MOSAICS FALL APART DIFFERENTLY: EXPLORING VARIATION IN COMMUNICATION BREAKDOWN PATTERNS IN THREE APHASIC PATIENTS

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SUMMARY

Background: In addition to linguistic impairments, the cognitive underpinnings of pragmatic abilities in aphasic individuals can be severely compromised. Impairments include incoherent discourse and other speech organization deficits. At the same time, preserved pragmatic patterns reveal communicative abilities that can go unnoticed if only standardized screening tests are used. Conversational Partners also appear to play a role in mitigating compromised linguistic ability. Although some tools assessing the communicative abilities of neurological patients have been recently employed, the question of whether pragmatic performance declines in consistent patterns remains poorly understood.

Material/ Methods: We applied the Pragmatic Evaluation Protocol – Revised (PREP-R) to video-recorded interviews of Greek individuals with aphasia, presented here as separate case studies. The tool offers a detailed account of pragmatic ability across 29 distinct categories and consists of three distinct subcomponents, namely enunciative pragmatics, textual pragmatics, and interactional pragmatics.

Results: Our results showed considerable variation in the performance of each patient and across our three aphasic patients. We also found that the role of the Key Conversational Partner was critical to effective communication, in line with previous research.

Conclusions: As the communication repertoire of each of our participants was found to be highly idiosyncratic, we propose that further research should shift away from the mere evaluation of isolated verbal abilities.

Key words: communicative abilities, aphasia, pragmatics

INTRODUCTION

Communication extends beyond the mere processing of verbal input, as speech is analyzed simultaneously via both linguistic and extralinguistic channels (Bara, 2010). Individuals with aphasia often encounter difficulties not only with linguistic but also extralinguistic layers of communication. For example, the output of patients with aphasia often seems to deviate from what is considered coherent discourse (the quality of binding groups of sentences into a meaningful whole; Linnik, Bastiaanse & Höhle, 2016), as they interrupt themselves and produce shorter utterances often at a slower speech rate (Andreetta, Cantagallo & Marini, 2012). As communication is by definition a social process, the role of the 'receiver' of a message should be taken into account in addition to the message conveyed (Mańko, Markiewicz, Chantsoulis, Rasmus, Łukaszewska, and Mirska, 2012). Individuals with aphasia may be unable to self-repair their utterances without the assistance of a conversational partner (Barnes, 2016). Research on aphasia demonstrates the importance of the participation of a Key Conversational Partner (KCP) in conversations (Prutting & Kirschner, 1983; Kagan, 1998; Whitworth, Lesser & Perkins, 1997; Lyon, 1989; Turner & Whitworth, 2006). Previous studies have introduced rehabilitation and assessment tools that make extensive use of a KCP, among which are the Conversation Analysis Profile for People with Aphasia (CAPPA; Whitworth, Lesser & Perkins, 1997), and Supporting Partners of People with Aphasia in Relationships and Conversation (SPPARC; Lock, Wilkinson & Bryan, 2001). The PerLA corpus (Gallardo Paúls & Moreno-Campos, 2005a; 2005b) also analyzes the transcripts of video-recorded conversations of individuals with fluent and non-fluent aphasia. The use of video recording and the participation of the interviewer and the KCP can add new insights into the patient's conversational behavior in a natural environment.

Despite efforts to explore the discourse production of neurologically compromised patients, less research has been conducted in comparison to that involving healthy participants (Linnik, Bastiaanse & Höhle, 2016) and pragmatic assessment rarely forms part of rehabilitation (Arcara & Bambini, 2016).

Hence, as the evaluation of aphasics' linguistic performance mainly stems from isolated verbal features, a large part of the communicative repertoire of these patients remains unexplored. A case of a neurological patient with anomia reported in Kindell, Sage, Keady and Wilkinson (2013) clearly demonstrates that neuropsychological assessment can point to debilitating communication difficulties, but an individual might still employ compensatory strategies that can dramatically enhance their communicative ability in a natural conversation. There is, therefore, a need to explore the full range of pragmatic abilities of neurological patients in order to appreciate their communicative abilities.

The present work aims at determining whether pragmatic abilities decline as a whole in patients with aphasia and whether similar patterns of pragmatic impairments are observed across different patients. The study primarily assessed the pragmatic abilities involved in narrating a story or providing instructions to

the interlocutor, through three separate case studies. The use of PREP-R aimed to shed light on the role of the KCP in assisting patients with producing speech by completing, repairing or initiating parts of conversations. We also sought to address whether there would be differences between the KCP and third parties in terms of interpreting a patient's output. In general, we set out to explore how communicative difficulties would manifest themselves across individuals with various etiologies and cognitive/speech-language comorbidities.

CASE STUDIES

Three patients took part in the study; two men (G and B) and one woman (E). E, 68 years old, had suffered an aneurysm in the left hemisphere and underwent surgery five years before the testing session. Her first symptoms were global aphasia with right hemiparesis. Her short-term memory was also affected. At the time of data collection, she showed symptoms of anomia. E was a high-school graduate, worked as a freelance accountant, and was retired at the time of data collection. Her KCP was her husband and the testing session lasted 15 minutes. G was a 36-year-old civil engineer with a medical history of TBI ten years prior to data collection. He presented Broca's aphasia, dysarthria, spastic tetraparesis, general retardation and affective disorders. G's KCP was his brother and their conversation lasted 11 minutes. B, a 39-year-old man, had suffered an ischemic stroke due to a middle cerebral artery infarction in his left frontal lobe five years before testing. His symptoms included Broca's aphasia, right hemiparesis, and verbal apraxia. He was a high-school graduate and worked in a private company. B's KCP was his wife and his interview took 20 minutes. None of the participants reported premorbid medical conditions or a history of substance or alcohol abuse.

METHOD

We employed the Pragmatic Evaluation Protocol – Revised (PREP-R, Fernández Urquiza, Díaz Martínez, Moreno Campos, López-Villaseñor & Simón López, 2015; see Gallardo Paúls, 2006; 2009; in Greek: Πρωτόκολλο Εκτίμησης Πραγματολογίας-ΠρΕΠ) in order to look at the pragmatic abilities of the three aphasic patients across various pragmatic categories. This comprehensive assessment tool stems from a series of studies conducted on Spanish people with aphasia (the PerLA corpus; Gallardo Paúls & Moreno-Campos, 2005a; 2005b), and has been revised for measuring accuracy purposes (see Gallardo Paúls, 2008 for the original version and Fernandez-Urquiza et al., 2015 for the revised version). PREP-R afforded us the opportunity to perform an analysis based on the examination of the transcripts of conversational interaction we have contributed to a database. The first subcomponent of PREP-R (enunciative pragmatics) examines the ability of patients to achieve their communicative purposes, regardless of lexical and grammatical failures. In the second subcomponent (textual pragmatics), participants are required to produce coherent stories and construct rational arguments. The third subcomponent (interactional pragmatics) looks at

the ability of patients to take turns, participate sufficiently in verbal exchanges, and employ non-verbal communication strategies. This tool has only been used in a handful of studies and –to the best of our knowledge– has not been used on Greek individuals with aphasia before. We recently employed the tool to assess pragmatic abilities in children before and after sleep deprivation; currently written up in an article under review.

To design the Greek version of PREP-R, we used both forward and backward translation and the authors of the study examined the compatibility of the two versions. Finally, a consensus study with independent investigators was carried out and resulted in them approving the Greek version. All conversational data were transcribed using the CHAT conventions (MacWhinney, 2000). The transcripts were linked to the videos to create real-time transcriptions and were uploaded to a platform. After a thorough observation of the videos, all yes/no ratings were given separately by three investigators and the results were compared and compiled together.

Procedure

All sessions took place in the investigator's office and lasted approximately 10 to 20 minutes. Written informed consent was obtained from the next of kin, i.e., the spouses and brother that participated in the study as Key Conversational Partners. Their wellbeing and confidentiality were protected by the researchers and they were treated in accordance with the Declaration of Helsinki. Concerning the assessment procedure, items were rated with "yes" when the participant demonstrated the corresponding pragmatic ability at least once during the conversation and "no" if they were absent or misused. Finally, items were rated as "not observed" when the participant did not have the chance to use them. Semi-structured interviews were conducted, and included both an emotionally charged condition, in which the participants were asked about the incident (the stroke or TBI), and an emotionally neutral condition, in which the participants described a procedure. The second condition also included a personal narrative and the participants were asked questions about their daily life, hobbies, and family. Although each conversation developed uniquely, the investigator put effort in discussing similar topics across the three interviews. Including an unfamiliar person in the conversation, i.e., the investigator, served as a means to direct the topic specifically to the aforementioned personal narratives. That is, the investigator asked questions and helped participants to navigate the topics of discussion to simulate a casual conversation among people meeting for the first time.

RESULTS

Tables 1 to 3 summarize participants' performance, according to PREP-R. Table 1 provides the scores on Enunciative Pragmatics. Participants' ratings on Textual and Interactional Pragmatics are presented in Tables 2 and 3 respectively. Cohen's coefficient showed substantial agreement among investigators for positively evaluated items (0.80), negatively evaluated items (0.62), and items rated as not observed (0.64).

Table 1. Enunciative Pragmatics, speech acts sublevel

ENUNCIATIVE PRAGMATICS	E	G	B
1. Speech Acts			
1.1 Utterance acts	Yes	No	Yes
1.2 Propositional Acts	No	No	No
1.3 Management of pauses and silence.	Yes	Yes	Yes
2. Intentional speech acts			
2.1 Direct conventional speech acts.	Yes	Yes	Yes
2.2 Indirect speech acts.	N.O.	N.O.	Yes
3. Editing Tasks			
3.1 Utterance Acts	Yes	Yes	Yes
3.2 Draft Acts	Yes	No	Yes
3.3 Compensatory nonverbal acts	Yes	Yes	Yes
4. Metapragmatic awareness	Yes	Yes	Yes
5. Cooperative Principle: conversational maxims and particularized implicatures			
5.1 Maxim of Quality	Yes	Yes	Yes
5.2 Maxim of Quantity	No	No	No
5.3 Maxim of Manner	No	No	No
5.4 Maxim of Relevance	Yes	Yes	Yes
5.5 Implicatures	N.O.	N.O.	Yes
6. Lexicalised tropic inferences	N.O.	Yes	N.O.

N.O.: Not Observed

Table 2. Textual Pragmatics

TEXTUAL PRAGMATICS	E	G	B
7. Coherence: Textual Superstructures			
7.1 Narrative superstructure	Yes	Yes	Yes
7.2 Argumentative Superstructure	N.O.	N.O.	N.O.
8. Topic Management			
8.1 Recognition of the introduction of a new topic	Yes	Yes	Yes
8.2 Fluid introduction of new topics	Yes	Yes	Yes
Cohesion Level			
9. Lexical Cohesion	No	No	No
10. Morphological Cohesion	Yes	Yes	No
11. Syntactic cohesion	No	No	No

N.O.: Not Observed

Table 3. Interactional Pragmatics

INTERACTIONAL PRAGMATICS	E	G	B
12. Agility of turn taking	Yes	Yes	Yes
13. Turn taking at the right moment	Yes	Yes	Yes
14. Adequate conversational participation	Yes	Yes	Yes
15. Predictability	Yes	Yes	Yes
16. Preference	Yes	Yes	Yes
17. Natural Use of Gestures	No	No	Yes
18. Gazes for communicating	Yes	Yes	Yes

Patient E

E produced recognizable utterances (Enunciative Pragmatics, item 1.1), but experienced difficulties with word retrieval and use of grammar (see Excerpt 2). She managed pauses and silence efficiently (item 1.3) and her utterances

showed that she understood the conversation topics. She also used direct speech acts (item 2.1; e.g., in Excerpt 2, based on her husband's help in lines 106-108). E employed verbal and paraverbal compensatory strategies to gain extra time. She also used gestures to compensate for difficulties with speech production (items 3.1, 3.2, and 3.3, respectively), as seen in Excerpt 1, line 74.

Excerpt 1

73   * INV: πριν πόσο καιρό περίπου?/how long ago?

74   * PAR: πριν [/] πριν τώρα περίπου [=! Σηκώνει το δεξί χέρι της δείχνοντας πέντε δάχτυλα]. / before [/] before now almost [=! She raises her right hand, pointing five fingers].

In the above excerpt, E was not able to verbally communicate to the investigator that she had had a stroke five years before the testing session. Alternatively, she used a gesture (showing 'five' with her fingers) and also managed to retrieve relevant words, such as "almost". This reveals E's ability to employ compensatory acts, demonstrating an adequate metapragmatic awareness (item 4). The information she provided was truthful (item 5.1), albeit scarce (item 5.2), since the answers were very short and she frequently relied on the help of the KCP, as in line 109 of Excerpt 2. In this excerpt, E's husband added that the incident that triggered E's stroke concerned their daughter. Notably, information was not provided in a clear or orderly manner (item 5.3). Nevertheless, it sufficiently related to the conversation topic (item 5.4). Excerpts 3 and 4 illustrate self-correction efforts, scarce information content, and problems with presenting information in a clear manner.

Excerpt 2

104   *PAR: και [/] και αυτό γιατί έγινε αυτό./ and [/] and this why did this happen.

105   *PAR: εγώ είχα μία (.) &εε μία./ I had a (.) &eh a.

106   *PAR: μία x./ a x.

107   *KCP: δυσκολία./ difficulty.

108   *PAR: δύσκολη x xx./ difficult x xx.

109   *KCP: με την κόρη [?]./with our daughter [?].

The Textual Pragmatics analysis revealed a mixed picture. E was able to properly narrate a story with intact superstructure (items 7.1). She perceived the introduction of new topics, and introduced new topics fluidly herself (item 8.1 and 8.2, respectively). Despite her expressive difficulties, she initiated a conversation regarding the circumstances under which she had had her stroke, introducing a question (see Excerpt 2, line 105). She also answered the question with the assistance of her KCP (lines 106 and 107). However, her lexical coherence was rated negatively, even though she demonstrated an adequate use of morphology (items 9 and 10). Difficulties with constructing complete sentences were also observed (item 11). E's problems in cohesion are better depicted in Excerpt 2, where the investigator asked her when she had had her stroke. An example of her syntactic cohesion problems is observed in line 74, in her utterance "πριν τώρα περίπου" ("before now almost").

E did better on Interactional Pragmatics; she was able to take turns in an agile and quick manner and at the right moment (item 13). She participated in the conversation as much as the other collocutors (item 14) and gazed at the investigator every time a question was addressed to her or gazed at the KCP if she needed a prompt (item 18). Her use of gestures, however, was only used to make up for impaired verbal communication rather than enhance verbal expression (item 17). Her use of predictive and reactive turns (item 15) was evaluated as adequate, as was her conversational preference (item 16). In line 104 of Excerpt 2, E asked a question (a clear predictive turn). Additionally, efficient reactive turns can be observed in line 74 of Excerpt 2, and in lines 106 and 108.

Considering all three subtests, E was positively evaluated for 9 out of 15 items in Enunciative Pragmatics (60%). Her Textual Pragmatics score was 57.14% (4 out of 7 items) and her Interactional Pragmatics performance reached 85.71% (6 out of 7 items). E's General Pragmatic Ability was positively assessed in 19 (65.52%) out of 29 items. Her Specific Pragmatic performance reached 76.19% (16 out of 21 items) and her Grammatically-based Pragmatic score was 37.5% (3 out of 8 items).

Patient G

G's performance on Enunciative Pragmatics reflected his most serious impairments. Ninety-four percent (118 out of 126) of his utterances were not recognizable and his word retrieval and use of grammar were compromised in the sense that they required the KCP's intervention, as depicted in Excerpt 3. Despite the latter, he managed pauses and silence efficiently within turns (item 1.3).

G was able to understand direct speech acts (item 2.1), as he responded properly to the investigator's questions, despite the fact that his output displayed low speech intelligibility, as was also shown in Excerpt 3. When asked to describe the type of treatment he had received after TBI, he had difficulty in understanding indirect speech acts (item 2.2). G used verbal and paraverbal compensatory acts. As demonstrated in line 118 of Excerpt 3, he used gestures to improve an unsuccessful speech act (items 3.1, and 3.3, respectively), which indicates self-awareness (item 4). Nevertheless, he was unable to use strategies to gain extra time (item 3.2).

Although G's utterances were short, his brother understood and interpreted them all. The process of decoding and interpreting G's verbal messages by the KCP was a crucial part of the dyad's conversational behavior. Hence, we rated the information provided by G as truthful (item 5.1) but not adequate to facilitate communication (item 5.2). In addition, information was not provided in a sufficiently clear or orderly manner (item 5.3), but was related to the topic of conversation (item 5.4). As illustrated in this excerpt below, G's brother is interpreting the majority of his verbal messages.

Excerpt 3
101   *INV: Στο ενδιάμεσο διάστημα περίπου τι είχε γίνει?/ What happened in between?
102   *PAR: xx xx xxx./ xx xx xxx.

103   *KCP: +" Από θεραπείες./ concerning therapy.
104   *PAR: x xx./ x xx.
105   *KCP: +" Του λόγου./ speech therapy.
106   *PAR: xxx./ xxx.
107   *KCP: +" Τίποτα./ nothing.
108   *PAR: xx xx./
109   *KCP: +" Μετά/After that.
114   *PAR: x x./ x x.
115   *KCP: Με είχαν./they had.
116   *PAR: xxx./xxx.
117   *KCP: +" Αφήσει./ left.
118   *PAR: x xx [=! Κινεί το δεξί χέρι του πάνω κάτω]./ [=! Waving his right hand up and down].
119   *KCP: +" Στην άκρη./ they left me be.

   G's assessment on Textual Pragmatics revealed that his ability to tell a story remained intact (item 7.1). He perceived the introduction of new topics and introduced new topics in a fluid manner (items 8.1 and 8.2, respectively). For instance, in Excerpt 4, G successfully initiated a conversation about him playing bouzouki every night (lines 318-339). He was rated positively for morphological coherence (item 10), with the only exception of a morpho-syntactic error, which, however, could alternatively be attributed to a semantic impairment; the KCP interpreted his output as the short form of a pronoun ('μένα' instead of 'εμένα'), but G actually used a different word with distinct meaning. G did not use syntax adequately. Difficulties in constructing complete sentences were observed (item 11), as were cohesion problems (items 9 and 11). Turns were assessed in terms of cohesion only by taking into account how G's KCP interpreted G's utterances. G knowingly fragmented his utterances into smaller parts so that his brother could interpret them. Linking them together revealed syntactic problems. In Excerpt 4, the resulting sentence 'Κάθε βράδυ θα παίζω μπουζούκι' ("Every night I will play bouzouki") is an example of this impairment, as G used a future tense to describe a habit.

Excerpt 4
318   *PAR: x xx./x xx
319   *KCP: +" Έχω./I
320   *PAR: x./x.
321   *KCP: +" Μια./ +"a/
322   *PAR: xx./xx.
325   *KCP: +" Μεγάλη αγάπη./ +" I really love./
326   *INV: Μεγάλη αγάπη για ποιο πράγμα?/ you really love what?
327   *PAR: x x xx xx ./ x x xx xx.
328   *KCP: +" Κάθε βράδυ./ +" every night
334   *PAR: xx ./xx.
335   *KCP: Θα +... /I will +... /
336   *INV: +" Παίζω [>]./+" play [>]./
337   *KCP: +" Παίζω[<] &αα ./ +" play [<] &aa./

338   *PAR: xxx ./ xxx.

339   *KCP: +" Μπουζούκι./ +" bouzouki./

Similar to E, G performed better on Interactional Pragmatics. His turn taking was timely and agile (items 13 and 12) and he participated sufficiently in the conversation (item 14). G used predictive and reactive turns (item 15) sufficiently and was positively assessed on conversational preference (item 16). His adequate use of both predictive and reactive acts can also be observed in Excerpt 4, where again he initiates a conversation about his hobby (playing bouzouki). He used gaze properly to communicate (item 18). He also used eye contact to indicate to his KCP that he needed assistance in expressing his thoughts. Yet he only used gestures to compensate for impaired verbal communication and was, therefore, rated negatively on item 17.

Eight out of the 15 items making up Enunciative Pragmatics (53.33%) were rated positively. On Textual Pragmatics, G's performance reached 57.14% (4 out of the 7 items were rated positively). Interactional Pragmatics reached 85.71% (6 out of the 7 items were rated positively). G's general pragmatic ability was positively assessed on 18 of the 29 items (62.07%). His specific pragmatic ability was positively assessed on 15 out of the 21 items (71.43%) and his grammatically based pragmatic ability on three (37.5%) out of the 8 items.

Patient B

B's utterances were recognizable (item 1.1), although words were not efficiently retrieved and his use of grammar was inadequate (item 1.2.). Excerpt 5 shows his difficulty both in retrieving his own and his wife's names. However, he did manage pauses and silence efficiently within turns (item 1.3). He also understood the topic of the conversation and achieved his communicative purpose. His perception of direct and indirect speech acts (items 2.1 and 2.2) was found to be intact. His ability to use compensatory acts and strategies to gain time was also preserved. For instance, Excerpt 5 shows that when he encountered difficulties in introducing his wife by name, he asked for a prompt: line 34; "what do we call her?". He also used gestures to improve speech acts (items 3.1, 3.2 and 3.3); such examples are found in lines 282 and 287 of Excerpt 6. The same excerpt shows his use of gestures in an effort to enhance his otherwise grammatically incorrect utterances ("went" and "and it was end"). His use of editing tasks showed sufficient metapragmatic awareness (item 4).

Excerpt 5

25   *INV: εσείς είστε ο Μπάμπης./ You are Babis.

26   *PAR: εγώ είμαι ο (.) Μπάμπης./ I am (.) Babis.

27   *PAR: &εε και η κοπέλα./&eh and the girl.

28   *PAR: είναι./ is.

29   *PAR: πως θα την πούμε? […]/what do we call her? […]

34   *KCP: εγώ είμαι η Θοδώρα [<1] η γυναίκα σου [<2]./ I am Thodora [<1] your wife [<2].

B's assessment on the Maxim of Quality was positive (item 5.1). Yet, the amount of information he provided was inadequate (item 5.2). He also failed to present information in a clear and orderly manner (item 5.3). He could not clearly state when he had had his stroke and his KCP had to intervene. This led to a negative rating of 5.3. On the other hand, his speech acts were related to the topic of conversation (item 5.4) and the use of implicatures was intact (item 5.5). No use of idioms was observed in the conversation (item 6).

B's ability to narrate a story was positively evaluated; the ability to construct an argument was not observed (items 7.1 and 7.2, respectively). B introduced new topics fluidly and was also rated positively on morphological cohesion. Nevertheless, his use of words, and construction of sentences were not sufficient for him to explain himself (items 9 and 11). An example of his cohesion impairment can be seen in Excerpt 6, where B is trying to describe what happened when he had had a stroke. In this excerpt, he refers to his and his wife's first reactions. Line 282 reveals a morphological deficit ('φύγα' instead of 'φύγαμε': the morphological inflection is missing), while line 287, shows an impairment of syntactical cohesion. In Greek, the utterances "και ήτανε τέλος (and it was end)" constitutes an ill-formed sentence.

Excerpt 6

282   *PAR: φύγα [=! Κινεί το αριστερό χέρι του προς τα πίσω] [>]./went [=! Waving his left hand backwards] [>].

283   *KCP: xx x [<]. /xx x [<].

284   *KCP: ξύπνησες [>]./you woke up [>].

285   *PAR: και [<]./and [<].

286   *PAR: τι έγινε;/ what happened?

287   *PAR: και ήτανε τέλος [=! Κινεί και τα δυο χέρια του προς τα έξω]./ and it was end [=! Waving both hands].

B's performance on Interactional Pragmatics was good. He took turns in an agile and quick manner and at the right moment (items 12 and 13). He participated sufficiently in the conversation and used gaze properly for communicative purposes (items 14 and 18). In contrast to E and G, B used gestures to compensate for impaired verbal production but also displayed a natural use of gestures throughout the interview (item 17). He used predictive and reactive turns (item 15) and his turn taking abided by the principles of conversational preference (item 16). This is seen in Excerpt 5, lines 27-29, where he makes an attempt to introduce his wife to the investigator. B was positively evaluated for 11 out of the 15 items for Enunciative Pragmatics (73.33%), for 3 out of the 7 items concerning Textual Pragmatics (42.86%), and 7 out of the 7 items making up Interactional Pragmatics (100%). B's general pragmatic ability was positively assessed in 21 out of the 29 items (72.41%). His specific pragmatic ability was positively assessed in 19 out of the 21 items (90.48%), but his grammatically based pragmatic ability was positively assessed for only 2 out of the 8 items (25%).

DISCUSSION

The primary aim of this work was to explore whether pragmatic ability can decline as a whole and whether similar patterns of compromised communicative abilities are found across different patients. Our results pointed to substantial variation within and across patients. The assessment of the recorded interactions revealed that one patient, B, performed better than E on Specific Pragmatic Ability and General Pragmatic Ability. On Grammatically Based Pragmatic Ability, B and E had similar ratings. On Enunciative Pragmatics and Interactional Pragmatics, B outperformed E. All participants performed very poorly on Textual Pragmatics and Grammatically Based Pragmatic Ability. They manifested pronounced difficulties in terms of coherence and cohesion, in line with previous findings that had reported such impairments (Andreetta, Cantagallo & Marini, 2012; Saldert, Bergman, Holstensson, Jönsson, Nygren, Vennman & Ferm, 2012; Nykänen, Nyrkkö, Nykänen, Brunou & Rautakoski, 2013). Aphasia is known to affect the linguistic aspect of pragmatic competence, as reflected in patients' grammatical and speech organization deficits (Saldert et al., 2012; Nykänen et al., 2013). Our participants performed better on Interactional Pragmatics, which is in accordance with previous evidence suggesting that this social communication component remains generally intact in people with aphasia (Gabbatore, Angeleri, Bosco, Cossa, Bara & Sacco,2014).

Our findings are in line with the proposition that pragmatic ability hinges on a variety of cognitive processes that work in synergy and can be differentially compromised (Champagne-Lavau, Stip, & Joanette, 2007). The evaluation of 29 pragmatic components revealed a complex picture with different patterns of pragmatic deficits being involved. Therefore, the pragmatic ability of patients was not totally compromised; some of its components were better preserved than others, demonstrating that pragmatic dysfunction is not global.

We had the opportunity to observe the patients' interaction with their two collocutors in both emotionally charged and emotionally neutral conditions. E's communicative ability was enhanced by her husband's phonological hints and overall intervention. B's KCP also contributed to his performance, verbally cuing him through questions and prompts. B thus managed to provide detailed and accurate information on his stroke. Previous research has shown that neurological patients tend to adapt to their deficits during a conversation (Gallardo Paúls & Moreno-Campos, 2005c). In general, the participation of a KCP further improved the performance of our participants, as also demonstrated in previous research (Beeke, Beckley, Johnson, Heilemann, Edwards, Maxim & Best, 2015; Booth & Perkins,1999; Croteau & Le Dorze, 2010; Marangolo, Fiori, Caltagirone & Marini, 2013). Knowing the interlocutor and understanding the situation in question are of paramount importance for the reception of a message (Mańko, Markiewicz, Chantsoulis, Rasmus, Łukaszewska, and Mirska, 2012). These additional factors enhance communicative efficiency and are more indicative of the full range of communicative ability in neurological patients (Pąchalska, MacQueen i Cielebak,

2018). In order for a reliable assessment of their communicative profile to be obtained, patients' disordered language functions should be assessed in conjunction with their interactive capabilities (Panasiuk, 2015). Further investigation of the communicative behavior of patients and the role of their KCP can lead to interventions similar to those designed for children (see Shire and Jones, 2015 for the use of augmentative and alternative communication and Dodd and Gorey, 2014 for a relevant intervention). More data from detailed records of conversations of patients and their KCP's in future research are thus deemed necessary. Communication training can also render health professionals more aware of the full range of communicative difficulties in neurological patients. It has been demonstrated that training in the field of communication in social situations can improve the communicative performance of TBI patients and their interaction with speech therapists (Tomaszewski, 2012).

Admittedly, a limitation of the present study is that performance on PREP-R could not be compared to the scores of the patients on any standardized screening battery, as all three patients spent only a limited amount of time in the clinic where we tested them. However, this limitation can be mitigated by the fact that detailed pragmatic ability assessment has been found to be as informative on patients' communicative performance and improvement as standardized batteries (Stahl, Mohr, Dreyer, Lucchese, & Pulvermüller, 2017) and has the additional advantage of providing comprehensive information on their actual communicative ability (Kindell, Sage, Keady & Wilkinson, 2013).

This multiple case study is one of the few contributions providing a detailed account of pragmatic abilities in the Greek population with aphasia. To further explore these patterns, group studies are warranted. We also plan to collect normative data from healthy Greek-speaking controls in order to better appreciate the neurotypical performance on these items. N*otwithstanding* the absence of normative data, the detailed analysis of the patients' performance provides a clear picture of their communicative skills, as PREP-R has been designed as a screening protocol and it is meant to detect sound pragmatic difficulties.

In conclusion, our work demonstrated that pragmatic ability can be differentially impaired across patients and when a pragmatic ability is impaired in a given patient, other pragmatic abilities can still remain intact. The role of the KCP was also found to be of paramount importance for efficient communication in our patients, as otherwise indiscernible speech was successfully decoded, leading to effective interactions. We hope that future work using PREP-R can further the understanding of the intricate relationship among different pragmatic abilities and, coupled with additional research, can give rise to cognitive interventions for clinical practice. Expanding the use of this tool, we aim to promote the evaluation of pragmatic abilities in people with aphasia as a means to better determine their communicative profile.

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