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

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ABSTRACT

Background: Language problems in dementia resemble the symptoms of aphasia in many respects. Persons with aphasia (PWA) and persons with dementia (PWD) present rather similar results on standardised language tests and cognitive screening tools. There is limited research that compares PWA’s and PWD’s language abilities, and a particularly small number of studies have an interactional focus.

Aims: In this study, we will contribute to the emergent discussion about interaction in aphasia and dementia. The aim was to investigate instances of trouble in conversations involving PWD, PWA and speech and language pathologists (SLPs), with a particular focus on trouble domain and interactional consequences.

Methods & Procedures: Ten PWD and 10 PWA were video-recorded during informal conversations with SLPs. Ten minutes of each conversation were transcribed thoroughly according to Conversation Analytical principles 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.

Outcomes & results: At first glance, the conversations between the PWD and PWA seemed rather similar when looking at the number of turns and the number of instances of trouble. The analyses, however, reveal that significantly more turns were spent on trouble solving in the conversations involving the PWA. The vast majority of the troubles involving the PWA were categorised as being connected primarily to linguistic issues, whereas trouble among the PWD were more evenly distributed between the trouble domains. The SLPs took a more active role in supporting the conversations of the PWA than for the PWD.

Conclusions: The results indicate that many conversational troubles involving PWD are connected to primarily 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

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cognitive issues, and that SLPs may take a more passive role in trouble solving in conversations involving PWD. The lack of personal common ground 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 abilities in PWA and PWD.

Introduction

Problems with language and interaction are frequent in dementia and the area is attracting an increasing research interest. The language problems of persons with dementia (PWD) resemble the symptoms of aphasia in many respects. Likewise, a majority of persons with aphasia (PWA) present cognitive impairments. Although different pathological processes cause the linguistic and cognitive deficits, it can be supposed that the problems both groups face in interaction are not that different.

The language abilities of PWD depend on the type of dementia, as well as on the course of the disease (Dijkstra et al., 2004). Word-finding difficulties are listed as being among the core symptoms of dementia (Kempler & Zelinski, 1994). Dijkstra et al. (2004) demonstrated that PWD displays a lower frequency of discourse-building features, such as coherence and cohesion, compared to persons without dementia. Sudden topic shifts and empty phrases were among discourse-impairing features found more frequently in conversations involving PWD. In a review from 2008, Kempler and Goral demonstrated that lexical impairments in three different types of dementia were primarily associated with deterioration of conceptual organization, whereas sentence- and discourse-level deficits are more associated with impairments in executive functions. It is suggested that many of the language impairments seen in PWD are due to extralinguistic, rather than linguistic, deficits. Hamilton (2019) discusses how language problems in PWD can be either due to problems with lexical memory (the words themselves), and characterized by communicative struggles, or due to problems with semantic memory (the underlying concepts of the words), and thus characterized by cognitive struggles. She also emphasizes that there is a need to distinguish between these memory-types in PWD. Loss of autobiographical facts (such as age, name, one’s home address, etc.) within the semantic memory, and recalling what happened (both recently and in the past) within the episodic memory are challenging breakdowns in PWD that make it difficult to engage in and hold a conversation, and further increase the associated struggles to maintain face (Hamilton, 2019).

Recently, there has been a discussion about the cognitive deficits in aphasia and about whether the symptoms of aphasia are impairments of more general non-linguistic cognitive mechanisms and processes (Code, 2018). Some aphasiologists have considered the focal cerebral pathology as a criterion for diagnosing aphasia. Under this interpretation, whereby language and intellect are viewed as disassociable functions of the mind, aphasia is a disturbance of language without disturbance of intellect. According to some recent accounts, deficits in cognitive abilities such as working memory and attention are discussed as constituting the underlying causes of PWA’s language impairments (McNeil
et al., 2011), whereas other researchers posit that the cognitive deficits in PWA instead reflect a general brain injury (Fonseca et al., 2018). Considering connectionist approaches to language, a central component is that there is no strong distinction between language and other types of knowledge (Joanisse & McClelland, 2015).

Despite the increasing interest in the interface between language and cognition, research that includes both PWD and PWA is limited. However, there are contemporary studies that indicate that PWA and PWD tend to present rather similar results on standardised language assessments, as well as when assessed with cognitive screening instruments like the MMSE (Fonseca et al., 2018; Myrberg et al., 2020, 2018). Although tests are important in the assessment processes, the examination of spontaneous connected speech enhances comprehensive assessment of language impairment (Beeke et al., 2007). It has recently been brought up for discussion that the barriers that PWA and PWD may experience in everyday conversations might have much in common, despite the different aetiologies (Samuelsson & Hydén, 2017).

In a comparison between PWA and PWD performing a picture description task (Nicholas et al., 1985), the authors found that the PWD produced more empty speech and conjunctions, whereas the PWA with more receptive aphasia produced more neologisms and paraphasias. The PWA with expressive aphasia shared many empty speech characteristics with the PWD. The authors conclude that even though PWDs’ non-informative speech resembles that of PWAs, the groups can in fact be distinguished, and that the findings might be of diagnostic significance (Nicholas et al., 1985). A recent study examines interaction and conversational trouble in Primary progressive aphasias (PPA) and concludes that although all the participants were successful in social interaction, the patterns of trouble clearly differed. The trouble indicating behavior observed, resembled both conversational behavior in dementia as well as in acute onset aphasia (Taylor et al., 2014).

Although impairments to the linguistic and cognitive functions do not translate directly into the same type of troubles in interaction and communication (Perkins, 2007), they still present the general constraints on the resources needed in interactional communication. Thus, instances of trouble in conversation could be considered to be connected to linguistic or cognitive issues, which might affect the course of the interaction. For the purposes of this study, troubles that appear to be related to different types of lexical problems are considered linguistic, whereas troubles that rather seem related to episodic memory are considered cognitive. Through our analyses, we want to contribute to the emergent discussion about the nature of the interactional abilities in dementia and aphasia. We propose to do this by means of an analysis of the interaction among PWA, PWD, and SLPs.

**Conversational trouble in dementia and aphasia**

Troubles that participants demonstrate in conversation are joint troubles, and hence have to be managed jointly (Clark, 1996). In conversations involving PWD and PWA, instances of trouble have been demonstrated to be more frequent than in “typical conversation”, thus leading to an increased need for joint trouble management (Barnes & Ferguson, 2015; Samuelsson & Hydén, 2017). The nature of the instances of trouble, as well as the management of the problem, are related to the individual’s specific
symptoms and for PWD also the progression of the disease (Samuelsson & Hydén, 2017). In their study, the PWD and the PWA initiated repair sequences more often than their interlocutors, thus keeping to the general rule of preference for self-initiated repair over other-initiated repair proposed by Schegloff et al. (1977). When it comes to the trouble source, it was demonstrated that questions posed by the PWD were the most frequent trouble source among the clinical group, something that has also been described by Caspari and Parkinson (2000), whereas word searches were the most common among the PWA. This might indicate that the origin of the trouble, or the trouble domain, might be different between PWD and PWA; for individuals with aphasia, it is primarily troubles with finding a word, while troubles for individuals with dementia mainly have to do with cognitive issues like not being able to identify references due to memory challenges.

In a study by Samuelsson and Hydén (2017), the authors describe that repair trajectories were collaborative processes, and that a majority of the repair sequences carried out by PWA or PWD, in conversation with their spouses, stretched over more than three turns. Hence, the conversation partners of both PWD and PWA had to take a more active role in maintaining intersubjectivity and resolving troubles, much more than in interaction with “typical” speakers, something that is in line with other researchers (Laakso & Klippi, 1999; Orange et al., 1996). In a study from 2008, Simmons-Mackie and Damico discuss how the clinician working with persons with communication disorders needs to be skilled in the use of corrections, and needs to calibrate their use of other-initiated repair (exposed corrections) and embedded corrections based on whether the therapy is impairment-oriented or has a more conversational focus (Simmons-Mackie & Damico, 2008).

Concerning the interactional consequences of troubles and repair, Hamilton (1996) argues that communicative breakdowns resulting from memory or language problems may increase feelings of incompetence on the part of the individual with dementia, which might lead to serious breakdowns of mutual face in the interaction. When the individual is aware of his/her challenges, there might be attempts to offer excuses for those actions that do not live up to expectations (Robinson, 2016). Brown and Levinson (1987) 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.

Although reading on the subject of language abilities and interaction primarily demonstrate similarities between PWA and PWD, a conclusion is that there might be a number of differences between the trouble domain and the interactional consequences. Thus, we can assume that we will find instances of trouble connected to linguistic versus cognitive issues, and that these will be dealt with differently. The method of identifying trouble and repair has proven to be a useful step in understanding conversation. In this article, we suggest that comparisons of interactional trouble could give insights on the language assessment process, and add to the body of knowledge surrounding potential intervention-focused intervention and support towards for and PWD.
Aim

In this study, we will contribute to the emergent discussion about interaction in aphasia and dementia. The aim was to investigate instances of trouble in conversations involving PWD, PWA and speech and language pathologists (SLPs), with a particular focus on trouble domain and interactional consequences.

Methods and procedure

Design

The analyses conducted in this study build on research approaches dealing with talk-in-interaction (Linell, 1998). The 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 (Linell, 1998, p. 187). The analyses were also informed by CA as well as quantitative approaches. A two-tailed t-test was used for the statistical comparisons between the observations among the PWA and the PWD. Data was collected as part of a larger research project, which received approval from the Regional Board of Ethics, Sweden (dnr 2012/443-31).

Participants

Ten PWA (Table 1) and 10 PWA (Table 2) were recruited for this study from a day-care centre for PWA or from two day-care centres for PWD. The participants needed to comprehend aphasia-friendly information about the study in order to give their consent. All the participants were supposed to be living in ordinary housing and attending day-care activities, thus forming a “functionally homogeneous” group. An exclusionary criterion for PWA was a known neurodegenerative disease heavily associated with language difficulties or memory problems, and a corresponding criterion for PWD was known as aphasia. This information was gathered from medical records or from the municipalities’ dementia contact nurses, attached to the day-care centres for PWD. All PWA had previous or ongoing SLP services, whereas none of the PWD had any previous contact with an SLP.

Furthermore, five SLPs were involved in the study. They all had at least 5 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.

Materials and procedures

Data were collected either at the day-care centres or, in two cases, in the participants’ homes (depending on participant preferences). The SLPs were told to engage in a conversation that resembled any small talk with a patient at the beginning or the end of a session in the clinic. Other than that, no topics were suggested. Eventually, the dyads tended to focus on the participants getting to know one another, since most of them were meeting for the first time. The conversations were at first initiated by the SLP, but
Table 1. 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>MMSE score</th>
<th>Severity of aphasia (according to medical journal)</th>
<th>Previous occupation</th>
<th>Education</th>
<th>Clinical description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 (SLP1)</td>
<td>56</td>
<td>F</td>
<td>Expressive</td>
<td>29/30</td>
<td>Mild</td>
<td>Technical operator</td>
<td>Upper secondary school</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>27/30</td>
<td>Moderate</td>
<td>Saw mill worker</td>
<td>Secondary school University</td>
<td>Apraxia of speech</td>
</tr>
<tr>
<td>A3 (SLP3)</td>
<td>69</td>
<td>M</td>
<td>Receptive</td>
<td>18/30</td>
<td>Moderate</td>
<td>Medical doctor</td>
<td>University</td>
<td>Very fast speech rate</td>
</tr>
<tr>
<td>A4 (SLP3)</td>
<td>56</td>
<td>F</td>
<td>Expressive</td>
<td>6/30</td>
<td>Severe</td>
<td>Industry operator</td>
<td>Upper secondary school University</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>6/30</td>
<td>Moderate-severe</td>
<td>Officer</td>
<td>Upper secondary school University</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>15/30</td>
<td>Moderate</td>
<td>Nurse’s assistant</td>
<td>Secondary school</td>
<td>Spanish as first language</td>
</tr>
<tr>
<td>A7 (SLP1)</td>
<td>78</td>
<td>M</td>
<td>Expressive</td>
<td>23/30</td>
<td>Moderate-severe</td>
<td>Travel agency manager</td>
<td>Upper secondary school University</td>
<td>Very slow speech rate</td>
</tr>
<tr>
<td>A8 (SLP1)</td>
<td>60</td>
<td>M</td>
<td>Receptive</td>
<td>17/30</td>
<td>Moderate</td>
<td>Machine operator</td>
<td>Secondary school</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>10/30</td>
<td>Severe</td>
<td>Machine operator</td>
<td>Secondary school</td>
<td>Apraxia of speech</td>
</tr>
<tr>
<td>A10 (SLP1)</td>
<td>98</td>
<td>F</td>
<td>Expressive</td>
<td>24/30</td>
<td>Mild-moderate</td>
<td>Shop assistant</td>
<td>Secondary school</td>
<td>Lives in own housing without any support</td>
</tr>
</tbody>
</table>

gradually several of the participants took a more active role in initiating topics. On average, the length of the conversations was 20 minutes. All the conversations were video- and audio recorded, with the researcher starting the equipment before leaving the room.

All the conversations were broadly transcribed by the first author and the transcripts and recordings were then repeatedly examined, with a particular emphasis on instances of trouble. In order to capture equivalent data from each participant, the first 10 minutes of each conversation were chosen for further analyses, and transcribed in a detailed way according to Conversation Analytical (CA) principles (Goodwin & Heritage, 1990). All the transcriptions were carefully scrutinized, and cases identified as instances of trouble were coded and calculated by the first author. The definition of trouble was “anything in the exchange of information perceived and made relevant as a problem of speaking, hearing, or understanding” (Schegloff et al., 1977), and thereafter handled during the following conversation. Adjacent attempts to solve the problematic issue were included in that particular instance of trouble. The reason for choosing this strategy of looking at the instances of trouble as "idea-units" was the interest in the ability to get a message across, rather than in analysing each trouble indicating behaviour separately. Some of the participants’ speech was characterized by numerous word and syllable repetitions and long pauses, which further influenced this decision. Due to these matters, isolated halts in the conversations due to reprise/minimal dysfluency were not counted as instances of trouble in the present study. Moreover, the number of turns and words produced by the PWA/PWD were counted in each 10-minute excerpt. In the
Table 2. Characteristics of participants with dementia (PWD).

<table>
<thead>
<tr>
<th>Participant (SLP)</th>
<th>Age</th>
<th>Sex</th>
<th>Dementia diagnosis</th>
<th>MMSE score</th>
<th>Level of cognitive impairment (according to MMSE score)</th>
<th>Previous occupation</th>
<th>Education</th>
<th>Clinical description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1 (SLP1)</td>
<td>73</td>
<td>F</td>
<td>Alzheimer's</td>
<td>26/30</td>
<td>Mild</td>
<td>Receptionist</td>
<td>Secondary school</td>
<td>Little disease insight</td>
</tr>
<tr>
<td>D2 (SLP1)</td>
<td>75</td>
<td>F</td>
<td>Alzheimer's</td>
<td>18/30</td>
<td>Severe</td>
<td>Industry worker</td>
<td>Secondary school</td>
<td>Slow speech rate</td>
</tr>
<tr>
<td>D3 (SLP4)</td>
<td>79</td>
<td>M</td>
<td>Alzheimer's</td>
<td>8/30</td>
<td>Severe</td>
<td>Teacher</td>
<td>University</td>
<td>Talkative and makes a lot of jokes in conversation</td>
</tr>
<tr>
<td>D4 (SLP4)</td>
<td>74</td>
<td>M</td>
<td>Mixed dementia</td>
<td>9/30</td>
<td>Severe</td>
<td>Welder</td>
<td>Secondary school</td>
<td>Hungarian as first language</td>
</tr>
<tr>
<td>D5 (SLP4)</td>
<td>72</td>
<td>M</td>
<td>Alzheimer's</td>
<td>18/30</td>
<td>Severe</td>
<td>Repairer (Janitor)</td>
<td>Upper secondary school</td>
<td>Very active, visits gym several times a week</td>
</tr>
<tr>
<td>D6 (SLP1)</td>
<td>72</td>
<td>M</td>
<td>Alzheimer's</td>
<td>18/30</td>
<td>Severe</td>
<td>Marketer/teacher</td>
<td>University</td>
<td>Slow speech rate</td>
</tr>
<tr>
<td>D7 (SLP1)</td>
<td>75</td>
<td>M</td>
<td>Alzheimer's</td>
<td>13/30</td>
<td>Severe</td>
<td>Forester Farmer</td>
<td>University</td>
<td>Uses hearing aid Tested in his own home, dependent on his wife</td>
</tr>
<tr>
<td>D8 (SLP1)</td>
<td>83</td>
<td>M</td>
<td>Alzheimer's</td>
<td>22/30</td>
<td>Severe</td>
<td>Farmer</td>
<td>Secondary school</td>
<td></td>
</tr>
<tr>
<td>D9 (SLP5)</td>
<td>79</td>
<td>M</td>
<td>Vascular dementia</td>
<td>13/30</td>
<td>Severe</td>
<td>Electrician (own firm)</td>
<td>Upper secondary school</td>
<td>Sensible and close to tears</td>
</tr>
<tr>
<td>D10 (SLP5)</td>
<td>84</td>
<td>M</td>
<td>Alzheimer's</td>
<td>17/30</td>
<td>Severe</td>
<td>Truck technician</td>
<td>Secondary school</td>
<td>Expresses a lot of doubt regarding his answers</td>
</tr>
</tbody>
</table>

data, lexico-syntactic features were the most important turn-yielding cues. Several pauses, which in typical speech would have been considered as potential transition relevant places, were interpreted as parts of turns, taking the speakers’ overall speech, such as speech-rate, prosody, and syntactic projections, into account.

Each instance of trouble was thereafter categorised by trouble domain: as connected to either primarily linguistic or cognitive issues. Instances of trouble that were categorised as connected to cognitive issues were those clearly associated with problems of semantic memory, including both autographically important facts as well as more “neutral” details, and those associated with episodic memory. These instances were identified by e.g., comments made by the PWD/PWA as being related to forgetfulness “I can’t remember right now”, empty speech, and help-seeking behavior. Instances of trouble that were classified as connected to linguistic issues were those involving several word repetitions, problems with pronunciation and those requiring conversational support from the SLP to reach an answer. Instances of trouble associated with lexical memory, manifested by e.g., comments like “what do you call that”, word searches, or paraphasias circumlocutions and incoherent but understandable answers, were classified as connected to linguistic issues. Finally, instances of trouble involving non-verbal contributions, e.g., iconic gestures or those related to quiet speech or imprecise articulation were added to the linguistic trouble domain. A few instances of trouble were difficult to categorize due to a lack of clues or context, and were therefore labelled as “borderline cases”. 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 (Orange et al., 1998). Whilst the first author made the initial categorization of the trouble domain, the second, and the third authors independently inspected each instance of trouble and independently classified the examples, being blinded to whether the corresponding participant speakers had aphasia or dementia. The level of inter-rater agreement was 85%. When ambiguities occurred concerning the data, the trouble domain was discussed, and a decision was then made by consensus.

The features of the instances of trouble and the trouble domain are presented in the results section. The examples inserted were selected due to how they demonstrate the specific organisational features in focus, and most of them are representative of a larger set of examples. In this article, all the examples have been idiomatically translated from Swedish into English. The keys to the CA transcription conventions (1) and transcriptions in the original language (2) are provided in Appendices.

**Results**

An overview of the number of turns and the instances of trouble is presented in Table 3. The 157 instances of trouble were almost evenly distributed between the clinical groups. In contrast with trouble solving in “typical speakers”, a majority of the problematic issues stretched over several turns. This has previously been demonstrated in several studies involving both PWA and PWD as well as persons with speech disorders (Milroy & Perkins, 1992; Orange et al., 1996; Saldert, Fern & Bloch, 2014). Instances of trouble were for the most part, initiated by the PWD/PWA; thus keeping to the general rule of a preference for self-initiated repair (Schegloff et al., 1977). The total number of turns differed slightly, as the PWA produced marginally more turns than the PWD.

**The total number of turns dealing with trouble**

Despite similar numbers of turns and troubles, there were significantly ($p = 0.049$) more turns spent on trouble-solving in the conversations involving the PWA: 32% as compared to 20% in the conversations involving the PWD. Example 1 illustrates a typical instance of trouble involving a PWA.

*Example 1, Conversation between A6 and SLP3*

01 A6: he wants (3.0) he wants eh to learn to no (. ) he wants to
02 learn to *argh* (3.0) (5.0) oh I don’t know *yes yes eh:*

<table>
<thead>
<tr>
<th></th>
<th>Total no. of turns</th>
<th>Total no. of troubles</th>
<th>Total no. of turns dealing with trouble</th>
<th>Trouble connected to linguistic issues</th>
<th>Trouble connected to cognitive issues</th>
<th>“Borderline cases”</th>
<th>Turns dealing with trouble: linguistic</th>
<th>Turns dealing with trouble: cognitive</th>
<th>No. of trouble unsolved Ling./cog./bord.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWA</td>
<td>1968</td>
<td>81</td>
<td>629</td>
<td>80</td>
<td>1</td>
<td>0</td>
<td>626</td>
<td>3</td>
<td>7/1/0</td>
</tr>
<tr>
<td>PWD</td>
<td>1729</td>
<td>76</td>
<td>348</td>
<td>42</td>
<td>31</td>
<td>3</td>
<td>156</td>
<td>172</td>
<td>5/10/2</td>
</tr>
</tbody>
</table>
In this sequence, A6 makes the trouble relevant in line 01–02. He thereafter makes a meta-comment, “whatissitcalled”, in line 03, something that has previously been described in PWD as a strategy for excusing their difficulties in conversation (Watson et al., 2010). The comment indicates that A6 is capable of reflecting upon the structure of language (Hamilton, 2019). SLP3 accepts and states that A6 knows what to say but “can’t get it out”. The SLPs’ explicit explanations of the cause of the problematic issue are seen on several occasions in the data involving the PWA. Even though A6 insists that he is not able to respond in line 08, SLP3 provides him with a candidate answer in the following line. A6 accepts this and, after another candidate answer in line 12, he reaches a concluding response and the problematic issue is resolved after nine turns. When instances of trouble are connected to linguistic issues, the interlocutors’ mutual assumptions about the words and their meaning, their shared common ground, might contribute to the resolution (Clark, 1996). However, the support from the SLP in example 1 was evidently a pre-requisite for the solution.

Example 2 presents a somewhat different scenario. As it begins, SLP1 asks about D2’s previous occupations.

Example 2, Conversation between D2 and SLP1

01 SLP1: did you work somewhere else after that
02 D2: yes: ((sighs)) “no don’t know that”
03 SLP1: no is it hard to remember or
04 D2: yes

Sighing and saying that one “doesn’t know” are different ways of announcing one’s cognitive problems (Hamilton, 2019). Instead of offering candidate answers, yes/no alternatives or posing further questions in example 2, SLP1 simply asks if it is hard to remember in line 03. D2 confirms this, and SLP1 subsequently initiates a new topic in the following turn. Hamilton (2019) argues that the most face-threatening memory problems for PWD relate to basic autobiographical facts within the semantic memory, such as the fact of where one has worked. Autobiographical facts are often in focus in many conversational studies involving PWD, and it has previously been described that aspects of identity such as values, norms, and personal stance in relation to past events, tend to be overlooked (Hydén & Örulv, 2009). Other conversational data on couples with dementia demonstrate that PWD might rely on their spouses to recall autobiographical facts (Nilsson, 2017). When interlocutors are not familiar with one another, like D2 and SLP1, they do not share
personal common ground, making this kind of trouble solving particularly challenging (Clark, 1996). Example 2 is representative for several of the instances of troubles considered unsolved among the PWD. In example 1, one might discuss the fact that SLP1 drops the problematic issue rather quickly, and this also seems to be a recurring phenomenon in the conversations involving the PWD.

**Trouble domain**

In the data from the present study, the majority of the instances of trouble were categorised as being connected to linguistic issues: 99% of the troubles involving the PWA and 55% of the troubles involving the PWD. A few instances involving PWD, 4%, were categorised as “borderline cases”, thus leaving 41% of the instances of trouble among the PWD within the cognitive trouble domain. The quantitative analyses demonstrated that these differences between PWA and PWD were significant (linguistic: \( p = 0.019 \); cognitive: \( p = 0.006 \)). An average of 7.8 turns were spent on each linguistic-oriented trouble involving PWA, whereas the equivalent number for PWD was 3.7 turns/trouble. For instances within the cognitive trouble domain, 3 turns were spent on the PWA’s sole example, whereas an average of 5.5 turns were spent on each cognitively oriented trouble among the PWD.

**Instances of trouble connected to linguistic issues**

An instance of trouble that is categorised in the linguistic trouble domain is presented in example 3. It starts with a communicative initiative from A9.

*Example 3, A9 and SLP3*

01 A9: ve se thateh: that eh ((taps pen against paper)) () and
02 pulled pulled pulled aeh ((taps)) neh: and then
03 SLP3: mm
04 A9: tha tshu↑ tshu↑ tshu↑ tshu↑ tshu↑ tshu↑ tshu↑ tshu↑
05 SLP3: well () was that anyone wo said that
06 A9: yes but se “tshu↑ tshu↑ tshu↑ tshu↑” ((pushes imaginary button))
07 SLP3: did you larm
08 A9: yes
09 SLP3: pushed
10 A9: yes

The combination of A9’s sounds, finger tapping, pitch, and timing, in line 04 and 06, helps to resolve the problematic issue. In order to use these kinds of non-verbal signals efficiently, the individual needs rather well-preserved conceptual knowledge for what they want to say, in spite of the absence of lexical representations (Bayle & Tomoedea, 2014). In the data from the present study, both A9 and A4 demonstrate functional use of non-verbal communication. There are no such examples among the PWD, instead instances of trouble within the linguistic domain are primarily manifested through word-searches, navigated in a variety of ways. An example of this is seen in example 4.

*Example 4, conversation between D4 and SLP4.*

01 D4: and marie works as (1.0) works at (2.0) dedede your daughter
02 ohohoh: sososo eh what’s it called () tusi no that’s in the office
03 SLP4: mhm  
04 D4: works then and (3.0) what’s it called (.) well works in (2.0) yes she is  
05 (2.0) she is nurses  
06 SL4: okay†  

D4 has clear word-finding difficulties, with a speech characterised by syllable-, word-, and phrase repetitions as well as several neologisms. D4 is bilingual and at first glance, appropriate/involuntary code switching was suspected in several cases on both word- and sentence level, something that has been previously observed in bilingual dementia subjects (Friedland & Miller, 2010). An example of this is his use of the word “tusi” in line 02. A consultation with a professional interpreter revealed that the coherent utterances in D4’s native tongue are at least as problematic as his Swedish, and that the example in line 02 is a probable neologism. Although there are instances of trouble connected to linguistic origin among all PWD, D4 and D6 stand out among the PWD for their high number of troubles within the linguistic domain, something that the interactional analyses reveal. D4 seems to have rather well-preserved language comprehension and appears to be able to notice and correct many of his problematic utterances. According to his medical journal, D4 has “mixed dementia”, which might explain his demonstration of what resembles more language-based frontotemporal dementia symptoms. However, D4, along with D3, are the PWD with the lowest MMSE scores. Equivalent results are observed in A4, A5, and A9, the PWA with the most severe linguistic problems. One might discuss whether this is a sign of cognitive impairment per se, or if the results reflect the impact of linguistic problems on the assessment with a linguistically oriented MMSE, an issue previously discussed by the authors of the present study (Myrberg et al., 2020).

Although the problematic issue in example 4 was clearly resolved, the issue of whether an instance of trouble can be considered resolved/unsolved is not entirely straightforward. In the present study, the resolution of a conversational trouble reflects the outcomes of the repair process, inspired by the work of e.g., Orange et al. (1998). Example 5 is an example of joint acceptance, representative for many of the examples involving PWA in the present study.

**Example 5, Conversation between A8 and SLP1**

01 SLP1: how are things (.) you are ret- you are retired now after your  
02 stroke [or do you] work ((writes “retired” and “work” in her note  
03 pad))  
04 A8: [no no] I am als- I have no it have oh don’t know (12.0) sick pay  
05 yes  
06 SLP1: ((writes “sick leave”)) so you don’t work anything anymore  
07 ((points at “retired”))  
08 A8: no this one ((points))  
09 SLP1: you are on sick leave  
10 A8: yes  
11 SLP1: ((circles “sick leave”)) yes indeed

The participants have just met and this particular instance takes place early on in the conversation. In line 02, SLP1 provides written alternatives. Thereafter, A8 declares that he does not know, followed by a substantial pause. When he finally
says “sick pay”, SLP1 once again turns to her note pad in line 06 to seek A8’s confirmation in the subsequent turns. SLP1’s perceptiveness, manifested by her use of supported conversation and awaiting and mirroring of A8’s answers, are presumable key factors for the resolution of this problematic sequence.

**Instances of trouble connected to cognitive issues**

Example 6 presents a representative case of an instance within the cognitive trouble domain. As it begins, SLP1 asks D6 about a basic autobiographical fact.

*Example 6, conversation between D6 and SLP1*

01 SLP1: but you also have grandchildren or
02 D6: yes; (1.) *now I better start thinking about the circumstances*
03 [((laughs))]
04 SLP1: [((laughs))]
05 D6: yes
06 SLP1: yes (6.0)well it doesn’t matter if you don’t remember (.) that at the
07 moment
08 D6: no
09 SLP1: yes because I know that *you know* deep inside
10 D6: yes
11 SLP1: yes ((nods))
12 D6: but it (3.0) it’s very tough

In line 02, D6 vaguely announces his cognitive problem, and follows this with a laugh. The use of laughter in this situation can be discussed as a strategic part of conversation (Wilson et al., 2007). It is possible that D6 uses this as a tool for mitigating his embarrassment during a display of his linguistic problems (Kovarsky et al., 2009). SLP1 dismisses the need for the information requested, followed by a comment in line 09, which might represent a probable intention to enhance D6’s positive face. Based on D6’s remark “it’s very tough” in line 12, it seems like SP1’s attempt was fruitless and in the following turn, she changes the topic. Among the PWD, a majority of the instances of trouble left without joint acceptance were within the cognitive trouble domain. We have previously discussed that the lack of common ground on a personal level makes this kind of trouble-solving challenging. However, as previously mentioned, D6 displays severe expressive problems in conversation. This raises the question of whether mutual understanding could have been reached, if SLP1 had provided the same amount of support and persistence as in some of the previous examples.

**Discussion**

The results of the present study indicate that instances of trouble seem to occur frequently, and equally often, in conversations involving PWD and PWA. At first glance, many of these instances seem to be rather similar, regardless of whom they involve. However, a more detailed analysis revealed that there are in fact several differences between PWA and PWD regarding trouble domain and the interactional consequences of the problematic issues.

First, we have shown that the majority of the instances of trouble may be categorised as being connected to linguistic issues as defined in this analysis. The finding that 99% of
the instances of trouble among the PWA were connected to primary linguistic issues was relatively expected, but the fact that 55% of the instances of trouble among the PWD were also classified as being linguistic was not an obvious finding. These results contribute to the picture of lexical retrieval problems in the progression of dementia (e.g., Kempler & Goral, 2008) and, as discussed by Kavé and Goral (2018), align well with previous findings about problems with word retrieval in aphasia. In our analyses of instances of trouble associated with lexical memory among the PWD, “knowledge of words, their form, and meaning” (Bayle & Tomoeda, 2014, p. 17) seems to be the primary trouble-source, rather than the underlying concepts of the words. A previous study demonstrates that persons with AD lose specific attributes of a concept before more general attributes (Mårdh et al., 2013). However, there are no examples of non-verbal communication among the PWD with more severe linguistic problems, something that requires well-preserved lexical representations. Lexical impairment in PWD has been discussed as being associated with deterioration of conceptual organisation, whereas sentence- and discourse-level deficits are more associated with impairments in executive functions (Kempler & Goral, 2008). In the data from the PWD in the present study, conversational troubles on sentence and discourse level are not as recurrent as conversational trouble associated with lexical memory.

Secondly, we found that although the number of problematic issues was equivalent among PWA and PWD, the trouble-solving involving PWA took up almost twice as many turns as the trouble-solving involving PWD. When the number of turns was distributed by trouble domain, it was evident that the number of turns spent on each instance of trouble connected to linguistic issues was significantly higher for PWA (7.8) than for PWD (3.7). One potential reason for the significantly higher number of turns among the PWA might be that PWA have more severe linguistic deficits and more complex word-finding problems than the PWD. The PWD seem to manage to navigate through their word-finding problems by circumlocutions and repeated attempts before finding the word, hence leading to joint acceptance (and making non-verbal communication redundant). Another plausible reason for the uneven distribution of turns may have to do with the interlocutors’ shared common ground. Since linguistic deficits are (or, at least, are expected to be) the primary cause of the interactional trouble in PWA, the SLPs can rely on their shared knowledge of language in order to manage the trouble. The SLPs in the present study were very perceptive in many of the conversations involving PWA, and they asked supplementary questions, provided written options and posed yes/no questions. This behaviour results in a large number of turns connected to each instance of trouble. This is also seen in some examples involving PWD, but to a far lesser extent, although 55% of the troubles involving PWD are connected to linguistic issues. At least two PWD demonstrate severe conversational difficulties; however, there are no examples of explicit cues such as written alternatives and similar aids in their conversations with the SLPs. It is reasonable to assume that some of the PWD might have benefitted from similar support. The uneven distribution of support provided by the SLPs might be a result of their professional culture and experience (e.g., practice of intervention techniques towards PWA) and their preconceived notions about PWA and PWD.

In our conversational data, instances of trouble connected to cognitive issues are more difficult to resolve than trouble within the linguistic trouble domain. A reason for this might be the participants’ lack of shared common ground on a personal level.
By contrast with the linguistically oriented troubles, the interlocutors in our material, on many occasions, face an almost unlimited number of plausible solutions to the troubles in the cognitive domain. This makes the required interactional work towards mutual understanding challenging. One might suppose that this challenge could in fact have resulted in more interactional work related to each trouble in the conversations, but on the contrary, it appears that the participating SLPs are more eager to let go of the subject (as demonstrated in example 6). In conversations with family, friends and other persons who share common ground with the PWDs on a personal level, it is possible that instances of trouble connected to cognitive issues are less frequent and resolved more easily where autobiographical facts are concerned. However, as the disease progresses, the PWDs’ extensive common ground slowly decreases, even with close family members (Nilsson, 2017). Reaching this point, it might be the case that frustration over the loss of shared memories creates barriers in conversation with the close family member that is not present with an unfamiliar conversational partner.

In the conversations analysed, there are several examples of the SLPs making comments to the PWA with probable implications aimed at enhancing their positive face, e.g., confirming that the PWA knows the answer but “can’t get it out”. Although PWD are involved in many instances of trouble within the linguistic domain, there are no such examples of face-enhancing comments from the SLPs in the conversational data. When it comes to troubles connected to cognitive issues, there are several examples (with an exception in example 6) of the SLPs commenting on the PWDs’ memory problems (as seen in example 2), followed, in many instances, by a topic shift. This kind of dismissing behaviour, when a person is struggling to come up with a personally important piece of information, has previously been discussed as particularly face-threatening. Although it might be impossible to resolve a problematic issue, it is important that the conversational partner of the PWD at least tries before changing the topic. Hamilton (2019) suggests that instances of trouble connected to cognitive issues seem to be more associated with embarrassment, frustration, and threat to positive face than those with a lexical origin. Therefore, SLPs (and other communication partners of PWD) might consider using more face-enhancing comments in relation to communicative breakdowns due to cognitively oriented trouble in interaction with PWD. It might be the case that the SLPs adjust their conversational style and problem-solving depending on their “knowledge” of the aetiology of what is the cause of the instances of trouble (based on diagnosis). On the other hand, it is also plausible that SLPs are more willing than the average conversational partner to accept repair attempts in order to maintain a polite conversation and save face, something that has previously been described for care staff (Brown & Levinson, 1987).

Even though turns, common ground and trouble-solving are treated as features of language, they are really features of the joint activity in which language is being used. In aphasia, there has been a shift in attention from language impairments to communication problems (Prins & Bastiaanse, 2004). One might discuss whether a more conversational approach to the linguistic problem associated with dementia would be valuable. Even though trouble domain and associated interactional consequences are of interest to researchers and clinicians, this has limited value to the individual who struggles with problems in conversations.
There has been little focus on what PWD and PWA have in common. It is beneficial to shift the focus away from the participants’ cognitive or linguistic skills (Hydén, 2014), and to focus instead on “the cognitive and communicative ecosystem”; the resources of others and physical prompts in the environment. Thus, it is important for the significant others and/or carers of PWA and PWD to try to facilitate casual conversations, something that SLPs are probably rather good at, as previously described by Müller and Mok (2014). In our study, the collaborative process of conversation is clearly demonstrated; it is clear that the actions of the conversational partner can scaffold the conversational ability of the PWA/PWD, which in turn can support their well-being and identity.

Several limitations of the present study deserve to be acknowledged: Certainly, it is challenging to try to distinguish between instances of trouble connected to linguistic versus cognitive issues, especially given the less than straightforward interface between language and cognition described in the introduction to this study. Furthermore, the sample of participants in this study is too small to draw strong conclusions. Therefore, our findings need to be interpreted with caution and further investigations are required in order to obtain conclusive results. An additional constraint is that while the present study included PWD with different types of dementia, most studies are limited to one type, particularly Alzheimer’s Disease. The reason for not limiting the participants’ dementia diagnosis was the knowledge that many PWD have mixed forms of dementia, and that there may be an uncertainty about the clinical diagnosis (Fischer et al., 2017). Furthermore, one should be aware that the informal conversations between the SLP and PWD in the present study are not automatically transferable to the PWD’s conversations in their everyday lives. To a large extent, this is due to the participating SLP’s experience of communication disorders and their potential use of facilitating strategies and support in interaction.

Conclusion

The results of the present study demonstrate that PWA and PWD have a lot in common in terms of instances of trouble and their interactional consequences. This aligns well with our previous findings that PWA and PWD present similar results on both standardised language assessments and on the cognitive screening tool MMSE. However, the conversational analysis reveals that whilst the vast majority of interactional troubles among PWA are connected to linguistic issues, a large share of communicative troubles in conversation involving PWD can be categorised as being connected to cognitive issues. Although this distribution needs to be further explored, it adds important information to the discussion about communicative problems in PWD, which, in the literature, focuses primarily on lexical problems. Instances of trouble connected to linguistic issues has an “advantage” over most cognitively oriented troubles, since the interlocutors often share common linguistic ground; hence, these communicative troubles generally require fewer turns in order to be resolved, which is also the case in the data of the present study. The fact that less support seems to be provided to the PWD in the conversations might be partially associated with preconceived notions about interactional trouble in PWA and PWD alongside the SLPs’ professional culture and experience, which might lead to unintended consequences in terms of face-threat and negative feelings. One potential reason for the significantly higher number of turns on the part of the PWA might be that PWA have more
severe linguistic deficits and more complex word-finding problems than the PWD, and that the PWD have easier access to their vocabulary. Spontaneous speech analyses of PWA and PWD have the advantages of being ecologically valid, meaning that they assess a person’s communicative ability in daily life. Finally, the analysis of instances of trouble is an area considered to be beneficial when applied to communicative assessments and interventions for PWA and PWD.

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