Interaction and Language Assessment in Aphasia and Dementia

A Comparative Perspective

Karin Myrberg
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ABSTRACT

Language problems in dementia resemble the symptoms of aphasia in many respects. A growing body of research discusses the cognitive deficits associated with aphasia. Despite common denominators, very little is written with a comparative perspective on the two clinical groups. Although speech and language pathologists (SLPs) play a central role in aphasia care, they are not routinely involved in healthcare services for dementia. By tradition, language assessments tend to be test-oriented, even though there is an awareness of the advantages with informal assessment approaches. The overall aim of this thesis was to examine interaction in persons with aphasia (PWA) and persons with dementia (PWD) in test conversation and more informal conversations. The thesis has an interactional focus with a comparative perspective on the two clinical groups, on conversational contexts, and on test results with reference to SLP services.

Study I, involving ten PWA, and study II, involving ten PWD, had similar approaches, investigating the organization of interaction between the participants and SLPs in test conversations and in more informal conversations. Furthermore, the participants’ interactional abilities were related to their actual test results on expressive tasks on an aphasia test battery. Study III involved detailed analyses of the Mini-Mental State Examination (MMSE) test interaction for both PWA and PWD. Additionally, the study set out to explore the relationship between linguistic and cognitive difficulties, in relation to assessments. Study IV investigated instances of trouble in conversations involving PWA/PWD and SLPs, with a particular focus on “trouble domain” and interactional consequences.

The results of study I and II demonstrated substantial differences between the organization of interaction in test conversations and informal conversations, regardless of whom they involved. The informal conversations provided opportunities for the PWA/PWD to talk more and to initiate own topics and multimodal resources were used by the PWA. This was seen to a far lesser degree among the PWD. With a few distinct exceptions, the PWD came across as rather communicatively competent. This was not necessarily reflected by the aphasia test results, since several participants struggled with a couple of test assignments. In PWA, the demonstration of aspects of communication that could be related to being a competent speaker did not fully correlate with aphasia test scores. The analyses showed that instances of trouble occurred
equally often in the two conversational contexts whereas trouble characteristic differed. Mutual trouble-solving was almost solely observed in the informal conversations.

Study III revealed some particularly challenging aspects of the MMSE test interaction. The study shed light on the problematic issue of separating language and cognition, since PWA and PWD had similar test results on the cognitive screening and since the “language” test items did not seem to capture linguistic problems more than the other remaining test items. Qualitative analyses of the interactional aspects of test situations may reveal information about both cognitive and linguistic abilities that otherwise would have been overlooked.

The in-depth analyses of conversational trouble in study IV revealed that most troubles involving PWA were connected to primarily linguistic issues. Conversational trouble in PWD, however, typically labelled “lexical problems”, were many times due to primarily cognitive issues. It was also observed that the SLPs took a more passive role trouble-solving in conversations involving PWD. Less severe linguistic problems in the PWD, lack of shared personal common ground, and preconceived notions about the medical conditions alongside with SLPs’ professional culture and experience are discussed as potential motives for this behaviour.

Altogether, the results of the present thesis demonstrate that formal tests that attempt to measure language or cognition do not take into account that it is problematic to separate these abilities. Within SLP services, it would be preferable to move away from a fault-finding perspective on assessment and intervention, towards an approach in which language and cognition as co-constructed acts is central.
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LIST OF PAPERS

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.


## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AD</td>
<td>Alzheimer’s disease</td>
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<td>CA</td>
<td>Conversation Analysis</td>
</tr>
<tr>
<td>EF</td>
<td>Executive functions</td>
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<tr>
<td>ICF</td>
<td>International Classification of Functioning, Disability and Health</td>
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<tr>
<td>MMSE</td>
<td>Mini-mental State Examination</td>
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<tr>
<td>MoCA</td>
<td>Montreal Cognitive Assessment</td>
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<tr>
<td>PPA</td>
<td>Primary progressive aphasia</td>
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<tr>
<td>PWA</td>
<td>Persons with aphasia</td>
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<td>PWD</td>
<td>Persons with dementia</td>
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<tr>
<td>QoL</td>
<td>Quality of life</td>
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<tr>
<td>SLP</td>
<td>Speech Language Pathologist</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Abbreviations
INTRODUCTION

Language is our dynamic device for communication. It embodies both individual and social processes and, by some accounts, is fundamental in developing thoughts and a part of our minds. Consequently, it might be disastrous for an individual when language and communication are affected by a brain damage as in aphasia or by a cognitive decline like dementia. In these cases, language assessments are often carried out by health care professionals, but to systematically examine something as dynamic as language is a complex matter. This thesis adds to existing knowledge about interaction and language assessments involving persons with aphasia (PWA) and persons with dementia (PWD). Furthermore, it contributes to modest existing knowledge of comparisons between the two clinical groups.

The relationship between language and cognition remains an unsolved scientific problem and the issue is highly relevant to discuss in relation to acquired brain disorders. While aphasia, by a traditional view, more specifically affects language functions, dementia involves a set of cognitive symptoms, including increasing difficulties with language and communication. Recently, there has been a discussion about the cognitive deficits in aphasia and about if the symptoms of aphasia are impairments of more general non-linguistic cognitive mechanisms and processes (Code, 2018). In light of the indistinct language-cognition relationship, and since social interaction not only depends on linguistic abilities but also on cognitive resources, there is a particular need to discuss the ecological validity of language assessments (i.e. how results can be applied to everyday life) as well as of assessments of cognitive functions.

The diagnosis of both aphasia and dementia largely relies on careful examination and application of clinical criteria, which also form the base for intervention. Traditionally in speech and language pathology (SLP) services, different standardised tests of linguistic abilities play a critical role in diagnosing aphasia and inform decisions about interventions. For persons with suspected dementia, there are a few linguistic tasks within cognitive test batteries, and more thorough additional language assessments are not routinely administered.

Language assessments are traditionally divided into formal and informal approaches. Even though there is a growing research interest of the analyses of informal conversations, as well as an awareness of its importance among clinicians, little is written that compares informal conversations between test-taker
and tester with test conversations and results. Despite an increasing interest in cognitive abilities in PWA, and in language functions in PWD, few comparisons have been made between the two diagnostic groups, and research that includes both groups is limited.

Since this thesis is based on the framework of language as a part of joint actions as suggested by Clark (2009), it has an interactional focus. Further, the methodological basis is qualitative and builds on research approaches used in interaction analysis, primarily Conversation Analysis (CA). It aims to compare, and add new perspectives on test conversations and informal conversations, in order to learn more about communication in PWA and PWD and the language assessment process. Moreover, it sets out to contribute theoretically with a comparative approach to the emergent discussion about language and cognition in aphasia and dementia with the intention to provide implications for clinical practice.

Outline of the thesis

The first part of the thesis is a theoretical introduction. Thereafter the general aims and research questions are described, followed by a summary of the main findings of each paper (I-IV). The last part consists of a general discussion of the findings, a methodological discussion and limitations, clinical implications and directions for future research. Furthermore, the four papers in their entirety are included at the end.

Aphasia and dementia

Aphasia

Aphasia is an acquired language disorder caused by a brain damage, with stroke as the most prevalent cause (Åhlsén, 2006). There are various definitions of the condition, e.g. by Papathanasiou and colleagues (2016, p. 4) that aligns well with the purposes of the present thesis, since it provides different aspects of outcome: “Aphasia is an acquired selective impairment of language modalities and functions resulting from a focal brain lesion in the language-dominant hemisphere that affects the person’s communicative and social functioning, quality of life, and the quality of life of his or her relatives and caregivers.” The incidence of aphasia is 30% in the acute phase of stroke and the
symptoms persist in 8-10% of long-term survivors after stroke (Yoon et al., 2015). Reduced ability to communicate is the most salient characteristic of the condition. Compared to stroke patients without aphasia, PWA have higher mortality, longer hospital stays, and poorer functional outcome, thus adding to the cost of stroke-related care (Ellis et al., 2012). PWA demonstrate low quality of life (QoL) and high prevalence of depression, also in comparison with stroke patients without aphasia (El Hachioui et al., 2014). In a survey made three months post stroke, 93% of the participants with aphasia experienced high distress, as opposed to 50% of the stroke patients without aphasia symptoms (Hilari et al., 2010). These psychosocial factors might be associated with the social and emotional isolation, observed in both family environments and health care settings, that often occur when the communicative ability is reduced (Davidson et al., 2008; Gordon et al., 2009). People in general tend to have little knowledge of aphasia, and a direct consequence of this is that the affected persons may experience that they are being left out of conversations and treated as if they were less intelligent, more naive or emotionally disturbed (Shadden, 2005; Worrall et al., 2011).

Adjustment to a life with aphasia can be multifaceted and complex (Hilari et al., 2012). Wellbeing has shown to be an important factor for recovery, with better treatment outcomes in PWA with positive mood states (Code & Hermann, 2003). Even though wellbeing is such an important factor, few studies have explored the impact of aphasia by talking directly to the patient (Musser et al., 2015). Since language and communication are important parts of people’s everyday life, aphasia has a direct impact on multiple aspects of identity (such as professional identity, family identity and social identity). The influence on identity is challenging, at least until the PWA can find a way to create a new identity for him/herself. Aphasia severity, support from a spouse or partner, relationships with friends and the ability to frame their experiences in new and adaptive ways, are among the factors that affect the process of shifting identity (Musser et al., 2015). Furthermore, a small amount of literature suggests that support groups and other social interactions with other persons with aphasia can aid in the process (Shadden & Agan, 2004). Some sociologists have argued that individuals who hold several identities (spouse, parent, worker, neighbor etc.) may be more resilient (Wamboldt & Reiss, 1989).
Introduction

Different approaches to aphasia assessments

Aphasia assessment is defined as “the quantitative and qualitative data gathering process for the purpose of circumscribing an individual’s communicative function and activity limitations, understanding his or her participation restriction, and devising appropriate rehabilitative objectives” (Murray & Coppens 2013, p. 67).

In clinical assessments of PWA, standardised aphasia test batteries or selected sub-tests of standardised aphasia test batteries are frequently administered by SLPS. The rationale for SLPS regularly choosing a formal approach is the belief that they provide reliable, valid and sensitive measurements of a person’s communicative performance (Bruce & Edmondson, 2010). The results are often used as a basis for therapy and assessments are often conducted repeatedly to observe changes over time (Goodglass & Kaplan, 1983). Since formal assessments are typically deficit-oriented, they primarily align with the level of body structure and function according to the World Health Organization’s (WHO) International Classification of Functioning, Disability and Health (ICF) (WHO, 2001). Even though the formal assessment is an important part of the aphasia evaluation process, it has been questioned, since it tends to give decontextualised results that provide little information about connected speech and certain language skills like turn-taking, repairs and topic management (Murray & Coppens, 2013). Within formal assessment approaches, replies have potentially negative consequences to the test-takers’ face. Nevertheless, a reply is still expected, which makes the formal testing a potentially face-threatening situation. It has been discussed that formal assessment might prevent PWA from employing successful compensatory strategies, and on the contrary, that the distraction-free test environment may mask problems (Coelho, et al., 2005). Altogether, formal assessment has been criticized for not sufficiently reflecting real life performance of PWA, the problems PWA might experience in their social world (Spreen & Risser, 2003) despite previous research demonstrating that rehabilitation goals and needs of PWA mainly concerned factors related to activity/participation rather than body structure and functioning (Worrall et al., 2011).

There are ambiguities concerning what defines an informal assessment and it has been highlighted that limited attention has been given on how it should be administered (Hersh et al., 2017). However, it seems to be an agreement that informal assessments provide the SLP with an opportunity to distinguish between natural language use and linguistic performance in artificial test
situations (Carlomagno et al., 2000). The informal assessment is discussed to have a therapeutic value in its own right, since it facilitates rapport-building and allows the PWA to demonstrate strengths in communication whilst revealing information about communicative needs and management (Hersh et al., 2017; Hersh et al., 2012). Assessments used to examine QoL or conversation-based assessments fall into the informal category. The latter is the most common informal assessment method reported in the literature, enabling examination of all levels of ICF and often referred to as “functional conversation” (Thomson et al., 2018). This aligns with clinical practice surveys where conversation-based assessments were reported to be a well-known informal assessment method (Vogel et al., 2010). Although there seems to be an agreement among SLPs of the advantages of more informal aphasia assessments, there is little information on assessment procedures. Conversation-based assessments are largely based on SLPs’ experiences, which make them challenging for less experienced clinicians. There is an ongoing development of the informal assessment approach and more information on when to use a given method is needed, as well as more information on administration, documentation, and analysis (Thomson et al., 2018).

**Dementia**

Dementia is the label of a group of progressive neurodegenerative disorders that manifest in gradual decline of cognitive function, with Alzheimer’s disease (AD), vascular disease and Lewy body dementia as the leading causes. Early identification of dementia is essential and might lead to better prognostic outcomes (Klimova & Kuca, 2016). Dementia is the major cause of disability among the elderly population, affecting 5 to 10%, and the challenges the health and social care services are facing are an important public health concern. As dementia is age-related, the number of people living with dementia is expected to increase due to the fact that people worldwide live longer (Prince et al., 2015).

**Dementia and language**

Dementia affects each individual in a different way, but memory problems is the most salient feature of the condition. The deterioration of cognitive function also affects problem-solving, orientation, comprehension, calculation,
learning capacity and judgement (WHO, 2017). Furthermore, language problems are listed among the core symptoms (Dijkstra et al., 2004). In some cases, not just in the Primary progressive aphasias (PPA), deficits of language are early symptoms indicating the disease (De Lira et al., 2011). Language impoverishment in dementia can take many forms, such as word-finding problems (anomia) as well as simplification of grammar and sentence comprehension deficits (Cummings, 2020). In conversation, PWD have a lower frequency of conversational features that build coherence and cohesion, and a higher frequency of discourse-impairing features such as disturbing topic shifts and empty phrases compared to healthy controls (Dijkstra et al., 2004). It has been demonstrated that PWD frequently ask conversational partners for repetition and make clarification requests (Samuelsson & Hydén, 2017). This tendency might be interpreted as compensation for limitations of the working memory capacity. Hamilton (2019) discusses how the loss of autobiographical facts (like age, name, previous occupation etc.) within the semantic memory and problems with recalling events (both recent and past) within the episodic memory, lead to difficulties for PWD in following and maintaining a conversation, thus increasing the struggle to maintain face.

As a dementia disease progresses, conversation is increasingly challenging and towards the later stages of the disease, verbal language production might disappear altogether (Ellis & Astell, 2017). The decline in the ability to participate in conversation might also have an impact on the individuals’ ability to maintain a sense of “self” (Kindell, et al., 2017). It is common that PWD experience social isolation and exclusion due to their communicative difficulties. Also, families living with PWD might experience a reduction of social contacts (Vikström et al., 2008). Several studies highlight the importance of the non-verbal aspects of communication to involve PWD with limited interaction abilities in social activities (e.g. Ellis & Astell, 2017; Hydén, 2011). Nevertheless, non-verbal attempts to communicate with significant others and/or caregivers are often ignored or judged as incomprehensible, and low levels of social activity in PWD in residential care are reported (Olsen et al., 2016). A common misunderstanding altogether is that PWD have lost the desire to participate in the social world (Norberg, 2001). Despite all barriers, there is also some evidence of PWD experiencing social inclusion and acceptance in conversation (Patterson et al., 2018). Patterson and her colleagues (2018) discuss
how some of the losses that people with dementia experience result directly from the responses of others, rather than dementia itself.

**Language assessments and intervention in dementia**

The benefits from specific language assessments in dementia evaluations are well documented (McKhann, et al., 2013). Language test performance may add valuable information to the neuropsychological examinations and might add further information for distinguishing between different sub-types of the disease (Orimaye et al., 2017). However, at least in the Swedish setting, specific language assessments are not mentioned in National dementia guidelines. As a consequence, thorough language assessments are not routinely carried out and the involvement of SLPs is seldom a standard procedure (Lindeberg et al., 2019). There is also a lack of consensus on how language assessments of PWD should be carried out (Bryan & Maxim, 2006). Commonly used cognitive screenings tests like MMSE or Montreal Cognitive Assessment (MoCA) involve brief subtests of language function; however, these have previously been criticized for not being sensitive enough to capture the whole spectrum of language manifestations in dementia (Macoir et al., 2017). Several recent studies with promising results investigate machine-learning approaches for detecting cognitive decline from speech samples (e.g. Luz et al., 2021; Shah et al., 2021).

Whereas language assessments as a part of the diagnostic process have been in much focus in the literature, less is written on assessment in a clinical practice, particularly informal approaches. The deficit-oriented approach makes sense from a medical point of view: however it is less relevant from a rehabilitation perspective. As Lindeberg (2021) discusses, although observations of functions of daily life such as preparing a meal is mentioned by the Swedish National Board of Health and Welfare as a factor to consider in extended dementia evaluations, nothing is said about language use in conversation. When focusing on functions of daily life, the attention ought to be on the PWD’s skills amid the deficits, particularly since clinical testing of both cognitive and linguistic abilities do not necessarily correlate with function of daily life (Müller & Mok, 2014).

Conversation is a key factor to provide good dementia care, and is associated with well-being and lower levels of agitation in PWD (Jootun & McGhee, 2011). Training/instruction of conversational skills related to dementia care significantly influences the communication with health professionals.
and family caregivers. It has the potential to facilitate identification of PWDs’ needs, increases positive interaction and improves the QoL and well-being of PWD (Eggenberger et al., 2013). However, intervention targeting language and interaction has no central role in dementia care (Jootun & McGhee, 2011). As Lindeberg and colleagues (2019) discuss, communication problems are primarily perceived as a barrier to providing medical care, rather than a health care issue in its own right.

The interface between language and cognition in PWA and PWD

Issues regarding the relation of the human cognition to language are of keen interest to researchers within anthropology, psychology, and linguistics. Interaction between language and cognition remains an unsolved scientific problem and several hypotheses considering the relationship between linguistic deficits and cognitive abilities have been proposed (Perlovsky & Sakai, 2014). Many cognitive psychologists and cognitive scientists have attempted to develop theories of cognition that also include language as a basic cognitive function.

Very broadly, there are two ways to conceptualise cognition. Whereas one approach proposes that all varieties of human cognition are based on general-purpose processes and mechanisms such as computation and information processing, the other way of conceptualising cognition emphasizes differences between more distinct domains of cognition (Piccini & Scarantino, 2011). The latter view can be labelled the “modularity” approach and a key idea is that the different modules or domains are learned more or less separately, using different mental mechanisms. This view is well supported by functional imaging experiments in neuroscience (Harris, 2006). Perlovsky and Sakai (2014) discuss if there is a recursive relationship between language and mind, and whether information is exchanged back and forth between language and perception, memory and consciousness. It has been discussed that language abilities can be negatively influenced by deficits in attentional resources (Murray, 2012), short-term memory, and executive functions (EF) (Kalbe et al., 2005). However, there are still authors that argue that language and cognition are not related, and that several aspects of cognition engage distinct brain regions independent from language (Fedorenko & Varley, 2016). A growing body of research report new knowledge on the language-cognition relationship, however there remains more questions than answers (Perlovsky & Sakai, 2014).

Stroke guidelines emphasize the importance of early cognitive screening in order to offer a tailored intervention (Blackburn et al., 2013). However, the
cognitive abilities of PWA have not been well studied (beyond the language domain), since they are often excluded from studies of cognitive sequelae (Fonseca et al., 2017; Wall et al., 2017). This is due to the challenges associated with the assessments, since many tests traditionally used to determine individuals’ cognitive profiles require a certain level of linguistic understanding and/or production and even non-verbal tests might have linguistic mediation (Fonseca et al., 2017).

Although, aphasia traditionally was considered solely a linguistic deficit, the general view nowadays is that the condition is frequently accompanied by other cognitive symptoms such as changes in memory, logical skills, attention and EF (Kalbe et al. 2005). PWA tend to present lower scores on non-verbal cognitive assessments than stroke patients without aphasia. Generally, there seems to be a connection between the severity of the language deficits and the level of cognitive impairment (Kauhanen et al., 2000; Marinelli et al., 2017). Naming, comprehension, reading and spelling are listed as the linguistic symptoms that primarily predict PWAs’ cognitive profiles (Marinelli et al., 2017). It is debatable whether the cognitive deficits are aggravating the symptomatology of aphasia or if it is the language problems that affect an individual’s ability to plan and execute a variety of tasks (Keil & Kaszniak, 2002; Murray, 2012). However, this relationship is not uniform, and PWA seem to be very heterogeneous as to type and severity of cognitive dysfunctions, which range from spared to severely impaired (Helm-Estabrooks, 2002; Fonseca et al., 2017). Recently, it has been suggested that what appears to be “linguistic” deficits in aphasia rather are impairments of more general non-linguistic mechanisms and processes like memory, EF and emotions (Code, 2018). According to other authors, aphasia affects language and cognition separately and independently (Hauser et al., 2002).

Several studies agree about the importance of cognitive abilities for outcomes of language intervention, both language-based therapy and interventions targeting multimodal resources (Marinelli et al., 2017; Purdy & Koch, 2006). It seems that PWA with concomitant cognitive impairments benefit less from language therapy. Furthermore, it seems like language intervention produces a nonspecific improvement in cognitive skills that goes beyond language recovery, and at the same time, several studies demonstrated a reduction of linguistic deficits after rehabilitative cognitive interventions (Helm-Estabrooks et al., 2000; Marinelli, et al., 2017). Relative perseveration of EF and the ability
to select and apply strategies, seems to be important to good response at language-based treatment as well as non-linguistic communication treatment (Purdy & Koch, 2006). The same authors found that it was hard for individuals with deficits of EF to spontaneously shift to alternative communication such as gesturing or pointing to items on a communication board (despite having been successful in performing these tasks in training sessions).

Although it is common to talk about “lexical problems” in PWD, it has been suggested that many of the language impairments seen in PWD are due to extralinguistic issues, such as impairments in attention and working memory, rather than linguistic deficits (Kempler & Goral, 2008). Mentioned as an example to support this, is the issue of word-picture matching, something that is relatively intact in PWD, even when naming is not, a task that requires a preserved semantic system (Rogers et al., 2006). As the disease progresses, there is also a gradual deterioration of the semantic/lexical system, hence errors in naming and lexical tasks can be attributed to a combination of extralinguistic and semantic/linguistic deficits (Aronoff et al., 2006). In their review (2008), Kempler and Goral discuss how cognitive problems such as deficits of EF and memory impairments cause sentence-level processing problems observed in PWD. Hamilton (2019) on the other hand, discusses the differentiation of lexical memory (the words themselves) from semantic memory (the underlying concepts of the words). Language problems in PWD can be either due to problems with lexical memory and characterized by communicative struggles, or due to problems with semantic memory, thus characterized in cognitive struggles. Thus, it is emphasized that there is a need to distinguish between these memory-types in PWD. Other hypotheses on the subject highlight the differentiation of loss of semantic information/decline of semantic representations in memory from semantic deficits that are due to problems in accessing or retrieving information stored in long-term memory (Hodges et al., 1992). In a study from 2013 it is highlighted that persons with AD loose specific attributes of a concept before more general attributes (Mårdh, et al., 2013). The findings suggest that semantic impairment displayed by PWD is due to loss of information rather than problems in accessing semantic information.

Many questions remain about the interface between language and cognition and about the underlying causes of conversational trouble in PWA and PWD. Although it no longer seems justifiable to treat language as separable from cognition, most formal assessment approaches are largely based on the simplifying and refining of these abilities. An advantage of informal language
assessments is that they offer important information of the interplay between linguistic and cognitive resources. In the following chapter, the theoretical framework used in the present thesis for analysing interaction will be described.

**Analysing interaction**

Essentially, there are two broad perspectives on language, with language as *system/structure* or as *discourse/communication* (Linell, 1998). Whereas the former applies a formalist approach, with language as a stock of linguistic resources such as phonology, syntax and semantics, the latter is more focused on function, language use and communicative meanings (Levinson, 1983). The present thesis adopts a more “pragmatic” approach, based on the framework of language as a part of joint actions. Hence, an interactional perspective is brought to the fore.

The concept of interaction analysis has been defined in different ways by different researchers; it is an overarching term that involves a set of approaches. Linell (1998) argues that it is not a set of specific empirical methods, rather a more a theoretical framework or general epistemology. This might seem problematic, and is an issue that have caused some quandary during the work with this thesis. Different methods are described in the literature, aimed at studies of mundane conversations, and have much in common. They involve video/audio recording of conversations, detailed analyses of interaction as it sequentially occurs in context and data driven analyses, with observations arising from data rather than pre-defined hypotheses (Kindell, et al., 2017).

Perhaps the most well-established approach to the studies of joint activities in which language is being used is CA. CA is concerned with the investigations of how interlocutors understand and respond to each other in interaction, with a central focus on sequential organization and turn-taking (Hutchby & Woofitt, 2008). It involves scrutiny of audio and video recordings and detailed transcripts of verbal and non-verbal actions according to specific conventions, which provides proof criteria for interpretation. CA focuses on the local context of the interaction, rather than making top-down explanations of why interlocutors do certain things. CA is sometimes criticised for its attention on local organization and neglect of social structure (Ten Have, 2007).

CA has been highly influential on other approaches within the concept of interactional analysis, including approaches that primarily focus upon the
underlying cognitive and linguistic processes that facilitates successful interaction as well as empirical research on discourse. The work in the latter approach carried out by Clark and colleagues have been important for informing psychologically oriented models of spoken discourse. The studies demonstrate how interlocutors modify and build upon their dialogue by collaborating on shared understandings of relevant topics, not only by a sum of individual actions (Ten Have, 2007). One general argument is that people use language primarily within joint activities. Although language can serve as a medium for cognitive processes, it rests on shared understanding and use. Therefore, it is suggested to be impossible to study language use without studying joint activities, and we cannot study joint activities without studying language (Clark, 2009). This interface can be a source of confusion, since there is a risk that phenomena might be treated as features of language when they in fact are features of the joint activity itself.

Shared knowledge of the world is crucial for understanding in interaction. Of specific interest for this thesis is the concept of common ground, an integral part of language use in dialogue (Clark, 2009). Interlocutors enter and leave conversations with different assumptions and priorities, but within the joint activity (built on individual actions), common ground is developed to serve their joint projects and activities. Common ground is a prerequisite for joint actions and refers to the interlocutors’ mutual, common or joint knowledge, beliefs and suppositions. Necessary for common ground (hence for interaction to proceed successfully), is that joint projects must be taken up, validated and completed with mutual understanding (Clark, 2009). Common ground can refer to aspects that are shared on a communal level, such as shared origin, beliefs, interests or language or on a personal level, interlocutors’ shared experiences (Enfield, 2006). Since shared personal common ground largely depends on interlocutors’ relationship it has been suggested to facilitate conversations for persons with communication disorders (e.g. requiring less time, less cognitive energy and fewer words), something that has partly been supported by limited research on the topic involving PWA (Doedens et al., 2021). Interlocutors’ share personal common ground as long as they remember experiences that were shared (Enfield, 2006). Therefore, lack of common ground in conversations involving persons with memory impairments is a major source of asymmetry, also when involving close friends or intimates (Hydén & Samuelsson, 2018). Nilsson (2017) discusses that there are more than recalling at stage when spouses of PWD are struggling for their
partner to come up with personal information; it is a way of holding on to their personal common ground. In interaction, participants normally orient toward avoiding threats to another participant’s face as well as their own (Brown & Levinson, 1987). Sometimes, well-intended support may have the consequences that it can be experienced negatively and even have face-threatening effects (Gjernes & Måseide, 2015). Face, in Goffman’s view, is a social object, determined by its owner and by others in an encounter, hence jointly determined (Goffman, 1967). When using language, persons are motivated to maintain own and interlocutor’s face, the basis of the analyses of politeness (Brown & Levinson, 1987). According to Clark (2009), equity and face appear to constrain all joint activities, which make face in relation to common ground an important factor to consider in the analysis of asymmetrical interaction.

A concept of relevance for the present thesis is *communicative projects*. Communicative projects refer to the topical activities, developed, carried out and completed in the course of action, in which interlocutors calibrate or adjust their actions with references to the others (Goodwin & Cekaite, 2013). An important feature is their somewhat hierarchical organization, since smaller sequences, “local” projects, are directly or indirectly nested within other projects, which in turn can belong to larger “global” projects, such as communicative activities or whole conversations (Linell & Korolija, 1997). Linell (2014) argues that the local communicative projects stand out as the most important units as parts of interlocutors’ immediate understandings and those small sequences also have important functions in larger wholes. Typically, communicative projects have multiple aims, primarily those at more global levels, and these goals and purposes are viewed as the communicative project’s most important features (Clark, 2009).

**Instances of trouble in aphasia and dementia**

Interaction analysis is increasingly being used in studies including persons with neurogenic language disorders. In these conversations, instances of trouble have demonstrated to be more frequent than in “typical conversations”. Hence, conversational trouble-management, repair organization, is particularly important when it comes to providing an illuminating and practically useful perspective of conversational abilities involving PWA and PWD (Barnes & Ferguson, 2014; Milroy & Perkins, 1992).
Troubles that participants demonstrate in conversation are joint troubles, hence they have to be managed jointly (Clark, 2009). Since instances of trouble occur more frequently in conversations involving PWA and PWD than in conversations involving typical speakers, there is an increased need for joint trouble management (Barnes & Ferguson, 2014; Samuelsson & Hydén, 2017). Moreover, when involving persons with communication disorders, inferences from context and background factors play a more critical role to trouble solving than in most other conversations (Ahlsén, 1993). The nature of the instances of trouble, as well as trouble management are related to the individual’s specific symptoms and progression of the disease (Samuelsson & Hydén, 2017). In the study by Samuelsson and Hydén, participating PWD and PWA initiated repair sequences more often than their interlocutors, thus keeping to the general rule of a preference for self-initiated self-repair compared to other-initiated repair as proposed by Schegloff, et al. (1977). It was demonstrated that questions were the most frequent trouble source among the PWD, as previously described (Caspari & Parkinson, 2000), whereas word searches were the most common among the PWA. This might indicate that the underlying (main) cause of the trouble, or “trouble domain”, might differ between PWD and PWA. It has been discussed that trouble involving PWA primarily include word-finding issues, whereas troubles involving PWD mainly have to do with cognitive problems such as not being able to identify references due to memory challenges. Samuelsson and Hydén further argue that differences in repair organization between PWD and PWA might be caused by the different progression of diseases. Since the onset of the disease is very sudden in aphasia, an urgent need to use repair strategies in conversation might lead to less efficient repair-work in comparison with PWD, where a more slow development of the disease might result in a more subtle way of dealing with the conversational problems (Samuelsson & Hydén, 2017).

Concerning the interactional consequences of troubles, Hamilton (1996) argues that communicative breakdowns resulting from memory or language problems may increase feelings of incompetence on the part of the PWD, which might lead to serious breakdowns of face in the interaction. When the individual is aware of his/her challenges, there might be attempts to offer excuses for the actions that does not live up to the expectations (Robinson, 2016). The notions of positive and negative politeness shed light on how conversational partners to individuals with communication disorders constantly
need to balance their use of positive (feelings of self-worth) and negative (relative independence) politeness strategies toward the individual (Brown & Levinson, 1987). Hence, the conversation partners of both PWD and PWA have to take a more active role in maintaining intersubjectivity and resolving troubles, much more than in interaction with typical speakers (Laakso & Klippi, 1999; Orange et al., 1996). In their study from 2008, Simmons-Mackie and Damico discuss how the clinician working with persons with communication disorders, need to be skilled in the use of corrections and need to calibrate their use of other-initiated repair (exposed corrections and embedded corrections), based on whether the therapy is deficit-oriented/restoration-based or has a more conversational focus.

In an article from 2019, Barnes and Bloch discuss how there is a need for an assessment of real-time co-present communication in PWA, with a particular focus on turn-taking sequences and repairs. Repairs have also been discussed to be an aspiring focus of analysis when investigating topic-management in conversations involving PWD (Hall et al., 2017). One conclusion is that there might be a number of differences between trouble domain and interactional consequences of trouble in conversations involving PWA and PWD.

To summarise this introduction, previous research has demonstrated that language problems in dementia resemble the symptoms of aphasia in many respects. However, there is limited research that compares language abilities for the two clinical groups. Furthermore, an arising discussion involves impairments of cognitive mechanisms and processes among PWA. The notion of language and cognition as two separable mechanisms is perhaps coming to an end, but has brought new questions about language and the mind. Still, when it comes to aphasia assessments, SLPs are prone to using standardised assessments, even though the ecological validity of formal tests has recently been debated. Furthermore, it is not given that aphasia intervention has an interactional approach. When it comes to dementia evaluations and intervention, SLPs have no central role. If SLPs are involved, there is reason to believe that SLP procedures to a large extent resemble those applied towards PWA.

Even if there is a growing agreement on the importance of informal language assessment, little is known about procedures and when to use a given method. Language abilities need to be examined within a joint activity, a fact that might be confusing since features of a joint activity might be mistaken for
features of language. For these examinations, interactional analyses are a pre-requisite. Instances of trouble and trouble-management are obviously essential to study when assessing conversations involving persons with language disorders. A shift from solely focusing on “lexical problems” in PWA/PWD to the investigations of trouble domain might be beneficial, in order to understand more about communication in the clinical groups. Little is written that has a comparative approach on language and interaction involving PWA/PWD, and a deeper understanding can be advantageous for SLPs and other healthcare professionals working with communication disorders. The thesis aims to contribute to this field.
AIMS AND RESEARCH QUESTIONS

The overall aim of the present thesis is to study language and interaction in PWA and PWD, with a particular focus on test interaction and informal conversations. The thesis has a comparative perspective, and sets out to contribute to the emergent discussion of the interface between linguistic and cognitive difficulties with reference to SLP services. The following research questions are addressed:

- How do PWA and PWD manifest their interactional abilities in a test conversation as opposed to a more informal conversation, and how do the participants’ performance on an aphasia test battery relate to these findings?

- In order to learn more about the MMSE test process from a language perspective and to explore the relationship between linguistic and cognitive difficulties, how are the linguistic abilities of PWA/PWD used when performing a cognitive screening test and what is revealed in the test interaction?

- With a particular focus on “trouble domain” and interactional consequences, how are instances of trouble encountered in conversations involving PWA and PWD?
Aims
METHOD

This section will describe in detail the participants and data collection, followed by a description of the methodology and procedures adopted.

Participants and recruitment – PWA and PWD

In this thesis, a total of ten PWA (Table I) and ten PWD (Table II) are included. The PWA were five women and five men, aged 51-98 years (mean 67 years; median 64.5 years).

Table I. Characteristics of participants with aphasia (PWA)

<table>
<thead>
<tr>
<th>Participant (SLP)</th>
<th>Age</th>
<th>Sex</th>
<th>Primary aphasia symptom</th>
<th>Education</th>
<th>Previous occupation</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 (SLP1)</td>
<td>56</td>
<td>F</td>
<td>expressive</td>
<td>Upper secondary school</td>
<td>Technical operator</td>
<td>Part-time work with adjusted tasks</td>
</tr>
<tr>
<td>A2 (SLP2)</td>
<td>73</td>
<td>M</td>
<td>expressive</td>
<td>Secondary school</td>
<td>Saw mill worker</td>
<td>Apraxia of speech</td>
</tr>
<tr>
<td>A3 (SLP3)</td>
<td>69</td>
<td>M</td>
<td>receptive</td>
<td>University</td>
<td>Medical doctor</td>
<td>Very fast speech rate</td>
</tr>
<tr>
<td>A4 (SLP3)</td>
<td>56</td>
<td>F</td>
<td>expressive</td>
<td>Upper secondary school</td>
<td>Industry operator</td>
<td>Uses a Filofax as a communication aid</td>
</tr>
<tr>
<td>A5 (SLP1)</td>
<td>66</td>
<td>M</td>
<td>receptive</td>
<td>University</td>
<td>Officer</td>
<td>Dependent on aphasia-ID and similar aids</td>
</tr>
<tr>
<td>A6 (SLP3)</td>
<td>51</td>
<td>F</td>
<td>expressive</td>
<td>Secondary school</td>
<td>Nurse's assistant</td>
<td>Spanish as first language</td>
</tr>
<tr>
<td>A7 (SLP1)</td>
<td>78</td>
<td>M</td>
<td>expressivem</td>
<td>Upper secondary school</td>
<td>Travel agency manager</td>
<td>Very slow speech rate</td>
</tr>
<tr>
<td>A8 (SLP1)</td>
<td>60</td>
<td>M</td>
<td>receptive</td>
<td>Secondary school</td>
<td>Machine operator</td>
<td>Part-time work with adjusted tasks</td>
</tr>
<tr>
<td>A9 (SLP3)</td>
<td>63</td>
<td>F</td>
<td>expressive</td>
<td>Secondary school</td>
<td>Machine operator</td>
<td>Apraxia of speech</td>
</tr>
<tr>
<td>A10 (SLP1)</td>
<td>98</td>
<td>F</td>
<td>expressive</td>
<td>Secondary school</td>
<td>Shop assistant</td>
<td>Lives in own housing without any support</td>
</tr>
</tbody>
</table>
Method

The PWD were two women and eight men, aged 72-84 years (mean 76.6 years; median 75 years).

Table II. Characteristics of participants with dementia (PWD)

<table>
<thead>
<tr>
<th>Participant (SLP)</th>
<th>Age</th>
<th>Sex</th>
<th>Dementia diagnosis</th>
<th>Education</th>
<th>Previous occupation</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1 (SLP1)</td>
<td>73</td>
<td>F</td>
<td>AD</td>
<td>Secondary school</td>
<td>Receptionist</td>
<td>Little disease insight</td>
</tr>
<tr>
<td>D2 (SLP1)</td>
<td>75</td>
<td>F</td>
<td>AD</td>
<td>Secondary school</td>
<td>Industry worker</td>
<td>Slow speech rate</td>
</tr>
<tr>
<td>D3 (SLP4)</td>
<td>79</td>
<td>M</td>
<td>Mixed dementia AD</td>
<td>University</td>
<td>Teacher</td>
<td>Talkative and makes a lot of jokes</td>
</tr>
<tr>
<td>D4 (SLP4)</td>
<td>74</td>
<td>M</td>
<td>AD</td>
<td>Secondary school</td>
<td>Welder</td>
<td>Hungarian as first language</td>
</tr>
<tr>
<td>D5 (SLP4)</td>
<td>72</td>
<td>M</td>
<td>AD</td>
<td>Upper secondary school</td>
<td>Repairer (janitor)</td>
<td>Very active, visits gym several times a week</td>
</tr>
<tr>
<td>D6 (SLP1)</td>
<td>72</td>
<td>M</td>
<td>AD</td>
<td>University</td>
<td>Marketer/teacher Forester</td>
<td>Very slow speech rate</td>
</tr>
<tr>
<td>D7 (SLP1)</td>
<td>75</td>
<td>M</td>
<td>AD</td>
<td>University</td>
<td>Farmer</td>
<td>Uses hearing aid</td>
</tr>
<tr>
<td>D8 (SLP1)</td>
<td>83</td>
<td>M</td>
<td>AD</td>
<td>Secondary school</td>
<td>Farmer</td>
<td>Tested in his own home, dependent on his wife</td>
</tr>
<tr>
<td>D9 (SLP5)</td>
<td>79</td>
<td>M</td>
<td>Vascular dementia</td>
<td>Upper secondary school</td>
<td>Electrician (own firm)</td>
<td>Sensible and close to tears</td>
</tr>
<tr>
<td>D10 (SLP5)</td>
<td>84</td>
<td>M</td>
<td>AD</td>
<td>Secondary school</td>
<td>Truck technician</td>
<td>Expresses a lot of doubt regarding his answers</td>
</tr>
</tbody>
</table>

All participants were recruited utilizing a convenience method, the PWA from a day centre for PWA and the PWD from two different day centres for PWD. The inclusion criteria were that the participants should have an aphasia or dementia diagnosis, they should live in own housing and attend day centre activities. Another inclusion criterion was an estimation of the PWA/PWD, by the staff at the day centre, as able to comprehend accessible or “aphasia-friendly” information about the study. There was a subtext with not limiting participation to a more formal degree of aphasia severity or stage of dementia, since these factors traditionally are based on standardised language tests and cognitive screening tools, which are matters of discussion within the present thesis. Instead, participants were supposed to form a rather “functionally homogene-
ous” group in the sense that they were at a rather similar degree in terms of activity-level. For PWA, an exclusion criterion was a known degenerative disease associated with memory- and/or language problems. For PWD, any type of PPA or other known aphasia was an exclusionary criterion. All PWA had previous or ongoing SLP-services and medical information were gathered from their SLPs’ medical records. Equivalent information about the PWD were assembled from the contact nurses affiliated to the day centres.

Furthermore, five SLPs were involved in the studies. They all had at least five years’ experience of working with acquired communication disorders, mainly aphasia. All of the SLPs had some experience of working with PWD, but primarily in combination with a stroke diagnosis or Parkinson’s disease.

Data collection and analyses

Data collection
The same data collection was used for all four studies of the present thesis. Encounters between the PWA/PWD and the SLPs took place at the day centres for PWA/PWD, at one occasion at a rehabilitation clinic, and in two cases, in the participants’ homes. The rooms used for the meetings were group rooms with an institutional air that resemble rooms at any SLP clinic in many respects. The meetings took place at one or two occasions. In the few cases where the participant and the SLP met for only one occasion, the meeting included several generous breaks.

All meetings were video-recorded (Canon Legria HF S30) to be able to capture multimodal resources. An audio recorder (ZOOM H4N Handy Recorder) was additionally used, in order to obtain good sound. Seating was arranged with the PWA/PWD sitting opposite to the SLP, with the camera set up on a tripod on the side, slightly more directed towards the PWA/PWD. At the starting-point of each encounter, participants were reminded of the purpose of the meeting and informed on time frames and their rights to withdraw participation at any time without giving a reason. Thereafter, the recording devices were started by the author of the present thesis and the SLP and the PWA/PWD were left alone in the room.

Most of the encounters started with the informal conversation, which seemed natural since it was the first time most of the participants met the SLP. Furthermore, a language test and a cognitive screening test were carried out.
Method

The scope of the informal conversations and the two test batteries are described in greater detail in the following paragraphs.

Informal conversations

For the more informal conversations (described as everyday conversations in study I), the SLPs were only instructed to carry out a conversation similar to the small talk taking place in the beginning or the end of any patient meeting. Other than that, no topics were suggested. It must be noted that the pre-arranged settings and intentions of the informal conversations in this thesis make them institutional by some accounts. However, the purpose was to target the kind of informal conversation or small talk that are frequently encountered in some institutional formats, such as SLP services (Hutchby & Wooffitt, 2008). The majority of these conversations were focused on the participants becoming acquainted with each other, since it was the first time most of them met. Furthermore, the conversations tended to focus on the weather, how the participant had travelled to the meeting, and about their normal activities in the facilities. Even though the informal conversations were first initiated by the SLPs, several of the PWA/PWD gradually took a more active role in initiating topics and posing questions. Various communication aids, such as pen and paper, pictures, and written key words were used in some cases. Among the PWA, two used personalized communication aids. The length of the informal conversations varied substantially, but in average, they lasted for approximately 20 minutes.

Test conversations

Standardised Language test/the “A-ning” aphasia test battery

For the standardised assessment of language abilities, the Swedish neurolinguistic aphasia examination, “A-ning” was used (Lindström and Werner, 1995). A-ning is a test battery for language assessment following brain injury, and an extensive survey among Swedish SLPs showed that it was the most used aphasia test in Sweden (Blom Johansson, Carlsson and Sonnander, 2011; Carlsson and Ericsson, 2008). Test modalities include “informative speech”, “repetition”, “auditory comprehension”, ”reading comprehension”, “reading aloud”, “dictation” and “informative writing”.

For the purposes of the present thesis, a complete aphasia test battery was carried out with some of the PWA/PWD, whereas in other cases, all tasks
in the test domain “informative speech” were carried out as a minimum, in order to receive a comparable quantitative score. The length of the language test conversations were 1-1.5 hours depending on the number of tasks carried out as well as on the participants’ fatigability.

**Cognitive screening tool/“the MMSE”**

All participants were given the Mini Mental State Examination (MMSE) for the cognitive screening assessment (Folstein, Folstein & McHugh, 1975). The MMSE is a widely used psychometric screening test, used to map out levels of cognitive function in dementia evaluations (Ismail et al., 2009). It is designed for clinical use in the diagnostic process and it is claimed to facilitate the assessment of progression and severity. The MMSE includes several brief sub-tests that assess various cognitive functions, including memory, attention and language. The SLPs were instructed to carry out the Swedish revision of the MMSE assessment strictly according to the manual (Palmqvist et al., 2013). Testing with the MMSE took 20-30 minutes in average.

**Method of analysis**

In this section, the methodological approach to the research design will be described. The primary data for analyses were the recordings of the test conversations and the informal conversations between the participants and the SLPs. The starting point of the analyses was to view all video recordings, approximately 40 hours of video films. According to CA conventions, one should attempt to leave preconceptions aside, trying to approach new data as objectively or non-specific as possible (Schegloff, 1996). This was an aspiring intention. Some of the analysed phenomena were more or less predetermined, these included turn-taking and instances of trouble, which should be in particular focus in assessment of real-time co-present communication (Barnes & Bloch, 2019).

All conversations were broadly transcribed. The process of transcribing mandates close and careful watching and listening. It is a key element to all interactional studies, and should be considered an important activity, rather than a step prior to research (Bolden, 2015). The transcriptions were then carefully examined whilst watching the recordings. This part involved all three authors of the studies I-IV, and views and interpretations of the interactions were
shared. It was during these first analyses that an aspiring interest in trouble domain, topic initiations and multimodal resources emerged.

For the detailed analyses of study I and II, the first 10 minutes of the informal conversations and the last 10 minutes of the test conversations were chosen. The time frames were set in order to capture equivalent data from each participant and conversational context. The reason for choosing the last 10 minutes of the aphasia test conversations was to capture the final tasks in the test domain “informative speech”, which occurred within that time span in all conversations. For the purposes of study III, the parts of the test conversations involving the MMSE assessments were extracted for each participant. For study IV, the first 10 minutes of all informal conversations were selected. The video-recordings of these samples chosen for further analyses were watched several times and transcribed in a detailed way according to CA conventions (Goodwin & Heritage, 1990). This process was time-consuming since the communicative style among several of the participants called for particularly careful and repeated watching and listening in order to hear what was being said. The level of detail on e.g. pause lengths and multimodal resources was judged on the basis of their contributions to the research questions, and differed somewhat between the articles. Similarly, the inclusion of the Swedish original transcriptions varied depending on journal preferences. Repair organization is an essential part of all interactional studies, and particularly salient when it comes to conversations involving PWA/PWD (Samuelsson & Hydén, 2017). Although categorized in the same manner, the terminology of conversational trouble varies between study I-IV since the terms “repair”, “instances of repair” and, “instances of trouble” are used. A reason for not limiting the label to solely repair was that the trouble definition used for the studies of the present thesis somewhat differed from the CA definition of repair. Some of the trouble indicating behavior in the data from the PWA/PWD in the present study was not categorized as instances of trouble. Certain minimal halts in the conversations, such as word- or syllable repetitions, long pauses, and interruptions were not included, since they occurred constantly for some participants and were interpreted to have a minimal influence on the trajectories of conversation.

All transcriptions and video recordings were scrutinised in order to find recurring patterns and phenomena of particular interest, connected to communication. Hutchby and Wooffitt (2008, p.105) call, “it is not the phenomenon as a linguistic object which is the focus of interest for CA, but the interactional
work being accomplished via turns at talk”. A particular focus was on similarities and differences of the organization of interaction between the conversational contexts as well as between the two clinical groups. This analytical process was conducted by detailed analyses of the transcriptions as well as repeated viewing of the recordings. When the decision of phenomena of particular interest had been made, these were identified, coded and calculated throughout the transcriptions. These patterns emerged inductively and were not pre-determined. This quantitative approach of instances of trouble and trouble management, topic initiations and use of multimodal resources proved useful in gaining an understanding of the extent of the different observations. According to Heritage (2011), an observation can be interpreted as valid by a thorough description and generalisation, to the extent that it can be considered context-free, with a similar sequential organization across contexts. This approach was in focus when looking at particular phenomena and re-coding were made several times in order to get representative cases and is further discussed in the section of methodological considerations.

The author of the present thesis made the initial categorization of the different phenomena. Thereafter, the second and the third author of study I-IV independently inspected the transcriptions and individually classified the examples, blinded to participant information. Data from two PWA and two PWD were selected for a formal assessment of inter-rater agreement. Overall, the level of inter-rater agreement was about 85%. However, ambiguities were discussed and decisions were made by consensus.

**Study I and II**

The procedures applied for study I and II were almost similar, except for the involvement of multimodal resources in the analyses involving PWA in study I. In these studies, the main rationale was to compare informal conversations with the test conversations involving the tasks aiming to target connected speech in the aphasia test battery. Conversational trouble was in focus in both studies, labelled “repair” (study I) and “instances of repair” (study II). The aphasia tests were scored according to the test manual by watching the video recordings.

**Study III**

For study III, the main focus was to look closely at the MMSE test conversations. For these purposes, the concept of communicative projects was well
Method

suited. Throughout the sequential analysis, using the framework of communicative projects, three recurring patterns stood out as relevant for further analyses: the understanding of the verbal instructions, the handling of the instructions and the evaluation of the answers. No quantification of these phenomena were made, and the analysed examples were selected to be representative cases of the aggregate patterns observed in the data. The MMSE tests were re-corrected according to the test guidelines. A non-parametric test (Mann-Whitney U) was used for the analyses of the differences of the PWAs'/PWDs’ MMSE scores.

Study IV
In study IV, conversational problems were labelled “instances of trouble”. Each instance of trouble was categorised by trouble domain: as connected to either primarily cognitive or linguistic issues. In the analysis, instances of trouble were considered resolved if there was a joint acceptance and the topic was shifted using appropriate topic manipulation conventions. Due to the challenges associated with this categorization, the second and the third author independently and blinded classified all examples. The instances of troubles were calculated and a two-tailed t-test was used for the statistical comparisons between the observations among the PWA and the PWD.

Ethical considerations
The studies for this doctoral project were conducted in accordance with the Declaration of Helsinki and had received ethical approval from the Regional Ethical Review Board in Linköping, Sweden (dnr 2012/443-31). There was no risk of physical harm associated with participation. The staff at the day centres initially contacted proposed participants and asked if they were interested in participation. If they were positive, a meeting was set up with the PWA/PWD, with a contact person at the day centres present and, in most cases, a spouse or other next of kin. At these meetings, the potential participants received oral and written information about the study. It was emphasized that participation was voluntary and that consent could be withdrawn at any time without stating a reason. Oral information was given with communication aids to those who needed it, and written information were provided also in an aphasia friendly version with short and clear sentences accompanied by visual aid, easy words and adjusted layout. Particularly careful information was given
about the use of the recording equipment, and that the recordings would be confidentially handled. At this point, the participants were able to ask any questions they had about the study. The PWA/PWD were then asked to consider the given information at home and then to get back at the first author or the contact person at the day centre if they were still interested. If they approved, in order to inconvenience the participants as little as possible, they were given the choice of scheduling the meetings with the SLP at the day centre or at home, whichever suited them best. Apart from a generous coffee break in the middle of the sessions, breaks were taken if the participants expressed that they were tired or needed a pause.

Conducting research with persons with cognitive and linguistic impairments calls for particular sensitivity (Hellström et al., 2007). All participants in the present study were rather “functionally homogeneous” in the sense that they were all living in own housing and independently attended day centre activities. Nevertheless, this does not automatically imply that their level of linguistic or cognitive abilities were equivalent, and we cannot be certain that all participants fully understood the circumstances associated with participation, or were entirely capable of making an informed decision. On the other hand, results on cognitive screenings tools and standardised language tests do not give the whole picture, which has previously been described by Sabat (2002) and is also one of the salient points in this thesis. To address this, consent was approached as a process rather than just giving information and a consent to sign, as described by Usher and Arthur (1998). Information about the study was given, and consent discussed at several occasions with the participants and particular attention was paid at signs of discomfort during the sessions with the PWA/PWD. The ingredient most likely to cause feelings of discomfort was testing with the aphasia test battery and the MMSE. Cognitive testing as part of an assessment process might result in feelings of uncertainty and worry, also prior and after testing (Lindeberg et al., 2021). Another concern was the use of the video-recording equipment. It was stressed both during the information meeting and in the beginning of each session that the recording was only being used for analytical purposes. As previously discussed by Hellström and colleagues (2007), the question is not whether PWD should be included in research, the matter is how it should be done. This line of reasoning is applicable also for PWA.
Method
SUMMARY OF STUDIES

In the following section, the findings of each of the individual papers are summarized. The papers can be found at the end of the thesis, and the reader is referred to them for more details.

**Study I: Different approaches in aphasia assessments: a comparison between test and everyday conversations**

In study I, ten PWA participated in two conversations with an SLP, a test conversation while performing tasks targeting the ability to produce sentences and narratives from an aphasia test battery and a more informal conversation. The conversations were audio and video recorded and thereafter transcribed. The sequential analyses of recurring patterns revealed three main phenomena of particular interest that were coded and calculated throughout the data and the test results were summarised and analysed. The outcomes were that PWAs produced almost twice as many turns in the informal conversations compared to the test conversations. Even though the sparse initiatives by the PWA in the test conversations was somewhat expected, the difference of the use of multimodal resources, which were more frequent in the informal conversations, was not an obvious finding. Although conversational trouble were observed equivalently often, trouble management differed. Repairs resolved within the same turn were found in the test conversations while repairs stretching over several turns were more frequent in the everyday conversations. Apart from the differences between the two conversational contexts, there seemed to be no obvious relationship between the participants’ actual test scores on the aphasia test battery and aspects of conversation that can be related to being perceived as a competent speaker.

**Study II: Interaction and language test performance involving persons with dementia: a comparison between test conversation and informal conversations**

Here, the aim was to compare the organization of interaction between PWD and SLPs in test conversations and informal conversations. Alike paper I, a further aim was to relate interactional abilities to the PWDs’ performance on
an aphasia test battery. Ten PWD participated in the study. All dyads were audio- and video recorded. Analyses were informed by interaction analytical approaches, such as CA, combined with quantitative measurements. Results demonstrated that there was a larger number of turns, words, and topic initiations made by the PWD in the informal conversations. The occurrence of repair instances was the same in the two conditions. However, repair instances in the test conversations were mostly resolved within one turn, whereas repairs stretching over several turns were more frequent in the informal conversations. Many of the repair instances were initiated with a clarification requests or a request for confirmation. Even though a majority of the PWD demonstrated relatively robust turn-taking patterns in the informal conversations, several of them struggled with the aphasia test assignments, in some cases due to visual perception problems. The results indicate that a thorough analysis of informal conversations is important in assessing language in PWD.

**Study III: The mini-mental state examination (MMSE) from a language perspective: an analysis of test interaction**

The aim of study III was to learn more about the MMSE test process from a language perspective, by looking in detail at the interaction between test-taker and tester. In addition, it set out to further explore the relationship between linguistic and cognitive difficulties.

Participants were ten PWA and ten PWD, in dyads with SLPs. The cognitive screening test MMSE was carried out, and the test conversations were audio and video recorded. The test results were summarized and analysed. Each conversation was transcribed verbatim according to CA conventions. The thorough analysis of the interactions highlighted some main findings that affected the test interactions.

Some particularly challenging aspects emerged through the analyses; the understanding of the verbal instructions, the handling of the instructions and the evaluation of the answers. There were no significant differences between the two groups of participants’ MMSE test results. “Language” as a test category did not seem to capture language disorders more than the remaining test items. Assessment of language and cognitive abilities are associated with clinical challenges. Qualitative analyses of the interactional aspects of test situations may reveal information about both cognitive and linguistic abilities, such
as pauses, hesitations, trouble-management and use of multimodal resources that otherwise would have been overlooked.

**Study IV: Instances of trouble in aphasia and dementia: an analysis of trouble domain and interactional consequences**

In study IV, the aim was to investigate instances of trouble in conversations involving PWD, PWA and SLPs, with a particular focus on trouble domain and trouble-solving. Ten PWD and ten PWA were video-recorded during informal conversations with SLPs. Ten minutes of each conversation were transcribed thoroughly according to CA conventions and instances of trouble were identified and calculated throughout the data. Thereafter, the instances of trouble were categorised by trouble domain: as connected to either primarily linguistic or cognitive issues.

It was revealed that many conversational troubles involving PWD are connected to linguistic issues. However, PWD seem to have less severe linguistic problems compared to PWA. The analyses also reveal that many of the language problems described in PWD might be a direct consequence of cognitive issues, and that SLPs seem to take a more passive role in trouble-solving in conversations involving PWD. The lack of shared personal common ground, SLPs’ professional culture and experiences and preconceived notions about the medical conditions are discussed as potential motives for the SLPs’ behaviour. The analysis of instances of trouble in informal conversations might contribute to both research and clinical assessment of language and interaction in PWA and PWD.
DISCUSSION

The overall aim of this thesis was to study language and interaction in PWA and PWD. A comparative approach was used, involving test and test conversations and more informal conversations with reference to SLP services. In order to address the research questions from the viewpoint of language as a part of joint actions, an interactional perspective was a prerequisite.

Study I and study II exposed several differences of test interaction and informal conversations in both PWA and PWD, and emphasized that there is no straightforward relation between the results on aphasia tests and participants’ abilities to actively participate in informal conversations. Study III explored MMSE test interaction, and demonstrated three recurring patterns that influenced the collaborative activity of the communicative projects. An observation was the connection between participants’ expressive problems and their overall problems with the MMSE. The final study IV exposed that although instances of trouble occurred equally often in PWA and PWD, there were differences in trouble domain and the interactional consequences of trouble. Altogether, both similarities and differences between PWA and PWD were observed. In the following section, these findings will be discussed and synthesised. This is followed by a section concerning methodological considerations and the discussion is concluded with a summary of clinical implications together with suggestions for future research.

PWA and PWD – a comparative perspective

The analyses of study I-IV revealed several similarities between PWA and PWD, both of test results and of organization of interaction in test conversations and informal conversation. At a quick glance, one might draw the conclusion that interaction and language abilities in PWA and PWD have much in common. However, the sequential analyses within the present thesis indicate that there are in fact interactional differences between PWA and PWD, something that might underpin the discussion of different aetiologies of the communicative problems. It could be beneficial to shift focus from the label “lexical problems” when discussing conversational difficulties in PWD, to the division into “linguistic” and “extralinguistic” problems. This might also be applicable to some PWA. Hamilton (2019) discusses how it might be of value to differen-
tiate between conversational problems related to lexical memory/words themselves and problems associated with semantic memory/concepts, since the nature of the difficulties might affect the associated struggle to maintain face. This is, however, a neglected field within previous research.

The analyses of study IV demonstrated that many of the instances of trouble involving PWD were interpreted as primarily related to cognitive issues, although they at first glance easily could have been taken for word-finding problems. It might be the case that these cognitively oriented trouble are more associated with embarrassment, frustration, and threat to positive face than those with primarily lexical origin. Another advantage of linguistically oriented trouble is that also unfamiliar interlocutors share a common linguistic ground, which facilitate trouble-solving (as opposed to many of the troubles connected to cognitive issues). In the data of study IV, the PWD were provided less communicative support from the SLPs than the PWA, an act that can support well-being and identity (Hamilton, 2019). Challenges with memory and/or language may heighten feelings of incompetence and the SLPs’ lack of face-enhancing comments towards the PWD as well as their sudden topic-shifts in the data of study IV are notable. There are reasons to believe that this behavior might be a result of the SLPs’ professional culture, their experiences (e.g. practice of intervention techniques towards PWA) or their preconceived notions about interactional trouble in PWA and PWD.

It is obviously beyond the scope of the present thesis to provide any answers about the interface between language and cognition. Discordant results have previously been presented about the relation between aphasia severity and degree of cognitive dysfunction, although a majority indicate a relationship, yet not straightforward (e.g. El Hachioui et al., 2014; Keil & Kaszniak, 2002; Marinelli, et al., 2017; Murray, 2012; Olsson et al., 2020). The previous discussion of tests (linguistic and cognitive) and their ecological validity, along with the somewhat problematic establishment of aphasia severity, pave the way for cautious interpretations of studies of the language-cognitive relationship. Consequently, it might be more relevant to discuss the impact of cognitive difficulties on participation in communication. It has been suggested that it is cognitive impairments/deficits of EF in conjunction with the language disorder that are responsible for the impaired communicative ability in PWA (Fridriksson et al., 2006). Furthermore, relative perseveration of EF seems to be important for outcomes of communication aids (Nicholas et al., 2011; Purdy
& Koch, 2006). Altogether, this indicates that level of EF might be a more important factor than the traditional concept of aphasia severity, primarily based on expressive verbal abilities. The involvement of EF could explain why the PWA of the present thesis demonstrate such disparate abilities to use different kinds of multimodal resources/communication aids. It might also tell us something about the relative absence of multimodal resources among the PWD with more extensive communicative problems involved in the present thesis. Müller and Schrauf (2014) discuss how cognition, in the light of language as a real-life communicative activity, is something that takes place between interlocutors (rather than within them). The approach of cognition as an interactive co-constructed act, instead of information processing within the individual mind, opens up for studying real-world conversational challenges as well as successful social cognition in both PWA and PWD.

**Test conversations and informal conversations**

Language assessments are a cornerstone in SLP services, used for diagnosing, intervention planning and for observations of changes over time. Albeit an increasing awareness of the need of evaluations of authentic conversational data, there is still a tendency among SLPs to choose the formal assessment approach, focusing on isolated symptoms and profiles of the language processing deficits. Although there are ambiguities concerning what constitutes a formal/informal assessment, there seems to be a consensus that conversation-based assessments are in fact informal (Thomson et al., 2018). For this reason, the comparative perspective on test and more informal contexts was chosen for the purposes of the present thesis, in order to provide guidance for further understanding of the scope of language assessments in general, and for PWA/PWD in particular.

Since traditional language assessments are characterized by asymmetry and goal orientation (Heritage, 2004), it was a rather expected finding that test conversations targeting connected speech in PWA/PWD would differ in some way from more informal conversations in terms of turn-taking, topic initiations and trouble-management. The contextual differences of the numbers of turns, topic initiations and trouble management were similar for both groups. This might suggest what has been previously discussed, that conversations of PWA and PWD might have much in common, despite the different aetiologies (Sam
An alternative scenario however, is that test conversations and more informal conversations are rather similar in terms of symmetry/asymmetry, roles and organization, regardless of whom they involve.

In the data of study I and II, it was observed that collaborate trouble-solving occurred frequently in the informal conversations, as opposed to the test conversations. Trouble management is central for activity, participation and not losing face, and is undoubtedly essential for persons with communication disorders in their everyday lives. Hence, trouble management ought to be one of the primary focuses in assessments of language and interaction (Barnes & Bloch, 2019; Hall et al., 2017). Nevertheless, when focusing on trouble management in informal assessments, it is important to consider that trouble and trouble-solving are primarily features of the joint activity, not only features of language. In order to study this, formal test conversations solely do not seem sufficient. An actively involved conversational partner that provides communication aids and facilitate the use of multimodal resources facilitates trouble-solving and has the opportunity to examine what works and what is problematic in conversation. Aphasia intervention directed towards improving conversation has received increased attention in recent years and several studies highlight the importance of communication partner training for PWA (e.g. Cherney et al., 2013). The informal assessment with a particular focus on trouble management, initiatives and multimodal resources might form an important basis for these kinds of intervention focusing on conversation and modifying the environment, also in PWD. The data from the present thesis emphasizes that small talk within a clinical meeting could be a suitable context for studying such features.

**Language tests results related to communication**

Solely looking at the results from the aphasia test battery, PWA had a mean score of 2.14 out of 5 (median 2.25) whereas PWD had a mean score of 3.75 (median 3.9). For healthy elderly in Sweden the mean score was 4.92 (Fagius & Söderman, 2009). A majority of the PWD involved in the present thesis did not demonstrate any obvious expressive problems in informal conversations, still, several struggled with one or more test assignments. These observations imply more test bias when the visual-oriented tasks of the language test are used for PWD.
Two of the PWD, D6 and D3, had extensive problems with the informal conversations that were not reflected by their test results. One PWD, D4, had both substantial problems with the aphasia test battery and demonstrated a very limited expressive verbal ability. However, D4 displayed participation in communication more than several other of the PWD since he seemed to compensate for deficits in linguistic abilities by displaying strategic, social and operational skills in conversation (according to the definition of communicative competence proposed by Light, 1989). In view of the discussion about language and cognition, the differences between PWAs’ and PWDs’ mean scores imply that the expressive tasks of an aphasia test battery might be useful in providing an overview of linguistic abilities at a group level. For the individual, however, it is problematic to base the assessment of communicative resources on these expressive tasks.

More consistently among the PWA, there was a connection between a limited expressive verbal ability and poor results on the aphasia test. By contrast, there was no clear relation between the PWAs’ test results and the perception of their overall abilities to participate in conversation. That communication variances are not only attributable to differences in linguistic abilities has recently been observed in persons with severe aphasia (Olsson, 2021). Participants A4, A9 and A5 exemplify this, as they were the PWA with the lowest test results. Still, they made initiatives, used multimodal resources and participated in trouble management in ways that made them come across as rather communicatively competent in the informal conversations. Participant A4 was the most salient example of this. She proved to be a particularly skillful user of multimodal resources, an ability that varies greatly in PWA (Holland, 1982, Olsson, 2021). With different criteria for establishing aphasia severity, traditionally classified by results on aphasia tests (e.g. Johnson et al., 2008) or by expressive ability (e.g. Darrigrand et al., 2011), it would not be given that a PWA like A4 would fall within the category of severe aphasia, despite a very limited expressive verbal ability. Psychosocial factors such as motivation and resilience, alongside with environmental support (and barriers) are aspects that further might influence the use of multimodal communication.

The main objective of aphasia intervention is to develop, rebuild or sustain communication between the PWA and his/her environment, with QoL as an overarching goal (van de Sandt-Koenderman, 2011). Based upon this, alongside with the previous discussion of test results not sufficiently reflecting participation in communication, it must be emphasized that the primary focus
Discussion

of SLPs should be on assessments of communication in informal conversations with the formal language test more as a supplement.

When it comes to intervention, PWD are, even more than PWA, suitable candidates for communicative approaches rather than the traditional restoration-based strategies to intervention. In neurodegenerative diseases, intervention should begin early, so that patients and their communication partners can learn to use communication strategies and tools as soon as possible (Fried-Oken et al., 2012). Apart from functioning as an important diagnostic tool in some cases, it is debatable if symptom-based language tests at all should be used by SLPs as a basis for intervention for PWD, particularly since visuo-spatial deficits and decline in EF seem to aggravate the test process further.

The MMSE test process

Feasibility of testing involving PWA and PWD is a problematic matter, and the analyses of the MMSE test process and the test results in study III further raises this question. It was expected that the MMSE, with its linguistic load, would cause problems to the PWA. Nevertheless, the equivalent mean scores between the two clinical groups on the subtests of language function was not an obvious outcome. While some test items seemed to cause ceiling effects, others appeared to assess more heterogeneous cognitive abilities (e.g. the repetition task). Overall, the assessment with the MMSE seems to be highly vulnerable to confounding factors that might affect the participants’ understanding of the instruction, their handling of the instruction as well as the test leader’s evaluations of answers. Memory problems in PWD and also in some PWA might affect the goals and purposes of the test items’ local communicative project. With less rigour to the test instructions and the evaluations of the answers, it is likely that deeper insights in the PWAs’/PWDs’ cognitive and linguistic abilities would have been achieved. It is frequently discussed that cognitive testing, such as assessment of EF, operate on other cognitive processes and are sensitive to confounding factors (e.g. Keil & Kaszniak, 2002). It is evident that this discussion of bias needs to be more in focus also in SLP-led assessments of language and interaction in PWA and PWD (as well as in assessments of linguistic abilities in other clinical groups).
Although the work with the present thesis has been exploratory, and many of the results obtained are suggestive rather than conclusive, there are some important clinical implications.

Testing is and has been useful in a number of ways and much of our knowledge of linguistic and cognitive abilities in PWA and PWD comes from a long tradition of formal assessment (Wilkinson et al., 2020). Nevertheless, the results of study I and II adds to the body of knowledge that test interaction may fail to capture communicative competencies and communicative difficulties. Additionally, the studies demonstrate that the ability to participate in conversation is not necessarily connected to language test performance and these findings seem to be consistent in both PWA and PWD. The considerations highlight what has previously been discussed, that it is essential to analyse different aspects of informal conversations when assessing language in PWA and PWD. It is not given that tasks targeting connected speech or narratives give an accurate picture of these abilities, since important aspects of the joint activity of conversation is overlooked. Communicative competence is essential to the QoL of individuals with language disorders and provides the means to attain social goals (Calculator, 2009). A way of strengthening the SLP-led assessments is evaluation of participation in communication through analyses of informal conversations, combined with rating-scales and language tests. However, the discussion of potential bias connected to each of these outcome measures is crucial. When deficit-oriented tests are being used, it is important to stress that SLPs need to have a qualitative approach to quantitative measures when assessing something as dynamic as language, something that probably is self-evident for many experienced clinicians. This is particularly important to address when assessing culturally and linguistically diverse patients, a group whose demand on health-care facilities rapidly is increasing in Sweden (Plejert, et al., 2015).

Study III emphasizes that MMSE testers need to be perceptive on how test-takers understand the verbal instructions and how the test instructions are handled. Although there is a rigour to formal testing, qualitative notes might be a beneficial procedure when testers evaluate test-takers’ answers. Otherwise, language problems might falsely be registered as cognitive deficits and conversely, memory problems may be interpreted as linguistic impairments. It is important to consider that also tests without wordy instructions or tests that
do not require verbal answers may have language elements to them, e.g. reading letters or numbers. Additionally, study III indicates that the division of MMSE into separable test categories are somewhat problematic (e.g. that the test items in the “language” test category seem to involve the MMSE tasks with lowest linguistic load). At least the results imply that it is problematic to use the test categories to draw diagnostic conclusions of these abilities. Here qualitative notes might yield valuable information of other abilities than what is “labelled” by the test categories.

Increasing knowledge about the interface between language and cognition in relation to PWA and PWD leads to a deeper understanding of interaction and language assessments for the clinical groups. The comparative study IV indicates that even though conversational trouble in PWA and PWD has much in common at first glance, there are in fact differences in the underlying causes of trouble and their interactional consequences. This might be of value for researchers, but also for clinicians when planning the therapeutic intervention, particularly when providing guidance to the PWA’s/PWD’s conversational partners. Furthermore, it is important for clinicians to consider that actions of the conversational partner might scaffold the conversation and support both well-being and identity.

Nevertheless, contexts, assessments and the underlying causes of conversational trouble are quite possibly of limited value for the individual who struggles in communication. The findings of differences in SLPs’ reception and trouble-solving towards PWA and PWD further indicate that a shift of focus away from the participants’ cognitive or linguistic deficits in assessment and from impairment- and/or restoration-based approach in intervention, is beneficial.
METHODOLOGICAL CONSIDERATIONS

There are a number of methodological considerations and limitations within the present thesis, which need to be acknowledged and discussed. Linell (1998, p. 187) states that interactional analyses adhere to a dialogical perspective, as they “seek to describe participants’ episodes of talk, and are focused on the interlocutors’ conversational treatment of some occasioned problem, issue, or topic”. This aligns well with the methodological approach used in this thesis which is primarily descriptive, aiming to capture aspects of the participants’ linguistic abilities in interaction. There is a wide range of perspectives, methods and terminology within the concept of interaction analysis. Although primarily informed by CA, which is the most well described method for the studies of interaction, the analyses adopted also deviate from traditional CA principles. Divergences include that the analysed conversations were not fully “naturally occurring”, that coding/quantifications were carried out and the way that repairs were defined in the studies. Within CA, there has been reluctance to consider contextual factors beyond what is demonstrated in a sequential level in the analyses (Hutchby & Woofitt, 2008). Furthermore, since some of the general research questions were posed beforehand, it is debatable whether there is a certain degree of researcher provocation to the material.

Although the use of video recordings in the clinical setting has proven to be a very suitable method when it comes to analysing clinician–patient interaction (Asan & Montague, 2014), there is a risk that the camera made the participants regulate their behavior in some way. Additionally, there is a need for reflection on the wellbeing of the PWA/PWD in the test situation since they are exposed to potential failure. Another limitation is that views and opinions of the PWA/PWD is lacking in this thesis, something that could be a direction for future research.

The informal conversations within the present thesis involved some features of institutional interaction since the interlocutors in some ways were tied to their institution-relevant identities and had a specific goal with the conversation (Drew & Heritage, 1992). A strive with the conversations was that they should be as informal as possible within a somewhat institutional context. The observed differences between the test context and the informal context indicate that small talk carried out between an SLP and a PWA/PWD within a clinical meeting might be “informal enough”, in order to make a proper evaluation of
Methodological considerations

Communicative abilities. Ecological validity is a recurring concept of this thesis, however it must be emphasized that the conversations that took place between PWA/PWD and an SLP within the scope of the present study, are not automatically transferable to real life encounters in the clinics, even if there is great resemblance in terms of roles and structure.

Although the interactional analysis itself is a qualitative method, it might include quantitative measures. One limitation of the present thesis concerns the identification of the interactional phenomena. Linell (1998) discusses that coding practices involve decontextualising and abstracting from, and hence disregarding, many properties of the dynamic flow of interaction. Therefore the coding and counting of “units” carried out in the analysed interactions is a tricky business.

Obviously, the number of participants included in the present thesis is too small to draw strong conclusions. Additionally, a few questions on the issue of participant representativeness need to be raised. Since the problematic issue of drawing conclusions of aphasia severity or level of cognitive deficits solely on test results is raised within this thesis, it would have been problematic to use these measures as inclusion criteria. Hence, the somewhat sweeping criteria of “functional homogeneous” participants was established. Participant selection was dependent on the contact channel of day centre personnel and additionally significant others in some of the cases. This paves the way for potential bias in a possible selection of “eligible” participants. However, this procedure was chosen in order to protect potential participant’s right to remain anonymous before giving their consent.

Information about diagnosis was assembled through participants’ medical journals, however several years had passed since most participants received their diagnosis and the gathering of more up-to-date information about general level of functioning, (which would have been interesting), was unfortunately not possible/available. Among the PWD, there were only two women and eight men, and this gender bias could be interpreted in several ways. It might be the case that men are more active participants of day centre services for PWD. Another plausible explanation could be that there are in fact some gender differences in dementia spousal caregiving.

Finally, a brief discussion on validity and reliability is added, difficult terms when it comes to qualitative studies. The coding and quantification of different features within the data are obviously sensitive to certain errors and
bias. A thorough explanation of how the different phenomena were identified was therefore provided. It has been argued that CA has good ecological validity in the sense that the phenomena studied are close to how things happen in real life interactions (Hoey & Kendick, 2018). In interactional analyses, the use of data sessions is an important aspect of discussing interpretations and validity. This approach could have been adopted more, since it was only conducted with a handful out of the 40 conversations.

Qualitative and interaction analytical findings can, to an extent, be generalised (Goodman, 2008). Generalisability was aimed for through building collections of cases with applications to larger populations (Sidnell, 2013). There are also examples of some deviant cases, something that has been described to add credibility to the interpretations of the patterns (Sidnell, 2013).
Methodological considerations
DIRECTIONS FOR FUTURE RESEARCH

Throughout the work with this thesis, some thoughts on valuable future research have emerged. There is an increasing amount of research on language abilities in PWD, and a steady growth of studies with an interactional focus. Still, few PWD get access to SLP services and language is mostly assessed as isolated test domains within the standard dementia evaluation. In research involving PWA, there is an ongoing discussion on cognitive abilities, with a particular focus on EF. Still, aphasia is a common exclusionary criterion in studies of cognitive functions, and cognitive assessments are rarely conducted by SLPs. For future studies, there is a need to examine language and cognition as a co-constructed act (rather than within individuals), or even to shift the focus away from the participants’ cognitive or linguistic skills and to focus instead on the “cognitive and communicative ecosystem” as proposed by Hydén (2014). In order to do so, it would be highly beneficial with close collaborative research (as well as interprofessional collaboration in clinical practice) between persons from various disciplines, such as SLPs, occupational therapists, linguists and neuropsychologists.

Relatively little is written on the interactional capacities and challenges that PWA/PWD and SLPs encounter in conversation, and there are few theoretical frameworks for exploring the consequences of these issues (Barnes & Bloch, 2019). A reason for this slow development might be that qualitative findings are not yet easily fitted into the requirements of evidence-based practice. The results of the present thesis indicate that further explorations of the similarities and differences between PWA and PWD are motivated. Further examples of comparisons between PWA and PWD in other contexts, such as conversations with significant others in different social contexts are needed, something that has only been occasionally described (Samuelsson & Hydén, 2017). This thesis is focused on face-to-face interaction, just like most research on communicative abilities in PWA and PWD, and future studies ought to also involve written communication, social media, texting, video-calls etc., due to changed patterns of communication in society. Moreover, the results warrant further explorations of language assessment and interaction in culturally and linguistically diverse PWA and PWD, factors that pose new demands on health-care facilities.

There is an ongoing development of the informal assessment approach. However, much remains to be known in terms of when to use a given method
Directions for future research

and how to administer, analyse and document during the process. It is also impor-
tant to bear in mind that an individual’s ability to participate in communi-
cation may vary across contexts and depend on environment, communication
goals and partners. Future research ought to build on the current body of work
in this field, focusing on how language and interaction can be established
within informal contexts in a structured way, facilitating, particularly for stu-
dents and less experienced SLPs, when clinically applying such approaches.
CONCLUSIONS

- It is not given that test conversations targeting connected speech give an accurate picture of language and interaction in PWA and PWD. The assumption is that there is greater ecological validity in qualitative analysis of informal conversation compared to qualitative analysis of talk in the test setting, with its more formal format governed by instructions from the start.

- Traditional tests used for PWA/PWD are based on rather simplistic statements about the language-cognition relationship. It is not given that language test performance and aphasia severity reflect communication in PWA and PWD and might thus lead to skewed assumptions of activity and participation levels. Important discourse-building features that are not displayed by the quantitative analyses are pauses, topic initiations, repair strategies, speech rate, prosody and multimodal resources. It is problematic that these factors are not considered when establishing aphasia severity.

- A functionally homogeneous group of PWD, living in own housing, independent of aid and attending day centre activities, demonstrate difficulties on a standardised language tests, which to some extent can be explained by different biases. Despite this, they are, with a few distinct exceptions, perceived as communicatively competent. It is proposed that language intervention needs to focus on communication and the communicative environment (rather than restoration-based approaches). Thus, it might be beneficial for SLPs to direct some attention away from the clinical diagnosis, which opens up for similar intervention approaches towards PWD with extensive communicative problems.

- The characteristics of conversational trouble differ between PWA and PWD. Many trouble involving PWD are primarily connected to cognitive issues. Much of what is labelled “lexical problems” in conversations involving PWD are due to primarily cognitive issues.
Conclusions

- Multimodal contributions are frequently made by many PWA in informal interaction. This seems to be less frequent in PWD, also in those who really struggle in conversation. The observed differences might be related to issues beyond language, which further emphasizes that it is hard to dissociate cognition from language use, and the importance of considering cognitive abilities in clinical encounters with PWA. This must be carefully conducted, since even non-verbal cognitive tests have linguistic mediations. A proposed procedure for SLPs might be the examination of language and cognition as co-constructed acts.
SVENSK SAMMANFATTNING


**Delstudie I** som inkluderade deltagare med afasi, och **delstudie II** som inkluderade deltagare med demens hade liknande upplägg. Studierna undersökte och jämförde samtalsmönster i testsamtal och mer vardagliga samtal mellan deltagarna och logopeder. Vidare relateerades deltagarnas kommunikativa förmågor till deras resultat på ett afasitest.

**Delstudie III** undersökte testsamtal med det kognitiva screeningstestet Mini Mental State Examination (MMSE) och inkluderade både deltagarna med afasi och demens. Studien avsåg att utforska förhållandet mellan språkliga och kognitiva svårigheter i relation till bedömningen och testet. I delstudie IV gjordes mer detaljerade jämförande analyser av problematiska situationer i de mer vardagliga samtalen. Studien inkluderade samtliga deltagare och hade särskilt fokus på konsekvenser i kommunikationen liksom den bakomliggande orsaken till varför problemet uppstod. Det framkom att samtalsmönster i logopediska testsamtal och vardagliga samtal skiljer sig avsevärt åt, oavsett om de involverar en person med afasi eller en person med demens i samtal med en logoped. Mer vardagliga samtal ledde till mer tal från deltagarna (både antal yttranden och antal ord) och möjliggjorde initiativtagning, gemensam problemlösning och användning av alternativa kommunikationssätt. Deltagarna med demens använde alternativa kommunikationssätt i liten utsträckning. Dock framstod de, med några tydliga undantag, som relativt kommunikativt kompetenta i de vardagliga samtalen. Den kommunikativa kompetensen hos personerna med demens återspeglades nödvändigare i resultaten från afasitestet där flera
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deltagare hade stora problem med åtskilliga uppgifter. Några av deltagarna med afasi upplevdes som kommunikativt kompetenta i de vardagliga samtalen, vilket inte återspeglades i testresultaten.

Analysen i delstudie III visade på flera intressanta företeelser i testsamtalen från den kognitiva testningen med MMSE. Studien belyser det problematiska med att separera språk från kognition. Deltagarna med afasi och delta-garna med demens hade, något oväntat, ungefär likartade resultat på screenings-testet. Detta gällde även för testkategorin ”språk”, vars uppgifter inte tycktes testa språkförmågan mycket mer än uppgifterna i testets övriga kategorier.

Den mer djuplodande analysen av kommunikationsproblem i vardagliga samtaler i delstudie IV syftade till att jämföra de båda kliniska grupperna. Resultaten visade att afasideltagarnas kommunikationsproblem nästan uteslutande berodde på språkliga faktorer. När deltagarnas med demens hade svårigheter i samtalen sågs en nästan jämbördig fördelning mellan språkliga och kognitiva orsaker till problemen. Det pratas ofta om ”lexikala problem” vid demens, men det tycks inte vara helt entydigt. Vidare framkom det att deltagandet logoped på något veka roll i problemlösningen med personerna med demens. Lindrigare språkproblem hos demensgruppen, avsaknad av ”gemeensam grund” i samtalen och logopedernas kliniska erfarenhet och förutfattade meningar om de båda tillstånden diskuteras som potentiella orsaker till skillnaderna i bemötandet.

Sammantaget visar avhandlingens resultat att formella test som försöker mäta språk eller kognition inte tar hänsyn till att det är svårt att separera dessa förmågor. Inom logopedisk praktik är det nödvändigt att betrakta språk och kognition som samvarierande förmågor. Vidare är det viktigt att vara mindre diagnosinriktad och att skiftra fokus från formella bedömningar och intervention baserade på ett felsökningsperspektiv, till informella bedömningar och intervention inriktade på kommunikation i vardagen.
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Papers

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