Institute of Behavioral Sciences
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JOINT MULTIMODAL MANAGEMENT OF HEARING IMPAIRMENT IN CONVERSATIONS AT HOME

– IMPLICATIONS FOR COMMUNICATION THERAPY

Kati Pajo

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Supervisors

Professor Anu Klippi
Department of Speech Sciences, Logopedics
Institute of Behavioral Sciences
University of Helsinki, Finland

Docent, University Lecturer, Markku Haakana
Department of Finnish, Finno-Ugrian and Scandinavian Studies
Faculty of Arts
University of Helsinki, Finland

Reviewers

Professor Ray Wilkinson
Department of Human Communication Sciences
Faculty of Medicine, Dentistry and Health
University of Sheffield, UK
Sheffield, UK

Senior Lecturer in Audiology, PhD, Christopher Lind
Department of Speech Pathology & Audiology/Clinical Effectiveness
Faculty of Health Sciences
Flinders University, Australia
Adelaide, SA

Opponent

Professor Ray Wilkinson

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ABSTRACT

Individuals with an acquired hearing impairment (HI) can experience difficulties in hearing, even with technical support, and these difficulties are overt in communication. Within the framework of conversation analysis (CA), this dissertation examines the dyadic conversations of HI participants in their home environment. In particular, the focus is on the collaboration that occurs during repair, how the repair sequences emerge and are organized between HI participants and the familiar partners during ordinary, everyday conversation. The database consists of approximately nine hours of video recordings from eight dyads. The aim of this study is to increase our knowledge of how indications of trouble emerge, to determine their local contexts in everyday HI conversations, and to analyze how the following repair sequences are managed between the participants. Through the findings, this study aims to further develop communication therapy that is conversationally oriented.

The results indicate that several findings drawn form the data support the previous studies, in particular, CA research concerning other-initiated self-repair (OISR) sequences. Thus, HI conversations are in many ways ordinary conversations. For example, in audiology, the assumption should not be that hearing impairment straightforwardly changes the ways to indicate trouble from the ordinary everyday resources. In addition, the HI individuals' other-initiated (OI) actions are similarly context dependent actions as in any mundane conversations. However, the attributes beyond the local context can have an effect on their occurrence and management (e.g. the degree of hearing impairment and familiarity between the speakers).

This study offers new lines of study, by exploring in detail how multimodal resources are used in OISR sequences and in instances where the trouble is more potential than explicit. The conversational extracts demonstrate that, as recurrent actions, the prosodic features, such as the urgency in fast articulation and the overlapping timing with the speaker's turn, as well as non-vocal features, which include the 'trouble posture' with changes in facial expression and movements of the body, can all constitute a familiar routine, revealing the hearing difficulty in an implicit way in comparison to verbal resources. The approach to the HI individuals' non-vocal actions during the speakers' turn introduce new information to CA studies and to audiological conversational studies. The study reveals how the collaboration between an HI recipient and his or her conversational partner intensifies when the HI individual, for example, frowns and leans towards the speaker. These instances are not similarly clear OISR sequences as those that are initiated by verbal resources. The non-vocal resources and responses from the speaker can be described as a continuum of collaboration. At the other end the participants are managing a threat

of misperception and towards the other end the collaboration reflects repair after misperception, similarly to actions following verbal OI-actions.

This study suggests possible clinical implications, where the keys include, the self-value of conversation, teamwork, the structure of requests for clarification and clarified speech, multimodality and visual access, multifunctional requests for repair, and repairing as a beneficial and positive behavior.

TIIVISTELMÄ

Kuulovika aikuisiällä voi kuulokojekuntoutuksesta huolimatta aiheuttaa kommunikaatio-ongelmia.

Tämä väitöskirjatutkimus tarkastelee keskustelunanalyysin (KA) viitekehyksestä huonokuuloisten parikeskusteluja kotiympäristössä. Tutkimus keskittyy arkikeskustelun korjausjaksoihin. Analyysin pääkohteena on se, kuinka korjausjaksot alkavat ja kuinka huonokuuloinen puheen vastaanottaja ja hänen läheinen keskustelukumppaninsa toimivat yhteistyössä korjausjakson aikana. Tutkimusaineistona on noin yhdeksän tuntia videonauhoituksia kahdeksalta keskusteluparilta. Tutkimuksen tavoitteena on lisätä tietoa siitä, kuinka ongelmallisuuden osoittaminen tehdään, millaisiin paikallisiin keskustelukonteksteihin nämä teot sijoittuvat ja miten keskustelijat selvittävät korjausjaksokokonaisuuden. Kliiniset sovellukset tutkimustuloksista pyrkivät kehittämään keskustelun keinoihin suuntautunutta kommunikaatioterapiaa.

Tutkimustuloksilla on yhtymäkohtia aikaisempiin tutkimuslöydöksiin, etenkin KA–tutkimuksiin, jotka käsittelevät toisen aloittamia itsekorjausjaksoja (engl. other-initiated self-repair (OISR) sequences). Nämä yhtymäkohdat osoittavat, että keskustelu huonokuuloisen kanssa on monin tavoin tavallista arkikeskustelua. Esimerkiksi huonokuuloisten keinot aloittaa korjausjakso eivät välttämättä poikkea tavallisista arkikeskustelun keinoista. Oletus audiologisessa keskusteluntutkimuksessa ei siis saisi olla, että kuulovika muuttaa vääjäämättä niitä keinoja, joilla ongelmallisuuden käsittely keskustelussa aloitetaan. Nämä huonokuuloisten korjausaloitteet olivat sidoksissa keskustelun lähikontekstiin, kuten missä tahansa arkikeskustelussa. Tärkeää on kuitenkin huomata, että myös lähikontekstin ylittävät ominaisuudet saattoivat vaikuttaa korjausaloitteiden tekemiseen ja korjausjaksojen käsittelytapaan (esim. kuulovaurion aste ja keskustelijoiden välinen tuttuus).

Tutkimus esittää uudenlaisen tavan analysoida korjausjaksoja tarkastelemalla niitä yksityiskohtaisesti multimodaalisesti ja analysoimalla myös tilanteita, joissa ongelmallisuus on enemmänkin uhka kuin selkeästi esillä. Keskusteluotteet osoittavat, että korjausaloitteet ovat toistuvasti tuotettu nopeasti artikuloituna ja vuoro voi olla tuotettu samanaikaisesti puhujan puheenvuoron kanssa. Lisäksi kasvojen ilmeen muutos ja kehon liikkeet muodostavat oman korjausaloitteisiin liittyvän kokonaisuuden. Nämä rutiininomaiset keinot paljastavat vaikeuden kuulla, mutta eivät niin eksplisiittisesti kuin sanalliset keinot. Tutkimuksen tarkka analyysi huonokuuloisen äänettömistä, kehollisista keinoista puhujan puheen vuoron aikana tuo uutta tietoa sekä KA–tutkimuksiin että audiologisiin keskusteluntutkimuksiin. Tieto koskee tilanteita, joissa keskustelijoiden välinen yhteistyö tiivistyy, kun huono-

kuuloinen esimerkiksi kurtistaa kulmakarvojaan ja nojautuu puhujaa kohti. Nämä tilanteet eivät ole niin selkeitä kuin sanallisin keinoin aloitetut korjausjaksot. Keholliset keinot muodostavat toimintojen kirjon, jota voi kuvata yhteistyöjatkumona. Jatkumon alkupäässä käsitellään kuulemisen ongelman ja keskustelun sujuvuuden uhkaa ja loppupäässä korjataan kuulemattomuutta lähes samalla tavoin kuin sanallisten korjausaloitteiden jälkeen.

Tutkimuksen kliiniset sovellukset sisältävät ohjeita, joiden pääkohdat ovat keskustelu itseisarvona, tiimityö, tarkistuskysymysten rakenne ja niihin vastaaminen, multimodaalisuus ja näköyhteys, tarkistuskysymysten monet toiminnot sekä korjausjaksot hyödyllisenä ja myönteisenä toimintana.

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In addition, I wish to thank all the anonymous readers who have offered comments and critical evaluation on the articles. Any errors and inconsistencies that remain are my own.

The figures in this PhD are the work of Elsa Ytti. Thank you aunt-Elsa!

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Helsinki
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LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following articles.

I Pajo, Kati (2013). The occurrence of 'what', 'where', 'what house', and other repair initiations in the home environment of hearing-impaired individuals *International Journal of Language and Communication Disorders* 48 (1), 66-77.

II Pajo, Kati (2012). "One gets along enough to make it work": a case study of local contexts prior to miscommunication between a hearing-impaired man and his spouse
Journal of Interactional Research in Communication Disorders 3 (2), 221-249.

III Pajo, Kati & Klippi, Anu (2013). Hearing-impaired recipients' non-vocal action sets as a resource for collaboration in conversation
Journal of Pragmatics 55, 162-179.

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1 INTRODUCTION

1.1 MOTIVATION FOR THE STUDY AND ORGANIZATION OF THE THESIS

The most common cause estimated for communication difficulties in adults is hearing impairment (HIA, Nordic-British Project 2001). In audiological rehabilitation, the majority of HI clients receive technical support in the form of hearing aids (Manchaiah *et al.* 2012). Thus, the evaluation focuses on the physical assessments (audiometric tests) and as a consequence, the rehabilitation focuses on the hearing-impaired individual (henceforth referred to as the HI). However, the regular use of hearing aids and the hearing-aid satisfaction leaves room for improvement (HIA, Nordic-British Project 2001; Manchaiah *et al.* 2012). Thus, even with technical assistance, HI individuals can experience difficulties in hearing and these difficulties are overt when they communicate.

The term *communication* refers to the Latin words *communis* and *communicare*, which can be translated as 'shared' and 'doing something together'. This is an illuminating perspective for examining hearing impairments, a conversation between an HI individual and his/her conversational partner. So instead of individual focus, this perspective changes it to focus both on the HI individual and on the conversational partner, as they share a moment of conversation. As a speech therapist in the field of adult audiology, to me this type of approach is fascinating and even practical. The advantage is that this approach enables us to evaluate the core issue, communication, and it encourages us to offer counseling precisely there where it is most needed (within conversation). In other words, the theoretical orientation adopted here has ecological validity, which makes it practical.

This type of qualitative research has evoked a generally growing interest among scholars who analyze communication disorders (for example, in aphasia: Klippi 1996; Wilkinson 2010; dementia: Lindholm 2008) and in particular, among the audiologic conversational analysts, utilizing the framework of conversation analysis (CA) (e.g. Lind *et al.* 2006; Okell & Lind 2012; Pajo 2012; Skelt 2006, 2010). This framework is important because as Lind (2010a: 17) states, "--- conversation difficulty is the major site of activity limitation/participation restriction for adults who have acquired hearing impairment". In particular, a crucial problem that the HI individuals and their partners experience is the phenomenon of repair (Hallberg & Carlsson 1991; Hétu *et al.* 1993; Scarinci *et al.* 2008). Despite this need to explore HI conversations, audiological studies in Finland have not approached this matter.

The present study is one of the first Finnish audiological conversational studies utilizing CA as a method (see, Pajo 2012). In addition, the Finnish Institute of Occupational Health has recently reported their research results (partly utilizing CA) and implications concerning employees with hearing aids (Koskela *et al.* 2013). One of the tasks of this project was to identify the hearing aid users' strategies for coping with social interaction in the workplace. The results suggested that the HI individuals' access to these strategies could facilitate hearing aid adoption.

This study therefore explores the interaction between participants with an acquired hearing impairment and their conversational partners.[1] Each of the three original publications forming the present thesis concentrates on dyadic interactions in the home environment of HI participants. This type of data is generally rare in the field of audiological research.[2] In particular, the focus is on interactional repair, how the repair sequences emerge and are organized in an ordinary, everyday conversation between an HI participant and his or her conversational partner. This knowledge is needed in communication therapy that is conversationally oriented, because the activity limitations and participation restrictions that are due to the acquired hearing impairment are considered to be chronic conditions and as a consequence, they constitute the valid concerns of intervention programs (Danermark *et al.* 2010; International classification of functioning, disability, and health, World Health Organization 2001; 2005; Laplante-Lévesque *et al.* 2010). To address this problem, this study is primarily aimed at hearing clinicians, who are speech therapists, audiologists, and other professionals working either within non-technical audiological rehabilitation, or working side by side with technical and non-technical rehabilitation. In addition, as a conversation analytic (CA) study, this analysis is addressed to the readers who are interested in CA and in repair that occurs during interaction.

This thesis will continue by introducing the CA framework (1.2). I will first present general information on this framework (1.2.1) and then introduce the focus of this thesis, other-initiated self-repair sequence (OISR) (1.2.2). Next, I will present the audiological conversational study designs and their clinical implications (1.3). The focus here is particularly on the results concerning repair and I will reveal some primary similarities and differences in the study designs and results (1.3.1). In addition, I will define the term *communication therapy* and I will specify why it is needed in the field of audiological rehabilitation (1.3.2). The specific aims of

1 An acquired hearing impairment differs from a prelingual hearing impairment. The three publications included in this thesis focus on the nature and intervention of particularly individuals who have lost their hearing in adulthood.

2 In Finland, analysis on several conversational settings (at home, work, in a Hearing Centre) is in progress 2011-2014 (Communication with hearing aids research project, University of Helsinki, Institute of Behavioral Sciences, Academy of Finland project number 140317).

my study are presented in (1.4). In Chapter 2, I will address the methodology of my study by introducing the participants (2.1), the home data collection and the structure of the data (2.2), the transcription system of CA (2.3), and the analytic procedure (2.4). After this, the results in Chapter 3 offer a summary of the original publications. I have divided this chapter into three subsections, and these describe the content of the three individual publications. The first subsection (3.1) collects the results of the whole data and presents the verbal resources in the other-initiation of repair of both HI individuals' and their conversational partners'. Another issue addressed in this subsection is the multimodal production style of OI-actions. The second subsection (3.2) shifts the focus to the interactional contexts prior to the other-initiation of repairs. This is a case study of one dyad and it demonstrates for example, how irregularly OI-actions occur in relation to interactional contexts. The third subsection (3.3) presents findings concerning the non-vocal actions by HI recipients. The conversational partners orient to these actions as indications of trouble, but they differ from verbal OI-actions. In Chapter 4, I will present the discussions and clinical implications. I will also present the primary findings, compare them to findings from previous studies, and I will discuss the limitations of the present study. Furthermore, I will offer possible suggestions for clinical implications. Finally, I will offer future perspectives for further research.

1.2 CONVERSATION ANALYSIS (CA)

1.2.1 INTERACTIONAL AND QUALITATIVE FRAMEWORK OF CA

It is evident that the interactional, situation-specific perspective on repairing calls for an empirical method. The methodology that I have adopted is conversation analysis (CA) and its qualitative approach on spontaneous, everyday conversation is well suited to these needs. I will focus on introducing the features of CA that are important in understanding the application of CA to the analysis of hearing impairment and to communication therapy. More comprehensive introductions to CA are available from several literature sources (for example, Tainio 1997; Sidnell 2010), in audiological rehabilitation texts (Lind 2009), and in articles focusing on an interactional approach in aphasia (Beeke *et al.* 2007; Wilkinson 2010). However, I will first summarize some central background information.

Conversation analysis has its roots in ethnomethodology (Heritage 1984), but in the 1960s the pioneering works of Harvey Sacks, Emanuel Schegloff, and Gail Jefferson, which originated from sociology, developed the distinguished methodology that is adopted today. Since then, various aspects of conversational phenomena have been uncovered. In particular, the CA findings concerning repair organization are central throughout my thesis and therefore they will be introduced in the following subsection (1.2.2).

Another qualitative method that is used in audiological studies that includes both the HI participant and their partners is, for example, interviews (Hallberg & Carlsson 1991; Hétu *et al.* 1988; Scarinci *et al.* 2008). In comparison to interviews, however, the method of CA is not based on the participant introspection, which can be difficult to some individuals. Another drawback of introspection is that speakers are not always conscious of their behavior during conversation. Conversation analysis focuses instead on exploring analytically the participants' *actions*, that is, in general how the participants use talk and non-vocal features during a natural conversation. CA therefore describes the interactional effect of a particular action or set of actions. CA offers important insights without conjecturing on the content of conscious minds.

By analyzing naturally occurring, everyday conversations, we can discover how participants understand and respond to one another (for manipulated conversations, see Wilson *et al.* 1998). An important analytical orientation in CA is that the participants interact with each other creating and renewing the local context with every utterance (Goodwin & Duranti 1992). This orientation offers new perspectives on communication by examining *turns* and how they are organized into *sequences* of interaction. Whereas a turn can be an utterance, it can also consist of only laughter or nodding. Sequences are constructed through the turns, for example, into longer story telling sequences or into short question–answer adjacency pairs (Schegloff 2007). In CA, the concepts of turn and sequence are central (Sacks *et al.* 1974) and they reflect the participants' orientation towards 'doing something together'. Thus, the term communication, which was mentioned in the previous subsection (1.1), can be described in CA terms as results both from and in *intersubjectivity*. This means that we orient towards social sharedness and we create mutual understanding.

The concept of *intersubjectivity* can be interpreted as the turn-by-turn actions of the participants and what these turns make available for the participants (see Heritage 1984; Sacks *et al.* 1974). Furthermore, intersubjectivity can be strengthened through operations of repair in order to resume mutual understanding (Schegloff 1992, 2006). The intersubjective state includes the concept of *recipient design* (Sacks *et al.* 1974: 727). For example, in my data, while producing a turn, the conversational partner can monitor the HI recipient's speech uptake. When the HI recipient produces something that indicates trouble, such as a frown and a lean towards the speaker, the conversational partner can design the turn production ad hoc to assist the recipient perceiving speaker's speech better (by leaning towards the HI recipient, by repeating some relevant words, etc.). Thus, recipient design can be used to refer to conversational actions, and this can assist us in better understanding the impact of the hearing impairment. To hearing clinicians conducting communication therapy, the recipient design clarifies and emphasizes that the participants in conversation display orientation and sensitivity towards one another and that they work in collaboration when they produce their turns

(Skelt 2012). As the example above concerning non-vocal actions suggested, even a single utterance in conversation can be *a collaborative achievement* (Goodwin 1979; 1981; Lerner 1996). In terms of counseling, the hearing clinician can assist the clients to acknowledge collaborative actions to enable them to better offer support for maintaining and resuming intersubjectivity.

Although the CA framework is primarily used to describe 'normal' everyday conversations between people who share equal competencies, several studies have been conducted that apply CA to asymmetric adult interaction (for example, aphasia: Goodwin 2006; Klippi & Ahopalo 2008; Wilkinson & Wielaert 2012; dementia: Lindholm 2008; Watson *et al.* 1999, hearing impairment: Lind 2009; Skelt 2006, Okell & Lind 2012, native-non-native conversations: Kurhila 2003; Lilja 2010; Seo & Koshik, 2010). Many of the studies on asymmetric participants have introduced non-vocal, gestural actions into the CA framework (Haakana *et al.* 2009). Originally, CA focused primarily on talk but some CA-researchers have nonetheless always considered bodily actions as being as important as talk. One of them is Charles Goodwin. His investigations of face-to-face interaction and embodied participation displays (gaze shifts, body posture, hand gestures, etc.) cover a wide variety of everyday interactions (see for example, Goodwin 1981, 2000, 2003). Indeed, the visual reciprocity in face-to-face conversation and the possibility to use embodied resources is very important in HI conversations.

The current approach to CA is multimodal analysis (e.g. Kääntä & Haddington 2011; Streeck *et al.* 2011). More precisely, *multimodal analysis* in this present study refers to the analysis of real time face-to-face interaction. This type of analysis includes not only language but also the body, gaze, facial expressions, prosody, and the timing of the utterance. Conversation analysis now incorporates all these factors as important interactive components in elaborating what is happening and in attaining an understanding between participants. The benefit of deepening the qualitative analysis with the multimodal approach is that more extended instructions can be introduced into communication therapy, which then can increase understanding between the providers of communication therapy and the clients.

In general, a qualitative, interactional approach is also needed to supplement the technically oriented audiological research and rehabilitation. As briefly mentioned above, interviews are one example of qualitative methods. Thus, CA is not the only method for qualitative findings and certainly not the only framework of conversational behavior (see Lind 2010b). For example, research approaches that draw from social psychology discuss their findings in terms of models of cooperation (for example, see Tye-Murray *et al.* 2010). These types of models use coding and counting and the results are often presented as group results of conversational behavior. These features separate them from the primarily qualitative approaches. In addition, the research settings in quantitative studies can be even strongly manipulated, while CA makes use of research settings that are as natural as possible.

A major part of the previous research on audiological conversation has adopted a quantitative approach, and these studies are introduced in a literature review (1.3.1) with CA studies.

1.2.2 CONVERSATION ANALYTIC APPROACH TO ORGANIZATION OF REPAIR: THE OTHER-INITIATED SELF-REPAIR (OISR) SEQUENCE

In CA, the shared understanding between participants is assumed to be the expected state of affairs. The way turns of talk are constructed and allocated form a turn-taking organization and the link between the turns forms action sequences, which reveal that the participants are 'on the same track' (Sacks *et al.* 1974; Drew 1997). It is not until one of the participants 'loses the track' that the mutual understanding is threatened.

In this chapter I present the CA approach to repair organization, which describes the systematic management of interactional trouble in everyday conversation (Schegloff *et al.* 1977). In general, repair is a mechanism to achieve clarification, to resume the main conversation after some perceived trouble.[3] Together with turn-taking and sequential organization, repair is fundamental in interaction. I focus on *other-initiated self-repair* (OISR) sequence because my study explores instances in interaction where the recipient, the HI individual, disrupts the progress of the conversation.

The instances of repair are analyzed according to who initiates the repair and who produces the completion of the repair. Schegloff, Jefferson, and Sacks (1977) have made a distinction between *self- and other-initiation* and *self- and other-repair* respectively. The term *self* refers to the participant who is speaking and *other* refers to the recipient. This distinction clarifies the actions in repair sequences, because repair initiation and repair can be produced either by the speaker or by the recipient. For example, the speaker can either recognize a need to clarify his/her own turn of talk (*self-initiated self-repair*) or after the recipient has requested a clarification for the turn (*other-initiated self-repair*). An example of an OISR sequence, where the HI recipient produces a verbal other-initiation of repair, is presented in the following conversational fragment (1). The keys for transcription are provided in an appendix.

3 For CA literature concerning repair in conversation see e.g. Drew 1997; Haakana 2011; Hayashi et al. 2013; Kurhila 2003; Lilja 2010; Schegloff et al. 1977; Schegloff 2000; Sorjonen 1997; Svennevig 2008.

(1) Emil and a piggy. Kerttu (HI) and her sister Pirkko are talking about television programs. Pirkko introduces a new program, which is a movie named *Eemeli ja possu*, 'Emil and a piggy'.

```
TROUBLE SOURCE
TURN            01Pir: No eilen tuli semmonen, (0.7) Eemeli ja possu. (0.4)
                  KER: ▲MOVES SLIGHTLY TOWARDS PIR
                       Well yesterday came that kind of Emil and a piggy

                02      päivällä.
                        in the daytime

OTHER-INITIATION  KER: LEANS TOWARDS PIR
OF REPAIR       03Ker: Mikä;
                        what-NOM

                04      (0.3)

REPAIR TURN     05Pir: Eemeli; (.) ja possu.=
                        Emil        and a piggy

CONFIRMATION/     KER: NODS
CONTINUER       06Ker: =Nii;
                        Yeah
```

Kerttu focuses her attention on Pirkko from the very beginning of Pirkko's turn (line 1) by moving herself slightly towards Pirkko. However, on line 3, Kerttu's *other-initiation of repair* (henceforth referred to as an OI-action) *mikä,* 'what-NOM[4]' (and a non-vocal emphasis; a lean towards Pirkko) reveals her need for repair. In principle, everything in conversation can be repaired. A CA-analyst indentifies the *trouble source* (the utterance, word, etc.) retrospectively, after the subsequent talk has focused on it. In the fragment above, Pirkko's turn on lines 1 and 2 needs to be repaired because from Kerttu's perspective, there is some type of trouble. In other words, it transpires that Pirkko's turn of talk is a *trouble source turn*. After the OI-action, Pirkko produces a *repair turn* (line 5) by repeating a part of her turn, the name of the movie *Eemeli ja possu*, 'Emil and a piggy'. On line 6, Kerttu accepts this repetition when she produces a confirmation *nii*, 'yeah', which yields the turn back to Pirkko (here, *nii*, 'yeah' also functions as a continuer).

As extract (1) demonstrates, the OISR sequence can consist of four turns, a trouble source turn, an OI-action, a repair turn, and a confirmation. However, in general the repair sequence consists of three turns (Haakana 2011; Schegloff *et al.* 1977), which means that the last turn, the confirmation, is not as typical in normal everyday conversations as it is in HI conversations (Lind *et al.* 2006; Lind 2009)

4 In Finnish, the interrogative pronouns inflect for case and number.

and possibly not as typical as it is in other asymmetric conversations (for example, in aphasic conversation, Laakso and Klippi 1999). It therefore seems that typically peer who are equal in conversation do not need to produce a separate indication of competence in order to move forward in their conversation. The following graphic illustration (Figure 1) summarizes the OISR sequence in the fragment (1). It includes a turn-by-turn negotiation of the repair, that is, it is an across-turn repair sequence.

Figure 1. An across-turn repair sequence: OISR sequence.

1	A:	TROUBLE SOURCE TURN
2	B:	OTHER-INITIATION OF REPAIR (OI-ACTION)
3	A:	REPAIR TURN
(4	B:	CONTINUER/CONFIRMATION)

The turns 2 and 3 construct the side sequence of repair, after which the main conversation can be resumed (Schegloff 2007). The turn 3 is either a repair or a confirmation depending of the OI-action type (for example, after a repetitive OI-action, the turn 3 can be a confirmation 'yeah'). The turn 4 includes several possibilities, and it is not necessarily a turn that is included into the repair sequence (e.g. a confirmation). As already mentioned, it can be a turn, which resumes the main conversation, or it can be a continuer, which yields the turn back to the other participant.

In extract (1), the OI-action *mikä,* 'what-NOM', is one of the many utterance types that make the speaker's repair a relevant next action. Drawing on everyday data, CA studies have explored different types of OI-actions. In 1977 Schelgloff *et al.* reported several turn types that are used as OI-actions including question words, which target a certain part in the previous turn (*who*, *where*, etc.); "open" (from Drew 1997) class repair initiators (*what*, *huh*, *sorry*, etc.), which leave the trouble unfocused; repetitions from the previous turn or repetition with a question word (*all the what*); and candidate understandings, which include 'you mean x' –type questions[5].

5 In Finnish, these questions are often initiated by *siis*, 'so' and/or ended by *vai*, 'or' (for example: *siis sielä oulun yliopistossa*, 'you mean in the university of oulu', *rannikolle vai*, 'you mean to the coast', Lilja 2010: 149) (Kurhila 2003; Lilja 2010).

In addition, actions that are embodied and non-vocal can be used as OI-actions (Skelt 2006; Lilja 2010; Seo & Koshik 2010). In my data, these instances differ from the verbal OISR sequences, as is demonstrated in the following two extracts (2 and 3).

(2) Goals. Kerttu (HI) and her friend Sirkka are talking about Kerttu's plans for the garden.

```
                01Sir: Ja se on kiva kun on jotain hommaa suunnitelmissa ja
                       And its  nice when one has  stuff   planned      and

REPAIR          02     tavoi- (.)tavoittei[ta?
NON-VOCAL
DISPLAY OF TROUBLE KER: ▲LEANS TOWARDS SIR
                        goa-      goals

                  KER:                    ▼ STRAIGHTENS HER POSTURE
                03Ker:                    [NII;
                                           yeah
```

(3) Young. Aki (HI) and his girlfriend Pia are talking about teenagers.

```
                01Pia: Siis mun mielest se on vähä silleen et niinku aattelee
                  AKI: DRAWS WITH A PENCIL ON A PAPER

                       Like I think     it is kind of so that like  think

                  PIA:                                          ▼ TURNS HER FACE
                                                                TOWARDS AKI, A
                                                                PROMINENT NOD
                  PIA'S GAZE:                                …[X_____
REPAIR          02     semmosta että (.) n'on nuoria? (0.9) ↑nuoria?
                  AKI'S GAZE:                          …_____________
NON-VOCAL         AKI:                                ▲ TURNS HIS EAR
DISPLAY OF TROUBLE                                      TOWARDS PIA,
                                                        THE DRAWING CEASES
                       that kind of that they're young      young

                  AKI: ▼ STRAIGHTENS HIS POSTURE
                       ____
                03Aki: Nii;
                       Yeah
```

In both extracts above the speaker halts her talk on lines 2 in the immediate vicinity of the HI recipient's change in participation. Therefore, these non-vocal changes, for example, shifting gaze and leaning towards the speaker affect the speaker. The turn continuation is a repetition of the word, which is under production (extract 2) or, which had just been uttered (extract 3). At first sight, these within-turn

actions by the speaker resemble self-initiated self-repair (indeed, with audiotape data they might be analyzed as this type of repair). However, it is essential that we take into consideration the recipient's non-vocal actions during the turn. Therefore, these instances cannot be considered to be an internal state of the speaker, but as something similar to verbal OI-actions. See Figure (2).

Figure 2. A within-turn repair sequence: Repair after recipient's non-vocal displays of trouble.

1	A + B + A: trouble source turn + non-vocal displays of trouble + repair

In figure (2), the repair after the non-vocal display is one of the alternative responses for the speaker. Other responses do not offer a repair, but they still reveal the speakers' orientation to the possibility of trouble (for example, segmentation of the turn, see also Skelt 2006).

In CA, the different OI-action types are examined according to their interactional effect (see for example, Robinson 2013). In other words, the analyst explores what is being done by a certain OI-action. Returning to the extract (1), Kerttu's *mikä*, 'what-NOM' utterance targets a specific part of Pirkko's turn. This finding is based both on the nominative case of the interrogative pronoun (*mikä*, 'what-NOM') and on the way the sequence continues. Pirkko's repair turn reveals her interpretation of Kerttu's previous utterance. Pirkko's response is a repetitive repair of a part of her turn, the name of the movie. In contrast, Pirkko does not utter an elaborative explanation of the movie. The production of the repetition includes a pause, which separates the two essential words in the name. This turn consequently the turn has a feature of perceptual clarity. In addition, Kerttu confirms (nii, 'yeah', line 6) the success of the repair without a delay. In short, typical features in my data are the repetitive repair turn, which has prosodic (and embodied, extract 3) emphasis, and the quick confirmation. These features demonstrate the interactional effects of OI-actions and why the OI-action was most likely used. In the extracts above, the most likely cause was misperception (for the features that indicate perceptual trouble see, Pajo 2012).

The range of the *'basis of trouble'* (Sidnell 2007: 290-291) is vast, including trouble with speaking (mispronunciation, saying something untrue, irrelevant, or inappropriate, see Svennevig 2008), hearing, and understanding (Schegloff *et al.* 1977; Schegloff 1987). This means that the basis of trouble in OI-actions does not solely concern hearing difficulties. More precisely, when HI individuals produce OI-actions, they should not be automatically interpreted as being static indications of a hearing impairment. As in any conversation, the HI individuals' OI-actions

can also be understood as implementing various social actions (see for example, Robinson 2013). However, since hearing is a precondition for understanding, and as a consequence, is a precondition for the progress in conversation, it is not surprising that addressing difficulties in hearing can be frequent in HI conversations. For example, repetition as a repair turn is usually considered to be an indication of the speaker interpreting the OI-action as a trouble in hearing (e.g. Couper-Kuhlen 1992; Drew 1997; Haakana 2011; Svennevig 2008). Nevertheless, the basis of trouble can be difficult to analyze because the participants rarely explicitly state their reasons for their initiating repair.[6] Furthermore, the interactional contexts can be highly complex locally, that is, many features affecting the need for repair are inter-related (for example, the perceptual difficulties and disagreement between the participants) (Drew 1997; Haakana 2011; Lilja 2010).

Certain actions in conversation can be seen as being preferred in comparison to the alternative (see for example, Schegloff 2007: 58-96). This means that the alternative types of response reflect different alignments towards the previous turn (Schegloff 2007: 58). In general, conversation is expected to continue and thus, that is the preferred state of conversation ("preference for progressivity", Schegloff 2006: 86). In contrast, the OI-action halts the progress of conversation. This is because the main conversation cannot proceed before the trouble is somehow resolved (or the repair is abandoned). For this reason alone, the OI-action can be viewed as dispreferred (Schegloff 2006) in comparison to the alternative, such as the use of minimal responses ('yes', 'uhm', etc.). However, a minimal response can be understood as merely a claim of understanding and by using it, a recipient can pass the opportunity to initiate repair (Schegloff 1993; Firth 1996). Furthermore, the OI-action is known to harbor other dispreferred actions, such as disagreement, or misalignment (Drew 1997; Schegloff 2007). This is an additional reason for an OI-action to be considered to be a dispreferred feature in conversation. In HI conversations, the increased need to disrupt the conversational flow can add to the HI individuals' sensitivity towards producing OI-actions (Skelt 2012).

The "natural ordering" of OI-actions can also be analyzed from the perspective of preference (Schegloff *et al.* 1977: 369). The various OI-action types differ in their capacity to locate the trouble source and their use is manifested according to the "preference for stronger over weaker" OI-actions (Schegloff *et al.* 1977: 369). In other words, the recipient more likely uses an OI-action that targets the trouble source (e.g. *who*) instead of using an unfocused, open-class OI-action (e.g. *what*). Furthermore, the occurrence of "multiples" (Schegloff 2000: 212), that is, for example, two OI-actions used in subsequent turns, has revealed that the second OI-action is typically 'stronger'. This means that the second OI-action targets the

6 Sometimes, it is the speaker who explicitly questions the recipient's perception (Pajo 2012).

troublesome part in the previous turn more precisely than the first OI-action (see also Haakana 2011; Svennevig 2008). The HI individuals can be unable to fulfill this natural ordering, but they can be interpreted as striving towards this ordering by using timing as a resource (see also, Couper-Kuhlen 1992). This can be seen in the following extract (4).

(4) German. Kerttu (HI) and her friend Sirkka are talking about Kerttu's blueberry shrubs.

```
01Ker: Joku bluu se oli se kolmas;
       Some blue it was it third
02Sir: Aha.
       Okey/oh
03Ker: Laatu e[t-
       Type that
04Sir:        [Oisko se saksalainen se y[ks;
               Could it be German it one

  KER:                                      LEANS TOWARDS SIRKKA
→Ker:                                     [>Mitä<?
                                            What

06Sir: Oisko se SAKsalainen se yks
  KER:              ▲FROWNS AND REMAINS IN THE LEANING POSTURE
       Could it be German it one

07     ku Saksastahan °niitä tul[ee aika (-)°
       when from Germany those come quite

  KER:                                LEANS MORE TOWARDS SIRKKA
→Ker:                               [>Ny mä e kuullu<,
                                      Now I didn't hear
09     (0.2)

  SIR: LEANS TOWARDS KERTTU
10Sir: PENsasmustikkaa tulee SAKsastaki aika paljo?
       Blueberry shrubs come from Germany quite a lot
11     (0.2)

  KER: STRAIGHTENS HER POSTURE AND NODS
12Ker: JOO.
  SIR: STRAIGHTENS HER POSTURE
       Yes

  SIR: NODS
13Sir: SUOmee?
       To Finland

  KER: NODS
14Ker: JOO.=
       Yes
15Sir: =Et oisko se SAKsalainen se yks laatu?
        That could it be German it one type
16     (0.2)
17Ker: Kun mää luulen et nää oli iha suomalaisii
       When I think that these were precisely Finnish
18     jalosteita;
       cultivates
```

On lines 5 and 8 Kerttu produces open-class OI-actions. The second OI-action *ny mä en kuullu*, 'now I didn't hear' offers more information of the basis of trouble than the first *mitä*, 'what', but both of these OI-actions leave the trouble source in the previous turn unfocused. Lind *et al.* (2006) have demonstrated that by interjecting the OI-action to the immediate vicinity of the trouble source, the HI individual adds some targeting force into the OI-action. In extract (4), Kerttu uses interjected timing in both of the OI-actions. At the same time, these actions reveal a rather deep misperception, and the inability to use stronger OI-actions. As Schegloff (2006: 82) argues, "doing a request early in the organization of an interaction can be a way of marking its urgency or some other feature known to be recognizable to the recipient(s)." In terms of timing of OI-actions, an interjected or an interruptive request for repetition (OI-action) can be interpreted as a resource to highlight the misperception. This way of marking an action can be particularly familiar to the recipients who are frequently conversing with the HI individual.

This subsection presented the OISR sequence and described the systematic management of interactional trouble in everyday conversation. The occurrence of OI-actions is routine in any interaction. An OI-action halts the progress of conversation until the trouble is resolved in the OISR sequence. This sequence can consist of four turns, but as I have demonstrated, non-vocal displays of trouble can also result in ad hoc repair during the trouble source turn. The descriptive analysis presented here focuses on how the participants orient to the interactional effects of the OI-actions, and how they manage to retrospectively interpret the most likely basis for trouble (e.g. misperception or trouble in understanding). The CA approach to the OISR sequence has highlighted two issues that are important to studies involving HI individuals. First, these actions that resume the main conversation are the participants' joint achievements. This perspective ensures that focus of the study is more balanced and on both participants and not only on the HI individual. Second, even if the OISR sequences are ordinary and needed in conversation, these sequences as well as the one-sided use of open-class OI-actions, can all be treated as problematic actions. It is therefore no wonder that particularly in HI conversations the HI individual's potentially frequent need to halt the conversation and that individual's inability to target the trouble can cause socially sensitive incidences.

1.3 ADULT AUDIOLOGIC STUDIES AND INTERVENTION ON CONVERSATION

For decades, one important subject and field of interest, particularly regarding conversation, has been the communication problems that are related to hearing impairment and this interest continues. The recent, special edition of *Seminars in Hearing* (Lind 2010a) introduced the current interests in conversation research. This publication reports that several research approaches are adopted and that some researchers also borrow methodologically from one another and are inspired by one another's approaches.[7]

In the field of audiology, scholars adopt qualitative approaches and particularly the method of CA less than the more quantitative approaches. In this chapter, I will present both quantitative and qualitative studies in the field of audiology. The focus is on conversational studies and I will highlight some primary similarities and differences between the various study designs and results. Finally, I will define the term *communication therapy* and I will state reasons to justify it as an important term in audiologic rehabilitation.

1.3.1 CONVERSATIONAL STUDIES IN THE FIELD OF AUDIOLOGY

In the following subsections, I will examine previous studies in the field of audiology from four perspectives. First, the focus is on conversational settings and data, which lead up to studies on local interactional contexts versus attributes beyond these local contexts. Second, study results concerning HI individuals' OI-actions is presented, and this is followed by the resources of the conversational partner, gaze monitoring and repair. Finally, I focus on the different ways of approaching repair sequences (efficiency and collaboration) in previous studies.

1.3.1.1 Manipulated settings versus natural conversations as data

In the field of audiology, a range of study and experimental designs have been created to explore the disruptions to conversation from the perspective of repair behaviors. Here, the term *repair* refers to all the actions by the participants to

7 For example, Tye-Murray *et al.* (1995) and Tye-Murray & Witt (1996) refer to CA study by Schegloff & Sacks (1973) on the notion of *adjacency pair* and Tye-Murray *et al.* (2010) use the term CA in the qualitative analysis part of their article. However, these studies are CA inspired and do not draw on CA conventions.

address misperception[8]. The study designs include those that incorporate self-assessment questionnaires (for example, see Heine *et al.* 2002) and interviews (e.g. Scarinci *et al.* 2008). In contrast, the experimental designs include "speech reception studies", "discourse studies", "free conversation studies", and CA studies (Lind *et al.* 2010a: 108-109). The studies conducted on free conversation are closest to CA, because these studies have attempted to obtain information from settings the participants' behavior is not as controlled in the settings nor is the setting as structured as in the other behavioral designs (for more on this topic, see e.g. Lind *et al.* 2010a). Nevertheless, the results of the free conversation studies are drawn from experimental designs that incorporate very different conversational settings from those used in CA studies.

The audiological CA studies follow the principle of natural conversation as research data (for audio data, see Lind *et al.* 2006; video data, Skelt 2006). For example, Skelt's (2006) findings concerning OI-actions are primarily from institutional interactions between audiologists and HI individuals (but, the data are partly taken from home conversations). Lind *et al.* (2004; 2006) have drawn their findings from unstructured conversations in a clinical room between HI individuals and their familiar partners. In both Skelt' and Lind's work, the HI individuals have a severe to profound degree of hearing impairment (supported by cochlear implants or hearing aids).

In contrast, many of the previous quantitative studies have used various manipulations of the environment, the participants, and conversational topic. The data are typically collected in clinical contexts and one example of the environmental manipulation that occurs is background noise (Caissie 2000; Caissie & Gibson 1997; Tye-Murray *et al.* 1995; Tye-Murray & Witt 1996; Pichora-Fuller *et al.* 1998) and organized sitting arrangements or other means that complicate or prevent lipreading (e.g. Tye-Murray *et al.* 1995, Pichora-Fuller *et al.* 1998, Tye-Murray *et al.* 2010). Other means of manipulating the environment is by determining beforehand the topics to be discussed by the participants, or by stipulating the conversational partner to be a professional in audiology or by offering instructions to the professional partner that include restrictions such as, "not to voluntarily repair breakdowns" (Pichora-Fuller *et al.* 1998; Tye-Murray *et al.* 2010: 161). In conclusion, because the focus of these studies is on the management of problems, the research designs have tried to promote the occurrence of problems (for the individuals with various degree

8 Many terms are used to refer to HI individuals and their styles of initiating repair, *request for repetition* (Wilson *et al.* 1998); *clarification request* (Caissie 2000); and *repair strategy* (Tye-Murray *et al.* 1995). The latter term *repair strategy* can be confusing because it can refer to either the HI individual, to the partner, or to both of them as they cooperate when solving a problem in conversation (Caissie & Rockwell 1993; Caissie & Gibson 1997).

of hearing-impairment) and to achieve this, the researchers have often needed to use several means of manipulation[9] (excluding Caissie & Rockwell 1993; 1994).

Restricted by the conversational settings, the free conversation studies primarily offer quantitative results (henceforth referred to as quantitative studies) whereas the CA studies are a descriptive, qualitative approach to micro-analyze the features in repair sequences. In addition, the quantitative studies seem to categorize the phenomenon of repair as one of several features that is connected to other conversational behavior (for example, for dominance, see Caissie *et al.* 1998). This means that quantitative studies usually cover a rather broad range of conversational behavior (see also the CA study by Skelt 2006). Following the topic of this study, the focus here is on the conversational study designs and on findings, which involve issues of repair.[10]

The comparison between the manipulated settings and the real-life interactions must be interpreted with caution because the manipulated experimental designs have focused primarily on HI individuals and the results highlight their disabilities and deviances that contrast with their conversational partners. In comparison, the natural conversation in CA is ecologically valid information (Beeke *et al.* 2007: 141), that is, it presents the participants as they behave in real, spontaneous interaction. These data have confirmed that despite the disruptions to conversational flow the communicative resources that the HI individuals and their conversational partners access, are predominantly ordinary, everyday resources (Skelt 2006, 2012). Furthermore, the equal examination of the participants has demonstrated that more attention needs to focus on the participants' collaborative management of troubles (Lind 2009; Skelt 2006, 2012).

Due to the interest in manipulated conversational settings, previous studies conducted outside the CA framework have not explored the local contexts of trouble in conversation. Thus, the knowledge of when OI-actions are used is constrained by the study method requirements and the perspective for the findings is not interactional. However, the study by Pichora-Fuller *et al.* (1998: 100) offers information on different "communication goals" including, "transactional" (information exchange) and "interactional" (social 'small talk') goals. They conclude that when the predominating goal in interaction is to receive information, the occurrence of OI-actions can increase. Another study by Caissie (2000: 45) that concerns topic shifting, draws attention to the partner's role in "conversational

9 See also a discourse study by Wilson *et al.* (1998) that includes highly structured conversations. For example, the "communication breakdown elicitation techniques" include speaking with one's head down, with a hand obscuring one's mouth, with an unexpected topic change, etc. (ibid. 33 and 40).

10 For more information concerning the management of potential perceptual risks (Skelt 2006, 2010) and dominance that occur in conversation, see for example, Caissie *et al.* (1998), Tye-Murray & Witt (1996), and Tye-Murray *et al.* (2010). For information on the self-isolating means of coping and retreating from active participation, see Caissie & Rockwell (1994), Hallberg & Carlsson (1991), and Hétu (1996).

breakdown"[11]. Caissie reported in that article that when the partners shift their conversational topic (particularly partial topic shifts), this increases the number of conversational breakdowns. However, in general, there is little research in the field of audiology concerning the local contexts prior to OI-actions. The OI-actions are not related to the interactional sequences but they seem to be treated as a strategy-set, from which any OI-action can be selected at any local context. This line of thought reflects the reasoning that underlying every OI-action is a perceptual difficulty. Indeed, with manipulated data, this most likely is the case. The drawback of that approach, however, is that by manipulating the environment the data are skewed and the result is a limited view of the range of practices that are included in OI-actions in real-life interactions (see e.g. Lind 2009).

The major point of departure from CA analysis is that the findings in quantitative studies are related to attributes that are beyond the interactional context. By way of illustration, the attribute of the HI participant, the degree of hearing impairment, naturally affects the frequency of misperceptions (Caissie *et al.* 1998). Other findings concerning the participant attributes include for example, that the HI individuals are more likely to use OI-actions with familiar partners than with unfamiliar partners (Caissie *et al.* 1998; Tye-Murray *et al.* 1995), and that the HI individual with "an interactive conversational style" attempts to actively initiate repair (Tye-Murray & Witt 1996: 23). In addition, Skelt's (2006: 329) CA-study approaches the need to minimize repair in conversation as "collaborative face work". In terms of OI-actions, the HI recipient's decision of whether and how to produce OI-actions can depend on threats to face (and with familiar people this threat is not so distinct than with unfamiliar people).

1.3.1.2 Hearing-impaired individuals' resources: other-initiations of repair

A central area of focus in audiological conversational studies is on the classification of OI-actions. Most of the studies divide the OI-actions into two major groups, the open-class and targeting OI-actions (similarly to, *non-specific and specific strategies*, a collection in Caissie & Rockwell 1993: 206). These groups are, in general, similar to previous CA findings (see subsection 1.3.2). However, questions of social acceptability still arise in relation to some of the strategies applied in the former audiological studies (Sparrow & Hird 2010). The problem has been the disruptive nature of the communicative strategies and how they draw attention to the hearing

11 This term includes the HI individuals' use of repair initiations or their "contribution to the conversation that revealed misperception", that is, 'misfit' talk (Caissie 2000: 45).

impairment such as, requests to *simplify*, *elaborate*, or to provide *a keyword* as possible OI-action types (Tye-Murray *et al.* 1990; Sparrow & Hird 2010).

The studies drawing from natural conversations have changed the perspective on OI-actions in the field of audiology. These studies have demonstrated that both the HI individual and the conversational partner use OI-actions (Lind *et al.* 2004) but that the HI individuals can produce significantly more OI-actions than their conversational partners (Lind *et al.* 2004). Nevertheless, by adopting an equal examination of both participants, previous CA research has established the useful observation that conversational partners (with normal hearing) also need to use OI-actions. In other words, OI-actions are ordinary in conversations.

Certain features in OI-actions can be interpreted as indications of the HI individual's orientation towards the sensitivity of delaying the ongoing conversation (Skelt 2006; 2012). As Skelt has observed, HI recipients typically produce minimally intrusive, disruptive, and time-consuming OI-actions (Skelt 2006). In practice, this means that the HI recipients recurrently produce single-syllable OI-actions such as *huh, eh, hm*[12], or use "stand –alone" non-vocal resources (Skelt 2006: 260). In face-to-face conversation, particularly these silent, but still very recognizable, non-vocal actions can be understood as indicating the HI participants' effort towards non-intrusive displays of trouble (Skelt 2006). In addition, the HI individuals can elaborate on the OI-action with apologetic utterance (for example, "beg y' pardon") or with accountings, and these may accompany OI-actions ("no I didn't catch that I can hear you speaking", Skelt 2006: 254 and 313-314). These actions can be interpreted as a display of the HI individual's sensitive stance towards the disruptiveness of an OI-action. However, overall, these (afore mentioned) indications of sensitivity are not features that are only specific to speakers with hearing disabilities although hearing impairment (the increased need to disrupt the conversational flow) may cause them to surface in conversation. [13]

The structure of OI-actions can reveal clear features of misperception. For example, in Lind's (2009: 230) conversational extract, the HI recipient produced a "candidate interpretation[14]", which revealed that he/she had not heard correctly because the repeated part from the prior turn did not respond to anything previously said (the OI-action is: "*trade in*", when the speaker has been talking

12 See also an international collection of open-class OI-actions and interjections by Enfield *et al.* (2013).

13 In general, the participants in conversation avoid intrusive actions when seeking others' attention (Goodwin 1981). The use of non-vocal resources to indicate trouble is also found in other asymmetrical conversations, native-non-native conversations (Lilja 2010; Seo & Koshik 2010). For additional information on the apologetic OI-actions in everyday conversations, see Robinson (2006).

14 Lind (2009: 228-230) presents six transcriptions of conversational fragments that contain various OI-action types, namely: general inquiry, metacommentary, partial repetition, specific wh-question, candidate interpretation, and the multiple-choice question.

about "*training*"). Similarly, the "don't mumble what" -type of metacommunicative utterances can be strongly connected to misperception (Lind *et al.* 2006).

1.3.1.3 Conversational partners' resources: gaze monitoring and repair

An important feature in face-to-face conversations is participant gaze and its involvement in the potentially problematic instances of interaction. Skelt's (2006) research concerning gaze is a pioneering work in the field of audiology. A particularly interesting finding by Skelt is that while speaking, the conversational partners can hold their gaze on the HI participant. In comparison to general gaze use, the speaker's gaze is known to be recurrently absent from the recipient of the talk (Skelt 2006: 65 and 118; 2010[15]). These "high-gazing" conversational partners in Skelt's (2006:320) study had had experience in interacting with various HI individuals. Therefore, this steady gaze pattern may be one feature that is specific to HI conversations (but possibly also to other asymmetrical conversations).

An interactional effect of a high-gazing conversational partner can be that the HI individual uses OI-actions less because the conversational partner contributes to the prevention of problems (Skelt 2006). The conversational partner manages this by monitoring the HI individual's speech uptake. For instance, a conversational partner can use gaze-soliciting devices (such as cutting-off the talk, pausing, and repeating a part of the talk) in order to achieve a mutual gaze (Skelt 2006; 2010; 2012). These gaze-soliciting devices are especially important in HI conversations (e.g. to secure lipreading). Yet in general, the gaze of the recipient is important to the speaker and these devices as described above are used in any face-to-face conversation (Goodwin 1981; Rossano 2012). The gaze devices highlight the collaboration between the participants and, more precisely, the conversational partner's important contribution to conversational flow.

The repair turn that follows the HI recipient's OI-action is typically a repetition (e.g. Caissie & Gibson 1997; Lind 2009; Tye-Murray & Witt 1996). The use of repetition is not always treated as the "appropriate repair strategy" for HI recipients (e.g. Caissie & Tranquilla 2010: 96). Nevertheless, the repetition can reveal something about the conversational partner's interpretation of the HI recipient's OI-action (cf. accounts in repair turns, e.g. Seo & Koshik 2010). Furthermore, when the conversational partner uses prosodic resources, such as slowing down speech rate, increasing intensity and pitch, and using pauses during speech production, this reveals further that the OI-actions has been interpreted as a misperception (Lind *et al.* 2010b). This form of clarification is also successful alone, without lexical

15 Skelt (2006; 2010) refers to the work on gaze by Kendon (1967).

changes to clarify and to repair speech (Lind *et al.* 2010b). In general, all these prosodic features create speech that is easier to perceive and no single prosodic feature seems to be distinctly more important (Lind *et al.* 2010b). Clarity can also be enhanced by using an additional resource, hand gestures (for example, iconic gestures that describe the object in discussion), particularly during a turn containing a repair (Skelt 2006). All these multimodal features can be utilized in any everyday OI-sequences (for prosody in repetitions, see for example, Curl 2005). However, the recurrent use of these features in HI conversations and the use of several resources (lexical, syntactic, semantic, auditory, and visual resources) at a time supports their connection to the recipient's hearing impairment (Pajo 2012). It therefore appears that the HI individuals and their conversational partners use predominantly 'normal' resources (albeit generally more frequently). In fact, this can be interpreted as a strength of these conversations. As Skelt (2006; 2012) suggests, normal resources achieve the necessary level of mutual understanding without drawing unwanted attention to the disability in hearing.

1.3.1.4 Different approaches: the efficiency of singular actions versus collaboration between the participants

The quantitative and CA study designs and frameworks have different interpretations of the resources (or *strategies*) used by the HI individuals and their conversational partners. These are briefly introduced in the following.

The studies that adopt the framework of principles of cooperation, orient to the open-class OI-action as a less cooperative alternative (Tye-Murray *et al.* 1995; Tye-Murray *et al.* 2010). This is because the HI individual leaves the need for repair unfocused and thus, he/she does not support the cooperative principle of minimum effort to repair (Tye-Murray *et al.* 2010). As a consequence, it is the partner who is left to interpret what needs to be repaired. Caissie and Gibson (1997) argue that lengthened repair sequences are also often linked to the use of open-class OI-actions. These repair sequences are regarded as being inefficient by the researchers. Thus, the open-class OI-actions are not considered to be as effective as the other OI-actions. However, the frequent use of targeting OI-actions can also be interpreted as disruptive and as having a negative effect on the willingness to engage a conversation with an HI individual (Tye-Murray *et al.* 2010). To summarize, these two results are central in quantitative studies, (1) the generally frequent rate in producing OI-actions, and (2) the potential inefficiency in the management of repair sequences.

In contrast, the CA approach does not support the line of thought that the use of one OI-action type is more effective or cooperative than some other type. At least, if viewed from the perspective of the length of repair sequences, the repair sequences in unmanipulated conversation are not typically lengthened (a case-study, Lind *et al.*

2006). The repair sequence, unrelated to certain OI-action types, is most commonly managed in four turns of talk, including the trouble source turn, OI-action, repair, and confirmation (Lind *et al.* 2006: 38). In addition, no clear difference in the length of the repair sequence is necessarily detected when comparing repair initiations either by HI individuals or by their conversational partners (Lind (2009), refers to his own doctoral thesis (2006)). Nonetheless, if the repair sequence is lengthened, the HI individual can produce two or (up to) three OI-actions (Lind 2009). This finding is similar to 'normal' everyday repair sequences (Schegloff 2000).

Furthermore, if the repair sequence is lengthened and the main conversation is clearly put on hold for the extended time of repair, this is not necessarily due to the use of a specific type of OI-actions (Lind *et al.* 2006). The quickness of resolving some trouble can depend on, for example, the joint work between the participants during the repair turn. As an illustration of this, Skelt (2006) states that a conversational partner who monitors the HI recipient's uptake signals can proceed in repairing if such signals are absent. Examples of actions that signal uptake are embodied actions, and a gaze withdrawal[16] with straightening of body posture (Skelt 2006). Another factor that affects the quickness of resolving the trouble is whether or not the partner accepts the HI individual's claim of an uptake after a repair turn, or whether she/he explicitly checks HI recipient's hearing (Pajo 2012). To summarize, in HI conversations, the conversational partners can be especially sensitive towards any trouble signals from the HI recipient.

1.3.1.5 Conclusion

Many study designs and experimental settings are used in the field of audiology to examine repair in conversation. The previous audiological studies are primarily quantitative with data collections from manipulated settings. I have compared these study designs with the qualitative CA studies, which use natural conversations as data. All previous conversational studies in the field of audiology have demonstrated that hearing impairment entails a clear risk of conversational problems through misperceptions and as a consequence, misunderstandings. A central result is that the HI individuals' frequently use open-class OI-actions and that the conversational partner needs to repeat (e.g. Caissie & Gibson 1997; Lind 2009; Tye-Murray & Witt 1996).

A key difference between the quantitative and the CA study results is that the former paint a noticeably deviant picture of the HI individuals as interactants, while

16 In general, a gaze withdrawal is a feature in orientation to action closure (Rossano 2012). This resource is usually used first by the participant who has initiated the entire course of action, and if gaze is maintained, the other participant can continue (Rossano 2012).

the latter has revealed that most of the resources used in HI repair sequences are also present in 'normal' everyday conversations. Furthermore, the local contexts that are found troublesome in HI conversations are potentially troublesome in any conversation, for example, the topic shifts (Drew 1997; Haakana 2011; Lilja 2010). However, the use of certain resources in specific contexts can occur with increased frequency and as emphasized action sets. Therefore, they can have a special significance in HI conversations.

Another important point is that in CA studies, the focus is not on the individual, but on the collaboration between the participants. The quantitative studies approach the matter of repair from an efficient/inefficient perspective. Unlike the quantitative approach, the CA studies offer evidence concerning the participants' orientation to the sensitivity of disrupting the conversational flow. This includes initiating a repair and repairing with ordinary resources that prevent drawing explicit attention to the disability.

1.3.2 COMMUNICATION THERAPY IN AUDIOLOGIC REHABILITATION

In the following, I will briefly describe what communication therapy is and why it is needed. In addition, the focus is on the suggestions for clinical implications from previous studies and the present direction in clinical implications.

1.3.2.1 What is communication therapy?

Communication therapy is one of the many terms that hearing clinicians (audiologist, speech therapists, etc.) or researchers use to refer to the form of counseling used to treat HI individuals. This therapy increases the skills of HI individuals and their partners to manage both the risk of conversational problems as well as the problems themselves. In practice, communication therapy often includes methods such as environmental and technical instructions and counseling, which target repairing behavior in conversation. The subject of repair in particular remains an important part of communication therapy because HI individuals themselves and their conversational partners can experience that when conversing, the frequent interruptions to the conversational flow include distinct problems (e.g. Hétu *et al.* 1993; Scarinci *et al.* 2008).

Communication therapy should be approached from the individual perspective of each client and their situation, with the exact form of therapy structured accordingly (Cott 2004; Laplante-Lévesque *et al.* 2010). This means that there is no 'typical' client or client-pair (HI individual + frequent conversational partner). For example, client-pairs may differ in their levels of involvement in the intervention process.

Similarly, the hearing clinician needs to be flexible and extend the scope of counseling if needed.

Nevertheless, clients will typically need to change some aspect of their behavior. Therefore, various "health behavior change models and theories" (Nieuwenhuijsen *et al.* 2006) are useful concepts when we wish to explain what counseling should include. In short, counseling is about providing information, but it needs to be tailored to the individual client's readiness to change by offering supportive, therapeutic guidance (Nieuwenhuijsen *et al.* 2006). In other words, a mere increase in a client's knowledge does not guarantee that client has adopted and will maintain a behavioral change.

1.3.2.2 Why is communication therapy needed?

Several studies and other publications concerning audiologic rehabilitation recommend that to HI individuals and their partners be offered communication strategies training (e.g. Caissie *et al.* 1998; Heine *et al.* 2002; Lind 2009; Marchaiah *et al.* 2012; Tye-Murray *et al.* 2010). One reason for this recommendation is that hearing aid intervention alone does not entirely remove an HI individual's disability (Manchaiah *et al.* 2012). In terms of the World Health Organization's International Classification of Functioning, Disability and Health (ICF: 2001), the relevant categories to hearing are *activity limitation* (intentional listening d115) and *participation restriction* (especially group conversations, d3504) (Danermark *et al.* 2010). The effort to ameliorate activity limitation and participation restriction, which effects can be broad ranging, may require communication therapy.

Another reason is an earlier finding by Knutson and Lansing (1990) concerning the relationship between communication strategies and psychological well-being in cases of profound hearing impairment. Knutson and Lansing (ibid. 661) associated ineffective communication strategies with negative psychological features. In addition, Hétu (1996: 18) states that "HI individuals are reluctant to make demands on others that would facilitate communication - because it requires disclosing their impairment or making it obvious." Thus, the stigma (shame) can present a significant obstacle to intervention (Hétu 1996) because the adjustments to the hearing difficulties demand substantial effort on the part of HI individuals and their families (Hallberg & Carlsson 1991; Hétu *et al.* 1988; Scarinci *et al.* 2008). Communication therapy, by focusing on conversational behavior, attempts to 'tackle' the experience or possible threat of shame and to assist the client in his or her adaption process. Indeed, recent studies have revealed that through communication intervention, the experiences of activity limitation and participation restriction can be reduced and the quality of life improved (e.g. Hickson *et al.* 2007; see also Jennings 2009).

Furthermore, the intervention that is targeted at actual conversation is also found to be beneficial in other fields of communicational problems, such as aphasia (Wilkinson & Wielaert 2012). Assessing conversation when it occurs and basing the suggested intervention on these observations is ecologically valid; that is, it can be applied in a straightforward manner to everyday conversation (Beeke *et al.* 2007; Lind 2010b). Contrary to the traditional task and disorder orientation to intervention, the recent approach shifts the role of the clinicians. They are no longer solely the ones engaging the client in conversation, but focus instead on the client-pair (Wilkinson 2010).

The interactional, everyday approach can be used to motivate frequent conversational partners to join in the communication therapy. To date, there still seems to be a lack of systematic attempt to involve frequent conversational partners in this type of intervention (Caissie & Tranquilla 2010; Manchaiah *et al.* 2012), although such attempts are becoming more frequent (Lind 2009; 2010b). In Finland, for example, communication therapy in the field of audiology is provided by speech therapists, but this type of intervention is not often available to those in need. For example, in a study by Huttunen (2010: 17), speech therapists reported that of the total number of their clients approximately 37% included the participation of family members. In general, there is little availability of audiologic communication therapy (Huttunen 2010). This refers both to the lack of speech therapists and to the underutilization of their work. Moreover, speech therapists working in tertiary care (central hospitals and university hospitals) spend a much of their time on assessments rather than on intervention.

1.3.2.3 From research to communication therapy practice: OI-actions

Previous studies in the field of audiology constitute several therapeutic points of departure that are targeted at repair in conversation. In general, researchers have tended to orient to the phenomenon of repair as something that needs to be reduced and remedied. Consequently, the HI individual is encouraged to adopt an assertive style in initiating repair, rather than, for example, being passive and pretending to hear (Caissie & Rockwell 1993; 1994; Tye-Murray & Witt 1996). However, HI individuals should appear genuinely interested in the conversation without asking too many clarifying questions. This means that they need to balance their use of OI-actions (*what*, *where*, etc.) and 'bluffing' (using minimal responses: *yes*, *mhm*, nodding, etc.) so as to promote the conversational flow (Tye-Murray *et al.* 2010).

An analysis of the OI-action types has several implications for clinical practice. Some OI-action types are considered to be more effective and natural than others (see Caissie & Gibson 1997; Erber & Lind 1994; Tye-Murray *et al.* 1995). The primary concern is directed towards the HI individuals' recurrent use of open-class OI-

actions (*what, huh*, etc.). This has been traditionally attributed to HI individuals' lack of skills (lack of information and acknowledgement) and use of these OI-actions has been regarded as ineffective and socially troublesome behavior. HI individuals are therefore recommended to adopt the use of specific OI-action types (e.g. Caissie & Gibson 1997; Caissie *et al.* 1998; Wilson *et al.* 1998; Heine *et al.* 2002). In a more recent rehabilitation book, however, Lind (2009: 235) suggests that HI individuals should "use specific repair initiators wherever possible", but adds that, "general repair initiators are not a lesser option" (*specific* here refers to the OI-actions that target the trouble source and *general* refers to open-class OI-actions). This approach by Lind differs from the former suggestions for clinical implications, because it does not downgrade the use of open-class OI-actions (see also Tye-Murray *et al.* 1995: 467). Nonetheless, it seems that the concept of *effective OI-action use* does not refer to a rich OI-action tool pack, but particularly to the use of OI-actions that target the trouble source (for example, see Heine & Browning 2002; Sparrow & Hird 2010).

1.3.2.4 Present direction: understanding conversational conventions and their multimodality

The present direction in clinical implications can be captured in the suggestion by Lind (2010b: 7): "intervention needs to be based on a clear understanding of the way conversation works, bringing aspects of conversational behavior under the client's conscious control." This statement includes two important issues. First, by providing information with a direct focus on conversation the hearing clinician strengthens the clients' awareness of their behavioral actions.[17] This helps the conversation be communicatively successful (also in aphasia intervention, see Wilkinson & Wielaert 2012). However, especially in earlier studies the implications have primarily concerned the HI individual, and the behavioral changes that they should adopt. This leads us to the second point in Lind's suggestion, "understanding of the way conversation works". If we accept the assumption that conversational behavior includes at least two participants, that it is tightly connected to the local contexts, and that repair sequences are vital mechanisms in conversations, then Lind's (2010b) suggestion of "understanding of the way conversation works", is not fulfilled in some previous studies. Therefore, those study designs or intervention programs that are not based on interactional framework and real-life conversation

17 In Scarinci *et al.*'s (2008:146) in-depth interviews, spouses to HI individuals were aware of their need to use e.g. face-to-face communication, positioning strategies, repetition, and attention seeking strategies. The researchers did not report, had the spouses undergone communication therapy or had they been offered some type of communication counseling.

had the task of defining what is acceptable and ordinary in actual conversation (cf. Sparrow & Hird 2010).

In addition, the use of multimodal resources is introduced step by step particularly by CA studies to the present clinical implications (see Lind *et al.* 2006, 2010b; Skelt 2006, 2012). This approach directs hearing clinicians to provide counseling on *how,* for example, an OI-action is produced instead of considering some OI-action types as being 'better' than others. An OI-action produced in the immediate vicinity of perceptional trouble is beneficial because it halts the ongoing talk before the trouble has a chance to possibly expand (Lind *et al.* 2006; Lind 2009). However, this interjection style, to produce the OI-action while the speaker is talking, may be used only with familiar partners, because it can be a sensitive matter to interrupt the speaker (Lind 2009). Furthermore, recent findings have begun to offer information concerning the participants' gaze and for example, body movements when initiating repair and resolving the trouble (Skelt 2006). Moreover, the present orientation supports the use of repetitions as a repair turn (cf. Caissie & Tranquilla 2010; Caissie & Gibson 1997; Tye- Murray & Witt 1996). From this perspective, various repetitions are a routine and a familiar way to repair difficulties in hearing. However, counseling should highlight the instructions concerning the production style of repetitions. For instance, prosody plays an important role in clarifying the repetition (Lind *et al.* 2010b) and the prosodic clarification can include both auditory and visual assistance to the HI recipient. All these features may seem self-evident. They are mostly related to face-to-face conversations and the recommending a conversation in face-to-face contact is basic information in HI counseling (see e.g. Caissie & Tranquilla 2010). However, only recent studies, including this doctoral thesis, have begun to demonstrate more thoroughly how systematic and important multimodal features are in HI conversations.

1.3.2.5 Conclusion

I have presented reasons for adopting communication therapy or, more precisely, counseling targeted at repair in conversation, in audiologic rehabilitation. One primary reason is that after hearing aid intervention, HI individuals and their conversational partners can continue to experience problems in communication. Thus, communication therapy offers supportive instructions for assisting HI individuals and their conversational partners in their everyday life and in their adaption process. Intervention aimed directly at conversation is also found to be beneficial in other areas of communication disabilities, but audiologic intervention lacks a systematic model for the inclusion of conversational partners. Furthermore, I have introduced several previous clinical implications. At present, the emphasis

lies on understanding our conduct in everyday conversation and on adopting multimodal approach to instructions concerning repair sequences.

1.4 THE AIM OF THE STUDY

This study contributes to the previous conversational research on hearing difficulties and asymmetric adult interaction. In the data, one participant in the dyad conversations that were analyzed has a diagnosed hearing impairment. Thus, this study can be classified as audiologic. The general aim of the study is to increase our knowledge of hearing disability in everyday conversations. I will present examples from the HI conversations that comprise my data, analyzing the following: (1) how indications of trouble emerge; (2) what their local contexts are in everyday HI conversations, and (3) how the following repair sequences are managed between the participants. Through these findings, this study aims to further develop the counseling in communication therapy.

In various counseling and training programs, the matters of repair have already been approached (e.g. Sparrow & Hird 2010). Several of these programs have nonetheless lacked a robust basis on everyday conversation and its repair sequences (see however, Lind 2009) and few studies have focused on conversations in the home environment (partially home data, Skelt 2006). This gap in research will be addressed in this study by exploring conversations carried out at home. I will reveal the mundane types of requests for clarification that can be seen to differ, to some extent, from the previous findings in clinical research settings.

Furthermore, if a study focuses solely on the words that are used in repair initiations and in repair, this may appear to be a rather simplistic view on the resources used in repair sequences in face-to-face interaction (cf. Wilson *et al.* 1998; Caissie *et al.* 1998). However, new analytical dimensions are created when multimodal orientation is adopted. This approaches the actions in repair sequences as the real-time interplay of several simultaneous resources (cf. Lind 2009). Until now, this perspective has received very little attention in audiological research and in intervention programs (see Skelt 2006). As a consequence, the overall production style of ordinary OI-actions has, for example, remained unspecified. In this doctoral study, the multimodal resources are explored in each of the individual publications (by HI individuals and by their conversational partners). This multimodal perspective offers the possibility of describing the participants' tools for achieving conversational flow in an extended manner. This perspective can be applied to clinical work. The benefits of this type of approach are in building a mutual understanding between the client and the clinician.

In previous research, both in the study of HI individuals (Skelt 2006: 260-266) and of presumably normally hearing individuals (native-non-native interactants,

Lilja 2010; Seo & Koshik 2010) non-vocal resources are used as stand-alone OI-actions. In other words, when an HI individual, for example, leans towards the speaker, this can generate a repair from the speaker. My perspective in this thesis differs from the previous studies because it demonstrates how the trouble is addressed with in a continuum manner, that is, not as clear-cut categories of action types (cf. OI-actions). I will analyze the various features of collaboration expressed by the HI individuals' and their conversational partners' during ongoing turns of talk.

Moreover, it would be insufficient to examine the requests for clarification and repair without first reviewing connection to the local context in interaction (cf. Tye-Murray *et al.* 1995; Caissie & Gibson 1997). For this reason, I will analyze several local contexts that generate repair sequences. To date, such contexts are not explored in detail in the field of audiology (see, for example Caissie 2000). However, previous CA-studies on various conversations have demonstrated, for example, that the contexts preceding open-class OI-actions can be complex (Drew 1997; Haakana 2011; Lilja 2010). I will demonstrate that local contextual features can promote the use of certain types of requests for clarification as well as that the identity of an HI individual is not relevant in all repair sequences. This information has clinical implications. In counseling it should be emphasized that even if hearing impairment increases the use of certain types of OI-actions, these actions cannot be selected randomly because their use depends on the local context.

In order to understand hearing impairment as a social phenomenon and to plan audiological intervention, qualitative findings are needed on the everyday communicational difficulties that are encountered at home. My analysis began as an inquiry into a conversation (presented in Pajo 2012) to determine how a speaker with hearing difficulty dealt with troubles in a conversation. The results from that study demonstrated that at the interactional level, this trouble in hearing can be revealed in features of everyday conversation that are situational, non-vocal, and turn-constructional, but that the familiarity between the participants also plays a role (Pajo 2012).

As a continuation to this earlier study, aim of the present study is to focus on conversations at home as a form of communication and to provide information on the repair sequences that are typical to this form. Each of the three original publications comprising the present thesis focuses on specific issues of repair in home conversations. The specific aims of the publications are as follows:

Study I explores the type of verbal OI-actions that are used in the data, how frequent these actions are, and how they are produced. This information is then summarized. Both the HI individuals' and their partners' actions are explored in order to compare the possible deviance of the HI individuals.

Study II provides a detailed exploration of the local interactional contexts that generate HI individual's OI-actions, and analyzes the selection of the OI-action types in these contexts. To this end, 14 separate conversations of one couple are analyzed.

Study III aims to detect the role of the trouble-indicating non-vocal actions of HI individuals in face-to-face conversation. This analysis explores the collaboration between the HI individual and the speaker. Two HI individuals and their partners were selected for this study.

2 METHODOLOGY

The same methodology was adopted in each of the three individual publications. This chapter presents the background to that research method. I will first introduce the participants and their selection criteria. Next, I will describe the procedure used in collecting the video data and will explain the structure of the data. In the transcription section, I will briefly present the conversation analysis (CA) conventions and tools that were used in organizing the video data. Finally, in the section on analytic procedure, I will describe the principals of CA analysis and the focus of the analysis in this study.

2.1 PARTICIPANTS

The data collection was conducted specifically for the purposes of this study and it has been granted full approval by the appropriate ethics committee (*Naistentautien ja synnytysten, korva- ja silmätautien, neurologian ja neurokirurgian eettinen toimikunta*, 'The ethics committee of obstetrics and gynaegology, otorhinolaryngology, neurology, and neurosurgery', 2007). The participants did not receive financial compensation for participating. Participant details and the medical information of the HI individuals are presented in table 1 and table 2 (under pseudonyms).

Table 1. Details of participants

Dyad number/ Year of recording	HI/gender	Age	Work/ retired	Partner/ gender	Age	Work/ retired	Partner description	Conversational frequency
1/2010	Aki (M)	43	work	Pia (F)	38	work	girlfriend	almost daily
2/2009	Sini (F)	57	work	Kari (M)	65	work	spouse	daily
3/2009	Matti (M)	64	retired	Maija (F)	64	retired	"	daily
4/2008	Simo (M)	69	work	Ulla (F)	67	retired	"	daily
5/2008	"	"	"	Antti (M)	67	work	co-worker	once a month
6/2007	Kerttu (F)	62	retired	Pirkko (F)	67	retired	sister	weekly
7/2007	"	"	"	Sirkka(F)	60	retired	friend	once a month
8/2007	"	"	"	Mari (F)	24	work	daughter	weekly

Table 2. Medical information on the hearing-impaired participants

	Duration of HI diagnose	Aetiology	Hearing aid (HA)	Unaided average loss in dB HL (0.5-4KHz) right/left ear	Unaided word recognition % right/left ear
Aki	10 years	sudden	unilateral	100/80	0/28
Sini	28 years	progressive	bilateral	95/90	64/68
Matti	6 months	sudden	bilateral	100/80	0/8
Simo	30 years	progressive	unilateral	48/90	50/64
Kerttu	13 years	sudden	unilateral	76/90	36/0

All participants were clients at the Hearing Centre for Adults, at the Helsinki University Central Hospital, in Finland. They have participated trough their attendance at ordinary speech therapy interviews (conducted by the author), which offered descriptions of their communicational difficulties. These interviews and access to the clients' medical files affected the clients' inclusion in this study. The inclusion criteria for the HI participants was determined on the basis of my professional experience in working with HI individuals as well as through the results of previous audiologic conversational research. The inclusion criteria for the HI individuals (and partly for their respective partners) were the following: to control the possibility of age related neurological problems, they had to be no older than approximately 65 years of age (or a person who was currently a part of work force); they had to have acquired their hearing impairment in adulthood; the degree of their hearing impairment had to be approximately 60-90 dB HL (the average bilateral value) and the recognition for words approximately 60% or less (Finnish Word Audiometry test, Jauhiainen 1974); and that they had to be native speakers of Finnish. Some candidates were excluded from the study because they did not have a frequent conversational partner. In addition, not all clients who fulfilled the selection criteria were willing to participate. The general reported reason for declining participation was that either the HI individual or the partner was reluctant to be video recorded.

The clients were invited to participate in the study during their speech therapy interviews providing them with written information. Five HI individuals eventually participated in the study. They all used hearing aid(s) and had a moderate to profound degree of hearing impairment. This degree can be defined for example, by using the WHO (2006) categorizations, which are based on the better ear hearing level, averaged over the frequencies of 0.5, 1, 2, and 4 kHz. Thus, this type of degree categorization is based on psycho-acoustic pure tone measurements, but the degree can be further described by using word recognition scores. All the HI participants had a decreased ability to recognize words.

In terms of real-life effect, the grouping (four "categories of profound deafness") used by Boothroyd (1993: 7-9) describes the level of disability in a profound hearing impairment from a more qualitative perspective. These groups include,

for example, descriptions of HI individual's auditory capacity with hearing aids and speech perception supported by lipreading. Following this grouping, three of the HI participants (table 2, Aki, Matti, Kerttu) are profoundly HI individuals (falling into the first and second groups of profound hearing impairment). Two HI participants were still able to have conversations on the phone (table 2, participants Sini and Simo); however, the other of these two restricted the conversations to familiar speakers (Sini). Therefore, Sini falls into the first group of profound degree of hearing impairment, and Simo did not fall into the profound category. He had the best speech perception capacity of all the participants. Another indicator that was used to determine the level of disability was the clients' descriptions of the success or difficulties they experienced in conversations at home. It is important to note that the same HI participants who were able to have conversations on the phone (at least to some extent) did not report having any conversational difficulties at home.

Eight conversational partners are included in the data. Each HI individual was asked to select a familiar conversational partner who did not have hearing difficulties. The number of conversational partners was not limited, but one partner was to be engaged in conversation at a time. Thus, Kerttu and Simo had more than one conversational partner and all the others had only one conversational partner during the whole data collection period.

All participants were native Finnish speakers, all had professional education, and more then a half (7/13) of these participants were still active in the work force. Furthermore, no neurological problems were reported and none of the participants had undergone communication therapy.

2.2 DATA COLLECTION AND DATA

The data consist of approximately nine hours of naturally occurring conversation in the home environment. The data were video recorded. The effect of the presence of recording equipment on the behavior of the participants was alleviated in several ways (see Caissie & Rockwell 1993). Firstly, the participants were volunteers, which suggested that they did not experience the camera as being a negative factor. Secondly, the participants were personally involved in selecting the setting for each conversation, which rendered the situation more comfortable for them. However, due to visibility as well as due to the implications for communication therapy, certain restrictions were placed on the setting. The setting was to be a coffee table with the participants sitting at a 90-degree angle at a distance of one meter from each other, except when either of them moved away for some reason. Nevertheless, the participants could select the table area in their home that was the most comfortable for them. Thirdly, after the participants received instructions on how to use the camera, the participants made the actual recording themselves

without the presence of a third party (the researcher). The fourth point is that the participants could conduct their recorded conversations according to their own schedule within a week's time. Approximately two hours of video data (from one hour to over two hours) from each HI individual was collected. This is a significantly larger sample size in comparison to previous studies (for example, ten minutes in Tye-Murray *et al.* 2010), which can be seen as the fifth way to alleviate the impact of a camera and to promote 'normal', representative conversational behavior. Finally, the camera was placed on a tripod stand and left there unattended for the time of data collecting, which was also thought to make the recording session less obtrusive.

I was especially interested in conversations around a coffee table, because this is a very common setting for everyday conversations. In my work as a speech therapist, I tend to advise my clients to have their conversations in this very setting to achieve relaxed but focused interaction. For example, for a profoundly hearing-impaired individual, a coffee table is a relaxing environment because the distance between the participants is sufficient to hear and to see the partner properly (the lighting and the background noise can also be controlled). In addition, when sitting at a coffee table, the main focus of the interaction tends to be on the conversation. In light of the preconceptions I harbored of coffee table conversations, I was curious to determine exactly what happens during these conversations that are audiologically rather ideal settings.

The different conversations in the data follow a similar structure although the duration of each conversation varies greatly from one minute to over an hour. When the recording begins, one of the participants (usually the partner) is sitting by the coffee table and the other (usually the HI participant) turns the camera on. The conversation has often already been initiated at this point, before both participants have taken their seats. The content of the conversations predominantly include everyday matters. Here 'everyday matters' refers markings and providing information on recent occurrences (for example, confirming participation to upcoming events), story-telling, or stating opinions. Some turns of talk also include observations on the visible environment. In addition, some food and drink is often set on the table, as well as other items that contribute to the overall comfortable atmosphere of any coffee table conversation. Furthermore, one dyad (table 1, Dyad 1) contacts various other people by phone during the conversations. This rapid and simultaneous interaction (by texting) with others who are absent from the room is a typical part of ordinary coffee table conversation in the world today. In this type of multitask-environment, the interactional attention recurrently shifts between the overlapping physical action and talk. These overlaps easily distract the conversational flow while having a conversation with a HI individual.

2.3 TRANSCRIPTION

According to conversation analysis (CA), conversation is orderly and the systematic behavior that is adopted by the participants is therefore analyzed in detail (see appendix). This detailed approach increases the reliability of the findings because the examined data is carefully transcribed to represent the original video or audio data. The contextual information of everyday conversations is rich and the analyst needs to have the tools to organize it. The conversational extracts in this study have been transcribed according to the CA conventions (Seppänen 1997; Sidnell 2010). To clarify how the turns are written, the speech turns that are in the extracts are predominantly presented in two lines. The first line is the original Finnish utterance, and the second is the approximate English translation. Finnish is an agglutinative language, which expresses grammatical functions and locations primarily with various word-final morphemes. In addition, nouns, adjectives and verbs are inflected. This is somewhat problematic for the translation, but no in-depth gloss lines are provided, because this study is primarily a behavioral study, not linguistic. In some cases, however, the translations are commented on in the footnotes.

The non-vocal aspects of the extracts are presented in capital letters (e.g. A FROWN, LEANING TOWARDS THE SPEAKER, etc.) and marked down in the transcripts where relevant. The direction of gaze (Goodwin 1981) is marked in a similar way. The speaker's non-vocal actions are marked above the turn and the recipient's non-vocal actions below the turn.

2.4 ANALYTIC PROCEDURE

The conversational fragments were analyzed according to the qualitative method of CA (see subsection 1.2). In CA, conversations are seen as public, overt processes (see Heritage 1984). For example, the display of trouble is an action that not only the participants observe, but also the analyst can observe.

The CA method is based on a sequential analysis with the role of the analyst being to detect recurrent features in interaction and to reveal how they are negotiated turn-by-turn in everyday interaction (Sidnell 2010). In CA, the sequential context is considered to be a resource for the participants and therefore, no single sections of talk are detached from the whole conversation and analyzed separately (Goodwin & Duranti 1992).

The quantification of interactional phenomena without qualitative analysis is considered to be problematic because local contexts in conversations are often complex (Schegloff 1993). As a consequence, the quantification and definition of the OI-action type (Studies I and II) was determined after conducting a qualitative sequential analysis.

In the present study, a collection was made of all verbal OI-actions that is, the utterances of the recipient of talk that have halted the conversation and have directed attention to the previous turn. The instances of *on vai/ei vai,* 'is it/isn't it/really', were analyzed as "ritualized disbelief" (Svennevig 2004: 507) and excluded from the analysis because even though their structure was similar to that of OI-actions, they seemed to indicate both hearing and understanding. In addition, certain instances did not clearly form repair sequences and were therefore excluded (for example, some cases of repetitions and turns similar to candidate understandings expressed an interest to continue on the topic rather than a need for repair) (cf. Schegloff 1997).

The process of analyzing the contexts prior-to-repair sequences (Study II) follows the CA-framework. The concept of *context* refers here to immediately observable behaviors. The existing context is manifested in the local demonstrations of the participants' understanding and the analyst concentrates on the participants' orientation in these demonstrations, not on their intentions (Drew 1997). According to CA, OI-actions initiate a repair sequence in any local context in which a mutual understanding between the speaker and recipient has been disturbed (Schegloff *et al.* 1977). Thus, the method of CA is data-driven; that is, any pre-specified categorization is avoided (for example, supposing that the basis of trouble in OISR sequence is in hearing). Instead, the analyst observes what the participants themselves focus on in a certain local context (an orientation to misperception, disagreement, inter-relating issues, etc.).

The analysis of the non-vocal actions of the HI recipients included the examination of their various movements towards the speaker: gaze shifts, leaning forward, and turning one ear towards the speaker. In addition, a change in facial expression to a frown (the knitting of eyebrows) can be included in this category of movements. (Figure 3 is a drawing of the original video recording).

Figure 3. The HI-recipient (on the right) shifts her gaze and leans towards the speaker.



The present analysis is not based on the figure presentation, but on the recordings that capture these rather rapid movements and how they gradually evolve. For example, a gaze shift by the HI recipient's towards the speaker can constitute an initiative action, which is then followed by the recipient leaning toward the speaker. Subsequently, the action is either maintained or the HI recipient's movement towards the speaker is renewed slightly until the situation passes, that is, until the HI recipient takes a turn or produces a minimal response.

Counting the non-vocal actions proved to be misleading because the actions consisted of various sets of action components that were occasionally repeated. Overall, these non-vocal actions constitute a major class of non-vocal activity in interaction (verbal OI-actions were also often accompanied by them), and only the recipient with the hearing-impairment produced them (cf. Seo & Koshik, 2010).

The reliability and validity of this study is attained through a precise transcription of the interaction as confirmed by a consensus on procedure (Peräkylä 2010). The data from the present study has been discussed in multidisciplinary data sessions to reach a consensus regarding the findings. To analyze prosody, in addition to the analyst's auditory perception, the PRAAT software (Boersma & Weenik 2013) was used.

3 RESULTS

In this Chapter, a summary of the original publications is presented. The order from Study I to Study III reflects the way the research progressed.

3.1 RECIPIENTS' VERBAL AND MULTIMODAL RECOURSES IN OTHER-INITIATION OF REPAIR (STUDY I)

Study I presents the overall frequency of the verbal OI-actions in my data. The total number of OI-action occurrences in approximately nine hours of data was 209. This quantification adds to the general description of the data, and it enables a basic yet informative comparison between the participants. The OI-action frequency for HI individuals was 164, while for the partners the corresponding number was 45. Despite the clear difference in frequency, the HI individuals and the partners used the same five major types of verbal OI-actions. The frequency and the OI-action types are presented in table 3.

Table 3. Verbal OI-actions of the hearing-impaired (HI) individuals and familiar partners (FP)

OI-action types	HI *n* = 5	FP *n* = 8
Open OI-actions		
1. Open	68	5
Targeting OI-actions		
2. Targeting question word	22	5
3. Question word with a repetition	19	4
4. Repetition	18	3
5. Candidate understanding	34	28
6. Others	3	0
The total of targeting OI-actions	**96**	**40**
The total rate in 9 hours Data	164	45

The open-class OI-actions are presented as one group. The various types of utterances in this group did not target anything specific that occurred in the previous turn, but left the trouble unfocused. The majority of open-class OI-actions (52/68) were speech variants of *mitä*, 'what' (*tä*, *mitä että, ai mitä*). An exception was the occasional use of the targeting *mikä*, 'what-NOM', which was grouped in the open-class OI-actions when it was repaired as an open-class OI-action (10/68, including the speech variant *mikä että*).

In the individual results of the HI individuals, the principal finding was that the total frequency of OI-actions differed across the HI individuals (table 4). However, the length of the conversational samples varied and this needs to be taken into consideration (ranging from Aki [1:00 hour] to Matti [2:18 hours]). Another important finding was that variation also occurred in the frequency of the individual usage of the different types of OI-actions.

Table 4. The individual frequency of OI-actions for HI individuals and the length of their conversational samples

	Matti 2:18h	Kerttu 2:03h	Aki 1:00h	Sini 1:38h	Simo 1:55h	Total 8:54h
Open OI-action	28	27	11	2	0	68
Targeting question word	10	5	1	5	1	22
Question word with a repetition	6	2	5	6	0	19
Repetition	15	0	1	2	0	18
Candidate understanding	16	2	1	15	0	34
Other	1	0	0	1	1	3
Total	76	36	19	31	2	164

A number of factors can account for these individual differences (for example, the degree of hearing impairment). It is important to note that comparing different conversations is known to present problems because each everyday conversation is unique, with different sequences and purposes.

In comparison to previous clinical studies, certain similarities were found for example, in the unequal production frequency of the OI-actions between HI individuals and their conversational partners (Lind *et al.* 2004). Their differences were indentified. For instance, an attempt to target the trouble source instead of using primarily open-class OI-actions was evident both at the group level and at the individual levels (cf. the 'natural ordering', Schegloff *et al.* 1977: 369). Explicit comments on misperception (three occurrences) or any type of apologizing (also three occurrences) rarely occurred, and other types of metacommunicative utterances (such as remarks on a speaker's speaking style) were not present (cf. Lind *et al.* 2006; Skelt 2006: 312-315). In addition, some other previously suggested possibilities for OI-action types, such as a request to elaborate, did not occur (cf. Sparrow & Hird 2010). These differences may result from the different settings for conversation (institutional conversations or organized clinical surroundings). The differences may to some extent follow from idiomatic conversational styles (cf. a case-study by Lind *et al.* 2006).

After the qualitative interactional analysis was conducted, a count and grouping of the usage of verbal OI-actions use was performed. The current analysis adopted a multimodal approach. Particularly in the case of open-class OI-actions, the HI

individual could produce the utterance with an overlapping timing with the speaker's turn. This urgency was emphasized by a fast speech rate. In addition, an embodied display of trouble (for example, leaning towards the speaker) was typically a part of the open-class verbal OI-actions. In contrast, the conversational partners never used the overlapping timing in their OI-action production. An example of the multimodal production style of OI-action is presented in (5):

(5) An open OI-action with some specification (Aki=HI)

```
PIA'S GAZE: IN A BOOK
1Pia: Tää'n näit primitiivi   [ta-
AKI'S GAZE: TOWARDS A BOOK …_____________
      This is these primitive ta-

                                  A SLIGHT FROWN, HEARING AID
                                  EAR TOWARDS PIA
 AKI'S GAZE:                      _____________________
→Aki:                            [>Ai m'tä=mä e'kuul[lu;<
→Aki:                                wha'I didn'hear';
 PIA'S GAZE:                      TOWARDS A BOOK

 PIA'S GAZE:                                          …[x_______
4Pia:                                                 [Primitiivi
                                                       Primitive


5    ___________,,, BACK TO A BOOK
     tatuointia tämä;
     tattooing this
```

The OI-action of stating *ai mitä mä en kuullu*, 'what I did not hear' on line 2 is uttered in overlap with the previous speaker's turn on line 1. The turn is produced with omissions to the articulation, because the speech rate is fast. Furthermore, the HI individual frowns and changes his body posture. After this, the trouble posture that he has assumed remains immobile until the trouble is resolved and the main conversation is resumed. This is presented in figures 4-6.

Figure 4. Main conversation



Figure 5. OI-action



Figure 6.Repair/trouble posture



To summarize, according to the CA findings by Schegloff *et al.* (1977), the results from the present data account for the typical OI-actions (cf. Lind 2009). In other words, the HI individuals and their partners use the same major OI-action types. As a group, the HI individuals use OI-actions more frequently than their partners, but the individual differences between HI individuals are clear. Therefore, HI conversations do not always signify recurrent repair sequences. The typical way for an HI recipient to produce an OI-action is by not drawing explicit attention to the action (cf. extract 5). Furthermore, explicit comments of 'not hearing' are rare occurrences in the data. It can be claimed that this is not a limitation but instead highlights the familiar and accepted conventions (the major types) of initiating repair at home with a familiar partner (cf. manipulated clinical settings, e.g. Wilson *et al.* 1998). However, the multimodal production style can emphasize the underlying reason for the difficulty in hearing. The HI individuals tend to use more multimodal resources (particularly leaning towards the speaker) in OI-production than their partners.

These findings cannot be extrapolated to all participants and must be interpreted with caution as some of the results were based on only one or two participants. However, the assumption should not be made that hearing impairment alters the use of ordinary OI-action types over time. Moreover, the significance of focusing on the overall production style of OI-actions is that it confirms the routine that is embedded in OI-actions.

3.2 INTERACTIONAL CONTEXTS PRIOR TO OTHER-INITIATION OF REPAIR (STUDY II)

Study II is a case study of a married couple dyad where the husband has a hearing impairment. This study explores the local interactional contexts that generate HI individual's OI-actions, and analyzes the selection of the OI-action types in these contexts. The hypothesis that OI-actions are dependent on the local interactional context was strengthened by this study (this perspective was adopted in Study I). In general, the number of OI-actions varied between conversations, depending on the conversational context. More precisely, the hearing impairment alone did not determine the frequency of a speaker's OI-action use. Table 5 presents the collection of OI-actions in the different conversational occasions (conversational takes).

Table 5. The number and duration of conversational takes in chronological order, with the number and type of OI-actions.

Conversational takes	Min/sec	Number of OI-actions	Open question e.g.What?	Candidate understanding e.g. You mean X?	Repetition e.g. Teppo tests?	Targeting question word e.g.Which?	Question word with repetition e.g.Who told?	Other a clause-like question
1	12:20	9	4	1	2	1	1	
2	01:00	2	1		1			
3	08:24	7		5		1	1	
4	10:00	4	1	2	1			
5	13:57	2			1	1		
6	04:25	3	2		1			
7	16:45	8	3		2	1	2	
8	08:47	5	2	2				1
9	14:35	10	4		3	3		
10	12:48	2			1	1		
11	11:57	11	3	5	1		2	
12	06:00	2	2					
13	10:15	10	5	1	2	2		
14	07:18	1	1					
Total 14	**138:31**	**76**	**28**	**16**	**15**	**10**	**6**	**1**

Every take includes at least one OI-action (from 1-11/take), but what is noticeable is that the longest takes do not have the highest frequencies (e.g. 7. take, 16:45 min/sec, 8 OI-actions), and during only a one-minute conversation, the frequency can be two OI-actions (2. take). The HI individuals mostly used various targeting OI-actions, while open-class OI-actions, which are typically associated with hearing difficulties, did not occur in every recording.

The evidence therefore suggests that some local contexts appear more likely to promote OI-actions than others. For example, when the HI individual was not available for conversation (at the recording outset), he mostly used open-class OI-actions. Furthermore, when the HI individual was not familiar with the topic (the unknowing participant) then candidate understandings were preferred. These contexts resulted in different types of repair sequences. In the former, it can be claimed that the hearing impairment strongly affected the occurrence of OI-actions. This interpretation is partly based on the fact that the HI individual needed to adjust to the acoustic environment. In addition, both these contexts lacked the HI individual's visual access to the speech. He was unable to lipread because his focus of attention (gaze) was not entirely on the speaker. In the latter context, the recipient's hearing impairment did not play a role. This interpretation derives from a lack of shared knowledge on the topic, and from the structure of the OI-action itself. This suggested that the HI recipient needed clarification for

imprecise referencing (in other words, “I heard, but I’m not sure who/what place/what point in time you are referring to”). In addition, the local contexts during the conversations formed complex contexts where many features were inter-related (for example, misperception intermingled with misalignment). These complex contexts in particular, were grounds for open-class OI-actions.

By analyzing everyday data and with interactional, qualitative approach, highlights the range of purposes of some particular OI-action types and their context-dependent interpretation. This perspective differs from the more quantitative audiologic conversational studies that consider OI-actions as being indications of misperception.

In addition, this study underscores the positive and socially important feature of repair sequences. An OI-action does not merely halt the conversation, but emphasizes a crucial part of it and, consequently, secures mutual understanding in a robust way. To illustrate, let us consider the following:

(6) TAKE 9 (Mat=HI)

```
MAI'S GAZE:  ,,,
01Mai:       ↑Mä+en ois erottanu ensinnäkään oikeestaan sitä, (0.5)
             I wouldn't have recognized first of all really that

             ▼LIFTS  ▼LIFTS HER EYEBROWS
              HER JAW
MAI'S GAZE:              …[x_____
02           kh     £sian #ääntä#.£
                     pig's sound

03           (0.3)

  MAT:       LIFTS HIS EYEBROWS, LEANS TOWARDS MAI
04Mat:       £Mikä;£
              What-NOM

05           (0.3)

  MAI:       NODS     NODS
06Mai:       £Sian. [sika.£
              Pig's  a pig

07Mat:               [Nii. mut kylhän Milla ties kaikki;
                      Yeah but Milla did know all
```

In this conversational extract the crucial word *sika,* ‘a pig’, is recycled in the repair turn on line 6, after the OI-action *mikä,* ‘what-NOM’ (line 4). In this way, with a quick check, the understanding between the participants is restored. In addition, this incident consists of collaboration between the participants. The partner can be interpreted to ‘guide’ the HI recipient towards the crucial word (see the analysis of the original Study II) and therefore, the repair sequence, which secures understanding, is an achievement between the participants.

In conclusion, I have examined what makes a shared understanding possible between an HI individual and their familiar partner. In other words, if that understanding is threatened, how does the partner construct a sufficient understanding of the HI recipient's trouble? The qualitative analysis revealed that several mundane local contexts in interaction promoted the HI individual's use of OI-actions. Based on this analysis, the partner interprets the OI-action according to: (1) the availability of the HI recipient's focus and readiness for conversation; (2) the shared knowledge of the topic; (3) the issues of alignment and agreement; (4) the redundancy versus topical shifts; and finally, (5) the need to repeat some words. For example, in (1), the simultaneous physical actions with talk might disturb the HI individual's speech perception and decrease the mutual monitoring work of the participants. In (2), the HI individual might not be familiar with the topic and might need to ask clarifying questions. In addition, one of the extracts demonstrated how misperception inter-relates with disagreement (3), and similarly, several troublesome features also inter-related in the extract, which demonstrate a topical shift (4). Furthermore, at times, the HI participant exhibited clear difficulties with single words (5). The analysis approached these difficulties as misperception because of unclear speech but also as instances where something relevant was highlighted.

The evidence therefore further shows that having a hearing impairment does not determine the frequency of the speaker using, for example, open-class OI-actions. Even when used by an HI individual, the OI-action types are multifunctional. Patterns in using certain OI-actions in particular local context were detected. However, the generally frequent utilization of OI-actions in this data was most likely a result of the HI individual's hearing impairment, which caused him to be susceptible to distraction and unable to endure charged contexts. Nonetheless, the study demonstrates that OI-action use can also refer to positive social features. For example, OI-actions can be viewed as the HI individual's alignment and focus as a conversational partner, which strengthens mutual understanding. This aspect in particular has not been emphasized in previous audiological studies.

3.3 RESPONDING TO TROUBLE INDICATING NON-VOCAL ACTIONS (STUDY III)

This study demonstrated that HI recipient's produced non-vocal actions (such as gaze shifts and leaning forward, turning one ear towards the speaker, or frowning) as indications of misperception. These findings are based on two HI participants extracted from the larger data. The non-vocal action sets did not function as similarly strong first pair parts as verbal OI-actions in a question–answer adjacency pair (cf. Seo & Koshik 2010). Depending on the speaker's interpretation of the HI recipient's non-vocal actions and on the HI recipient's following action, these collaborative

procedures could be placed as points on a continuum of collaboration. This means that non-vocal displays of trouble could not be clearly categorized as OI-actions, but as indications of strained listening. In some sense, non-vocal displays of trouble are similar to participation displays (Goodwin 2003), that is, that the HI individual shifts his or her focus of attention to the speaker. However, an important difference between non-vocal displays of trouble and participation displays is that the action is not only a gaze shift towards the speaker but a similar set of trouble (strain) indicating actions that typically accompany verbal OI-actions.

When the HI individual remained silent, however, but produced non-vocal indications of trouble, the speaker sometimes responded by increasing his or her monitoring work or with a repair. The speakers' monitoring work included, for example, shifting their gaze towards the HI recipient and their segmenting of the turn continuation into 'doses' of talk. In short, the speaker did not respond with a direct repair, but demonstrated recognizable 'alertness.' This is demonstrated by the following:

(7) Ker=HI

```
PIR'S GAZE:  ,,,                  …[x_____________________________________
→Pir:        Muuten    toi; (0.2) Väinö luki; (0.3) Valituista Paloista;
KER'S GAZE:  ____________________________________________________________
KER:                   ▲FROWNS AND LEANS SLIGHTLY TOWARDS PIR
             By the way that      Väinö read        from Reader's Digest

KER:         NODS
KER'S GAZE:  ___
05Ker:       Nii;
             Yeah
PIR'S GAZE:  ___

KER'S GAZE:  ___
06           0.4
PIR'S GAZE:  ___


PIR'S GAZE:  _____________________________________
→Pir:        semmone      täydellinen rikos; (0.7)[(kun),
KER'S GAZE:  _____________________________________
             that(type of) perfect     crime       (when)


KER:                                                LEANS TOWARDS PIR
KER'S GAZE:                                         _______
08Ker:                                              [>Mikä?<
PIR'S GAZE:                                          _______
                                                     What-NOM
PIR'S GAZE:  __________________
09Pir:       Täydellinen rikos;
KER'S GAZE:  __________________
             perfect     crime
```

At the beginning of this transcription (line 4), the HI individual emphasizes her role as a recipient by frowning and leaning slightly towards the speaker. Through these actions she manages to engage the speaker's averted eyes and a mutual gaze is achieved. Subsequently, the speaker continues her turn in three segments, which appear as doses of talk, because they are divided by pauses, into separate parts: (1) *Väinö luki*, 'Väinö read'; (2) *Valituista Paloista*, 'from Reader's Digest'; (3) *semmone täydellinen rikos*, '(that type of) perfect crime' (lines 4 and 7).

These actions (frowning and leaning, which are responded to by direct eye contact and dosing the talk) represent a point at the beginning of the continuum of collaboration where the trouble is only potentially present. A realistic description of similar extracts is captured when the non-vocal actions of the HI recipient are approached from the viewpoint of participation displays (Goodwin 2003). In this study, this refers to the achievement of intensified shared attention, which has been initiated by the HI recipient. The foundation of this state is the mutual gaze, which enables more prominent changes in the participants' behavior (such as tailoring the speech into smaller units). More precisely, the speaker did not always produce a repair as a response to the non-vocal action sets. Nonetheless, these action sets were similar in their appearance and similarly positioned in a sequence to those that were responded to with a repair.

Indeed, occasionally the trouble was more clearly highlighted and the collaboration between the participants resembled other-initiated self-repair (OISR) sequences. However, the difference compared to verbal OISR sequences was that the non-vocal actions lacked a similar explicitness as first pair parts as verbal OI-actions. In other words, the speaker seemed to monitor the need for repair according to the local context, and if a repair response followed it was typically a short repetitive-like action (relevant word(s)), which only minimally delayed the progression of the conversation (see examples 2 and 3, Subsection 1.2.2).

When approaching the use of non-vocal actions as a continuum of collaboration, it is possible to avoid strict categorization into action types. Instead, non-vocal actions can refer to a range of implications, from actions that monitor and maintain the conversational flow to actions that resume that flow. Thus, the HI recipient is not necessarily seeking a solution to a specific trouble that could be remedied by the speaker, as in the following:

(8) Ker=HI

```
   PIR:                                ▼BEGINS TO MOVE HER HANDS
→Pir: Nii ja sit jos tulee tuuli;
   KER:                           ▲FROWNS, LEANS TOWADRS PIR
        Yeah and then if comes the wind

   KER: NODS
06Ker: Nii;
        Yeah

PIR:    ▼AN ICONIC HAND GESTURE I  ▼AN ICONIC HAND GERSTURE II
→Pir: TUULI               j:a pöllyttää niitä.
        The wind          and whirls    them

KER:    NODS
08Ker: Mm.
```

In the extract above, the speaker chooses to confirm the HI recipient's uptake (line 7) regardless of the HI individuals claim on uptake (line 6). However, the HI recipient has used trouble-indicating non-vocal actions during the previous turn (line 5), which can be interpreted as increasing the likelihood of the speaker's confirming actions. These repair-like actions are noticeable, because the timing and the prominent use of the iconic hand gestures emphasize the turn (see the complete analysis in Study III).

To summarize, the non-vocal actions in the present data were systematically produced as a part of the speaker's turn and not as turns in their own right (cf. Seo & Koshik 2010). The non-vocal actions are consequential actions of the HI recipient, used to strengthen the collaboration with the speaker. When the speaker has experience of HI-conversations and is familiar with a particular HI individual, the speaker's monitoring of the HI recipient's uptake can be extremely sensitive and prevent any need for overt displays of trouble (see also Skelt 2006).

The non-vocal actions can be approached as a continuum of collaboration, which avoids strict categorization into action types and, instead, refers to a range of implications from actions that monitor and maintain the conversational flow to actions that resume that flow. Unlike previous studies (Caissie & Rockwell 1993; Lilja 2010:79-83; Seo & Koshik 2010; Skelt 2006:260-266; Tye-Murray *et al.* 1995; Tye-Murray & Witt 1996) that have approached the recipients' non-vocal actions primarily as one action type as OI-actions the present study extended the analysis to the more general collaborative procedures, which indicate trouble in face-to-face interaction (Beavin Bavelas *et al.* 2002; Goodwin 1979, 1981). The intensified monitoring work in face-to-face conversation may well be typical of HI conversations.

4 DISCUSSIONS AND CLINICAL IMPLICATIONS

4.1 MAIN FINDINGS OF THIS STUDY

In this doctoral thesis, I have analyzed dyad conversations between moderately to profoundly hearing-impaired participants and their familiar conversational partners. The conversations were recorded on video at the home of each HI participants. My findings contribute to the previous conversational studies on hearing difficulties and asymmetric adult interaction. More precisely, my analysis demonstrates, how troubles in speech perception emerge and are managed in everyday conversation. I intended this thesis primarily for the use of hearing clinicians, who are speech therapists, audiologists, etc. In addition, I addressed this thesis to any reader interested in CA and repair in interaction.

I have demonstrated that several findings drawn from my data support previous studies, particularly CA research on OISR sequences. First, the major OI-action types used both by HI individuals and by their conversational partners, were similar to those in Schegloff *et al.* (1977). Furthermore, the OI-actions were primarily short utterances. Second, repetitions (with small changes) as repair turns were used throughout the data (for similar results, see e.g. Curl 2005; Haakana 2011; Lind *et al.* 2010b; Skelt 2006). Third, the OI-actions produced by the HI recipient were context-dependent actions, just as they are in any mundane conversation (Drew 1997; Haakana 2011; Lilja 2010). These similarities reveal that, in many ways, HI conversations are like any ordinary conversation. For example, hearing impairment does not necessarily mean recurrent disruptions in the flow of the conversation. Furthermore, the disruptions can be very quick, one word repetitions, during an ongoing turn (cf. lengthened repair sequences, Caissie & Gibson 1997). Thus, the acquired disability in hearing does not, as a rule, surface in the conversation or take over the conversation in a face-to-face setting.

However, as a group, the HI individuals in this study used more OI-actions than their partners, particularly open-class OI-actions. These results are in line with previous audiologic studies and therefore, they are one of the central issues of communicational problems in HI conversations (e.g. Lind *et al.* 2004; Skelt 2006; Tye-Murray & Witt 1996). In other words, the frequency of OISR sequences and the types of OI-actions serve as concrete examples of activity limitation and participation restriction in everyday HI conversations (WHO: ICF 2001). Therefore, these sequences continue to be a target of intervention aims in various communication programs, which include reducing the communication activity limitations and participant restrictions (see e.g. Hickson *et al.* 2007). However, a more systematic

use of the ICF categories in assessment and intervention of hearing impairment should be used (see Danermark *et al.* 2010).

My study has also contributed to the results from previous studies. The similarities between the CA research results concerning normal, everyday conversation, and the results from my study, need to be discussed from the perspective of audiology. In other words, the focus should shift to the everyday resources of initiating repair. The ordinary everyday resources in indicating trouble should be treated as sufficiently beneficial and it should not be assumed that hearing impairment straightforwardly changes an HI individual's existing skills of selecting OI-actions (cf. Sparrow & Hird 2010). As an illustration of this, I have presented evidence that the attempt to target the trouble source, instead of resorting primarily to open-class OI-actions, was apparent in the conversations conducted in home environment. In other words, despite the difference in the frequency of open-class OI-actions between the participants (HI individual and conversational partner) the HI individuals also strived towards the "natural ordering" of the use of OI-actions (Schegloff *et al.* 1977: 369).

Apologetic and metacommunicative utterances were rare in my data, but they have been included in previous audiological CA studies (Lind *et al.* 2006, Skelt 2006). A reason for these differences can be attribute to the different settings for conversation. Contrary to this study, the results of Skelt's (2006) study on repair were primarily derived from institutional conversations. To some extent, personal conversational styles can also play a role in the differences of the results. For example, in the case-study by Lind *et al.* (2006: 44) the HI individual produced metacommunicative utterances as OI-actions (for example, "see you keep dropping I'm loosing you").

Another issue is the identity of the HI individual, which is not relevant in every repair sequence. The local contexts preceding OI-actions can be very complex interactional contexts that are typical in any everyday conversation. As a consequence, OI-actions cannot be interpreted as a context-free strategy-set (cf. clinical implications by Caissie *et al.* 1998; Heine & Browning 2002; Heine *et al.* 2002). However, the attributes that are beyond the local context can affect their occurrence and management (these attributes include the degree of hearing impairment, the familiarity between the participants, and the knowledge of the hearing impairment).

This analysis presented new lines of study, by exploring in detail how multimodal resources are used in OISR sequences and in those instances where the trouble was more potential than explicit. The current study focused on the participants' overall production style because data observations directed to the hypothesis that multimodality was vital in these conversations. For example, at times the HI individuals positioned their verbal OI-actions tightly with the previous turn, even in overlap. In contrast to the previous findings by Lind *et al.* (2006), the HI individual

in my study used primarily open-class OI-actions with this resource of interjected timing. This feature added to the impression of an absolute inability to hear (cf. long pauses prior to OI-actions as indications of trouble in understanding, Svennevig 2008). Furthermore, the OI-actions were typically articulated with fast speech rate, and this made the utterances even shorter (for similar results, see Haakana 2011). This gave the impression of a quick check up question (in comparison to astonishment, see Selting 1996). By comparison, the repair turns were typically produced with a reduced speech rate and with an increased accentuation, as well as using other prosodic resources (as in Lind *et al.* 2010b). These resources seemed to clarify the audiovisual perception of the turn.

I have demonstrated that it is necessary to record not only the prosodic features in OISR sequences, but also to video record the face-to-face interaction in HI conversations to access to the facial area of both participants (cf. Lind *et al.* 2006). This enables an exploration of the participants' non-vocal features. The results of this study indicate that HI individuals can form a 'trouble posture' when producing verbal OI-actions. This included several embodied actions, which were followed by immobility until the trouble was solved (see also Skelt 2006). While producing the repair, the conversational partners oriented to the 'trouble posture', for example, by mirroring the same type of actions (e.g. by raising their jaw or by leaning towards the HI recipient). Furthermore, compared to verbal/lexical actions, the non-vocal actions were not a distinct-type of action. The practical consequence of this was that transcribing these actions was challenging.

To save the most important topic to last, I consider that it is particularly the findings concerning the non-vocal indications of trouble that introduce new information to CA studies in general and to audiological conversational studies in particular (see Lilja 2010; Seo & Koshik 2010; Skelt 2006; Tye-Murray & Witt 1996). These findings describe actions that concern not only repair in interaction, but broader actions of collaboration in instances that include an implicit trouble. The results reveal how the collaboration between HI recipients and their conversational partners intensifies when the HI individual frowns and /or leans towards the speaker. These instances can result in an immediate reaction from the speaker, but the reactions are not always repetitive repairs, that is, these instances are not clearly OISR sequences (cf. Seo & Koshik 2010). These findings suggest that the use of non-vocal indications of trouble forms a continuum of collaboration, where several resources for responding are used (tailoring the turn into segments, gesturing with hands, repetitions, etc.). In other words, the HI recipients' non-vocal indications of trouble were more ambiguous than the verbal indications of trouble (see Tye-Murray & Witt 1996). For example, they used non-vocal actions in a similar way to participation displays (Goodwin 2003). Nonetheless, in all of these instances, the need to strain the perception of speech was recognizable because the action set was similar to what they used in verbal OI-actions. Therefore, these non-vocal

actions in my data were not 'merely' displays of participation (cf. Goodwin 2003), but also a reminder for the speaker of the recipient's difficulties to perceive speech. In general, the findings demonstrate that the HI individual and the speaker can intensify collaborative turn construction in troublesome instances, and the initiative to do this can be something silent from the HI recipient.

4.2 METHODOLOGICAL STRENGTHS AND LIMITATIONS

The present study has distinct methodological strengths. Although the CA framework for the organization of repair is used first and foremost to describe 'normal' everyday conversations, several studies have demonstrated that CA is a suitable method for exploring interactions with particular limitations and restrictions (for example, on aphasia, see Goodwin 2006; Wilkinson 2010). The analytical comparison between 'normal' and variously asymmetrical data can assist in defining what is typical for some particular disability and what is a common for asymmetrical conversations in general (also including native-non-native conversations, Lilja 2010; Seo & Koshik 2010). For instance, when comparing participants with different linguistic competencies, certain characteristic features emerge. These include the use of contextual knowledge and multimodal resources, increased collaboration between the participants, and lengthening and complexity of repair sequences (Haakana *et al.* 2009: 26). These findings are also useful in audiological conversational research and in the clinical work.

A central benefit of CA method is the ecological validity of the data (for manipulated data, for example, see Tye-Murray *et al.* 2010). One such benefit is the range of practices included in OI-actions that can be obtained through exploring natural conversations. Furthermore, by utilizing sequential approach, the researcher or the hearing clinician can avoid a fixed assumption that the attribute of hearing impairment is in some way connected to a certain context. Instead, the sequential level of detail and the caution in the analysis increases the validity of the findings, that is, whether some feature of talk or other behavior is an indication of a hearing impairment (on validity in CA, see Peräkylä 2010). Furthermore, the sequential analysis avoids the one-sided perspective of observing only the HI individual. Instead, the instances of repair are treated as negotiations between the participants (Lind 2009). These are observable behaviors in local conversational contexts, which are dependable of each other (cf. independent perspective to OI-actions and to repair turns, e.g. a discourse study by Wilson *et al.* 1998). The analysis is guided by the public ways of joint management. It is therefore important to present the method of CA (or other similar qualitative methods) as one highly relevant motivator for intervention (on the need for a systematic approach, see Manchaiah *et al.* 2012). In general, the strength of an interactional and situation specific approach to conversation is in its

ability to demonstrate, in a concrete way, that all the participants in a conversation have a responsibility towards the conversational flow.

One of the limitations of this study was that even after taking all the precautions (see 2.2), the participants remained conscious of the camera to a certain extent. For example, the camera was mentioned and gazed occasionally during the conversations. However, it is difficult to evaluate the exact extent of the impact that the presence of the camera and the awareness of the conversations being recorded for research purposes had on the participants' behavior. For example, it is possible that the static positioning of the participants had a negative impact on the everydayness of the data. Nevertheless, this study contributes to conversational research in general, and a camera is a central tool for data collection in this field (particularly in multimodal approach). Therefore, the present data is suitable for this type of research.

Another limitation is that this study presented a small, specific sample of data and findings. For this reason, these data must be interpreted with caution because some of the findings were based on one or two dyads (e.g., the use of some OI-action types, and the use of non-vocal actions). Furthermore, the conversational difficulties and the way they emerge in conversation may be restricted to these participants, an individual with an acquired hearing impairment (with sufficient hearing to have a conversation) and their partners (who are familiar and who are aware of hearing difficulties). Despite these restrictions, everyday conversational data is always ecologically valid (Beeke *et al.* 2007; Lind 2010b). This refers to the fact that every feature in studies based on ordinary conversation is applicable to real-life environment. It is therefore safe to assume that similar conventions to initiate a repair and resolve the trouble can occur in other similar conversations.

In addition, one limitation of my study concerns the analysis of local contexts. It is important to remember that an analyst cannot claim cause and effect between some contextual feature and a particular OI-action if the participants in a conversation do not verbalize that causal relationship and make the matter public. However, based on the data and previous research, the analyst also needs to try to be as specific as possible.

4.3 CLINICAL IMPLICATIONS

Turning now to the clinical implications, I will present what I would include in a conversationally oriented counseling program of communication therapy. First, this type of counseling needs to be acceptable in a real-life environment (cf. Sparrow & Hird 2010). Accordingly, the strategies suggested also need to be based on ecological validity, and the hearing clinician should take into consideration the social sensitivity of repair (of face threat, see Skelt 2006).

Based on the evidence from this study, my aim is to develop communication therapy in the field of audiology. In Finland, a systematic approach to this type of intervention is lacking and therefore, these suggestions to clinical implications are unique. Following the interactional framework of CA study method, my focus is on client-pairs, that is, on the HI individual and his/her familiar partner as they share a moment of conversation. The most important factor in the present approach is to ensure that the hearing clinician and the client-pair understand one another. One practice towards ensuring this is to offer extended counseling (similar to the model adopted in the training of clear speech, Caissie & Tranquilla 2010). In other words, if the counseling is left to a general level, this leaves ample room for misunderstandings or uncertainty as to the exact meaning of the counseling. If needed, conversational intervention should therefore include extended counseling (a client-pair centered-approach in mind). One tool in this counseling, is a video from real-life conversation, which can be transcribed to emphasize the crucial features of behavior.

The following clinical implications summarize the findings of the three independent publications for this thesis. These implications are merely suggested approaches to be tested in intervention programs. They work as a general guideline for communication therapy, which offers tools both to secure the conversational flow and also to assist adaption to the disruptions. The hearing clinician should then take an individual approach with each client-pair and extend the information accordingly. This includes that the instructions are presented in a concrete way and not condensed as in the Table (6), which presents a key aspects with guidelines for client-pairs.

Table 6. Guidelines for adaption and for securing the conversational flow.

1. **Self-value of conversation**
   Consider the value of engaging in a conversation, especially, when conveying an important message. For example, the quick shifts in everyday interaction can change your focus of attention away form your conversation. Therefore, ensure for example, that you both are available for conversation and that you use successive actions (talk and other actions separately).

2. **Teamwork**
   Focus on working together and on improving your skills. You may already be a good team, but in order to improve the teamwork, start from a setting that is not socially demanding and that allows face-to-face access (e.g. a coffee table). This is an important basis for using both your sense of hearing and your sense of sight while engaging in a conversation.

3. **Requests for clarification and the clarified speech: structure**
   Pay attention to the tools that you use when both requesting for clarification and offering clarification. You have many existing skills, but it is possible that you need assistance in acknowledging their basic elements. You can show your partner that he/she needs to clarify his/her talk with various, short, questions (*Huh?*, *Who?*, *Where?, What is?, To Robert?, etc.*). These are used by anyone who has not heard what is said or who is unsure of what was said. Thus, their use is ordinary. However, the request for clarification can be emphasized using prosodic and bodily tools (see point 4).

   The ways to clarify talk are also familiar to you, but you may again need assistance in acknowledging the tools you use. Clarification for someone who has not heard is typically a repetition of something previously said. However, it is very important *how* you repeat (see point 4).

4. **Multimodality: visual access**
   Both of you can monitor each other and use facial and gestural tools while talking. In this way, perceiving speech is easier for the one with hearing difficulties and if trouble occurs, the partner can notice it more quickly.

   You may already emphasize the request for clarification, for example, by saying it soon after the speaker has finished, or even while the speaker is still talking. In addition, you can lean your upper body or your better hearing ear towards the speaker, and/or use a frowning facial expression (or uplifted eyebrows). Furthermore, when you use very fast articulation, the turn resembles even more a quick check up question. A quick way to announce trouble can also be to use a frown or/and a lean toward the speaker without saying anything. By using these tools, you specify the trouble in hearing without drawing explicit attention to it (cf. point 5).

   It is important that the repetition is said during eye contact with the recipient and that the talk includes prominent prosody (e.g. reduced speech rate, stress on the relevant words and possibly a raised volume). When you repeat, you can clarify your message further by using visual support (an uplifted jaw/facial area to support lipreading, possibly also composed nodding and the use of hand gestures). The repetition can be considered successful when the recipient e.g. responds with a *yeah*, and/or nods, or when he/she continues with the topic. Usually one repetition is sufficient, but sometimes additional repetitions and clarifications are needed.

5. **Multifunctional requests for clarification**
   Learn more about the functions of requests for clarification. Several reasons cause them to occur and thus, difficulty in hearing is just one reason to use requests for clarification. The reasons of trouble can be complex. For example, the reasons can be a difficulty to understanding, determining why something was said, not remembering, and disagreeing with the speaker. If you want to be specific that the reason is a question of hearing, you can say, for example, *(Sorry) I didn't hear*, instead of, *What?,* which can imply many other troubles.

6. **Repairing as a beneficial and positive matter**
   How do you feel towards requesting clarification? Try to approach it and the following repetition as actions that emphasize something relevant and as a consequence, something that intensifies teamwork. Actually, repair in conversation strengthens mutual understanding. So, when requests of repair are used, something vital occurs and the conversation is not just disrupted. In other words, the repeated part is often relevant to the topic at hand and focusing on it can strengthen your mutual connection. This perspective can help you in adapting to their potentially frequent occurrence.

These six guidelines can help a hearing clinician emphasize that concentrating on conversation can be challenging in everyday interactions. My data show that everyday life is replete with quickly occurring overlaps, even around a coffee table (talking while replying to text messages, eating, reading a paper, etc.). This can lead to situations that affect both participants. One consequence is that the HI individual's inability to endure charged contexts emerges and the conversational partner's monitoring work is disturbed. Therefore, to prevent the frequent occurrence of OI-actions and especially, open-class OI-actions, the participants need to be encouraged to consider their perspective on conversation. However, an absolute prevention of repair sequences is not possible, nor is it an aim in the counseling.

When the participants' focus of attention is on conversation, it enables them to better succeed in displaying participation and in achieving collaboration. These local contexts of teamwork (or collaboration) support the overall conversational flow. During counseling, the hearing clinician can point out, for example, that teamwork can even prevent the need for verbal OI-actions. During mutual gaze, the HI individuals can solely use non-vocal indications of trouble and the conversational partner can detect them. A consequence, the pre-state of trouble can be managed without verbal OI-actions. In my data, these compact achievements of joint repair were very brief incidences and therefore, minimally disturbing to the conversational flow. However, this type of conversation is sometimes so intense that it can be exhausting for both participants (for the conversational partners perspective, see Scarinci *et al.* 2008).

An important part of communication therapy is the counseling concerning the major everyday OI-action types. By going through these action types, they can be interpreted as neutral utterances without associating any possible awkwardness or embarrassment with them. The hearing clinician should not assume that a hearing

impairment causes a narrowing in the range of OI-action types or that the ordinary ways to initiate repair are not suitable for HI individuals, that is, not effective in HI conversations (for example, see Heine *et al.* 2002). In addition, it can be illuminating for the client-pair to discuss the OI-actions and repair turns from the point of view of rich multimodality and intensified monitoring work. This means that the OI-actions and the repair turns that follow are not merely words, but they can be very descriptive actions. Rather than, for example, instructing what is an appropriate structure in repair turn after misperception, some client-pairs may benefit from counseling in more expressive ways of repeating. During counseling, the use of these mundane skills can be further motivated. This motivation should not prove to be too difficult because this rich set of resources in face-to-face repair sequences 'works'. In my data, when the participants recurrently use multimodal resources to emphasize (and focus on conversation as the main action), the main conversation is typically resumed by using only one OI-action + repair turn.

In addition, it is essential that the counseling point out that the selection of the OI-action type is not necessarily up to the HI individual's skills. This is because the features in the local context also play a role. Similarly, repetition as a repair turn may not be enough, if the basis of trouble in hearing inter-relates for example, with disagreement. To this end, the counseling needs to include real-life examples of the occurrence of trouble (e.g. in a coffee table environment). In general, depending on the conversational contexts, the use of different OI-action types varies. For example, in my data '*what*' and other open-class type OI-actions were typically used in contexts where many features resulted in a very complex local context (such as an absent gaze, a topical shift, and an unfamiliar topic to the HI individual). The client-pairs can become more conscious of these risk and as a consequence, increase their understanding towards repair sequences (even if they cannot be avoided). This type of information can be beneficial in particular to partners who in general react with suspicion ("I think he/she just has a selective hearing") and frustration towards OI-actions.

The positive aspects of the repair sequences are not specifically discussed on the literature of audiologic intervention. The hearing clinician needs to, of course, align with the potentially negative experiences. Nevertheless, it is also important to introduce a more positive aspect. OI-actions and the repair that follows not only halt the main conversation, but also emphasize something crucial. This type of information can increase the client-pair's understanding of their repair sequences and increase the possibility of their accepting the use of OI-actions and the need for repair. Furthermore, as already introduced in previous points of clinical implications, concentrating on conversation and on improvements needed in the teamwork can decrease the need for frequent repair. As Hétu (1996: 19) points out, "professional accompanies the client in his/her struggle to maintain a 'normal' social identity". To me, this includes talking about the normality of the OI-actions per se and the

normality of the local contexts that lead up to OI-action use (for example, a topic shift or/and unfamiliarity with a topic). This information can assist in restoring the social identity of the HI individuals. To summarize, the aim is to prevent miscommunication, but only to a certain point because repair sequences are also needed and are beneficial in interaction.

My suggestions for clinical implications are based on an analysis of the findings drawn from video recordings. In CA, the video recording is first observed on a general level without trying to detect certain incidents or features in interaction. From a clinical perspective, this strengthens the client-pair centred approach. However, the busy clinical work may require a checklist style, which means that the hearing clinician looks for particular conversational features. In aphasia intervention, the SPPARC manual (Supporting Partners of People with Aphasia in Relationships & Conversations) is an example of the way CA can be used in conversationally oriented intervention (Lock *et al.* 2001). The SPPARC manual introduces certain areas of focus, which are features such as repair, turns and sequences, topics and the overall balance of conversation. Similarly, in audiological intervention, these areas could encourage discussion. Furthermore, by using a qualitative interactional tool, a hearing clinician needs to consider to what extent we are allowed to intervene and to suggest change in our clients' behavior, and on the other hand, what is merely natural, ordinary, everyday interaction (or similar to other asymmetrical interactions).

4.4 FUTURE PERSPECTIVES

To conclude the discussions, for future research, the qualitative, multimodal approach could be extended to different natural conversational settings (for instance, to group conversations at home). This approach could encourage and capture the residual skills of HI individuals' in managing their conversations and the conversational partners' resources to maintain and resume conversational flow. This would provide a more in-depth understanding of the interactional role that, for example, non-vocal actions and material context play in conversations. For the examination of these features, special attention should be paid to the recording technique and setting.

I hope that hearing clinicians will be motivated to adopt the interactional approach to establish a communication therapy that it covers a range of frequent conversational partners of the HI individual (Lind 2009). But first, a specific client-pair intervention routine must be achieved. The development of that routine requires clinical reports concerning the experiences of the conversation-oriented communication therapy. In other words, intervention needs to be provided and attempts need to be implemented to demonstrate that the intervention has a real-

life affect. The applicability of CA in the direct assessment of change regarding audiological issues also needs also to be tested (cf. in aphasia intervention, Wilkinson & Wielaert 2012).

The relatively recent technological advances (the video recordings and the software technology) have made it both possible and practical for clinicians and researchers to easily collect video-recordings from actual daily interactions. As a result, in the future, video-recordings at home conversations or from work environments may become a routine part of a clinician's assessment procedures. The hearing clinician can also, with patient and institution consent, collect video extracts. This could be used when training new clinicians to indentify certain phenomena and with clients who themselves do not want to be video recorded.

Highly skilled professionals are needed for certain aspects of intervention and they should be utilized in the field of audiology and generally consulted for interventions in health behavior changes (Goulios & Patuzzi 2008; Nieuwenhuijsen *et al.* 2006). Communication therapy is one of these interventions and, for example, the speech therapist is a professional who can conduct these interventions. However, even speech therapists need to examine their knowledge and abilities and keep their training up-to-date.

I close my thesis by bringing together this study and a more general research philosophy concerning human conduct. Humanistic sciences have a strong relationship with the Industrial Revolution and the dream of technology as the servant of humankind (von Wright 1985). In audiology, this can refer to hearing aids and to other technical solutions that are, in fact, desired both by the clients and the hearing clinicians (excluding clients who, for different reasons, do not have aids nor use them). These technical instruments are something concrete and offer fairly quick assistance, and these are at least some reasons for their attraction. However, for example, the hearing aids per se do not guarantee that the communication problems are solved. Another point is that the utilization of technology as the primary intervention can cause underutilization the more humanistic intervention approaches, which then can prevent their being further developed. Therefore, my intent in this thesis has been to highlight the humanistic research philosophy and the intervention approach and as a consequence, to secure its place within the field of technical audiologic rehabilitation.

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APPENDIX: KEYS TO THE TRANSCRIPTION

Non-vocal behaviour:		LIFTS HIS EYEBROWS, LEANS TOWARDS MAI
Original Finnish talk:	04Mat:	£Mikä;£
Translation into English:		What

The turn in interest in the fragment is indicated by a right arrow →

Pauses are reported in brackets in seconds (0.4) and a micro pause is indicated by a (.), which is less than (0.2)

Overlapped speech is indicated by square brackets [ ]

Falling intonation is indicated by a (full stop) .

Rising intonation is indicated by ? or a clear rise in pitch by ↑

Level intonation is indicated by ;

Accentuation is indicated by underlining

Fast speech occurs between > <

Slow speech occurs between < >

Soft voice is indicated by °degree symbols around the relevant words°

Loud voice is indicated by CAPITAL LETTERS, for example: NII

Forceful articulation is indicated by **b**old letter

Smile is indicated by £pound symbols around the relevant words£

Creaky voice quality is indicated by #

A missing sound is indicated by ´

Cut offs are indicated by a dash, for example: tavoi-

Adjacent utterances without a pause between them are indicated by =

Words uttered together are indicated by +

An unclear part of an utterance is placed between (), for example: (kun)

Facial expression and body/head movement by a speaker are indicated by CAPITAL LETTERS above the turn lines

A recipients actions during a speaker's turn are indicated by CAPITAL LETTERS below the turn lines

The use of gaze:

Gaze shift towards the other participant without mutual gaze ...____

Steady gaze ____

Point where mutual gaze is achieved ...[x____

Nom = nominative