

Hearing impairment and cochlear implants

A conversation analytic study of teachers' actions in response to the storytelling of children with cochlear implants

Ph.D. Dissertation

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*'Not being able to see, separates people from things; not being able to hear,
separates people from people'*

Immanuel Kant (1724-1804)

German philosopher

List of papers

This thesis is based on the following five papers.

1. Eleni Mourtou and Markus Meis (2012) Some basics about hearing loss, hearing technologies and barriers to hearing aid use In M. Egbert and A. Deppermann (eds.) *Hearing aids communication. Integrating social interaction, audiology and user centered design to improve hearing technology use*, 9-21. Mannheim: Verlag für Gesprächsforschung.
2. Eleni Mourtou (2014) Language practices in the ci-classroom. In *Journal of Interactional Research in Communication Disorders*, 5 (1): 115-140.
3. Eleni Mourtou (forthcoming) The use of German *aha* in the classroom: Teachers' demonstration and instrumentalization of *aha* as a response to the storytelling of children with cochlear implants. Manuscript submitted to *Applied Linguistics and Professional Practice*. Under review.
4. Eleni Mourtou (forthcoming) 'Also'-introduced summaries as an educational tool in the storytelling of German children with cochlear implants. A teacher's response to problems of structure, content and language. Manuscript submitted to *Journal of Pragmatics*.
5. Trine Heinemann and Eleni Mourtou (forthcoming) The 'diary sheet' as an augmentative alternative communication device for German cochlear implanted children in the classroom: Social interactional uses and consequences. Manuscript submitted to *Journal of Interactional Research in Communication Disorders*.

English summary

In this thesis I examine the actions that teachers for the hearing impaired employ in response to the storytelling of German children with cochlear implants. In particular, I examine the teachers' tools for working on the language development of these children and how the children react to the teachers' actions. Based on 60 video-recorded storytellings of children in the first class of elementary school, taken from the environment of a special school with focus on hearing rehabilitation, and using Conversation Analysis as my method of inquiry, I consider how the teachers work on specific problems in terms of the language and language production of the children and how the children respond to the teachers' employed practices.

The thesis consists of five original papers and an introduction, in which I describe hearing impairment as a pervasive worldwide phenomenon, the medical means to diagnose hearing loss and the technical means of treating it. The main part of the introduction focuses on the cochlear implant in children, the post-operational rehabilitation of these children and the school in which the study took place. In addition, I introduce the basic principles of Conversation Analysis, describe my data and the setting the data stem from and discuss some of the methodological considerations that arose from applying Conversation Analysis on my data. An overview of the results of the study and a brief discussion of the papers, close the introduction.

In paper one of this thesis I provide basic information about hearing loss and present statistics concerning the prevalence of hearing loss worldwide. This paper should work as an introduction to the topic of hearing loss and supply the reader with further information concerning this topic.

In the analytic papers (papers two-five) I examine the different practices the teachers use to work on the language development of the children and show, how the teachers follow educational but also rehabilitational purposes.

Paper two investigates language practices, which teachers use to work on the children's active language production and their pronunciation. I examine two practices, which are used during the storytelling activity: repeat requests and

questions. Whereas repeat requests are used in the post-operational therapy of the children, questions are used to provoke and further check the children's active language production.

Paper three focuses on a specific type of response particle, the German change-of-state token 'aha' and how it is used by a teacher in the classroom. 'Aha' has been documented to display surprise, thus indicating that an utterance has informed the speaker and marking an epistemic shift from that of -K (not knowing) to + K (knowing) of the producer. The paper shows that the teacher uses 'aha' for two purposes: firstly, as a demonstration of news receipt after unknown information within the story and secondly, as a tool to acknowledge the child's effort to improve his/her language production.

Paper four shows how a teacher uses two particular groups of 'also'-introduced summaries in response to the storytelling of the children. The paper demonstrates how the teacher uses 'also'-introduced summaries in second person to restructure the activity that was disturbed and how she uses 'also'-introduced summaries in third person to address a particular problem within the child's telling, either concerning the content of the story or the language the child uses.

In paper five, we investigate how a particular specialized object, the *Tagebuch-Blatt* (diary-sheet), is employed in the storytelling of the children. We investigate how these children and their teacher use the *Tagebuch-Blatt* both as a semiotic resource that scaffolds the children's communicative competence and as a pedagogical and therapeutic prompt to bolster the children's verbal language production. We also demonstrate, however, that the use of the *Tagebuch-Blatt* can have socially problematic consequences in that when used for pedagogical and therapeutic purposes, the sheet can also be used to deny the children the basic right to own, know about and describe their own experiences. Whilst the sheet serves to bolster the children's language production, it does so, on occasion, at the expense of challenging the children's cognitive competence.

Overall, the study seeks to enhance the awareness of the consequences of hearing impairment and highlights the particular needs of children with cochlear implants.

Danish summary

I denne afhandling undersøger jeg en række handlinger udført af lærere der underviser hørehæmmede. Specifikt ser jeg på hvordan disse lærere håndterer og reagerer på fortællinger produceret af tyske børn som bærer kokleaimplantater. Mit fokus er især på hvilke interaktionelle redskaber lærerne anvender til at udvikle og arbejde med børnenes sprogudvikling og hvordan børnene reagere på dette. Mit studie er baseret på 60 videooptagne fortællinger, leveret af børn i første klasse på en specialskole for hørehæmmede børn. Ved hjælp af metoden konversationsanalyse undersøger jeg i disse fortællinger hvordan lærerne identificerer og arbejder med de individuelle børns problemer med sprog og sprogproduktion.

Afhandlingen består af fem originale videnskabelige artikler/kapitler, samt en introduktion. I introduktionen beskriver jeg mere generelt fænomenet hørenedsættelse og hvordan hørenedsættelse diagnosticeres og behandles. Derefter diskuterer jeg mere specifikt hvad et kokleaimplantat er, og hvilke former for sprogterapi børn med kokleaimplantater modtager i den skole som undersøges. Derudover introducerer jeg de basale principper for konversationsanalyse, beskriver data og kontekst mere detaljeret og diskuterer nogen af de metodologiske overvejelser som opstod i løbet af studiet. Jeg afslutter introduktionen med en oversigt og diskussion af de fem originale artikler.

I artikel et beskriver jeg overordnede træk ved hørenedsættelse, for eksempel hvor hyppigt og i hvilke former det opstår. Denne artikel fungerer dermed som en introduktion til emnet hørenedsættelse og skulle give læseren indsigt i og information om dette emne.

I de mere analytiske artikler (to til fem) undersøger jeg forskellige praksisser der anvendes af lærere til at identificere og arbejde med de kokleaimplanterede børns sprogudvikling, i forbindelse med børnenes fortællinger. Her viser jeg overordnet at læreren følger både lærings- og rehabiliteringsmål.

Artikel to undersøger to sproglige praksisser anvendt af lærerne til at arbejde med børnenes sprog produktion og udtale: anmodninger om gentagelse og spørgsmål. Here

viser jeg overordnet at anmodninger om gentagelse primært bruges med sproglig rehabilitering som mål, mens spørgsmål bruges til at provokere og tjekke børnenes sproglige produktion.

Artikel tre fokuserer på en bestemt svar-partikel, den tyske skiftemarkør ”aha” som generelt anvendes til at registrere overraskelse og til at indikere at taleren undergår et epistemisk skift, fra at ikke vide noget (-K) til at vide noget (+K). I artiklen viser jeg at læreren anvender ”aha” til to ting: (a) som en demonstration af hvordan man som taler markerer at man nu har forstået noget, og (b) som et redskab hvormed man kan anerkende et barns indsats for at forbedre sit sprog.

Artikel fire viser hvordan læreren bruger to forskellige typer opsummeringer, begge initieret med ”also”, som svar på børnenes fortællinger: når disse opsummeringer formuleres i anden person anvendes de til at restrukturere aktiviteter der på en eller anden måde er blevet afsporet; når opsummeringerne formuleres i tredje person anvendes de til at adressere et specifikt problem ved det enkelte barns fortælling, for eksempel indholdet i fortællingen eller måden fortællinger er formuleret på.

I artikel fem undersøger vi hvilke rolle det fysiske objekt ”Tagebuch-Blatt” (dagbogsarket) spiller i børnenes fortælling. Vi viser at både børn og deres lærer anvender dette objekt som en semiotisk resurse, der af børnene kan bruges til at understøtte deres kommunikative kompetencer og af læreren kan bruges som et pædagogisk og terapeutisk redskab til at fremprovokere børnenes mundtlige produktion af sprog. Vi viser dog også at objektet kan bruges til at nægte børnene retten til at vide og fortælle om egne oplevelser og dermed en gang imellem kan risikere at udfordre børnenes kognitive kompetencer.

Overordnet set søger dette studie at forstærke viden om konsekvenserne af hørenedsættelse og især at fremhæve de særlige behov som børn med kogleaimplantater måtte have.

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“Let us be grateful to the people who make us happy; they are the charming gardeners who make our souls blossom.”

Marcel Proust

Doing a PhD and writing a thesis demands a lot of work and effort. Without people, who would be around to support one and cheer one on, it would not be possible. I consider myself blessed, as there were always a lot of friends around to carry me on, when I was too weak to walk my way. They did it silently and with lots of care and love and once I was on my feet again, they celebrated with me. I was raised with love and care by my parents and I was supported with love by my friends. Even if life tends to be difficult at times and brings us in a state of desperation, there is always someone to wait for you at the end of the tunnel.

I thank my supervisor, Trine Heinemann, for the tremendous effort she put into teaching me Conversation Analysis and for always being there, when I needed her. I could not wish for a better supervisor.

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I would like to thank Maria Wisnet, from the bottom of my heart. Maria was the head teacher at the *Johannes-Vatter-Schule*, where the data for this study were collected. As delegate and president of the German Association of Teachers of the Deaf, she dedicated her life to the improvement of the education of the deaf. She literally opened the doors to her institution to young researchers, of whom I was one. Maria was extremely open and willing to be confronted with problems that occurred in the school, as she was fully devoted to offer the best education to the children. She was always very keen on knowing what will come out of my research and I promised her to keep her updated. Maria passed recently away

and I experience a sadness, which can't be described. I owe this woman a great deal and I feel blessed to have known her. Thank you, Maria, for believing in improving things and for being always so kind and nice to me. We miss you. This study is also dedicated to you with my greatest respect and admiration.

My parents, Ingrid and Jiannis.

Mommy, we two have been through the darkest of times together. You were always there, surgery after surgery, treatment after treatment and from hospital to hospital, holding my hand day and night. You are one of the few persons, who never ceased to believe in me. You always cheer me up with this wonderful Austrian humour and charm 'spiced' with the Italian temperament of our family. And of course you passed on to me the love for Austrian pastries and Viennese Waltz! My life is so much more cheerful, sweet and turning because of you! Ich hab' Dich furchtbar lieb, Mamili!

Daddy, I still have in my mind the sounds of the countless lullabies you sang to me when I was little. You taught me the most essential things in my life and protected me tenderly, showing me, that I always have to maintain my dignity. You never ever became tired of inventing new stories about my favourite childhood hero: the Greek donkey! I love your company when I, captured by melancholy, gaze into the distance and lost in my thoughts find you there, also gazing into the distance, united with me in solemn silence. You wonderful and stubborn Greek daddy, my love for you is beyond words. Σ 'αγαπώ πολύ μπαμπά!

My brother Alexis, whom I love deeply, despite the fact that he insists, that I must have been adopted (this in a manner of affectionate teasing).

The greatest of all nephews, Angelo, who thinks that I am still 'cool', although I am considered 'ancient' and deadly boring by his age group. Even if it is now embarrassing to you, I will never forget how we two, when you were little, always used to fall asleep on the sofa, cuddled together under a blanket provided by 'granny'.

My wonderful friend Sian, who always had and has an open ear for me in times of joy and sorrow. I feel blessed, that you exist in my life and I am looking so much forward to more 'Eleni & Sian adventures'. Thank you for being a friend, Sianlein.

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Last and most importantly, I would like to thank the child who is responsible for the fact that I did a PhD at all: Mehmet! You dear boy, with your kind and serious request that I should write a book about hearing impaired children. You are a teenager now Mehmet and probably you do not even remember my promise, but see, I kept my word! During the course of writing my thesis, you became my personal symbol for every hearing impaired child in this world. So, this is dedicated to all these children, with my deepest love, my greatest respect and my fullest devotion.

Με αμέτρητη αγάπη
(With countless love)

Ελένη

Eleni

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ORIGINAL ARTICLES

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Introduction

‘Ours is not the silence that soothes the weary senses. It is an inhuman silence, which severs and estranges. It is a silence, which isolates, cruelly and completely. Hearing is the deepest, most humanizing, philosophical sense man possesses’

Helen Keller (1880-1968)

Deafblind Writer

This thesis is concerned with classroom interaction between German pre-lingually deafened and cochlear implanted children and their hearing teachers. It is based on video-recorded data taken from the particular setting of the storytelling of these children, practiced during the *Morgenkreis* activity in the first class of elementary school. The school these data stem from is a German special school dedicated to the needs of children with hearing impairment. I investigate the teachers’ actions in response to the storytelling of the children and how these actions reveal the educational and rehabilitational agenda the teachers follow.

This thesis does not intend to criticise the teachers’ actions and practices, but to show how atypical populations interact with each other. As such, it shows how a hearing teacher evaluates and interprets the verbal contributions of the children and how the children respond to the evaluation of their contribution by a hearing person.

It will uncover the possibilities, but also the challenges that might be encountered when professional purposes meet individual needs.

My interest in how people with a disability interact with their environment arose when I was a child, and long before I was personally confronted with my own fate of being deaf. My cousin, Daniele, was born with a severe visual impairment and according to himself is only able to distinguish shadows. I was extremely intrigued by the ways he perceived our world, by his profound sensitivity to sounds, voices and touch, and by his stamina in overcoming obstacles. I still remember how he used a

magnifying glass to read a text for his studies. It took him a couple of days and nights to read a text and I sat there in awe and watched him. He graduated (with honours!) in psychology from an Italian university, did his PhD (with honours!) and worked for many years at the UN in Vienna. Currently, he is the chief consultant for the blind and the visually impaired in Vienna. Not only did he show me that the world is not merely black and white, but he inspired me with his tremendous kindness, his wisdom and his courage. I still vividly remember a discussion we had about the phrase 'love at first sight' and about how much we human beings take everything for granted without reflecting about life in its whole abundance.

Many years later we had another of these discussions, this time about how a person with cochlear implants--me--experiences the world, which consists mostly of sounds, and how vision helps to communicate with the environment. Ironically, I lost the sense he relied upon and I still had the sense he lost. If there was a person in my closer circle to understand how I felt, how difficult things can be and how ignorant people are, then it was he. I was always so thankful that he presented me a different view of things, his own inward view, and I deeply enjoy being with him, as he hears for me and I see for him.

I was born with a functional hearing and became deaf at the onset of a chronic illness during the Easter holidays in 1998, shortly before my twentieth birthday. This happened without warning, and neither I, nor my parents were prepared for what was to come. My whole world, which was based on sounds and hearing, became silent and I was disconnected from my environment. I was not familiar with sign language or with any means of communication other than spoken language. I felt entirely trapped in a world to which nobody had access. I communicated with my environment by writing, and I remember that my mother and I used tons of paper to interact.

After an odyssey in various hospitals, one day my doctor told me that my inner ear was irreversibly damaged and that I will remain deaf for the rest of my life. My mother came to see me in the hospital a couple of hours later and we sat on a bench in the hospital garden and cried silently for hours. I was angry because my parents are the dearest persons to me and I did not want to make them sad.

A couple of months later and as a late deafened adult, I was considered a candidate for a cochlear implant at the university hospital in Munich. I had no idea what a cochlear implant was, but if it was a way to hear again, then I wanted to have it. I had several surgeries and re-implantations until the year 2004 when I was provided with a bilateral cochlear implant. For many years after becoming deaf, I was in great denial and did not want to have anything to do with deaf people or people with other disabilities. This was because society teaches us that if you are disabled you are a loser, that if you are disabled you are not supposed to go to university, that if you are disabled nobody would want to date you, that if you are disabled people will pity you. Pity was the last thing I wanted. So I struggled with my new condition for many years, until the moment when I realised that my disability is not me and I am not my disability, but that it is just a part of me, like my brown hair or my blue eyes. I started to view my deafness as my life partner now, not the one I wished for though, but the one I have to live with in the best possible way.

Later, and as a student of linguistics, I was quite shocked to see that the concerned literature did not pay attention to the importance of hearing for the acquisition of spoken language. That was the starting point for me to do research and direct people to the importance of a functional hearing for language and communication. But I was inexperienced and did not know how I could depart on such a journey. It was to take several years until I started working as a consultant for adults with hearing loss at the university hospital in Frankfurt, Germany. The ENT department of the hospital where I worked started to conduct a follow-up study on children with cochlear implants and I was asked to contribute as a linguist. I instantly knew that was the field in which I wanted to do research. I started to network with educational staff working with children with cochlear implants and as a result I was invited to visit the *Johannes-Vatter-Schule* in Friedberg, a school dedicated to children with hearing impairment, 60 kilometres from Frankfurt. I am still touched when I remember how the children reacted to me, once they realised that adults also can have a hearing loss and use cochlear implants. The teachers and most of the parents of the children are hearing and somehow the children thought that only they, children, use cochlear implants. So I was quickly welcomed by the children as ‘one of them’ and I was encountered with an intense trust they showed me.

Once I got permission for video-recording the classroom interaction from the state of Hessen, the school and the parents, I began to spend many hours in the school, watching, discussing and learning. Although I was already in the process of collecting data, I still was not sure what to investigate and how I could use these data in a productive way, or if I should use these data at all. To my surprise, one day Mehmet, one of the children in the class and actually the troublemaker and class clown, came to me and asked me what I would do with all the videos I was filming. I did not know how to explain it to him, so I simply said that I would write a book about them. He looked at me for a moment and said something I will never forget: “could you please write about the problems we have and write a book about children with cochlear implants?”

I was speechless, not only about my own stupidity in believing that children are not really aware what is happening around them, but also about his sincere and serious request. I went home that day and spent hours laughing and crying in turn, as a result of my overwhelming emotions. My decision was taken, and I took this promise very seriously, come what may. I took that decision not because I think children are weak and helpless little beings, but because they have taught me a great deal and because we are responsible for providing them the best education and conditions for a better future.

Sometimes in our efforts to educate children, we do that in accordance with our own beliefs and views as adults, and in that case as hearing adults, which might not always be what the children need. We human beings tend to judge everything based on what the majority thinks is best and unfortunately, even with the best intentions, we risk disabling people even more, because we attempt to shape them the way we want them to be, without respecting what THEY want to be or what they are. If I as a hearing impaired adult can contribute in showing what great effort these children put into interaction, and if they need me to speak and stand up for them, then I will always do so with dedication.

One last and final fact that further reinforced my decision was the announcement, that the European Union officially has ratified the Convention on the Rights of People

with Disabilities by the UN.¹ The Convention will make a step towards the change of the perception of disability in society. There is a legal obligation to the countries, which have ratified the Convention, to make great improvements concerning the rights of people with disabilities. The progress in each country will be monitored and reported to the UN. The Convention aims to improve and implement the rights of people with disabilities in all sectors as e.g. education, health system, workplaces, social places and especially facilities. This means, that studies on the special needs of people with disabilities will become very important to further the goal of the UN-Convention. With this study, I would like to contribute to this great step ahead in our society.

The introduction to this thesis will first discuss hearing impairment as a worldwide phenomenon and show that this phenomenon cannot be generalized, as it appears in various forms, for different reasons and because it is experienced individually by the people affected with it. To better understand these differences and the importance of hearing for communication, I also provide a description of the function of the auditory system and the medical procedures through which a hearing loss is diagnosed. A brief overview of the technical means for treating hearing loss will close the first section. The information given in section 1 should work as a bridge that will lead us over to the actual interest of my thesis, which is the cochlear implant and children with cochlear implants.

Section 2 hence, will first discuss the cochlear implant (ci) as a prosthesis for treating irreversible profound hearing loss, and secondly, children with cochlear implants. A presentation of the characteristics of hearing with a ci as well as the particular needs of children with ci in the post-operational stage, will lead us to the presentation of the school where the data were collected and the way teachers in that school work with the children. The description of the storytelling activity, which is the interest of my study, will be the final point of section 2.

In section 3 then, I will discuss Conversation Analysis as my method of inquiry, its development and basic principles. As my thesis is about classroom interaction, which

¹ For further information see: <http://www.un.org/disabilities/convention/conventionfull.shtml>

is an institutional setting, I will also present the characteristics of institutional interactions and provide an overview of the literature concerning classroom interaction. At the end of section 3 I will give a detailed account of the data I used for this study, as well as discussing some of the methodological considerations that have arisen from applying CA to this context.

In the final section I will summarize my findings and discuss them by presenting a brief overview of the papers this thesis consists of.

1. Hearing impairment – A pervasive worldwide phenomenon

Hearing, in connection with the other senses, helps us experience our environment and our mutual dependence of it and thereby ensures a smooth coexistence with our fellow individuals by assisting us in developing an adaptive behaviour within our environment and society. Therefore, an intact hearing is of crucial importance for an individual, normal and physiological development and maturation, as it secures communication² (Hellbrück 1993, Pöhle 1994). The highly complex physical, biochemical and neurobiological process of hearing, though, is hidden to the eye of the casual observer, who takes hearing for granted. The consequences of a missing or dysfunctional hearing are multidimensional. They may include emotional, interpersonal, behavioural, physical and psychological aspects (Craggs-Hinton 2007). Hearing loss can occur at a pre-lingual, peri-lingual or post-lingual stage and is classified as conductive, sensorineural, or mixed loss (Ding 1984). The severity of the disability is determined by the age at which the hearing loss occurred, the duration, the frequencies affected and the degree. Of great importance is, further, whether the hearing loss is unilateral or bilateral (Ding 1984, Pelkofer 1978, Leonhardt 1999).³

As every hearing impaired person experiences hearing loss in a very particular and individual way, a generalisation of the concept of hearing loss is elusive and any degree of hearing loss also brings with it a different effect for communication. This proves to have consequences for the rehabilitation and also the fitting and adjustments of hearing devices and cochlear implants.

Hearing loss is associated with important adverse effects on the quality of life of hearing impaired individuals, which are only slightly reversible with hearing aids. Several studies show, that hearing impaired adults, for example, noticed effects on their job performance due to their deteriorated hearing (Hetu et al. 1990, Joore et al. 2003). For the hearing impaired, understanding in communication requires a great deal of concentration and compensational tools, like lip-reading, combination of information and the use of the contextual frame.

² I refer to communication of spoken language, as deaf born individuals are also able to communicate with the help of sign language.

³ A more detailed description of these issues will be provided in sections 1.2 and 1.3.

According to WorldWideHearing (2014) 642 million people worldwide are affected by some degree of hearing loss. Out of this sizable population, 278 million have hearing loss that is defined as disabling. Furthermore, 80% of those with disabling hearing loss come from low and middle-income countries. In Europe alone approximately 16% of adults are suffering from a hearing loss, which in numbers are 71 million people (Shield 2006).

For children, it is reported that 181 million children worldwide are hearing impaired and will need lifetime support (WorldWideHearing 2014). A study conducted by Ross et al. (2008) showed that approximately 3 in 1000 babies in the US are born with permanent hearing loss. Furthermore, almost 15% of all children and adolescents between 6-19 years suffer from temporary or permanent hearing loss that was caused partly by disease or exposure to excessive noise (Niskar et al. 1998).

Although there are no precise numbers available concerning children with hearing loss in Europe, we can assume, that the statistics would mirror the US numbers. In addition to the individual consequences of a hearing loss, it also affects the social costs if it remains untreated. Studies show that untreated hearing loss costs the European Union alone 168 billion Euros annually (Shield 2006).⁴

As the numbers given above attest, hearing loss is a worldwide pervasive phenomenon. It is expected that the numbers will increase up to 25% by 2020 due to the ageing population and other factors like greater exposure to noise, diseases and pollution (Rosenhall et al. 1999, Sorri et al. 2001). Considering these numbers and the effects hearing loss has for the affected person and his/her environment, hearing loss is an issue that needs to be further investigated and dealt with.

In the following sections I will first provide a description of the auditory system and its function. A description of it is necessary if we are to fully understand the various types of hearing loss and the effects it has. I will then present the different types of

⁴ Article 1 of this thesis, provides more detailed statistics on the prevalence of hearing loss

hearing loss and the degrees, as well as the ways a hearing loss is diagnosed and the technical means available to treat it.

1.2 The auditory system – The ear and its function

The auditory system and its components is a high-precision, delicate sensory system, which allows us to receive and process sounds. It consists of the outer ear, the middle ear, the inner ear, the central auditory pathways and auditory cortex (Hellbrück 1993). In regard to the particular functions, the auditory system can be subdivided into the peripheral auditory system (outer ear, middle and inner ear) and the central auditory system (auditory pathways and auditory cortex). Whereas the peripheral auditory system is responsible for translating sounds into neural codes, the central auditory system is responsible for the interpretation of these codes, so that they at the next stage can be processed by the brain (Clopton and Spelman 2000).

The auditory system starts to work once it is stimulated by sound, e.g. mechanical motion or vibration. The moment mechanical vibration or sound is set in motion, it takes the form of pressure waves, which flow through the air particles and arrive at the outer ear. The particular shape of the outer ear helps to absorb these incoming sound waves. The outer ear then ‘modifies the sound wave in transferring the acoustic vibrations to the eardrum’ (Pickles 1982, 10). The eardrum, which is an elastic membrane, starts to resonate and vibrate due to the bouncing sounds. Through the vibration of the eardrum, the sound is transferred to the three bones in the middle ear, which are flexible and connected with each other. The first bone (Malleus) passes the sound on to the second bone (Incus) and the sound then arrives at the third bone (Stapes), which is connected through an opening, the oval window, to the inner ear (Clopton and Spelman 2000).

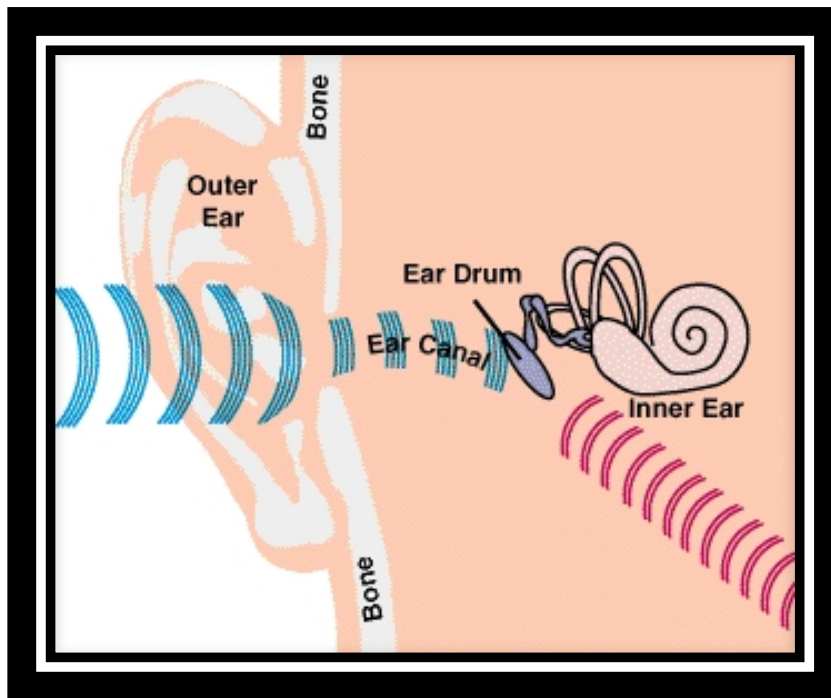


Figure 1: Sound waves arrive at the outer ear and are then transmitted to the middle and inner ear for further processing. From <http://www.linuxjournal.com/article/2189>

The liquid filled inner ear consists of the cochlea, which hosts the organ of Corti⁵ and the vestibularis system (= the balance system). Both organs are linked to each other and react to the finest changes in pressure provoked by wandering waves in the liquids, which were triggered by the incoming sound. The hearing nerve leads from the cochlea to the central auditory pathways, which transfer the information to the brain (Harland and Plath 1997). The organ of Corti and its inner and outer hair cells can be seen as the actual hearing organ, as it is responsible for the translation of mechanical vibration to neural impulses, which are sent to the brain to process. The hair cells are responsible for different frequencies, depending on their location in the cochlea, thus sounds are processed according to their spatial region. Wandering waves that hit the inner ear arrive at various points of it and stimulate these hair cells. The incoming sounds are then not only dismantled in frequency parts, but already analyzed, so that the brain can react quicker to the stimuli. Once the stimuli have arrived at the brain they are further analyzed and processed cognitively.

⁵ The organ of Corti was named after its discoverer the Italian anatomist Alfonso Corti, (1822-1876) (see: Leonhardt 1999, 217).

In sum, the function of the various parts of the auditory system can be shown in the following scheme:

Outer ear → sound-amplifying function

Middle ear → sound-transmitting function

Inner ear → sound-processing function

The auditory system is considered to be the most sensitive and delicate part of the human body. Disturbances in its function might arise due to various medical conditions and reasons. Damages that occur in the outer or middle ear are usually treatable, while damages in the inner ear tend to be irreversible.

1.3 Audiometric procedures to diagnose a hearing loss

When a hearing loss occurs or a doctor assumes that there might be a disturbance in hearing, the affected person is sent to an audiologist. An audiologist⁶ is a trained professional who evaluates the non-medical aspects of hearing impairment (Rezen and Hausman 2000).

The three main parameters to characterize sound are: intensity, frequency and complexity. These parameters are inspected within a hearing test.

Frequency refers to the rate of the sound pressure waves and is responsible for the perception of high-pitched and low-pitched sounds. It is measured in Hertz (Shimon 1992). The frequency range, in which a sound event must be in order to be perceived by a human, is between 16/20 Hertz and 18,000/20,000 Hertz. ‘The domain of the best hearing lies between 1,000 and 4,000 Hertz; the domain of sound of speech lies about between 200 and 8,000 Hertz’ (Grosse 2001, 27).

⁶ The education in audiology varies greatly within the EU and in other countries (see: <http://medi.uni-oldenburg.de/euea/html/curriculum.html>).

Intensity refers to the amplitude of the pressure waves and is responsible for how loud we hear a sound. The relevant domain of loudness for humans starts at 0 Decibel (dB) and ends at about 140 dB. Normal hearing is located between 0 and 20/25 dB (ibid).⁷

Complexity refers to the combination and interaction of frequencies and intensities of a sound. Most of the sounds we perceive are a complex combination of various intensities and frequencies. Hearing loss is then identified between these borders of intensity and frequency based upon, for spoken language, the important range of frequencies.

Audiometric procedures are used to evaluate qualitatively and quantitatively the hearing of a person. These include several specific procedures, which are divided into objective and subjective tests.

1.3.1 Subjective audiometric measurements

The precise evaluation of subjective hearing tests depends on the cooperation, the reactions and the interpretations of the examinee. These tests form the basis of any diagnosis of hearing and any further medical examination (Thiel 2000). The result of subjective tests is an audiogram, which shows the auditory threshold for pure tones.

The wave of a pure tone consists of only a single frequency, thus pure tones can be considered as demonstrating the range of pitches. In fact, the human ear can hear pure tones that are much lower or higher, than those presented in an audiogram. For an audiogram though, pure tones, which are found in human speech, are selected and used for testing the hearing. When analyzed electronically ‘each speech sound has been found to be an unique and complex combination of these pure tones’ (English 2004, 44). An audiogram hence demonstrates within which range of frequencies a hearing loss occurs and tests the performance of the inner ear. It thus facilitates a quantitative assessment of the hearing loss.

⁷ For a Decibel (Loudness) Comparison Chart see: <http://www.gcaudio.com/resources/howtos/loudness.html>

The test is done in a sound room where the examinee's ear is tested by providing him or her with sounds, which come from a so-called audiometer. The audiometer also automatically interprets the examinee's reactions. The sounds are transmitted through loudspeakers or headphones. Pure tones are used for the test in a range from 10 Hertz to 125 Hertz. The loudness of the sounds is varied between 0 dB and 120 dB.

Putting the above information together we gain three components an audiogram (see figure 2) consists of:

1. The range of pitches presented in the hearing test.

The pitches (or pure tones) can be seen as lined up in the horizontal part of the audiogram (measured in Hertz (Hz), see figure 2). An audiologist will use the term 'frequency' (see 1.3) to describe in which area the hearing is disturbed, for example, high frequency hearing loss or low frequency loss.

2. The Loudness of each pitch, or how loud a pitch has to be, to be heard by the examinee.

The loudness can be seen in the vertical part of the audiogram (see figure 2). It is measured in Decibel (dB). There are various degrees of hearing loss (see 1.5), which can be deciphered in an audiogram.

Component 1 and 2 combined give us the 'hearing threshold' (English 2004, 45), which tells us how loud each frequency has to be in order that the examinee can hear it.

The audiologist records the threshold of an examinee in circles. In figure two, for example, the hearing threshold for 125 Hz is 40 dB, for 250 Hz it is 50 dB, for 500 Hz it is 80 dB, etc. (see figure 2, upper left). Figure 2 shows how the hearing level starts for frequencies at 125 Hz as moderate hearing loss (at 40 dB) and further becomes a severe-to-profound hearing loss from the frequencies of 250 Hz and further.

3. The hearing in each ear.

Usually, the hearing is tested in both ears and presented in different audiograms. In figure 2, for instance, we can see the tested hearing of the right ear (see upper left 'Rechtes Ohr'/right ear). The hearing thresholds of both ears as recorded in the audiograms can then be presented in one audiogram together.

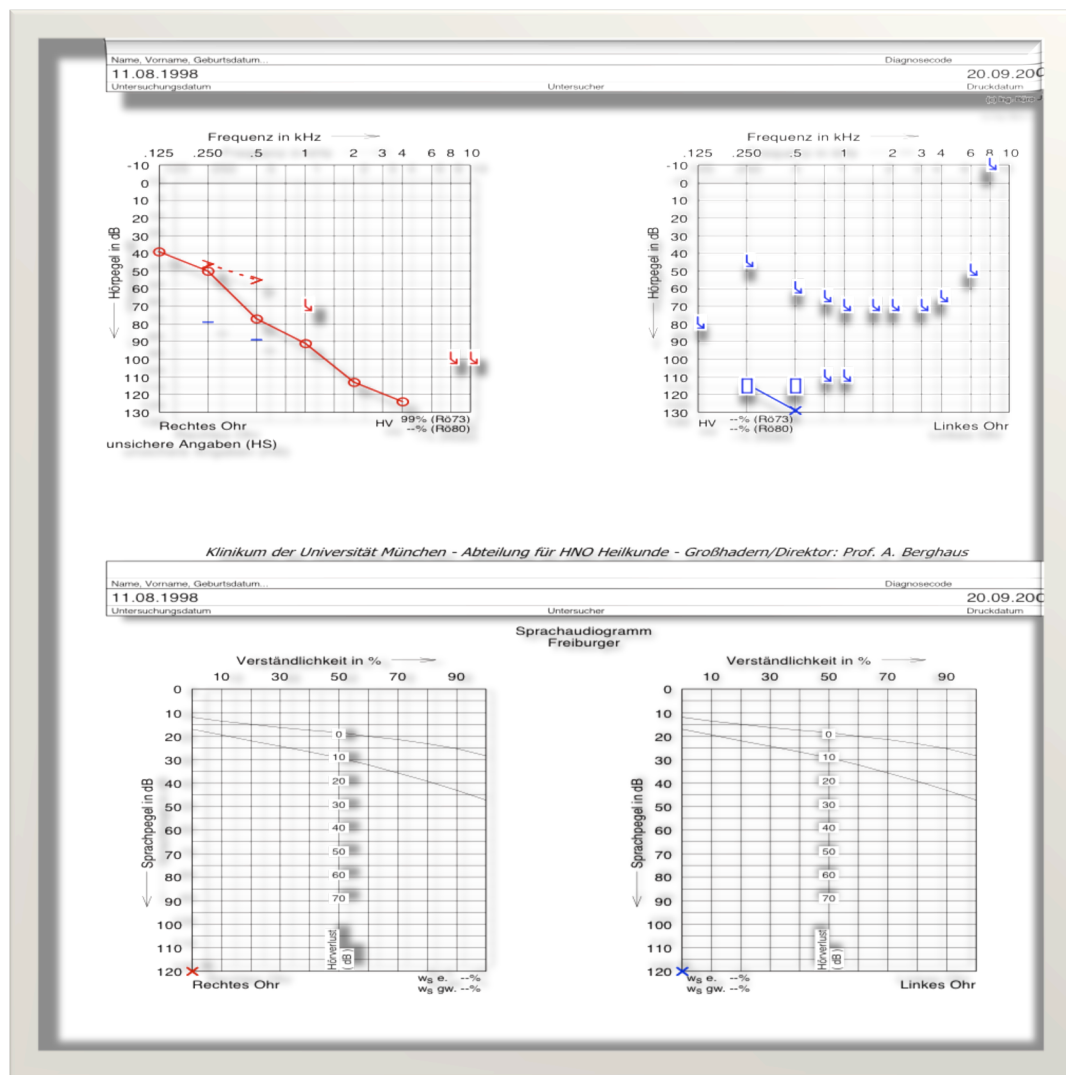


Figure 2 shows the audiogram and speech audiogram of a profoundly hard of hearing person. The audiogram is the author's audiogram. With courtesy to the university hospital Munich.

In addition to a conventional audiogram, some audiologists generate a speech-audiogram, which tests the speech comprehension. For this purpose, special tests are used, which vary from country to country. These tests assess either the perception of single words, or of whole sentences. Both tests together provide a clear picture of the type and degree of hearing loss. Once an audiologist has tested the hearing and identified the type of hearing loss, an otorhinolaryngologist can initiate further steps for the treatment of the hearing loss.

1.3.2 Objective audiometric measurements

The evaluation of objective audiometric measurements does not require the collaboration of the patient. These measurements test the mechanical changes relating to the transmission of sound within the ear and the reactions of the nervous system (including the hearing nerve) to acoustic stimuli. Electric Response Audiometry (ERA), impedance measurement, tests that provoke otoacoustic emissions,⁸ or the nowadays implemented new-born hearing screening (Gross 2005) are some of the objective tests used in audiometry. These tests are made with the help of special instruments, which interpret the reactions of the nerves of the examinee. Usually the results of the objective tests confirm the results of the subjective tests and thus allow the control of the overall test results. Particularly for patients whose collaboration is not always given, e.g. children, these tests are an important means of diagnosis to detect a hearing loss at an early age.

1.4 Types of hearing loss and their consequence for communication⁹

Observation has shown that the general public has very limited and biased information concerning the issue of hearing loss. The assumption that there is only one type of hearing loss and that hearing loss occurs mainly in elderly people is still pervasive. The notion of the term hearing loss is difficult to comprehend, as hearing loss occurs in various forms and in different degrees. The effect of it is experienced differently from person to person,¹⁰ as many other factors play a distinctive role as well.

In medicine and its related fields as e.g. audiology, the type of hearing loss is categorized according to the location of the damage in the auditory system.

⁸ Otoacoustic emissions are sounds, which are produced from within the ear and can be provoked by an external stimulation (Kemp 1978).

⁹ Article 1 of this thesis provides a further and more detailed description concerning the issues discussed in this section.

¹⁰ For further reading see: Craggs-Hinton (2007), Rezen and Hausman (2000).

In general, there are three main types of hearing loss: Sensorineural, conductive, and mixed hearing loss. Deafness, defined as a total lack of auditory perception, is treated as a condition of its own.

1.4.1 Sensorineural hearing loss

The most frequent type of hearing disability is acquired sensorineural hearing loss. With sensorineural hearing loss, we describe a condition where the processing and translation of the auditory impulses in the inner ear and their further transformation to the brain is disturbed. This results in a disturbance of the qualitative sound perception e.g. some sounds are not perceivable or distinguishable anymore. The person with sensorineural hearing loss is not able to perceive faint sounds or sounds of low salience, as they might be heard often as muffled. In general, there is a restriction of the dynamic adjustment to sounds, thus the experienced sound is not congruent with the real sound event. The affected person hears speech, but is not able to give a meaning to it. This is due to the fact that particularly middle and high frequencies are damaged and thus consonants and vowels, which are produced between 2,000 and 4,000 Hertz are deranged (Kloster-Jensen and Jussen 1974).

The causes for sensorineural hearing loss can be found, inter alia, in exposure to loud noise, diseases and other medical conditions, and aging (Hellbrück 1993). In the event sensorineural hearing loss appears at an early age, it has severe consequences for the entire language development (Thiel 2000).

1.4.2 Conductive hearing loss

Conductive hearing loss is the condition when the sound transmission from the outer and middle ear to the inner ear is troubled. The inner ear is normally still functioning, but the sound does not arrive at it. In conductive hearing loss the sound perception is not particularly disturbed, as it is 'characterized by a nearly equal degradation of the sense of hearing in the entire array of frequencies' (Pelkofer 1978, 21). The affected person hears sounds in a lower volume, but does not experience them as biased.

Conductive hearing loss can be treated by the use of a hearing aid, which levels the frequencies to a normal range. Conductive hearing loss is caused by anatomical deformations of the outer or middle ear, by diseases or infections (Hellbrück 1993).

1.4.3 Mixed hearing loss

In mixed hearing loss, both conductive and sensorineural hearing loss occur together. Here, the damage is either in the outer or middle ear and the inner ear or auditory nerve simultaneously. The effects and consequences of this condition are similar to the above described.

In the US, 90% of all hearing loss is sensorineural and only 0.8% conductive (Hain 2010). These numbers are assumed to be similar for Europe.

1.4.4 Deafness

Deafness is the condition where the affected person entirely lacks the ability to perceive sound. As sound is also perceived through the bones in the skull, it is assumed that only 5% of people who have been diagnosed as deaf in fact show a total lack of sound perception (Grosse 2001). Most deaf people are born with their condition, which is caused either by medical risks and diseases during pregnancy, or is due to hereditary factors. Many deaf people use sign language as a means of communication, a language which deaf people have used throughout history. Each country has its own native sign language, which might include variations. The 2013 edition of *Ethnologue*, currently lists 137 sign languages.¹¹

¹¹ Lewis et al. (eds.) (2013). "Deaf sign language". *Ethnologue: Languages of the World* (17th ed.). SIL International.

1.5 Degrees of hearing loss

Hearing loss is not only categorized in various types, but also in degrees. The degree of hearing loss indicates how much the loudness of a sound needs to be increased so that the person can perceive it. There is a notably large variation in the definition of the degrees and the severity of hearing impairment, as well as in the definition of the hearing levels, used by different organizations (e.g. WHO, European Commission, American National Standards Institute, etc.). For this section I use the levels of degrees as given by the World Health Organization (WHO 2001).

Mild hearing loss (at 26-40 dB)

Individuals with a mild hearing loss have the ability to hear and repeat words spoken at a normal sound level at a distance of about 4 feet (Grosse 2001). The affected person usually has some hearing problems, but is able to follow normal conversation, if there is no background noise.

Moderate hearing loss (at 41-60 dB)

Moderate hearing loss brings a greater difficulty in hearing speech with it. Some sounds may not be heard at all. Speech can only be understood if it is loud. Sounds that are loud for normal hearing persons may appear very soft to individuals with moderate hearing loss. Group situations are a big challenge, even more with background noise (Ding 1984).

Severe hearing loss (61-80 dB)

With a severe hearing loss normal conversational speech is almost no longer audible. Speech is usually distorted, making comprehension impossible. The affected individuals also may not be able to hear themselves. Sounds, which are very loud to a normal hearing person, appear very soft or not at all to the individual with severe hearing loss.

Profound hearing loss (≥ 81 dB)

With profound hearing loss we refer to deafness, as only extremely loud sounds can be heard, or for being more accurate, felt through the vibration they produce. Hearing

aids may not help or help only very little (Pelkofer 1978). In these cases a cochlear implant (see section 2) is often suggested as the adequate treatment.

1.6 Technical means of treating hearing impairment

This section will briefly present technical means and technical supportive devices, which are available for individuals with hearing loss. These devices serve to improve, compensate and facilitate the hearing condition and thus the life condition of the person with hearing loss.

1.6.1 Hearing aids

Hearing aids are electroacoustic or medical devices, which serve to amplify sounds for the hearing aid user. They basically consist of four functional entities: a microphone, an amplifier, a regulator circuit and a receiver. The microphone is responsible for the reception of acoustic signals and their translation into electric waves. The amplifier then intensifies the signals, using energy that is provided through the batteries in the hearing aid. With the help of the regulator the volume of the electric signals can be adjusted according to the needs of the user. The receiver translates the electric waves back into sound waves, thus they can be transmitted to the ear for further processing.

Hearing aids are available in a variety of types and models. Since their introduction in 1996, digital hearing aids have outnumbered the analogue hearing aids, which were used in earlier years (Levitt 2007). Digital hearing aids allow a range of adjustments, e.g. concerning the noise reduction, the directional processing, the adaptation to different sound environments, the feedback cancellation, etc. (Vonlanthen and Arndt 2007). Despite the large variety of hearings aids and the development in technology, hearing aids may help to compensate a hearing loss, but do not restore a fully intact hearing.

Nowadays, a number of different types and forms of hearing aids are available, including behind-the-ear (BTE) hearing aids, in-the-ear (ITE) hearing aids, and invisible in-canal hearing aids (IIC). This group constitutes the three major types of hearing aids, out of which BTE aids are used by the majority of hearing aid users (Hamann and Schwab 1991). Also available are eyeglass aids in which the hearing aid is attached to glasses and wireless hearing aids.

Hearing aids are usually adjusted, fitted and checked by a specially trained hearing aids acoustician and sometimes also an audiologist.

1.6.2 Hearing assistive technology

Hearing assistive devices are devices that help the hearing aid user in communicating in more challenging situations or in noisy environments like, e.g., meetings, group situations, public places with poor acoustical environment, etc.

For facilitating communication with a speaker who is close by, but where the background is noisy, personal amplifiers can be of great help. In situations where several speakers are involved, or where the main speaker (e.g. a teacher) is more than a few metres away, FM systems, infrared and induction loops come into action. These systems work with magnetic fields, radio or light waves and transmit the sound from a speaker (e.g. professor, teacher) to the receiver of the device employed by a user. The device is individually adjusted and fitted to the hearing needs of the user. Most modern hearing instruments allow the user to connect directly to Bluetooth devices. Telecoil programs, which are incorporated into most hearing aids, enable a direct acoustic access to any sound event, if an induction loop is available (e.g. in theatres, cinemas, airports etc.). Furthermore, messaging systems like text messages on mobile devices, email and the possibility to chat online, are also seen as a life-facilitator by most people with hearing loss.

This section discussed hearing loss, the different types of it as well as the medical means to diagnose it and the technical means to treat it. It became clear, that hearing loss cannot be considered as a homogeneous condition, as it appears in different

forms, through various reasons, and as it is experienced differently from person to person affected by it.

The next section will direct our focus on another technical means of treating profound hearing loss, the cochlear implant (ci). The discussion of the cochlear implant deserves a separate section, as a ci is considered to be a prosthesis and as such it differs from conventional hearing aids. Also because the prerequisites to become a user of a ci differ significantly from those of becoming a hearing aid user. A description of the ci and the ci in children, as well as the post-operational rehabilitation issues of a cochlear implantation in children, will lead us to the presentation of the school in which this study has been conducted. Hence, we will be able to observe how a facility dedicated to the needs of children with ci works and how the educational staff in this facility apply certain practices to accompany the children's language development. At the end of this section we will become familiar with one of the practices teachers use to scrutinize and work on the children's language development, which is also the setting of the data I used for this thesis.

2. The cochlear implant and paediatric cochlear implantation

The history of the cochlear implant (ci) begins already in the late 1950's and 1960's when physicians tried in a first experimental attempt to stimulate the hearing nerve of a deaf patient with an electrode.¹² The patient was afterwards able to distinguish some sounds, but not to understand spoken language (Lehnhardt 1998). It took many scientists in different countries several years and various attempts in vain before an electrode that could provide a broader spectrum of sounds was developed and a secure operation method was authorized. In the 1980s the first commercial cochlear implant was launched and approved for adults suffering from a profound sensorineural hearing loss. This was the green light for the first regular cochlear implantations to take place. The American Food and Drug Administration approved the ci as a medical treatment for adults in the year 1985 and in 1990 for children (Diller et al. 2005). In Germany, it has been implemented as a medical treatment for profound hearing loss since 1987 (Lenarz et al. 1994).

In the beginning of treating profound hearing loss with ci, mostly adults who had lost their hearing at a post-lingual stage were implanted. This was because post-lingually deaf adults were considered to obtain the best benefits from a ci as they had already developed an acoustic memory in the brain and as they therefore were more apt to become used to hearing with a ci. Also, because at this stage, little was known about the medical risks of cochlear implantation in children and because the available implants were not designed for the specific anatomic features of a child. Since the 1990s, though, there has been a rapid development in improving the technical features of implants as well as in refining the medical procedure of implantation. Nowadays, any child who is born with a profound and irreversible hearing loss is considered a candidate for a ci and many children also receive a bilateral ci.

In the next section I will first provide a description of the ci and then discuss children with ci and their rehabilitation, as they are the focus of my attention. A presentation of the school I visited for collecting my data, and the ways teachers in that school work

¹² For further reading on the history and development of the cochlear implant see: Diller and Grasser (2005).

with children with ci, will further lead into the presentation of a particular practice the teachers use to work with the children, the storytelling activity.

2.1 The cochlear implant

A cochlear implant is considered a medical treatment for profound hearing loss, when a hearing aid is of no benefit. Contrary to a conventional hearing aid, a ci is a prosthesis, an artificial replacement of a missing body part, e.g. the replacement of the function of the inner ear. Unlike a hearing aid, a ci does not transmit actual sounds through any portion of the ear structure. A ci is a tiny and very complex device that is surgically implanted into the cochlea. It is recommended for individuals with severe and irreversible hearing loss, and a functional hearing nerve is required. The implant works with a part worn externally, behind the ear (see figure 3). The microphone of the outer part picks up sounds, which are arranged and selected by the speech processor and converted into electric impulses by the transmitter. The transmitter includes a magnet and sends the impulses through the skin to the receiver of the implant.

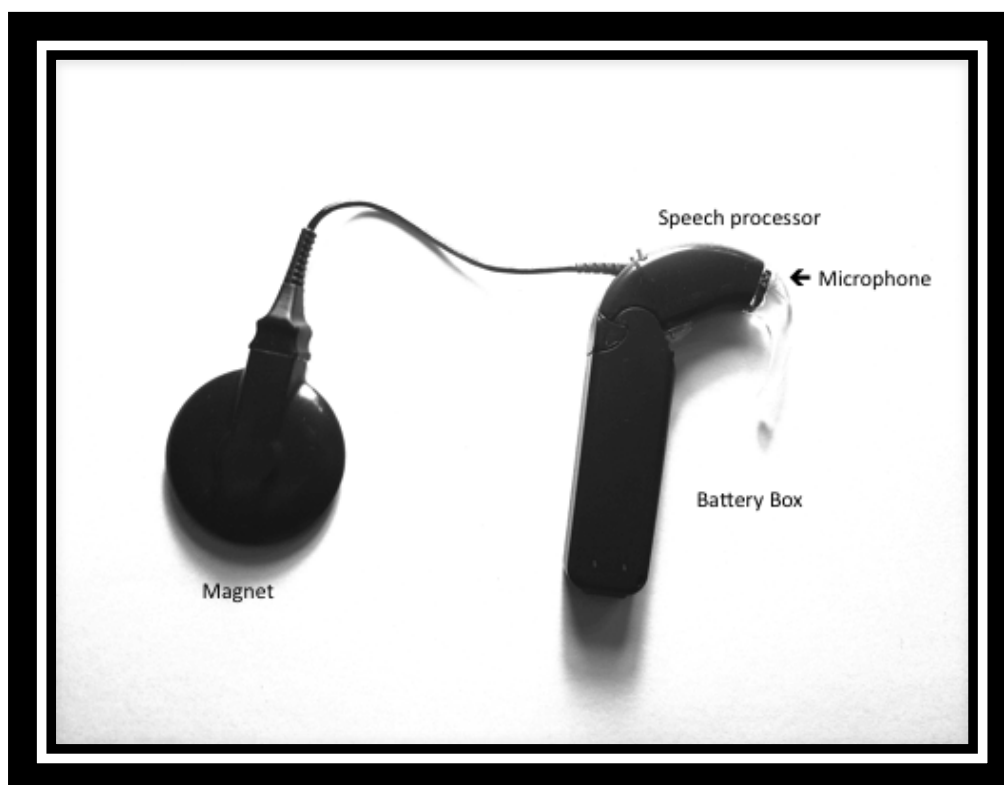


Figure 3 shows the outer part of the cochlear implant.

An array of electrodes (see figure 4), which is placed into the cochlea, collects the impulses of the receiver and sends them to different regions of the inner ear. The electrodes imitate, in a limited way, the function of the hair cells (see 1.2). Modern implants have 12-24 channel electrodes depending on the product. More channels though, do not guarantee a better sound perception, as it is not the number of channels, but the depth of the insertion of the electrodes, which matters for sound perception (Escude et al. 2006). Electrodes cannot be fully inserted into the cochlea and thus not all spatial regions of sounds in the cochlea can be reached.



Figure 4 shows an actual implant and the electrode, which is inserted into the cochlea.

Taken from: <http://www.sensorymedic.com/wp-content/uploads/2013/03/Implanted-device.gif>

As described in 1.2, sound is processed in different regions in the cochlea and the different regions are responsible for different sounds (high-pitched or low-pitched etc.). The sounds of the regions that are not reached by the electrodes are not perceivable by the ci user.¹³ The fact that the length of a cochlea varies greatly in human beings (Xu et al. 2000) complicates the process of developing an electrode that can be fully inserted into a cochlea. Whereas the implantable part of the ci remains

¹³ This website provides examples of simulation of hearing with a ci:
http://auditoryneuroscience.com/prosthetics/noise_vocoded_speech

implanted for a long time,¹⁴ the external parts like the speech processor (see figure 5) are upgradeable according to the new technical developments.

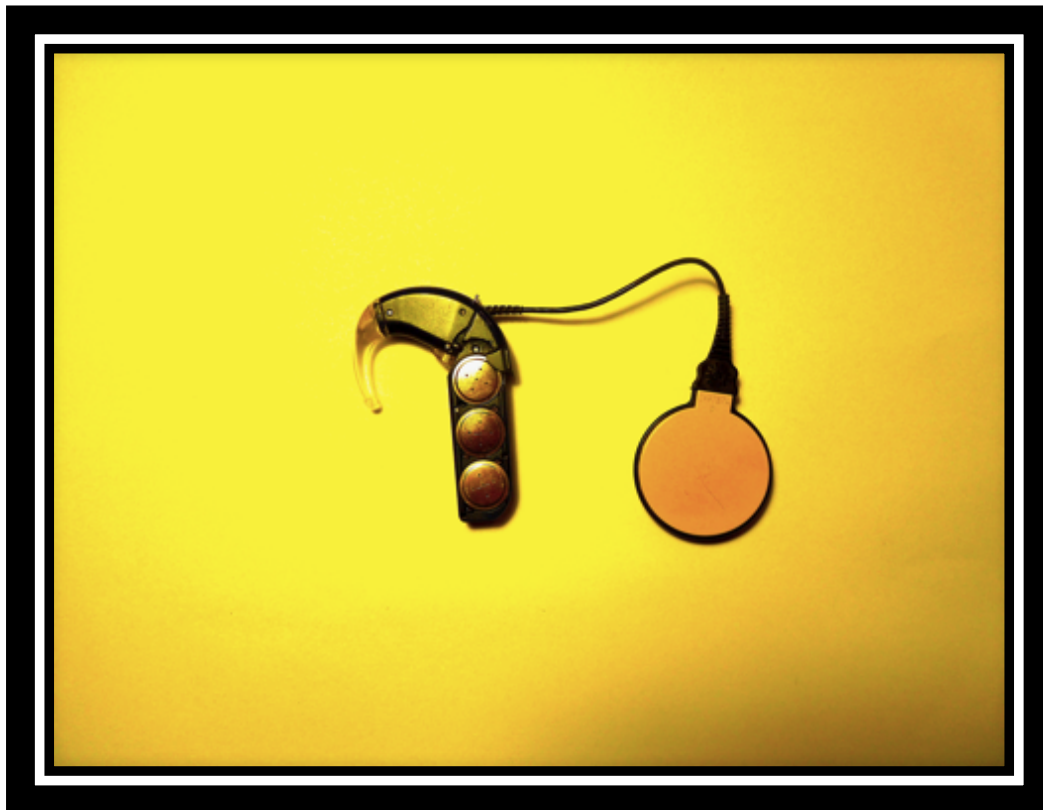


Figure 5 shows the outer part of a cochlear implant with open battery box. The batteries supply the processor with energy for the sound processing.

An implant differs from a common hearing aid as it does not amplify the incoming sound, but instead bypasses the damaged portions of the ear and stimulates the hearing nerve directly (see figure 6). In most cases a ci enables the user to only partly understand spoken language and differentiate some sounds. Hearing with a ci can be described if we imagine looking at a painting that consists of millions of different shades and colours. The ci-user would only be able to see a few of these millions of colours used in the painting and would have to imagine what this painting presents. He or she might be able to get an idea of the sketched image, but would not see the various colours. Thus, a lot of concentration, effort and combination of different sources of information are needed, if the ci-user wants to understand spoken language.

¹⁴ The implant manufacturers provide a guarantee for minimum 10 years, though if still functioning, an implant does not have to be replaced.

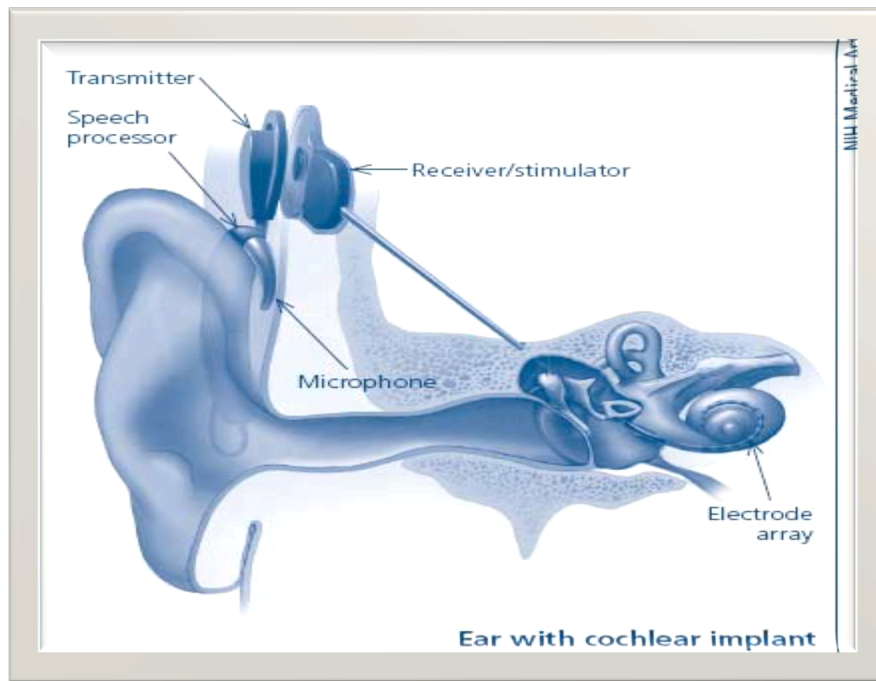


Figure 6 shows the outer part of the device and its connection to the receiver and the implant inside the body.

Taken from http://www.nidcd.nih.gov/staticresources/health/images/ear_coch.jpg

Therefore, after an implantation the user has to go through the process of adapting to the newly perceived sounds and linking them to a meaning. Depending on the age at implantation and the medical history of the ci-user, the rehabilitation might take weeks to months (Dillier 2001). Usually speech therapists and audiologists are involved in this rehabilitation, which is either provided by the hospital where the implantation took place, or by special rehabilitation centres. A ci is fine-tuned by a specially trained engineer, who adjusts the volume of the array of perceived frequencies according to the needs of the ci-user. Subsequent objective hearing tests help the engineer to improve the adjustment.

2.2 Cochlear implants in children

The report of the WHO (2010) showed that 0.5 in every 1000 new-born children suffer from a severe-to-profound hearing loss. The consequences of untreated hearing loss in early childhood might have ‘an influence on speech development, personality development, social, emotional and intellectual development’ (Rasinski et al. 2007, 48). With the aim of avoiding these consequences, some countries offer a new-born hearing screening, which allows medical staff to detect an early hearing loss

immediately (WHO Report 2010). In Germany, where this study took place, newborn hearing screening has been covered by statutory health insurance since 2009 (Gross 2005). The screening is done at most university hospitals shortly after a child is born. It can be demanded by the child's parents or recommended by a doctor, particularly if the medical history of the child's family shows a risk for hereditary hearing loss.

Since the 80s, when the first paediatric cochlear implantations took place (Eisenberg and House 1982) the ci has become the medical solution to treat hearing loss at a very early age. As the means of diagnosing hearing loss have improved within the last two decades, children born with a severe to profound hearing loss are nowadays likely to receive a ci right after being diagnosed with severe hearing impairment (Papsin and Gordon 1997). The age at implantation has been reported to be crucial for a successful acquisition of language with ci, as the functioning of the auditory system and particularly the maturation of its auditory pathways is only given, if the auditory pathways are stimulated through sounds (Plath 1991, Frerichs 2001, Müller and Wagenfeld 2003). Studies have shown that the linguistic performance of children implanted before the age of 5 was better (Tye-Murray et al. 1995, Fryauf-Bertschy et al. 1997) than of those implanted at a later age. Further studies and concerning the same age group of early implanted children showed that the speech recognition of some of these children is comparable to post-lingually deaf adults with ci (Dowell et al. 2002). This would support the notion of early implantation.

As described in 2.1 a ci is a prosthesis and thus not able to fully restore the sense of hearing. Although the technical development of the ci, its components and the speech-coding strategies¹⁵ advance rapidly, a ci-user continues to be hearing impaired and needs special rehabilitation and treatment. This accounts particularly for children born with a severe hearing loss, or for children who have acquired a severe hearing loss in a pre-lingual state, hence, before the phases of language acquisition begin. Whereas hearing children are reported to begin to react to sounds before birth (Thiel 2000), children with ci need to learn to process the sounds in their environment with the limited sound perception a ci provides and with the help of professionals. Hence, they

¹⁵ For further reading on the speech coding strategies of ci's see:
http://pdt.ifps.org.pl/pdf/quoting/hochmair_medel_cochlear_implants.pdf

receive constant training, e.g. auditory-verbal therapy following the implantation (Wirth 1994, Geers and Moog 1994, Nevins and Chute 1996). Based on current statistics 71.910 children worldwide have a ci. Out of these 8.042 have bilateral ci's (Peters et al. 2010, 18) and the numbers are expected to increase rapidly.

The following subsections will discuss the post-operational rehabilitation of children with ci, the challenges these children might encounter and the techniques educational staff working with these children use to meet their needs.

2.3 Post-operational therapy in children with ci – Learning to hear

Take care of the sense and the sounds will take care of themselves!

Lewis Carroll, Alice's Adventures in Wonderland

In the post-operative stage, children¹⁶ with ci require an intensive rehabilitation program. First priority within the rehabilitation is to help them 'utilize the auditory signal and to naturally integrate the various components of communication including listening, speech, language, reading and thinking' (Sorkin and Caleffe-Schenck 2008, 1).

As congenital¹⁷ and pre-lingually deafened children with ci have not heard any sounds before,¹⁸ they have to learn first to interpret the sounds, as they have not built-up an acoustic scheme of sounds in their brain yet that would link a sound to a meaning (Diller and Grasser 2005). The intensity of the rehabilitation has implications for the speed at which children with ci will acquire language and the way they will communicate (Dolnick 1993, Stedt and Rosenberg 1987). This could also be shown by the study of Schauwers et al. (2005) which attested, that despite some initial delays in language development, some children with ci have similar and in some cases faster spoken language development, when compared to children with normal hearing of the same age (Schauwers et el. 2005). However, there are various factors that affect the

¹⁶ Ci-adults also receive an intensive rehabilitation, but have different needs than pre-lingually deafened ci-children.

¹⁷ With congenital deaf we refer to children, who have been born deaf (Müller and Wagenfeld 2003).

¹⁸ Pre-lingually deafened children might have heard sounds before becoming entirely deaf, but as most of them become deaf before the age of 2, the experienced sounds are not enough to build up an acoustic memory.

outcome a child with ci will have and individual results are highly variable (Geers et al. 2007).

Some of characteristics of hearing with a ci, which accompany the rehabilitation process of these children are:

- The perception of sounds might differ according to the coding strategy of the particular implant or implants used by the child. Some children might have a cochlear implant in one ear and a hearing aid in the other. This bimodal way of hearing, then, might bring with it difficulties in hearing. The sound processor's adjustment and how the child responds to the particular adjustment must therefore be constantly monitored (Tavartkiladze 2005, Lehnhardt 2005).
- The identification of speech differs according to word frequency, lexical density and word length. For example, lexically easy words, which appear in a high frequency and have few phonetic neighbours, are better identified than more difficult words, which appear in higher frequencies and have more phonetic neighbours. The recognition of words also tends to be better for polysyllabic than for monosyllabic stimuli (Quellet and Cohen 1999).
- As a ci is not able to filter simultaneously incoming sounds, like a physiological auditory system is able to, the children tend to have great problems in understanding with background noise or when there is a greater distance to the sound source, or when there is reverberation (Diller 2005).
- Children with ci gain their understanding of spoken language based on a combination of lip-reading, hearing and visually received information (Diller et al. 2005).
- Children with ci show increased eye contact, e.g. for being able to lip-read and turn taking, which is frequently indicated more verbally (Diller and Grasser 2005).

- Due to the limited auditory access that a ci provides the child, children with ci have difficulties in self-monitoring their speech and their language production (Pakulski 2011).

Professionals who are involved with/in the rehabilitation of children with ci are well informed and aware of the listed challenges and incorporate their knowledge into the rehabilitation, with the aim of providing the best help. One of the basic steps in rehabilitation, which usually is either provided by the implanting clinic or in special rehabilitation centres, is the so-called auditory-verbal therapy. With this type of therapy, the discrimination between specific sounds and the detection of individual words is practised (Sorkin and Caleffe-Schenck 2008). In auditory-verbal therapy, repetition of words or whole sentences and redundancy are used to train the auditory memory of the children. The basic aim of auditory-verbal therapy is a ‘speech and language development that nearly matches that of normal-hearing people’ (Diller 2005). In general this therapy adopts a holistic view, as it tries to involve all the senses (e.g. the vision) for making it possible to hear. The focus though lies on the auditory education and the child’s individual personality and linguistic performance with the goal to provoke a reflective and natural linguistic behaviour.¹⁹

Once the children have acquired the skills to perceive and interpret sounds, the focus moves on to understanding speech and applying the acquired linguistic skills in daily communication. This is of particular interest, especially when the children start to go to school. Here, the children have different needs, which are to be found in improving their grammar and pronunciation. Children with ci are reported to acquire inflectional morphology and vocabulary more slowly, when compared to their hearing peers (Szagun 2002), for example. They are also shown to have a lower working memory when they have to process unknown speech and language input (Diller and Grasser 2009). In general they have difficulties with grammatical markings, especially when the perceptual salience of these markers is low (Szagun 2002).

The various ci manufacturers, as well as organizations concerned with cochlear implants, offer a variety of clear guidelines and instructions on how to work with a

¹⁹ It should be noted, that different countries also have developed different programs (and policies) for hearing impaired intervention. For further reading see: (Diller et al. 2005).

child with ci, which varies depending on whether the rehabilitation is for toddlers or for school children.²⁰ Finally, the children's parents play also an important part in the rehabilitation of their child, as they are responsible for the language and sound input the child gets at home. The better the cross information and intervention between doctors, therapists, teachers and parents is, the more beneficial the results for the child will be.

The next subsection will present an institution, which is dedicated to meet the particular needs, as described above, of children with cochlear implants. It will present the school where the data for this study was collected, but also how professionals in this institution work with children with ci. Hence, we will be able to get a complete picture of how educational stuff working with children with ci put their professional skills into practice.

2.4 The Johannes-Vatter-Schule

The *Johannes-Vatter-school* (Johannes-Vatter-Schule)²¹ is a special school that focuses on hearing rehabilitation. It is furthermore a supra-regional consultation and support centre in the service of the German federal state of Hessen. In Germany, educational and rehabilitational matters are organized differently according to which state is responsible. As the school serves the whole state of Hessen, the school incorporates a boarding school for the children who must travel a longer way to reach the school. It furthermore includes a consultation centre, a mobile support centre, a support society, a nursery school and a vocational school. The adjacent *Cochlear Implant Zentrum Rhein Main*,²² is responsible for the technical support and control of the children's cochlear implants. The school's staff is particularly trained in the field of hearing impairment, either as teachers for the deaf or for the hearing impaired. They receive constant further training in the form of workshops and seminars. The majority of the children at the school have cochlear implants, though there is also a

²⁰ See: <http://www.cochlear.com/wps/wcm/connect/intl/home/support/rehabilitation-resources/early-intervention/early-intervention> and the guidelines of a project founded by the EU: <http://www.qeswhic.eu/downloads/letter01en.pdf>

²¹ For more information about the school, see: <http://www.johannes-vatterschule.de/>

²² For more information about the Ci centre see: <http://www.cic-rheinmain.de/>

class particularly dedicated to children with hearing aids, who have different needs than children with ci.

Each classroom is equipped with an induction loop, which enables the use of assistive listening devices (e.g. FM systems, microphones). These devices transmit sounds directly via a microphone to the children's processors (see section 1.6.2). A paediatric audiologist and engineer is always on duty, if technical problems occur in the class or with the ci of a child. Each child also receives individual rehabilitation in the ci-centre. The number of children in a class is set for maximum eight children, who usually sit in a semi-circle, thus all can see the teacher.

Based on the philosophy of the school's patron, Johannes Vatter, the school curriculum is based on the oral method, which means that the students are only taught orally, without the help of any assistive linguistic methods (e.g. manually coded language) or sign language.

2.4.1 The educational staff in the Johannes-Vatter-Schule

Educational staff working with hearing impaired children, as e.g. teachers, are particularly trained to meet the needs of these children. The study of pedagogy or education for the deaf and hearing impaired though, varies broadly, in Germany for example from state to state.

Due to the challenges of hearing with a ci mentioned in the last section and the resulting restricted auditory access the children experience, the teachers have difficulties in scrutinizing the children's acoustic perception in detail, as this is also individually different. Therefore, teachers make use of certain tools with which to test and improve the language skills of children with ci. This applies particularly for lessons or activities, where the children are more apt to communicate, e.g. the German lessons. The practices and techniques the teachers use are not pedagogically standardized, but are those that have been shown to work better with the children and might differ from teacher to teacher.

One tool to check and improve the language skills of each child in the *Johannes-Vatter-Schule* is the storytelling of the children, which will be presented in the next section. The storytelling gives the children the opportunity to talk and experience the reactions to their talk and for the teacher to see where and which language difficulties the particular child experiences. Furthermore the storytelling is also supposed to teach the children the principle of having a dialogue.

While a child is telling his or her story, the teacher operates a variety of techniques to display her understanding of the story, or where something was not understandable, and where things need to be corrected or improved. As all teachers in the school are hearing, they also serve as the hearing counterpart, mirroring how people outside the school would understand the child's talk. In that sense, the teacher has a 'control' function, as she also has to prepare the children for a primarily hearing world.

The teacher hence not only checks the children's language skills one by one, but also projects how communication is done and how its rules are applied. Like in all schools, the teachers are responsible for teaching and modelling social values and norms, but when working with children with ci, this has to be done in a more attentive and structured manner.

Concerning the language checks the teachers do during the storytelling, they use various practices to work on particular problems in the grammar or pronunciation of the child and to make the child/ren aware of any problems. The teachers do not merely function as teachers then, but also as a further step in the rehabilitation of the children, as they apply techniques, which are known from therapy. The teacher's role as an educator and therapist at the same time is also due to the fact that, in the *Johannes-Vatter-Schule* a child is not supposed to move to the next grade/class, before she or he has attained certain linguistic and communicative skills. Thus, the teachers, in addition to teaching the basic educational skills, are also expected to 'treat' the specific language problems of a child and to support each child in such a way that he or she will be able to move on in school. The activity during which teachers show and apply their twofold agenda is the storytelling, the structure and setting of which will be presented in more detail in the next section.

2.5 The *Morgenkreis*-storytelling in the Johannes-Vatter-Schule – The object of study

The *Morgenkreis*-storytelling has its roots in the German educational progressivism in the 80's. Within this movement, German educators tried to conceptualize the teacher-student relation in favour of the student (Röhrs 1980). The students should have the ability to perform a 'free-talk', which would be journalized by a teacher. The activity though, is structured through clear instructions and rituals, where the child/student tells and the teacher comments.

Although there is still little data available on the *Morgenkreis*, it is stated to be an activity operated in most German elementary schools (Mori 2010, Purmann 2001). It is a ritual, with which the new day or lesson is opened and can include singing (mostly in nursery schools), welcoming of the new day, or the storytelling of all children, concerning events of the prior day or the prior weekend. Studies on the *Morgenkreis* have stressed its functional importance as an opportunity for the children to share experiences and to learn from each other (Heinzel 2000). Röhner (1998) discussed the function of including a child's view of the world into the storytelling and the function of the teacher's reactions to it as a mirror of the child's experience. Ott (1998) investigated the role of the teacher during the *Morgenkreis*-storytelling. In his study, the teachers have been shown to demand a particular behaviour from the children during the activity and to be responsible for modelling valid social norms and values. Overall, the *Morgenkreis*-storytelling is seen as opportunity to follow 'language-didactic' goals (Morek 2012, 237).

In the *Johannes-Vatter-Schule* the *Morgenkreis*-storytelling is a fixed part of the daily school program in classes of the elementary school. Here, the *Morgenkreis*-storytelling is also considered an opportunity to make the children use active language and by doing so, allowing the teacher to scrutinize it and if necessary, help to improve the communicative skills of the child/children. It is integrated into the German lessons, which usually are the first lesson of the day. As the children's limited hearing is considered to bring a limited working memory with it (Diller and Graser 2009), language activities are always set at an early lesson/hour. In that way a better level of

concentration of the children is expected by the teachers. A school lesson lasts about 40 minutes and within it the storytelling takes place.

The storytelling activity is divided into two different types: a) *the Weekend-Storytelling (WE-ST)* and b) *the Prior-Day-Storytelling (PD-ST)*, which diverge slightly in the characteristics of their procedure (see also Heinzl 2000). Both types consist of a typical core structure, which differs mainly in the opening phase of the activity. The various phases of both types can be seen in the following scheme:

A. Phases of the Weekend-Storytelling	B. Phases of the Prior-Day-Storytelling
1. Request of the orange Tagebuch-Mappe	1. Presenting the plush toy
2. Electing the teller	2. Electing the teller
3. Showing the Tagebuch-Blatt around + changing seat	3. Passing the teller the toy+microphone
4. Telling	4. Telling
Elaboration on the story :	Elaboration on the story :
a) questions, reformulations, comments, invitations to repair/repeat by the teacher	a) questions, reformulations, comments, invitations to repair/repeat by the teacher
b) questions by the other children	b) questions by the other children
c) by the teller	c) by the teller
5. Closing + electing the next teller	5. Closing + electing the next teller

Phases 1-3 serve as 'pre-phases' of the storytelling as they are ritualized activities, which introduce the greater telling phase. They function as transition-points, both for the intersection from previous activity to storytelling, as well as from pre-phase to the actual storytelling. They also mark a spatial transition within the classroom. The children change their seating from a semi-circle at their tables, to a smaller semi-circle in front of their tables and their teacher. Thus, the introduction to the activity is accompanied by a change of location.

In phases 2-4 there might be a switching from an earlier phase to a further one or vice versa. For instance, the teacher or a fellow pupil may elaborate on the teller's story during the telling and not after it. The boundaries between the telling and the reactions of the teacher to it are flexible and intertwined. As the storytelling is a tool for the teacher to work on the particular child's language, the teacher performs a number of

actions relevant to the telling. These include displays about the nature and extent of her orientation/understanding to the story, as well as about the type of the child's language problems within the telling.

Finally phase 5, may either function as transition to a new teller (new story) or/and the closing of the entire activity.

The teacher is the moderator and in charge of the proceedings. She initiates the different steps and secures the retention of them, for example, she introduces or opens the activity, in specific ways. In the following, I will describe the proceedings of the two types of storytelling. Although my data consists of both these types, in my investigation and analysis I have mainly focused on the WE-ST, as they are longer and hence more interaction between the child/ren and the teacher takes place. Therefore, I will present the WE-ST in more detail.

The Weekend-Storytelling

The *Weekend-Storytellings* take place on Mondays during the first school lesson. Before the weekend, each child is given a special sheet of paper, called *Tagebuch-Blatt*, 'diary-file' (see figure 7). In the upper part of the *Tagebuch-Blatt* is a frame, where the children draw the events they have experienced. Below the frame are lines, where the children's parents provide a written account of their child's experienced events.



Fig. 7 Shows a *Tagebuch-Blatt* designed for the *Weekend-Storytelling*.

The activity is initiated, once the children are all seated and once the teacher requests that the children get their 'diary-files' (see figure 8). The children sit in a semi-circle

in the front part of the class and the teacher in the middle. This particular seating arrangement secures the possibility for each child to see and thus also lip-read each other.



Figure 8 shows children with their orange diary-sheet.

The following step then is to select the first teller. The teller is either selected by the teacher, according to the seating order in class (clockwise) or according to who sits next to the previous teller. After the teller is selected, he or she shows her *Tagebuch-Blatt* around and takes a seat next to the teacher. This gives the impression that the teacher is a 'host' who receives the teller in her 'territory'. The telling is then usually initiated by a question from the teacher, e.g. in the form of '*what have you done during the weekend*'.

The subsequent/actual phase of telling includes several sub-phases with a varied and not fixed order. Here the teacher is able to evaluate and monitor the child's active and passive language development. The teacher uses a variety of verbal and nonverbal techniques to evaluate the story to which the child reacts differently. Because the teacher follows a pedagogic agenda of which the child is not aware, a slight tension between the child's wanting to tell a story and the teacher's professional purpose might appear. For my study I have particularly focused on the teacher's practices in response to the telling of a child and how the child reacts to the teacher's actions.

The telling ends either when the teller indicates that the story has finished or when the teacher asks the teller if the story is finished and receives an affirmative response. The next step, which is linked to the closing phase, is to select the next teller. This can be done either by the teacher or the actual teller.

The Prior-Day storytelling

The Prior-Day-Storytellings take place all the other weekdays. They are usually shorter and no *Tagebuch-Blatt* is used to present in class. The appointed teller is given a plush toy (see figure 9), which indicates that s/he is the actual teller and is passed to the next teller, once the story is told. Furthermore the teller is given the teacher's mobile microphone, to which all children are connected. The plush toy manages the turn-taking during the PD-ST, as only the one who has it, has the floor to tell a story. The teller is not seated beside the teacher, but remains in his or her seat, though still in a semi circle.



Figure 9 shows how the teacher passes the plush toy to the first teller and hence initiates the PD-ST.

The splitting of the classroom activities and the indicating of a new activity by objects (diary-file, plush toy) helps the children to orient within the lessons and ritualise lesson activities. As previously mentioned, cochlear implanted children gain their understanding of spoken language based on a set of lip-reading, hearing and combining visually received information. By intersecting the classroom activities into smaller parts and announcing them, the teacher helps prevent the children getting tired and distracted. Although the objects used might be a help to ritualize the activity,

particularly the ‘diary-sheet’ might become an obstacle for the course of the telling, as the last paper of this thesis shows.

This section discussed the cochlear implant and in particular cochlear implants in children. It became evident that although the cochlear implant is a means to treat profound hearing loss it is, as a prosthesis, not comparable with conventional hearing aids. It does not amplify sounds, but it provides hearing sensations, which must be interpreted by the ci-user. This happens with the help of intense rehabilitation and training. In the case of pre-lingually deafened children with ci this means, that they need to learn to link a particular sound to a meaning, which does not happen automatically as in hearing children, but must be done under supervision and guidance, especially in the first years after the implantation. The sounds these children perceive do not equal the actual sound event and the perceived sounds might also change due to adjustments made to the ci processor. Therefore, the sound awareness of these children need to be constantly checked, to make sure that already learned matches of sounds with words or meaning do not get lost or do not fade in the acoustic memory.

Furthermore, this section also presented the school where the data for this study were collected and which is especially dedicated to children with ci. A presentation of the ways teachers in that school are prepared to work with children with ci linked us to one practice they employ to work on the children’s language, namely the storytelling. The next section will lead us to the discussion of the method I used for my investigation and the characteristics of the same. It will also outline the specific characteristics of institutional interaction and finally, classroom interaction. Following this is a detailed description of the setting and data I used for my study, as well as a discussion of the methodological issues that arose when applying CA to this particular context.

3. Method and Data

In this thesis, I use Conversation Analysis (CA) to investigate the classroom interaction between hearing teachers and cochlear-implemented children (see section 2).

Section 3.1 describes the development of CA and its basic principles. It summarizes the theoretical and methodological framework of Conversation Analysis, which has its origins in the 1960's in the work of Harvey Sacks, Emanuel Schegloff and Gail Jefferson. Following this is a section on institutional interaction and classroom interaction, which is also the setting of the data this thesis is based on.

A detailed description of the data used for this thesis and the circumstances within the data have been drawn from, completes this section.

3.1 CA as method

The idea that language is more than a tool to exchange information and to describe the world around us has been a topic of several disciplines like philosophy, linguistics, sociology, social sciences and anthropology (see Austin 1962, Goodwin 1979, 1981, Labov and Fanshel 1977, Searle 1969, Sacks et al. 1974). Although interaction between individuals and thus social interactions have been a topic of interest for those disciplines, it was still a major problem how to study interaction and describe and analyze how social actions are organized.

A first answer to this query was given by Harold Garfinkel's sociological approach, called *ethnomethodology*. The main focus of this approach is on the description of how mutual understanding is achieved by people while they interact. In that sense Garfinkel was interested in the intersubjectivity of interaction and in how participants of interactions make use of different procedures to establish a common ground on which their interaction is based. In an attempt to state the core of his approach, Garfinkel (1967, 11) uses the term ethnomethodology to

‘refer to the investigation of the rational properties of indexical expressions and other practical actions as contingent ongoing accomplishments or organized artful practices of everyday life’.

Taking Garfinkel's words into closer observation, he implied not only that people establish mutual understanding, but also that the ways in which they do that must be visible in their actions and therefore also possible to investigate and specify. Furthermore, he considered mutual understanding as acquired through the use of social actions and language and hence, as something that happens recurrently and without bearing greater problems to the people involved in interaction, because it is based on common ground. Garfinkel's approach arose as a response to the 'Parsonian perspective', which viewed mutual understanding as something that is given and that does not demand any effort by the participants of an interaction.

Another sociologist, who like Garfinkel focused his interest on the everyday social interaction, was Erving Goffman. The main aim of Goffman's work is to be seen in the description of how face-to-face interaction is organized in general. In his works he introduced various concepts and models to describe the organization of interaction (Goffman 1981, 1982, 1983, 186). The works of Garfinkel and Goffman provoked a shift from the theories of social interaction to the actual investigation of how social life is practiced every day.

The method that is known as CA, was introduced by Harvey Sacks, a former student of Garfinkel, who was inspired by the works of Garfinkel and Goffman and who sought an analytic way to investigate the organization of interaction.

The main aim of Conversation Analysis is to uncover the basic structures of social interactions and therefore, how interactants construct and arrange systematic, socially organized interaction. CA studies naturally occurring talk on the assumption that spoken interaction is systematically orderly in all its facets (cf. Sacks in Atkinson and Heritage 1984, 21-27). CA endeavors to describe how participants of the communicative process produce their own interactional behavior and further, how they interpret that of their interlocutors and how they define their relationships (Heritage 1984).

Sack's initial ideas of an analytic approach to the study of interaction are documented in his lectures given at UCLA at Irvine, between 1964-1972 (published as Sacks 1992a and 1992b). Within these lectures, Sacks showed that closer examination of

talk can uncover the various ways in which participants of an interaction manage an abundance of social actions; in addition, that the ways humans interact are highly organized and that participants of interactions permanently orient to different sets of actions and categories. Sacks data are based on recordings of naturally occurring conversations. These data included countless examples of actual conversation he collected as research fellow at the Suicide Prevention Center between 1963-1964.

The first analytic findings grounded in this data resulted in a number of pioneering papers on very general conversational practices, e.g. turn taking (Sacks et al. 1974), conversational openings (Schegloff 1968, 1979) and closings (Schegloff and Sacks 1973) and repair (Schegloff et al. 1977). With these papers Sacks and his followers could show in detail to which extent conversations are organized.

One of the very basic analytic innovations in CA was the specification of interactional sequences (Schegloff 1968, Sacks 1987) and adjacency pairs (Sacks 1992a), which refers to the fact that social actions are organized or split into sequences. Turns at talk, hence, are not seen as mere expressions of thoughts or ideas, but as implementing a range of social actions, for example, agreeing, disagreeing, requesting, apologizing, asking, etc. (see also Austin 1962, Searle 1976). In that sense, turns at talk provoke certain kinds of next talk, which are then interpreted in relation to the prior turn and thus finally define what action the prior turn accomplished. For example, a question is a question due to the fact that an answer is given (Schegloff and Sacks 1973). This observation becomes clear in the notion of adjacency pairs, e.g. greeting/greeting or question/answer, or actions

whose central characteristics is the rule that a current action (a 'first pair part' such as a greeting or a question) requires the production of a reciprocal action (or 'second part') at the first possible opportunity after the completion of the first (Goodwin and Heritage 1990, 287).

The fact that studies on Conversation Analysis are based on video or audio recordings of authentic conversation provides the analysts with the opportunity to investigate the details of the interaction, as the data can be studied and observed over and over again.

Once the data are collected, the interaction is transcribed based on the transcription conventions developed by Gail Jefferson (1984). Jefferson's conventions allow noting a variety of phenomena such as overlapping speech, particular intonational features, pace, volume and so forth. Due to the increasing interest of analysts in different kinds of interactions, various ways of noting a phenomenon in interaction have developed, which might not be standardized but 'designed' by the particular analyst. Some analysts, for example, have created ways of adding information about visual phenomena into their transcripts (Goodwin 1981, Heath 1986, Nevile 2006).

As natural or authentic interaction is accompanied by many particular details, the analyst does not know in advance which details might be relevant for the research. Thus, the following analysis starts by merely looking at the data, until the analyst's attention is drawn to a particular interesting occurrence in the data. Once the analyst has observed something interesting, the next step is to make a collection of this phenomenon. The next phases of the analysis include the description or variation of the sequential positions these phenomena occur in, in accordance to previous conversation analytic findings.

The main strength of CA lies in the fact that CA tries to avoid confining analysis with preconceived theoretical assumptions, instead working as inductively as possible and only allowing analysis to be based on the details that are directly observable in the data (Steensig 2001). For that reason, CA investigates un-elicited data of *naturally-occurring* interactions. The data is analyzed from the viewpoint of the interactants and is not interpreted by assumptions of the analyst. This methodological strength has also been the reason why I have chosen CA as my method of inquiry.

3.1.2 Institutional interaction

Although the first conversation analytic studies focussed on informal or everyday conversations, conversation analysts soon became increasingly interested in applying their method to the investigation of conversation in institutional settings. The first of these studies investigated conversations for instance in classrooms (Mehan 1979,

McHoul 1978, 1990), in court (Maynard 1984, Atkinson and Drew 1979) and in medical consultations (Heath 1986, Silverman 1987).

Studies on institutional interaction showed that structures and/or practices from everyday conversations are adapted and hence specialized to the needs of the institutional task at hand (Drew and Heritage 1992, Heritage 2004).

Drew and Heritage (1992, 22) proposed three particular characteristics, which may specify institutional interactions:

1. At least one of the participants displays an orientation to some goal, task or identity related to the specific institution.
2. The participants orient to special and particular constraints regarding what are treated as allowable interactional contributions.
3. Different institutional contexts are associated with different inferential frameworks and procedures, which the participants make relevant.

These characteristics may appear in particular combinations in regard to the institution concerned (Heritage and Greatbatch 1991).

From a micro analytical perspective, these characteristics can be identified within the institutional interaction as they may take a particular systematized form or feature. Heritage and Drew (1992) and further Heritage (1997) summarized such systematized features, which can be used as a tool for analysts.

I will refer to Heritage (1997) and briefly discuss distinctive specifics of institutional interaction.

1. In institutional settings the organization of turn-taking may appear to bear some constraints for the participants of the interaction (Sacks et al. 1974), e.g. it may provide the conversational parties involved with different opportunities for taking a turn. This becomes particularly evident in settings like in courts (Atkinson and Drew 1979) or in classroom (Seedhouse 2004). In such instances, the turn-taking system is employed to make a participant speak or, vice versa, to restrict the participant's opportunity to speak.

2. A further distinction might be seen in the way turns are designed in order to achieve specific actions. In classroom interaction, for example, the teacher designs questions in accordance to the educational purposes and needs. Mehan (1985) showed that teachers design their questions, to which they already know the answer, so as to test the students' knowledge. In other settings like in news interviews, journalists were shown to use assertive negative interrogative questions to express their own point of view rather than seeking an answer by the interviewee (Heritage and Clayman 2013).

3. Institutional interactions are also characterized by the way participants choose particular words or phrases. This may become evident in a layman's and a professional's vocabulary and a varying knowledge concerning practices applied in the institution concerned. The different access to a particular terminology shows the participants' familiarity or non-familiarity with an institutional setting (Femø Nielsen 2009).

4. A further and last distinction can be seen in the interactional asymmetry that characterizes institutional interaction. This asymmetry can refer to the asymmetry of participation (e.g. who has the authority to initiate an action, doctor vs. patient), the asymmetry of knowledge (layman vs. expert) and the right of access to knowledge (Heritage 1997). Overall, the asymmetry relates to the purposes the expert serves and the actions that are related to those.

In sum, the distinctions mentioned above have an influence on the general structural organization as well as on those sequences occurring in institutional interaction. The analyst then, needs to identify these and seek to explain which goals they serve in the overall institutional interaction.

3.1.3 Classroom interaction

The setting of the data on which this study is based is the institutional setting of a special school for hearing impaired children. In this setting, hearing teachers interact with hearing impaired children. Therefore, a closer look on the specifics of classroom

interaction is necessary, if we are to understand the similarities but also the differences between the conventional classroom and the school interaction investigated for this study.

During the last 40 years the research on classroom interaction has received a great deal of interest, which emanated from the discourse analytic work of Sinclair and Coulthard (1975). Since then, several studies in the field of CA have contributed by dealing with specific dimensions that cast light on the institutional character of interaction in school. The main interest of these studies focused on the organization of turns and sequences (McHoul 1978, Mehan 1979). Although the approach of the first studies by Sinclair and Coulthard and the following in CA is different, they all acknowledge the notion of a three-part sequence (IRE/IRF) (Sinclair and Coulthard 1975, Lemke 1990, Mehan 1985). Such sequences consist of the initiation of the teacher (e.g. asking a question), the response by the student and the assessment of the student's response by the teacher.

For a more detailed description of the three-part sequence I will refer to Mehan (1985). According to him, an instructional phase consists of interactional sequences within which academic information is exchanged. Such sequences, which he calls 'elicitation sequences' are composed of three intertwined parts: an initiation, a reply and an evaluation act (ibid. 121). In his view, these three parts become two connected adjacency pairs, of which the first is to be found in the initiation-reply pair and upon which the reply becomes first part of the second adjacency pair (reply-evaluation).²³

Another point Mehan (1985) focused on were the so-called known-information questions, questions to which the teacher already has the answer. These questions aim at checking the student's knowledge in relation to the teacher's question. These types of question are often encountered in educational and academic settings (see also Searle 1969).

Beside the investigation of the sequential organization in classroom interaction, CA studies tried to reveal the ways in which the management of the turn-taking system, as

²³ Schegloff (2007) views this differently. According to him the third part of the sequence is considered to be an extension of the basic adjacency pair.

known from everyday conversation, is applied and modified for the specific needs of classroom interaction. A first attempt can be seen in the work of McHoul (1978), who revealed that the system of turn-taking in class is largely managed by the teacher and provides only limited participation opportunities for the students. Particularly self-selection and other-selection as first speaker is only done by the teacher and not by the students. In her study, Kapellidi (2013) examines what consequences these rigidly managed features of turn-taking can have for the verbal contributions and the way students feel about their contributions in classroom interaction.

At this point it is important to mention that Mazeland (1983), in his critique to McHoul's study and particularly referring to the feature of next-speaker selection, noted that the teacher can in addition to addressing only one student, also address the whole class. He calls this 'programmed self-selection' (programmierte Selbstauswahl, 1983, 81) and claims that in this way the teacher indeed invites the students to participate. A point that McHoul did not support in his study.

Finally, there has also been an interest in examining how repair is organized in classroom interaction. Repair has been explicated as a problem-solving device in case problems of understanding occur in conversation (Schegloff et al. 1977). A repair can be self-initiated, when the speaker of the problematic turn initiates the repair, or other-initiated, when someone other than the speaker initiates the repair.

Seedhouse (1999, 2004) investigated how repair is done in language classrooms and concluded that 'there is a reflexive relationship between the pedagogical focus and the organization of repair; as the pedagogical focus varies, so does the organization of repair' (Seedhouse 2004, 179). In short that means, that a teacher might initiate a repair in instances where s/he considers it more important to intervene than in others, as the teacher's preference might be on solving a particular problem at a particular moment.

In sum, it can be claimed that all conversation analytic studies reveal the institutional character of classroom interaction and regard the overall organization of classroom talk as the domain of the teacher. To speak with Geekie and Raban (1994, 153)

'typically, classroom talk has been shown to be not only rigidly structured but also teacher-dominated' and specifically they noted that 'teachers are responsible for two-thirds of the talk in classrooms' (ibid. 154).

3.2 Data and setting

The data on which this thesis is based are taken from the environment of a special school for hearing impaired children (see section 2) and hence it represents classroom interaction. The data consist of approximately 30 hours of video recorded school interaction and were collected in the time frame between December 2008 and December 2009. In the further stage of deciding which school activity and which interactional phenomena I would be interested in, I focused on a particular activity, which is a daily practiced activity in the classes of elementary school in the institution concerned. This activity is the storytelling activity, which is a part of the *Morgenkreis* activity (see section 2).

The class I have selected for my study is the first class of the elementary school. In a previous stage, these children have been in the pre-school or kindergarten of the same institution, where they were prepared to move to the first class of elementary school. The decision whether a child may go to elementary school is based on the language skills that particular child has acquired in the pre-school. If the nursery teacher in the pre-school does not consider a child to be ready, then this child might remain in the pre-school for a longer time. The children are supposed to have acquired a certain level of language skills in order to become an elementary school pupil.

As I visited both schools (pre-school and elementary school), and as I became familiar with the methods of teaching these children, I became very interested in seeing the results of the efforts of the nursery teachers, once the children were moved to the elementary schools. It should be noted though, that this study does not provide a comparison between the two schools, but focuses only on the first class of elementary school. During my visits to the institution, and as I had the opportunity to talk and discuss with the teachers, I became aware that the teachers in the pre-school and in the elementary school have to deal with different goals and problems and therefore I focused only on the elementary school.

At the time the recordings took place, eight children were in the class. Two of them were transferred to a different class at a later point, as they developed some serious health issues. Hence, the thesis is concerned with the storytelling of six different

children at different days in the time frame named above. For my thesis, I directed my attention to the storytelling of three children out of the six, as the phenomena I investigate appeared frequently in those storytellings. Overall, my investigation is based on 60 video-recorded storytellings.

Depending on how many children are present (some might be in ci-therapy), each storytelling takes approx. 2-7 minutes. With the aim to work more intensively with the children, each class is usually divided and taught by two teachers. Thus, the storytelling in this paper is also concerned with storytellings of the same children, supervised by two different teachers.

In the course of analyzing my data I was confronted with some particular issues or problems that need some further attention. A CA conducted study is, to some extent, based on the intersubjectivity of the parties involved in the interaction, hence on how these parties make sense of their actions during the interaction. In the current study, hearing teachers interact with children, who have a disturbed hearing. Due to this fact, we cannot be sure that the children always acoustically perceive the interpretation of their verbal contributions by the teacher during the interaction, as their acoustic perception is not analytically available. Furthermore, some of the verbal contributions of the children were provided in an unintelligible way in terms of pronunciation and it became difficult to determine the children's understanding of the teacher's interpretation of their contribution. Therefore, I have directed my attention to a large extent towards the teacher's actions and practices to see how she as a professional interprets the children's actions and as a result how the children react to the teacher's interpretation of their actions.

A further issue that is worth mentioning is the difficulty in transcribing and noting the pronunciation of the children. As it became evident in the discussion of the ci in children, the investigated children are still in the process of their language development. In practice, that means that due to their limited control of their own speech, it might happen that they pronounce a word differently in the course of their telling, even if they are aware that it is the same word. Thus, we can interpret their verbal contribution largely based on the teacher's reaction to the same.

For the process of transcribing it became necessary to add some symbols for the representation of the children's pronunciation and in addition to become more explicit in describing these issues in the analysis. As the data are in German, they needed to be translated into English, and hence it was difficult to provide a one-to-one interpretation of the unintelligible words of the children into English. Even if the children's contributions were understandable in their content for a native speaker of German, it was sometimes a challenge to represent the pronunciation errors in such a way as to make them accessible to the English speaking reader. Therefore, the transcription of the children's contributions also varies in the papers this thesis consists of, as in the course of writing my thesis, I tried different ways to make these issues obtainable for the reader.

During the analysis of my data, I became aware that despite the great tool that CA offers us to investigate interactions, we might have to develop transcription notions, if we are to investigate data of atypical populations and present them to readers of different languages. For data with hearing impaired individuals who might have speech problems this means, that we as CA analysts might be called to broaden our analysis, in the sense that we might for example include insights from other fields as e.g. phonetics or speech science. This we would have to do, if we want to pay tribute to the specific needs of these people and if we want to provide findings that might find their way into the hands of professionals working with these people.

In my opinion as a researcher, the moment we are involved with data of atypical populations, we become responsible for treating them with due respect and for finding a way to present them to a broader public. Opening oneself as a researcher to other fields should not be considered as a risk, but as a possibility to grow and blossom.

In the next section I will discuss my findings in the form of a summary of my papers.

4. Discussion and summary of the papers

In this thesis I have described hearing impairment as a worldwide pervasive phenomenon, the types of hearing loss and the medical and technical solutions to it. This I did with the intention to provide the reader with the necessary information to understand the importance of a functional hearing for communication and to show that the condition of hearing loss as such cannot be generalized. The provision of information about hearing loss was also necessary in order to introduce the reader to my main interest: children with a cochlear implant (ci). It became evident that users of a ci, and specifically children with a ci, must be considered as a separate group within individuals with hearing loss, as they are actually profoundly deaf and still hearing impaired, once they have been provided with a ci. Hence, pre-lingually deaf children with ci need particular attention and guidance in their language development after the first years of the implantation. This guidance is given by educational staff, which is specially trained to meet the language needs of these children. The presentation of the school where the data of this study were collected and the ways teachers in that school work should give the reader an insight into a facility working with children with ci. The detailed description of one activity the teachers use to scrutinize and improve the children's language skills, and which is the object of this study, completed the picture we gained of children with ci.

The five papers of which this thesis consists focus on the notion of hearing impairment (in *paper one*), and in particular they investigate the teacher's action in response to the storytelling of the children (*paper two-five*). They show how the teacher implements a variety of practices during the storytelling to either work on the children's language problems, such as unintelligible pronunciation, or how the teacher employs questions to make the children produce active language.

Paper two of this thesis focuses on these frequently employed practices that have been revealed as repeat requests, which were further divided into implicit and direct repeat requests and questions. The investigation of these practices uncovered the twofold agenda of the teacher, namely her educational role as a teacher and her role as a professional in applying practices that are known from auditory-verbal therapy. The

analysis shows, that the children on occasion became troubled by the teacher's actions, indeed because her actions follow different purposes.

The children consider the storytelling as a joyful way to tell their fellow peers about the exciting things they have experienced. This would be the actual purpose of the storytelling as it is practiced in schools for normal hearing children. The teacher, though, sees the storytelling as a platform, where she can screen the children's language provided in their verbal contributions and further act in her role not only as teacher but also as a therapist. The mix of the teacher's professional purposes is not always clear to the children. For instance, when a child tells a story, and even if the story's content is understandable, as the analysis showed, the teacher intervenes when she finds it necessary, bringing the child's telling to a halt, the consequence of which is that the child becomes troubled or even annoyed. In such cases, she asks the child to repeat a sentence after her, and that sentence would have a form the teacher thinks of as appropriate. This particular practice of having the child with ci repeat a sentence is also done in the course of auditory-verbal therapy and as such it has a clearly rehabilitational purpose.

In order to make the child produce active language or to highlight a problem in the child's turn, the teacher uses questions either in the form of yes/no questions or of wh-questions. Even if questions are a frequently used tool of teachers in the classroom to check the students' knowledge (as shown in section 3.1.3), in the classroom of children with ci, they are implemented to work on the child's language development. By investigating the teacher's actions for instance, it became clear, that a nonverbal answer (e.g. nodding) to a yes/no question was not considered as sufficient, also because the children were shown to sometimes affirm contradicting facts.

I assume that this has to do first with the limited hearing of the children and second with the fact that the children are not aware of the purpose of the question. Studies of hearing impaired individuals have shown that nodding is a compensation strategy, when a spoken sentence has not been fully understood (Farrugia 1989, Stedt and Rosenberg 1987). The teacher as professional and educated to work with children

with hearing impairment is aware of these issues and thus implements questions in accordance with that knowledge.

Overall, it can be said that the teacher's actions stem from different interactional environments, namely those of therapy and school. The children though, see the activity as something that happens in ordinary or everyday interaction and have trouble following the teacher's purposes, which change according to the problem she is focusing on. Interestingly, the children reacted promptly when the teacher asked them to repeat after her, something they are familiar with from therapy. This could be either because the children consider the teacher mainly as a therapist or because the children know exactly what to do when they are asked to repeat; something they do not, when confronted with questions. Considering the above observations, it would probably work better if the teacher made a clearer distinction of her purposes. It would be interesting to investigate what would happen, if she lets the children tell their story and then applies her practices of improving and working on their language.

The teacher certainly has the best intentions when working with the children, but as the analysis showed, it would likely help the children more, if therapy and education are applied at different times. On the other hand, if we consider the limited time the teacher has to work on the language and the particular needs of eight children during the activity, then more investigation is needed to suggest a possible solution.

In my further investigation of the data, which resulted in *paper three*, I examine how the teacher models the use of a certain German change-of-state token 'aha' and how in an attempt to evaluate the language contribution of a child, she instrumentalizes the same token for this purpose. The particle 'aha' is used in German conversations to display surprise and to indicate that the receiver of the information has undergone a shift of knowledge from not knowing to knowing. My investigation showed that the teacher uses 'aha' in cases when she receives information that she did not have beforehand, but also in cases where she wants to acknowledge the telling child's effort to contribute a better language production. In the first case, the change-of-state token is used to display a 'real' shift of knowledge and hence is intended to demonstrate to the children how this change-of-state token is used in conversation. In cases where she already had the information and still uses 'aha', the teacher intends to

display that the child's verbal contribution is more appropriate in terms of language compared to a prior turn of the child.

The reason why the teacher instrumentalizes 'aha' in sequential positions where she evaluates the child's language is analytically not available. What can be said, though, is that her institutional agenda comes into practice again as she uses actions of ordinary interaction like a response particle, first to model its use to the children and second as a therapist to evaluate the children's language contributions. Her instrumentalized use of 'aha' though, might include the risk that the children, in a later stage of their lives and when having a conversation, might use this change-of-state token in an inappropriate way.

For the next paper, *paper four*, I investigated how the teacher employs 'also' introduced summaries in second or third person to either be directed at the telling child or the whole class. Studies have shown that 'also' in German institutional interaction works as a tool to introduce a summary or a paraphrase (Bührig 1996, Gühlich and Kotschi 1983). Within the summary, the initiator of it not only displays what s/he has understood so far, but also does an evaluation or a qualitative adjustment to what has been said. For instance, a doctor who uses an 'also' introduced summary displays to the patient how s/he understood what the patient said and in the same instance also adjusts the given information in accordance with his/her professional knowledge. In that way the professional mirrors what has been understood and hence, offers the patient the possibility to affirm, adjust or negate the summary's content. For the professional these kinds of summaries help to re-establish the flow of the interaction but they also serve as a tool to minimize risks in not applying his or her professional purposes appropriately. If, for example, a doctor did not display in a summary what s/he understood and the patient did not have the possibility to confirm or negate the doctor's understanding, then mistakes concerning the medical treatment are possible.

In the classroom with the children with ci, the teacher uses these summaries also for her professional purposes. When the content of a child's story has not been clear, or if the child provided language that needs improvement, the teacher uses an 'also' introduced summary in second person. This summary is addressed only to that child

and mirrors what the teacher could understand of the story. Furthermore, in doing so, the teacher also offers the possibility for the child to confirm or negate what the teacher summarized, or simply to adjust it. In instances where the activity as such got troubled, e.g. due to simultaneously contributed comments by the other children, who were not appointed to comment, the teacher uses ‘also’ introduced summaries in third person. These summaries then are addressed to the whole class as listening unit. Here, the teacher tries to re-structure the activity and model to the children how they have to act in a socially acceptable way. She does this, by pointing out that one has to listen while the other one talks and what consequences it has for the overall interaction if these basic principles are not kept: the telling gets interrupted. An ‘also’ introduced summary in third person also serves to maintain the main theme of the child’s story, as the teacher provides it in her summary. By doing so she supplies the whole class with bits of the story of the current teller and makes sure that all children are, despite their individual hearing difficulties, able to follow.

The analysis showed, that the teacher’s employed summaries worked very well for achieving her purposes. These summaries seemed to be a helpful tool to work with a particular child but also at the same time to involve and address the whole class and educate them accordingly. This paper showed anew, how the teacher multitasks between her roles as an educator, teacher and therapist and how actions of ordinary interaction are instrumentalized for educational purposes.

In the last paper, *paper five*, we investigated the role of the diary-sheet during the storytelling. As described in 2.5 the diary-sheet plays an important role for initiating, but also accompanying, the activity. We focused our interest on this object, not merely because it plays a role during the storytelling, but also because it brings a third party into the interaction, namely the parents, who provide a written account of their child’s story. Hence, we can claim, that two of the parties involved are hearing adults, who interact with the children with ci. Our investigation revealed that on one hand the diary-sheet serves as a resource to scaffold the children’s active language production, but that its use might also entail socially problematic consequences.

In the course of the telling the ‘diary-sheet’ might function as a semiotic source for the child, as s/he can also underline facts of the story by showing them in the drawing.

For the teacher then the 'diary-sheet' might serve as an incentive to ask the child questions about things or people she sees in the 'diary-sheet'. In such instances the 'diary-sheet' works as a valuable help to bolster and support the interaction between the child and the teacher as it provides visual information that might be worth talking about. In other places though, the 'diary-sheet' became an obstacle to the storytelling, as the teacher relied more on the written facts provided by the parents, than on the facts provided verbally by the child. This happened in particular, when the written account of the parents stated different things than the child who was telling. The teacher then, was observed to challenge the child's right to his or her own experience by supporting the parent's statement. The children though could be seen to reject the teacher's adjustments or to defend their right on knowing the facts to their own story.

The analytic papers of this thesis uncovered the manifold purposes of the institutional agenda of the teacher and the practices she implements to meet these purposes. They furthermore revealed how the children reacted to these practices and thus allowed preliminary assumptions about the efficiency of the practices applied.

However, it became evident to me, that additional and more in-depth CA research on classroom interaction with children with ci is necessary, if we are to provide a clearer picture of the features of this particular setting. Although in recent years conversation analysts have shown an increased interest in interactions with hearing-impaired individuals, there is still little or no data available on classroom interaction with hearing impaired or cochlear implanted children. Most of the studies dealing with hearing impairment are concerned with hearing impaired adults. Heinemann et al. (2012), for example, investigate the interaction between a hearing impaired adult and an audiologist and how the audiologist translates the symptom description of the patient into treatment. In the setting of audiological consultations as well, Brouwer and Day (2012) examine how methods of solving problems between hearing impaired adults and audiologists relate to the compliance the patients show. Pajo (2012) presented a case study in which two sisters, one of whom has a severe hearing loss, interact at home. Groeber and Perek Doehler (2012) discussed the interaction of a hearing impaired adolescent with his hearing assistant teacher in the regular classroom. Finally, Wilkinson (2013) edited a special issue on dysarthria and hearing impairment.

Despite the fact that all these studies contributed greatly to increasing awareness of the consequences of hearing impairment and added new findings to the field of Conversation Analysis, I hope and wish that more studies on children with hearing impairment and ci, will be conducted in the future.

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Paper one:

Eleni Mourtou and Markus Meis (2012) Some basics about hearing loss, hearing technologies and barriers to hearing aid use In M. Egbert and A. Deppermann (eds.) *Hearing aids communication. Integrating social interaction, audiology and user centered design to improve hearing technology use*, 9-21. Mannheim: Verlag für Gesprächsforschung.

Introduction to audiology: Some basics about hearing loss, hearing technologies and barriers to hearing aid use

Eleni Mourtou and Markus Meis

This chapter provides background information for researchers who wish to become familiar with some basic medical and audiological aspects of hearing loss and the technology of hearing aids. It introduces (1) the disciplines involved in research on hearing loss, (2) the medical categories of hearing loss and their various effects on communication, (3) the different degrees of hearing loss as defined by different national and international organizations, (4) statistics on the prevalence of hearing loss worldwide, (5) some technological aspects of hearing instruments, (6) statistics on non-usage of hearing instruments worldwide, and (7) barriers to using hearing aids. Since hearing loss is a worldwide pervasive phenomenon which is likely to increase even further in the future, the authors point out that an understanding of the non-use of hearing aids is crucial.

1. Introduction

Several disciplines study the sense of hearing, hearing loss and hearing rehabilitation. Audiologists deal with the study of auditory and vestibular processes, including testing hearing, diagnosis of hearing loss, and rehabilitation. The medical aspects of hearing fall within the field of otorhinolaryngology ('oto' = ear, 'rhino' = nose, 'laryngo' = throat/ abbreviated as "ENT"). Medical research on the highly complex physical, biochemical and neurobiological aspects of hearing provides the basis for the patient's ear examination, diagnosis and treatment of hearing loss. The development of technologies for assessing and treating hearing loss is an interdisciplinary endeavor with specialists from engineering, design, medicine and audiology. Research into coping with hearing loss and hearing instruments is conducted mainly in logopedics, hearing pedagogy, social psychology, general psychology and audiology.

The multilayered aspects and implications of hearing loss on individuals and on communication require a multidisciplinary approach. Studies concerning interactional aspects of hearing loss based on video-taped authentic encounters are still a desideratum. Results from such studies may have implications for the rehabilitation of individuals with hearing loss. Describing hearing loss only in terms of medicine and audiology does not suffice to capture the problems caused by hearing loss adequately.

Contributing fields:

- audiology
- otorhinolaryngology
- engineering
- design
- rehabilitation

In the multidisciplinary approach, studies on interaction are still missing.

2. Types of hearing loss and their implication for communication

In audiology and medicine, the types of hearing loss are distinguished according to where the damage in the auditory system is located. The most frequent type of hearing disability is acquired sensorineural hearing loss. The damage occurs in the cochlea and particularly in the hair cells of the cochlea (sensory), or in the auditory nerve (neural). In 'conductive' or 'central' hearing loss, the outer or middle ear is affected so that the sound is not conducted properly. In mixed hearing loss, both conductive and sensorineural hearing loss occur, with damage in one or more of the areas of the ear or auditory nerve (Hain

Hearing loss differs according to where in the ear the damage occurs.

2010). In the US, 90% of hearing loss is sensorineural hearing loss and 0.8% conductive (Hain 2010). These figures are assumed to be similar in Europe.

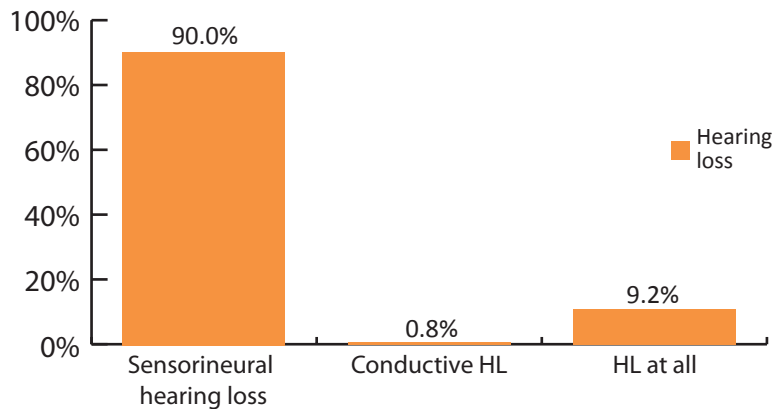


Table 1: Percentage of the types of hearing loss in the US population (adapted from Hain 2010)

Depending on the type of hearing loss, different kinds of treatment are possible, and the effects on communication differ.

Sensorineural hearing loss is not reversible, i.e., it cannot be treated by surgery or medication. The only help is to use assistive technologies (Boenninghaus/Lenarz 2005). Acquired sensorineural hearing loss is due to aging, exposure to noise and infections. Sensorineural hearing loss can also occur congenitally mostly due to a birth trauma, viruses or genetic factors, and for persons with a genetic predisposition, exposure to noise can enhance its emergence. While sensorineural hearing loss used to be associated mostly with aging, it is now also a condition found in younger people due to the damage caused by exposure to noise and loud music (SCENIHR-Report 2008). This type of hearing loss provokes a change in the quality of hearing so that affected individuals lack the ability to perceive sounds clearly. Faint sounds and even speech at a regular conversational loudness may be perceived as unclear, muffled, and distorted (Craggs-Hinton 2007). A phenomenon peculiar to sensorineural hearing loss is the so-called 'recruitment phenomenon', when the dynamic adjustment to sounds is restricted. The affected person perceives a very sudden change from not hearing to hearing sounds very loudly and in a distorted fashion. The result for communication is that the person cannot distinguish words which sound similar (cf. Bonner, ch.11, this volume).

In conductive hearing loss, sound is not conducted properly, and the affected person experiences sounds with a lower or fainter quality. Treatment by medication or surgery can reverse the damage and hearing aids can restore the hearing ability. Conductive hearing loss can be caused by interferences of the auditory canal, the eardrum, otosclerosis (the abnormal growth of bone in the middle ear), or infections (Boenninghaus/Lenarz 2005). With central hearing loss, the problem does not lie in the malfunction of the ears, but in the central nervous system, and more precisely in the brain (Hain 2009). In persons with normal hearing, incoming acoustic signals are identified by the brain, which gives a meaning to the received signals. Individuals with central hearing loss hear well, but have problems in filtering out competing auditory signals (Lauer 2006). Children are very often diagnosed with auditory processing disorders (Cacase/McFarland 1998). Although there are

SENSORINEURAL HEARING LOSS:

90% of the damage occurs in the cochlea (=sensorineural hearing loss).

It can only be treated by using hearing instruments.

The causes are:

- ageing
- exposure to noise
- infections
- genetic predisposition

Effects on hearing:

- loss of ability to distinguish sounds
- loss of perceiving faint sounds
- speech at regular loudness sounds are often muffled
- restriction of dynamic adjustment to sounds

CONDUCTIVE HEARING LOSS:

- caused by malfunction of the nervous system or brain
- sounds are not conducted properly
- can be treated by medication or surgery

Effects on hearing:

- loss of ability to filter competing auditory signals

adequate tests available, it is still very difficult for audiologists, surgeons and therapists to diagnose and treat these disorders (Lauer 2006).

3. Degrees of hearing loss

The degree of hearing loss indicates how much the loudness of a sound needs to be increased so that the person can perceive it. With a specially designed hearing test, an audiological professional measures the test person's hearing threshold in decibels. It can be difficult to determine the degree of hearing loss because patients are not always able to accurately report their hearing sensations (Kinkel 2005; Heinemann et al., ch.12, this volume).

Different organizations vary largely in how they define the degree and severity of hearing impairment. Some organizations use the 'Better Ear Hearing Level' ("BEHL") or 'Better Ear Average' ("BEA"), others the 'Worse Ear Hearing Level' ("WEHL") or 'Worse Ear Average' ("WEA") from the 4 M frequencies 0.5, 1, 2, and 4 kHz. Degree of hearing loss is divided into either four or five categories. As this table indicates, some organizations define mild hearing loss as starting at 20 dB, while other organizations consider a level up to 26 dB as 'normal' hearing. The definition of severe and profound hearing impairment diverges even up to 14 dB.

	Mild	Moderate	Moderate/ Severe	Severe	Profound
WHO	26-40	41-60		61-80	≥81
Euro. Com.	21-39	40-69		70-94	≥95
ANSI	27-40	41-55	56-70	71-90	≥ 91
RNID, UK	20-40	40-69		70-94	≥ 95
BSA	20-40	41-70		71-95	≥ 95
NIDCD, US		-40		≥ 75	

Table 2: Degrees of hearing impairment as categorized by different organizations (adapted from Shield 2006: 14)

Notes on Table 2:

WHO: avg. 0.5, 1, 2, 4 kHz

European Commission: avg. at 0.5, 1, 2, 4 kHz of the (BEHL)

ANSI = American National Standards Institute

RNID = Royal National Institute for Deaf and Hard of Hearing People

BSA: British Society of Audiology: avg. at 25, 5, 1, 2, 4 kHz of pure tone thresholds

NIDCD = National Institute on Deafness and Other Communication Disorders: avg. at 0.5, 1, 2, 3 kHz of pure tone thresholds

In the following, we present the definitions of the World Health Organization (WHO 2001). According to the WHO, disabling hearing impairment in adults is "a permanent unaided hearing threshold level (average for frequencies 0.5, 1, 2, 4 kHz) for the better ear of 41 dB or greater" (Shield 2006: 11). It is important to note that the WHO definition does not distinguish between symmetrical and asymmetrical hearing loss. For example, a person who is deaf in one ear, but has a 'Better Ear Average' (BEA) of 24 dB HL in the other ear, would be characterized as "normal hearing" according to the WHO, yet from an audiological perspective a hearing aid would be indicated. From a rehabilitation point of view regarding the provision of hearing aids, the WHO definition is thus not sensitive enough.

Severity of hearing loss is diagnosed in terms of the degree to which a sound has to be amplified in order to be perceived by the affected person.

International and national organizations differ slightly in how they categorize degrees of hearing loss.

Most organizations use four categories:

- mild
- moderate
- severe
- profound

A hearing aid is indicated with mild hearing loss.

For treatment, it is necessary to distinguish the hearing threshold of both ears separately.

The WHO categorizes degrees of hearing ability into five degrees. The first degree describes normal hearing (0-25 dB), and the following four degrees differentiate severity of hearing loss. Communication is impeded in the following ways:

- Individuals with mild hearing loss are able to hear and repeat words spoken at a normal sound level at a distance of about 4 feet (Grosse 2001). The affected person usually has some hearing problems, but is able to follow conversations if there is no background noise. Some soft sounds, like birds chirping or faint and distant speech may sound inarticulate or are difficult to hear at all (Craggs-Hinton 2007). Hearing aids are of great help because they amplify the low signals. Even children with mild hearing loss can achieve normal language acquisition if the hearing loss is diagnosed early and treated appropriately (Löhle 1991).
- Moderate hearing loss entails greater difficulties in hearing speech. Some sounds that are loud for normal hearing persons may appear very soft, and some sounds may not be heard at all. Speech can only be understood if it is loud. The so-called 'cocktail party effect' is a big challenge, i.e., in group situations, even more so with background noise, hearing is greatly impeded (Ding 1984). A hearing aid will help with most hearing difficulties if the background noise is low and the speech discrimination is good, yet hearing may still be a phenomenon in other communicative situations. If children with moderate hearing loss are not supplied with hearing aids, errors in their speech may occur, as children will not be able to monitor their own speech. Above all there may be limitations in language comprehension and usage as well as limitations in the child's vocabulary if not supervised on a regular basis by a speech therapist (Löhle 1991; Leonhardt 1999).
- With severe hearing loss, normal conversational speech is almost not audible anymore. What makes it even worse, speech is usually distorted, making comprehension impossible. In addition, the affected individuals may not be able to hear themselves. Sounds, which are very loud to a normal hearing person, appear very soft or cannot be heard at all by individuals with severe hearing loss. If the hearing loss is bilateral, the situation is even worse. In this case, speech comprehension is only possible with the help of lip-reading, even if hearing aids are worn. Children with severe hearing loss need special accommodations for being able to visit schools and to compensate the challenges with hearing (Leonhardt 1999; Thiel 2000).
- Profound hearing loss is deafness, as only extremely loud sounds can be 'heard', or to be accurate, 'felt' through the vibration they produce. Hearing aids may help very little or not at all (Pelkofer 1978). In these cases, a cochlear implant is often indicated. Nowadays deaf born children are likely to receive a cochlear implant (Dittmann 2006).

4. Prevalence of hearing impairment among adults worldwide

Hearing disability occurs to varying degrees when surveyed for different geographic regions. In this section, we summarize statistics for Europe, Aus-

COMMUNICATION PROBLEMS:

Mild:

- conversations with background sounds are problematic
- soft sounds are lost
- sounds from a distance are difficult

Moderate:

- sounds appear very soft
- some sounds are lost totally
- background sounds are highly problematic
- group situations are very difficult

Severe:

- normal speech cannot be heard properly
- speech sounds distorted
- loss of hearing one's own speech/voice

Profound:

- communication is only possible with the help of lip-reading

Hearing loss is a global problem

tralia/New Zealand, the USA, Latin America and Africa. It should be noted, however, that a comparison is not always accurate because statistics are sensitive to the different definitions of hearing loss, age ranges and the selection criteria of the populations as data base (Shield 2006).

In the past 25 years, there have been several European studies concerning hearing impairment in adult populations. The UK National Study of Hearing was the first large-scale investigation on hearing impairment in adults in Europe (Davis 1991; 1995). Further studies have been conducted in Italy (Quaranta et al. 1996), Denmark (Karlsmore et al. 2000), Finland (Uimonen et al. 1999), Sweden (Johansson/Arlinger 2003), Germany (Sohn 2001), France (IPSOS-Study 2001), as well as a joint report for the Nordic countries and the UK (Sorri et al. 2001).

As an overall estimate, these statistics indicate that in Europe approximately 16% of adults are affected by hearing loss, which in absolute numbers is 71 million people in Europe as a whole, among them 55 million in the EU (Shield 2006). It is expected that numbers will increase up to 25% by 2020 due to the aging population and other factors, such as greater exposure to noise (Rosenhall et al. 1999; Sorri et al. 2001). Table 3 (below) shows the estimated current prevalence of hearing impaired adults in Europe.

Mild	Moderate	Severe	Profound
16.9%	4.6%	0.7%	0.2%

Table 3: Estimated numbers of adults with hearing loss in Europe in current European classification of hearing loss (adapted from Shield 2006: 22-23, tables 3.11 & 3.12)

The various studies share the result that the severity of hearing loss and its prevalence increase with age (Shield 2006: 22, table 3.11). "In general over a lifetime hearing deteriorates at a rate of 5 to 6 dB per decade. Over the age of 55 hearing deteriorates at a rate of approximately 9 dB per decade, while under 55 the rate is about 3 dB per decade" (Shield 2006: 32).

In Germany, for example, about 19% of the population above age 14 has less than normal hearing, according to a small-scale study by Sohn (2001). In Denmark, 27% of persons age 50-64 report difficulties in following a conversation with several interactants (Christensen 2006a/b; cf. also Hear-It 2008). In France only 7% of persons age 35-44 have hearing loss, but 17% of persons age 70 and older (IPSOS-Study 2001). In Italy 3.89% of persons age 31-40 have hearing loss, but 18.73% persons age 51-60 (Shield 2006).

The growth rate of hearing impairment in adults in Europe for the years 2005 to 2025 (to nearest million) is estimated as follows (Davis 1997):

Year	≥25	≥35	≥45	≥65	≥95
2005	82	49	27	8	2
2015	91	54	30	10	2
2025	100	61	34	11	2

Table 4: Estimated increase in adults by hearing threshold to nearest million (adapted from Davis 1997).

The numbers in Australia are comparable with those of the European studies. Every sixth Australian over the age of 15 has hearing loss. It is estimated that by 2050, even every fourth Australian will have hearing loss, which equals 27% of the population. Currently, 17% of the population has hearing loss (Australian Hearing Annual Report 2010). Based on the findings of the

International comparison can only rely on estimates since methods for categorization, statistics and populations differ.

In Europe, it is estimated that 16% of all adults have hearing loss.

Prevalence is increasing internationally.

Prevalence increases with age.

report, in Australia more than half of the population aged between 60 and 70 has hearing loss. In New Zealand 10.3% of the population (390.600) has hearing loss of some degree. Seven out of ten persons below age 30 show evidence of permanent hearing loss due to exposure to noise (Greville 2001). For the USA, it is estimated that there are 35 million hearing impaired people. This equals 11.3% of the whole population. Several longitudinal studies show that there has been a growth rate in hearing impairment in the US (Kochkin 2003; 2004; 2005; MarkeTrak VI-VIII). "Over the last generation, the hearing loss population grew at the rate of 160% of US population growth" (Kochkin 2008; MarkeTrak VIII, 1).

In the USA, the rate of hearing loss has increased 160% over the last generation.

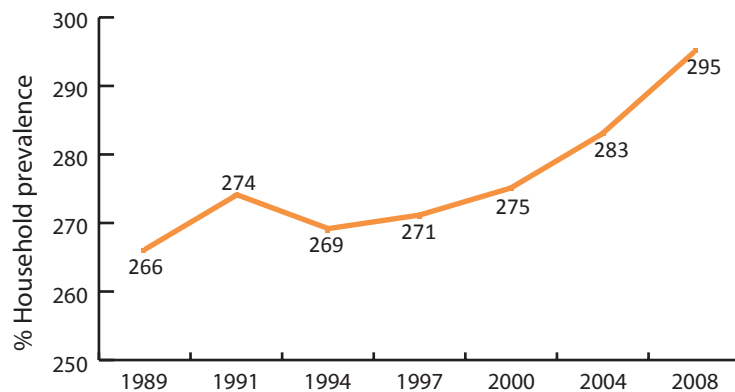
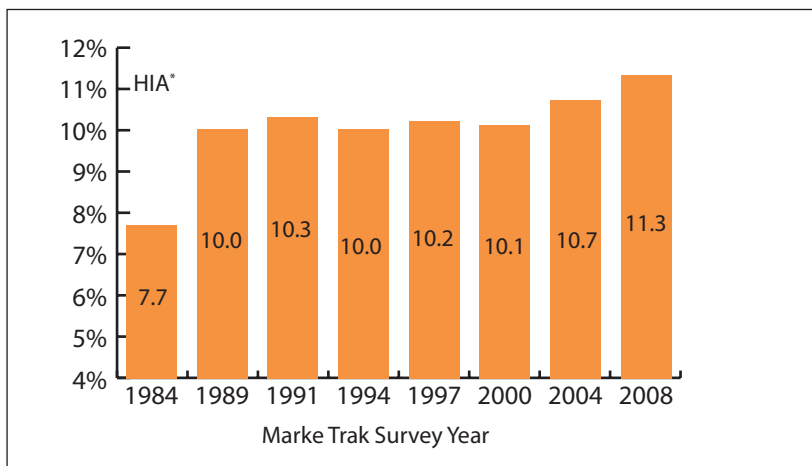


Table 5: Growth rate of hearing impairment in US households in percentage (adapted from Kochkin 2008)



* Adjusted by +.7% to account for multiple hearing-impaired per household

Table 6: Growth rate of hearing impairment in the years 1984-2008 (adapted from Kochkin 2008)

The numbers for hearing loss within different age groups in the US are as follows (Shield 2006; Gates et al. 1990):

- Under age 18 5%
- From age 18-44 23%
- From age 45-64 29%
- Age 65 and above 30%

The increase affects adults at all age ranges.

For Latin America it is difficult to provide figures because of the different health care systems across Latin America and the varying economic conditions in some countries. However, numbers are available for Chile and Co-

lombia. The first national study on disability in Chile discovered that almost 1.5 million people have hearing loss (FONADIS 2004). In Colombia 5 million people (11%) have hearing loss. It is estimated that the rate increases up to 14% for persons at age 25-50 (Talaro-Gutierrez et al. 2011).

The few studies available on hearing loss in Africa concern the younger population and mainly children. In Sub-Saharan Africa more than 1.2 million children of age 5-14 suffer from moderate to severe hearing loss. In Nigeria approximately 14% of schoolchildren have hearing loss, in South Africa 7.5% and in Swaziland 4.1% (McPherson/Swart 1997).

In sum, these figures indicate that there is a relationship between prevalence of hearing loss and poverty. For countries with access to health care for the majority of the population, age and noise exposure increase the prevalence of hearing loss.

5. Hearing aids

The development of hearing aid technologies has made considerable progress, especially after the introduction of the first full-digital hearing aid in 1996. This has led to the development of various adjustable parameters of digitally programmable hearing aids by thus increasing the potentials of digital signal processing. Especially nowadays common PC-based fitting strategies and the inclusion of measurement equipment allow more complex calculations in the fitting process (Kinkel 2005). "Many advanced features like noise reduction, feedback cancellation, directional processing, and adaptation to varying sound environments are made possible with digital technology" (Vonlanthen/Arndt 2007: 7). Frequency-dependent amplification, as used in analog hearing aids, will become more and more obsolete. "Today, three out of every four hearing instruments sold are fully digital hearing instruments. Totally analog instruments could eventually disappear" (Vonlanthen/Arndt 2007: 7). Despite considerable progress in hearing aid technology, hearing aids are still only able to compensate partially for hearing loss in most cases; they are not able to fully restore it.

As the variety of hearing aids is growing, the following brief overview is meant as an introductory orientation. Frequently, hearing aids are categorized according to the place where they are worn.

Body hearing instruments include all the important constituents, like the amplifier circuit and the microphone, as well as the user and fitter control units in a housing which is carried on the body or in a pocket. The market for body hearing instruments, though, is steadily becoming smaller, as these devices turn out to be cosmetically unappealing to most users (Vonlanthen/Arndt 2007).

Behind-the-ear ("BTE") hearing instruments are the most frequently used hearing instruments in Europe. All constituents are placed in a housing worn behind the ear. The sound is carried to the ear canal via soft plastic tubing. For users of eye glasses, the hearing instrument can be attached to the side piece of the glasses.

In-the-ear ("ITE") hearing instruments fit directly into the cochlea or ear canal. Completely-in-the-canal ("CIC") hearing instruments usually fit deeply into the ear canal. The end or canal tip terminates in the bony part of the external auditory canal. "In 1993 completely-in-the-ear-canal were introduced to the market. In 1994 and 1995 they grew quickly in popularity and have leveled off to about 10-15% of hearing instrument sales in the European and North American market" (Vonlanthen/Arndt 2007: 15).

The following table shows the distribution of the three most popular types of hearing aids in Europe compared to North America:

Internationally, there is a correlation between prevalence of hearing loss and

- age
- exposure to noise
- poverty
- access to health care

The first fully digital hearing aid was introduced in 1996.

Digital features include:

- noise reduction
- feedback cancellation
- directional processing
- adaption to different sound environments

Hearing technologies help but in most cases they are not able to bring back normal hearing.

Types of hearing aids:

- body hearing aids
- behind-the-ear hearing aids
- in-the-ear hearing aids

Region	BTE	ITE	CIC
Europe	65%	31%	4%
NA	26%	59%	15%

Table 7: Proportion of hearing instruments sold in North America and Europe (adapted from Volanthen/Arndt 2007: 18)

The costs of hearing aids vary from 420 € up to over 2,000 € per ear with different reimbursement from the health insurance providers (cf. Egbert et al., ch.3, this volume).

Three different classes (economy, medium, and business) are to be distinguished with different levels of performance, mainly regarding sound, noise reduction, wind and echo blocker, and additional features like multi-media or bluetooth connectivity.

Beyond hearing aids, there are also other assistive technologies which can improve sound perception in different environments. These depend on the hearing aid used, and the degree and type of hearing loss. There are external noise reductive microphones, amplifiers, FM systems, telephones with special amplifiers, visual alerting systems, and other features. It is also important to mention that other communication technologies with many users without hearing impairment provide communication modes where hearing is not central, such as e-mail, chat and short message systems.

6. Non-usage of hearing instruments worldwide

The socioeconomic demand for treatment of hearing loss is enormous. Untreated hearing loss costs the European Union 168 billion Euros annually, in all of Europe 213 billion (Shield 2006), and in North America 154-186 billion Dollars annually (Mohr et al. 2000). A large number of hearing impaired individuals drop out of employment. The lost productivity costs more than an appropriate assistance would (HRF 2008).

Despite the large variety of hearing instruments available and the ever-improving rehabilitational and medical means, a great part of the population with hearing loss remains untreated, drops out of the path through the health care system, or fails to use the hearing aids they have acquired. Considering the socio-psychological adverse effects that hearing loss has on individuals, the divergence between having hearing loss and use of hearing aids is hard to understand. Several studies in different countries discovered that only a small percentage of the individuals with hearing loss do use hearing aids. Out of the 35 million hearing impaired Americans, for example, more than 25 million do not have a hearing aid (Kochkin 2008). Thus, only one out of five of those who would benefit from a hearing aid owns one. According to the Royal National Institute for Deaf People just one out of four hearing impaired individuals in the UK has a hearing aid. Dillon (2001: 210) states that "[...] of those who consider they have hearing loss, or who objectively have a loss, only 14 to 24% own a hearing aid. That is approximately four out of five people with a hearing loss have not tried hearing aids".

There are geographical differences in which type of hearing aid is preferred.

A hearing aid costs 420-2000 € per ear.

The cost increases with advanced features.

In addition to hearing aids, other technologies can help.

Untreated hearing loss constitutes a high economic burden.

Approximately 80% of persons with hearing loss whose hearing could improve with a hearing instrument do not use it.

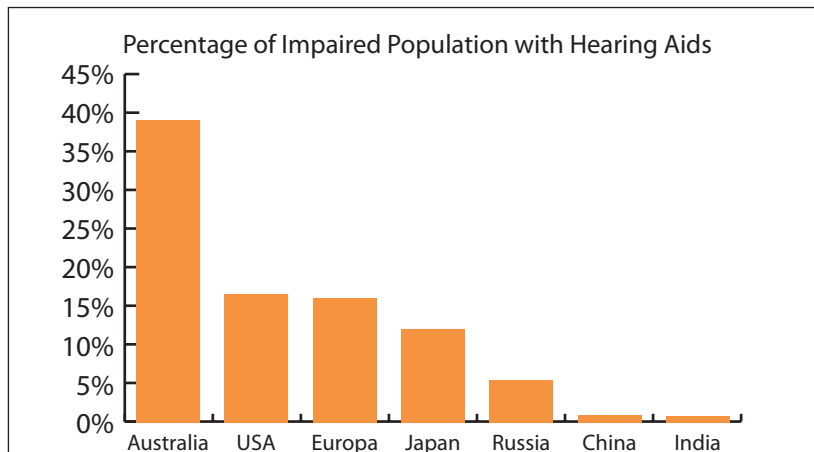


Table 8: Global market overview (adapted from Bisgaard 2009)

Sorri et al. (2001) report that “[...] of the several million hearing impaired people in Nordic countries (Denmark, Finland, Iceland, Norway, Sweden), around 60-70%, possibly up to 85%, could benefit from hearing aids. It is estimated that around 5% of the total population have a hearing loss of 45dB or above in both ears, while around 20% have a bilateral loss of 25dB or above” (Shield 2006: 87-88). Furthermore, the above study shows that the percentages of people with hearing aids are lower in comparison to the 20% predicted to have a hearing loss of 25dB, and even very much lower to the 5% predicted to have a hearing loss of 45dB. According to Davis (2003), only one out of four of the population in Europe who would benefit from a hearing aid actually owns a hearing aid.

Interestingly, the number of ownership of hearing aids has not increased over the last 40 years, as one could have expected due to the great technological improvement (Shield 2006).

7. Barriers to using hearing aids

The most important reasons why people deny that they have hearing loss and do not seek treatment seem to be rooted in socio-psychological concerns. Many individuals with mild to moderate hearing loss do not admit or simply do not realize that they have hearing loss, because they can hear well enough in many situations (Kochkin 1993) and do not attribute the resulting stress at work to mild hearing loss (Christensen 2006a/b). Communication problems may surface in cases of misunderstandings and when the communication partner becomes impatient due to the repeated occurrence of misunderstandings. In many cases, hearing loss is slowly progressing. These may be the reasons why many individuals tend to attribute communication problems to the actions of others (Dillon 2001). The denial of a hearing problem is therefore shown to have negative effects on the personal and work-life of the affected individuals (Rezen/Hausman 2000).

Hearing loss is still accompanied by many prejudices (Pöhle 1994): “The shame that is central to the experience of hearing loss” can lead to avoidance of social interactions and self-isolation (Hetu 1996: 19). Especially the age group from 35 to 44 years is found to be most affected by stigma-related issues. In this group, over 50% reported stigma as a reason for not purchasing a hearing aid (Kochkin 1993). People who suspect that they are having hearing loss might therefore wait for years, until they finally seek professional help.

The non-compliance rate differs even across western countries with national health care.

There is no correlation between technological progress and the use of hearing aids.

In western countries, reasons for not using hearing aids are largely socio-psychological. In particular, non-users

- deny having hearing loss
- are not aware of hearing loss
- attribute the communication problems to others
- are ashamed of their condition
- experience stigmatization

Even people who do admit their hearing loss and show interest in acquiring hearing aids may not get them due to misdirected medical guidance. Misinformation even from well-minded physicians might confuse and finally mislead the patient with hearing loss. Especially general practitioners who are not specially trained in hearing problems might advise the patient inadequately and thus not even recommend hearing aids to their patients (Kochkin 1993). For an example of such an encounter, cf. Deppermann (ch.9, this volume).

In comparison to visual impairment (the most frequent disability world-wide), wearing glasses is less stigmatized and may even be found to signal attractiveness or intelligence. The opposite is experienced with hearing impairment (the second most frequent disability world-wide). Cosmetic reasons may also be a challenge for some people with hearing loss.

Rehabilitational counseling can help people to adjust to the new experiences and finally improve their life situation through the benefit of better hearing with a hearing aid (Wilson et al. 1999). Interestingly, despite the positive effects reported on counseling and rehabilitation, there is not enough access to such counseling in most countries (cf. Egbert et al., ch.3, this volume). We can only speculate about the reasons, though the lack of governmental awareness campaigns on hearing loss might be a contributing factor. For example, many people are not even aware they can have their hearing tested for free.

Further reasons for non-compliance lie in the expectations that many people with hearing loss have with regard to hearing with hearing aids (Heinemann et al., ch.12, and Brouwer/Day, ch.13, this volume). Most of the candidates for hearing aids expect an immediate and optimal result or even the restoration of their hearing. These high expectations might be provoked by the advertising strategy used by the hearing aid companies, which try to present their products in a very appealing way or even promise high hearing results. Phonak states as their motto: "Because all people should be able to hear, understand and fully experience the life's rich landscapes of sound. Life is on" (Phonak n.d.). Siemens (n.d.) markets their hearing aid "Aquaris™" with the slogan "Enjoy life without limits", and similarly, Oticon (n.d.) describes their new product in a video commercial with the following promise: "Oticon Agile is the first ever hearing solution designed to give you the energy of understanding".

The failure of the hearing aids to meet customers' expectations may reinforce the belief that hearing aids do not help. Therefore, it is very important that hearing aid producers, dispensers and fitters communicate realistic results so that the potential hearing aid user can adjust his or her expectations accordingly.

Technical problems in hearing aid use might also be a reason for hearing aid users' withdrawal from using hearing aids. Phenomena such as feedback oscillation or occlusion are very likely to appear in hearing aid use. Feedback oscillation is the reamplification through the hearing aid of sound produced by the speaker. The hearing aid then starts to squeal very loudly. Even if it is not audible for the hearing aid user, it might be very disturbing for people in the environment. Occlusion is the perceived distortion of the own voice and resonance of the inserted plastic tube, which affects natural sound quality (Volanthen/Arndt 2007). More problems might be found in the handling of the hearing aid or the controlling of the device in case it is too tiny. Eventually the size of hearing aids is a dilemma for hearing aid designers, as on the one hand, most people wish hearing aids to be small and invisible, and, on the other hand, some people may have problems handling the hearing aid when it is very small.

Further barriers:

- misinformation by medical professionals
- Wearing eye glasses is associated with intelligence, whereas using hearing aids is not found to be attractive.
- Most health care systems do not provide for counseling and coping support as an integral part of treatment.
- Many persons with hearing loss have unrealistic expectations of hearing aids.
- Some advertisements by hearing aid producers raise unrealistic expectations.
- Some users cancel using their hearing aids because of unwanted technological side effects such as squealing.
- Some users have problems handling their hearing aids.

Most of these problems are solvable by the audiologist, if the fitting and adjustment of the hearing aid is made appropriately. This requires expertise of the audiologist and compliance and patience from the hearing aid user. However, communication does not seem to be easy between audiological professionals and laypersons (ProMatura 2007a/b; Heinemann et al., ch.12, and Brouwer/Day, ch.13, this volume). Studies on clinical encounters in other medical settings show that the better the clinical encounter was structured, the better the compliance of the patient had been (Collins et al. 2007; Stivers 2007).

Kochkin (1993) surveyed 2063 hearing impaired non-owners of a hearing aid concerning their reasons for non-compliance. Out of a list of 60 possible reasons for non-ownership, he asked the participants of the survey to score the importance of each reason. Furthermore, he divided the reasons into 6 categories. Table 9 shows the most important reasons, which emerged within these categories.

Category of reasons	Total %	Reasons	Non-owners %
Hearing loss issues	96	- Loss not severe enough - Mild hearing loss - Hear well enough in most situations - Hearing loss not disruptive	43.3 40.6 39.5 26.9
Consumer/ personal issues	68	- Cannot afford - More serious priorities - Hearing not tested yet	44 43 34
Stigma	44	- Do not want to admit loss in public - Embarrassment about wearing - Hearing aids are noticeable - Hearing aids do make you look old - Hearing aids do make you look disabled	27 27 25 22 20
Hearing health care professionals	44	- Advice of ENT specialist - Distrust of hearing aid specialists - Opinion of audiologist - Opinion of family doctor	33 29 26 27
Social network	34	- Opinion of spouse - Opinion of hearing aid owner	20 20
Product feature	48	- Poor performance and low value - Amplification of background noise - Maintenance expense - Hassle to use	55 36 32 30

Table 9: Reasons for non-ownership of hearing aids (adapted from Kochkin (1993))

“Stigma is an attribute or characteristic that marks a person as different from others and that extensively discredits his or her identity” (for seminal sociological work, cf. Goffman 1963; Major 2007). Stigmatization of hearing loss and especially of deafness seems to be one of the issues with the greatest socio-psychological impact on the affected individuals (Oyer/Oyer 1979; Thomas/Herbst 1980; Rutman 1989; McKenna 2001). Its roots go far back in history. Aristotle (384 BC-322 BC), for example, considered the acquisition and accumulation of knowledge to be expressed and obtained only via the spoken word. Deaf individuals were therefore considered ‘savage’ human beings, not able to gain knowledge, as they lacked, according to his view,

Technical problems are solvable but require expertise, endurance, and successful communication.

Results from a survey of 2063 non-users of hearing aids show the reasons for non-compliance in more detail (cf. table to the left).

Stigma associated with hearing loss and deafness is deeply rooted in human history.

Some philosophers viewed deaf persons as not having language, and thus not having access to knowledge.

the most important capacity of being educated (Prillwitz 1990). This belief is also found in Kant's philosophy of language. In his "Anthropologie in pragmatischer Sicht" [Anthropology in pragmatic view"] (1793), Kant expresses that the non-iconic character of oral language is the best way of describing definitions and thus "[...] that the deaf are only able to obtain an analogon of knowledge" (1980: 49).

An even more severe belief is reported for Europe in the Middle Ages, when deaf individuals were judged as not being worthy to believe in God, or not even being humans. This view was founded on an interpretation of the Bible, where in Saint Paul's Epistle it is stated: "Whoever will call on the name of the Lord will be saved" (10: 13) and "So faith comes from hearing and hearing by the word of Christ (10: 17)." (cf. The Holy Bible 1978). The first line of the Saint John's Gospel also underlines that only the spoken word brings God closer to man and man closer to God: "In the beginning was the Word and the Word was with God, and the Word was God." Since deaf people who use sign language are not able to 'hear' they were considered to be incapable of receiving the message of God or to call upon him. For this reason, the sacraments of baptism and marriage were denied to them for a long period of time. Only much later in the Age of Enlightenment, first attempts were made to teach and educate deaf individuals (Furth 1977).

Though nowadays Sign Languages are considered official languages in many countries, the belief that deafness and hearing loss is combined with inferior mental capacity is still not diminished (Prillwitz et al. 1985). The 2008 Annual report of the national Swedish association of hearing impaired people provides evidence that hearing problems are still the source of stigmatization (HRF 2008). In the same report it is also stated that because of stigmatization, many hearing impaired individuals seek to hide their hearing problems, especially at the workplace.

In addition to economic concerns, unrealistic expectations and stigma, a further reason for non-compliance seems to lie in the health care encounters. In a German study by Meis and Gabriel (2006), "Barriers in the supply with hearing systems: The view of the customer," key factors of non-compliance were identified. 190 persons (average age 63 years) participated in the survey. Their hearing problems had started in the past five to six years. For a period of nine months, participants filled out a detailed questionnaire in several intervals with questions regarding different technical and non-technical aspects of the hearing system supply. In the event the participants ended up cancelling the supply, they were asked in detail for their reasons. 27% cancelled the supply with hearing systems before the visit to an ENT physician, 40% after the visit to an ENT physician, 10% after the first visit to an acoustician and 11% during the fitting with the hearing system. Only 12% were supplied with hearing systems.

Participants in the study were asked in the beginning of data collection to list reasons for and against a supply with hearing systems. The two main reasons against a hearing instrument were 'cosmetic reasons and stigmatization' (32%) and 'additional effort and handling' (23%). Only 15% mentioned technical and functional reasons, 7% high costs, and 6% the (low) acceptance of hearing aids of other persons using hearing systems. About 11% held the opinion that the use of hearing systems is satisfactory. 6% mentioned other reasons.

According to the quantitative analyses, the main barriers in the supply with hearing systems from the view of the customers are the price (costs of purchase and the following costs) and assumed technical and audiological problems, especially poor speech intelligibility in noisy surroundings. It can be assumed that in other health systems with governmental funding, the price will not play such an important role as in the reported study.

In the Middle Ages, the Bible was interpreted as stating that deafness prevents faith because deaf people could not hear the Word of God.

People who feel stigmatized tend to hide their hearing loss.

In a survey of 190 persons with hearing loss who had dropped using hearing aids, most cancelled their hearing aid after visiting the ear, nose and throat doctor.

A very significant barrier is the lack of information about the supply of hearing systems. Nearly half of the participants did not have the basic knowledge of the hearing aids and fitting process. It might be difficult to win a customer for a product about which he or she has no basic knowledge and is likely to feel stigmatized before even considering the wide variety of assistive technologies.

A further barrier is the fact that ENT physicians recommend a hearing system supply only hesitantly. 44% of the test persons reported that their physician did not recommend a hearing aid, although three external experts (ENT physicians/audiologists) supported it unanimously according to the patients' files. These results indicate that ENT physicians' recommendations should be reviewed.

8. Conclusion

Hearing loss is a world-wide pervasive phenomenon, as data on prevalence by various studies show. It is crucial to note that statistics also let expect an increase in prevalence. As a consequence, the demand for hearing aids in the future will also increase. This is due to the aging population in most countries and other factors like more exposure to noise. Hearing aids can be of great help and improve lives of people with hearing loss. The hearing aid market offers a wide variety of hearing aids and supportive technical devices.

Despite the great progress in hearing aid technology, the barriers to using a hearing aid successfully are still immense. The reasons are multilayered and matter for the whole rehabilitational process. Although data on non-use of hearing aids by those who would benefit from them have been available for a long time, the situation has not changed. It is obvious that neither the hearing aid industry nor the medical profession have succeeded in overcoming these barriers. The hearing impaired and all of their communication partners in personal, professional and public life would benefit from a higher compliance rate of hearing aids. Studies are needed on how the stigma of hearing loss and the barriers of using hearing aids emerge in the situation where they are experienced, mainly in social encounters.

Most patients do not have sufficient information.

Many doctors do not prescribe a hearing aid for patients with mild hearing loss although a hearing aid is indicated.

Although there is research on non-use of hearing aids, neither the hearing aid industry nor the medical profession have succeeded in overcoming these barriers.

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Paper two:

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Language Practices in the Ci-Classroom

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Abstract

Prelingually deafened children are nowadays likely to receive a cochlear implant (ci). As these children do their language acquisition with a cochlear implant they require a constant rehabilitation and support. Educational staff is instructed on how to work with children with ci in form of guidelines and workshops.

This paper discusses language practices used in the setting of a school for cochlear-implanted children. These children encounter language and pronunciation problems that accompany prelingual deafness and hearing with a cochlear implant. I examine two practices, which are used during the storytelling activity: repeat requests and questions. Whereas repeat requests are used in ci-therapy, questions have been shown to be instrumentalized for educational purposes in the setting of a school. I will reveal the educational/rehabilitational issues that are linked to these practices.

KEYWORDS: COCHLEAR-IMPLANTED CHILDREN, AUDITORY-VERBAL THERAPY, SPEECH AND LANGUAGE PROBLEMS, CLASSROOM INTERACTION, CONVERSATION ANALYSIS

1. Introduction

According to the WHO (Report 2010) 0,5 in every 1000 newborn children have a severe-to-profound hearing impairment. If not diagnosed and treated 'hearing losses in the early childhood have an influence on speech development, personality development, social, emotional and intellectual development' (Rasinski, Vorwerk, Pötzsch, Bartel-Friedrich and Neumann 2007:48). To avoid delayed speech development in children some countries offer a newborn hearing screening which enables the physician to detect early hearing loss (WHO Report 2010). In Germany, for example, newborn hearing screening has been covered by statutory health insurance since 2009 and is offered at most university hospitals (Gross 2005). If a child is diagnosed as deaf it is likely to receive a cochlear implant (Papsin and Gordon 2007). A cochlear implant (ci) is an electronic prosthetic device surgically implanted into the cochlea, which partially restores auditory sensations, but provides limited sound/speech detection, especially in prelingually deafened children, i.e. children who become deaf before the phases of language acquisition begin (Lehnhardt 2005). Cochlear implants are very different from other hearing instruments, as they do not amplify sounds, but instead compensate for damaged or non-working hair cells in the inner ear by stimulating the auditory nerve directly. 'If the auditory nerve is functional the ci can restore auditory sensation and in many cases it can restore speech understanding' (Vonlanthen and Arndt 2007:274).

Because cochlear implants do not merely amplify sounds, children with ci require intensive rehabilitation to learn to make use of the auditory signal provided by the ci (Sorkin and Caleffe-Schenck 2008). The auditory access of these children is limited and results in difficulties of monitoring their own speech and language productions (Pakulski 2011). The problem with perceiving and detecting sounds with a ci lies in the 'poor spectrotemporal resolution' (Giezen 2011:34). Speech sounds in general can be described as 'specific combinations of rapidly changing acoustic characteristics such as formant frequencies, duration and intensity' (Giezen 2011:33) that provide information which is used by listeners to discriminate the incoming sound. Especially the recognition of vowels is degraded with a ci and is therefore problematic to be identified by the child with ci (Giezen 2011). In comparison to hearing peers, children with ci acquire inflectional morphology and vocabulary slower and are shown to have a lower working memory when processing unknown speech and language input, i.e. words or sentences the child has not heard before and thus not memorized in his or her short-term auditory memory (Diller and Graser 2009). Factors like the onset of deafness, the rehabilitation intensity and especially the age at implantation, have implications for the children's progress in language acquisition (Dolnick 1993; Stedt and Rosenberg 1987). Therefore some children with ci are likely to receive a lifelong and constant speech and auditory-verbal therapy as they do their language acquisition with ci (Wirth 1994; Geers and Moog 1994; Nevins and Chute 1996).

Learning to interpret and detect sounds with a ci is not only difficult for the child, but can also be a challenge for educational staff working with children with ci (Szagun 2002). Besides repair strategies and listening/lip-reading techniques, the focus of rehabilitation lies on the auditory-verbal therapy. Based on the *Hierarchy of Auditory Skills* (Erber 1982), which explains listening as combination of detection, discrimination, identification and comprehension of sound, auditory therapy aims at exercising the discrimination between specific sounds and the identification of individual words (Sorkin and Caleffe-Schenck 2008). Repetition of words or whole sentences and redundancy are used to train the auditory memory of the children. The various cochlear implant companies as well as organizations concerned

with cis, like the *Committee of Audiology*, provide very clear guidelines about how to work with a child with ci (see: Allum, Dillier, Strauchmann, Kompis, Pelizzone and DeMin 2010 as well as Diller and Graser 2005:35--43). Common rehabilitation programs and auditory-verbal therapy are either provided by the implanting clinic, or at specialized cochlear implant centres.

In terms of education, German children with ci can and do participate alongside their hearing peers in mainstream education, where they may however receive special attention. Alternatively, in some German states, children with ci are educated in a special school that focuses specifically on hearing impairment. In either case, teachers of the hearing impaired receive lifelong training, at workshops or clinics; they are the link between school, doctors/audiologists and the therapists of the children and the primary follower of the development of each child. In the classroom they apply certain practices to test and improve the children's language skills; practices that each school or teacher may have personalized based on the guidelines and recommendations they receive.

This paper investigates two of the practices teachers use in the German classroom, to monitor and work on the auditory and verbal development of children with ci. Specifically, this paper is concerned with classroom interaction in a German school for hearing impaired children and adolescents. The school curriculum is based on the oral method, thus no sign language is used or taught in this school. The children, with which the teacher interact, are all eight years old and in the first grade and have all been prelingually deafened and bilateral implanted at the age of 1 to 2 years. At the time the study was undertaken eight children were in the class. The class was separated into two groups during the German lessons, so that the teacher could pay special attention to the individual child's speech and language development.

This paper presents the way in which teachers use an activity commonly used in German elementary school for hearing children, namely storytelling, as a way of screening and improving children's with ci language skills, by applying practices that are otherwise used in the post-operational auditory-verbal therapy of the children. This type of therapy serves to enhance, sensitize and train the hearing with a cochlear implant. It aims at helping the child with ci recognize words, memorize them and finally produce them in an intelligible way. As the children are prelingually deafened, this therapy is an essential part of training the brain to discriminate the incoming sounds. The interaction is atypical as a hearing teacher interacts with hearing impaired children who have different interactional needs and habits. As Goss (2003:6) notes, 'a person with hearing loss growing up in these conditions may not learn the accepted forms of social behavior, especially the rules for turn-taking and managing conversational interaction'. Thus the teacher has to prepare the children for the environment of a hearing world and its interactional modalities. The discrepancy between the children's needs and the teacher's aims leads to problematic moments within the classroom interaction, as issues of different purposes are implemented to meet different needs.

Using the framework of Conversation Analysis (see Psathas 1995) I thus explore language practices used in the ci-classroom, which serve specific pedagogical aims, but also embed characteristics of auditory-verbal therapy. Two practices appear very prominently in the ci-classroom: repeat requests and questions. These practices are used to make the children produce active and correct language, but also to highlight problems in their production in terms of grammar, semantics and pronunciation. The discussion of the various examples will reveal the reflexive relation between the teacher's educational and therapeutical purposes, the format her turns are designed with to achieve these purposes, as well as the children's reactions to them. It will be seen that the children's access to repeat requests is easier, as they are familiar

with them from their therapy. The examples will also illustrate the language difficulties that accompany prelingual deafness. In the following, I will first give a brief description of the overall activity of the classroom storytelling in which the teacher employs the two practices to be discussed. I will then show how repeat requests are operated to focus on the child's speech production and correction of it and how questions are used to achieve the production of spontaneously spoken language. I will conclude with a discussion of the findings of the analysed practices.

2. Object of study

The storytelling presented in this paper is an activity that serves as a tool to work on the children's language skills. As an activity, storytelling is generally used in German elementary schools within the *Morgenkreis* (morning circle). Heinzel (2000) describes the *Morgenkreis* as a pedagogic tool for developing communicative skills and as setting for exchanging information and problem solving. Röhner (1998) sees the *Morgenkreis* as a possibility for pupils to share their life-experiences. The goal of the *Morgenkreis-storytelling* of children with ci is to help the children build up enough linguistic competence to function in a hearing world. Unlike ordinary, everyday storytelling which is typically co-constructed by the participants (Goodwin 1984; Jefferson 1978), the storytelling of the ci-classroom is regulated and structured by the teacher, as is the case with many other instructional practices employed in the classroom (Sinclair and Coulthard 1975).

During the storytelling each child reports its activities of the prior weekend, the *Weekend-Storytelling* (WE-ST), or the prior day, the *Prior-Day-Storytelling* (PD-ST). WE-STs take place on Mondays during the *Morgenkreis*. Before the weekend each child is given a special sheet of paper called *Tagebuch-Blatt* (diary-sheet), on which the children draw their experienced events and their parents write an account of the same activities. Before beginning the storytelling the elected teller shows the *Tagebuch-Blatt* to the class and the teacher. During the WE-STs the children form a smaller circle in front of their desks and the teller sits beside the teacher. The PD-STs take place on all the other weekdays. They are usually shorter and presented without *Tagebuch-Blatt*. The child who is telling does not sit beside the teacher, but remains at his/her usual chair. Generally in all the other lessons, the children sit in a semi-circle and the teacher in the middle front part facing them. These particular seating arrangements secure the possibility for each child to see each other and lip-read.

This paper is based on 60 such storytellings, which have been videorecorded, transcribed and analyzed, using Conversation Analysis. In transcribing, the standard recommendations of Jefferson (1984) have been met, and the original German is accompanied by a translation. Words and structures produced by the children that are delivered in ways oriented to by the teacher as ungrammatical or in other ways problematic are highlighted in bold type, both in the original German and the English translation. Where it has not been possible to identify and thus translate a word produced by the children, the German representation is also given in the translation.

3. Language practices

Within the storytelling activity the teacher seeks to meet different pedagogical and therapeutical goals, either of getting the children with ci to produce precise strings of linguistic forms (e.g. in the form of sentences), or of provoking their ability to transform experiences into words. Two particular practices that the teacher employs to meet these goals

are repeat requests and questions. The examples in section 3.1. will document repeat requests made by the teacher. These requests either check the attention and auditory perception of the children, or serve as a tool to directly or implicitly request precise linguistic forms from the child who is telling. Repetition and hence repeat requests are used in auditory-verbal therapy of children with ci. The examples will illustrate these embedded rehabilitation issues and demonstrate how the children's familiarity with them can be seen in their responses. The examples in section 3.2. will illustrate how the teacher uses either wh-questions or yes/no questions depending on the process the story-telling child makes in its actual language production. Here it will be shown that wh-questions are more challenging for the children to respond to than yes/no questions. The examples will reveal the teacher's awareness of this fact and how she positions the two types of questions according to her goals.

3.1 Repeat requests

Repeat requests are used by the teacher to indicate a problem of production in the child's turn either in terms of pronunciation or grammar. They are a tool to either directly or implicitly ask for a repetition. The repetition can refer to a particular word or a whole sentence and is correspondingly delivered differently, depending on what the request targets.

Direct repeat requests are delivered in the imperative when addressed to the story-telling child e.g. *then say it again* or *say it again* and in the form of a request constructed by addressing the child's ability to repeat (can you say it). Ability requests such as these have in other contexts been suggested to indicate a high degree of entitlement on behalf of the requester (Clayman & Heritage 2002; Heinemann 2006), which here fits with the teacher's inherent rights to ask questions and make demands of the children.

Section 3.1.1 will present and discuss this type of request. Section 3.1.2 will then cast light upon examples where the teacher is doing the repeat request implicitly, i.e. without a directive construction.

3.1.1 Direct repeat requests

The first example will show how the teacher uses repeat requests after an ungrammatical production by the child who is telling. The example is taken from the beginning of Jessica's storytelling.

Example 1a. Jessica's Storytelling.

Jes: Jessica; Ahm: Ahmed; Tea: Teacher.

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02 Jes:  isch war mit papa blu:men (.)fassa(.) °gekauft°
          I was with daddy flo:wens(.)fassa (.) °bought°
03      (1.1)
          *makes watering flowers gesture
04 Ahm:  <DER DANN> (.) papa hat *wassa blumen
          he then (.) daddy has *water flowers
05 Tea:  has-, habt ihr blumen gekau:ft
          has-, have you(pl)bou::ght flowers
06 Jes:  ((nods))
07 Tea:  ↑ja?
          ↑yes?
08 Jes:  ((nods))
09 Tea:  dann sags noch[mal
          then say it ag[ain
          *points at her drawing
10 Jes:  [*isch wa
          [*I was

```


11 Tea: hmhm↑ (.) dann sags nochmal
 hmhm↑ (.) then say it again
 12 Jes: °isch° wa(.)<°me meine°> papa(.) pa°pa° ein
 °I° was (.)<°with my°> daddy (.)dad°dy° a
 13 blu:men °fasch°(.) gekauft
 flo:wer °fasch°(.)bought
 *turns to the class
 14 Tea: ↑aHA↓*aehm(.)habt ihr verstanden was Jessica
 ↑aHA↓*aehm(.)have you (pl) understood what Jessica
 15 gemacht hat
 has done

Jessica provides information about her weekend activity, namely buying flowers with her father (line 02). Though this information is probably understandable to most, her sentence is ungrammatical, in addition parts of it are produced at a low volume, which may make it harder to hear and understand. According to Müller (1996) low volume is also an indication of insecurity of how to pronounce a word, which suggests that Jessica herself already knows that her sentence is not delivered correctly. In the first part of Jessica's sentence she tells that she was with her father and finishes with an unintelligible word (*fassa*). The past participle *bought* is not congruent with the auxiliary verb she uses and the auxiliary verb is pronounced incorrectly (*isch wa*= I was). Though it may be understandable that Jessica and her father went to buy flowers over the weekend, the delivery has many incorrect features that may hinder understanding. In orientation to this, the teacher provides her understanding of what Jessica said, by formulating this as a yes/no question she asks for Jessica's confirmation (05). The teacher stresses the word *bought* to indicate if that is the action in Jessica's story. Jessica confirms twice non-verbally and is finally asked by the teacher to repeat (09). The teacher's turn is overlapped by Jessica who delivers a half verbal, half non-verbal turn. She initiates her sentence verbally, but finishes it by pointing at her *Tagebuch-Blatt*, where the activity is to be found (10). The teacher acknowledges her try by using a continuer (Goodwin 1986) *hmhm* and asks her to repeat, indicating that Jessica's production is still not satisfying (11). Jessica tries anew and produces a turn that differs from her initial one in line 02. She now introduces the personal pronoun *my* before the word *daddy* (12). The teacher approves of Jessica's turn by producing the change-of-state token (Heritage 1984) *aha* (Weinrich 2005:837) and then shifts to the activity of checking the audience's attention (see example 1b).

Example 1b, which is the continuation of example 1a, will now show how the teacher uses another repeat request to direct her attention from Jessica to the other children. By doing so she aims at checking their attendance and understanding of Jessica's storytelling so far.

Example 1b

Tea: Teacher; Ahm: Ahmed; Meh: Mehmet.

*turns to the class
 14 Tea: ↑aHA↓*aehm(.)habt ihr verstanden was Jessica
 ↑aHA↓*aehm(.)have you (pl) understood what Jessica
 15 gemacht hat
 has done
 16 Ahm: ((nods))
 17 Meh: ((nods))
 *points at Ahmed
 18 Tea: ↑ja (.) *kannst du es ↑sagen
 ↑yes(.) *can you ↑say it
 19 Ahm: die (.) deine papa blume dekauft
 she (.) your daddy flower bought
 20 Tea: AHA:

The teacher is satisfied with Jessica's effort and directs her attention to Ahmed and Mehmet, who were chatting, asking them whether they have understood what Jessica has told (lines 14 and 15). Because her inquiry is in the form of an interrogative yes/no question, the nods delivered by Ahmed and Mehmet (lines 16 and 17) are in principle sufficient confirmation of their understanding. But as the teacher wants to see if they have been listening nods are not satisfactory to the teacher. Sacks (1992) elaborated on the difference of claiming understanding versus demonstrating understanding. Taking his findings into account we could say, that Ahmed's and Mehmet's nodding would be a claim of understanding yet the teacher has no evidence for the understanding until it is demonstrated. She thus asks Ahmed to repeat what Jessica has said (line 18), which he does in line 19. Though his production is not grammatically correct, the teacher does not request another repetition, thus displaying that in this case she was checking for understanding and attention, not aiming at getting a perfect production as was the case with her prior repeat request directed at Jessica.

The above example demonstrated how the teacher requests the repetition of sentences that were ungrammatical or hardly understandable. It showed how she constructs her requests differently according to whom she addresses them at. In case her request is directed at the child who is telling we could observe an imperative, whereas in case where the request is directed at the audience, a modal verb of ability (Redder 1984) was used. Finally, the examples demonstrated that actions that would be sufficient or acceptable in non-institutional settings e.g. the nodding of the children were disapproved of and asked to be transformed into a verbal form. Thus the repeat requests do not only reveal the institutional character of the setting, but also the linguistic/therapeutical purposes of the teacher.

3.1.2 Implicit repeat requests

Repeat requests can also be made more implicitly, in cases where the teacher is targeting a particular word, rather than a whole sentence. The words the teacher is aiming at are mispronounced due to the children's hearing problems.

Example 2 will now show how the teacher can make such an implicit repeat request which refers to the pronunciation of a particular word, here *vanilla*.

Example 2. Jessica's storytelling.

Tea: Teacher; Jes: Jessica; Ahm: Ahmed.

```

08 Jes:   Gicola auf f::anela
          Nikolas also f::anilla
09 Tea:   vani:lle.
          vani:lla.
10 Ahm:   h[äte banane,
          h[ad banana,
11 Jes:   [va[n:ille
          [va[ni:lla
12 Tea:   [vanille, eis.
          [vanilla, ice cream.
13        (0.4)
14 Tea:   ↑Ahmed fragt dich was,
          ↑Ahmed asks you something,
15        (0.5)
16 Ahm:   de banane?
          this banana?
17        (0.2)
18 Jes:   nee:
          nō:pe
19 Tea:   >.hh< bananeneis is gelb,(.)
          >.hh< banana ice cream is yellow,(.)
20        [und vanilleeis is ↑auch gelb.

```

[and vanilla ice cream is ↑also yellow.
 21 Ahm: [ja
 [yes
 22 (0.5)
 23 Jes: nein. **e**ve **f**inne **n**e un gelb e blei.=
 no. **vanilla** an yellow is (unclear).=
 24 Tea: >mm mm.=>.hh(0.2)>schau mal.<
 mm mm.=>.hh(0.2)>look.<
 25 >.hh< va n↑il: l↑e.
 >.hh< va n↑il:l↑a.
 26 (0.3)
 27 Jes: **va ne na**,=
vanilla,=
 28 Tea: =genau.=>so was is es<=>.hh< >gut.
 =exactly.=>such is it<=>.hh< >good.

Jessica tells about a visit she paid to an ice cream parlor together with her family, describing the type of ice cream each member of her family had. As she has repeatedly mispronounced the word *vanilla* and does so again in line 08, the teacher takes the next turn and pronounces the word correctly syllable by syllable and with marked stress, so as to indicate that this word is the one that was problematic (line 09). Jessica clearly recognizes the teacher's turn as an implicit request for repetition and repeats correctly after her, using the same stresses and pauses in the word as the teacher has. As the teacher later claims that vanilla ice cream is yellow, Jessica attempts to correct her by stating that vanilla ice cream is white, but mispronounces the word *vanilla* again (line 23). This time the teacher asks Jessica to look at her, thus she can also lip-read the word *vanilla* while pronouncing it clearly (lines 24 and 25). Jessica then repeats and comes very close to the correct pronunciation (line 27).

In this example the teacher used an implicit repeat request for a particular word. Jessica's prompt reaction to this implicit request in line 11 testifies that she is familiar with the practice. The fact that Jessica's delivered pronunciations of the word *vanilla* differ each time, is proof of the deteriorated hearing and the difficulties with the short-term auditory memory that have been documented for children with ci (Dawson, Busby, McKay and Clark 2002).

The last example in this section will show how the teacher first mirrors the ungrammatical production by a child and then goes over to an implicit repeat request. It can be seen that her *over-enunciation* of the sentence to be repeated and the pauses she uses to deliver them, are a signal for the child to repeat.

Example 3

Jes: Jessica; Tea: Teacher; Ahm: Ahmed.

375 Jes: ich **bin** **dik** k↑onen.
 I **am** l↑emon.
 376 (0.7)
 377 Tea: ich b↑in zit↑rone?
 I ↑am le↑mon?
 378 (0.1)
 379 Jes: ja::[:.
 yes::[:.
 380 Tea: [ich [bin=
 [I [am=
 381 Ahm: [deiss dog=
 [(unclear)=
 382 Jes: =>ich wei kik k↑o:ne.
 =>I (unclear) l↑e:mon.
 383 Tea: moment.(0.2)Jessica sagt(0.1)ich b↑in zit↑rone,↑
 hold it.(0.2)Jessica says(0.1) I ↑am le↑mon,↑
 384 (0.2)
 385 Ahm: nei ei.

386 no o.
 386 (0.2)
 387 Tea: >ich<(0.1)<ha[:be?> (0.2)
 >I< (0.1)<ha[:ve?> (0.2)
 388 Jes: [a:be
 [have
 389 Tea: >zit[ronen,<e[is> (0.4) g[egessen.
 >le[mon, <i[ce cream> (0.4)e[aten.
 390 Jes: [tjone [ei [ge gessen
 [lemon [ice [eaten

In line 375 Jessica tries to say that she had lemon ice cream but produces an ungrammatical sentence, stating that she *is* lemon, rather than that she *had* lemon ice cream. The teacher repeats her sentence with a questioning intonation, by stressing the verb that is problematic in the sentence (377). Jessica affirms, but is overlapped by the teacher who again repeats the ungrammatical part (380). Ahmed comments shortly and Jessica takes the turn (381--382). As her sentence is ungrammatical and incomplete and Ahmed's unclear, the teacher brings them to a halt (383). She verbally takes Jessica's position and repeats her ungrammatical sentence, thus the other children might uncover the grammar mistake (line 383). Ahmed disapproves the sentence, namely notices the mistake and the teacher moves over to say the sentence correctly to be repeated after her. We can observe the same intonational features that occurred in the prior examples, slow pacing, pauses between the words and stressed intonation. This is a sign for Jessica to repeat after the teacher what she also does, after the first pause in the teacher's turn.

In sum, repeat requests are to be found in positions after ungrammatical, incomplete or mispronounced productions by the children. They can either be addressed to the child who is telling in form of an imperative, directing the child to repeat a correct form after the teacher, or addressed to a different child directing that child to demonstrate understanding. When they aim at checking the attention or the auditory perception of the children, the request is delivered with a modal verb of ability e.g. *can you say it again?* The use of modal verbs reflects the question of ability the child has to re-produce, not only in terms of attention, but essentially in terms of listening. In case the request is used to get a reproduction of an unclear pronunciation the request is implicit, as the teacher first provides what has to be repeated in a very stressed way, using pauses between the words.

With these requests the teacher is able to call the child's attention to an ungrammatical or mispronounced production and to correct it, thus helping the child memorize a correct form of the sentence. Because of the difficulty of control of their pronunciation and their difficulties with short-term auditory memory, constant repetition helps children with ci to internalize and memorize the sound of the repeated word or sentence (Sorkin and Caleffe-Schenck 2008). Repeat requests occur as an implicit request when referring to the pronunciation only. In these cases, the teacher pays particular attention to her intonation when serving as a pronunciation model. The fact that repetition and stressed over-enunciated pronunciation does not only occur in the classroom, but also as a fixed part of cochlear implant rehabilitation, facilitates the children's access to these turns. The examples illustrated that the children have no apparent problems with understanding what actions are made relevant by the repeat requests, even when these are done implicitly, as they are a familiar pattern. In the next section I will discuss another pedagogical/therapeutical practice used by the teacher, this one aiming at supporting the spoken language development of the children, thus also training their receptive and expressive vocabulary.

3.2 Questions in the ci-classroom

In educational settings such as schools, the distribution of knowledge differs from that of other contexts and it is primarily the teacher's job to check whether the student possesses the relevant knowledge, through asking questions to which the teacher already knows the answer. Studies on classroom interaction have investigated the composition of these instructional phases which consist of interactions where the knowledge exchange takes place. The studies have shown that a core sequential structure is to be found in most classroom interaction, namely the IRE/IRF three-part sequence (Sinclair and Coulthard 1975; Lemke 1990; Mehan 1985). These three parts consist of the initiation of the teacher, the response by the student and the evaluation of this response by the teacher. Mehan (1985) elaborated on the format of the teacher's initiations of so-called known-information questions, i.e. questions to which the questioner already knows the answer and could reveal that these types of questions are widely encountered in educational settings. They aim at checking and uncovering the student's knowledge in relation to the teacher's question.

This section deals with similar initiation moves by the teacher in the ci-classroom. Here the teacher uses questions to check the children's linguistic competence discernible in their answers. In the ci-classroom *Morgenkreis* the teacher typically knows the answer from the *Tagebuch-Blatt* but is still asking the child for information. For this purpose the teacher uses wh- and yes/no-questions. Schegloff (1968) notes that when a person delivers a question she/he places constraints not only on the actions the recipient of the question should produce, but also on the design of these actions. Raymond (2003) states, that a polar question constrains the answer to *yes* or *no*, whereas a wh-question constrains the recipient to provide information concerning the matter displayed in the question. A question that is designed as follows *what did you do yesterday?* constrains the recipient to give information about the particular action the recipient did at a particular time, *yesterday*. These constraints are not always clear to the story-telling child. Questions bear greater difficulties for the children than repeat requests, which are known from ci-therapy.

The examples will demonstrate that wh-questions are a bigger challenge for the children, as they require the production of a sentence rather than just a *yes* or *no*. Wh-questions in German are usually initiated by an interrogative pronoun with the verb or auxiliary verb in second position. They would have the form of inter alia *what did you do? With whom did you + verb? Who was also there?* In case the child gives a one word answer and it is still not clear what the activity was, then the question has the form of *for whom is ...?* adding the word given by the child. In some cases this form is followed by a question like *what?* targeting the priorly asked information. Additionally the teacher stresses the objects and verbs and the supposed agent of the action. Yes/no questions appear with the verb in first position without interrogative pronoun and provide a candidate event that has to be affirmed or rejected by the child.

The following examples will show that in case that wh-questions are used, more turns are required to get an answer. Furthermore they are often followed by candidate answers the teacher provides, to make them more accessible to the child. The examples will reveal that the child's reaction to a yes/no question might not be sufficient for the teacher and are in fact treated as evidence that the child did not understand the question. Indeed, as noted by Higgins (1980:227): 'children, inadequately prepared students, and patients may often use this technique. In these situations pretense may be used because the individuals know less than what they would like others to believe. They are managing their stigmata of ignorance'. According to Farrugia (1989) as well as Stedt and Rosenberg (1987) hearing impaired

individuals often compensate with affirmative actions like nodding, when they have not fully understood spoken sentences.

The children will be shown to affirm by nodding, contradicting facts the teacher provides in a yes/no question. It will be discussed how the teacher treats these turns of strategies of compensation.

The first example will be an illustration of two instances of wh-questions, specifying certain items that are already available to the teacher, but which the story-telling child is asked to provide.

Example 4 a. Jessica's storytelling.

Tea: Teacher; Ahm: Ahmed; Jes: Jessica.

- 01 Tea: <ach (.) ihr habt nicht nur blu::men gekauft> ihr
<oh (.) you did not only buy fl̥o::wers> you
02 habt noch was anderes gekauft=was denn?
have also bought something else=what?
03 Ahm: sie hat ein H[<AUS.>
she has a H[<OUSE.>
04 Jes: [<HAUS.>
[<HOUSE.>
05 (0.6)
06 Jes: haus
house
07 (0.6)
08 Tea: für we::n ein haus,
for wh::om a house,
09 (0.4)
10 Tea: ((looks at Jessica))
11 Jes: man papa hat de laufen de HAUse neue
me daddy has they run the HOUse new
12 Tea: <ein neues(.)[vo:gelhaus>habt ihr auch gekauft,
<a new (.) [a:viary>have you(pl)also bought,
13 Jes: [((nods))
14 Tea: ((looks at Jessica))
15 Jes: ja,
yes,
16 Jes: ((nods))

The teacher tries to get information about what Jessica bought with her father. Following her inquiry is a latched question that targets anaphorically the object that has been bought by Jessica and her father. She facilitates the access to Jessica about what she wants to know (lines 01--02). Ahmed and Jessica answer that it was a house (lines 03--06). The teacher takes up the answer and uses another wh-question this time to inquire for whom this house is (line 08).

Jessica tries to give an answer in telling that *they* (the birds) *run* into the new *house*. Jessica assumes that the teacher knows that *they* who run into the house are birds and thinks that she provides the information. But her production was ungrammatical and incomplete. At this point the teacher is the one who supplies the information she was asking for (line 12) and gets an affirmation, verbal and non-verbal (lines 13, 15 and 16).

Example 4 b, which is the continuation of the above example, will now show how questions are used to check the listeners' understanding.

Example 4 b

Tea: Teacher; Sum: Sumeya; Ahm: Ahmed.

- 01 Tea: Sumeya (.) hast du es mitbekommen?
Sumeya (.) have you gotten it?

02 (0.9)
03 Sum: ((nods))
04 Tea: was ↑ham sie den noch.=sie haben blu:men gekauft
what do they also ↑have.=they have bought flo:wers
05 und noch was was haben sie denn noch gekauft,
and something more what have they also bought,
06 Ahm: der hat (.) hau vogel.
he has (.) house bird.
07 (0.9)
08 Tea: ((looks at Sumeya))
09 Sumeya↑ was ham sie noch gekauft.
Sumeya↑ what have they also bought.
10 (2.6)
11 Tea: was hat die Jessica hier gema:lt
what has Jessica dra:wn here
12 (0.6)
13 Sum: °malt°
°draws°
14 (0.5)
15 Tea: für we:n ist das haus?=für ↑dich für die ↑kinder?
for who:m is the house?=for ↑you for the ↑children?
16 Ahm: ((laughs))
17 Sum: ((laughs))
18 Sum: °ne[in°
°n[o°
19 Tea: [nein
[no
20 Ahm: das is ein vogel (0.5) °deine°
that is a bird (0.5) °yours°
21 Tea: ((looks at Sumeya))
22 Sum: °ein vo° °ogel°
°a °bird°
23 Tea: <ein neues vogelhaus habt ihr gekauft>
<you bought a new aviary>

The teacher directs her attention at Sumeya and inquires if she has understood. Sumeya nods, but the teacher is not satisfied and uses four different wh-questions to make Sumeya deliver the answer (lines 04, 05, 09 and 11). The form of the teacher's questions vary and finally change the theme from *what have they bought* to *what has Jessica drawn*. Thus, the child is confronted with different syntactic and semantic forms of questions. Sumeya is not able to answer correctly (line 13). The teacher asks anew for whom the house is and provides a candidate answer (line 15). Ahmed and Sumeya show their disapproval of the candidate answer by laughing and both deliver an answer (lines 16--22).

The example demonstrated how the teacher uses both types of questions to elicit information from the children, respectively make them produce sentences. It also shows how wh-questions challenge the children, especially when their form varies too much. The teacher provides candidate answers in the form of yes/no questions to facilitate the access to the wh-questions for the children. Non-verbal actions like nodding as an answer to yes/no questions are not considered adequate by the teacher and are followed by further questioning.

The next example will provide similar observations concerning the difficulty the children have when the format of the teacher's questions is too complex.

Example 5. Jessica's Storytelling.

Jes: Jessica; Tea: Teacher; Ahm: Ahmed.

23 Jes: mit meinem papa blu:men gekauft
with my daddy flo:wers bought
24 Tea: ↑hmm↓was habt ihr denn mit den blumen ↑gemacht
↑hmm↓ *what have you then ↑done with the flowers*

25 Jes: (unclear [])
 26 Ahm: [gekauft
 [bought
 27 Tea: was habt ihr mit den blumen gemacht
 what have you done with the flowers
 28 Ahm: der war (unclear)
 he was
 29 Tea: moment mal Sumeya ich frage die Jessica
 hold it Sumeya I ask Jessica
 30 was hat sie denn
 what has she then
 31 mit den blu:men gemacht die ihr gekauft habt (.)
 done with the flo:wers which you have bought (.)
 32 habt ihr die der mama geschenkt für die ↑va:se↓
 have you given them to mommy for the ↑va:se↓
 33 Jes: ((nods))
 34 Tea: oder habt ihr die blumen gleich in den
 or have you the flowers immediately in the
 35 ga:rten gepflanzt
 ga:rden planted
 36 Jes: ((nods))
 37 Tea: ↑was
 ↑*what*
 38 Jess: blumen zuhause viele blumen
 flowers at home many flowers
 39 Tea: warn das blumen für den ga:rten (.)
 were these flowers for the ga:rden (.)
 40 oder für den ↑ti:sch (.) für die mama
 or for the ↑*table* (.) for mommy
 *makes a gesture
 41 Jes : nein *gar[ten
 no gar[den
 42 Tea: [für den gar[ten
 [for the gar[den
 43 Jes: [au ((unclear))
 44 Tea: für den ga:rten (.) ihr habt die blumen
 for the ga:rden (.) you have the flowers
 45 in den garten gepflanzt
 planted in the garden
 46 Jes: ((nods))
 47 Tea: ↑hmhm↓

Jessica tells that she bought flowers with her father. The teacher takes the next turn and inquires with a wh-question what they have done with the flowers (lines 23--24). Jessica's answer is unclear and while another pupil suggests a candidate answer, the teacher insists on getting the response from Jessica. She firstly repeats her question (line 27) and then states explicitly that Jessica is the selected recipient of her question (lines 29--31). In her next turn she uses a yes/no question to which Jessica answers with nodding (line 33). The teacher though does not acknowledge the nodding but provides an alternative candidate answer connected to the prior question by *or* (lines 34--35). Thus Jessica has two options to affirm or negate, namely if the flowers were for mommy's vase *or* were planted in the garden. Jessica affirms both parts of the question and this is a sign for the teacher that something is problematic, i.e. that Jessica has probably not understood her question. She thus asks again by using only an interrogative pronoun (line 37). Instead of supplying an answer, Jessica continues with her story (line 38). The teacher then delivers the same form of yes/no question as in her prior turns (lines 32 and 34--35), but in a simpler form (lines 39--40). Jessica answers that the flowers were for the garden. The teacher takes up her answer and repeats it for Jessica in a complete form (lines 44--45).

Example 6 documents as well how the teacher uses questions to elicit information already known. It will also show how the change of the structure of the questions might confuse the child.

Example 6. Alma's storytelling.

Alm: Alma; Tea: Teacher.

64 Alm: *looks at the drawing and points at it
 *da ist tante Namka
 *there is aunt Namka
 65 (1.2)
 *points with a pen at the scenery of A's drawing
 66 Tea: *und wer ist da noch tante Namka ↑und (.)
 *and who is there as well aunt Namka ↑and (.)
 67 Alm: ich weiss nicht (2.0)
 I don't know (2.0)
 68 der mama hat vergessn zu schrie:ben
 mommy has forgotten to write
 69 (2.3)
 *points at the drawing
 70 Tea: wie heisst denn der mann von *tante (.) Meri:ma
 how is the husband of *aunt (.) Meri:ma called
 71 Alm: ich weiss nicht der mama hat gar nix vergessen zu
 I don't know mommy has nothing forgotten to
 72: schr[ieben
 wri[te
 73 Tea: [on kel onkl
 [un cle uncle
 74 Alm: ne::
 no::pe
 75 Tea: onkel Fa:di:l
 uncle Fa:di:l
 76 Alm: ((smiles)) onkel Fadil ((singing))
 uncle Fadil
 77 Tea: °aha° der mann von tante Me:↑rima
 °aha° the husband of aunt Me:↑rima
 78 heisst onkel Fa:dil
 is called uncle Fa:dil
 79 Alm: ja::
 yes::
 80 Tea: ↑ja:↓
 ↑yes:↓

Alma tries to show where in her drawing the aunt she mentioned before is. The teacher uses a wh-question as she wants to know who else is in the drawing besides aunt Namka. She involves the information which was already given into her question and finishes it with an *and* thus Alma can add the missing person (line 66). Alma tries to explain that her mother has not provided this information in the *Tagebuch-Blatt*. The teacher knows that Alma can supply the information and asks again, this time by giving a hint about which name she wants to know (line 70). Alma tries to explain the lack of information anew. The teacher has changed the theme in her second question from initially wanting to know *who is to be seen in the drawing* to *what is the name of aunt Merima's husband*. Evidently by doing so, the teacher tries to facilitate the process of answering for Alma. Alma is confronted with different questions she cannot answer. However, the teacher seems to notice Alma's difficulties as she does not ask further, but delivers the name she wanted to know (line 75). Alma shows recognition by smiling and repeats the name of her uncle. It seems that she is more familiar with the word *uncle*, than *husband of*, which the teacher used in her question. Finally the teacher provides the answer she was demanding in a whole correct sentence that is affirmed by Alma.

In the last example the teacher uses a wh-question to elicit a missing verb, does not succeed and finally provides a candidate answer.

Example 7. Jessica's storytelling.

Tea: Teacher; Ahm: Ahmed; Jes: Jessica.

267 Jes: **Gicola auc schuhe neue sch[uhe AUH**
Nicolas new shoes too shoes too

268 Ahm: [MA-
269 (0.6)

270 Tea: mh h₁m. (0.4) Ahmed bitte.
mh h₁m. (0.4) Ahmed please.
271 (0.5)

272 Ahm: **un:d (.) Nicola hat(0.2)brau schuhe.**
and (.) Nicolas has (0.2) brown shoes.
273 (1.5)

274 Tea: was braune [schuhe
what brown [shoes

275 Jes: [stiefeln,=
[boots,=
276 Tea: =was braune schuhe.=was,
=what brown shoes.=what,
277 (0.3)

278 Jes: Gicolas
Nicolas
279 (0.2)

280 Ahm: d[a:r.
(unclear)

281 Jes: [Gico[la-
[Nico[las=

282 Tea: [ja. (0.5) <habt ihr die> (.) >gep₁ut[zt<?
[yes (0.5) <have you the> (.) >clea₁n[ed<?
283 die sch-
the shoes=

284 Jes: [ich au:.
[me too:.

285 Ahm: [nein.
[no.

286 Tea: [habt ihr die schuhe (.) gep₁utzt?=
[have you cleaned(.) the shoes?=
287 Ahm: =nei[n. kaufe.
=n[o. buy.

288 Tea: [(unclear) ah hah. (0.6) a(h):l(h)so(hh). (0.6)
ah hah. (0.6) so: (0.6)

289 Nicol[₁as
Nicol[₁as

290 Jes: [las
291 (0.2)

292 Tea: h[at (.) n[eu₁e (0.5) b[r:au₁e (.) [schuh₁e
h[as (.) n[₁ew (0.5) b[r:ow₁n (.) [shoe₁s
293 Jes: [hat (.) [eue [brau [schuah.
has (.) [new [brown [shoes.
294 (0.2)

295 Tea: [ge-
[bou-

296 Jes: [Mascha a[u
[Marcel t[oo

297 Tea: [ge- k₁a[u:ft. [gekau:ft.=>.hh< Marc₁el
[bo- [u:ght [bou:ght.=>.hh< Marc₁el
298 Jes: [auft. [g'kauf
[bought. [bought

Jessica tells about her brother who also got new shoes. Ahmed overlaps her and gets to tell further after an invitation by the teacher (lines 267--270). Jessica and Ahmed use auxiliary verbs in their turns that lack a main verb. Jessica tells the class about persons and shoes, but it is unclear what happened with these shoes. The teacher comes in, takes up on Ahmed's turn

and tries twice to inquire about those shoes. As she does not get an answer she delivers a candidate answer which is negated by Ahmed, who also provides the right answer. She acknowledges his answer and summarizes Jessica's story which Jessica recognizes as request to repeat after her. The pacing the teacher uses for her sentences and the small pauses between the words signal to Jessica that it is a repeat request. This example thus documents how the teacher uses questions after incomplete turns to highlight the problem in productions. The structure of her questions did not lead to an answer and therefore she supplied a candidate answer. The candidate answer led to a correct answer, which was the turning point to initiate an implicit repeat request for Jessica. Jessica immediately reacted to this request and repeated after the teacher.

The examples in this section demonstrated that the teacher uses questions to either stimulate the children's active language production or to highlight ungrammatical or incomplete productions. Wh- and yes/no -questions were used for that purpose. Questions of the latter type were seen to be answered mainly non-verbally by the children, who seemed to be compensating non-understanding by nodding. The teacher's awareness of this fact and her pedagogic purpose to make the children talk correctly, might be a reason why she uses wh-questions. With the aim to make wh-questions accessible more easily for the children she could be seen to provide candidate answers or hints. In cases where the structure of the teacher's questions varied too much, the children got troubled and could not answer.

4. Conclusion

This paper has discussed the language practices used by teachers in the ci-classroom during children's storytelling. Two practices appeared in this setting: repeat requests and questions. Repeat requests are used in a direct or an implicit form and aim at asking the child for the repetition of a sentence or word. Direct repeat requests have the form of an imperative when directed at the telling child. They can be either followed by the child's repetition or, when that is not delivered by the child, a provision of an answer to be repeated from the teacher. When the teacher wishes to check the attention of the listening children, modal verbs were used for the request. The use of modal verbs reflects the question of ability the child has to re-produce, not only in terms of attention, but essentially in terms of listening. Repeat requests appear after ungrammatical turns of a child in terms of semantics, grammar and pronunciation. They help to provide the correct form of a sentence or word so that the child can see the difference to his/her own turn, but also hear and memorize the correct form. Repeat requests are part of the common ci-rehabilitation and are familiar to the children, as demonstrated by the fact that the children usually react immediately and appropriately to them. This applies to implicit repeat requests as well, where the intonational features, the pacing and the stressing of syllables the teacher uses, are a signal to the child that a repetition is expected. Tykkyläinen's (2009) study of speech and language therapy showed that changing speed and pacing, lengthening words and sounds, stress and pausing are practices used in therapy.

Questions are used to provoke the child's active language production and to highlight a problem in the child's turn. For this purpose mainly wh- and yes/no- questions were used. Wh-questions seemed to be a bigger challenge as they demand the production of larger sentences. Especially when they aimed at highlighting a problem in the child's production, more turns were required until the child understood the purpose. In such cases they were turned into candidate answers in order to become more accessible. When the structure of the teacher's questions was too complex or varied too much, the children appeared to be troubled. Nonverbal answers to yes/no-questions were not considered as sufficient by the

teacher, if the child therewith affirmed contradicting facts. In general yes/no questions were used less by the teacher.

The practices employed by the teacher, as shown in this paper, are taken from different interactional environments. Questions are more likely to occur in ordinary conversations. In the setting of a school they are instrumentalized for specific pedagogical purposes. Within the storytelling activity they serve to make the children deliver oral language in a proper form. In most cases the teacher had the information already, but nevertheless aimed at a correct production by the child. Thus, the teacher uses the interactional environment of ordinary conversation (storytelling) to employ pedagogical purposes. This interconnection was not always clear to the children, who appeared to focus more on the interactional environment of everyday conversation and designed their turns in accordance to the interactional needs of that environment. Based on the investigation of the teacher's turns as well as on those of the children it can be claimed, that the children's stories are understandable, in terms of content. Hence it is justifiable that the children did not immediately comprehend when the teacher was working on their telling, as for them and for others it made sense.

Besides the educational purposes that would be relevant for children of that age, the teacher also applies auditory-verbal therapy in her actions, that have the format of repeat requests. The children are confronted not only with practices, structures and resources of ordinary conversation (storytelling), but also with the practices used in two further different institutional settings, namely the school and the ci-rehabilitation. Drew and Heritage (1992:43) state that "many kinds of institutional encounters are characteristically organized into a standard 'shape' or order of 'phases'". Taking this into consideration a clearer distinction between the use of the discussed practices and their environments could be more helpful for the children. Children with ci might have less difficulties when confronted with clear instructions e.g. in the form of repeat request, as it is more evident to them what they are supposed to do.

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Paper three:

Eleni Mourtou (forthcoming) The use of German *aha* in the classroom: Teachers' demonstration and instrumentalization of *aha* as a response to the storytelling of children with cochlear implants. Manuscript submitted to *Applied Linguistics and Professional Practice*. Under review.

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Abstract

Response particles serve a variety of interactional purposes and are as such an essential element of conversations. One of the purposes response particles are used for is to index a change of state, that is to the display that the speaker has undergone a shift from being un-informed to being informed.

In this paper I investigate one specific type of response particle, the German change-of-state token 'aha' and how it is used by a teacher in the classroom with prelingually deafened and cochlear-implanted children. 'Aha' has been documented to display surprise, thus indicating that an utterance has informed the speaker and marking an epistemic shift from that of -K (not knowing) to + K (knowing) of the producer.

Based on 60 storytellings of children with cochlear implants I show that the teacher in fact uses 'aha' for two purposes: firstly, as a demonstration of news receipt after unknown information within the story and secondly, as a tool to acknowledge the child's effort to improve his/her language production.

I conclude with a summary of the findings, discussing the implications the teacher's differentiated use of 'aha' may have for the children and their acquisition of interactional competence.

KEYWORDS: COCHLEAR IMPLANTS; RESPONSE PARTICLES; CHANGE-OF-STATE
TOKENS; LANGUAGE SOCIALIZATION; COCHLEAR-IMPLANTED
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The use of German aha in the classroom: Teachers' demonstration and instrumentalization of aha as a response to the storytelling of children with cochlear implants

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1. Introduction

Response particles are, despite their small size, an essential element of conversations, as they serve as a listener's device for demonstrating active listening and understanding, and thus help to establish the continuity of conversation. Response particles indicate that and how a prior turn has been understood and particularly, what stance is taken towards the utterance produced in the prior turn (Sorjonen 2001, Gardner 2002, Moore and Maynard 2002). Response particles can, among other things, serve to display understanding or non-understanding (Schegloff et al. 1977), as continuers to further the ongoing conversation by signaling or 'claiming' understanding (Schegloff 1982, Goodwin 1986), as markers to show the speaker's shift from being un-informed to informed (Heritage 1984, Golato and Betz 2008), as instruments to acknowledge an utterance or show agreement with (Gardner 2007, Golato and Fagyal 2008), as devices to re-establish affiliation (Emmertsen and Heinemann 2010) and to indicate epistemic stance (Gardner 2002, 2007).

Because of the different interactional roles served by response particles, speakers who do not use them appropriately, overuse them or fail to use them at all, might cause interactional trouble, since the co-participant might assume that the listener has not been paying attention,

has not understood or does not agree with the contents of the delivered speech, such misalignment eventually leading to a halt in the progression of interaction. For most people, the use of response particles in interactionally appropriate ways is entirely unproblematic. Discursive and grammatical phenomena such as response particles are features of interaction and language that are only partly in the awareness of a native speaker (Silverstein 1976) and are more or less automatically acquired during the process of language socialization, where speakers learn to use language in socially adequate ways (Ochs and Schieffelin 1984, Rymes 2008). Whilst the acquisition and use of response particles typically poses no problems for native speakers of a language, particular groups of language users are not necessarily socialized into using response particles adequately. Recent studies have thus directed their attention to the use of response particles in the context of second language acquisition (Yoshimi 2001, Fung and Carter 2007). Opposite to the ‘normal’ language socialization as it happens in the social and language context of a native speaker it can be assumed, that in the second language classroom only some aspects of a culture and language are taken into consideration. Thus, the foreign language learner might not be encountered with the whole spectrum of the language as a native speaker of the same language during his or her language socialization (Kasper 1989).

Indeed, there is evidence to suggest that second language learners do not use response particles as frequent or as appropriately as native speakers of a language do and that this may lead to second language learners being evaluated negatively or as incompetent speakers. Sawyer (1992) and Shibahara (2002) for example have shown that speakers learning Japanese as a second language use response particles less both in terms of frequency and array. Likewise, Spanish learners of English do not easily acquire the use of ‘well’, which results in native speakers of English evaluating them negatively (Iglesias Moreno 2001). For second language learners of German, Liedke (1996) shows specifically that response particles are

usually not taught in the second language classroom and that even learners who have otherwise acquired a good to very good language level, will be regarded as incompetent users of the German language because they fail to use response particles when involved in a conversation with a native speaker.

In this paper, I consider another group of language learners who, like second language learners, might face difficulties acquiring and using response particles adequately in their interactions with others: Children who were prelingually deafened and have been bilateral provided with cochlear implants. Unlike common hearing aids, a cochlear implant (ci) does not amplify the incoming sounds, but instead compensates for damaged or non-working hair cells in the inner ear by stimulating the auditory nerve directly. The indication for receiving a ci in these children is a congenital sensorineural hearing loss. This type of hearing loss is characterized by a non-working cochlea, respectively the inner ear. The function of the cochlea in hearing is -besides the amplification of sounds- the frequency-resolution of the same (Govaerts et al. 2002). As the function of frequency resolving is essential for the development of speech and language and as a ci can only partially restore frequency resolution, these children have to learn to discriminate and identify language, in this case their native language. In contrast to hearing children who begin to react to sounds already before birth (Thiel 2000), children with a ci need to start to orchestrate the world of sounds at a later point and with the help of professionals. Prelingually deafened children with cis must be taught to actively pay attention to sounds, as they are not accustomed to rely on their sound perceptions (Beiter and Estabrooks 2006). Thus children with a ci need to learn to identify, discriminate and understand the perceived sounds. Practically this means that a big part of language acquisition for children with ci, occurs through and alongside teaching, therapy and imitation, rather than through language socialization. The language the children are provided with by professionals such as teachers and therapists is thus the language or 'mode' that the

professional thinks best of for working with these children. Rehabilitation programs and school curricula naturally tend to focus on the improvement of the children's pronunciation and their ability to use expressive vocabulary, rather than on the appropriate use of response particles. Response particles are however frequently employed by teachers when interacting with the children in the classroom and though no explanation is given for how different response tokens are employed, the teacher in these situations can be said to serve as a 'communication model' for the children by demonstrating how response tokens are used.

Using Conversation Analysis, I, in this paper, investigate the use of one specific type of response particle, the German change-of-state token *aha* and how its use is demonstrated or modeled by the teacher, when responding to storytelling that is produced by children with a ci, as part of a classroom activity. Whilst change-of-state tokens ultimately are employed to index that information provided in the prior turn has caused a cognitive shift in its producer, whose status has now changed from uninformed or misinformed to newly informed (Heritage 1984), the current study will show that the teacher uses *aha* for two particular aims within the storytelling activity. First, the teacher uses *aha* to demonstrate or model for the children how a listener to a story should act, when receiving new and important information concerning the story. Whilst this use or demonstration of use mirrors the function of *aha* as a change-of-state token that registers the receipt of new knowledge, the teacher in addition instrumentalizes *aha* to acknowledge a child's successful production of words or sentences that in essence provide information already given and known.

The paper is organized as follows: I first provide a brief description of the challenges faced by children with cis – and their teachers - when learning spoken language. I then describe the overall activity of storytelling in which the teacher demonstrates the use of *aha*, as this activity is employed as a pedagogical tool in German schools in general and in the classroom

with cochlear-implemented children more specifically. Before turning to illustrate the teacher's two different usages of *aha*, I discuss the interactional function of change-of-state tokens more generally. I conclude with a summary and discussion of the findings, in terms of the implications the teacher's differentiated use of *aha* may have for children with ci and their acquisition of interactional competence.

2. Data and background

The current study is based on videorecorded interactions between a teacher and her pupils in a German school for hearing impaired children and young adolescents, which serves primarily as school for children with cochlear implants. Specifically, the paper focuses on how the teacher demonstrates the use of the change-of-state token *aha* to the pupils during a classroom activity known as storytelling. A total of 60 storytellings, transcribed according to Gail Jefferson (1984) and analyzed with Conversation Analysis form the basis for this paper.

2.1 Cochlear implants in young children. Post-operational rehabilitation and language therapy

The eight children participating in the storytelling activity are all eight years old and visit the first grade of a German school for hearing impaired children. All the children were prelingually deafened and had received their cochlear implants before the age of two. A cochlear implant (ci) is an electronic device which is surgically implanted into the cochlea. It

is recommended for individuals with severe and irreversible hearing loss and a functional hearing nerve. The implant also consists of a part which is worn behind the ear. The microphone of the outer part picks up sounds as electrical impulses and transmits them subcutaneously via a magnet to the implant. The electrical impulses stimulate the hearing nerve and lead the stimuli to the brain.

In Germany the occurrence of newborn hearing loss is stated to be 1-2/1000 in healthy newborns and 50-100/1000 in newborns under risk (Rasinski et al. 2007). Newborn children with profound to severe hearing loss can nowadays receive a ci at a very early age due to the improved medical means of diagnostics, such as the newborn hearing screening (Fortnum et al. 2001). An early implantation is considered essential for a good linguistic performance, as studies have shown that it was best in children implanted before the age of 5 years (Tye-Murray et al. 1995, Fryauf-Bertschy et al. 1997). The process of implantation is followed by an intensive language and speech therapy, which is either provided by the implanting clinic or in special rehabilitation centers. The aim of rehabilitation is to help the implanted child benefit most from the ci by learning to listen to incoming sounds and linking them to a word/meaning. Furthermore children with ci also need to learn to use their voice in communication (Fortnum et al. 2001). During the course of ci-rehabilitation the emphasis moves from sound perception on to speech, especially for children with ci that visit a school. Here the children are supposed to put the learned skills into practice in spoken conversation. Children with ci have been shown to have difficulties with case and gender marked articles or with grammatical markings in general of which the perceptual salience is low (Szagun 2002). In the environment of a school these difficulties can be better observed and focused on, as the children have to produce active language. As every child with ci might encounter different challenges when using or producing language, teachers are trained to accompany and support them by applying certain practices to improve their language. In schools, teachers furthermore

act as communication models to give the children access to the interactional issues they have to learn to become competent speakers. With the aim of screening the children's language problems and further work on them, but also to demonstrate how communication functions, the teachers in this paper use the storytelling activity as a platform to apply language therapy but also to teach social skills.

2.2 The *Morgenkreis* in German schools and in the ci-classroom

The *Morgenkreis* 'morning-circle' is a daily practiced activity in many German elementary schools and consists of children taking turns telling a story of something they have experienced to each other and the teacher. As such it is documented to follow 'language-didactic' goals (Morek 2012: 237). The activity is a product of the German educational progressivism in the 80's, which tried to newly conceptualize the teacher-student relation in favor of the student (Röhrs 1980). Hence, the activity is seen as the student's 'free talk', which is journalized by the teacher. Studies on the *Morgenkreis* have described it as an activity that provides an abundance of learning possibilities as it bears a high potential for performing actions and communication (Heinzel 2000, Purmann 2001). Additionally, it is considered as an adequate setting for exchanging information and to do problem solving while interacting with others by sharing daily life-experiences. As an activity the storytelling is structured through clear instructions and rituals, where the child tells and the teacher comments.

The *Morgenkreis*-storytelling has also been adapted in many German schools for hearing impaired children. One of those schools is the school where this study has been undertaken.

Besides the aims described above, the *Morgenkreis*-storytelling of the children with ci is an attempt to make the children use active language, help them to improve their language development and to assist them in building communicative skills. During the activity, each child gives an account of his/her activities either of the prior weekend or the prior day. The day before the storytelling takes place, the teacher provides each child with a diary-sheet. In the upper part of the diary-sheet is a frame, where the children draw their experienced events. Below the frame are lines, where the children's parents supply a written report of their child's activity. Prior to the beginning of the storytelling, the child who is going to tell shows the diary-sheet to the other children and the teacher. The children in the class sit in a semi circle; the teacher and the child who tells his/her story sits in the front, facing the rest of the children. Hence, every child can see and possibly also lip-read each other. For the teacher, the storytelling is a tool to work on the particular child's language. The teacher performs a number of actions relevant to the telling. These include displays about the nature and extent of her orientation to and understanding of the story, as well as displays about the kind of language problems a child might have within the telling. Above all the teacher is a communication model who displays to each child how communication is supposed to be done and how a listener to a story should act. It is this latter aspect of the teacher's actions that will be focused on in the remainder of this paper.

3. Change-of-state tokens: The use of German *Aha* in the ci-classroom

Among the large group of response tokens available to speakers, change-of-state tokens are those that are employed to display that a cognitive change has occurred within the producer, for instance in terms of "his or her locally current state of knowledge, information, orientation

or awareness” (Heritage 1984: 299). The best described change-of-state token is probably the English ‘Oh’ (Heritage 1984, Couper-Kuhlen 2009, Schiffrin 1987), which can be used in a variety of contexts to accomplish different kinds of actions, which all largely are constituted by the display of a change of state. When used in response to information of some kind, ‘Oh’ systematically “registers, or at least enacts the registration of, a change in its producer’s state of knowledge or information” (Heritage 1998: 291). ‘Oh’ thus also functions as a sequence-closing third (Schegloff, 2007), because “the “change of state” proposal carried by “oh” indexes an epistemic shift concerning the K– position previously adopted by the questioner” (Heritage 2012: 34), so that the ‘oh’ producer now knows something he or she did not know or knew incorrectly, before. The potential universal presence of change-of-state tokens is indicated by their presence in languages such as Danish (Emmertsen and Heinemann 2010), Finnish (Koivisto 2013), German (Imo 2009, Golato 2010), Greek (Georgakopoulou and Goutsos 1998, Archakis 2001), Japanese (Onodera 2004) and Mandarin Chinese (Wu 1997, Liu 2002). For German in particular, it has been documented that there are two major groups of linguistic items that might serve as change-of-state tokens: particles and particle combinations like *ach so*, *oh* and *aha*, and expressions with their own semantic meaning i.e. adverbs like *echt* ‘really’, *wirklich* ‘really’, *ehrlich*, ‘honestly’ (Imo 2009). The work of particles seems to be clearly distributed in German, so that *oh* serves to display an emotional change of state (Weinrich 2005, Golato 2012); *ach so* indicates realization or understanding after repair sequences (Golato and Betz 2008, Golato 2010), whereas *aha* is documented to display surprise, thus indicating that the surprising information has at the same time changed the state of information or that the lack of understanding of prior turns has been removed (Weinrich 2005: 838). *Aha*, like English ‘oh’, when produced in receipt of information thus appears to be dedicated to registering that the producer has undergone an epistemic shift from –K (not knowing) to +K (knowing).

In the following, I will consider how the teacher in the context of storytellings by cochlear-implanted children uses *aha* for two purposes: firstly to display surprise and thus a change of her current state of information after receipt of unknown information and secondly, as a tool to acknowledge a child's effort to improve his/her language production.

3.1 *Aha* used as a demonstrative change-of-state token

The examples in this section will show how the teacher uses *aha* after having received information within the child's story that was not known to her or the other, listening, children, beforehand. In that sense the examples demonstrate the ordinary use of the change-of-state token as used in German conversations. The teacher though, uses *aha* in a clearly demonstrative way in both her embodied actions and verbal contributions. Hence, the teacher serves as communication model and demonstrates to the children how a story-recipient should behave and act. The teacher will be observed to underline non-verbally the importance of the given information and to acknowledge comments to the story given by other children in the class. In these cases the teacher will be seen to react on behalf of the listening child i.e. doing as if she was the listener by demonstrating to the children how a listener should act.

In the first example, Sumeya has been telling a story that involves a girl called Victoria. In line 112, the teacher follows up on this aspect of the story by inquiring whether the girl is someone Sumeya has recently met, thus pursuing information that has neither been provided in the earlier turns, nor is available from the diary-sheet.

Example 1. Sumeya's storytelling

Tea: teacher, Sum:Sumeya

- 112 Tea: >Hm- hm? .hhhh Und(0.6)hasst du das mädchen(0.1)<neu>kennengelernt,
>Hm- hm? .hhhh And(0.6)have you the girl (0.1) <new> met,
>Hm- hm? .hhhh And (0.6) have you met, the girl (0.1) <recently>,
113 Sum: ((nods))
114: (1.0)
115 Tea: N↑EU↓
N↑EW↓
recently
116 Sum: ((nods))
*looks from Sumeya to the other children
117 Tea: *A h↑a.
118 (0.7)
119 Tea: Sumeya, (0.4)hat ein=<neues> (0.2)<m↑ädchen> (0.3) >kennen<gelernt.
Sumeya, (0.4)has a= <new> (0.2) <g↑irl> (0.3) >met<.
Sumeya, (0.4) has >met< (0.3) a =<new> (0.2) <g↑irl>.
120 (0.7)
121 Tea: >Eine kleine<(0.1)f:reundin?
>a little<(0.1) g:irlfriend?
122 Sum: ((nods))
*looks at the children again
123 Tea: *acht jahre[↑alt,
*eight years[↑old,

The teacher's inquiry is *and*-prefaced, thus indicating its logical nextness within the overall sequence of events (Heritage and Sorjonen 1994) and it is biased towards an answer confirming that Sumeya has only recently met Victoria. In line 113, Sumeya produces the preferred response through an affirming nod, but the teacher pursues a more elaborate response by delivering the word *neu* 'new' again, in isolation and with emphasis (line 115). Children, students and patients have been reported to often use compensation strategies to

cover their ignorance (Higgins 1980). Specifically affirmative actions like nodding have been described as an often used strategy in hearing impaired individuals, in situations when they have not entirely understood spoken sentences (Stedt and Rosenberg 1987, Farrugia 1989). The teacher who knows this pursues by emphasizing *neu* ‘new’ to make it clearer what is the important element in her inquiry. Furthermore she is also making another slot available for Sumeya to confirm. She is herewith targeting the type of relation to Victoria, e.g. wants to make sure, that Victoria is a ‘new’ friend of Sumeya. When Sumeya nods again and thus can be understood to confirm this particular relation with Victoria, the teacher now accepts that her inquiry has been understood and produces an *aha*, thus displaying a change of state, i.e. that she has now been informed where she was previously uninformed. The teacher acknowledges and values this part of Sumeya’s story in shifting her gaze from her to the class and retelling it (lines 119-123). Within her retelling the teacher repeats all facts about Sumeya’s friend that were provided so far. What the teacher does further evidences the change of state she has undergone and her turning to the other children and retelling this demonstrates to them how a listener should adequately treat some information as noticeable new. The pause after the *aha*, the shift of gaze and the retelling of a part of Sumeya’s story underline the importance the teacher gives the new information.

The teacher may also indicate a change of state in her own and other’s knowledge base, when someone other than the child engaged in the storytelling provides information. This is the case in the following example, where Sumeya has been telling about the game hide-and-seek that she played with her friend Victoria. During the telling, one of the other children, Jessica, has several times tried to comment on the telling. In line 175, when Sumeya’s story has reached a possible conclusion, the teacher addresses Jessica to tell what she has to share concerning the story, indicating this shift in activity by producing *so* (Barske and Golato 2010).

Tea: teacher, Jes: Jessica

In response to the teacher's prompt, Jessica informs the others that she has also played hide-and-seek (line 181). She does so by imitating or "doing playing" the game by counting to three, while covering her eyes (line 181). In response to this new information, the teacher produces an *aha* (line 182), simultaneously shifting her gaze and torqueing (Schegloff, 1998) the upper part of her body from Jessica to the original story-teller, Sumeya. The teacher thus seems to demonstrate to Sumeya how Jessica's information could be received, acting as if on behalf of Sumeya by signaling that the comment was important information.

The final example of how the teacher demonstrates for the children how information can be responded to with a change-of-state token such as *aha* comes from a context in which the child telling the story provides information that is contrary to what the teacher (thought she) knew before. Here, Alma has been telling a story about a birthday present she got from her friend Jessica. In her telling, Alma used some problematic prepositions and it is thus apparently not evident to the teacher whom received what. As Alma has drawn a cat on her diary-sheet, the teacher assumes that the cat is called Jessica and asks Alma to confirm this (line 37). Alma negates that the cat is called Jessica and after an interjection that displays surprise delivered by the teacher (line 40) she clarifies that it was a present (line 41). The teacher then takes up the item *present* and inquires about that, stressing the preposition *von* ‘from’ to indicate that this aspect is still unclear to her (line 42). When Alma affirms the question in line 43 with a *ja* ‘yes’, the teacher has thus been informed of something contrary to what she (thought she) knew earlier, namely the identity of Jessica as a gift-giver, not as a cat.

Example 3. Alma’s storytelling.

Tea:teacher, Alm: Alma

- 37 Tea: **heisst die [katze Jessica?**
 called the [cat Jessica?
 is the cat [called Jessica?
- 38 (1:08)
- 39 Alm: **nee::**
 no::pe
 no
- 40 Tea: hm↑
- 41 Alm: **ein GESCHENKE**
 a presents

- 42 Tea: **du hast (.) von Jessica ein geschenk bekommen**
 you have (.) from Jessica a present received
you have (.) received a present from Jessica
- 43 Alm: **ja:**
yes
- 44 Tea: **↑aha↓ (.) ist Jessica die tochter von merim tante merima?**
↑aha↓ (.) is Jessica the daughter of merim aunt merima?

The examples in this section showed how *aha* is used to display a change of state, when the teacher received information within the telling that was unknown beforehand. In that sense *aha* is used in places where some new information can be added to the current state of information. Though *aha* is here used as it is ‘supposed to’, i.e. to mark genuine exchanges of knowledge and information, the teacher is using multimodal resources like gestures, body posture, shift of gaze and intonational features to mark how to be an attentive listener and to demonstrate not just listening, but understanding i.e. the ability to distinguish between new (or contrasting) information or segments of a story.

3.2 *Aha* as an instrumentalized change-of-state token

This section will provide examples where the teacher uses *aha* as instrumentalized change-of-state token. By using *aha* the teacher either evaluates the effort of a child to provide relevant information, acknowledges a child’s attention after having done an attention check or shows receipt of a better language production by the child.

In the following example we find two instances of such ‘instrumentalized’ *ahas*, first used by the teacher to acknowledge the effort of the child telling the story in producing a more coherent or understandable turn-at-talk, then in receipting another, listening child’s

demonstration of understanding of what has been told. Here, Jessica is telling a story about her father and her buying flowers and a flower cask (line 05). After Ahmed's comment on Jessica's story (line 07) the teacher inquires whether Jessica and her father bought flowers (line 08), stressing the word 'bought' and thus indicating that parts of Jessica's initial turn was perhaps not as clear as could be. Jessica confirms by nodding and the teacher produces a post-response pursuit (Jefferson 1981) in the form of *ja* 'yes' with strongly rising intonation, after which Jessica nods again (line 11). The teacher then requests Jessica to repeat in line 12 and again in line 14. Jessica's repeat in line 15 is, compared to her initial production in line 05, if not grammatically correct, then at least more grammatically detailed. She adds the personal pronoun *meine* 'my' to indicate that the father in question is her father and the indefinite article *ein* 'a' to indicate that they bought one flower cask. Though Jessica's first turn clearly communicated the gist of the story, i.e. that she and her father bought flowers/flower casks, her second production is grammatically more precise. The teacher honors this new – and better – production with *aha*, which here cannot be understood as a genuine indicator of her having undergone a change of state in receiving new information, as this was already available from Jessica's first production in line 05. Instead, what the teacher here seems to be doing by receipting Jessica's repeat with *aha* is to specifically orient to this turn as if it was a first, thus indicating that the initial production was not sufficient to relay the information and thus to acknowledge Jessica's better and more detailed sentence in line 15.

Example 4. Jessica's storytelling.

Jes: Jessica, Ahm: Ahmed, Meh: Mehmed

05 Jes: **isch war mit papa blu:men (.) fassa (.) °gekauft°**
 I was with my daddy flo:wers (.) cask (.)°bought°
 I °bought° flo:wer (.) casks (.) with my daddy
 06 (1:07)

07 Ahm: <DER DANN> (.) *papa hat wassa blumen
<HE THEN> (.) *daddy has water flowers

08 Tea: has-, habt ihr blumen gekau::ft
has- ,have you(pl) bou::ght flowers

09 Jes: ((nods))

10 Tea: ↑ja?
↑yes?

11 Jes: ((nods))

12 Tea: dann sags noch[mal
then say it ag[ain
*points to her drawing

13 Jes: [*isch wa
[*I was

14 Tea: hmhm↑ dann sags nochmal
hmhm↑ then say it again

15 Jes: °isch° wa(.)<°me meine°> papa(.)pa °pa° ein blu:men °fasch°(.)gekauft
°I° was (.)<°with my°> daddy(.) dad °dy° a flo:wer °cask° (.)bought
°I° was(.)<°with my°> daddy (.) dad °dy° bought a flo:wer °cask°
*turns to the class

16 Tea: ↑aHA↓(0.1)*aehm (.) habt ihr verstanden was Jessica gemacht hat
↑aHA↓(0.1) *aehm (.) have you (pl) understood what Jessica done has
↑aHA↓(0.1) *aehm (.) have you understood what Jessica has done

17 Ahm: ((nods))

18 Meh: ((nods))
*points to Ahmed

19 Tea: ja? *kannst du es ↑sagen
yes? *can you it ↑say
yes? *can you ↑say it

20 Ahm: die (.) deine papa blume dekauft
the (.) your daddy flowers bought
the (.) her daddy flowers bought

*points at Jessica

21 Tea: **↑aHA:↓also(.)***dann sagst du es nochmal=ich sags dir mal vor ich ha:be
 ↑aHA:↓ so(.)**then you say it again=I tell you the answer first I ha:ve*

Directly after the *aha* in line 16, the teacher directs her attention to Ahmed and Mehmed. She inquires whether they have understood what Jessica has told and as in other examples they confirm by nodding, thus claiming, but not demonstrating their understanding (Sacks 1992). Consequently, the teacher selects Ahmed to repeat what Jessica said, to check his understanding (and attention) (line 19). In his turn Ahmed repeats the core of Jessica's story, namely that she bought flowers with her father. The teacher delivers *aha* after his turn, again not to show a change of state, but to acknowledge his attention and understanding and redirects her attention back to Jessica.

The last example will also show how the teacher's *aha* is used to acknowledge the child's effort to deliver information that the teacher already had.

Example 5. Alma's storytelling.

Alm: Alma, Tea: teacher

*looks at the drawing and points at it

64 Alm: ***da ist tante namka**
 *there is aunt namka

65 (1.2)
 *points with a pen at Alma's drawing

66 Tea: ***und wer ist da noch tante namka ↑und (.)**
 *and who is there still aunt namka↑and (.)

*and who is there as well aunt namka↑ and (.)

67 Alm: **ich weiss nicht (2.0) der mama hat vergessn zu schrie:ben**
 I know not (2.0) the mommy has forgotten to write
 I do not know (2.0) mommy has forgotten to write (it)

68 (2.3)

*points at the drawing

69 Tea: **wie heisst denn der mann von *tante (.) meri:ma**
 how called adv the man of *aunt (.) meri:ma
 how is the husband of *aunt (.) meri:ma called

70 Alm: **ich weiss nicht der mama hat gar nix vergessen zu schr[ieben**
 I know not the mommy has adv nothing forgotten to wri[te
 I do not know mommy has forgotten to wri[te (it)

72 Tea: **[on kel onkl**
[un cle uncle

73 Alm: **ne::**
 no::

74 Tea: **onkel fa:di:l**
 uncle fa:di:l
 *smiles

75 Alm: ***onkel fadil ((singing the name))**
 *uncle fadil

76 Tea: **°aha° der mann von tante me:↑rima heisst onkel fa:dil**
 °aha° the man of tante me:↑rima called uncle fa:dil
 °aha° the husband of aunt me:↑rima is called uncle fa:dil

77 Alm: **ja::**
 yes::

78 Tea: **↑ja:↓**
 ↑yes:↓

Alma tells about a visit to her aunt Namka, where all her family gathered. As Alma used her diary-sheet to show the people that have been at aunt Namka's, the teacher takes up the turn and investigates about who else is to be seen in Alma's drawing (line 66). Alma cannot

provide the answer and accounts for this by explaining that her mother has failed to write this information. The teacher then tries to ask more detailed about a particular person, namely the husband of aunt Merima (line 69). Alma again claims not to have this knowledge, with the same account as before. What the teacher does next reveals that she in fact had the information all along, i.e. that she knows the name of Alma's uncle (either from earlier storytellings or from the current diary-sheet). In line 74, the teacher thus provides the answer for Alma (line 74), who repeats it in line 75. It is thus in the context of having herself provided the information first, that the teacher produces an *aha* (here followed by a repetition of the name of Alma's uncle).

The above examples demonstrated how the teacher delivered an *aha* after turns that displayed information she had beforehand. So *aha* was not used to indicate a state of change in the teacher's information state, but to acknowledge the child's effort to provide adequate and appropriate information relevant to the story, or to acknowledge a more coherent or understandable production. Furthermore *aha* was used after an attention check directed at a listening child in the class if he/she succeeded in demonstrating his/her attention.

As the course of the stories was sometimes interrupted or disturbed by comments of the children we can assume, that the teacher's *aha* is further acknowledging the fact that the children are keeping track of the facts told within the story. By using *aha* the teacher seems to honor the fact that the children are still concentrated enough to deliver the facts that are important.

4. Conclusion

This paper investigated the German change-of-state token *aha*, as it was used by teachers during the storytelling of children with a ci. Within the storytelling of the children *aha* was

placed in different sequential positions, following different purposes. In cases where the information or item provided by the telling child was not known yet to the teacher or the other children, *aha* was used to mark a shift of knowledge as it would happen in ordinary conversation. The teacher demonstrated this change of state not merely by using *aha*, but also by utilizing multimodal resources like changes in her body posture, shifting of gaze and the use of intonational features to also acoustically make the knowledge shift salient to the children. The receipt of new information could also be followed by longer pauses, which briefly stopped the activity and functioned as sign-posts indicating that something important within the telling has happened. In that way the teacher could visually and acoustically draw the children's attention, who herewith could register the information of value marked by the teacher. With the aim to underline the importance of received information the teacher also retold the event provided by the child who was telling. The teacher acted in that particular way not only to indicate her own shift of knowledge but primarily to model to the children how and when a story-recipient should act in a similar situation. Hence, the teacher uses the storytelling as a platform to help the children acquire the principles of dialogue, modeling the specific purpose of indicating – inter alia- a change of state, thus the children can imitate it in their future interactions.

Aha was, however, also used in positions where the child has not provided new information. In these cases it served to acknowledge the effort of a child to either deliver a more correct sentence or to deliver a word which the teacher considered important for the story. The teacher then either had the information as the child had already supplied it within the telling, or retrieved it from the diary-sheet, expecting the child to supply the item that was mentioned in it. *Aha* thus was instrumentalized in order to evaluate and was oriented only to this particular purpose treating second turns of children as initial turns, in cases the second turn was grammatically better comparing to the first.

The purpose of the *Morgenkreis*-storytelling is to improve the children's communicative skills and to provide a setting for fine-tuning their social skills. The teacher as moderator or observer of the activity helps to navigate the children in acquiring and refining these skills. For language acquisition in general it has been stated that the role of imitation is crucial (Skinner 1938, 1957, Poulson, Nunes and Warren 1989). This accounts particularly for children with a hearing impairment, at stages where their spoken language abilities are minimal (Ronkainen 2011). In this paper the use of *aha* as a genuine change-of-state token after the receipt of new information, is done in orientation to the demonstration and hence imitation of it to/by the children. However, *aha* was also used in the context where knowledge has not been exchanged. Regarding the importance of imitation in hearing impaired children, the fact that the teacher employs *aha* for different purposes, might endanger the children's appropriate use of *aha*. Children of this age and especially children with a hearing impairment are more apt to imitate the forms of communication that they are provided with and memorize the demonstrated use as appropriate. The teacher's instrumentalized use of *aha* might bear the danger of disable the children to use *aha* in an appropriate way in a latter stage of their life and when encountered with speakers that are considered competent in using this particle. The lack of adequate use of discourse particles might label the children as incompetent speakers of their native language.

It would be helpful if the two issues of the storytelling – social activity and language activity- would also be treated with adequate language. Hence, *aha* could be used only in places where it really serves to show receipt of information. In places where the teacher evaluates the child's language it would be a clearer signal to use words, which are known to be used for evaluating such as *good*, *very good*, *well done* etc. Presumably, the teacher follows her own pedagogic curriculum that justifies an instrumentalized use of *aha*, but in her role as a

professional communication model who is responsible for what the children will be provided with to imitate, she could consider to make a clearer distinction of her professional purposes.

Notes

1. Hair cells are receptors of the auditory and vestibular system in the inner ear (Hellbrück 1993).
2. Cochlea: part of the inner ear, which is responsible for the hearing perception (Hellbrück 1993).

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Paper four:

Eleni Mourtou (forthcoming) 'Also'-introduced summaries as an educational tool in the storytelling of German children with cochlear implants. A teacher's response to problems of structure, content and language.

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***'Also'-introduced summaries as an educational tool in the storytelling of German children with cochlear implants.
A teacher's response to problems of structure, content and language.***

1. Introduction

Studies on institutional interactions have shown that structures, practices and resources of ordinary conversation are adapted for institutional talk (Drew and Heritage 1992; Heritage 2004) and that this adaptation emanates from the purposes of particular institutional settings, connected to a system of needs of the individuals interacting within that setting (Ehlich and Rehbein 1994). The expert (e.g., teacher, doctor) operates a range of practices to meet the institutional purposes and the layman (e.g., student, patient) responds to them accordingly. The purpose behind the expert's actions varies according to the institutional context and tends to accomplish distinct conversational actions. These practices play an important role in organizing the structure of an institutional setting as well as the domain of knowledge that is available to the parties involved in the interaction.

In educational settings such as schools, the adaptation of the interaction to the purposes of the school is crucial for the further social and intellectual development of the students. The purpose of educational institutions is the "distribution and acquisition of structured, deepmattered and cross-linked knowledge in specific professional areas" (Morek 2012: 220). This means that "the teacher is the one who mainly imparts knowledge to students, generally corrects students and controls turn-taking and sequence organization and who has greater rights to initiate and close sequences" (Gardner 2013: 593). Hence, classroom interaction bears characteristic features in terms of "distribution of knowledge, access to conversational resources, and to participation in the interaction" (Drew and Heritage 1992: 49). To prepare and educate students suitably, teachers among other things work on the knowledge displayed by the students by mirroring it in the form of summaries or reformulations and by giving it the form it is supposed to have. They are furthermore responsible for keeping up a specific structure that is demanded in an educational setting; thus all students can benefit from the educational and social aims upon which the teachers focus.

The practice frequently employed by experts of making modifications to the layman's verbalization of knowledge, so-called "formulations" (Garfinkel and Sacks 1970; Heritage and Watson 1979), has the aim of adapting the layman's verbalizations to the purpose of the institutional setting and allowing the expert to act in his/her function as an expert (Buttny 1996; Antaki et al. 2005). Formulations can be used to make a summary or gist of the matter that has been presented so far (Heritage and Watson 1979; Raymond 2004) and thus close an action or larger activity (Schegloff 2007). They can serve to incline another person to join the ongoing conversation or, per contra, to deter a person from joining the talk (Pillet-Shore 2008; Sacks 1992). They can also be used for plainly asserting what the recipient said or what the recipient hinted at during the conversation (Schegloff 1996). These formulations can be introduced by discourse markers like 'so' and provide then a conclusion or summary of the prior talk (Steensig and Larsen 2008; Bührig 1996). It is this particular practice of using the discourse marker 'so' (German *also*) as an introduction to a reformulation or summary in the context of German institutional conversation, which will be the focus of this paper.

In this paper I investigate how teachers of a class with children with cochlear implants use *also*-introduced summaries during the context of a storytelling activity. The storytelling as an act of socializing is instrumented for the educational purposes of the teacher, namely the screening and further improvement of the children's language and social skills. As the children are still in the process of developing and improving their language skills after having been in post-operational auditory-verbal therapy, the teacher has to attentively monitor the interaction in the classroom. First, so that all children can, despite their individual hearing difficulties, benefit most from the educational setting and second, to prepare them for the society of a mostly hearing world. The storytelling activity provides the teacher with a platform to work on both these issues. With the aim of keeping up the structure of the activity in a shape that enables all children to talk and listen in socially expected ways, and to help the children with their particular language difficulties, the teacher uses two forms of *also*-summarizing: a) summarizing in third person in case the activity has been interrupted and needs to be restructured, and b) summarizing in second person in case the

particular child who told a story displayed language problems or the content of the child's story was unclear.

Using the framework of Conversation Analysis, I explore in which sequential positions the teacher uses *also*-introduced summaries and discuss the educational purposes behind the teacher's actions. In the following, I will first give a brief introduction to the background of the activity and the children involved as well as to the cochlear implant. I will then show how *also*-introduced summaries are used in the classroom of children with cochlear implants. I will conclude with a summary and discussion of the findings.

2. Data and background

This paper is based on a study conducted in a German school dedicated to the educational and therapeutic needs of children with cochlear implants (ci). The educational staff working with these children consists of teachers of the deaf who receive ongoing training in the form, for instance, of workshops and guidelines. The school curriculum is based on the oral method, thus oral language is the means of teaching and communicating. The eight children in the class have been diagnosed with a severe-to-profound congenital or pre-lingual deafness and have all received their ci before the age of two. At the time the data were collected, the children were eight years old, first graders and bilateral users of ci's. With the aim to monitor and improve the language and social skills of the children, the teachers apply a variety of practices in the classroom. The paper focuses on one of these practices, namely the daily practiced storytelling, which is performed in the larger context of the so-called *Morgenkreis*. The purpose of the activity is twofold, as it includes the acquisition and performance of social skills as well as of those of communication. On the basis of 60 video-recorded storytellings, I investigate how the teacher summarizes parts of a child's story, and to what effect.

2.1. The cochlear implant and children with ci in school

A cochlear implant is a prosthetic electronic device, which is surgically implanted into the inner ear and stimulated by an externally worn processor. Contrary to a conventional hearing instrument a ci neither restores hearing nor amplifies sounds. The ci's capacity lies in partially restoring auditory sensations and "in many cases it can restore speech understanding" (Volanthen and Arndt 2007: 274). Candidates for a ci are individuals with a severe-to-profound hearing loss who do not benefit from a hearing aid, but have a functional hearing nerve, which is required for receiving an implant. Since the 1980s cochlear implants are an approved medical procedure for the treatment of severe hearing loss and the first pediatric cochlear implantations took place from that time on (Eisenberg and House 1982).

Due to the improved means of diagnostics (e.g., the newborn hearing screening (WHO Report 2010)), children born with a severe hearing impairment are likely to receive a ci after being diagnosed, also because it has been shown that their linguistic performance is best when they receive a ci before the age of five (Tye-Murray et al. 1995). According to current statistics 71,910 children worldwide have a ci; 8,042 have bilateral ci's (Peters et al. 2010: 18). The post-operative therapy of children with ci focuses on helping the children benefit most from the auditory signals they receive (Sorkin and Caleffe-Schenk 2008). Particularly this means helping the children link the sounds they perceive to words or meaning. As the "spectrotemporal resolution" (Giezen 2011: 34) with a ci is poor, specific sounds and phonologic entities such as vowels are degraded. The children therefore tend to have difficulties in monitoring their own speech and language production (Pakulski 2011) and in perceiving grammatical markings of perceptual low salience (Szagun 2002). Unknown speech and language input, e.g., words or sentences not heard before, and as a consequence not memorized in the short-term auditory memory, might likewise present difficulties for a child with ci (Diller and Graser 2009).

After the first years of intense rehabilitation, children are appointed to visit a school, which might be either a school alongside their hearing peers or a school especially dedicated to children with hearing impairment. The study presented in this paper was conducted in such a school, specially designed for children with ci. The school's

educational staff is trained to serve the needs of children with ci, and the equipment is configured for their specific needs (microphones, induction loop, special seating, etc.). In school, the focus of emphasizing sounds, as is done in therapy, moves on to emphasizing speech and language performance. The teacher dedicates specific lessons mainly to the purpose of letting the children talk, which provides the opportunity to monitor the language skills of each child and help the child improve them. In the visited school, the first lesson of every day is devoted to this particular aim, and takes the form of storytelling in the *Morgenkreis* of the class.

2.2. The object of study

The *Morgenkreis* (morning circle) is the daily ritual of beginning the day together as a class and encompasses the storytelling of each child. The activity as such is commonly used in many German elementary schools and intends to provide a platform where the children can develop their communication skills and exchange their experiences (Röhner 1998; Heinzel 2000). Besides the purpose of acquiring and refining social skills, as e.g., the principle of having a dialogue, acting as speaker and listener in socially expected ways, the *Morgenkreis* storytelling also includes language-didactic goals. The activity is seen as the children's opportunity to talk and the teacher's to comment on the children's stories. It follows a clear and repetitive structure with which the children are familiar.

In its adaption to the classroom of children with ci, the *Morgenkreis* storytelling's purposes are enhanced by the particular needs of the children with ci. Here, the children need attentive observation by their teacher, as they are still in the process of acquiring and improving their spoken language abilities and noise or other acoustic disturbances need to be minimized as much as possible for performing the activity. The children thus have to learn to respect the acoustic needs of their classmates in order to be able to tell and listen and not become tired prematurely due to auditory overstimulation.

During the course of the storytelling each child tells the class of his or her experiences either of the prior day or of the prior weekend. The class sits in a semi-circle with the teacher in the middle; the child who tells sits besides the teacher. This positioning

both maximizes the potential to see and lip-read each other and also presents the teller as the protagonist of the scene described. At the end of the week the children get the so-called *Tagebuch-Blatt* (diary sheet). The *Tagebuch-Blatt* consists of a frame into which the children draw their experiences and lines below that frame where the children's parents give a written account of their children's activities. Before a storytelling starts the teller goes around in the class and shows the children his or her *Tagebuch-Blatt*, so that the children also have a visual interpretation of what they will listen to soon.

Overall, the activity is strictly structured and monitored by the teacher, who employs a range of different practices dedicated either to working on the children's language (Mourtou in press), to structuring the telling activity or to both simultaneously. In the following I will concentrate on how the teacher uses *also*-introduced summaries to work on restructuring the activity or as a form of corrective feedback to the child telling the story.

3. *Also*-summaries as an institutional practice

In institutional interaction, German *also* has been shown to serve a specific role for the introduction of a paraphrase or a summary (Bührig 1996; Gühlich and Kotschi 1983) helping to do a "qualitative converting" (Bührig 1996, 242). Explicitly this means, that "with the help of 'also' a refocusing of knowledge taken from different utterances is done which then in the summary is transferred into a conceptual or understandable structure" (Bührig 1996, 241). The initiator of the summary thus displays what he or she has understood in the conversation so far and invites the receiver of the summary to for instance affirm, negate, or simply process the newly verbalized facts. This means that the recipient of the *also*-introduced summary is orientated to an evaluation of the course of the interaction by the expert, who provides a newly structured knowledge of the layman's prior formulation in the summary. By doing so the expert either attempts to restructure the flow of the interaction that has been momentarily troubled or aims at giving the layman's provided knowledge the form that the expert thinks of as appropriate for the institutional setting.

As we shall see, *also*-introduced summaries can be done in third person, when the aim is to restructure the telling as a social activity; and they can be done in second person, when the aim is to guide the current telling child within its telling. Thus, both types of *also*-summaries are intended to minimize those problems that might hinder the understanding of the story, either with regards to the structure or the content of that story. Below, I will consider each type of *also*-summaries in turn.

3.1. *Also*-introduced summary in the third person

Also-introduced summaries in the third person are typically found in contexts where the course or structure of the storytelling activity has been interrupted or troubled. They are used as a means for restructuring and refocusing the telling on behalf of the telling child. They appear in situations where an acoustic processing of the story of the child is not given anymore, as the children comment in disarrangement mostly without having indicated their interest to comment, e.g., in the form of raising their hands. The teacher then briefly stops the activity and uses an *also*-introduced summary, providing the children with a summary of the facts of the story as they could be understood so far. This is evident in the following three examples.

Example 1

Te: teacher; Su: Sumeya; Je: Jessica; Ah: Ahmed; Meh: Mehmed

```

126 Te: >Das ist< >.hh< Vic to:: ria::.
        >This is< >.hh< Vic to:: ria::.
127      (0.3)
128 Te: Vic to: ria:.
129      (0.1)
130 Te: >.hhh<(0.2)und >.hh<(0.3)was hasst du
        >.hhh<(0.2)and >.hh<(0.3)and what have you
131      denn mit ihr gespielt
        then with her played
        played with her then
132      (0.7)
133 Te: Was hasst du gespielt
        What have you played
134      (0.6)
134 Su: So >ein zwei drei< ge[spielen.
        So >one two three< pl[ayed.
135 Ah:                                     [Da zwecke#1=
                                                [hide-and-seeK=
136 Je: >Ic=I[c ein zwei drei du behabt din darbei<
        >I=I [one two three you (unclear) and yet<
137 Ah: [ein zwei drei vier fünf sechs sieben acht[neun zehn

```

¹ #: Indicates that a word/item has not been pronounced correctly, but is still in an understandable acoustic form.

[one two three four five six seven eight [nine ten
 138 Te: [So. Nach
 [So. one
 139 Te: einander.=
 after another.=
 140 Me: =>Ich au [ha#<=
 =>I too [ha<=
 =>I have too
 141 Ah: =Hab ich
 =Have I
 142 Te: [Moment. Mehmet.=
 [Just a moment. Mehmet.=
 143 Ah: =Hab ich.=Hab ich.
 =Have I. =Have I.
 144 (0.2)
 145 Te: A:lso.(0.2)Sumey↑a,=
 146 Je: =Ich au:c[h (g)spielen.
 =I to: [o played.
 =I played too.
 147 Te: [ts:::t
 148 (0.3)
 149 Te: Sumeya, hat mit Victo:ria, gespielt.und ihr
 Sumeya, has with Victo:ria, played. and you
 Sumeya, has played with Victo:ria, and you
 150 wisst was sie gespielt hat.=>Jezt ist der Ahmed
 know what she played has. => Now is the Ahmed
 know what has played. => Now it is Ahmed's
 151 dran.=Hör [mal zu.<
 turn.=Listen[to. <
 152 Je: [Ich ↑au::ch.
 [I ↑to::..

Previously, before this extract and not shown here, Sumeya's story was concerned with her new friend Victoria and the game hide-and-seek, which the two girls played. Sumeya's telling was disrupted several times by comments from other children and at this point we hence have the teacher first present and retell this earlier part of Sumeya's story. By doing so the teacher also tries to link what Sumeya has drawn on her diary-sheet with what she has told so far. In addition to this, the teacher inquires further about the name of the game the two girls played, as it has not been named until this moment (lines 126-133). She thus goes back to the initial point where Sumeya told about playing and was interrupted by the other children's comments. Sumeya identifies the game they played, not by providing the name but by demonstrating features of the game (the counting) (line 134). Ahmed overlaps Sumeya and provides the name of the game, though he does not pronounce the word correctly (line 135). Jessica, another child in the class, latches her comment on to Ahmed's and tries to get attention by stating that she has also played the game (line 136), but is at the same time overlapped by Ahmed, who adds the feature of counting in the game (line 137).

Neither Ahmed nor Jessica are the appointed tellers and neither have indicated in a socially acceptable way (e.g., by raising their hands), that they want to comment. In orientation to this, the teacher takes the turn by slightly overlapping Ahmed's and indicates that one should talk after another (lines 138-139). Mehmet though, seems to imitate his classmates and show familiarity with playing the game, by saying "me too" (he has played that game too) and provoking Ahmed to show his familiarity as well (lines 140-141). The teacher tries to bring them to a halt and directs her turn at Mehmet, but is again not able to restructure the class to an attentive listener audience (line 142). Sumeya's telling has thus been interrupted several times and it is at this position that the teacher produces an *also*-initiated summary in the third person. The small pause after *also* works as bridge between the *also* and the summary by enhancing the importance of what is going to follow *also* and the attention that shall be linked to it. She initiates the summary by naming Sumeya, thus showing who is the main character of the story. Her summary is interrupted by Jessica again, whom she 'shushes' to stop (145-147), before she re-initiates the summary, stating that Sumeya played with Victoria. Following the summary she provides the children with a slot to comment on (ihr wisst was sie gespielt hat/you know what she has played) (lines 149-150), then appoints Ahmed directly with filling the slot she provided, namely supplying the name of the game.

The fact that hide-and-seek is a game that seems to be played by all children in the class and is something they can identify with has troubled the smooth process of Sumeya's storytelling, as all children were excited to comment on it. As they do so in a way that is not expected in schools, where pupils are usually appointed a turn-at-talk by raising their hands and being permitted to talk by the teacher, the activity's innate educational and social purpose got out of focus. With the aim to restructure this purpose of learning how to tell and listen while somebody is talking, the teacher uses an *also*-introduced summary in the third person to keep the story's theme tangible for all the children, indicating what is important to know about the story. In that sense the summarizing can be seen as a memory hook for the children, as well as a starting point for the telling child for the next part of the story. Hence, it also serves to make the children aware that if everyone talks in disarrangement, then nobody is going to understand what has been said.

The following example, which is taken from the same storytelling, similarly illustrates how the teacher uses an *also*-introduced summary in the third person to get the telling into the expected form again after this has been interrupted.

Example 2

Te:teacher; Ah: Ahmed; Je: Jessica; Me: Mehmet; Su: Sumeya

208 Te: >.hh< >das spiel< heisst >.hh<
 >.hh< >the game<is called>.hh<
 209 ver::(.)st↑eck(.)k↓en
 hi::de(.) and↑(.) s↓eek
 210 (0.2)
 211 Ah: we[r[steck
 hi[d[anseek#
 212 Je: [w[er#
 [h[id
 213 Te: [ver:steck:en[:.
 [hide:and:seek[:.
 214 Je: [la b[au wau
 (unclear)
 215 Ah: [o du bau up tandem
 (unclear)
 216 (0.9)
 217 Te: Also (0.4)
 218 Me: >u# de baum st[eht<
 >a'the tree st[ands<
 >and the tree st[ands
 219 Te: [Victoria >↑hat die augen zugehalten↑ und hat
 [Victoria >↑has the eyes kept closed↑ and has
 [Victoria >↑has kept the eyes closed↑ and has
 220 gezählt. eins zwei dr:ei
 counted. one two thr:ee
 221 Su: [ten mal [s,
 [ten time[s,
 222 Ah: [vier
 [four
 223 Te: [z↑ehn, bis zehn.>.hh< und was hast du gemacht?=
 [t↑en, until ten.>.hh< and what have you done?=
 and the
 224 andere? Das andere k↑ind?
 other? The other ch↑ild?
 225 (0.2)
 226 >was habt ihr gemacht?
 >what have you(pl) done?

Between the final turns of example 1 and the first turn of example 2, the teacher addressed first Ahmed and then Jessica to comment on Sumeya's story. Though the children were able to demonstrate what one has to do when playing hide-and-seek, none of them delivered the actual name of the game (though see Ahmed's attempt in line 135, example 1). The first turn in this example shows how the teacher finally provides the class with the name of the game (lines 208-209). Ahmed and Jessica try

to repeat the word after the teacher, but as they do not pronounce it correctly, the teacher repeats it for them (line 213).

The fact that the activity in Sumeya's story on which the children commented so excitedly finally has a name provides the teacher with the opportunity to refocus on the core of Sumeya's story by using *also* as the introduction (line 217) to a summary. Again, we find a pause before the actual summary, which further stresses the importance of what is to follow and the attention that is demanded of it. Mehmet though, sees the pause as an opportunity to comment and delivers an additional fact about the game, namely the location where one stands when counting (the tree). The teacher ignores this comment and continues her projected summary, describing the procedure of the game and that Victoria covered her eyes and counted (lines 219-220).

As in example (1), the teacher's summary is in the third person, this time naming Victoria, who was the main actor of the activity she is summarizing. Sumeya adds the information that they counted until ten, information that the teacher uses as the first part of her following turn. The teacher's summary is done in a position where not only the telling got interrupted repeatedly, but also in a position where Sumeya's story includes clarification of the activity she tells about. In example (1) we saw the teacher doing a summary after having made sure that Sumeya has a "new" friend and that she played together with this friend. The summarizing in example (2), by contrast, identifies Victoria as the main actor in the game (the seeker, who counted to ten), making this the main theme of this part of Sumeya's story. Hence, the two examples demonstrate that *also*-introduced summaries in the third person appear in positions where the teacher finds it necessary to recapitulate the main theme of the story, a theme that has otherwise been interrupted by the other children's active participation. By summarizing and thus identifying the main themes within the story the teacher thus manages to secure the understanding of the story for all children in the class, despite the disturbances.

The last example in this section, which is taken from a different storytelling of Sumeya, will also show how a summary in third person is done by the teacher.

Example 3

Te: teacher; Me: Mehmet; Je: Jessica

```
*looks at Sumeya
12 Te: *sie war auf einem Jahrmarkt und ist
      *she was in an amusement park and is
      *she was in an amusement park and has
      **points at her diary-sheet
13      **hier mit einem karuse:ll gefah[ren
      **here with a carouse:ll driven
      **here been on a carouse:ll
14 Me:                                     [jessica
      *looks at Jessica
15 Te: *Jessica bitte (.)komm
      *Jessica please(.)come/behave
16 Te: Jessica? (.) wir haben deine Sache gehört?(.)
      Jessica? (.) we have your story listened? (.)
      Jessica? (.) we have listened to your story?(.)
17      vom Wochenende und jetzt is
      of the weekend and now is
      *raises her hand and makes a move with it from J. to S.
18      *die Sumeya dran und du musst auch gut [zuhören
      *the Sumeya turn and you must also good[listen to
      *Sumeya's turn and you must also good [listen to
19 Je:                                     [ja::
                                      [yes::
      *points at Sumeya
20 Te: *also Sumeya war auf einem ja:hrma:rkt(.)
      *also Sumeya was in an a:mu:sement park(.)
21      auf einem ja:hrmarkt und
      in an amu:sement park and
      *points at sumeya's diary-sheet
22      der heisst *sche:lmenmarkt
      this is called *sche:lmenmarkt
```

The example begins with a summary by the teacher of what Sumeya has told so far (line 12-13). While the teacher is doing her summary, Jessica is having a side conversation with another child. Mehmet calls out Jessica's name, hereby nominating her as a 'troublemaker'. In orientation to this, the teacher directs her attention to Jessica, asks her to stop and reminds her that the class had already listened to her story and that now it is Sumeya to whom she shall pay attention (lines 15-18). After Jessica's agreement to do that, the teacher initiates an *also*-summary, recapitulating the core of Sumeya's story, namely that she has been to an amusement park called 'Schelmenmarkt'. Her summary is accented by stressing particular words and by pointing at Sumeya's diary-sheet.

The three examples above thus in different ways illustrate how the teacher uses *also*-introduced summaries at points in the interaction at which the ongoing telling has been interrupted or digressed from its course because of the other children's activities

and contributions. In its overall aim at restructuring the activity, the *also*-introduced summary also serves to piece up and identify the main themes of a story as well as to demonstrate and secure the children's roles as listeners. By doing so, the teacher's function as an expert becomes very prominent, as she orchestrates and moderates the course of the activity and intervenes in positions where she finds it necessary. This happens with the aim to keep up a structure of the activity that she finds suitable, albeit the fact that some children seem to understand the story in process as they willingly comment on it. This structuring of the activity is hence a way to demonstrate to the children how a listener should behave to a story being told and what consequences it might have, if specific features like indicating the interest to comment or share own experiences (e.g., by raising one's hand or waiting until one is addressed to talk) are not respected. In that sense the teacher also acts in favor of the children in the class who might not have commented on the story, as they were not able to listen due to the acoustic disturbances caused by the simultaneous verbal contributions by some of the children. In her function as teacher, and particularly in her function as teacher of the deaf, she has to make sure that all children can benefit from the activity as a listener but also as a teller in an acoustic situation that will serve all the children. With this aim, she is also piecing up the main themes of the story to indicate what was important so far in case a child was not able to listen to/hear parts of the story, and providing the child who tells with a starting point to continue. In general, the children do not indicate when they have not understood or heard something. The teacher is therefore the one who has to do this on behalf of the children, by structuring the activity and checking that the circumstances are beneficial for all children to understand.

In the following, I will consider *also*-introduced summaries delivered in the second person, to show that these are directed not at managing the overall structure of the telling, and thus not directed at the listening children, but instead directed at the telling child, doing work to demonstrate the troubles or problems which emerge in the language the child produces or the contents of the child's story.

3.2. *Also*-introduced summary in second person

This section will show how *also*-introduced summaries in second person are directed only at the child who tells and aim at working on the language production of the child or the correction and verification of facts of the child's story. This type of summary focuses on the child's performance as a teller and tends to indicate to that child what was problematic either in terms of language the child used or in terms of the content of the story. As such, these summaries act as a form of "corrective feedback" (Chaudron 1988) with primary focus on the content.

The first example will demonstrate how a summary follows an unintelligible and ungrammatical production by the child, referring to the part of the production that was understandable.

Example 4

Te: teacher; Al: Alma

- 20 Te: °so° ((turns Alma's diary-sheet to the class and looks at Alma))
21 Al: °ich° ich war bei tante merima mit meine mama und onkel
°I° I was at aunt merima with my mommy and uncle
22 namka und meine bruda und ich (.)
namka and my brotha and I (.)
*points at diary-sheet
23 hat *↓da schokoladen (.) da
has *↓there chocolates (.) there
*points at diary-sheet
24 schokolade und *einanhalb wassa
chocolate and *one and ah half water
*points at Alma
25 Te: al:so (0.2) *alma du wa:rst
al:so (0.2) *alma you we:re
26 (0.1)
27 Al: (unclear)
*points at diary-sheet
28 Te: *bei tante meri:ma
*at aunt meri:ma
29 Al: ja
30 (4:01)
*points at her drawing
31 Al: ich hab Jessica *geschenk gege:rn# (.) eine ko lila
I have Jessica *present given (.) a cow purple
I have given a *present to Jessica (.) a purple cow
32 (.) ein pferd isse geschenk
(.) a horse is tha present
(.) a horse is the present

This example comes from the beginning of a story told by Alma, about her family's visit to her aunt Merima. In lines 21-24 Alma names with whom she visited her aunt and what food and drinks they had. Whereas the first part of Alma's production, where she explicates with whom she has been to her aunt, is understandable, the second part is unintelligible. There is no grammatical congruency as the personal pronoun "ich/I" does not agree with the verb 'hat/has' and a finite verb, which would indicate what she has done with the food and drinks, is missing. In orientation to this, the teacher initiates an *also*-introduced summary in the second person, with which she summarizes only the part of Alma's story that was understandable, thus treating this as the core or main theme of Alma's story (lines 25 and 28). The teacher thus also provides Alma with a slot to either continue or correct the part that she did not summarize. Alma, however, merely confirms the facts summarized by the teacher without adding or restating the information left out and instead continues with her story (lines 31-32). The teacher also does not insist on getting a correct version of Alma's utterance at this point, but lets her continue with her story instead, presumably waiting for clarifying facts to come.

The following example similarly shows how the teacher initiates an *also*-introduced summary at a point where a turn delivered by a child was perhaps intelligible, but not entirely understandable and certainly not grammatically correct.

Example 5

Te: teacher; Ah: Ahmed; Je: Jessica

189 (0.1)
 190 Te: Jetzt erzählt di[e- Jessica.
 Now tells th[e- Jessica.
 Now Jessica is telling
 191 Ah: [Ja:
 [yes:
 192 Je: >.hh< Papa >mama< (0.1)Marcel, (0.3)>Nicola<
 >.hh< daddy>mommy< (0.1)Marcel, (0.3)>Nicola<
 193 und Jessica.=Marcel(0.1)>wenn die dar< habi da mal.
 And Jessica.=Marcel(0.1)>when the there<(unclear).
 194 Te: Ah ha. .hhh ehm- (0.3)
 195 Je: I[ch au
 M[e too
 196 Te: [Al:so >du hast das< [auch schon gespielt.
 [Al:so >you have that< [too already played.
 [Al:so >you played that<[too already.
 197 Je: [in dem koffer liegen den
 [in the suitcase lay the
 drei vier
 three four
 198 Je?: (>la ma bier<)

(unclear)
 199 Je: schlafen (gehabt)
 sleep (had)
 200 Te: ∞>.hh< hah∞ Wisst ihr wie das spiel h↑eist?
 ∞>.hh< hah∞ Know you how the game c↑alled?
 ∞>.hh< hah∞ Do you (pl) know how the game is called?

The example is taken from Sumeya's storytelling about the game hide-and-seek (see also examples (1) and (2)). During that telling, Jessica several times attempted to comment on Sumeya's story, but produced unintelligible turns or was overlapped by other children. At this point, however, the teacher addresses Jessica specifically to contribute to the story, selecting her as the next speaker (line 190). Though Jessica's turn is unintelligible it apparently provides sufficient information for the teacher to understand the gist of her talk, namely that she too has played the game. In line 194, the teacher produces the change-of-state token 'aha', thus claiming to have received new information (Mourtou 2013). She then demonstrates this by producing an *also*-introduced summary, stating what this information is (that Jessica has played the game). Her summary is in the second person, thus directed particularly at Jessica and providing (for her) in a correct sentence what she attempted to express earlier, but excluding facts Jessica provided, e.g., that she played that game with her father and her brother. In that sense the teacher's summary is selective concerning the facts she has been provided and focuses only on the fact that is important for the current state of Sumeya's story (namely that Jessica has played that game too). Having done so, the teacher then directs her attention at the whole class again (line 200) by inquiring after the name of the game.

In the following example, the *also*-introduced summary is likewise produced in a context where a child has delivered something that the teacher deems incorrect, but here it is related to the content of the information delivered, rather than the form. The summary done in the next example is thus addressing contradicting facts provided, respectively, by the child and the child's diary sheet. In this case the teacher's summary serves as a clarification of these contradicting facts and thus the re-organization and correction of the events of the story to be told.

Example 6

Te: teacher; Je: Jessica; Pu x: pupil x; Pu y: pupil y

159 Te: hast du bei Maja geschlafen? (.)
 have you at Maja slept? (.)
 have you slept at Maja's? (.)
 160 oder hat Maja bei dir geschlafen?
 or has Maja at you slept?
 or has Maja slept at your place?
 161 (0.1)
 162 Je: Maja (.) mir geschlaf.
 Maja (.) me slept.
 Maja (.) slept at my place.
 163 Te: Maja ist zu dir gekommen?
 Maja is to you come?
 Maja has come to you?
 164 (0.2)
 165 Je: ja
 yes
 (0.1)
 167 Te: und ihr habt bei dir zusammen geschlafen?
 and you have at you together slept?
 And you (pl) have slept together at your place?
 168 Je: ja
 yes
 (0.4)
 170 Te: hmhm
 (0.1)
 172 Pu x: han jessi.
 (unclear)
 (0.1)
 174 Pu y: wo is [meine mama
 where is[my mommy
 175 Te: [hier steht aber (.) ich habe bei Maja geschlafen
 [here says but (.) I have at Maja slept
 [but here it says (.) I have slept at Maja's
 176 (0.2)
 177 Je: nei
 no
 178 Te: also du warst bei Maja
 also you were at Maja's
 179 (0.2)
 180 Je: ja
 yes

The example is taken from Jessica's storytelling and is concerned with her overnight stay at her friend's Maja. Apparently Jessica has not explicated who slept where, as the teacher in line 159 inquires about this. Jessica's answer is only partially correct in grammatical terms (as there is a verb missing etc), but it appears to reveal that it was Maja who stayed at Jessica's place. Certainly, this is how the teacher understands it, as she subsequently asks for confirmation of this twice, first by explicating that Maja came to Jessica (line 163), then by inquiring whether they both slept at Jessica's place. Jessica confirms both of these inquiries with 'ja/yes' (lines 165 and 168), but we see further indication that the teacher is not satisfied with this answer, when she produces the receipt *hmhm* (line 170), which here seems to indicate her disbelief. To stress her disbelief the teacher refers to Jessica's diary sheet where it apparently is written that Jessica stayed at Maja's, contrary to what Jessica has just claimed. Whilst Jessica,

with her “no” in line 177 still appears to maintain the idea that Maya stayed with her, the teacher ignores this and instead relies on the diary sheet to produce a summary of events (line 178) a summary which Jessica subsequently seems to accept.

Whilst in the first and second example either the child who tells or a participating child is the source for initiation of a summary, in example three we can see that the stimulation to do a summary comes from an object, namely the *Tagebuch-Blatt*. Jessica’s affirmative answers in lines 165 and 168 would be an indication that she states and believes that the facts she affirms are correct and would actually not prompt further interrogation, if the teacher did not have access to the facts outlined in the *Tagebuch-Blatt* that contradict Jessica’s version. Furthermore, Jessica’s turns were also intelligible and would not need a correction. However, closer investigation of the 60 storytellings has not only shown that the children do not actively indicate when they have not understood, but also that they may have problems with prepositions that indicate location (as in example 3) or time². The teacher, aware of this fact, therefore consults the *Tagebuch-Blatt* to make sure that the facts the child tells about are correct. Hence, the teacher’s summary here clearly focuses on rectifying the facts Jessica provides in accordance with the *Tagebuch-Blatt*, which provides the written account of the parents and thus seems to be the source of correction and reliability for the teacher.

The examples in this section were concerned with *also*-introduced summaries done in the second person and hence directed at one particular child. It was shown that these summaries serve to work on problematic moments occurring within the telling of a child. These problems can be either due to unintelligible and ungrammatical turns by the children or to incorrect facts that have been provided and hinder the further understanding of the child’s story or may lead to misunderstanding. In these cases the teacher mirrors to the child what has been understandable and leaves a slot open for the child to correct or continue, or transfers an unintelligible sentence or unclear fact into a correct form. In this way the further process of storytelling as well as the events told about are monitored by the teacher who tries to secure the understanding of the story. Considering the actions this type of summary can accomplish, it can be

² The teachers have also confirmed these observations during interviews.

generally seen as a "corrective feedback" (Chaudron 1988), a tool that serves to identify an error in educational settings. In cases such as in example 4 and 5, where the trouble source was an unintelligible language production, the summary might come close to the function of a recast, i.e. "utterances that rephrase a child's utterance by changing one or more sentence components ... while still referring to its central meanings" (Long 1996, 434). While recasts rephrase and change components of an utterance, the summary the teacher does in example 4 and 5 displays the main facts of the child's story or comment and works selectively concerning what will be expressed in the summary. Here, the focus lies more on first mirroring to the child what was understandable without necessarily changing components of the child's utterance (as in example 4) and second summarizing selectively out of a range of utterances the child provided, what was the bottom line of these utterances (as in example 5). Example 6 then takes a particular position, as here the "corrective feedback" might be seen as to come from a material source, the *Tagebuch-Blatt*.

4. Conclusion/Summary

This paper dealt with *also*-introduced summaries operated by a teacher during and in response to the storytelling of children with cochlear implants. It investigated in which positions *also*-introduced summaries appeared, what kind of problems they were focusing on and what purposes they served in the context of an educational setting. It became evident that the teacher employed two groups of *also*-introduced summaries in accordance to specific educational and interactional needs that emerged. The first group was identified as *also*-introduced summary done in third person and the second group as *also*-introduced summary in second person.

Also-introduced summaries in third person were used to restructure the activity of the storytelling, in case it was interrupted by the children in the class through commenting without being appointed. One of the purposes of the activity is to practice the principles of verbal interaction in a socially expected way. Practically this refers to the acquisition of the social skills of acting as a teller and a listener. The children are supposed to pay attention to the actual teller and indicate if and when they want to comment. The simultaneous verbal contributions of the children not only

disturbed the activity, but also diminished the acoustic access to the turns delivered. Every child in the class has an individual hearing challenge, which got troubled due to the disarrangement of the utterances of the children. The teacher, in her function as teacher for the deaf and aware of this fact, used an *also*-introduced summary in these positions to re-establish a structure that is suitable for all children for being able to listen. She indicated explicitly who is the actual teller and tried to moderate the verbal contributions of the children by appointing them in particular to talk.

If the story digressed too far from its course, the teacher brought the activity to a halt and used a summary to provide the children with the main themes of the story told so far. In these cases she worked selectively in her summary, providing the most important facts in a concise form. In that way she helped the children keep track of the main events of the story, but at the same time offered the telling child a starting point to continue. Children with ci tend to have a lower working memory when they encounter words or sentences they have not heard before (Diller and Grasser 2009). The use of an *also*-summary was hence directed to minimize this particular problem.

The fact that the first group of summaries were delivered in third person stresses the educational purpose which lays behind them. In ordinary conversation a summary would presumably not be delivered in third person, but would be instead directed only at the addressee of the summary. Here, the addressee is the whole class as a listening unit (or audience) and thus the teacher has to do the summary in a 'neutral' form. In this way the teacher acts as re-teller or "assisting teller" (Lerner 1992) of the story, making sure that the structure of the storytelling is kept. As could be seen in the examples, the children did understand the story that was told, as they were commenting on it. This would lead to the assumption that a summary is not necessary. However, the summaries in third person were not aimed at working on the content of the story, but on the form it was supposed to have as a social activity.

The second group of *also*-introduced summaries, in second person, were directed only at the telling child and were used to work on problems concerning the language production of the child or the content of the story. The examples showed that the teacher employed such a summary to indicate an error in the production, and thus functioned as a "corrective feedback". In cases where the child's turn or part of it was

unintelligible, the teacher summarized the part that was understandable, mirroring in that way what could be understood and left a slot open for the child to correct the erroneous part or continue.

In positions where the summary was directed at a child who commented (such as in example 2 of section 3.2.), the teacher made a selection of the facts provided through the child's comments, stating what was the most important outcome of these comments. In that sense the summary came close to what has been described as "recast" (Long 1996) for the L2 classroom, an action that rephrases a child's utterance by referring to its key meaning. Similarly to students in the L2 classroom, the children in this paper are at a stage where they still acquire and improve their language skills and corrective feedback is a frequently used practice. Having a closer look at the examples 1 and 2 of section 3.2, it can be claimed that the summary the teacher made did not receive any particular reaction by the child to whom it was addressed. In example 1 the child continued with her story after the teacher's summary, and in example 3 the actual teller of the story continued. This observation would stress findings, which stated, that "from the perspective of both learners and teachers, the corrective reformulations entailed in recasts may easily be overridden by their functional properties in meaning-oriented classrooms" (Lyster 1998, 51). Though the summary in second person presented in this paper differs slightly from recasts, it can be claimed that it did not provoke any particular corrective response by the child, as the child seemed to focus on just telling the story.

In cases such as in example 3 of section 3.2, though, the teacher's summary as a corrective device became more evident, as it aimed to verify doubtful facts provided by the child. Here, the teacher acted as a corrective teller, referring to an external and material source, namely the *Tagebuch-Blatt*. Though the child affirmed the course of the events in the way she presented them, the teacher focused on the outline of the events as they were stated in the *Tagebuch-Blatt*. In these positions, the story came to a halt and was continued only after rectifying the contents of the story. Hence, the summaries that are aiming at correcting the story had greater interactional consequences as the course of the story was briefly stopped.

In sum, *also*-introduced summaries in second person worked on the linguistic performance of a child and the content of the child's story. This type of summary is more likely to happen in the context of ordinary conversation, where a listener of a story displays what he or she has understood so far. Therefore, they are also delivered in second person as they focus on the interaction as dyadic.

Concerning the use of *also* to introduce both types of summaries, it appears that *also* works as signal to indicate a focusing on what is to follow. The teacher's use of *also* can thus be seen as demonstration to the children that *also* has this particular function in German conversations and further invite them to use it as speakers of German. For stressing the function of *also* the teacher could be seen to make a pause between it and the utterance that followed, to underline its importance.

This paper showed that *also*-introduced summaries in the setting of the classroom with children with ci serve a variety of educational and social purposes. The teacher as expert operated them successfully as she had to multitask within the educational and social purposes of her agenda, preparing the children to become competent speakers in their language and act in socially expected ways.

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Paper five:

Trine Heinemann and Eleni Mourtou (forthcoming) The 'diary sheet' as an augmentative alternative communication device for German cochlear implanted children in the classroom: Social interactional uses and consequences. Manuscript submitted to *Journal of Interactional Research in Communication Disorders*.

The ‘diary sheet’ as an augmentative alternative communication device for German cochlear implanted children in the classroom: Social interactional uses and consequences.

1 Introduction

For people with communication disorders of various kinds and their co-participants, objects can play a significant role in so far as they allow people who are unable to speak or who have limited capacity to express themselves verbally to convey information in alternative ways (e.g. Collins and Marková, 1995; Olsson, 2004). More importantly, perhaps, objects can also be employed by participants with communication disorders for, for instance, initiating actions and sequencing talk in ways that they cannot accomplish verbally (e.g. Collins, 1996; Aaltonen, Arminen and Raudaskoski, forth) and thus help them participate in interaction on an equal level with those participants who do not have any limitations in their speech production and as such enable more democratic participation in interaction (e.g. Annable, Goggin and Stienstra, 2007).

While people with communication disorders are able to enlist mundane objects that are already in their environment, such as plastic blocks and a digital camera, for the purpose of scaffolding their interaction with others (e.g. Stribling and Rae, 2010; Aaltonen, Arminen and Raudaskoski, forth), there are also a vast range of specialized objects available that have been designed for the specific purpose of scaffolding or augmenting communication. Jointly referred to as Augmentative Alternative Communication (AAC) systems or devices, such specialized objects can be implemented in therapeutic as well as mundane contexts, they can be low- or high-tech and they can be based on visual, tactile, or auditory resources, but they typically have in common that they are designed to enable participants to jointly co-construct the message of the person with a communication disorder (e.g. Blau, 1986; Buzolich and Wiemann, 1988; Higginbotham, 1989; von Tetzschner and Martinsen, 1996; Higginbotham and Wilkins, 1999) and to resolve any problems created from that disorder together (e.g. Laakso, 2003; Oelschlaeger and Damico, 2000).

In this paper we focus on the use of a particular AAC, or specialized object, namely the *Tagebuch Blatt* (diary sheet) as it is used in a German school for prelingually deafened children who have been implanted with a cochlear implant (ci). These children are in the process of developing and improving their verbal language competence and of learning to hear with the ci, and the *Tagebuch Blatt* is one of the specialized objects used for scaffolding the children’s communicative competence in a hearing world. We will consider the ways in which both children and their teacher use the *Tagebuch Blatt* to scaffold interaction about the children’s past experiences. In particular, we illustrate how the *Tagebuch Blatt* is employed by the teacher as a tool for prompting or pursuing verbal productions from the children and by the children as an alternative semiotic resource to that of verbal productions. We will then turn to demonstrating that the *Tagebuch Blatt* also allows for more socially problematic usages in which the children are ultimately denied the basic right to own and know about their own experiences. Here, we will show how the pedagogical and therapeutic goals of using the *Tagebuch Blatt* for checking and bettering the children’s communicative competence, can, on occasion, cause unforeseen consequences where the children are corrected, not just on their language production, but on the truth-value of the experiences they describe to the teacher and their peers. We conclude the paper with a discussion of both the possibilities and the challenges that the children and teacher faces when implementing the *Tagebuch Blatt* in the classroom as an ACC system intended to scaffold the overall communicative competences of the children.

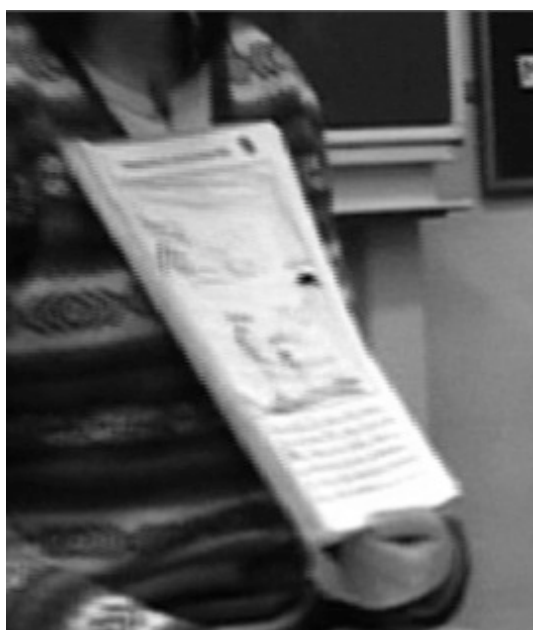
The data on which the current paper is based consist of 60 video-recorded classroom interactions between 4 to 8 German children aged 8, and their teacher. The children have all been diagnosed with profound to severe hearing loss before the age of 2 (i.e. prelingually) and have consequently received a cochlear implant (ci). A cochlear implant is an electronic device surgically implanted in the cochlea, which, through the help of an outer microphone, transmits sound in the form of electrical impulses that stimulate the hearing nerve and lead the stimuli to the brain. Unlike common hearing aids, a ci does not amplify incoming sounds, but provides a ‘poor spectrotemporal resolution’ of sound (Giezen, 2011:34), which enables the user to partly understand spoken language and differentiate some sounds. Once implanted with a ci, children thus require intensive rehabilitation in the form of auditory-verbal therapy, to learn to make use of the stimuli provided by the ci, i.e. to interpret and detect the sounds perceived. Though factors such as the time of onset of deafness, the rehabilitation intensity and especially the age at implantation have implications for children’s language (Stedt and Rosenberg, 1987), the limited auditory access of children who have been implanted with a ci generally means that they, when compared to their hearing peers, have problems monitoring their own speech production (Pakulski, 2011), tend to acquire inflectional morphology and vocabulary slower (Diller and Grasser, 2005) and have more difficulties recognizing vowels (Giezen, 2011).¹

Auditory-verbal therapy is provided both by implanting clinics and special rehabilitation centers, but in Germany, therapy and rehabilitation is also provided in the context of primary and secondary education. Children with cochlear implants are typically offered primary and secondary education in schools that are dedicated to and specialized in such issues and can offer speech and audio-verbal therapy as part of and alongside the children’s ordinary education. The video data that the current study relies on was recorded at one such school and focuses on a particular activity, the *Morgenkreis* storytelling.

The *Morgenkreis* (morning circle) is an activity recurrently practiced in many German elementary schools, after it was first introduced in the 1980’s, as part of the educational progressivism of that period in which the student-teacher relationship was re-conceptualized to center more on the student. While the activities of the *Morgenkreis* and the activities within it are conducted in a form that allows more ‘free-talk’ than does traditional class-room interaction, including, for instance, singing, welcoming the day and storytelling by the children, it is nevertheless considered a pedagogical activity that follows language-didactic goals (Morek, 2012) and allows the children to develop communication skills as well as accomplish a range of other learning possibilities (e.g. Purmann, 2001). The storytelling activity which we will focus on in this paper thus centers on allowing children in a class to take turns telling a story to each other (and the teacher) of some event or experience they have been part of, i.e. to share their life experiences (Röhner, 1998), but the storytelling activity is - unlike the co-constructed storytelling of ordinary, everyday interaction (e.g. Jefferson, 1978; Goodwin, 1984) - typically structured through clear instructions, rules and rituals and is in effect heavily guided by the teacher, as is the case with many other practices in the classroom (Sinclair and Coulthard, 1975).

The pedagogical design and learning outcomes of the *Morgenkreis*-storytelling correspond well with the overall therapeutic goals of rehabilitating the communicative competences of children with ci to function in a hearing world. In the specific school investigated here, the activity was organized in the following way: At the end of each week, each child is given a sheet of paper, called the

Tagebuch Blatt (the diary sheet, see Picture 1). The upper part of this sheet consists of a frame, within which the children can draw one or more of the events they have experienced over the weekend. Below the frames are lines where the children's parents are to supply a written report of the same activities (see Picture 1). The *Morgenkreis*-storytelling takes place every Monday morning, where the children take turns telling each other (and the teacher) about their experiences during the weekend.² The children sit in a half-circle facing the teacher and the child who has been elected to tell his/her story sits next to the teacher, facing the other children. Before beginning the story, the elected teller walks the half-circle and shows his/her *Tagebuch Blatt* to each of the other children, and the teacher. The following analysis will focus on how the *Tagebuch Blatt* is employed in various ways by both children and teacher to scaffold and structure the interaction.












Picture 1. The teacher presents a child's *Tagebuch Blatt* to the other children. In the frame of the upper part the child has drawn pictures and below her parents have added some text.

3 The *Tagebuch Blatt* as a specialized object for scaffolding interaction and communicative competences.

Whilst both the *Morgenkreis*-storytelling and the *Tagebuch Blatt* are employed in many elementary schools across Germany, in the context of teaching and rehabilitation of children with ci, the *Tagebuch Blatt* can be considered a specialized object or AAC device, because of the way it helps to organize the storytelling as a whole and because of the central role that is assigned to the *Tagebuch Blatt* during that activity. The following 6 cases in different ways illustrate the central role that the *Tagebuch Blatt* as an object is assigned in the *Morgenkreis*-storytelling and the different ways in which it can be employed by both the children and their teacher to scaffold their interaction. We begin by considering how the teacher assigns the *Tagebuch Blatt* and its contents a significant role in the overall storytelling activity of the children.

3.1 Show and tell – the *Tagebuch Blatt* as a resource for organizing tellings

Extract 1 [2009-01-19] “Show and tell”

- 01 TEA: >Dominik wer< darf den heute anfangen?
>Dominik who< may then start today?
- 02 (2.0)  Dominik does a “thinking face”.
- 03 ALMA: Dann komm ich,=
Then come I,=
Then it’s my turn,=
- 04 DOM: =>Alma.<  Dominik raises hand to slap Alma gently on her shoulder.
- 05 TEA: .tch Alma darf anfangen? Alma dann zeig bitte mal,
.tch Alma may begin? Alma then show please,
- 06 (0.3)   Alma gets up from her own chair and moves towards the “teller’s chair”.
- 07 TEA: ganz vorsichtig, zeig erstmal? (.)den
very careful, show first (.) the
- 08  The teacher points round the class while Alma sits to her right in the “teller’s chair”.
kindern dein bild.
children your picture/drawing.
- 09 TEA: >So ich muss es auch mal sehen,<
>So I must see it once too,<
- 10 (0.5)  Alma hands the sheet to the teacher.
- 11 TEA: >Ich hab nämlich noch gar nicht geschaut,<
>I haven’t even looked at it yet,<
- 12 (9.8)  The teacher inspects the sheet.
- 13 TEA: S:O,
14 (3.2)   The teacher turns the sheet to face the class, then gazes at Alma.
- 15 ALMA: Ich (1.4) Ich war bei (de dange nina,
I (1.4) I was at (aunt nina ,


In the first two cases we see how the teacher introduces and treats the *Tagebuch Blatt* as a central, perhaps even primary actor within the story telling activity. Extract (1) is from the very beginning of the storytelling activity and shows how the teacher uses the *Tagebuch Blatt*, here in particular the drawing on the sheet, as the initiator of the larger activity of a child describing her experiences during the previous weekend. The teacher begins the activity by inquiring of one of the children who is supposed to begin on this day (line 01). Dominik, the child selected to answer this inquiry, does so through his physical actions, by first looking around the class while displaying a ‘thinking’ face, then by specifically turning to Alma and slapping her gently on the shoulder (lines 02--04). Alma meanwhile self-selects and nominates herself as the teller of a story (line 03), but only after Dominik has aligned with her self-selection does the teacher ratify this (in line 05) and invites Alma to begin the storytelling activity.

The teacher’s invitation specifies the order of events in which the telling should be organized, requiring of Alma to show her picture on the *Tagebuch Blatt* (lines 05--07). At this point, however, Alma has already started moving to the chair next to the teacher, from which all stories are to be delivered, demonstrating her readiness to begin *telling* her story. In response to this, the teacher insists that the *Tagebuch Blatt* first has to be shown to the children (*‘zeig erstmal’* ‘show first’, line 07), thus encouraging Alma to get up from the chair and circulate among the children while showing her drawing on the *Tagebuch Blatt*. After Alma has complied with this, the teacher then states her own need to see the *Tagebuch Blatt* (lines 09--11), Alma hands her the sheet and the teacher inspects it for some time. Only at the point where the teacher both verbally and visually indicates that she is now done with her inspection, does Alma initiate her actual telling. Thus, the teacher completes her inspection by producing the boundary marker *so* (right) in line 13, indicating that they are now at a place in the overall activity at which Alma can begin her telling (Barske and Golato, 2010), then places the sheet against her body, so that the front faces the other children. She then turns her gaze to Alma (line 14), after which Alma begins her telling.

By inviting Alma to first show her drawing to her audience, before beginning her verbal description of her experiences during the weekend, the teacher in effect uses the *Tagebuch Blatt* to structure the overall activity of the storytelling, i.e. assigns it a central role in the organization of the overall activity. At the same time, she manages to create a strong link between what is drawn and written on the actual *Tagebuch Blatt* and the verbal telling that is yet to come. This is evident also in the following instruction given by the teacher to another child, Jessica, who is just about to launch her verbal telling. Here, Jessica has already shown the *Tagebuch Blatt* to the other children, as well as the teacher, when in lines 01--02 the teacher invites her to take her position in the chair from which the actual telling is to take place. After Jessica has positioned herself in the chair and adjusted the seat, the teacher, as in extract (1) produces the boundary marker *‘so’* (‘right’), indicating that they are now at a place in the overall activity at which Jessica can begin her telling. She further specifies this by stating that everyone will be listening attentively (line 05), then that now as the other children have seen the *Tagebuch Blatt* (line 06), Jessica can begin to tell the story. At the same time, she hands the sheet back to Jessica, thus using it as a tangible turn-taking device (cf. Day and Wagner, forth), indicating with the hand-over that it is now Jessica who has the floor.


Extract 2 [2009-03-09] “You’ve seen it, now tell us”

01 TEA: >So.< .hh >Du kommst auf den< gr̩:ssen stuhl, hier Jessica?
>So.< .hh >You get on the< bi::g chair, here Jessica?




The teacher points to the “telling chair” and Jessica sits down.

02 JES: (Ja also einer blick in den ko:rs)
(yes-unclear-one look at the-unclear)




Jessica adjusts the chair.

03 TEA: >So.<
04 (.)
05 TEA: Und wir hören dir gu:t zu:, .hh was Jessica
And we listen attentively, .hh to what Jessica



The teacher grabs the sheet.

06 erzählt. Ihr habts ja gesehen, .hhh jetzt erzähl uns.
tells. You (pl) have already seen it, .hhh now tell us.



The teacher hands the sheet back to Jessica.

As in extract (1), the teacher here specifies the overall order of events, as first showing (or seeing) then telling. She also, at least implicitly, ties the sequence of showing (and seeing) to the sequence of telling that is to come, thus, as in extract (1) creating a tie between the two activities, so that it should be clear to everyone that what is to come in the telling is related to and based on what they have all just seen (and perhaps read) on the *Tagebuch Blatt*. As we shall see in the following examples, both teacher and children subsequently use this direct (if implicit) connection between what is drawn or written on the *Tagebuch Blatt* on the one hand, and the children’s telling, on the other hand. As we shall see, the teacher typically uses the information on the sheet, i.e. the child’s drawings and the parents’ text, to prompt the children to provide more detailed descriptions of their experiences, whereas the children typically use the information on the sheet as an alternative semiotic resource, when prompted by the teacher to provide more details.

3.2 Tell me more – the *Tagebuch Blatt* as a resource for prompting and delivering more details

Once the verbal delivery of the children’s story telling has been initiated, as in extracts (1) and (2) above, i.e. after the showing has been accomplished, we see that both teacher and child use the *Tagebuch Blatt* as an assisting device for the production of meaning, though they do so in slightly different ways, as illustrated in the following two extracts.

Extract 3 [2009-03-09] “What else”

01 TEA: Ein neues <vogelhaus> habt ihr gekauft. .hh
A new <birdhouse> have you (pl) bought. .hh

02 und dazu auch noch?=
and in addition/besides as well ?=



The teacher points to the sheet and makes a “sprinkling” movement with hand and fingers.

03 JES: =Das.
=This.



Jessica points to the sheet.

04



The teacher nods and mimes “und” while Jessica repeatedly points to the sheet.

05 TEA: >Was ist das,<
>What is that,<



The teacher points to the sheet.

06 TEA: <vo:gel>,
<bi:rd>,

07 (0.6)

08 JES: fü:tte[r].
fod[der].

09 TEA: [<fütter.> A:ha.
[<fodder.> A:ha.

In extract (3), we see the child, Jessica, using the *Tagebuch Blatt* as a semiotic resource through which she can deliver an answer by means of physical indexing, as an alternative to producing a verbal reference which she apparently has trouble retrieving and/or delivering. By contrast, the teacher uses the *Tagebuch Blatt* and the physical indexing of items on the sheet as a prompt for Jessica to deliver exactly that verbal reference that Jessica apparently has problems retrieving and/or delivering. Here, Jessica has told the teacher and the other children about going shopping with her father during the weekend, buying, among other things, flowers for planting in the garden and a birdhouse. At this point in the telling, the teacher has summed up Jessica’s telling so far, ending with the item ‘*vogelhaus*’ (‘birdhouse’). She then prompts Jessica to continue her telling by producing the ‘and-prefaced’ turn ‘*und dazu auch noch*’ (line 02), with which she indicates that

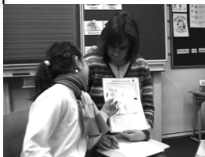
what is to come is an agenda-based part of a larger action (Heritage and Sorjonen, 1994). The remainder of her turn is further calibrated to indicate this logical nextness of her inquiry, by her use of the items ‘*dazu*’ (‘in addition’), ‘*auch*’ (‘as well’) and ‘*noch*’ (‘still’). Most notably, the teacher simultaneously points to the *Tagebuch Blatt*, making a gesture best described as an imitation of holding a quantity of small items in her hand and subsequently sprinkling these in the air, thus indicating that the item she is inquiring about is an item depicted on the *Tagebuch Blatt* and hence something that is still missing from Jessica’s telling.

Whilst the teacher thus uses information on the *Tagebuch Blatt* in an attempt to prompt additional details in Jessica’s telling, extract (3) also illustrates how the child, Jessica, attempts to use the *Tagebuch Blatt* and her drawing on it as an alternative semiotic resource to that of a verbal production. Instead of naming the item the teacher has identified, she points to that same item, simultaneously producing the definite article ‘*das*’ (‘that/this’), thus showing rather than telling what else she and her father bought on their shopping trip (line 03). In practical terms, Jessica’s pointing gesture thus answers the teacher’s question, by locating and showing the item bought. Jessica can thus be said to use the *Tagebuch Blatt* as an assisting device with which to scaffold her communicative competence. However, because the context in which her answer is delivered is one in which the therapeutic or pedagogical goal is to produce verbal expressions rather than ‘just’ achieve mutual understanding, the teacher here persists in getting Jessica to deliver a verbal expression. She does so, first by miming the word ‘*und*’ (‘and’) in line 04 alongside her nodding confirmation, thus indicating to Jessica that though her question is in principle answered, the sequence as a whole is not closed down yet. Instead of delivering a verbal expression at this point, however, Jessica once more, now repeatedly points to the sheet, as if insisting on this type of delivery as being sufficient (see Stivers, 2004, for a verbal equivalent of this type of repetition). The teacher then goes on to pursue a verbal expression specifically, by asking Jessica to name the item pointed to, with the question ‘*was ist das*’ (‘what is that’) in line 05, and when this fails, by gradually helping Jessica to deliver the item verbally by producing the first part of the compound word ‘*vogelfutter*’ (‘bird fodder’)³ (line 06) and finally by producing the correct version of the second part of the compound word ‘*futter*’ (‘fodder’), line 09. When this is accomplished to her satisfaction, she concludes the sequence by producing an instrumentalized version of the change-of-state token ‘*aha*’, with which she demonstrates that Jessica’s delivery is at this point satisfactory and that it can hence be treated as a delivery of new information (Mourtuou, 2013).

In extract (4), we similarly see how the teacher uses the *Tagebuch Blatt* as a device for prompting more talk from a child and how the child treats the same sheet as a potential (but again insufficient) semiotic resource that can scaffold her communicative competence. Here, Alma has been telling the others about her activities over the weekend, largely centering round some family visits. At this point in the telling, Alma herself uses the *Tagebuch Blatt* as a prompt for her telling, pointing to a person in her drawing and identifying that person as her ‘aunt Nanka’ (line 01). After a lengthy pause (line 02) that perhaps indicates that Alma has nothing more to tell, the teacher, as in extract (3) above, points to and thus identifies another item on the sheet, which Alma is yet to talk about. Again, as in extract (3), the teacher orients to the information on the *Tagebuch Blatt* as information Alma is accountably expected to tell about, as part of a larger agenda, again through the production of an ‘and-prefaced’ turn and through the inclusion of the word ‘*noch*’ (‘still’).

Extract 4 [2009-01-19] “Who else”

01 ALMA: Und da ist dante nanka.
And there is aunt nanka.



Alma points to a character drawn in the upper left corner of the sheet.

02 (1.1)

03 TEA: Und wer ist da noch, tante namka, und?
And who is there still/in addition, aunt namka, and?



The teacher points to character in the upper left corner of the sheet with her pen.

04 (0.7)

05 ALMA: Ich weiss nicht.
I don't know.

06 (0.9)

07 ALMA: Mein mamma hat vergessen zu schreiben,
My mommy has forgotten to write ,

08 (1.7)

09 TEA: Wie heisst denn der mann von tante (.) Merima?
How is the husband of aunt merima then called?



The teacher points to different character with her pen.

10 (0.6)

11 ALMA: Ich weiss nicht. der mamma hat gar nicht vergessen [zu schreiben
I don't know. the mommy has not at all forgotten [to write

12 TEA: [onkel?
[uncle?

13 TEA: onkel?
uncle?

14 (0.9)

15 ALMA: (nee el bis her)k[eine ahnung.
(nope - unclear)n[o idea.

16 TEA: [onkel fa:di:l.
[uncle fa:di:l.

17 (0.9)

18 ALMA: Onkel fadil.
Uncle fadil.

19 TEA: ∞Aha,∞

20 (0.3)

21 TEA: Der mann von tante merima heisst onkel fa:di:l,
The husband of aunt merima is called uncle fa:di:l,



The teacher points to character on drawing with her pen.

22 ALMA: Ja:::,
yes:::,

Like Jessica in extract (3), Alma here apparently has trouble naming the item that the teacher has identified in her drawing. Alma, however, does not use the *Tagebuch Blatt* as a physical resource for answering the teacher's question, as did Jessica. Her response nevertheless suggests that in different circumstances the *Tagebuch Blatt* could have been a resource. Thus, Alma here states her inability to answer the teacher's question on the grounds that the information she is looking for is not provided on the sheet (her mother has forgotten to write it, line 07). In orientation to this, the teacher attempts an alternative prompt, one that does not rely on the sheet. She thus tries to get Alma to name the person she has indicated on the drawing through other means, i.e. by identifying him as the husband of aunt Merima (line 09), information that Alma would presumably have independently of whether her mother has written it on the sheet or not. Alma, however, once more refuses to have the information (and on the same grounds as before) and the teacher finally has to name the person as 'uncle Fadir' (line 16), which Alma then confirms through a repeat.

Extracts (3) and (4) illustrate how both teacher and children employ the *Tagebuch Blatt* as a resource in their interaction, by both orienting to and treating it as a source of information, information that can (and in fact ought to) be included in the children's storytelling. The extracts however also illustrate that the underlying reasons for employing the *Tagebuch Blatt* as a communicative resource differ: Whereas the children may attempt to use the *Tagebuch Blatt* as a semiotic resource and as an alternative to the verbal production of language in contexts where they may have difficulty retrieving or producing a word, the teacher uses the *Tagebuch Blatt* as a resource for prompting the children to specifically produce verbal expressions. In that regard, the participants may at one level be at odds with each other, since the children can be seen to prioritize communicative competence in the form of mutual understanding, whereas the teacher can be heard to pursue communicative competence in the form of adequate *verbal* language production. This, of course, is a natural consequence of the pedagogic/therapeutic context in which the children are to produce their tellings: from the teacher's perspective, the institutional goal of these interactions is not to achieve mutual understanding per se, but exactly to practice the children's verbal language skills at the possible expense of more embodied means of expression. For these institutional goals, the *Tagebuch Blatt* constitutes an excellent resource for the teacher, since she can both employ it as a resource of information against which the children's descriptions of their weekend can be checked and compared, and as a resource for structuring the children's storytellings and prompting more detailed descriptions, when needed. As we shall see in the following, however, the *Tagebuch Blatt* can in fact present or depict a reality disjunctive to that of the children's own descriptions (see e.g. Pollner, 1975), and the teacher's reliance on the information given on the *Tagebuch Blatt* can, in such cases, cause a range of problems of a more challenging nature, since this reliance ultimately intercedes with the children's own basic right to know about their own experiences.

3.3 *But here it says – the Tagebuch Blatt as an alternative depiction of reality*

Competent members of a society are usually entitled to know best, most and first about their own experiences, i.e. have ultimate 'epistemic rights' (Heritage, 2011; 2012) with regards to matters that first and foremost concern themselves. However, as illustrated for instance by Rasmussen (2013), such basic epistemic rights are on occasion denied less competent speakers at the expense of accomplishing particular therapeutic or pedagogical goals. In the following two extracts, we see how the *Tagebuch Blatt* and the information provided there not just constitutes a communicative resource for both teacher and children during the activity of storytelling (as shown in previous

sections), but also, on occasion, is invoked to challenge the children's cognitive competences, here in the form of their competence to know, remember and express correctly their own experiences.

Extract (5) provides a first illustration of how this challenge can be invoked through the same means described above, i.e. through the teacher using the *Tagebuch Blatt* as a resource for prompting and providing further details from a child telling a story. In this case, Alma has been selected as the next storyteller and has shown her sheet to the other children and to the teacher (cf. extracts (1) and (2)). Alma begins her telling in lines 05--07 by describing to the others that she went somewhere to get ice cream with Faruk and Mike. Alma ties her verbal production directly to her drawing on the *Tagebuch Blatt*, by pointing, in turn, at each of the protagonists of her story, as she names them (line 05).

The way in which Alma identifies the protagonists apparently causes some confusion for the teacher. First, when the teacher reformulates Alma's telling, she mentions only Alma and one other person, Mike (line 08). Alma, however, has also named and pointed to Faruk as a protagonist in her story and in line 09 she makes this point explicit by pointing once again, while at the same time producing the turn '*Und der auch*' ('and that one too'). However, when the teacher asks Alma to identify this third person by name (line 10), Alma identifies him as Mike, then when the teacher points to a fourth character on Alma's drawing (line 16), Alma identifies also this person as Mike.⁴ At this point, the teacher appears to give up her strategy of prompting a more detailed verbal description from Alma through using the drawing on the *Tagebuch Blatt* and instead turns to scrutinize the sheet herself, apparently reading the accompanying text written by Alma's parents (line 25). After having read the text, the teacher then produces a summary of what she has understood so far, namely that someone called Malik was visiting the home of Alma (line 26). Having made this summary, the teacher then asks Alma to identify Malik on the drawing, which Alma does by pointing to a character there (lines 29--32). The teacher then continues by asking about Mait (presumably the same character that Alma has named as Mike), who Alma also identifies by pointing (lines 36--38). At this point then, it appears that the teacher has managed to establish some coherence between the written text on the *Tagebuch Blatt*, Alma's drawing on the same and Alma's initial verbal description of her experiences.

Extract 5 [2009-03-30] “But it says so here”

05 ALMA: Ä:hm (0.6) Ich war mit (die) faruk (1.1) mike (0.3) und (0.9)
A:hem (0.6) I was with (the) faruk (1.1) mike (0.3) and (0.9)



Alma points at two different characters in her drawing when naming Faruk and Mike

06 (mike) (0.7) und Alma (en) eis gegessen.
(mike) (0.7) and Alma (an) ice cream eaten.

07 (1.6)

08 TEA: Du: hast mit mike, (.) ein eis gegessen?
You: have with mike, (.) an ice cream eaten?



The teacher points first to Alma, then to a character in the drawing.

09 ALMA: Und der auch.
And he too.



Alma points to a character in her drawing.

10 TEA: Wer ist das?
Who is that?



Teacher points to the same character as Alma just did.

11 (0.8)

12 ALMA: Mike.

13 (0.3)

14 TEA: >Das ist< Mike.
>This is<Mike.



The teacher points to a different character in the drawing.

15 (0.3)

16 TEA: und wer ist das?
and who is that?



Teacher points to the character earlier identified as Mike by Alma (line 12)

Extract 5 [2009-03-30] “But it says so here” – continued

17 (3.9)

18 ALMA: Mi:ke.

19 ??: (da:ruk)

20 (1.6)

21 ALMA: Ähm (1.1) (da::rnu,) >ne.< (0.5) (da:i,)
 Ahem (1.1) (unclear,) >ne.< (0.5) (unclear,)

22 (4.8)

23 ALMA: (ne[in]
 (n[o])

24 MARK: [(Ja: du hast den bruder ein fir geschrieben)
 [(yes: you have the brother a four written)

25 (5.3)



Teacher turns the sheet towards herself and starts reading.

26 TEA: A:lso; (0.7) bei euch zu besuch (.) <waren> ma:lik,
 So:; (0.7) at your place visiting (.) was ma:lik,

27 (0.8)

28 TEA: Wer ist Malik?
 Who is Malik?



Teacher turns the sheet towards Alma.

29 (0.8)



Alma points to the drawing.

30 TEA: Das ist Malik.
 This is Malik.



Teacher points to the character indicated by Alma.

31 (0.3)

32 ALMA: Ja.
 Yes.

33 (0.5)

34 TEA: und (.) Ma:it?
 and (.) Ma:it?

35 (0.5)



Alma points to the drawing.

36 ALMA: >dar<
 >there<

37 TEA: Ma:it?

38 (0.8)



Teacher points to the character indicated by Alma.

So far, extract (5) and the strategies employed by the teacher appears to be very much the same as those of extracts (3) and (4): the teacher uses information available on the *Tagebuch Blatt* as a way of prompting the story-teller, here Alma, to produce verbal contributions of a more specific or precise nature. The teacher appears to continue this strategy in the remainder of this extract, but, as we shall see, the effect is somewhat different, because the *Tagebuch Blatt* (or the teacher's interpretation of it) is somewhat at odds with Alma's own version of reality. Having succeeded in getting Alma to identify in her drawing, two characters also described in her parents' text, the teacher in line 39 now prompts Alma to continue this activity of identifying characters. She does so first by producing a stand-alone 'und' ('and') with rising, questioning intonation, thus indicating that there are more items of the same kind to do the same thing with that Alma has done before. When the 0.9 seconds pause suggests to her that Alma may not in fact provide that next item, the teacher adds additional cues, first by pointing to the text in the *Tagebuch Blatt* and providing the name of another character apparently listed there, 'Zahna' (line 39). With this, the teacher appears to indicate that Alma should now be able to identify Zahna on her drawing, as one of the characters that went to get ice cream or at least as one of the characters that came to Alma's house. Alma's response in line 41 clearly shows her confoundedness: after a delay of 0.8 seconds, she produces the 'open repair initiator' (Drew, 1997) *was* (what), which along with her facial frown clearly indicates that she has some trouble with the preceding turn. Despite Alma's facial expression, which seems to suggest that the problem is one of agreement, rather than hearing (see eg. Svennevig, 2008), the teacher appears to interpret the problem as one of hearing and merely repeats her problem-turn, i.e. the name Zahna (line 43). Alma, however, now indicates that the problem was not of hearing, but rather that the teacher's version of events is incorrect, by stating that Zahan 'waited at home' (line 45). It is unclear (to us) whether this means that Zahna was never at Alma's place (i.e. that 'at home' refers to Zahna's home) or merely that Zahna did not go with the others to get ice cream (i.e. waited at Alma's home). Irrespective of what location 'at home' means in this context, it is however clear from Alma's statement that the version of events pursued by the teacher through her prompts is somehow at odds with Alma's own experience – and thus presumably incorrect. Instead of accepting this, however, the teacher appears to insist on her version of events as being the correct one, by grounding that version in what is available in the *Tagebuch Blatt*. She thus, in line 46 produces a fairly challenging objection to Alma's statement, emphasizing that the version of events she portrayed is written in the *Tagebuch Blatt*, the implication of this being that it must be right.

Extract 5 [2009-03-30] “But it says so here” – continued

39 TEA: und? (0.9) | Z:ahna.
and? (0.9) | Z:ahna.

40 (0.8)



Teacher points to a name in the text.

41 ALMA: Was.
What.

42 (0.5)



Alma frowns while uttering “Was”.

43 TEA: Z:ahna.

44 (0.3)

45 ALMA: >Zahna hat zu hause gewarten,<
>Zahna was waiting at home,<

46 TEA: Ja steht hier aber.
Yes but it says here so.

47 (0.3)

48 TEA: deine cousine Zahna,
your cousin Zahna,

49 (1.3)

50 ALMA: Mamma hat falsch geschrieben,
Mommy has written wrongly,

51 (1.2)

52 TEA: Wer ist denn das?
Who is that then?



Teacher points to a character in the drawing.

53 (0.7)

54 ALMA: Farusj.

55 (4.0)

56 TEA: und dein onkel?
and your uncle?

57 (2.8)

58 ALMA: (wa-wa)
(unclear)



Teacher scrutinizes the sheet.

59 (0.3)

Extract 5 [2009-03-30] “But it says so here” – continued

60 TEA: onkel fa:ruk,
uncle fa:ruk,

61 (0.3)

62 ALMA: Ja?
Yes?

63 (0.4)

64 TEA: >und< tante,
>and< aunt,

65 (1.3)



The teacher scrutinizes the sheet.

66 MARK: Bianca,

67 (2.7)

68 TEA: tante, (.) mellar?
aunt, (.) mellar?

69 (1.5)

70 TEA: >tante mellar?<
>aunt mellar?<

71 (1.1)

72 TEA: >Nee wie heisst< die tante?
>No how is< the aunt called?

73 (1.8)

74 ALMA: Melta.

75 (1.2)



The teacher turns to Alma.

76 TEA: Mel:za. Okay.

77 (0.7)

78 TEA: A:lso; (1.4)Und ihr wart, bei der tante Melza?
So; (1.4)and you (pl) were, at aunt Melza's?

79 (2.5)

80 ALMA: Ne:..
No:..

81 (0.4)

82 ALMA: (Melka war mir zu hause.)
(Melka was at me/my home)

83 (0.2)

84 TEA: A:ha. Alle haben (.) dich besucht? >Alle waren< bei auch zuhause [(ne)?
A:ha. All have (.) visited you-S? >All were< at you-PL at home[(ne)?



The teacher first circles the text on the sheet with her finger then points to Alma.




At this point then, we have on the table two different versions of events. In most contexts, such contesting versions of events would be resolved in terms of who has primary access to and hence primary knowledge about the events, which here would clearly be Alma, who has participated in (and is in fact in some way the main protagonist of) that event. The teacher, however, does not back down from the version of events she has relayed by way of the *Tagebuch Blatt*, thus in effect claiming that this document is a more reliable source of what happened than is Alma's telling. Rather than accept that Alma is right in claiming that Zahna stayed at home, the teacher instead pursues Alma's acceptance of the event description of the *Tagebuch Blatt*. She does so, first by indicating that Alma has failed to hear or understand, by adding additional information to the person reference she initially produced (Zahna), namely that who is referred to, is Alma's cousin (line 48). In doing so, she indicates that her original person reference form was perhaps too minimal for Alma to recognize appropriately (e.g. Levinson, 2007).⁵ Alma, however, does not in any way acknowledge this additional information about the referent, but continues her initial line of rejection by stating that her mother has written it wrong (line 50). Again, the teacher refuses to back down, now indicating another potential problem with Alma's verbal description of events, namely that it does not in fact reflect the version of events that Alma herself has presumably drawn on the *Tagebuch Blatt*. Thus, in line 52, the teacher points to a character on Alma's drawing, inquiring who that character is, in a challenging manner. The implicit challenge of this inquiry is largely accomplished by her inclusion of the modal adverb or particle '*denn*' (cf. line 05, extract 3 and line 10, extract 5 where this particle is absent). '*Denn*' can (in this context) best be translated into English as 'then' and here serves to indicate that the existence of the character inquired about by the teacher is somehow inconsistent with Alma's rejection of Zahna as a protagonist in the story ('Who is that *then*').

As it turns out, however, the person indicated by the teacher on Alma's drawing is not Zahna, but Faruk, the person who was originally identified by Alma as one of the protagonists of her ice cream story (see extract 5 above, line 05). When Alma states this, the teacher has no more resources available to challenge Alma's version of events, since Alma has now rejected the correctness of the written version (line 54) and dissolved a potential problem of inconsistency between her telling and her drawing. In reaction to this and after a long pause of about 4 seconds, the teacher thus returns to the more routine prompting of Alma to produce detailed and specific verbal descriptions of the events that took place, first by inquiring what the name of Alma's aunt is (lines 64--76) and then by inquiring whether they visited at her place or were visited by her (lines 78--84).

In extract (6) we in similar ways see how the teacher's orientation to what is written and/or drawn on the *Tagebuch Blatt* as the correct version of events may cause her to challenge the children's right to know and tell about their own experienced events. In this case, we find Alma in the midst of telling about another weekend experience, where she (and her family) spent the night at her uncle Faruk's place. In terms of who was where, Alma's delivery is perhaps not quite precise. That is, while it appears to be clear (to us) that the Saturday activity involved Faruk and Steffi spending time with Alma and her brother (lines 02--03), it is only after a 0.6 seconds pause in line 03 that Alma specifies in an intelligible way that it was they (i.e. her side of the family) who visited Faruk (and his side of the family). Whilst her turn in lines 02--03 is thus not entirely correct grammatically, the word order and choice of words by themselves does seem to disambiguate who was where. Nevertheless, the teacher in line 06 pursues this, presumably in an attempt to get Alma to produce a fully correct sentence, as indicated by her slow production of her question and her emphatic stress on the words '*wer*' ('who') and '*wo*' ('where') and by her insistence to 'hear it again' (line 09). At this point, then, there is no indication that this is anything but a communicative

problem, i.e. that either Alma did not produce the sentence correctly or that the recipients did not hear it well enough.

Extract 6 [2009-10-05] “That’s the other way round”

01 TEA: Alma >was hast du< am wochenende gemacht?=
Alma >what have you< done during the weekend?=


Alma moves her right hand towards the sheet held by the teacher.

02 ALMA: =an danka <war> Faru(k)s und ich >und mein bruder und<
=on (danka) <was> Faru(k)s and I >and my brother and<

03 (tan[ka (.) steffi) (0.6) waren wir () faruk.
04 (tan[ka (.) steffi) (0.6) were we () faruk

04 JES: [(janka)

05 (1.7)

06 TEA: <W:ar war am samst:ag w:ar?>
<Wh: o was on saturd:ay whe:re?>

07 (0.2)

09 TEA: das müssen wir noch mal hören,
this we must hear again,

10 (1.4)

11 ALMA: Wir war am (tamstag bei) fa:ruk,
We were on (Saturday at) fa:ruk,

12 TEA: Ihr wart (.) bei fa:ruk?
You were (.) at faruk?

13 ALMA: ((Nods))

14 (2.0)

15 TEA: Weil hier <steht> (0.2)
Because here <it says> (0.2)



The teacher turns the sheet towards herself.

16 AH/ME: Alma: ,

17 (1.1)



The teacher points first to the sheet, then to Alma.

18 TEA: tante samka: und onkel martin waren bei euch zu besuch, h
aunt samka: and uncle martin were at yours to vi[sit,

19 ALMA: [Nein das (dar) hier,
[No that (there) here,

Alma points first to the text, then to the picture on the sheet.



Extract 6 [2009-10-05] “That’s the other way round” - continued

20 ALMA: ∞sonntag∞ >das war< (.) fa:ruk.
 ∞sunday∞ >that was< (.) fa:ruk.

21 (1.5)

22 JESS: (den) sp:ielen einen ball,
 (whom) are pla:ying with a ball,

23 ?: (Alma ertält [unkel]
 (Alma is telling[uncle]

24 TEA: [↑A:h:: das ist umgedreht?
 [↑A:h:: this is reversed?

25 (0.3)

26 JESS: [(>da ich hab< bai:)
 [(>there I have<unclear:)

27 TEA: [A:h okay:,



The teacher turns the sheet towards the children.

28 TEA: Alma (.) möchte zwai sach[en erzählen.
 Alma (.) wants to tell tw[o things.

29 MEHM: [(Du au:::ch,) (0.8)
 [(You too:::,)

30 (0.8)

31 MEHM: (Du au:ch)
 (You too:)

32 TEA: >Mehmet?<

33 ALMA: >Ich hat< zwei sache,=
 >I has< two things,=

34 TEA: =Z:wei sachen.= einmal der (0.3)
 =Tw:o things.= one the (0.3)

35 ALMA: bei fa:ruk,
 at fa:ruk,



The teacher points to the sheet.

When Alma produces a more correct version of her description of events (line 11) in response to the teacher’s request to do so, we see, however that this request was perhaps not, after all, produced in pursuit of a grammatically more correct sentence, but an indication of a larger problem, namely that the teacher did not accept this as the correct version of events. In response to Alma’s turn of line 11, the teacher thus produces a repeat question (line 12), which shows that she has both heard and understood Alma’s turn. The repeat question is delivered with strongly rising intonation and emphatic stress on the two protagonists in the description, Alma’s family (*‘Ihr’*) and Alma’s uncle (*‘Faruk’*). Together, the emphatic stress and rising intonation expresses the teacher’s disbelief or incredulity, thus indicating that she is of the opinion that Alma’s statement is incorrect. This is further substantiated when Alma maintains her position through a confirming nod (line 13). At this point, the teacher turns the *Tagebuch Blatt* towards herself and explicitly states that some information is written there (*‘weil hier steht’*, line 15). She then goes on to read aloud what is

written (line 18), namely that Alma's aunt Samka and uncle Martin were visiting her. This version of events that the teacher presumably reads from the *Tagebuch Blatt* is significantly different to the version just told by Alma: firstly, the teacher here states that Alma received a visit, rather than Alma visiting someone. Secondly, the teacher names Samka and Martin as the people involved, rather than Faruk and Steffi who were named by Alma. Despite these large discrepancies, the teacher does not conclude that they are here talking about two different events. Alma does, however, and seeks to explicate this by using the different segments on the *Tagebuch Blatt* as well as a verbal explanation. Thus, in line 19, she first points to the text, then to her drawing, at the same time stating '*das (dar) hier*' ('that (there) here'). With this she seems to make an explicit link between parts of the text, parts of her drawing and the statement just produced by the teacher, i.e. indicating to the teacher that the two discrepant versions of events are in fact separate events, one taking place on the Saturday, one on the Sunday. This exquisite and very competent use of the *Tagebuch Blatt* to assist her verbal explanations clearly succeeds, as evidenced by the teacher's display of realization in line 27, where she first produces the change-of-state token '*ah*', then explicates her new understanding, '*das ist umgedreht*' ('this is reversed'). The teacher's understanding is further substantiated when she in line 28 turns to the other children and relays to them that Alma has two things to tell, with which she explicitly separates the two into two separate events.

Extracts (5) and (6) together illustrate how the teacher's strategy of using the information provided on the *Tagebuch Blatt* as a prompt or pursuit to get the telling child to produce more and more detailed or specific verbal contributions may, on occasion, lead her to challenge the children's inherent right to know and tell about events that they have themselves experienced. As noted by Sacks (1984), persons who have access to events through personal experience ordinarily hold epistemic authority over such events, and the telling children in the ci-classroom are unarguably persons who have personally experienced the events they describe. The presence of the *Tagebuch Blatt* (and the teacher's reliance on this sheet), however, complicates the matter of epistemic authority, because the *Tagebuch Blatt* introduces two versions of the described event, each from persons of experience: the child's parents (through the written text) and the child (through the drawing). The version told by the child can thus be compared against two other versions, and as we have seen this is exactly what the teacher on occasion does. Ultimately, the teacher's reasons for comparing the different versions may be oriented to matters of communicative competence, i.e. it may be the case that the teacher invokes the versions available from the *Tagebuch Blatt* in positions where the child's verbal delivery is unintelligible, ambiguous or in other ways confusing, linguistically, but the outcome of this is nevertheless that the child is effectively denied the epistemic authority that would ordinarily accrue to her as someone with personal experience of the event talked about. Ultimately, then, by treating the *Tagebuch Blatt* as the representation of truth and attempting to create coherence between what the children say and what is written there, the teacher treats the telling child not just as someone who is communicatively challenged, but also cognitively challenged, i.e. as someone who is not able to remember or conceptualize her own personal experiences adequately.

5 Summary and conclusions

The *Tagebuch Blatt* is clearly implemented as an AAC system or specialized object in the context of the ci-classroom. Here, the *Tagebuch Blatt* serves the role of scaffolding the interaction between teacher and children and is as such employed in a range of different ways. The teacher uses the *Tagebuch Blatt* both as a way of structuring the overall storytelling event that the children are to

engage in and as a means for prompting verbal descriptions and details from the children when these are otherwise lacking. In turn, the children employ the *Tagebuch Blatt* as a potential additional semiotic resource for accomplishing mutual understanding, but pointing to and indexing elements of the *Tagebuch Blatt*, for instance to provide answers to the teacher's prompts. Whilst this use of the *Tagebuch Blatt* is not consistent with the overall therapeutic/pedagogical agenda of the teacher, which is to get the children to deliver adequate and understandable verbal descriptions, for both parties the presence of the *Tagebuch Blatt* and their use of it at least provides a point of departure from which their overall joint goal can be met, that of the children telling a story about their experiences over the weekend.

As our analysis has also demonstrated, however, the presence and use of the *Tagebuch Blatt* can also have some presumably unwanted and potentially problematic consequences. The information provided by the *Tagebuch Blatt* can, on occasion be ambiguous, confusing or even contradicting the version of events described by the children themselves (or be interpreted as such by the teacher). When, in such cases, the teacher chooses to rely on the *Tagebuch Blatt* as providing the correct version of events, she also, in effect, uses it to question the child's ability to remember and describe his or her own personal experiences, or, in other words, place the children in the category of 'disabled member of society who cannot report his own social experiences' (Rasmussen, 2013:294). That this is a problematic matter is evidenced by the fact that the children actively resist having the right to know and talk about their own experiences taken away from them, for instance by rejecting the correctness of the events as described by the teacher via the *Tagebuch Blatt* or by using the *Tagebuch Blatt* to illustrate how the teacher has misinterpreted the information provided there. In the moment-to-moment progression of the interaction, one could thus argue, that the teacher through challenging the children's version of events simultaneously succeeds in having the children act as very competent speakers, who are able to perform fairly complex actions of rejecting, explaining and counter-challenging. On the other hand, by challenging the children's ability and right to convey their own experiences, the teacher may also – presumably unintentionally - be *heard* as disabling the children on a cognitive level, indicating that their communicative problems reside not just in their lessened physical ability to produce and receive auditory signals, but also in a lessened mental or cognitive ability to process these signals.

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¹ For experiencing the “hearing” with a ci, see

<http://successforkidswithhearingloss.com/demonstrations#Cochlear>

² In fact, storytelling takes place every day, but only after a weekend is it based on the *Tagesbuch Blatt*. As we are here specifically focusing on the role and use of the *Tagesbuch Blatt*, we consider only the Monday-storytellings here.

³ Jessica does in fact produce this last part of the compound first, in line 08, but with a slightly faulty pronunciation.

⁴ It appears, however, that one of the other children may in fact have identified this fourth person on Alma's drawing as Faruk (see line 19), but that Alma rejects this identification (line 23).

⁵ Practically, in a context where the recipient has potential hearing problems the teacher also adds more words that can perhaps be deciphered differently by Alma, thus allowing her to recognize who they are in fact talking about and thus ultimately also recognize that that person was in fact part of the described event.

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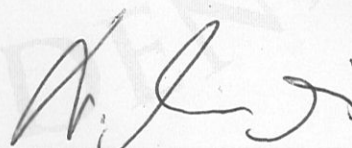
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