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PEOPLE WITH APHASIA AND FAMILY MEMBERS IN EVERYDAY CONVERSATION

PERSPECTIVES ON ECOLOGICAL VALIDITY OF
APHASIA THERAPY AND ITS OUTCOME
MEASUREMENT

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DOCTORAL DISSERTATION

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ABSTRACT

Aphasia is a common sequela of stroke that frequently affects a pivotal element of life—interpersonal communication. While there are different approaches to aphasia therapy, people with aphasia (PWAs), their family members (FMs), clinicians, and researchers agree that an improved ability to have meaningful conversations is desired. However, many questions remain about how to achieve this complex goal as well as how to measure aphasia therapy outcomes in everyday conversation. This thesis examines authentic everyday conversation between PWAs and FMs with the overarching aim of uncovering issues relevant for both designing ecologically valid aphasia therapy and measuring ecologically valid outcome.

Data for this thesis were collected as part of the research project Treatment-Induced Speech and Language Improvement and Neuroplasticity after Stroke at the University of Helsinki. It recruited people with chronic post-stroke aphasia with the aim of comparing the separate and combined effects of repetitive transcranial magnetic stimulation and intensive language-action therapy (ILAT). During the research project, participants video-recorded everyday conversation at home at four different time points. This thesis examined approx. 15 hours from this conversation database, across nine PWAs and their FMs. The data were analysed drawing on the methods of conversation analysis (CA).

The thesis consists of three original peer-reviewed articles and this summary. Study I examined collaborative repair as a possible index for ILAT-induced improvement in everyday conversation in a dyad consisting of a person with mild anomic aphasia and a FM. Study II investigated how two persons with severe non-fluent aphasia initiated social actions in everyday conversations with their FMs. Study III explored how people with different types and degrees of aphasia accomplished a social action typically achieved using specific, multi-word linguistic formats, namely proposing a joint future activity, in comparison to their FMs.

The findings suggest the analysis of collaborative repair, more specifically a FM's use of candidate understandings as repair-initiations, captured an ecologically valid outcome of aphasia therapy in mild aphasia. This was apparent in the data as a decrease in the frequency of FM-initiated candidate understandings post-ILAT, and a qualitative change in the function of candidate understandings post-ILAT. Both changes concurred with an ILAT-induced improvement in the PWA's linguistic abilities captured via decontextualized assessment and suggest enhanced conversational flow following therapy. The findings indicate that for collaborative repair to be an

ecologically valid outcome measure of aphasia therapy, a data-driven analytical approach, which tailors a measure of repair to an individual dyad, is critical. Results further demonstrate that crucial for a PWA's self-initiated participation is the use of residual communicative resources in the environmental and sequential context of everyday conversation. Importantly, these resources are not limited to linguistic means as the vehicle for propositional content. This was visible in the data when people with severe non-fluent aphasia initiated social actions using turn constructions which were essentially embodied, exploiting artefacts, or utilizing formulaic language. In this way they accomplished proposals of joint future activity, although markedly less frequently compared to their FMs. In contrast, people with mild aphasia produced a comparable number of proposals to their FMs, using typical linguistic formats. The language disorder linked to mild aphasia was displayed in frequent word searches that were commonly self-repaired. Finally, the results highlighted the significance of a FM's actions on shaping the sequential context of everyday conversation such that it either facilitates or potentially restricts a PWA's production of a next turn.

To conclude, this thesis demonstrates the importance for ecological validity of an interactional perspective on designing impairment-focused aphasia therapy and communication partner training, and on measuring change in everyday conversation. Based on the findings, concrete suggestions are made for both planning aphasia therapy, and measuring therapy outcomes in conversation.

TIIVISTELMÄ

Afasia eli aikuisiän kielihäiriö on yleinen aivoverenkiertohäiriön seuraus. Se aiheuttaa kielenkäytön vaikeuksia, jotka ilmenevät arkielämän vuorovaikutustilanteissa. Afaattiset ihmiset, heidän läheisensä ja asiantuntijat korostavat, että afasiakuntoutuksen päämääränä tulisi olla arkivuorovaikutuksen helpottuminen. On kuitenkin epäselvää, miten tämä päämäärä parhaiten saavutetaan ja miten afaattista arkivuorovaikutusta tulisi mitata. Tämä väitöskirjatutkimus tutkii afaattisten ihmisten ja heidän perheenjäsentensä välistä luonnollista arkikeskustelua. Tavoitteena on löytää tekijöitä, jotka ovat merkityksellisiä ekologisesti validin afasiaterapian suunnittelussa ja sen vaikutuksen mittaamisessa.

Väitöskirjatutkimuksen aineisto on peräisin Helsingin yliopiston tutkimusprojektista Puheen ja kielen kuntoutuminen afasiassa ja kielellinen neuroplastisiteetti. Tutkimusprojektiin rekrytoitiin ihmisiä, jotka olivat saaneet afasian aivoverenkiertohäiriön seurauksena, ja siinä verrattiin transkraniaalisen magneettistimulaation ja puheen tuottoon keskittyvän intensiivisen afasiaterapian (intensive language-action therapy, ILAT) vaikutuksia. Tutkimuksen aikana osallistujat kuvasivat videokameralla arkikeskustelujaan kotona neljänä eri ajankohtana. Tässä väitöskirjatutkimuksessa tarkasteltiin yhdeksän afaattisen ihmisen ja heidän perheenjäsentensä videoituja keskusteluita, kestoaltaan yhteensä noin 15 tuntia. Vuorovaikutusta analysoitiin keskusteluanalyttisin menetelmin.

Väitöskirjatutkimus koostuu kolmesta osatutkimuksesta ja yhteenveto-osasta. Ensimmäinen osatutkimus tarkasteli lievästi afaattisen ihmisen ja hänen perheenjäsenensä keskustelun korjausjaksoja ennen ja jälkeen ILAT-jakson. Toinen osatutkimus selvitti miten ihmiset, joilla on vaikea-asteinen sujumaton afasia, aloittavat sosiaalisia toimintoja arkikeskustelussa perheenjäsentensä kanssa. Kolmas osatutkimus tarkasteli miten vaikeusasteeltaan ja tyypiltään eri tavoin afaattiset ihmiset tekevät arkikeskustelussa ehdotuksia tulevasta toiminnasta verrattuna perheenjäseniinsä.

Löydökset viittaavat siihen, että keskustelun korjausjaksojen analysointi, tarkemmin sanottuna afaattisen ihmisen perheenjäsenen käyttämien ymmärrysehdokkaiden tarkastelu, voi lievässä afasiassa olla ekologisesti validi afasiaterapian mittari. Tämä näkyi aineistossa niin, että ILAT:n jälkeen perheenjäsenen käyttämien ymmärrysehdokkaiden esiintymistiheys laski ja ymmärrysehdokkaissa tapahtui laadullinen muutos. Muutokset viittaavat siihen, että arkikeskustelu etenee sujuvammin ILAT:n jälkeen. Jotta keskustelun korjaustoiminnan muutoksen mittaaminen olisi ekologisesti validia, on kuitenkin tärkeää, että analyysi on aineistolähtöinen ja huomioi

keskusteluparille tyypillisen korjaustoiminnan. Kaikkien osatutkimusten löydökset osoittavat, että ratkaisevaa afaattisen ihmisen oma-aloitteiselle osallistumiselle oli se, miten hän pystyi käyttämään jäljellä olevia kommunikaatioresurssejaan arkikeskustelussa. Löydöksissä korostuu, että kommunikaatioresurssit eivät rajoitu kielellisiin merkityssisältöihin. Tämä näkyi aineistossa siten, että ihmiset, joilla oli vaikea-asteinen sujumaton afasia, aloittivat sosiaalisia toimintoja käyttäen kehollisia ja keskusteluympäristön tarjoamia keinoja, kuten esineitä, tai käyttäen fraasimaisia ilmauksia. Näin he tuottivat ehdotuksia myös tulevasta toiminnasta, joskin huomattavasti harvemmin kuin heidän perheenjäsenensä. Sen sijaan lievästi afaattiset ihmiset tuottivat vastaavan määrän tulevan toiminnan ehdotuksia kuin heidän perheenjäsenensä, käyttäen tyypillisiä kielellisiä ilmauksia. Afasiaan liittyvät kielelliset vaikeudet ilmenivät heillä lähinnä itsekorjattuina sanahakuina. Lopuksi kaikkien osatutkimusten löydökset painottavat keskustelukumppanin merkitystä arkikeskustelussa; he voivat toiminnallaan joko tukea tai mahdollisesti rajoittaa afaattisen ihmisen vuorojen, ja sitä kautta sosiaalisten toimintojen tuottamista.

Väitöskirjatutkimus havainnollistaa vuorovaikutuksellisen näkökulman tärkeyden, kun halutaan suunnitella ekologisesti validia afasiaterapiaa ja mitata sen tuottamaa muutosta arkikeskustelussa. Tulosten perusteella tehdään konkreettisia ehdotuksia, joita voidaan hyödyntää häiriökeskeisessä afasiaterapiassa ja keskustelukumppanin ohjauksessa sekä tutkittaessa puhe-terapian vaikutusta arkikeskusteluun.

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Lohja, August / elokuu 2023

Asta Tuomenoksa

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LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following publications:

- I Tuomenoksa, A., Pajo, K., & Klippi, A. (2016). Collaborative participation in aphasic conversation before and after intensive language-action therapy. *Clinical Linguistics & Phonetics*, 30(10), 749-769.
- II Tuomenoksa, A., Beeke, S., & Klippi, A. (2022). People with non-fluent aphasia initiating actions in everyday conversation with familiar conversation partners: resources for participation. *Aphasiology*, 36(5), 575-598.
- III Tuomenoksa, A., Beeke, S. & Klippi, A. (2023). People with aphasia and their family members proposing joint future activities in everyday conversations: a conversation analytic study. *International Journal of Language & Communication Disorders*, 58(2), 310-325.

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The publications are referred to in the text as Studies with their Roman numerals.

ABBREVIATIONS

CA	conversation analysis
BNT	Boston Naming Test
FCP	familiar conversation partner
FM	family member
PWA	person with aphasia
PwBA	person with Broca's aphasia
SLT	speech and language therapist
WAB	Western Aphasia Battery

TRANSCRIPTION AND GLOSSING SYMBOLS

All conversation extracts presented in this thesis show the talk of each person on two lines. The first line displays the original Finnish talk in italics, and the second, bolded line, a rough translation into English. In some extracts, the target phenomenon is presented as an English word-by-word gloss on a third line. The transcription symbols follow standard CA conventions (Jefferson, 2004). Where relevant, interactants' embodied actions are depicted on a fourth line by applying Mondada's (2018) conventions for transcribing multimodality.

Transcription Key

[]	Brackets indicate where overlapped speech begins and stops.
*((text))	Text in double brackets describe the participants' non-verbal actions. The start and end points of simultaneous talk and non-verbal actions are indicated with an asterisk on each line.
=	An equal sign marks where there is no interval between adjacent utterances.
(0.5)	Numbers in single brackets indicate silence represented in tenths of a second.
(.)	A full stop in single brackets indicates a micropause, i.e., an interval of less than one tenth of a second in the stream of talk.
., ?	Markers of intonation contour: final falling intonation (.), slight rising intonation (,), sharp rising intonation (?).
↑ ↓	Arrows indicate a sharp change in pitch: upward arrow a rise, downward arrow a fall.
<u>talk</u>	Underlined syllable or word indicates emphasized talk.
:	A colon indicates an extension of the sound or syllable it follows.
(talk)	Single brackets containing either a word, phrase, or syllable mark where the target item(s) is/are in doubt.
(--)	Dashes in single brackets designate the number of syllables heard but remaining obscure.
ny-	A single dash indicates an abrupt cut-off to a word or a part of a word.
°talk°	Degree signs indicate a silent voice.
>talk<	Lesser than/greater than signs indicate talk delivered at a greater speed than surrounding talk.

<talk>	Greater than /lesser than signs indicate talk delivered at a slower speed than surrounding talk.
£talk£	Pound sterling signs indicate talk delivered with an auditorily recognisable smiling voice.
→	An arrow beside a speaker's name alerts the reader to talk that is central for the analysis.

Glossing symbols

3	third person
COND	conditional
NEG	negation
NEO	neologism
PASS	passive
PHON DIS	phonological distortion
PROP	proper name
PRT	particle
SG	singular

Finnish cases

Approximate meaning

ESS	essive	“on/as”
ILL	illative	“in/into”

1 INTRODUCTION

1.1 MOTIVATION FOR THE STUDY AND ORGANIZATION OF THE THESIS

Aphasia is an acquired language impairment, which affects in varying degrees some or all language modalities: comprehension and speech production as well as reading and writing. Within social interaction, aphasia frequently decreases communicative activity and restricts participation, consequently having a negative effect on interpersonal relationships, employability, and quality of life (Berg et al., 2020; Graham, Pereira, & Teasell, 2011; Hilari, 2011). For clinical and research purposes, aphasia is commonly dichotomously divided into the categories of fluent and non-fluent aphasia, based on language output. Fluent aphasia refers to effortlessly articulated speech produced with a normal rate and prosody, nevertheless containing erroneous words, while non-fluent aphasia refers to articulatory laborious and linguistically sparse speech production and reduced grammaticality (Goodglass & Kaplan, 1997; Kertesz, 2005).

The most common cause of aphasia is stroke, that is, a disruption of blood flow or a haemorrhage in the cerebral arteries. Worldwide, stroke is the second most common cause of disability and death (Saini, Guada, & Yavagal, 2021). In Finland the prevalence of stroke was 82 000 persons in the year 2009, which equals 1.5% of the population (Stroke and TIA: Current Care Guidelines, 2020). Figures on stroke-related aphasia were not reported separately, but using the estimate that approximately one third of stroke patients experience aphasia (Brady, Kelly, Godwin, Enderby, & Campbell, 2016), yields an estimated prevalence of 0.5% of stroke-related aphasia. The incidence of stroke in Finland was 194 per 100 000 inhabitants (i.e. 0.19%) in the 2010s (Stroke and TIA: Current Care Guidelines, 2020), of which a third, that is 0.07%, may again be used as an estimation of the incidence of stroke-related aphasia. With the current Finnish population of 5.54 million, the above figures give an estimate of 27 700 persons living with stroke-related aphasia, and 3604 persons, that is 10 persons every day, acquiring stroke-related aphasia. Treatment of aphasia is thus no marginal matter within the Finnish health care system and society.

The primary treatment for stroke-related aphasia is speech and language therapy, that is, aphasia therapy (Fridriksson & Hillis, 2021). There is a wide consensus spanning from people with aphasia (PWAs) and their significant others to clinicians and researchers on the ultimate goal of aphasia therapy, namely, an improvement in the PWAs' everyday communication (Doedens & Meteyard, 2022; Wallace, Worrall, Rose, & Le Dorze, 2017; Wallace, Worrall, Rose, Le Dorze, et al., 2017; Worrall et al., 2011). Specifically, PWAs and their families desire increased interpersonal communication, such as an improved

ability for a PWA to participate in conversation, not only at the level of basic needs, but at the level of complex conversation entailing exchange of emotions and thoughts (Wallace, Worrall, Rose, Le Dorze, et al., 2017). In other words, the effects of aphasia therapy should generalize to PWAs' everyday interaction—aphasia therapy should be ecologically valid.

To date, the effectiveness of aphasia therapy is well established for people with post-stroke aphasia in the chronic phase, that is more than six months post-stroke (Brady et al., 2016; Breitenstein et al., 2017; Fridriksson & Hillis, 2021; Rose et al., 2022). However, both in research and clinical settings, the outcome of aphasia therapy is typically measured using a variety of language tests administered in an institutional setting involving monological talk or simulated interactions, or by having the patient and/or the familiar conversation partner (FCP) complete communication questionnaires. Such measures potentially miss important aspects of mundane interaction due to the fact that a language assessment is decontextualized (cf. Beeke, Wilkinson, & Maxim, 2007; Heesch & Schegloff, 2003), simulated interactions may draw on different cognitive demands than real-life interaction (Doedens & Meteyard, 2020), and that people in general are poor at identifying what they actually do when interacting (e.g., ten Have, 2007). Thus, such measures may lack ecological validity. Indeed, it is widely acknowledged that while measuring the generalization of aphasia therapy to everyday conversation is pivotal to achieving ecologically valid therapy, it is very difficult to do (Carragher, Conroy, Sage, & Wilkinson, 2012; Dipper et al., 2021; Fridriksson & Hillis, 2021; Kagan et al., 2008; Stark et al., 2021; Wallace et al., 2019; Webster, Whitworth, & Morris, 2015).

Adding further to the intricacies of proving both the effectiveness and ecological validity of aphasia therapy is the fact that views on what aphasia therapy should encompass are diverse (e.g., Rose et al., 2022). Traditionally, aphasia therapy is divided into two major perspectives: the impairment-focused and the consequence-focused approach. The first seeks to remediate the language disorder while the latter focuses on reducing the impact aphasia has on a PWA's life (Basso, Forbes, & Boller, 2013; C. Thompson & Worrall, 2008). Regardless of therapy perspective, the sought-after outcome of aphasia therapy is however the same, that is, improved everyday communication. Nevertheless, there are gaps in our knowledge of how to achieve this, both in terms of designing ecologically valid aphasia therapy and measuring treatment outcome. This is particularly true when it comes to demonstrating generalisation of a treatment bridging linguistic levels, that is showing a treatment targeted at a word-level, for example, has an effect on another level of language use such as conversation (Saldert, Jensen, Blom Johansson, & Simmons-Mackie, 2018; Webster et al., 2015).

This thesis provides perspectives on both ecologically valid outcome measurement and designing aphasia therapy with ecological validity. It examines video-recorded everyday conversation of PWAs and a specific group of FCPs, namely family members (FMs) at home in the context of an aphasia

therapy outcome study, which investigated the combined and separate effects of intensive language-action therapy (ILAT) (Difrancesco, Pulvermüller, & Mohr, 2012) and transcranial magnetic stimulation (Barwood et al., 2011). The methodological approach adopted in this thesis is conversation analysis (CA), which views communication as a collaborative achievement between interactants, evolving turn by turn guided by norms people acquire during language acquisition (e.g., Clift, 2016; Schegloff, 2007; Sidnell & Stivers, 2013). This methodological choice allows for a switch from a person-centred research focus otherwise representing the mainstream in aphasiology, to a focus on dyadic interaction, that is, the PWA and their FMs.

The thesis scrutinizes the dyads' authentic interaction to uncover recurrent practises they use when managing the frequent problems aphasia causes in their everyday conversation, and when accomplishing different social actions. Within CA, this thesis represents a strand of applied conversation analysis, which aims to provide a complementary or alternative view of disordered talk such as aphasic conversation, in order to eventually generate interventions to tackle the interactional problems revealed through analysis and potentially challenge previous professional practice (Antaki, 2011).

This thesis is compiled of five chapters and the three original articles. In the present chapter, chapter one, I will continue with introducing an interactional view on aphasia, which is founded on earlier CA-informed research on typical interaction. I will also outline previous research foci within CA-informed aphasiology. I will then present the main approaches to aphasia therapy and discuss two treatment methods relevant for this thesis in more detail: interaction-focused aphasia therapy and ILAT. This is followed by an outline of ecological validity and outcome measurement in aphasia therapy. Chapter two states the aims of this thesis. Chapter three describes the methodology, and the fourth chapter summarises the results. In chapter five, I will discuss the findings in the light of previous research, consider methodological issues, and present prospects for future research. I will conclude chapter five by providing clinical implications. The three original articles are attached at the end of the thesis.

1.2 APHASIA IN INTERACTION–THE CONVERSATION ANALYTICAL VIEW

Well-functioning interpersonal communication in everyday life is the desired endpoint of aphasia therapy for PWAs, their conversation partners as well as clinicians. To reach such a goal, examining authentic interaction seems logical. Interaction-focused aphasia research using CA has however been rather marginal in aphasiology, forming a strand of research within the consequence-focused/social approach to aphasia and its rehabilitation (Simmons-Mackie, Savage, & Worrall, 2014).

CA-informed aphasiology research took root in the 1990's as the seminal works of Lesser and Milroy (1993), and Goodwin (1995) amongst others were published, as well as a special issue in the journal *Aphasiology* (1999). At that time, this new line of research elucidated how PWAs and their FCPs collaboratively achieved a shared understanding in everyday conversation, despite the linguistic asymmetry aphasia caused between the speakers. From early on, CA-informed aphasiology research was also conducted in Finnish, as represented by the pioneering work of Klippi (1996) and Laakso (1997).

While not the mainstream approach within aphasiology, CA-informed aphasia research has been influential within the study of atypical interaction, that is CA-research on interaction where at least one of the participants has a communication disorder (Antaki & Wilkinson, 2013; Wilkinson, Rae, & Rasmussen, 2020). Research on atypical interaction draws upon the methods and findings from CA research on typical interaction. Founded on the work the sociologists Harvey Sacks, Emanuel Schegloff, and Gail Jefferson commenced in the late 1960's, CA teases apart the mechanics governing naturally occurring interaction (Clift, 2016; Sidnell & Stivers, 2013). Contrary to a layman's idea of interaction as an unpredictable phenomenon, CA regards it as an orderly, recurrent and coordinated activity between interactants, containing "order at all points" as Sacks (1984, p. 22) defined it, and as such available for rigorous study.

A central tenet of CA is that people accomplish their 'social business' in interaction by employing systematic interactional patterns, that is practices. Using such practises people perform social actions, which refer to the interactional essence a turn in interaction performs, and which the recipient must acknowledge to produce an adequate response (Levinson, 2013). Examples of social actions include greetings, requests, refusals, telling stories or planning future actions, to name a few. Importantly, the accomplishment of a social action is not tied to a single form of implementation, but may be accomplished in various ways, combining different interactional resources. For example, the social action of greeting may be done by uttering the word 'Hi' or by gazing at a recipient and nodding.

The aim of CA research is to reveal practises people use and orient to in order to accomplish social actions and achieve intersubjectivity, in other words mutual understanding. This is attained by analysing naturally occurring interaction through audio or video-recordings. At the core of CA methodology is the principle of 'composition plus position equals action' (Hoey & Kendrick, 2017; Levinson, 2013; Schegloff, 1996). This means that an interactant's contribution, a spate of talk for example, is interpreted depending on how the contribution is composed, that is how it is lexically, syntactically, and prosodically constructed, but also depending on where in the sequence of interactional turns the contribution is positioned. For example, a 'hello' initiating an encounter will be interpreted differently from a 'hello' positioned within an on-going conversation. Further, CA views an interactional contribution as "both context-shaped and context renewing" (Heritage, 1984,

p. 242), which means that an interactional contribution is constructed in relation to previous communicative actions, and that such a contribution in turn sets the context for any subsequent contributions. Schegloff (2007) defined the “coherent, orderly, [and] meaningful successions... of actions” (p. 2) as sequence organization, which is essential for getting interactional activities done. Thus, CA does not deal with decontextualized interactional elements, but scrutinizes interaction in the context of sequences of communicative actions. Neither does CA classify interactional behaviours in predefined categories determined by researchers. Instead, CA is a data-driven, inductive empirical methodology that investigates:

- (1) how people construct their interactional turns whether they are linguistic or embodied (i.e. non-linguistic) (Clayman, 2013; Heath & Luff, 2013),
- (2) how people allocate turns between participants such that interaction proceeds one speaker at a time with minimal gap and overlap (Hayashi, 2013; Sacks, Schegloff, & Jefferson, 1974),
- (3) how turns form sequences of actions, such as canonical two-turn sequences like greeting-greeting or question-answer pairs, defined as adjacency pairs, or larger social activities such as decision making (Levinson, 2013; Schegloff, 2007; Stevanovic, 2012),
- (4) how people remediate, that is repair, any trouble arising in interaction (Kitzinger, 2013; Schegloff, Jefferson, & Sacks, 1977).

CA research may take the form of a collection-based study or a single case study. The first mode involves documenting how a social action is produced and organized in interaction by collecting and analysing a substantial number of instances of the phenomena of interest across different participants and contexts (Robinson, 2007; Schegloff, 1996). The latter refers to using cumulated CA-knowledge to analyse a single episode of interaction and demonstrating that interactants in fact orient to previously uncovered practices such as turn-taking (Robinson, 2007; Schegloff, 1987). While collection-based research in its genuine definition (i.e., discovering new practises) is less common within CA-informed aphasiology, a great deal of single case studies have been conducted, which have elucidated PWAs communicative competence (e.g., Barnes, Candlin, & Ferguson, 2013; Beeke, Wilkinson, & Maxim, 2003; Goodwin, 1995).

A substantial body of CA research on typical interaction has scrutinised institutional interaction, meaning contexts where interactants perform their institutional roles, as a doctor and a patient, for example. In comparison, CA-informed aphasia research has not explored institutional interaction to a comparable extent (Wilkinson, 2019), but some research on interaction during

aphasia therapy sessions, amongst others, exist (see e.g., Horton, 2006). This thesis deals with everyday conversations at home, involving PWAs and their FMs, which is non-institutional talk. Hence, the following sections will outline central themes in previous CA-informed aphasia research, excluding institutional interaction.

1.2.1 REPAIR AND APHASIC CONVERSATION

It is apparent that the linguistic impairment linked to aphasia may interfere with a PWA's ability to produce talk, resulting in recurrent trouble in everyday conversation. Thus, it is not surprising that repairing such trouble has from early on been a central topic in CA-informed aphasia research (Wilkinson, 2015).

Repair refers to practises people use when they encounter “problems in speaking, hearing, and understanding” (Schegloff et al., 1977, p. 361). It is deployed “so that the interaction does not freeze in places where trouble arises, that intersubjectivity is maintained or restored, and the turn and sequence and activity can progress to possible completion” (Schegloff, 2007, p. xiv). Repair has two central aspects: 1) the initiation of repair, whereby an interactant signals an interactional problem or trouble-source, and 2) the resolution of repair, i.e., resolving the trouble. Both initiation and resolution of repair can be accomplished either by ‘self’, referring to the current speaker, or ‘other’, referring to the recipient of the talk. Thus, the initiation-resolution and self-other dimensions form four basic repair patterns: self-initiated self-repair (SISR), self-initiated other-repair (SIOR), other-initiated self-repair (OISR), and other-initiated other-repair (OIOR).

The first pattern, SISR refers to an occasion when a speaker her/himself both initiates and resolves a trouble-source. For example, a speaker may repair a missaying, by interrupting an erroneous production and replacing it with a more suitable linguistic element. SISR is the most common form of repair in typical interaction (Kitzinger, 2013), and traditionally also regarded as a preference predominating over other repair patterns (Schegloff et al., 1977). The second pattern, SIOR, refers to a speaker initiating repair and a recipient resolving it. It is related to what is referred to as ‘jointly constructed turns’ (Lerner, 1996), which are common when a speaker encounters a word search; a recipient may then provide a candidate word to resolve the problem by completing the turn (Helasvuo, Laakso, & Sorjonen, 2004; Lerner, 1996). The third pattern, OISR, denotes a recipient initiating repair on a prior speaker’s talk, which the prior speaker subsequently repairs. It is considered to be a frequent and efficient means of resolving trouble in typical conversation (Kitzinger, 2013). OISR was a common pattern also in my data. The following conversational fragment, extract 1, will provide an example. In the extract, a FM (spouse) and a PWA are about to eat breakfast (for a transcription key, see pages 13-14).

(1)

Line	Speaker		Transcription
1	FM		<i>(paahdoiksä) leipää</i> (did ya make toast)
2	PWA	→	<i>mitä</i> what
3	FM		<i>(paahdoitko) leipää</i> did you make toast
4	PWA		<i>joo:n on.</i> yea:n.

The extract begins with the FM asking the PWA a yes/no question (line 1). In response, the PWA does not produce an answer, but initiates repair by uttering ‘what’ (line 2). Such a repair-initiator does not pinpoint a specific trouble-source in the preceding turn, but leaves it open, merely acknowledging that something has been said (hence called open-class repair-initiation in CA; Drew, 1997). Next, the FM reproduces her initial question with a slightly altered turn construction (line 3), to which the PWA provides an affirmative answer, which closes the sequence. Thus, the PWA’s repair initiation and the FM’s solution to it, form a short intervening sequence between what could minimally have been a two-turn sequence (a question-answer sequence), nevertheless efficiently solving the trouble displayed by the PWA’s repair initiation. As such, extract 1 is similar to other-initiated repair sequences found in typical talk, where the trouble is most often solved after a single, and typically two-turn, repair sequence (Kitzinger, 2013). The fourth repair pattern, OIOR, refers to a recipient correcting a previous speaker’s turn without providing an opportunity for the original speaker to self-repair. Compared to other repair patterns, OIOR is infrequent in typical everyday conversation amongst adults (Haakana & Kurhila, 2009; Kendrick, 2015), but regarded relevant in adult-child, particularly parent-child, interaction (Schegloff et al., 1977).

1.2.1.1 Collaborative repair

Compared to typical conversation, repair in aphasic conversation is more frequent, may take atypical forms, and be prolonged, becoming the main activity in interaction (Wilkinson, 2015). For example, in instances of a PWA’s word-finding difficulty long ‘hint and guess’ sequences may develop, where the PWA’s hint provide information about the searched-for word and the conversation partner’s guess attempts to use this information to supply for the searched-for word (Laakso & Klippi, 1999).

Like people without aphasia, PWAs launch repair on their own talk, that is initiate self-repair (Laakso, 1997; Laakso & Godt, 2016; Leaman & Archer,

2022). But due to the linguistic impairment connected to aphasia, PWAs may not be able to resolve a trouble-source by themselves. Further, linguistic restrictions, such as prominent lexico-grammatical disruptions typical of non-fluent aphasia, may impede the production of a comprehensible turn at talk in the first place (e.g., Goodwin, 1995; Laakso & Godt, 2016; Wilkinson, 1999b). Hence, PWAs often need the help, or collaboration, of their conversation partner to resolve interactional trouble (e.g., Perkins, 2003). Collaborative repair, that is SIOR and OISR patterns, are a hallmark of repair action in aphasic conversation. It entails the linguistically more skilled conversation partner taking more responsibility for furthering the interaction by helping to resolve PWA-initiated repair (SIOR) on the one hand, and initiating repair with actions that acknowledge a PWA's needs (OISR) on the other (Ferguson, 1994; Milroy & Perkins, 1992). Although the quantity of collaborative repair may vary significantly across a dyad's conversations, the nature of the trouble-sources giving rise to collaborative repair have been found to be consistent, displaying one or more predominant trouble-sources (Perkins, Crisp, & Walshaw, 1999).

A particularly useful repair-initiation strategy for a PWA's conversation partner is a candidate understanding (Milroy & Perkins, 1992). It is defined as a recipient's means of initiating repair by presenting the most 'advanced' understanding about a previous turn of talk, by restating the trouble-source turn by using different words (Kitzinger, 2013). Extract 2 from my data provides an example. The PWA (in this case a person with fluent aphasia) and his FM (spouse) are discussing how the PWA, depending on the weather, will get into town the following week.

(2)

Line	Speaker	Transcription
1	FM	<i>ooksä kattonu et onks luvattu mitää, (1.0) [lumipyryjä. have you checked if there's going to be any, (1.0) [snow flurries.</i>
2	PWA	<i>[e:i (tiedä). [don't (know).</i>
3	FM	<i>.joo .okay</i>
4		<i>(4.5)</i>
5	PWA	<i>täytyy vaa mennä tuolta, (2.0) sen <u>kautta</u>, (0.5) mistä ennenki menny. just have to go, (2.0) via the, (0.5) where (I've) gone before.</i>
6	FM →	<i>ai sielt Uudenkylän y'mean via New Village</i>
7	PWA	<i>>nii joo. (.) nii joo.< >yea yea. (.) yea yea.<</i>
8	FM	<i>nii. yeah.</i>

In line 5, the PWA states that he has to take the familiar route but has trouble specifying what the route is, ending his turn by replacing the referring expression with the circumlocution ‘where (I’ve) gone before’. The FM addresses the unspecified referent by providing a candidate understanding, suggesting the route is ‘via New Village’ (line 6), which she constructs with the Finnish turn-initial particle *ai* followed by a noun phrase. Such a turn-construction is typical of a Finnish candidate understanding. In general, candidate understandings are a frequent means of other-initiated repair in typical Finnish conversation (Haakana, Kurhila, Lilja, & Savijärvi, 2016). Aphasic conversations differ in the sense that the use of candidate understandings is asymmetric: it is the linguistically more skilled conversation partner who possess the ability to support the conversational flow by contributing a candidate understanding, which a PWA may then accept or reject. In extract 2, the PWA confirms the FM’s candidate understanding (line 7) and following an affirmation token by the FM the repair sequence is closed. Hence, the candidate understanding functions as a quick remedy for the interactional trouble without highlighting the word-finding problem; it does not require the PWA to repeat the trouble-source turn, which might be problematic, but offers a solution to it, and once the short repair sequence is accomplished, the conversation may progress.

However, to be able to formulate a candidate understanding, a PWA’s conversation partner needs to grasp something of what a PWA has said. This is not always the case. For example, Barnes (2016) observed that a PWA’s topic initiation within an ongoing conversation may present the conversation partner with comprehension problems, which elicit an open-class repair initiator. In typical conversation an open-class repair initiation commonly receives a repeat or near-repeat in response (Kitzinger, 2013, cf. extract 1), but repeating a troublesome turn is naturally difficult for a PWA, as producing the turn was problematic in the first place. Instead, Barnes (2016) demonstrated PWAs truncating or continuing their trouble-source turns, which provided further resources for the interactants to collaboratively build a shared understanding.

Although collaborative repair is frequent in everyday aphasic conversation, and even a clinical recommendation (cf. Leaman & Archer, 2022), interactional trouble may also be glossed over, similar to typical conversation (e.g., Clift, 2016; Schegloff, 2007). Barnes and Ferguson (2015) documented that in response to a PWA’s problematic talk, a FCP may merely receipt that something has been said, without providing support for resolving the interactional trouble. This often leads to abandonment of the PWA’s talk, thus restricting a PWA’s communicative participation.

1.2.1.2 Correct production sequences

Another common phenomenon in aphasic conversation is correct production sequences, or language-exercising sequences, which are related to repair. Such sequences refer to instances where a recipient knows what a PWA is talking about but nevertheless pursues correct verbal production of a target word (Bauer & Kulke, 2004; Beeke et al., 2014; Booth & Perkins, 1999; Lindsay & Wilkinson, 1999; Wilkinson et al., 1998). FCPs typically do this by producing the target word's initial sound or syllable, in order to elicit a PWA's correct production. It resembles the phonological cueing technique speech and language therapists (SLTs) utilize in aphasia therapy to facilitate PWAs' production of target words within language exercises (e.g., Hickin, Best, Herbert, Howard, & Osborne, 2002). In everyday aphasic conversation, correct production sequences have been thought of as orienting to the aphasic language impairment as something that can be improved, hence to be practised within informal talk, but also as a strategy to keep the conversation going (Bauer & Kulke, 2004), or to present a PWA as a competent language user after all (Aaltonen & Laakso, 2010). However, as a recurrent interactive strategy, correct production sequences may also create emotional distress in a PWA (cf. Beeke et al., 2014).

1.2.2 ADAPTATION TO APHASIA

Adaptation to aphasia refers to practises or strategies both PWAs and conversation partners may use in order to handle the interactional trouble imposed by the linguistic restrictions linked to aphasia in everyday conversation (e.g., Heeschen & Schegloff, 2003; Wilkinson, 2015; Wilkinson, Beeke, & Maxim, 2003)¹. Collaborative repair-action discussed in section 1.2.1.1 can be regarded as one form of adaptation interactants may deploy. Next, some adaptive strategies PWAs' have been found to use will be outlined. Although the strategies are presented separately below, the reader is asked to bear in mind that PWAs' deployment of resources essentially intertwine. The subchapter will end with another means of adapting, namely co-construction of social actions.

1.2.2.1 PWAs' adaptive strategies

The type and severity of aphasia naturally affect the linguistic resources available to a PWA in everyday conversation². In general, CA-informed

¹ An adaptive interactional practice or strategy does not here refer to a behaviour put in practice consciously, but rather an intuitive way of acting in real-time interaction.

² It should be noted that linguistic resources as they are uncovered in an institutional SLT test situation, do not display similarly within everyday interaction (e.g., Beeke et al, 2003; Heeschen & Schegloff, 2003).

aphasiology research has demonstrated that the both lexically and grammatically scanty speech production typical of non-fluent aphasia may result in conversational turns lacking a recognizable social action, whereas fluent aphasia may manifest itself in semantically and referentially ambiguous turns as well as word searches that are self-repaired (e.g., Helasvuo, Klippi, & Laakso, 2001; Laakso & Godt, 2016; Wilkinson, 1999b).

People with non-fluent aphasia have been found to utilize several turn-constructional resources to accomplish social actions. To begin with, they may exploit formulaic language, that is idiomatic expressions, which are reasonably fixed in form and articulated fluently as one prosodic unit, thus serving as a resource for smooth turn-construction. Such expressions may vary from single particles such as ‘yes/no’ (Goodwin, 1995) to multi-word phrases such as ‘I suppose’ (Barnes, 2012; Beeke, 2003), and usually appear in a responsive position, functioning as confirming a previous turn of talk, for example. Formulaic language may also be employed in enactments, which entail a PWA using their residual linguistic resources and combining them with embodied elements as well as prosodic features. Such an array of intertwined resources can be used to recount events, thus overcoming the difficulties of producing complex linguistic structures (Klippi & Helasvuo, 2011; Wilkinson, Beeke, & Maxim, 2010). For example, a PWA may use direct reported speech represented by simple lexical forms such as “oh no” while at the same time depicting bodily actions, facial expression, and voice of a ‘narrator’. Prosody, meaning the way we say things by varying our voice quality, pitch, loudness and speaking rate, has in general been established as a central resource for people with non-fluent aphasia. Variations in prosody allow for building different social actions through same linguistic means, the particles ‘yes’ and ‘no’ for example, as well as regulating turn-taking by signalling the continuation or completion of a turn (Beeke, Wilkinson, & Maxim, 2009; Goodwin, 2010; Rhys, Ulbrich, & Ordin, 2013).

Further, people with non-fluent aphasia may use atypical, linguistically adapted turn-constructions to compensate for their difficulties of producing lexical units and grammatical structures in a timely manner. For example, in English a turn-initial temporal noun phrase such as ‘last week’, may compensate for the difficulty of producing a tense-marked verb, and combined with a temporally unmarked verb construction such as ‘you go out’ as well as a rising intonation, it can function as a topic initiating question (Beeke et al., 2003). In Finnish, people with non-fluent aphasia may use participial verb forms without auxiliaries (e.g., *kastunut* ‘wet’ instead of *oli kastunut* ‘had become wet’), or the verb might be omitted altogether, and a reference to past time achieved by using an adverb such as *silloin* ‘back then’ (Helasvuo et al., 2001).

People with non-fluent aphasia also frequently rely on embodied resources, which in CA refers to gestures, facial expressions, gaze, head and body movements et cetera (Mondada, 2014). For instance, pointing and hand gestures may be intertwined with remaining linguistic resources to allude to

referents not physically present in the moment (Goodwin, 2003; Klippi, 2015). However, it has also been established that a PWA's gesturing may be problematic and launch a 'hint and guess' sequence, which may end up unresolved (Auer & Bauer, 2011). Embodied resources commonly interplay with environmental resources, meaning the setting where the interaction physically takes place as well as the objects and artefacts available. For example, people with non-fluent aphasia have been found to point at a line of text or a photograph in a newspaper, which has been interpreted by the recipient as a topic initiation (Archer, Tetnowski, Freer, Schmadeke, & Christou-Franklin, 2018).

Everyday conversation of people with fluent aphasias, specifically Wernicke's aphasia, are less researched. Generally, it has been documented that word-finding difficulties typical to Wernicke's type of fluent aphasia display themselves in semantic errors, phonological distortions and neologistic words, that is words that don't exist in the language even though the phonetic construction of the word conforms to the language in question. CA-informed research has demonstrated that in everyday conversation, such word-finding difficulties frequently result in repetitive but unsuccessful self-repair attempts as well as a PWA commenting explicitly about the word-finding difficulty (e.g. Helasvuo et al., 2001). It has also been proposed that both English and Finnish speaking people with fluent aphasia circumvent word-finding difficulties by using general meaning words such as pronouns, the noun 'thing' or the verb 'do' instead of engaging in a word search within the constraints of a conversation in progress (Laakso, 2003; Wilkinson et al., 2003). Wilkinson et al. (2003) suggest that people with fluent aphasia may adapt to word-finding difficulties by utilizing a strategy of producing a turn-initial (i.e., fronted) noun phrase thereafter adding a proposition about it using general meaning words. The fronted noun phrase allows for resolving a cumbersome word search without the simultaneous production of a grammatical construction, and the use of general meaning words may bypass the possibility of launching prolonged self-repair.

Lastly, like people without aphasia, PWAs in general draw on the sequential organization of interaction. CA-informed aphasiology research has, for example, demonstrated that persons with severe non-fluent aphasia can successfully participate in commercial interactions with sales personnel at drug stores, coffee shops and the like, the essential resource being the mutually known course of conversational actions (Anglade, Le Dorze, & Croteau, 2019).

1.2.2.2 Co-construction and FCPs' adaptive strategies

Co-construction was eloquently described by Goodwin et al. (2002, p. 31) when reporting on family conversations involving a person with severe non-fluent aphasia, Chil, as "what others can do within a single turn instead requires sequences for Chil and his interlocutors". That is, co-construction entails a PWA and a conversation partner collaboratively building a PWA's

turn-at-talk, sometimes over several turns, before the conversation partner may respond to it. As such, co-construction is related to collaborative repair. However, especially in severe non-fluent aphasia the turn-constructural resources available to a PWA may result in turns too unclear to initiate repair on, and active co-construction by the recipient is needed instead (Laakso & Godt, 2016). Extract 3 from my data provides an example of this. It is the PWA's birthday, and prior to the extract the PWA and his FM (spouse) have been talking about their ages. The topic has however dried up and extract 3 starts following a lapse in the conversation.

(3)

Line	Speaker	Transcription
1	PWA	<i>ko:hta se tota (2.0) *toi? (0.8) <Tuulla,></i> soon the uhm (2.0) *that? (0.8) <Tuulla,> *((grabs his mobile phone))
2		(1.5)
3	FM	<i>jotakin sä otit puhelimesta kiini,</i> something about you grabbing your phone,
4	PWA	<i>>nii just ja ,< (0.9) tu:- e:iku,</i> >yea exactly and,< (0.9) tu:- no,
5		(3.0)
6	FM	<i>nii:i?</i> ye:a?
7	PWA	<i>(toi o,) (1.0) tu:o se tota,</i> (it is,) (1.0) that: the uhm,
8	FM	<i>jonku <u>muun</u> syntymäpäivä</i> somebody else's birthday
9	PWA	<i>nii *kohta sitte, (1.2) *tää kato,</i> yea *soon then, (1.2) *this you see, *((picks up *looks at his mobile phone))
10		(3.0) ((PWA scrolls mobile phone, FM steps forward to view the phone))
11	PWA	<i>entti (1.0) Antti.</i> entti (1.0) Antti.
12	FM	↑ <i>Antti.</i> ↑ Antti.
13	PWA	nii. yea.
14	FM	<i>ai ↑jaa.</i> ↑ oh really.

In line 1, the PWA initiates talk, which subsequently, following a co-construction sequence, proves to be a continuation of the birthday topic. Turn-initially the PWA produces an adverb referring to time ('soon'), followed by

evident word-finding difficulties displayed by the hesitation, the long pause as well as the use of the pronominal premodifiers of a noun phrase *se* ‘the’ and *toi* ‘that’ (Helasvuo et al., 2004). During his word search the PWA grabs his mobile phone. Then he produces *Tuulla*, which can be heard as a phonemically slightly distorted proper name (line 1). From the FM’s response ‘something about you grabbing your phone’ (line 3), it is evident that she has trouble deciphering what the PWA is talking about, as she puts into words the PWA’s embodied action and thus considers it relevant for co-constructing meaning. One factor complicating her comprehension is probably that the name the PWA mentioned is hers (pseudonym in transcription). Next, the PWA responds with confirming the mobile phone as relevant for what he is talking about and continues by repeating the proper name, cutting the word off and initiating self-repair with the Finnish repair particle *eiku* (line 4). In line 6, the FM produces an enthusiastic dialogue particle, which functions as an encouragement for the PWA to continue. Following the PWA’s repeated try to produce a referent (line 7), the FM is able to provide the candidate understanding that the PWA is talking about somebody else’s birthday (line 8), which explicates that she at this point grasps the topic of their current talk. The PWA confirms this and by using the information in his mobile phone, he produces a proper name (line 11). The FM repeats the name enthusiastically, which displays she recognizes the person (line 12). Eventually she treats the information they have co-constructed, namely that Antti’s birthday is also coming up, as news to her (line 14). In sum, extract 3 demonstrates that what a person without aphasia might have produced within a single turn with ‘come to think of it, Antti’s birthday is also coming up soon’, for example, took several turns for the PWA and FM (lines 1-13) to co-construct. The extract also exemplified the PWA using an object as a turn-constructural resource.

In addition to co-constructing a PWA’s turn over several turns, as demonstrated in extract 3, PWAs’ conversation partners frequently aid a PWA by completing her/his turn syntactically and semantically. Oelschlaeger and Damico (1998) call such instances ‘turn completion joint productions’, which resemble self-initiated other-repair (see 1.2.1), particularly in occasions when an initial speaker displays a word search (Helasvuo et al., 2004; Lerner, 1996).

While co-construction and completion of a PWA’s turn may be regarded to facilitate a PWA’s participation, other adaptive strategies PWAs’ conversation partners have been found to use might do the opposite. For instance, a FCP might resort to a strategy of asking a PWA only yes/no -questions or pose questions both interactants already know the answer to, that is presenting a test or known answer question. Both strategies are frequently observed in aphasic conversation and are thought of as means for a FCP to engage a PWA in a conversation, although such strategies may actually constrain a PWA’s contribution to minimal or already known responses (e.g., Beeke, Beckley, et al., 2013, Wilkinson et al. 2010).

1.2.3 APHASIA AND SOCIAL ACTIONS

Previous CA-informed aphasiology research has by and large approached aphasic everyday conversation from the starting point of the linguistic difficulties related to aphasia, such as word finding problems or agrammaticality, and how they are reflected in interaction. Hence, much research has focused on turn-constructive and sequential phenomena like adapted ways of achieving a turn-at-talk and repair. While examining how PWAs and their conversation partners accomplish social actions has been part of such work (e.g., doing repair can also be considered a social action), it was not the initial focus of most early CA-informed aphasiology research (see however e.g., Klippi, 1996 for work on single-word turns as topic initiations). Recently, an increasing number of studies have begun to scrutinize how PWAs achieve certain social actions. For example, Barnes et al. (2013) focused on PWAs topic initiations in everyday conversation. Initiating a topic, or initiating a social action in the first place, is of great importance as it relates to communicative participation and independence. Based on their case study, Barnes et al. (2013) concluded that topic initiation may be hazardous even for a person with mild aphasia as achieving referentially and sequentially unambiguous turns may be difficult. Leaman and Edmonds (2020) and Leaman et al. (2022) examined the topic initiations of 10 and 20 PWAs respectively, and compared them with their FCPs' as well as SLTs' topic initiations. Both studies examined unstructured conversation and coded topic initiation strategies according to knowledge derived from previous CA-research. The studies found that PWAs frequently used non-coherent topic initiations, that is abrupt changes of topic, while their conversation partners practically never used such a strategy. Additionally, the more severe the aphasia, the more problems a PWA had with initiating a topic coherently and comprehensibly (Leaman & Edmonds, 2020). Other social actions that have recently received research interest include planning joint activities and requesting. Killmer, Svennevig, and Beeke (2022a) demonstrated that a person with severe Wernicke's aphasia was able to maintain agency in planning sequences as his FCP (i.e., spouse) collaborated in response to his initiations as well as invited him to participate in planning talk she initiated. Such collaboration rendered the PWA as a competent contributor to the planning activity. Killmer, Svennevig, and Beeke (2022b) investigated how three parents with aphasia accomplished a pivotal aspect of parenting, namely making requests to their children as in asking them either to do or stop doing something. They found that in general, asking the children to stop doing something is more easily accomplished as it requires less specification through linguistic resources. Further, persons with more severe aphasia had to rely on embodied resources such as higher volume to express authority.

1.2.4 SUMMARY OF PREVIOUS CA-INFORMED APHASIOLOGY RESEARCH

Due to the linguistic restriction aphasia poses, repair is a pervasive feature of aphasic everyday conversation. CA-informed aphasiology research has documented that PWAs frequently need the collaboration of their linguistically more skilled conversation partner to resolve interactional trouble. Thus, collaborative repair patterns are typical to aphasic conversation. An optimal repair-initiation strategy for a PWA's conversation partner is a candidate understanding, which reformulates previous troublesome talk and offers an interpretation of it to be either accepted or declined, and as such furthers the conversation without highlighting a PWA's language difficulty. CA-informed research has also documented atypical repair patterns in aphasic everyday conversation. These include prolonged 'hint and guess' sequences and correct production sequences.

CA-informed aphasiology research has further demonstrated how both PWAs and their FCPs adapt to the interactional problems aphasia causes in everyday conversation. PWAs' adaptive strategies include the intertwined use of residual linguistic and embodied resources as well as environmental resources including deploying the sequential structure of interaction. Some of the adaptive strategies support the flow of conversation and facilitate PWAs' communicative participation, while others may stall the interaction and present PWAs with communicative barriers.

Altogether, previous CA-informed aphasiology research has elucidated a diverse range of features of aphasic interaction. However, most of the previous research consists of case studies. Much of the early work took the aphasic language impairment and how it displays itself in PWAs' everyday interaction as a starting point, scrutinizing the consequences of agrammatism and repair initiations, for example. More recent work has sought to understand how PWAs accomplish specific social actions such as topic initiations or requests. CA-informed aphasiology research as it relates to clinical applicability and outcome measurement are discussed in the following sections.

1.3 APHASIA THERAPY

In broad terms, aphasia therapy has traditionally been approached from two main perspectives: an impairment-focused and a consequence-focused approach, which both encompass plenty of specific interventions (Basso, 2010; Fridriksson & Hillis, 2021; Herbert, Best, Hickin, Howard, & Osborne, 2003; C. Thompson & Worrall, 2008; Wilkinson et al., 1998). To put it simply, the impairment-focused perspective aims to rehabilitate the impaired language components with exercises that target the linguistic deficit, whereas the consequence-focused approach aims to reduce the impact aphasia has on a person's life (Basso et al., 2013; Fridriksson & Hillis, 2021; C. Thompson & Worrall, 2008). The term consequence-focused approach was coined by

Thompson and Worrall (2008), who describe it being shaped by influences from the pragmatic or functional communication approach (e.g., Davis & Wilcox, 1985), the Life Participation in Aphasia Approach (LPPA, 2001), and the World Health Organization's model of biopsychosocial disability; the International Classification of Functioning, Disability and Health (ICF) (World Health Organization, 2002). The latter views an individual's health and functioning as a dynamic state formed of biological, individual, and social factors.

Both the impairment-focused and the consequence-focused approaches strive to achieve optimal communication ability for a PWA. Underlying the impairment-focused approach is an assumption that improved language function will generalize to everyday communication abilities as a by-product, while the consequence-focused approach more straightforwardly tackles communication activity and participation, paying less attention to reducing the language impairment (Fridriksson & Hillis, 2021; C. Thompson & Worrall, 2008). The dichotomy might reflect the historical development in aphasiology, namely commencing as a field engaged in disentangling brain-based language processing more than a century ago, to a field encompassing an interest in functional language use as well as the accomplishment of everyday conversation at the end of 20th century (e.g., Holland, 1991; Lesser & Milroy, 1993; Luria, 1973; Wilkinson, 1999a). Nevertheless, it is obvious that both impairment-focused and consequence-focused perspectives are needed in aphasia therapy (Holland, 1991; C. Thompson & Worrall, 2008). A holistic approach is also put forward by the ICF framework as it pays attention to impairments at the level of body structures and functions, communication activities and participation as well as environmental and personal factors to create maximal quality of life (Simmons-Mackie & Kagan, 2007). Recently, intensive comprehensive aphasia programs, which combine the principles of neuroplasticity with all ICF's domains, have gained popularity (Rose, Cherney, & Worrall, 2013; Rose et al., 2021).

In the next two sections, I will outline two interventions relevant for this thesis. First, a consequence-focused aphasia therapy approach, more specifically the interaction-focused approach (Wilkinson, 2010), which is linked to a CA-informed view on aphasia therapy. Second, the therapy method used in the main research project this thesis is connected to, namely the intensive language-action therapy (ILAT) (Difrancesco et al., 2012), which may be considered representing an impairment-focused approach.

1.3.1 INTERACTION-FOCUSED APPROACH TO APHASIA THERAPY

Conversation or interaction-focused aphasia therapy refers to a communication partner training (CPT) intervention underpinned by CA (Beeke, Maxim, & Wilkinson, 2007; Booth & Perkins, 1999; Simmons-Mackie et al., 2014; Wilkinson, 2010). CPT is an umbrella term denoting interventions which aim to teach people around a PWA, and possibly a PWA her/himself,

how to use communication strategies and environmental resources in order to facilitate communication, and thereby improve a PWA's participation and quality of life (Cruice, Blom Johansson, Isaksen, & Horton, 2018; Saldert et al., 2018; Simmons-Mackie, Raymer, & Cherney, 2016). For instance, a PWA's conversation partner can be trained to use a strategy of writing the key words of a conversation to make a message more comprehensible for a PWA, whereas a PWA may be taught to systematically use multimodal means such as pointing to objects in the environment to compensate for the language disorder. Hence, CPT aims to change the interactants' behaviour within the context of everyday conversation (Simmons-Mackie et al., 2014), and it relies on the fact that conversation is a collaborative endeavour (Simmons-Mackie & Damico, 2007). As such, CPT belongs to the consequence-focused approach amongst aphasia therapy.

Interaction-focused aphasia therapy utilizes CA-knowledge on turn and sequence construction, repair, and other conversational phenomena as well as previous findings about conversational patterns in typical and atypical interaction to analyse video-recorded everyday conversations of PWAs and their FCPs (Barnes & Nickels, 2018). Using examples from the video-recordings, the aim is to facilitate a dyad to discover and become aware of recurring conversational patterns (or strategies) they use, which may function as either communicative facilitators or barriers. The patterns are then discussed, and the targets of therapy are decided on in collaboration between the couple and an SLT. Usually, the target is to decrease the use of barrier behaviours, which may stall the conversation or highlight the aphasic language impairment, and/or increase the use of facilitatory behaviours (e.g., Barnes & Nickels, 2018; Saldert et al., 2018; Wilkinson, 2010). For example, Wilkinson et al. (2010) aimed to replace a FCP's barrier behaviour of asking strings of yes/no questions with a strategy of posing more open questions instead. The rationale was that the yes/no questions curtailed the PWA's response alternatives, whereas an open question has the potential to provide a slot for the PWA to add something new to the topic. Beeke et al. (2014) discovered a PWA's writing ability to be a resource in turn-construction (see also, Klippi, 1996 for a PWA using writing in turn-construction). Consequently, the PWA was encouraged to incorporate writing into his conversational turns with the aim of achieving more complete turns-at-talk, potentially resulting in increased mutual understanding.

Compared to other CPT interventions, which typically provide general advice on how to facilitate communication in aphasic conversation, interaction-focused aphasia therapy is individualized for a dyad, and the therapy targets are rooted in the dyad's everyday conversational behaviours. As for the efficacy of interaction-focused aphasia therapy, Wilkinson and Wielaert (2012) reviewed six single case studies using interaction-focused aphasia therapy and concluded that change in the targeted conversational behaviours can be achieved. For example, the above-mentioned study by Beeke et al. (2014) documented a significant increase in the PWA's use of

writing. However, research has in general indicated that it is easier for participants to diminish conversational barrier behaviours than increase the use of facilitating strategies (e.g., Barnes & Nickels, 2018; Beeke et al., 2015). This was also apparent in a study by Best et al. (2016), which examined the effect of interaction-focused aphasia therapy in eight dyads, each consisting of a person with chronic non-fluent aphasia and their FCP. The researchers found a significant reduction in barrier behaviours on the group level, but no changes in the use of conversation facilitators. So far, CA-informed research has given rise to several interaction-focused aphasia therapy resources that can be used in clinical work: Supporting Partners of People with Aphasia in Relationships and Conversation (Lock et al., 2001), Better Conversations with Aphasia (Beeke et al., 2013), and Facilitating Authentic Conversation (Damico et al., 2015).

1.3.2 INTENSIVE LANGUAGE-ACTION THERAPY

Intensive language-action therapy (ILAT) (Difrancesco et al., 2012), also known as constraint-induced aphasia therapy or constraint-induced language therapy (Pulvermüller et al., 2001), has since its introduction in the beginning of this millennium become an established aphasia therapy method (e.g., Brady et al., 2016; Meinzer, Rodriguez, & Gonzalez Rothi, 2012). It incorporates three principles, which are based on neuroscience research and the linguistic theory of speech acts (Difrancesco et al., 2012; Pulvermüller & Berthier, 2008). First, ILAT emphasises massed practice to re-strengthen the brain's neural networks involved in language processing. In practice, this means that therapy is delivered for three hours per day for two weeks, totalling 30 hours. Second, exercises are based on communicative and behavioural relevance. This is achieved through implementing the therapy in small groups consisting of PWAs and an SLT. The group engages in 'language games', that is exercises designed to approximate different communicative actions such as requesting or planning joint activities (Pulvermüller & Roth, 1991; Stahl, Mohr, Dreyer, Lucchese, & Pulvermüller, 2016). Cards with pictures of objects are used in a request game, while action pictures related to action verbs are used in a planning game (Difrancesco et al., 2012). Third, ILAT focuses on encouraging verbal communication to avoid learned non-use of communicative abilities. This is implemented by an SLT or SLT assistant, who guides the participants to systematically use their available linguistic abilities and augment their verbal utterances (Difrancesco et al., 2012). In addition, barriers preventing the participants from seeing each other's non-verbal communication (as well as cards) are used to invite verbal communication.

Traditional impairment-based aphasia therapy, such as methods addressing naming difficulties (e.g., Best et al., 2011) or sentence production ability (e.g., Carragher, Sage, & Conroy, 2015), typically aim for a PWA producing certain linguistic elements or structures with the help of an SLT. ILAT differs from traditional impairment-based methods in that the second

principle includes aspects of functional communication: language use is embedded in short communicative sequences within a group activity, entailing one participant making a request and another participant providing a response, for example (Difrancesco et al., 2012; Pulvermüller & Berthier, 2008). This communicative aspect has been thought of as being central for the success of ILAT (Stahl et al., 2016). ILAT is, however, implemented in an institutional setting and does not engage PWAs' conversation partners. Thus, ILAT may be regarded more as an impairment-focused than a consequence-focused intervention.

Previous research has documented ILAT to improve language functions in chronic aphasia (e.g., Brady et al., 2016; Meinzer et al., 2012; Pulvermüller et al., 2001) with improvements maintained for up to 2.5 years (Doppelbauer et al., 2021). Outcome measures have included standardized language tests, different discourse measures, and self- and other- ratings of functional communication. An example of the latter is the Communicative Activity Log, which was developed to be used in conjunction with ILAT to document the quantity and quality of a PWA's verbal communication in everyday life (Pulvermüller et al., 2001). However, previous studies have not addressed the outcome of ILAT for in situ communication such as everyday conversation.

1.4 EVERYDAY CONVERSATION–ECOLOGICAL VALIDITY AND MEASURING OUTCOME

Ecological validity is commonly defined as the extent to which a (therapy) task resembles, or a research finding generalizes to the real-world, meaning activities outside the therapy clinic or the research laboratory (Holleman, Hooge, Kemner, & Hessels, 2020). As a communicative task, everyday conversation is considered to have high ecological validity; having a conversation is the most common use of language in our everyday lives (e.g., Schegloff et al., 1977). Also for PWAs it is still the most frequent mundane communication activity (Davidson, Worrall, & Hickson, 2003). In fact, being able to have a meaningful conversation is a preferred aphasia therapy outcome for both PWAs and their FCPs (Wallace, Worrall, Rose, Le Dorze, et al., 2017). As such everyday conversation has been identified as a pivotal site for outcome measurement, and as regards interaction-focused aphasia therapy in particular, an important target for treatment (e.g., Carragher et al., 2012; see also, Dipper et al., 2021; Wilkinson, Bryan, et al., 2010).

At the same time, researchers are united on the difficulty of measuring the impact an intervention has had on PWAs' everyday conversation (e.g., Fridriksson & Hillis, 2021; Kagan et al., 2008; Stark et al., 2021; Wallace et al., 2019; Webster et al., 2015). Indeed, outcome measurement following aphasia therapy frequently focuses on assessing an individual's linguistic skills such as language production and comprehension (Brady et al., 2016; Doedens & Meteyard, 2020; Wallace et al., 2020; Wallace, Worrall, Rose, Le Dorze, et al.,

2017). The difficulty of measuring everyday communication was also reflected in the Research Outcome Measurement in Aphasia (ROMA) consensus statement, which aimed to establish a core outcome set for post-stroke aphasia treatment research. In a first attempt, an international panel of experienced aphasia researchers reached consensus regarding measurement instruments in the domains of language, emotional well-being, and quality of life, but failed to agree on a measure of communication as well as a measure of patient-reported satisfaction with treatment (Wallace et al., 2019). Following up on this work, consensus on a communication outcome measure was recently reached as The Scenario Test (van der Meulen, van de Sandt-Koenderman, Duivenvoorden, & Ribbers, 2010) was included in the ROMA core outcome set (Wallace et al., 2022). The Scenario Test presents a PWA with fictitious communication situations, where any mode of communication (e.g., speaking, gesturing, or writing) may be used, while an examiner provides support using natural communication strategies (van der Meulen et al., 2010). The test thus meets the ROMA consensus group's demand of assessing situated language use (Wallace et al., 2022). However, simulated interactions, as in The Scenario Test, may differ from authentic everyday interaction in terms of cognitive demands required at the very least, because authentic interaction does usually not involve pretending to be in a fictitious situation, for example (Doedens & Meteyard, 2020). Consequently, an interest in measuring authentic everyday interaction persists.

1.4.1 IMPAIRMENT-FOCUSED APHASIA THERAPY AND OUTCOME MEASUREMENT

Previously, several impairment-focused aphasia therapy studies have aspired to capture potential generalization of therapy effects beyond the treated linguistic domain (e.g., word or sentence level) to everyday conversation (Webster et al., 2015). This has been implemented by quantifying different linguistic elements of a PWA's conversational output pre- and post-treatment, and possibly by subjecting them to statistical analysis (e.g., Best et al., 2011; Carragher et al., 2015; Kirmess & Lind, 2011; Obermeyer, Leaman, & Edmonds, 2020). For example, Kirmess and Lind (2011) elicited dialogical interview samples pre- and post-ILAT from three PWAs, and analysed amongst other things the number of PWAs' words and utterances, the mean length of utterances, the frequency and proportion of nouns and verbs, as well as the proportion of information units. They found an increase in noun production and the proportion of information units for all participants following treatment, but also individual variation on several other measures that were in part contradictive to the researchers' expectations. Best et al. (2011) investigated the outcome of word-level naming therapy in a group of 13 PWAs by collecting conversation samples from the PWAs and their FCPs, which they analysed using the Profile of Word Errors and Retrieval in Speech (POWERS) (Herbert, Best, Hickin, & Howard, 2012). POWERS entails

documenting the number of speech units, content words (i.e., nouns, verbs, adjectives, etc.), circumlocutions, pauses, and speech errors (e.g., phonological errors) a PWA produces. In addition, POWERS records some dialogic aspects of conversation. The number and type of conversational turns (i.e., substantive turns containing at least one content word versus minimal turns such as ‘mm’) produced by both a PWA and a FCP are counted, as well as instances of collaborative repair, meaning occasions when either speaker indicates a trouble which needs to be resolved in co-operation (cf. section 1.2.1). The authors of POWERS hypothesise that following naming therapy, a PWA would produce more content words and substantive turns, while the need for collaborative repair would decrease (Herbert et al., 2012). However, like Kirmess and Lind (2011), Best et al. (2011) did not find straightforward evidence of generalisation of treatment gains to everyday conversation, as several of the conversational measures did not improve as predicted despite a significant improvement in picture naming, that is, the activity targeted by the treatment.

The above-mentioned studies exemplify the challenges in demonstrating therapy-induced linguistic change in a complex phenomenon such as everyday conversation. Amongst other things, analysing and coding conversational samples is laborious and time-consuming, which may be part of the explanation for the generally small number of participants in such studies. This in turn, results in restricted statistical power and consequent problems of generalization of the results (e.g., Kirmess & Lind, 2011; Obermeyer et al., 2020). Further, to date there is no consensus on what should be quantified, and hence, according to Webster et al. (2015) there is a risk of “fishing” outcomes by using a variety of measures, which may lack theoretical justification as to what links the measures with the treatment activity (see also Saldert et al., 2018). A recent systematic scoping review demonstrated that researchers use a multitude of measures to examine potential change in everyday conversation, many of them traditional linguistic measures targeting only a PWA’s talk, extracting the mean length of utterance or correct information units, for example (Azios et al., 2022). In addition, to handle the discrepancy between the inherent variation in everyday conversation (e.g., topic) and the need for a controlled linguistic environment for research purposes, researchers frequently use connected speech samples, that is picture descriptions, or monologic or dialogic speech production (cf. Stark et al., 2021; Webster et al., 2015). For instance, a sample suitable for linguistic analysis may be extracted from a structured or semi-structured interview. However, drawing out only a PWA’s production does not capture the essence of everyday conversation, namely that of a situated, multimodal activity, which evolves in collaboration between two or more interactionalists (cf. Barnes & Bloch, 2019). Along the same lines, Doedens and Meteyard (2022) have recently argued that communication should be assessed, treated, and treatment outcomes measured not only as a linguistic phenomenon, but as acknowledging communication as interactive, multimodal, and contextual.

1.4.2 CA AND OUTCOME MEASUREMENT

Because CA scrutinizes naturally occurring interaction, and analyses the interactants' visible actions, it is exceptionally strong in terms of ecological validity (Seedhouse, 2007). Quantification has however been a debatable issue in CA (e.g., Schegloff, 1993; Stivers, 2015). As CA is an inductive method, CA researchers have traditionally been cautious about separating the phenomena of interest from their interactional sequences in order to code and quantify them. There has been worries that a deductive top-down approach may result in grouping conversational phenomena that appear similar on the surface, but which in fact serve different social functions (Schegloff, 1993; Wilkinson, 1999a). For example, a 'what' may function as an open repair initiator in everyday conversation, but also forecast a disagreement (Kitzinger, 2013). Therefore, counting isolated 'whats' as a measure of repair activity without considering the sequential environment, is not valid from an interactional point of view. Nevertheless, if an interactional behaviour is thoroughly defined through a data-driven process that considers the sequential aspects of interaction such as a recipient's behaviour, interaction can be coded and quantified while still preserving main CA-principles (Stivers, 2015). For example, using previous CA-knowledge of the design and interactional trajectories of yes/no questions, Heritage et al. (2007) examined how two question formats used by primary care doctors affect patients' expression of secondary concerns. They demonstrated that the doctors' use of a question format entailing 'something' as in "Is there something else you want to address?", was associated with patients expressing their secondary concerns, whereas a question entailing 'anything' as in "Is there anything else you want to address?" eliminated further concerns. Showing one word making such an interactional difference would not have been possible without integrating CA-rooted coding and quantification.

Previous interaction-focused aphasia therapy studies have measured interactional outcome by counting the number of targeted conversational behaviours in pre-, during and post-therapy video-recordings, and by subsequently performing statistical analysis (Barnes & Nickels, 2018; Beeke et al., 2015; Best et al., 2016). Like in typical CA-research, the basis of identifying and quantifying conversational behaviours lies in the robust concepts of turn-allocation, turn-construction, sequence organization, and repair, as well as findings derived from both typical and atypical CA research (Barnes & Bloch, 2019). Thus, the aim is not to quantify pre-defined linguistic elements or rate communication, but to document possible change in the occurrence of the conversational behaviours targeted in treatment, which were in the first place identified by observing actual everyday conversation of a PWA and a FCP (see section 1.3.1). A recent CA-informed study showed that operationalizing a conversational strategy through data driven means yields an outcome measure that has an acceptable inter-rater reliability (Azios, Archer, & Lee, 2021).

In addition to quantifying targeted behaviours, potential change following (interaction-focused) aphasia therapy can be approached from a longitudinal

point of view, that is by analysing sequences of similar activities pre- and post-therapy to discover potential qualitative differences (see Deppermann & Pekarek Doehler, 2021). Wilkinson and his colleagues (Wilkinson, Bryan, et al., 2010; Wilkinson, Lock, Bryan, & Sage, 2011) have presented two case studies demonstrating that both a PWA and a FCP can change their conversational strategies. Following interaction-focused aphasia therapy, a person with non-fluent aphasia adopted a new, more collaborative, and thus more successful strategy of initiating topics (Wilkinson et al., 2011), whereas a FCP of a person with non-fluent aphasia learned to replace yes/no questions with open questions, hence providing the PWA with more choices about how to construct his responsive turns (Wilkinson, 2010). Along the same lines, Saldert, Johansson, and Wilkinson (2015) demonstrated that interaction-focused aphasia therapy, which targeted a FCP's pedagogic activities (e.g., initiating and maintaining correct production sequences) not only reduced following therapy, but also changed in quality as the FCP ceased to prolong the pedagogic activities over several turns, like he did pre-therapy.

2 AIMS OF THE STUDY

CA-informed aphasiology research can provide valuable knowledge of a preferred aphasia therapy outcome, that is everyday conversation. Previous CA-informed aphasiology research has explored a diverse range of features of everyday aphasic conversation. Nevertheless, the knowledge base so far is mainly based on case studies, and the starting point of research has in general been the linguistic difficulties connected to aphasia and how they display themselves in interaction. Some work has also been conducted on measuring the outcome of interaction-focused aphasia therapy at the level of everyday conversation. However, everyday conversation as an outcome following impairment-focused aphasia therapy has not been studied from a CA perspective.

Using the framework of CA, this thesis examines authentic everyday conversation between PWAs with different types and severities of aphasia and their FMs in the context of an aphasia therapy outcome study. The broad aims of the thesis are twofold. The first aim is descriptive as it seeks to deepen our understanding of how PWAs initiate and collaborate with their FMs in the construction of social actions. The second aim is application-focused, as it explores both how outcome of impairment-based aphasia therapy may be measured in everyday conversation and how ecologically valid aphasia therapy may be developed and implemented. The three original articles have the following specific aims:

Study I investigates possible change in everyday conversation following aphasia therapy, more specifically ILAT, in the interaction of a person with mild anomic aphasia and her daughter. An ecologically valid improvement in everyday conversation was in advance defined as a change in collaborative repair action otherwise characteristic of aphasic conversation.

Study II explores how two persons with severe Broca's aphasia initiate social actions in everyday conversations with their FMs to discover both the capabilities the people with severe Broca's aphasia possess as well as the possible participatory obstacles they encounter.

Study III examines how people with varying degrees and types of aphasia, accomplish a social action that ordinarily requires the production of specific linguistic formats, that is, the social action of planning a joint future activity, in comparison to their FMs.

3 METHODOLOGY

3.1 RESEARCH PROJECT

Data for this thesis stems from the research project *Treatment-induced speech and language improvement and neuroplasticity after stroke* carried out at the University of Helsinki during 2012-2014 and led by the principal investigator professor Anu Klippi (Klippi, 2011). It compared the separate and combined effects of repetitive transcranial magnetic stimulation (rTMS) (Barwood et al., 2011) and Intensive Language-Action Therapy (ILAT) (Difrancesco et al., 2012) in chronic post-stroke aphasia. The research was conducted in accordance with the Declaration of Helsinki, and the protocol and its amendments were approved by the Local Ethics Committee for Clinical trials, the Hospital District of Helsinki and Uusimaa. Written informed consent was obtained from each subject or their significant other. The participants got no reimbursement for participating in the research project. The project received financial support from Tekes (nowadays Business Finland), the Finnish Funding Agency for Innovation, the Strategic Center for Health and Well-being (financing 1104/10).

The research project recruited 17 participants through hospitals, outpatient clinics and aphasia support groups in Helsinki and surrounding neighbourhoods. The inclusion and exclusion criteria are presented in Table 1. Some of the criteria such as a residual ability to understand simple task instructions were related to successful implementation of ILAT, while some criteria such as pacemakers were considered risk factors for the TMS-treatment.

Table 1. Inclusion and exclusion criteria for the research project *Treatment-induced speech and language improvement and neuroplasticity after stroke*.

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> • Age between 18 to 75 years • Native speaker of Finnish • Presence of a single clinically documented stroke • Chronic stage (i.e., ≥ 12 months post-stroke) • Aphasia documented by the WAB • Residual ability to understand simple task instructions • Information about medication available • Apraxia diagnosed (if present) • Right-handedness (no left-handedness in first-order relatives) 	<ul style="list-style-type: none"> • Recurring utterances or global aphasia (BNT < 3 points) • Neglect, agnosia severe vision impairment or hearing loss • Severe attention or memory deficits that would prohibit participation in language games • Cardiac pacemaker or other simulators that would prohibit magnetic resonance imaging and present a risk factor for TMS • Severe diabetes or severe depression • Additional neurological diagnoses • Other interventions or on-going speech and language therapy during the research period

The participants were randomly assigned either to group A, which received a 4-week period of rTMS combined with a 2-week period of ILAT, or to group B, which received the same treatment except that rTMS was replaced with sham stimulation (Heikkinen et al., 2019) (see Table 2). The main outcome measure, the Western Aphasia Battery (WAB) aphasia quotient (AQ) (Kertesz, 2005), as well as the secondary outcome measures the Boston naming test (BNT) (Kaplan, Goodglass, Weintraub, & Segal, 1997) and the Action naming test (ANT) (Obler & Albert, 2005), were administered at the four testing points presented in Table 2. Both rTMS and sham stimulation were delivered in 20 minutes daily sessions, five days a week. During the stimulation, the participants were presented with noun and action pictures, which they were to name in order to increase speech-related brain activity. No cues were provided, nor feedback given.

Table 2. Research design of the project *Treatment-induced speech and language improvement and neuroplasticity after stroke.*

	Week 1	Weeks 2–3	Week 4	Weeks 5–6	Week 7	PAUSE	3-month follow-up
GROUP A	1) Baseline Language Test 1 2) Baseline video-recording of conversation	rTMS-treatment	1) Language Test 2 2) 2 nd video-recording of conversation	rTMS-treatment + ILAT	1) Language Test 3 2) 3 rd video-recording of conversation		1) Language Test 4 2) 4 th video-recording of conversation
GROUP B	1) Baseline Language Test 1 2) Baseline video-recording of conversation	sham-rTMS-treatment	1) Language Test 2 2) 2 nd video-recording of conversation	sham-rTMS-treatment + ILAT	1) Language Test 3 2) 3 rd Video-recording of conversation	1) Language Test 4 2) 4 th Video-recording of conversation	

ILAT was implemented following the description provided by Difrancesco et al. (2012). The objective of ILAT is to provide intensive practice that focuses on mobilizing the participants' remaining linguistic skills in behaviourally relevant tasks. In the research project, these principles were carried out by delivering the treatment in groups of three participants and an SLT playing a card game, where the goal was to attain pairs of cards by verbally addressing the co-players. The SLT modelled the use of linguistic formulations and if needed, a SLT student supported each participant to elaborate their verbal utterances. As materials, a picture vocabulary of 555 Finnish nouns and 421 Finnish verbs were utilized. Intensity was achieved by implementing the treatment in sessions lasting for three hours, five days a week, for two consecutive weeks, totalling 30 hours of therapy (see Table 2).

3.2 DATA COLLECTION AND PARTICIPANTS

For the purposes of this thesis, all 17 participants of the main research project were asked to video-record approximately 20-30 minutes of everyday conversation at their homes at four time points during the project: 1) baseline, 2) after a 2-week period of either rTMS or sham stimulation, 3) after a 2-week period of either rTMS or sham stimulation combined with ILAT, and 4) after a 3-months follow-up period (see Table 2). During a home visit in the baseline phase, the participants, and if available, their FMs, were instructed to perform the video-recordings in a situation where they would usually talk about mundane issues, while having a meal, for example. No specific instructions regarding the content of the conversations were given. The participants were equipped with a video-camera on a tripod and instructed on its use, after which they could manage the recordings independently without the presence of researchers. The video-camera was picked up a few days later. The data were gathered between January 2012 and March 2014.

Together with 25 family members, the 17 PWAs video-recorded 76 conversations totalling approximately 25 hours. Some 15 hours of conversation data utilized for studies I-III are displayed in Table 3, which also reports the PWAs' demographical and etiological information, their aphasia type according to the WAB, and their relation to the family member. Systematic information about the conversation partners was not collected. However, the relationship between the conversationalists as well as the duration of the relationship became apparent from the video-recordings.

3.3 DATA SELECTION

The starting point of Study I was to explore the possible effects of ILAT on collaborative repair. I limited the initial data selection to dyads, where the PWA did not receive actual TMS in order to both exclude the effects of rTMS and to permit considering the post TMS-data as a second baseline (i.e., testing point 2 in Table 2). This made eight dyads eligible. From these, three dyads had missing data prohibiting adequate comparison between pre- and post-ILAT conversations. Additionally, one PWA recorded all conversations with two of his friends, that is, the conversations were triadic. I considered this problematic for two reasons. First, triadic conversations differ from dyadic conversations in fundamental respects (e.g., Stivers, 2021). Second, in addition to the CA-informed qualitative analysis, I planned to use the quantitative method Profile of Word Errors and Retrieval in Speech (POWERS) (Herbert et al., 2012), which is based on data from dyadic interaction. Consequently, I excluded the triadic conversations. From the four remaining dyads, I selected one based on the fact it had the longest duration of data.

Table 3. *Participants in Studies I to III. NB: *Veikko's data was part of both Studies II and III.*

	Pseudo-nym (sex)	Age	Aetiology	Duration of aphasia in months	Aphasia type (WAB AQ)	FM	Duration of conversation data
Study I	Liisa (female)	63	LH ischemic stroke	51	Anomic (87.8)	daughter	1 hour 21 minutes
Study II	Jari (male)	52	LH ischemic stroke	24	Broca (37.0)	spouse	3 hours 48 minutes
	Veikko* (male)	72	LH ischemic stroke	48	Broca (52.2)	spouse	2 hours 5 minutes
Study III	Teppo (male)	50	LH ischemic stroke	32	Anomic (87.0)	spouse	1 hour 20 minutes
	Anne (female)	54	LH ischemic stroke	92	Anomic (80.7)	spouse	48 minutes
	Irene (female)	58	LH ischemic haemorrhage	43	Anomic (74.1)	spouse	1 hour 16 minutes
	Kalle (male)	47	LH ischemic haemorrhage	17	Anomic (71.1)	spouse, daughter	1 hour 22 minutes
	Timo (male)	37	LH ischemic stroke	12	Conduction (72.2)	spouse	1 hour 34 minutes
	Leila (female)	62	LH ischemic stroke	34	Conduction (61.7)	spouse	1 hour 50 minutes

During the data selection process related to Study I, I made two important observations. First, the data was not sufficient or suitable for comparing pre-versus post-ILAT conversations on a larger scale. Second, the data seemed to be very variable relating to the severity and type of aphasia at the very least. A striking feature from the dyads including a person with moderate/severe Broca's aphasia was that the PWAs initiated talk much more infrequently compared to data from dyads with a PWA with milder aphasia. Regarding collaborative repair, there was very little substantive content for the FMs to initiate repair on in these dyads. This prompted the focus of Study II, namely, how people with non-fluent Broca's aphasia initiate social actions in the first place. Initiating actions are of interest in relation to ILAT, as its language games consist of short interactional sequences starting with one participant requesting an object or proposing an activity (Difrancesco et al., 2012; Pulvermüller & Berthier, 2008). The main data pool included three participants with a diagnosis of Broca's aphasia, one of whom proved to be

bilingual (Swedish-Finnish), whom I thus excluded. Hence, the data of Study II comprised of video-recordings from two dyads, each with a person with Broca's aphasia (PwBA) and their spouse (see table 3).

Study III took as a point of departure to investigate the accomplishment of a social action across varying degrees of aphasia. I chose the social action of proposing a joint future activity, which may be considered the first step of planning a future activity (Houtkoop, 1987; Stevanovic, 2012). In typical conversation a proposal of joint future activity is accomplished with specific linguistic formats that implicate both the speaker and the recipient as agents for the suggested future activity (Couper-Kuhlen, 2014). Examples of formats are *Why don't we X* and *Let's X* (where the X is the activity proposed), or modal declaratives and interrogatives such as *We could have dinner tomorrow* and *Shall we make a salad?* respectively (Couper-Kuhlen, 2014; S. Thompson, Fox, & Raymond, 2021). In other words, a proposal of joint future activity requires the use multi-word utterances, and as such is of special interest regarding PWA. Proposing a joint future activity also links to ILAT as one of the language action game used involves suggesting an activity to a co-player (Difrancesco et al., 2012). Initially, I viewed all 25 hours of data to identify dyads where both the PWA and the FM proposed a joint future activity. This resulted in a data pool of 30 conversations from seven PWAs and their eight FMs, in total a good ten hours of video-recordings (see table 3).

In Study I, I combined the qualitative analysis with quantitative data as I counted the PWA's and the FM's substantive and minimal turns as defined by POWERS (Herbert et al., 2012). A substantive turn contains at least one content word (i.e., a noun, proper noun, verb, adjective, adverb, or numeral), while a minimal turn refers to a turn in conversation that does not contribute to the contents of a conversation, but typically consists of tokens like 'mm', 'oh', or 'yeah'. This quantification allowed for calculation of the percentage of collaborative repair per substantive turns, which further permitted a comparison of repair quantity across the four conversations differing in length and collected at different time points (i.e., pre- and post-ILAT). As regards to the reservation about quantifying interactional phenomena in CA, I considered a substantive turn as an 'environment of relevant possible occurrence' (Schegloff, 1993, p. 107) of collaborative repair, thus warranting quantification. In Studies II and III quantification was used to illustrate the frequency of the focus phenomena in the data. Nevertheless, the qualitative analysis was the principal focus in all three studies. Table 4 summarizes the data and analytical procedure of all three studies.

Table 4. Overview of the data and analytical procedure.

Main data pool	76 video-recorded home conversations from 17 PWAs and 25 family members totalling approx. 25 hours		
	Study I	Study II	Study III
General research question	Does ILAT change the repair-action typical of aphasic conversations i.e., collaborative repair?	How do people with Broca's aphasia (PwBAs) initiate social actions through linguistic resources?	How do PWAs with varying degrees and types of aphasia construct a social action that requires specific linguistic resources?
Focus phenomenon	Collaborative repair-action across the four conversations during the research project	PwBAs' forward-projecting verbal/vocal initiations/first-pair parts	Proposals of joint future activity
Data	Four conversations (two pre- and two post-ILAT) from one dyad consisting of a PWA and a FM totalling 1 hour 20 minutes	17 conversations from two dyads each consisting of a PwBA and a FM totalling 6 hours	30 conversations from five dyads each consisting of a person with mild aphasia and a FM, and two dyads each consisting of a person with severe aphasia and a FM, totalling approx. 10 hours
Collection	35 FM-initiated repair sequences	89 instances of the PWA initiating talk: 19 formulaic initiations, 70 striving for propositional content	59 proposal sequences: 45 from the milder data, 14 from the severe data
Quantitative data	Number of substantive and minimal turns in conversation (cf. Herbert et al., 2012), percentages of repair-action/substantive turns	Illustrating the frequency of the focus phenomenon	Illustrating the frequency of the focus phenomenon

3.4 ANALYTICAL PROCEDURE

The qualitative analysis was based on the robust method and concepts of CA (e.g., Clift, 2016; Schegloff, 2007; Sidnell & Stivers, 2013; ten Have, 2007). A central tenet of CA states that “composition plus position equals action” (Hoey & Kendrick, 2017). In practise, this means that data are not screened for separate words or utterances, for example, to be detached from the interactional context in which they appear. Instead, any phenomenon of interest is analysed in its interactional environment; the analysis is based on examining the phenomenon’s *sequential position* amongst the strand of turns or within an overarching social activity, as well as scrutinizing its *composition* (e.g., lexico-grammatical construction or prosodic and embodied features). What ultimately is pursued, is an understanding of what the phenomenon accomplishes for the interactionalists in question as well as a description of how it occurs (Schegloff, 1996). To allow for such an analysis, data are transcribed as precisely as possible including features like overlapping talk, hesitations, pauses, prosody, and embodied actions (e.g., gaze or gestures).

I transcribed the data for studies I-III according to the traditional CA transcription principles introduced by Jefferson (2004). Where relevant, I transcribed the embodied actions such as gaze and gestures utilizing a simplified version of the multimodal transcription conventions presented by Mondada (2018). The transcription symbols are presented on pages 13-14. I used the software InqScribe® to transcribe and manage the data as it provides useful features such as slow motion and a possibility of tagging segments of interest for easy access later. In study II, I utilized the annotation tool ELAN (2018) to allow for a more detailed transcription of the conversationalists' co-occurring multimodal actions.

The analytic procedure was in all studies iterative. With the initial research foci in mind, I first repeatedly viewed the data in conjunction with the transcripts to identify candidate occurrences of the phenomena of interest. That is, collaborative repair for Study I, PwBAs' initiations for Study II, and proposals of joint future activity for Study III. This orientation to the data does not comply with the typical 'unmotivated looking', which usually characterizes CA (see e.g., Clift, 2016, pp. 42-43). Rather, it is in line with applied CA, which targets to explore how communication disorders such as aphasia impact on conversation (Wilkinson, 2014).

The main tool I used for identifying a spate of talk as an occurrence of the research phenomenon was the next-turn proof –procedure (Hoey & Kendrick, 2017; Sidnell, 2013). It entails paying attention to how a recipient deals with a turn-at-talk, thus displaying how s/he has understood it, and using this information as evidence for the analysis, an idea originally presented by the CA pioneers Sacks, Schegloff and Jefferson (1974). In addition, I utilized CA-knowledge of typical interaction, which has cumulated from decades of previous research, and has revealed fundamental practises governing interaction such as turn-taking (Sacks et al., 1974), turn-construction (Clayman, 2013), sequence-organisation (Schegloff, 2007), and repair (Kitzinger, 2013; Schegloff et al., 1977). Further, CA-knowledge from aphasic conversation in both English and Finnish (e.g., Beeke et al., 2007; Goodwin, 1995; Helasvuoto et al., 2004; Klippi, 1996; Laakso & Godt, 2016; Laakso & Klippi, 1999) as well as Finnish typical conversation (e.g., Haakana et al., 2016; Stevanovic, 2012) served as grounds for my analysis.

I gathered all candidate sequences, that is, the turn with the focus phenomenon including preceding and following talk, into an initial collection. However, in Study I, an independent CA-researcher, who was blinded to the data collection point, identified the focus phenomena. This was done to minimize the effects of researcher bias. We then formed the final collection for Study I in a consensus meeting. For studies II and III, I examined each candidate sequence in detail to discover potential regularities between them, and consequently to sort them into descriptive groupings. That is, while each sequence was unique in its authenticity, all sequences of a descriptive grouping shared a functional (e.g., 'doing repair through a candidate understanding') or a turn-constructural (e.g., entailing propositional content) feature, for

example. This analytical phase entailed on the one hand omitting some candidate sequences as on close inspection they proved not to fit the emerging description of the focus phenomenon, and on the other hand going back to the data to check if there were further sequences to be included (cf. Schegloff, 1996). With this kind of an initial idea of the data, I discussed and, if necessary, further refined my analysis in meetings with my supervisors, who are specialists in CA and aphasia. Following this, I presented parts of the data in data sessions with both domestic and international academics as well as PhD students using CA in their research. Data sessions are central in CA for several reasons. First, presenting the original data (i.e., video- or audio-recording) accompanied with the transcripts allows for checking transcription accuracy. Second, the collective viewing and discussion of the data elevates the analysis beyond individual interpretations, and permits the formulation of a shared and conceptualized understanding (ten Have, 2007, pp. 140-141), thus validating the analysis. The data sessions lead me to further refine, and eventually finish my analysis, which as a final step entailed choosing extracts exemplifying my findings to present in my publications.

4 RESULTS

This chapter presents a summary of Study I and a synthesis of Studies II-III. It highlights the central themes that emerged from the Studies: collaborative repair in everyday conversation as an index of aphasia therapy outcome, and social action and the impact of aphasia severity.

4.1 CHANGES IN COLLABORATIVE REPAIR WITHIN EVERYDAY CONVERSATION AS INDICES FOR ILAT-INDUCED IMPROVEMENT

Study I examined everyday conversation between a person with mild anomic aphasia and a FM for possible aphasia therapy-related, that is ILAT-related, changes. The analytical focus was on collaborative repair, in other words, repair action that involves both the speaker and the recipient. Collaborative repair may manifest itself in two ways: 1) the current speaker initiates repair, but the recipient completes it (i.e., self-initiated other-repair, SIOR), or 2) the recipient initiates repair on the prior speaker's turn, which the prior speaker then completes (i.e., other-initiated self-repair, OISR). Compared to typical conversation, collaborative repair is more common in aphasic conversation (e.g., Booth & Perkins, 1999; Milroy & Perkins, 1992). Typically, the linguistically more skilful conversation partner completes a PWA's turn or initiates repair on it thereby optimally furthering the conversation. This is taken as a sign of conversationalists adapting to the problems aphasia causes in interaction (Ferguson, 1994).

The starting point of Study I was the hypothesis that ILAT would ameliorate the PWA's language impairment, including word-finding difficulties, which might then translate into both quantitative and qualitative changes in the dyad's collaborative repair action within everyday conversation. Quantitatively, as result of the PWA's improved language abilities, fewer instances of word-finding difficulties as well as a greater capacity to complete successful self-initiated self-repair was expected. In consequence, the need for collaborative repair would decrease. Concurrent with a possible improvement in word finding, a qualitative change in the function of the FM's repair initiations was presumed as the need for addressing specific word finding difficulties would decrease (Perkins et al., 1999).

Data for Study I came from a dyad consisting of Riitta, a person with anomic aphasia and mild apraxia of speech, and her daughter, Tiina. Riitta lives alone but talks with Tiina on a daily basis. Their video-recorded data totalled 1 hour 21 minutes (see Table 3).

Table 5 presents the results of the linguistic outcome measures attained from the main research project. The results demonstrated an improvement in

Riitta’s linguistic skills as the WAB Aphasia Quotient (Kertesz, 2005) increased by six points to 93.6 at the post-ILAT Language Test 3 and five points to 92.6 at the follow-up Language Test 4, compared to a mean quotient of 87.6 at Baseline Language Test and Language Test 2. A change of ≥ 5 points is regarded as clinically significant (Gilmore, Dwyer, & Kiran, 2019; Katz & Wertz, 1997).

Table 5. Results of the Western Aphasia Battery Aphasia Quotient (WAB AQ) and types of collaborative repair initiations across the four data points by amount (n) and percentage of occurrence per substantive turn (%). (Adapted from Tuomenoksa et al., 2016).

	Baseline Language Test and Conversation				Post sham-TMS, Language Test and Conversation 2				Post ILAT, Language Test and Conversation 3				Follow-up, Language Test and Conversation 4			
WAB AQ (max 100)	87.8				87.3				93.6				92.6			
	PWA		FM		PWA		FM		PWA		FM		PWA		FM	
Number of substantive turns	104		126		108		143		95		115		92		131	
OISR	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N	%
Candidate understanding	0	0	9	8.7	0	0	3	2.8	0	0	5	5.3	0	0	1	1.1
Other (e.g., partial repeat)	1	0.8	5	4.8	0	0	1	1	2	1.8	1	1.1	0	0	3	3.3
SIOR																
Completion of trouble-source turn	0	0	3	2.9	0	0	0	0	0	0	1	1.1	0	0	0	0
SUM	1	0.8	17	16.4	0	0	4	3.8	2	1.8	7	7.5	0	0	4	4.4
Mean of FM-initiated repair, %	10.1								6.0							

Table 5 also presents the results of the quantitative conversational measures. The results indicate that the collaborative repair-action was asymmetric, which is in line with previous research on aphasic conversation (Ferguson, 1994). In the whole dataset, Riitta initiated repair only three times on Tiina’s turns (OISR), and there were no instances where Riitta would complete a trouble-indicating turn produced by Tiina (SIOR). At the same time, Tiina either initiated or completed repair on Riitta’s turns on 32 occasions, which equals 91% of the total 35 collaborative repair instances.

In line with the initial hypothesis, the mean frequency of collaborative repair-action performed by Tiina decreased across the conversations. In the two conversations pre-ILAT (i.e. Baseline and Conversation 2), Tiina initiated or completed repair on 10.1% of Riitta’s substantive turns, that is turns

containing at least one content word such as a noun, a verb, or an adjective (Herbert et al., 2012), compared to 6.0% in the two conversations post-ILAT.

The qualitative microanalysis of the 35 collaborative repair sequences identified a candidate understanding as the most frequent repair initiation type (n= 18), used exclusively by the FM, Tiina (see Table 5). Such instances entailed Tiina explicating her interpretation of Riitta's previous turn/s for Riitta to either confirm or reject (Kitzinger, 2013). A candidate understanding is a particularly useful repair-initiation strategy in aphasic conversation as it permits the linguistically more skilled conversation partner to provide a possible solution to a problematic turn by a PWA. This follows the principle of 'least collaborative effort', which supports the conversation to progress without highlighting a PWA's language impairment (Perkins et al., 1999). Extract 4 from Riitta's and Tiina's baseline conversation presents an example. The extract begins as Tiina introduces a new topic by inquiring what Riitta wants for Christmas (line 1).

(4)

Line	Speaker	Transcription
1	Tiina	<i>no mitä sä haluat joulupukilta</i> well what do you want from Father Christmas
2	Riitta	<i>.hhh hö:hh kartan.</i> .hhh hö:hh a map.
3	Tiina	<i>kartan.</i> a map.
4	Riitta	<i>v:hh sellasen kartan tota: m vhh .hh tota:</i> v:hh that kind of map we:ll m vhh .hh we:ll
5		<i>Prismassa on .h niitä karttoja, sellainen s- ö</i> Prisma (name of store) has .h those maps, kind of s-ö
6		<i>tota:m *mth sell[a:st</i> we:llm *mth tha[t kind of *((gestures an opening book))
7	Tiina	→ <i>[autokartta vai</i> [y' mean a road map
8	Riitta	<i>ei kun s- sellaisen kartan mikä kertoo maailmasta.</i> no but that kind of map which tells you about the world.
9	Tiina	<i>aha?</i> I see?

The focus of interest is on line 7, when Tiina produces a candidate understanding. It is a response to Riitta's previous turn with obvious word finding difficulties (lines 4-6), which are displayed by hesitations and Riitta leaving a syntactic unit incomplete ('that kind of map we:ll m .hh we:ll', line 4) to instead embark on describing where you can by a map she wants ('Prisma has .h those maps,', line 5). After this, she once more tries to specify the map

(‘kind of s-ö we:llm’, lines 5-6), this time combining a gesture with her word search: she gestures an opening book with upward-facing palms. At this point (line 7) Tiina produces a candidate understanding (‘y’mean a road map’) with the turn-final particle *vai* (‘or’), which implicates uncertainty, and thus leaves the candidate understanding to the recipient to confirm or reject. In her next turn, Riitta rejects ‘road map’ as the word she targeted (line 8), however adding a clause, which specifies the map as a ‘map which tells you about the world’ (i.e., an atlas). Although Tiina’s candidate understanding was not the word Riitta targeted, it was a step towards solving the word-finding problem while at the same time progressing the flow of their conversation.

A categorisation of Tiina’s candidate understandings across the four conversations suggested a change in their function. Table 6 displays the candidate understandings grouped according to a classification based on Kurhila’s (2006) research on linguistically asymmetric dyads, namely native and non-native Finnish speakers. Kurhila (2006) defines a paraphrasing candidate understanding as a turn that summarizes the recipient’s comprehension of a previous turn/s without adding new elements, thus functioning as an understanding check of prior information. A completing candidate understanding expresses how the recipient has understood the implications of a prior speaker’s talk, that is, it presents a conclusion of prior talk by articulating information not mentioned before thus moving the conversation forward topically (Kurhila, 2006). Uncertainty marked candidate understandings refer to turn constructions that include an element of doubt expressed by interrogatives such as a question-word, a turn-initial conclusive particle (e.g., *siis*, ‘Y’mean’), or the turn-final particle *vai* (‘or’). Uncertainty marked candidate understandings are used to elaborate on a prior reference, present a conclusion to be confirmed, or resolve a word search (Kurhila, 2006).

Table 6. Function of Tiina’s candidate understandings (CUs) across the conversations.

	Pre-ILAT		Post-ILAT	
	Baseline Conversation	Conversation 2	Conversation 3	Conversation 4
Paraphrasing CU	1	1	2	1
Completing CU			1	
Uncertainty marked CU				
a) elaborating	3	2		
b) concluding	3		2	
c) resolving a word search	2			
SUM	9	3	5	1
TOTAL				18

Pre-ILAT, Tiina's candidate understandings more often functioned as resolving a word search (see extract 4) or elaborating specific referents (7 of 12 instances) than concluding or paraphrasing longer stretches of talk (5 of 12 instances). In contrast, in the conversations post-ILAT, all six candidate understandings functioned as concluding, completing, or paraphrasing longer stretches of Riitta's talk, while candidate understandings addressing word-finding or referential problems were non-existent. Extract 5 from Riitta's and Tiina's second conversation exemplifies both a paraphrasing and an elaborating candidate understanding. Here, they are talking about the treatment Riitta receives in relation to the main research project. The extract begins as Tiina asks how long a therapy session will last (line 1).

(5)

Line	Speaker	Transcription
1	Tiina	<i>monta tuntii se puheterapia (°on°)</i> how many hours is the speech and language therapy
2	Riitta	<i>e tota.; o- k- tota: .hh (.) ko me tuntia.</i> e uhm; o- k- uhm: .hh (.) <u>three</u> hours.
3	Tiina	<i>[okei]</i> [okay]
4	Riitta	<i>[°se ei°] se ei ole puheterapaa .hh vaan .hh eh</i> [°it's not°] it's not speech-language therapy .hh but .hh eh
5		<i>sillä tavalla korteill leikitään.</i> you kind of play with cards.
6	Tiina →	<i>aha? [siis ryhmässä.</i> I see? [y'mean in a group.
7	Riitta	<i>[m.</i> [m.
8	Riitta	<i>joo kyllä. kyllä .hh siinä on tota:m .hhh öhmhmm .hh</i> yeah yes. yes. .hh there is we:llm .hhh öhmhmm .hh <i>kaksi naista ja yksi mies. ja, [pu-</i> two women and one man. and, [pu-
9	Tiina →	<i>[siinä ryhässä=</i> [in the group=
10	Riitta	<i>=joo. ja puheterapeutta on .hh ömhh (1.0) mies.</i> =yes. and the SLT is .hh ömhh (1.0) a man.
11	Tiina	<i>joo.</i> yes.

Tiina's first candidate understanding is visible on line 6. Prior to it, Riitta has refuted Tiina's assumption that the research project will involve speech and language therapy and stated that it will be a kind of play with cards (*korteill leikitään*) instead (lines 4-5). Riitta's turn is constructed in passive voice

without a place reference, or a specification of the card play. In response, Tiina produces a candidate understanding with the initial news receipt token *aha?* ('I see') indicating revelation, followed by the rephrase 'Y'mean in a group' (line 6). It displays Tiina's comprehension of the card playing activity, condensed from information mentioned a few turns earlier in the conversation as they studied Riitta's schedule (prior to the extract). As such, Tiina's candidate understanding is a paraphrase that summarizes information brought up in prior talk.

Tiina's second candidate understanding 'in the group' (line 9) has a different function. It addresses the non-specific place referent (*siinä*, 'there is') in Riitta's previous turn (line 8) by providing a candidate for the place (*siinä ryhmässä*). The prominent first-syllable stress in 'group' is an interrogative element marking the candidate understanding as uncertain, thus projecting Riitta's confirmation or rejection. This candidate understanding functions as fleshing out a prior reference and may thus be regarded as an uncertainty marked elaborating candidate understanding. The elaborative, pin-pointing nature is in this instance exhibited by the fact that Tiina produces the candidate understanding in overlap with Riitta's continued description of the group; a mutual reference needs to be established before furthering the conversation.

In conclusion, the WAB AQ scores attained from the main research project, showed a clinically significant ILAT-induced improvement in Riitta's linguistic skills. Study I demonstrated this to concur with changes in collaborative repair within everyday conversation: both a decrease in the frequency of collaborative repair and a change in the function of the FM's candidate understandings were observed post-ILAT. Candidate understandings post-ILAT addressed longer stretches of talk instead of resolving pinpointed trouble. In sum, these findings suggest an ILAT-induced change in the dyad's everyday conversation, that is, an ecologically valid outcome. Thus, Study I provides emerging evidence of how a PWA's improved language skills may translate into everyday dyadic interaction.

4.2 PWAS RESOURCES FOR INITIATING SOCIAL ACTIONS IN EVERYDAY CONVERSATION

Studies II and III investigated how people with varying severities and types of aphasia accomplish social actions in everyday conversation with family members. Specifically, Study II explored the (verbal) resources people with severe Broca's aphasia utilized when initiating issues of importance to them, whereas Study III examined the accomplishment of a particular social action relying on linguistic resources, namely proposing a joint future activity, in dyads where a PWA had either mild or severe aphasia. Both studies aimed to elucidate PWAs' assets and possible obstacles for communicative

participation. Data for these two studies comprised approximately 14 hours of video-recordings from eight PWAs and nine FMs (see Table 3).

Unsurprisingly, the results indicated that a PWA's remaining linguistic resources, which relate to both aphasia severity and aphasia type, were influential for *how* a PWA constructed a social action. For the purposes of this thesis, I defined a WAB Aphasia Quotient of 70 as a marker between mild and severe aphasia. For studies II and III, this corresponded to five PWAs with mild aphasia (WAB AQ's between 71.1-87.8), of which four persons according to the WAB aphasia classification had anomic aphasia and one person conduction aphasia (see Table 3). The remaining three PWAs had severe aphasia (WAB AQ's between 37.0-61.7); two persons had Broca's aphasia and one person conduction aphasia.

The next sections demonstrate how persons with severe aphasia utilized a repertoire of residual communicative resources, co-construction by FMs, and artefacts to initiate social actions and to propose joint future activities. This is followed by an outline of how persons with mild aphasia propose joint future activities. The last section will present the role the FMs had in shaping the conversations' sequential environment.

4.2.1 PEOPLE WITH SEVERE APHASIA STRIVING FOR PROPOSITIONAL CONTENT—USE OF RESIDUAL VERBAL/VOCAL AND EMBODIED RESOURCES, ARTEFACTS AND CO-CONSTRUCTION

A main finding from Study II was that the persons with severe Broca's aphasia most often strived for propositional content when initiating conversational sequences. That is, they produced or attempted to produce turns containing a noun, proper noun, verb, adjective, adverb, or numeral (cf. Herbert et al., 2012). This was apparent in 70 instances of the total 89 instances analysed. However, in most instances the propositional import was accomplished without actual content words (42 of 70 instances). This was made possible by the PWAs utilizing their residual verbal and embodied resources, artefacts (e.g., a newspaper), and relying on the FMs to co-construct the talk. Extract 6 exemplifies this. In this extract Jari, who has severe Broca's aphasia, and his spouse Tuula discuss the maintenance of Jari's vehicle, which is an Erkkola (the make). From the dyad's previous conversations, it has become apparent that a person called Andersson has serviced the vehicle.

(6)

Line	Speaker	Transcription
1	Tuula	<i>eikä Andersson sitte, (0.9) viime viikol sanonu että mh (.)</i> and Andersson didn't (0.9) last week mention that mh (.)
2		<i>että tulisko uudestaan tässä käymään tällä viikolla</i> that he would come around again this week
3	Jari	<i>en tiä sit [nii.]</i> don't know then [yeah.]
4	Tuula	<i>[nii.]</i> [yeah.]
5		(1.2)
6	Jari	→ <i>ka:i sitte toi, (1.0) *zzy::n zyn (1.4) *sinne sitte</i> probably then the, (1.0) *zzy::n zyn (1.4) *there then *((revving the engine *swipes hand fwd))
7	Tuula	<i>että toi? (.) Erkkola täytys viedä jonneki,</i> y'mean the? (.) Erkkola should be taken somewhere,
8	Jari	<i>nii.</i> yeah.
9	Tuula	<i>pajalle.</i> to a <u>workshop</u>.
10	Jari	<i>nii.</i> yeah.

The focus of interest in this extract is Jari's turn in line 6, which he produces after a short topic-introducing sequence initiated by Tuula (lines 1-4). Notably, Jari's turn does not contain any content words. Instead, it is composed of the modal particle *kai* ('probably'), the adverb *sitten* ('then'), a pronominal premodifier of a noun phrase *toi* ('the' / 'that') followed by an onomatopoeic verbalization in precise conjunction with an iconic gesture illustrating the revving of an engine. After a lengthy pause, the turn then ends with the adverbs *sinne* ('there') *sitte* ('then') combined with a forward swiping hand gesture (line 6). As such, Jari's turn implies that something is going to happen in the future ('probably then'), while the onomatopoeic expression integrated with the iconic gesture takes the place of a noun phrase, and the adverb 'there' combined with the deictic hand gesture adds a place-reference. In other words, Jari produces a multimodal turn exploiting his residual communicative resources. Even though the turn-construction is atypical, or adapted to his available resources, and consequently lacking content words, it nevertheless conveys propositionality. This is reflected in Tuula's response: it is a candidate understanding glossing the noun phrase as the 'Erkkola', providing the verb construction 'should be taken' (line 7), and suggesting 'WORKshop' as the reference to place (line 9). In lines 8 and 10 Jari confirms Tuula's candidate understandings and as a result, they have co-constructed a topic-expansion, initiated by Jari, stating that Jari's vehicle probably needs to be taken for repairs.

4.2.2 FORMULAIC LANGUAGE IN THE CREATION OF SOCIAL COHESION IN SEVERE APHASIA

Study II further demonstrated that initiations constructed through formulaic language was an important communicative resource for the persons with severe Broca’s aphasia. Nineteen of the 89 initiations analysed were constructed through a formulaic utterance, meaning a single or multi-word turn that has a relatively fixed linguistic format, creating one fluently articulated prosodic unit. Extract 7 provides an example. Jari, a person with severe Broca’s aphasia, and his wife Tuula are seated at their kitchen table eating tortillas, with their cat keeping them company.

(7)

Line	Speaker	Transcription
1		((Jari halts his actions, gaze switches btw Tuula and the cat))
2	Jari	[<i>tuossa. (0.5) [tossa. >tossa. <]</i> [here. (0.5) [here. >here you go.<] (((Jari holds out his tortilla))
3	Tuula	[> <i>mä: annan.< mä <u>annan.</u></i> [> I’ll give.< I’ll give.]

As the extract begins, Jari halts his physical actions, switching his gaze between Tuula and the cat (line 1). He then lowers his gaze to the tortilla he is eating and holds it out while fluently uttering *tuossa*, the mundane Finnish equivalent to ‘here you go’ and repeating it in its colloquial form *tossa* (line 2). In this context, his verbal and embodied actions display he is offering his tortilla to Tuula. However, Tuula declines Jari’s offer by stating that she will feed the cat (with her own food) (line 3), which closes the sequence.

Like other formulaic initiations in the data, Jari’s initiation in extract 7 did not convey propositional (verbal) content nor launch an extended sequence. Nevertheless, formulaic initiations typically lead to unproblematically unfolding sequences; in extract 7 an offer-decline sequence, where the initiation displays Jari’s anticipation of Tuula’s needs, and consequently the offer of assistance. Such actions are considered fundamental for building and maintaining social cohesion (Kendrick & Drew, 2016).

4.2.3 FROM PROPOSITIONAL CONTENT TO SOCIAL ACTIONS – PEOPLE WITH SEVERE APHASIA PROPOSING JOINT FUTURE ACTIVITIES

Some initiations striving for propositional content (28 of 70) examined in Study II, contained an actual content word. A typical linguistic construction of such initiations was a turn-initial referring expression, or a turn-initial referring expression followed by a comment. Extract 8 presents an example from Veikko, who like Jari has severe Broca’s aphasia. In this extract he and

his spouse Anja are talking about a popular TV singing show titled “Grab the mike”. In addition to being a topic initiation, the analysis relating to Study III demonstrated that Veikko’s initiation became understood as a proposal of joint future activity (see section 3.3). As the extracts begins, Veikko and Anja are seated at their kitchen table, each reading a section of the morning paper.

(8)

Line	Speaker	Transcription
1	Veikko	→ <i>noh*e:m, (0.8) (puhe:) >tota< puhh (3.2) mt toi, (1.2) joubuu: mikkii.</i> PRT uhm NEO that NEO mike-ILL wel*le:m,(0.8) (puhe:) >well< puhh (3.2) mt the, (1.2) joubuu mike. *((points at the newspaper))
2		(1.6)
3	Anja	<i>[mm?]</i> [mm?]
4	Veikko	→ <i>[tuossa on] (0.7) e- tota: (0.3) e- o:n: (2.2) olni (.) >nonnimonni.<</i> there be-3SG uhm be-3SG NEO NEO [there’s] (0.7) e- we:ll (0.3) e- i:s: (2.2) olni (.) >nonnimonni.< (0.4)
5		(0.4)
6	Anja	<i>tartu mikkii[n.</i> grab the mi[ke.
7	Veikko	<i>[Enii.£ =</i> [£yeah.£=
8	Anja	<i>>ni KEtä,< (0.4) ketäs sanoit</i> >so WHO,< (0.4) who did you say
9		(3.2) ((Veikko gazes at the newspaper and leans forwards to it))
10	Anja	<i>eiku *tuolla</i> no *there *((points at Veikko's newspaper))
11	Veikko	<i>nii.</i> yeah.
12		(0.8)
13	Veikko	→ <i>(nyt) tuota: o:nga Y:ynströmi. (0.3) eiku,</i> now uhm NEO PROP.PHON DIST PRT (now) we:ll o:nga Y:ynströmi. (0.3) no but,
14		(1.0)
15	Anja	<i>ai se kauhee.</i> oh the terrible one.
16	Veikko	<i>Enii.£</i> £yeah.£
17	Anja	<i>juu >ei ei eik se. (.)</i> yea >no no no< that (one).
18		(1.0)

19	Anja	<i>uman uman vai >mikäs se< e:iku (0.7) missä se onkaan. (0.7)</i> uman uman or >what was it< no: (0.7) where is he/she. (0.7)
20		<i>mikä yhtye se onkaan.</i> what band is ist now.
21		(12.0) ((Anja eats and sips coffee, Veikko reads the newspaper))
22	Anja	<i>ei tarvii kattoa</i> no need to watch
23	Veikko	<i>ai.</i> oh.
24	Anja	<i>(-) en mä ä ainakaan kestä sitä</i> (-) I can't at least not stand him
25	Veikko	<i>ei. ei,</i> no. no,

After a lapse in the conversation, Veikko initiates a new topic by producing a turn replete with word finding difficulties indicated by multiple search particles and pauses (line 1). However, in addition to the neologism *joubuu* he produces the recognizable word *mikkii* ('mike' meaning microphone) with a falling turn final intonation (line 1). While 'joubuu mike' may be regarded as referent, and 'mike' a content word, that is a noun, this talk does not alone account for how Veikko's initiation is comprehended.

Study III revealed that when a proposal of joint future activity initiated a planning activity, like in extract 8, the proposal was most often constructed entailing a future time reference (15 of 18 instances). This held true for both FMs' and PWAs' proposals, regardless of aphasia severity. In extract 8, we observe Veikko incorporating an artefact, that is the newspaper he is reading, in his turn construction. As he starts verbalizing, he points to the newspaper visible to both of them. The section Veikko has in front of him happens to be the TV guide—a resource with inherent time reference. The positioning of his point at the beginning of the turn is noteworthy as elements placed turn-initially are regarded as important early clues to the social action a turn is implementing (Levinson, 2013). Eventually, after Veikko's comment in line 4, two repair sequences initiated by Anja to clarify the referents (lines 6-7 and 8-16), and some topical talk about the mutually established topic (i.e., the artist on the Grab the mike TV show) (lines 17-20), Anja treats Veikko's initiation as a proposal of joint future activity, that is to watch the show together. This is visible in her turn 'no need to watch' (line 22), which functions as a refusal to Veikko's proposal.

Thus, although Veikko produces a content word when launching a new topic on line 1, more decisive for his initiation to become understood as a proposal of joint future activity is the fact that it contains an element typical of that kind of social action: a future time reference. This he accomplishes not verbally, but through an artefact.

The next extract presents another instance where a person with severe aphasia constructs a proposal of joint future activity with a turn-initial future time reference. The extract also illustrates the difference between a proposal

initiating a planning activity, as seen from Veikko, and a proposal within a larger planning sequence. In extract 9, Leila, a person with severe aphasia and her spouse Pekka discuss a trip to the food market. The extract begins as Leila initiates the topic after a lapse in the conversation.

(9)

Line	Speaker	Transcription
1	Leila	→ <i>toi, (1.5) k- huomenna tuota, .hh (.) tä- >tuota< .hh o- lähetäi</i> that tomorrow PRT PRT leave-(PASS.COND) PHON DIS uhm, (1.5) k- tomorrow well, .hh (.) tä- >uhm< .hh o- leave
2		<i>k- ki- tonne, manniin ku(han) käydään (1.4) tela-</i> to there manni-ILL PRT go-PASS thera- PHON DIS k- ki- over to, the manni after we've had (1.4) thela-
3	Pekka	<i>puheterapias</i> speech language therapy
4	Leila	<i>nii. ((nods))</i> yea.
5		(1.2)
6	Pekka	↑ <i>ruoka, (0.5) ↓kauppa[an,</i> ↑to the food, (0.5) ↓ mark[et
7	Leila	<i>[kauppaan nii. ((nods))</i> [to the market yea.
8	Pekka	<i>mennään vaan.</i> yea let's go.
9		(4.0)
10	Pekka	<i>onks sul (jo) jottain erikoista mielessä</i> do you already have something special in mind
11	Leila	<i>e:i mutta,</i> no: but,
12		(1.6)
13	Pekka	<i>me ei olla pitkään aikaan tehty keitto</i> we haven't made soup in a long time
14	Leila	→ <i>keitto. ↑toi, khh (.) (haetaan) (onko) toi, (.) hh .hh</i> soup that fetch-PASS be.3SG-Q that soup.↑ um, khh (.) (should we get) (is there) um, (.) hh .hh
15		<i>kakkikei- keitto</i> Frankfurter soup PHON DIS soup Frankfurter sou- soup
16		(2.6)
17	Pekka	<i>vaik [ka?</i> why [not?
18	Leila	<i>[joo? joo? joo?</i> [yea? yea? yea?
19	Pekka	<i>tai sitten ihan jostain muustaki</i> or of entirely something else

20	Leila	<i>ei kun ka:k- ta ka:k- toi, (.) kak- toi, (1.6) kakkikeitto</i> no I want ka:k- ta ka:k- uhum, (.) kak- uhum, (1.6) Frankfurter soup
21	Pekka	<i>nakki</i> Frankfurter
22	Leila	<i>joo. (.) nakkikeitto</i> yes. (.) Frankfurter soup.
23	Pekka	<i>selvä homma.</i> all right./that's settled then.

Following some hesitation, Leila produces the future time reference ‘tomorrow’ turn-initially. Like Veikko’s turn-initial time reference in extract 8 accomplished with the help of an artefact, this verbally explicit time reference serves as an early clue to the social action Leila performs with her talk. In contrast to Veikko’s initiation, Leila’s turn entails additional linguistic elements typical of joint future proposals in Finnish: the verb ‘go’ (*lähetäi*, line 1) is in passive form implicating joint activity, and although the end of the verb is phonologically distorted, it resembles the conditional mood ending *-is(i)*. Nevertheless, Leila’s initiation remains in part linguistically unclear. Pekka’s approval (line 8) does however indicate that he indeed recognized Leila’s turn as a proposal of joint future activity, although the approval comes after addressing the word-finding difficulties in Leila’s talk (lines 3-7).

After a lengthy pause (line 9), Pekka furthers the topic by asking Leila if she already has something special in mind (line 10). Following Leila’s negative response (line 11), Pekka states they haven’t had soup in a long time (line 13). This creates a slot for Leila to produce talk, which may be understood in context, that is within their activity of planning a trip to the food market the following day. Indeed, in line 14, Leila produces another proposal of joint future activity: she suggests that they’ll get Frankfurter soup. Although the referent (‘Frankfurter soup’) is phonetically distorted and the grammatical construction is unclear, the verb ‘get’ is in passive form indicating joint agency. Again, Pekka’s response, which is a partial agreement (‘why not’ line 17), displays he has understood Leila’s turn as a proposal. They continue negotiating the topic (lines 18-20), and the sequence eventually closes with Pekka’s explicit approval (line 23).

Notably, like most proposals in the data appearing within a planning activity (i.e., 25 of 41 instances), whether constructed by a PWA or a FM, Leila’s second proposal (line 14) does not entail a future time reference; it is implicit in the context. That a proposal of joint future activity within a planning sequence may be done without a future time reference means that such a proposal might be linguistically easier for a PWA.

4.2.4 MILD APHASIA–TYPICAL PROPOSAL FORMATS WITH WORD FINDING DIFFICULTIES

A main finding from Study III was that people with mild aphasia constructed proposals of joint future activity utilizing similar linguistic formats as their FMs, and which are frequently found in typical Finnish conversations. The most common linguistic format used by people with mild aphasia and their FMs was a declarative clause, frequently constructed with a modal verb such as *voida* ('could'), in the conditional mood. For example, 'We could throw the grill away' as an English equivalent. Another finding of Study III was that people with mild aphasia produced similar numbers of proposals of joint future activity to their FMs, whereas people with severe aphasia proposed joint future activities much more infrequently compared to their FMs.

Proposals of joint future activity were however not totally unproblematic for people with mild aphasia as word finding problems were frequently observed. Extract 10 exemplifies this. In the extract Irene, a person with mild aphasia, and her spouse Heikki discuss their plans for visiting some friends.

(10)

Line	Speaker	Transcription
1	Irene	<i>onkse auki</i> is it on
2	Heikki	> <i>on on</i> < >yea yea<
3	Irene	<i>joo. joo. .hh niin no:in, niin esimerkiksi:, (1.7) >no mun pitää soittaa</i> yeah yeah. .hh we:ll, say for example (1.7) >well I have to call
4		<i>mäen oo soittanu< ö:m vielä, (.) niin, niin tuosta:hh (2.3) tuosta:, (3.0)</i> I haven't called< u:m yet, (.) like, like abo:uthh (2.3) abo:ut, (3.0)
5		<i>Liisasta ja Leosta mä: >mäen oo vielä soittanu< niille mutta, mutta,</i> Liisa and Leo I: >I haven't called< the[m yet but, but,
6	Heikki	[<i>mm.</i>] [mm.
7	Irene	<i>vaikka? (.) vaikka? .hh ny- huomenna voisin soittaa ja [kysyä että, (.) että,</i> like? (.) like? .hh ny- tomorrow I could call and [ask if, (.) if,
8	Heikki	[<i>mm.</i>] [mm.
9	Irene	→ <i>jos me: kato mentäis niin että, (.) että:, se olis, (1.8 ((SWALLOWS)))</i> if we PRT go-PASS-COND so that that it be.3SG-COND if we: like we'd leave so that, (.) tha:t, it would,
10		<i>niin noin, (1.0) niin, (1.9) että mentäis (het-) e:i e:i, (1.2)</i> PRT PRT PRT that go-PASS-COND NEG NEG say like, (1.0.) like, (1.9) that we'd leave (het-) no: no:, (1.2)
11		<i>*maanantai tiistai keski(viikko) torstai perjantai, .hh ni mentäis</i> Monday Tuesday Wednes(day) Thursday Friday PRT go-PASS-COND *Monday Tuesday Wednes(day) Thursday Friday, .hh so we'd leave <i>*((finger-counting days →</i>

12		<i>lavvantaina ja sitte lähdettäis pois sunnuntaina.*</i> Saturday-ESS and then leave-PASS-COND away Sunday-ESS on <u>Saturday</u> and then return on <u>Sunday</u>. * →)) *
13	Heikki	<i>m:m?</i> m:m?
14	Irene	<i>eiks se olisi ihan kiva.</i> wouldn't that be quite nice.
15	Heikki	<i>se sopis (kyl[lä])</i> sounds like [a plan (yes)]
16	Irene	<i>[niin on.</i> [that yes.
17	Heikki	<i>.joo</i> .yeah

The extract begins with Irene asking if the video camera is on (line 1). Following an affirmative response from Heikki, Irene talks about her plans to call Liisa and Leo (lines 3-5), which she thinks she will do the following day (line 7). Next, she formulates a proposal as an ‘if’-prefaced declarative clause with an explicit ‘we’ as agents, and the verb ‘go’ in passive voice and conditional mood (combining ‘we’ with a passive construction is typical of Finnish) (line 9). However, producing a future time reference presents a problem. To reach the target day of the week, she resorts to counting the days aloud starting from Monday, accompanying the verbal count with a finger-count (line 11). Before producing ‘Saturday’, the targeted time, she repeats the verb ‘go’ and continues to propose that they’ll return on Sunday (line 12). Thus, despite apparent word finding difficulties, Irene manages to self-repair her turn. Successful self-repair of word finding difficulties was typical of proposals constructed by persons with mild aphasia. That Irene’s turn is indeed understood as a proposal of joint future activity is displayed in Heikki’s approval ‘sounds like a plan’ (line 15), albeit he produces this after Irene pursues a more committed response (line 14).

4.3 THE ROLE OF FMS IN SHAPING THE SEQUENTIAL CONTEXT OF A CONVERSATION

The extracts from all studies (I to III) have more or less overtly demonstrated the pivotal role a FM has in shaping the communicative environment, or more specifically, a conversation’s sequential context. In extracts 4 and 5 from Study I, the FM Tiina utilized candidate understandings to resolve the PWA Riitta’s word finding problems. This practice allowed for conversational flow without highlighting the difficulties aphasia causes in Riitta’s talk. However, a FM’s actions are more consequential in conversations involving a person with severe aphasia, as the linguistic asymmetry between the participants is greater. For example, extract 6 begins with the FM Tuula presenting a question

formulated as a yes/no-question, but which at the same time may be heard as a topic-proffer. It is a means a speaker may use to initiate talk about a topic that is recipient-oriented, by being in the recipient's domain of knowledge, for example (Schegloff, 2007, pp. 169-170). In extract 6, the topic-proffer generated a slot for the PWA Jari to extend the topic, which he eventually did with his multimodal turn and in co-construction with Tuula. In extract 9, the FM Pekka created a slot for the PWA Leila to further the planning sequence she had initiated, by posing a topic-related question and a comment. Both strategies, that is, presenting a recipient-oriented topic-proffer or extending a PWA-initiated sequence, are examples of actions that generate a possibility for a person with severe aphasia to produce a next-action, that is, a turn that furthers the sequence, and hence to participate in the conversation.

However, when a conversation partner produces talk that has the prospect of generating further talk from a person with severe aphasia, the conversation partner should again be able to provide a response. This might be demanding if the turn a PWA produces is incomprehensible. One of the dyads, Veikko with severe Broca's aphasia and his spouse Anja, seemed to have adapted to this particular challenge. Like Tuula and Pekka, Anja created sequential environments where Veikko had the possibility to further the topic, but these were all tied to written artefacts such as a newspaper, which served as a resource for Anja's comprehension. This adaptive strategy was instantiated in Anja's comment "conversation in the morning could be better as we have the newspaper", which followed a short-lived attempt at them having a conversation without any material resources.

Incomprehensible or linguistically ambiguous turns produced by people with severe aphasia are also in danger of delayed acknowledgement. In extract 8, Anja responded to Veikko's multimodal proposal following collaborative repair sequences, some topical talk, and a 12-second-long pause. This suggests Anja needed time to decipher the implication of Veikko's talk. Another kind of delay was apparent in extract 9. It entailed a sequence that may be considered to function as a language-exercise (Bauer & Kulke, 2004) and as such did not support the flow of conversation. Following Leila's proposal of joint future activity, but before acknowledging this turn as such (i.e., providing a response), Pekka engages in phonological cueing (line 6), a strategy frequently used in speech and language therapy to elicit a target word. This happens despite the fact that he already seems to comprehend Leila's proposal, as his sequence-closing approval displays. Thus, his cueing delays the acknowledgement of the social action and underlines Leila's language impairment. As such, it puts Leila's integrity as a competent adult in doubt in that moment.

5 DISCUSSION

The aim of this doctoral thesis was to examine how persons with varying degrees and types of aphasia initiate social actions in everyday conversations with their family members in their homes, as well as investigate possible aphasia therapy related change in conversation. In general, the results demonstrated the conversations to be co-constructed by the participants in a situated environmental and sequential context, where a PWA's ability to initiate a social action in a given moment was linked to the use of contextual and remaining communicative resources and the FMs' actions. Importantly, the PWAs' remaining communicative resources were not limited to linguistic resources alone. As regards outcome measurement, the results suggested an ILAT-related change in everyday conversation that was, like the ability to accomplish initiations, connected to the collaborative nature of conversation, namely collaborative repair. In sum, this thesis responds to recent calls for an interactional, multimodal, and in situ view on aphasia in order to establish how aphasic everyday interaction is accomplished and how it should be measured to consequently inform both research and clinical practice (Azios et al., 2022; Barnes & Bloch, 2019; Doedens & Meteyard, 2022).

In the sections below, I will summarize and discuss the main findings, present methodological considerations, and suggestions for future research. I will conclude this chapter and thesis with clinical implications.

5.1 COLLABORATIVE REPAIR AS AN OUTCOME MEASURE

In line with the initial hypothesis, Study I showed an ILAT-induced improvement in the linguistic abilities of a person with mild aphasia captured via decontextualized assessment. This occurred alongside a decrease in the mean frequency of collaborative repair, specifically FM-initiated repair, in everyday conversation. Further, the qualitative analysis of Study I indicated a change in the function of the FM's most common repair initiator, that is a candidate understanding. Pre-ILAT candidate understandings most often addressed word-finding and referential problems, post-ILAT such candidate understandings were non-existent. Instead, post-ILAT candidate understandings paraphrased or completed longer stretches of the PWA's talk. This suggests that the PWA's improved linguistic abilities translated into a change in the nature of trouble-sources, and consequently the FM's need to repair pinpointed trouble in the PWA's talk reduced. This is supported by previous CA-informed aphasiology research that has documented the stability of trouble-sources giving rise to collaborative repair (Perkins et al., 1999). Hence, a change in an established repair pattern following aphasia therapy points to

a therapy induced change, particularly if the change captured is not random, but can be aligned with the therapy activity (cf. Webster et al., 2015). In Study I, this is the case as the therapy activity, that is ILAT, focuses on the production of nouns and verbs in the context of short interactional sequences, which is in line with analysing an interactional phenomenon known to be utilized in solving interactional trouble, that is collaborative repair.

The change in the FM's use of candidate understanding may further be argued to result in enhanced conversational flow. Candidate understandings are common repair initiators in typical Finnish everyday conversation, addressing either imprecise reference or other unclear details in a preceding turn, or explicating a conclusion about prior speech (Haakana et al., 2016). Nevertheless, given that word-finding problems are both pervasive and long-standing in aphasia (e.g., Raymer, 2005), a finding that indicates a PWA to produce less imprecise reference or word searches, points to reduced conversational trouble.

Like previous research that has sought to capture the potential generalisation of impairment-focused aphasia therapy to everyday conversation (e.g., Best et al., 2011; Carragher, Sage, & Conroy, 2013; Carragher et al., 2015; Greenwood, Grassly, Hickin, & Best, 2010; Obermeyer et al., 2020), Study I (being a case study) indicated a positive change for an individual PWA. However, impairment-focused trials have so far failed to demonstrate change in everyday conversation at a group level (e.g., Best et al., 2011; Carragher et al., 2013, 2015; Palmer et al., 2019). This probably reflects the intricate nature of everyday conversation, which does not easily lend itself to a uniform outcome measure; while focusing on a PWA's talk, all the above-mentioned studies utilized different outcome measures. As the recent scoping review by Azios et al. (2022) demonstrates, there is extensive interest to measure aphasia therapy outcome in the context of everyday conversation, but research to develop a valid and reliable conversational outcome measure is still in its infancy.

Study I was novel using CA to scrutinize an interactive phenomenon following impairment-focused aphasia therapy. In contrast to outcome studies coding predefined linguistic elements (e.g., Carragher et al., 2015; Greenwood et al., 2010), the approach of Study I was for its essential part data driven. Following POWERS (Herbert et al., 2012), the starting point was the broader phenomenon of collaborative repair, but importantly, it was the sequential analysis that identified candidate understanding as the repair action to be coded. However, despite the feasibility of scrutinizing candidate understandings for this dyad's data (i.e., a dyad consisting of a person with mild anomic aphasia and a FM), it became apparent that for several reasons the remaining data could not be examined with the same template. First, the repair action of dyads including a person with severe non-fluent aphasia was different as the PWAs did not produce much talk that the FMs could initiate repair on in the first place. When repair was present, it displayed as co-constructed sequences (cf. Laakso & Godt, 2016). Second, the conversational

activities of some dyads differed across their conversations in ways that would skew a pre- versus post-therapy comparison. For example, one dyad engaged in creating a shopping list in one of their conversations. This conversation was characterised by the PWA's repeated word searches as she tried to name the items for the list, followed by the FM's candidate understandings (cf. Laakso & Klippi, 1999). As such it was essentially different from the dyad's other conversations, which did not involve extended and repeated word searches. Last, when viewing all the data in preparation for Study I, even if PWAs' aphasia severity appeared to be similar, dyads often had individual repair patterns, which would not necessarily fit a predefined repair-related measure. For instance, some FMs more straightforwardly corrected a PWA instead of providing a candidate understanding. This highlights the individual nature of a dyads repair patterns that have evolved through countless and cumulative interactions during a long shared history as family members, of which dealing with aphasia related interactional problems is only one part (for an introduction to longitudinal CA, see Deppermann & Pekarek Doehler, 2021).

To conclude, Study I suggests collaborative repair to be a promising and ecologically valid outcome measure of impairment-focused aphasia therapy for some persons with mild aphasia, as long as repair is first scrutinised individually, that is within a dyad, through a data-driven approach. Procedures for doing this are discussed in more detail in section 5.6.

5.2 INITIATION OF SOCIAL ACTION AND APHASIA SEVERITY

Study II demonstrated that when persons with severe non-fluent aphasia initiated social actions by verbal/vocal means, they commonly strived for propositional content. That is, they aimed to produce turns containing nouns, proper nouns, verbs, adjectives, adverbs, or numerals to take Herbert et al.'s (2012) definition. However, the analysis showed further issues of importance. First, in most instances the propositional import of a PWA's turn was accomplished without actual content words as the PWAs' utilized varying combinations of their residual communicative resources, including residual language, embodied means, and the use of artefacts. Second, people with severe non-fluent aphasia used formulaic language to initiate sequences that have the potential for building and maintaining social coherence between conversationalists. Using formulaic language, a PWA could offer their assistance, for example. Importantly, this was accomplished despite the fact that the turns did not add propositional content to the conversation. Third, Study III pointed out that to achieve a more comprehensive understanding of PWAs interactional competence, it is fruitful to go beyond a focus on separate propositional content words (cf. Herbert et al., 2012) and instead investigate specific linguistic formats, in other words conventionalized turn constructions that people use to perform a certain social action. Focusing on the social action

of proposing a joint future activity, the analysis demonstrated that aphasia severity is connected both to the frequency of PWAs' proposals and the turn constructions used. People with mild aphasia produced a comparable number of proposals to their FMs utilizing similar linguistic formats as the FMs, and which have been found in typical Finnish conversation (Couper-Kuhlen & Etelämäki, 2015; Stevanovic, 2012, 2013). The PWAs' proposals nevertheless entailed frequent word finding difficulties which were typically self-repaired. In contrast, people with severe non-fluent aphasia produced markedly fewer proposals compared to their FMs using adapted turn constructions, that is their proposals were linguistically not identifiable as representative of typical proposal formats. Such turns were understood as proposals of joint future activity because they contained an element or elements of the specific linguistic format (and thus the social action) in question. Again, a content word per se was not the critical factor for the action to be understood. For example, like the FMs and the persons with mild aphasia, persons with severe non-fluent aphasia constructed a proposal initiating a planning activity by including a future time reference. However, people with severe non-fluent aphasia were able to accomplish this by other than verbal means, through an artefact, such as a newspaper for example.

These findings conform to previous CA-informed aphasiology research, which has elucidated the importance of residual linguistic abilities (e.g., Barnes, 2016; Goodwin, 1995; Helasvuo et al., 2001; Wilkinson, Beeke, et al., 2010), embodied resources (e.g., Auer & Bauer, 2011; Beeke et al., 2009; Goodwin, 2010; Klippi, 2015), and use of artefacts (e.g., Archer et al., 2018) in PWAs' construction of turns and accomplishment of social action. More specifically, the findings add to previous research that has demonstrated how people with severe non-fluent aphasia use adapted turn-constructions to compensate for their difficulty to produce grammatical utterances in a timely fashion within everyday conversation.

The findings also extend previous knowledge. Adding to previous research, which has documented the use of formulaic language in responsive positions (Barnes, 2012; Beeke, 2003; Bruns et al., 2019), Study II showed persons with severe non-fluent aphasia to use formulaic language to initiate social actions. Further, as both Studies II and III focused on initiating actions, the results provide a window into PWAs' assets to achieve self-initiated interactional participation, that is agency. Particularly Study III was novel in its investigation of proposals of joint future activities (see also Killmer et al., 2022a) and in comparing people with mild and severe aphasia to FMs with a focus on accomplishing social action, not compensating for aphasia. Making a proposal is the first step of planning future activities, opening up a possibility for a collaborative negotiation sequence (Houtkoop, 1987; Stevanovic, 2012). In relation to aphasia and interactional participation this means that if a PWA accomplishes a proposal of joint future activity, she/he possesses genuine agency.

Altogether, these findings demonstrate that if everyday conversation is viewed as a source from which a PWA's use of language may be extracted (e.g., in terms of content words, or word errors), we miss important aspects of PWAs' communicative competence and lose an opportunity to uncover PWAs' agency in action. In this thesis, such competence was clearly revealed in the multimodal turn-constructions by which people with severe non-fluent aphasia achieved proposals of joint future activity, for example. But it was also apparent in people with mild aphasia as they were seen to accomplish social actions without trouble despite word-finding difficulties, which from an impairment-focused perspective could be a main concern.

5.3 THE IMPACT OF FMS' CONVERSATIONAL STRATEGIES

Conversation is essentially *interaction* between two or more people. The analysis related to all studies crucially entailed scrutinizing sequences of interaction, that is the FMs' actions were always a part of the analysis, even though Studies II and III focused on PWAs actions. Thus, reporting the findings separately is done for the purpose of convenience only.

In line with previous CA-informed aphasiology research, the analyses demonstrated that the linguistically more skilled conversation partner may with her/his actions shape the sequential context such that it either facilitates or potentially restricts a PWA's production of a next turn (e.g., Barnes & Ferguson, 2015; S. Beeke et al., 2013; Goodwin, 1995; Laakso & Klippi, 1999; Wilkinson, Bryan, et al., 2010), thus essentially impacting on a PWA's conversational participation or agency as a speaker. This was particularly visible in dyads where a PWA had severe non-fluent aphasia. In the case of facilitative interactional strategies, the findings demonstrated how a FM could encourage a PWA to participate in a conversation by using initiations functioning as topic-proffers. For example, a FM could introduce a recipient-oriented topic, meaning a topic that is in the recipient's domain of knowledge (Schegloff, 2007). Another means to facilitate a PWA's participation was for a FM to present a topic-related question or comment on PWA-initiated prior talk. Both strategies created a sequential context where a PWA had the opportunity to produce further talk on a topic which she/he presumably has an interest in.

As an example of a restricting interactional strategy, the analysis in Study III demonstrated a FM to initiate a correct production sequence (e.g., Beeke et al., 2014), when his subsequent turn displayed that he in fact already understood the social action and the content of the PWA's turn (see extract 9). This resulted in delayed acknowledgement of the social action the PWA's talk was doing. The FM's actions thus limited the PWA's agency in that moment, highlighting the language disorder instead. However, defining a FM's interactional strategy as restricting or facilitating is not straightforward. The

example above concurs with what Bauer and Kulke (2004) described as sequentially independent exercising, meaning an FM-initiated exercise sequence, which is not linked to a PWA's preceding word finding difficulties or a FM's corrective feedback, and as such has the potential to highlight the linguistic asymmetry between the conversationalists. Nevertheless, Bauer and Kulke (2004) also argued that initiating a correct production sequence may, for a FCP of a person with severe aphasia be a strategy to keep the conversation going in the first place, as it introduces an established pattern of turns, namely an initiation, a response and an evaluation of the response. The key to avoid foregrounding the linguistic asymmetry between the interactants in such sequences is according to Bauer and Kulke (2004) that the conversationalists collaboratively agree upon the activity. This seems not to be the case in extract 9, as the PWA does not embrace the correct production activity. The continuation of the extract, however, displays the same FM to use facilitative strategies a few turns later, when he furthers the PWA-initiated planning sequence. This demonstrates that a FCP may use both facilitative and restrictive interactional strategies within the same local sequence of talk. This supports the need for an interaction-focused approach to aphasia therapy, that could make a FCP aware of the interactional consequences that different conversational strategies have, and thus prioritise strategies that promote a PWA's participation.

Similarly, the analysis in Study II suggested artefacts to be both a resource and a limitation in aphasic conversation. In this Study, one of the dyads consisting of a person with severe non-fluent aphasia and his spouse seemed to have adapted their talk to make visual material a central asset as all their conversations were centred around either a newspaper, photographs, or advertising leaflets. The FM did not proffer topics outside these materials and most of the PWA's initiations were linked to these resources. Hence, for this dyad the visual materials both enabled and restricted the interaction. Again, these findings point to the importance of an interaction-focused approach to aphasia therapy, which could have this specific dyad (i.e., both the PWA and the FCP) explore a broader array of resources to initiate topics, for example. The clinical relevance of these findings will be returned to in section 5.6.

5.4 METHODOLOGICAL CONSIDERATIONS

CA provides an established and robust methodology for uncovering the mechanics of both typical and atypical interaction (e.g., Clift, 2016; ten Have, 2007; Wilkinson et al., 2020). CA-informed research investigates authentic everyday conversation, which is the site where improvement is desired following aphasia therapy (Wallace, Worrall, Rose, & Le Dorze, 2017; Wallace, Worrall, Rose, Le Dorze, et al., 2017). Hence, CA has inherent ecological validity and provides an important perspective to the field of aphasiology.

In this thesis, several measures were taken to maximise the reliability and validity of the results. Central for reliability in CA research is the selection of what is recorded and the recordings' technical quality (Peräkylä, 2011). In this thesis the data were to represent the participants' everyday conversation. To decrease researcher intrusion, the participants managed the video-recordings independently with the instruction to record when they talked about mundane issues. However, this instruction proved to be problematic as some video-recordings showed monologic talk or an interview of a PWA. Such data were consequently excluded. In some cases, the independent recording also resulted in recordings with a suboptimal camera angle, which sometimes left the participants' embodied actions and the precise use of artefacts as well as the part of the FMs' actions invisible (e.g., a FM sat with their back towards the camera or were ambulatory). These issues could possibly have been avoided, if the data had been viewed immediately after collecting the cameras from the participants and requesting them to make new recordings if necessary. However, data from dyads entailing a person with severe non-fluent aphasia (Studies II and III), where embodied actions presumably had most import, did for the most part show both participants. Additionally, when considering the reliability of authentic interaction data, one must take into account the inherent variability in conversation (Perkins et al., 1999). Data for Study II were deemed representative as both dyads commonly made several recordings per data collection point, thus providing a more reliable account of the dyad's interaction. In terms of the amount of data, Study I would have benefitted from a multiple baseline (Perkins et al., 1999), although data from the second testing point, that is post sham-TMS, served as a second baseline. Further, a larger dataset, that is a greater number of repair sequences, could have made statistical analysis an additional tool in measurement of change following aphasia therapy.

Reliability of research findings also relate to the replicability of the results (Seedhouse, 2007). In CA replicability of the analysis is transparent in the sense that reporting the findings entails presenting transcribed extracts from authentic data, from which a reader may check the analytical claims themselves. Preceding publication, transcript adequacy and analytical findings for Studies I-III were discussed both in supervisory meetings and in data sessions, where other CA-researchers, could comment and make analytical observations. Recent CA-work has also made data in the form of transcripts more broadly available for readers in appendices (see Barnes et al., 2019). Making the original data (i.e., the videos) available for further research, would conform with the drive for open science. However, the data permits for this thesis did not allow data sharing; it remains an aspiration for future work.

Internal validity in CA is reached through rooting the analysis in the participants' perspective, which materializes in their actions. That is, an analyst does not make claims on issues not demonstrated in the interaction (Seedhouse, 2007), the most important analytic tools being validation through the next-turn-proof and deviant case analysis (Peräkylä, 2011). Relating to

this, the data of study III did not include occasions of deviant cases, that is cases where a recipient would interpret a proposal of joint future activity as something else, thus having the original speaker subsequently make the social action explicit (cf. Pomerantz, 1980). A larger dataset would provide more opportunity for uncovering deviant cases and elucidate a PWA's means of dealing with a recipient misunderstanding what their talk is doing.

External validity refers to the degree to which the results may be generalized beyond the specific research context (Seedhouse, 2007). Compared to quantitative research methods, CA-informed research does not per se aim to generalize its findings to a wider population. Rather, it aims to delineate the rules which people visibly orient to when they accomplish social actions in authentic interaction, and which are materialised as recurrent interactional patterns. As such, CA has uncovered general interactional rules, for example universal practises of turn-taking (Stivers et al., 2009). The query in much CA work is thus how people use such general rules in particular instances of interaction (Seedhouse, 2007; ten Have, 2007). CA-informed aphasiology research concerning everyday conversation investigates how such general rules operate and are potentially adapted when conversationalists' linguistic resources are asymmetric. The value of CA-informed aphasiology work is that it provides an alternative view of communicative competence (Antaki, 2011). Instead of focusing on the language disorder, it demonstrates that PWAs frequently orient to the same general rules that their FMs in everyday conversation. For instance, in Study III this was visible in the PWAs' proposals that initiated a planning sequence: like their FMs, they constructed their proposals using a future time reference. Finally, according to (Peräkylä, 2011), generalization may in relation to CA also be described in terms of possibility. Adapted to CA-informed aphasiology, this means that while CA identifies and describes communication strategies in particular contexts (e.g., dyads or communicative activities), such strategies, whether facilitative or inhibitory, are considered *possible* in other settings. For example, a strategy that has been found to facilitate further talk from one PWA within a certain communicative activity may in interaction-focused aphasia therapy be explored in other dyads and across other communicative activities, for its potential to also benefit others. This aspect of generalization thus permits issuing suggestions to be explored in clinical practise (see section 5.6).

5.5 FUTURE RESEARCH

Future research is in part tied to the limitations presented in the previous section. As Study I was a case study, future studies with a larger dataset, case series studies for example, would further our understanding of collaborative repair action as an index for treatment-induced improvement (cf. Tetnowski, Tetnowski, & Damico, 2021). In addition to applying quantitative measures (and in line with what was done in Study I) future research could in a larger

dataset also apply a longitudinal CA-approach to examine qualitative changes in repair patterns during and following aphasia therapy (Deppermann & Pekarek Doehler, 2021). Concerns about the size of the dataset pertain also to Study III, where the data included only two dyads (of seven) where the PWA had severe non-fluent aphasia; the other five dyads included a person with mild aphasia. As the persons with severe non-fluent aphasia made markedly fewer proposals compared to their FMs or people with mild aphasia, more research is justified to discover further interactional strategies people with severe aphasia and their FCPs may use when planning joint future activities.

Data selection for this thesis, while necessary, excluded research topics of interest. For example, the data entailed some instances of other-initiated repair by PWAs, which is currently a little-researched topic although it could elucidate how PWAs' comprehension problems are instantiated in conversation. Also, knowledge about how PWAs deal with a misinterpretation of their social action (e.g., a proposal of joint future activity) could elucidate further important aspects of PWAs' participation in situ. Further, research on PWAs' resources to initiate social actions by other than verbal means would be of interest, as Study II scrutinized only initiations entailing a verbal/vocal component. Study II further excluded PWAs' initiations defined as 'unclear'. Such initiations received no uptake or recognition by the FMs and consequently were abandoned by a PWA. These lost participation opportunities would merit further research to establish whether there are any recurrent features in them that could be targeted in conversation-focused aphasia therapy.

Study III examined one social action, proposing a joint future activity, which when accomplished successfully has particular potential to enhance a PWA's participation in everyday life; it opens up a possibility of a larger negotiation sequence that may influence a participant's future actions. Future research should explore further social actions with similar participatory potential.

Although everyday conversation has inherent ecological validity as an object for study, ecological validity can also be explored from other angles. For example, interviewing PWAs and FCPs to achieve stakeholder views on aphasia therapy outcome or the usability of a certain interactional practice could provide a good complement to a CA-study.

Lastly, as CA-informed aphasiology research has cumulated knowledge for several decades, the field might be ripe for a systematic review that would synthesise the extensive evidence. In the same way that Parry and Land (2013) have summarized CA findings relevant for healthcare professionals who need to talk about end of life care with their clients, findings from CA-informed aphasiology research could be synthesised to describe interactional practises that maximise conversational flow in authentic aphasic conversation, for example. Such knowledge would be directly useful to SLTs and their clients, but also to a broader audience of health care practitioners and educators.

5.6 CLINICAL IMPLICATIONS

As an SLT with many years of clinical experience, my primary impetus for this thesis was to inform and augment clinical practise. Hence, drawing on the findings of this thesis and the cumulated knowledge from previous CA-informed aphasiology research, this section presents clinical implications in the form of suggestions an SLT may consider when planning and implementing aphasia therapy that strives for ecological validity. First, this section however presents some points on measuring outcomes in everyday conversation, which are directed towards (clinical) researchers, who already have some knowledge of CA.

Measuring change in everyday conversation

The recent scoping review by Azios et al. (2022) concludes that to establish a reliable, valid, and stable conversational outcome measure in the future, researchers need to reach a consensus on how to collect, analyse, and count conversation data. Regarding data collection, this thesis took authentic, dialogic conversation as a point of departure, and within it, an interactive phenomenon for measurement, namely collaborative repair. Data collection entailed video-recording everyday conversation in PWAs' home environments, without the presence of researchers. To account for the inherent variability of everyday conversation, Study I analysed two pre- and one post-therapy conversations as well as one conversation following a three-month pause. Multiple samples at both baseline and post-therapy would have been useful to strengthen the observations about collaborative repair in each phase of the study. To make sure that data are representative, future studies would benefit from multiple baselines as well as multiple during and post-therapy samples, including a follow-up after some time to investigate consolidation. In Study I, data analysis involved identifying collaborative repair instances. Here, the essential CA tool, the next-turn proof –procedure (Hoey & Kendrick, 2017; Sidnell, 2013), was used, meaning that it was a recipient's response that defined a preceding turn of talk as initiating collaborative repair. Thus, the analysis focused on sequences of talk (as opposed to focusing on a PWA's talk only) and was rooted in the conversationalists' observable behaviours (i.e., data driven). The final collection of collaborative repair instances was formed in a consensus meeting. For increased reliability, future studies should however aim for defining the phenomena of interest thoroughly, have researchers independently identify and code the phenomena of interest, and then calculate inter-rater reliability (see, Azios et al., 2021). For a qualitative analysis, every instance of collaborative repair in the final collection was scrutinized in more detail: What was the trouble source? Who initiated repair and how? Who resolved the trouble? This qualitative part of the analysis revealed that a candidate

understanding was the FM's most frequent repair initiator. The analysis further elucidated that the trouble-sources the candidate understandings addressed changed following therapy. Such a result might have been undetected had the coding been pre-defined. To compare the frequency of collaborative repair across conversations, the number of each interactant's turns was first counted, from which the proportion of collaborative repair was then calculated. Comparing proportions of repairs instead of occurrences of repairs per minute, for example, was motivated by the fact that proportions of repair are analytically defensible as repair is a relevant next-action of any interactional turn, whereas the amount of repair per minute is analytically irrelevant if the analysis is grounded in the sequential organization of interaction (Schegloff, 1993).

In sum, Study I exemplifies a data-driven analysis of collaborative repair, which might be adapted in future studies across several dyads (specifically in dyads where a PWA has mild aphasia), potentially resulting in individual (i.e., dyad-specific), but nevertheless comparable and ecologically valid outcome measures. At present, this kind of measurement requires the analyst to have CA skills, which makes it impractical for clinicians. It is, however, hoped that future research can find a way to streamline the analysis so that it will be feasible for clinical use.

Designing ecologically valid impairment-focused aphasia therapy tasks

In general, when planning therapy tasks and activities, the SLT should consider what a PWA will *do* with the language practised. That is, the SLT should think of a variety of social actions relevant for the individual, such as greeting, complaining, giving opinions (in CA terms, assessing), disagreeing, planning future actions and so forth, rather than thinking in terms of covering a repertoire of linguistic entities such as nouns, adjectives, or verbs.

For example, in an ILAT planning game (see Difrancesco et al., 2012), therapy might utilize linguistic formats known to be used in everyday interaction instead of descriptive language, as is commonly the case (e.g., 'I have a boy swimming'). It would be beneficial instead to model a proposal of joint future activity by using ecologically valid linguistic formats such as 'Let's go for a swim', or 'Shall we go swimming tomorrow?'. Note that the latter utterance entails a future time reference, which this thesis found to be typical of proposals initiating a planning activity. Being able to propose a time to do something later, gives a PWA genuine agency in planning future activities. Consequently, therapy should ensure that a PWA, particularly a PWA with moderate/severe non-fluent aphasia, has resources for producing such an initiation by providing artefacts containing a future time reference such as a calendar.

The SLT should also acknowledge, that people with moderate/severe non-fluent aphasia propose joint future activities using atypical or adapted linguistic formats in authentic everyday conversations. For example, by first pointing at a newspaper containing a future time reference and then producing a referring expression. Relating this knowledge to an ILAT planning game means that at least initially the therapy setting might need to be modified so that a PWA may use artefacts, which are visible to other ILAT participants. That is, the necessity of barriers, which otherwise are characteristic of the method, need to be considered. The SLT should also consider the need for modifying how proposals are modelled. To take the adapted variant into account, the SLT might initially want to model a proposal with a turn-initial future time reference: ‘Next week (while pointing at a calendar), shall we go swimming?’, for instance. If a person with severe non-fluent aphasia were to acquire an adapted linguistic format from an ILAT planning game, this would be an ecologically valid outcome of therapy as such a turn provides a recipient with an early cue of the social action under way as well as giving the PWA agency in planning future activities.

Supporting conversations at home

Communication partner training (CPT) is an umbrella term covering several approaches, which aim to guide a PWA and/or their conversation partners in how to have more successful and enjoyable conversations. CA-underpinned CPT, which this thesis speaks to, is one of the approaches (e.g., Beeke et al., 2013 with its Finnish translation of therapy resources). It grounds the advice given to a dyad on an analysis of the dyad’s authentic interaction, paying attention to fundamental structures of conversation such as turn construction, turn-taking, and repair (see, Wilkinson, 2010). As such CA-underpinned CPT is well-equipped for giving PWAs and their close conversation partners insight into a PWA’s communicative potential, and consequently enhancing a PWA’s agency in everyday conversations. For clinical convenience, the suggestions below do not demand detailed transcription of everyday conversation samples. However, the suggestions require an SLT to evaluate authentic everyday aphasic interaction. For repeated viewing, video-recording the conversations is recommended.

When viewing a dyad’s video material, the SLT should observe a PWA’s use of residual linguistic, embodied, and contextual resources. Based on observations, the SLT should educate a PWA and their FCP about the multimodality of interaction and the PWA’s use of embodied and contextual resources specifically. This may include making the PWA and their FCP aware of the following issues:

(1) A PWA may use formulaic language, that is idiomatic expressions such as 'Here you go' or 'Oh gosh', to offer a cup of coffee, or comment humorously on previous talk, for example. Although such turns usually do not provide new information, that is propositional content (thus commonly excluded in discourse measures), formulaic language is of *interactional* importance as it has potential for creating social cohesion. If present, this can be acknowledged and encouraged.

(2) PWAs can accomplish social actions through gestures or utilizing artefacts. For example, a PWA can request an object without talk by pointing at it or initiate a topic by pointing at a newspaper article. Thus, it is important to look out for this happening in conversations and guide a PWA and a FCP to treat this as a genuine part of the conversation, not as primary behaviour to initiate repair on. Having artefacts such as newspapers or calendars at hand in home conversations may facilitate a PWA to produce a proposal of joint future activity, for example, and hence promote a PWA's self-initiated participation. However, we know both from clinical experience and previous CA-informed research (e.g., Auer & Bauer, 2011) that a PWA's use of gestures and artefacts may also present problems as it may be difficult for a FCP to understand what is meant. In addition, while artefacts are generally facilitating, they may become a restriction if a dyad's conversation becomes centred around them only, as they may limit the topics or social actions the dyad is able to achieve through them. It is thus important to recognize that generic advice on using more gestures and providing material resources to compensate for the aphasic language disorder may be insufficient and even frustrating for a dyad. Instead, advice should optimally be rooted in the observation of the dyad's use of such resources in their own interaction, which has the potential to uncover the nuances of facilitatory and restrictive interactional patterns.

When observing a FCP's actions, the SLT should consider whether they facilitate or impede the flow of conversation. This thesis showed that a FCP may withhold acknowledgement of a social action to focus on producing a word or utterance correctly. Such action reduces a PWA's agency in a conversation, and could hence be a target for education and discussion in CPT. This thesis also demonstrated facilitatory conversational strategies FCPs used in order to generate slots for people with severe non-fluent aphasia to produce talk and further the interaction. To enhance the participation of people with severe non-fluent aphasia in everyday conversation, concrete facilitatory strategies could be taught to FCPs. Examples of such strategies include:

(1) Presenting a PWA-oriented topic-proffer, for instance a question that is in the PWA's interest and domain of knowledge. Extract 6 shows an example of this as the spouse asks the PWA about something that happened while the PWA was at home alone and thus has sole knowledge of. In addition, the topic of the question is of interest to the PWA. In other words, the spouse poses a genuine question, which she knows is of interest to the PWA.

(2) Furthering a PWA-initiated sequence by a question and/or a comment. An example of this can be seen in extract 9, when the spouse builds upon the PWA's proposal to go the food market the following day by asking a question ('Do you already have something special in mind?'), which furthers their joint planning activity. When receiving a negative response, the spouse continues with a comment ('We haven't made soup in a long time'), which encourages the PWA to continue, as well as presenting her with an alternative to consider. Thus, both the question and the comment support the PWA's agency.

To summarize the clinical implications of this thesis, I would like to highlight that these suggestions for measuring conversational outcomes and for providing ecologically valid therapy are based on an interactional view of aphasia where both a PWA's and a conversation partner's actions are of importance. While these suggestions will not solve the complexity of measuring outcome in everyday conversation or solve all problems in aphasic interaction, particularly not in cases of severe aphasia, I believe that an interactional approach to aphasia, and other language-communication disorders for that matter, will help our profession in providing individualized and consequently more ecologically valid speech and language therapy for our clients, thus promoting our clients' participation and quality of life.

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