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Personal Narratives after Stroke: Stories from Bilingual Greek- English Immigrants Living in South Australia

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Narratives are intricately intertwined with quality of life, culture, and social participation. This paper reports stories told by bilingual people describing the events or consequences of a stroke on their lives. Six immigrant participants (mean age 70 years) who were less than four years post-stroke spontaneously produced a narrative recounting their personal experience of having a stroke in their native language (Greek) and in their second language (English). Stories from the two languages were taken at least ten days apart. All participants had learned English in early adulthood upon migration from Greece to Australia, and not through formal teaching but informally, in the community. This group of immigrants had lived in Australia on average for 46 years. Narratives in the two languages underwent quantitative (length, number of propositions) and qualitative analyses (ratings of coherence, ratings of clarity). Most individuals produced coherent “tellable” stories despite disruptions in language because of stroke-related language deficits or aphasia. Overall, stories were better told (length, complexity of content, temporal-causal sequencing, reference) in Greek – their native language. The results have implications for policy-makers providing health and welfare services to ageing immigrant populations. The findings are also relevant to other countries that have large immigrant populations of stroke survivors.

Introduction

In broad terms, narration is the act performed by a speaker when telling a story of real or fictional events in some type of logical and chronological order. For the listener, a narrative is understood if the speaker has conveyed the overall meaning, and the story “makes sense” as a whole (Olness &

Englebretson, 2011). Measuring narrative abilities offers information regarding language function at both the level of discourse (macrostructure) and the sentence and word levels (microstructure). Both macrostructure and microstructure levels are important for evaluating narrative competence across the lifespan (Westby & Culatta, 2016). The abilities of a speaker to narrate a “tellable” story is also influenced by one’s life experiences, world knowledge and cultural heritage (Bliss & McCabe, 2008; Fivush et al., 2011).

There is extensive evidence that people who have suffered a stroke and have aphasia experience significant challenges with narration. Aphasia is an acquired language deficit usually as a result of stroke that affects comprehension and production of spoken and/or written language. A hallmark of aphasia is anomia, that is, word-finding problems (Kambanaros, 2008) evident in spontaneous communications (Kambanaros, 2010).

Research studies reporting on the difficulties people with aphasia have with narration are referenced in three recent reviews addressing the linguistic level of analysis (Bryant, Ferguson & Spencer, 2016) the current theoretical and methodological challenges (Linnik Bastiannse & Höhle, 2016) and the quality of discourse information measures used in aphasia work (Pritchard et al., 2017). On the whole, at the microstructure level, impaired narrative abilities have been linked to word level deficits (Marini et al., 2011) and breakdown of sentence structure (Whitworth et al., 2015). In contrast, at the macrostructure level, people with aphasia tend to produce coherent narratives regardless of word and surface sentence structure deficits (Olness & Englebretson, 2011; Olness & Ulatowska, 2011).

Despite a burgeoning literature exploring the discourse abilities of people with aphasia post-stroke, only a small body of research has focused on competence in producing personal event narratives. Personal (event) narratives are stories a person constructs from memory about an experienced event. In this case, the narrator is familiar with the event(s) and characters and has easy access to the content and relevant details (Fivush et al., 2011). Furthermore, during the telling the narrator often uses evaluative statements and nonverbal expressions that reflect their thoughts and emotions about the experienced event and what makes the story worth sharing (Olness & Ulatowska, 2011). Labov and Waletzky (1967) refer to personal narratives as “the paradigm of human communication” acknowledging their important status in everyday life. In fact, one would

struggle to recall a typical day in which a personal story relaying an event is not shared (Olness & Ulatowska, 2011), whether short (e.g., a few sentences about what happened at the market) or long (e.g., a significant life-turning event such as the birth of a baby). It is assumed by the speaker that the hearer does not know the event(s), subsequently actions are described causally or are rationally connected (Westby & Culatta, 2016; Fivush et al., 2011).

For the listener, a coherent narrative must include details referring to the *who, what, when, and where*, details of the event (Labov, 1972). This is termed the “referential function” of the narrative. On the other hand, when the narrator expresses their thoughts, emotions and evaluations about what happened (Fivush et al., 2011), this refers to the “evaluative function” of the narrative (Labov, 1972). At a philosophical level, being the narrator of a personal event presupposes the awareness of oneself as the *experiencer of the event in the past and the rememberer of the event in the present* (Westby & Culatta, 2016:262).

Competence in producing personal narratives is considered important for a speaker’s social and psychological well-being as it gives them the opportunity to “make sense” (again) of the experience during the telling (Corsten et al., 2015). Personal narratives are closely intertwined with cultural identity (Bliss & McCabe, 2008), and are considered “the point at which the individual and culture intersect” (Fivush et al., 2011:323).

Generally, in health care settings, personal narratives are considered clinically important as stories are used to inform practice and build rapport between the clinician and the patient (Hall & Powell, 2011). Personal event narratives are also considered ecologically salient tasks since through everyday experience, contextual details, person revealing characteristics and information about feelings and meanings are shared (Hall & Powell, 2011; Olness & Ulatowska, 2017).

In this work, personal event narratives were elicited by probing from long term memory the experience of having a stroke. Usually, stroke symptoms come on very suddenly, leaving the survivor awestricken wondering where “it” (the stroke) came from (Othenin-Girard, 2015). There is no doubt that the experience of stroke is a life-changing event, and uniquely experienced by each survivor. Stroke narratives have been shown to be important tools for reflecting on, understanding and sharing the experience and in particular

for working through identity (re)negotiation (Corsten et al., 2015; Armstrong & Ulatowska, 2007) after the stroke event.

However, there is no research exploring stroke narratives in the two languages of bilingual people with aphasia. This is remarkable given the large numbers of bilingual and/or multilingual speakers worldwide with aphasia, and the considerable literature on assessment and treatment considerations relevant to this population (see Goral & Connor, 2013).

Background to the study

The focus of the present study is on bilingual immigrants with aphasia, a vulnerable social group whose L1 or mother tongue is a heritage language in the country of residence. All participating bilingual people with aphasia resided in Australia and were non-native speakers of English who produced stroke stories in their native language Greek (L1) and their second language English (L2).

The personal stroke stories recounted by the bilingual individuals with aphasia were analysed at the microstructure level (for length and propositions) and for macrostructure (coherence, clarity, preservation of temporal causal relations, breakdowns in reference). Finally, given the suggestion by Schroeder and Marian (2014:115) that “the linguistic structure and cultural associations of the particular language a bilingual is using determine what is encoded during an event and how memories are reported”, prompted the comparison of the bilingual stroke narratives for semantic content, mainly if more memories (information) was accessed and encoded in the native heritage language, Greek, compared to the less proficient L2, English.

Research questions

The aim is to exclusively examine bilingual stroke narratives for their referential language (i.e., clear statement of events), and how language is used to highlight important information in each language (L1 and L2) based upon the work of Olness and Ulatowska (2011).

The research questions to be addressed are three-fold. Do bilingual immigrants with stroke-related aphasia:

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1. produce coherent and clear narratives in both L1 (Greek) and L2 (English)?
2. show similar/different use of story elements (e.g., temporal-causal structure, reference and code switching) in L1 (Greek) vs. L2 (English)?
3. narrate more information (events) in a more proficient L1 (Greek) vs. a weaker L2 (English)?

Method

Participants

The stroke narratives from six bilingual Greek–English speaking individuals with fluent, anomic aphasia (four males and two females, aged between 60 and 74 years) were used in the study. Demographic information is reported in Table 1.

Table 1: Demographics of the bilingual immigrants

Participant	Sex	Age	Years post stroke	Previous occupation	Years of education	Age at migration	Years in Australia	Where stroke occurred
NL	M	74	7	Factory worker	3	22	52	In church (with spouse)
DK	F	66	1	Factory worker	1	22	44	At home (with spouse)
TK	M	60	2	Restaurant owner (in the mines)	8	14	46	At home (alone)
JI	M	68	2	Waiter	11	27	41	In Greece on holiday (alone)
JY	M	63	3	Taxi driver	6	16	47	At work (with other people)
MM	F	68	5	Factory worker	5	29	39	At home (with spouse)

Note: All participants were born in Greece and their schooling took place in Greece only; M=male; F=female.

All participants had sustained a stroke(s) in the left hemisphere of the brain. There was no history of neurological disease or past brain injury, present and/or past mental illness including depression and history of alcohol or substance abuse. No participant had hearing or visual deficits, and all were right-handed (self-report). All participants had been living with chronic aphasia for more than a year (range one–seven years).

All bilingual people with aphasia were volunteers and had given written consent in accordance with the Flinders Clinical Research Ethics Committee (FCREC), of the Flinders Medical Centre, Adelaide, South Australia. The current study protocol was approved by the author’s institute committee on human research.

Demographic information

A comprehensive *case history* and a *self-rating scale* were administered by the author¹ to confirm bilingual status from each participant in the language of their choice at the time of data collection. The information from the self-rating scale is reported in Table 2.

Table 2: Language proficiency in L1 (Greek) and L2 (English) of the bilingual participants

	Speaking		Understanding		Reading		Writing	
	L1	L2	L1	L2	L1	L2	L1	L2
Participant								
NL	2	2	4	2	2	1	2	1
DK	4	3	4	3	2	1	2	1
TK	5	4	5	4	5	3	3	3
JL	5	4	5	4	5	1	3	1
JY	4	4	4	4	4	4	4	3
MM	4	2	4	3	4	1	4	1
Mean	4.0	3.2	4.3	3.3	3.7	1.8	3.0	1.7

Key: 1=poor; 2=average; 3=good; 4= native-like; 5=highly proficient

The information in the case history covered broad areas such as demographic information, family history, language history, language use and current communication needs. Major emphasis was given to the topic of language use that included specific questions related to with whom and

¹ The author is a certified bilingual English–Greek speech pathologist with 30 years of clinical experience.

what situations participants spoke Greek and/or English.

All participants were born in Greece and had been living in Australia on average for 46 years (range 37–53 years). They had all acquired English as a second language after puberty or in early adulthood (range 14–29 years of age) upon migration to Australia. All participants had attended schooling in Greece (range 3–11 years), revealing limited education not exceeding senior high school. No individual was educated in Australia, showing that English was learnt informally. All had pre-morbid employment skills that did not require exceptionally high cognitive and linguistic skills (e.g., factory worker, taxi driver, waiter), and all enjoyed listening to stories but also telling stories to family and friends in Greek and English.

All bilingual people with aphasia were married and lived at home with their spouse. All but one (TK) were married to a Greek, born in Greece. The Greek language was predominantly used in the home and with immediate family (but not with grandchildren) and at cultural events or religious settings. English was predominantly used in daily activities outside the home such as shopping, car and home maintenance, banking, medical and health issues, talking with grandchildren and neighbors etc.

All participants considered themselves fluent speakers of English as it was used on a daily basis. Overall, both Greek and English were used on a regular basis in their daily lives. Language proficiency was assessed indirectly by means of a self-report in response to a self-rating language scale used in previous research by the author (Kambanaros & van Steenbrugge, 2006). Each participant was requested to rate their proficiency using a five-point scale of poor, fair, good, very good to excellent in the following modalities: understanding; communicating/speaking; reading; writing. The case history and self-rating scales were necessary to determine whether the bilingual people with aphasia were fluent bilinguals pre- and post-stroke, that is, were speaking both languages on a regular basis. A family informant was asked to verify subjects' language abilities for both languages prior to the stroke also.

In sum, all bilingual people with aphasia in the current study had a fluent aphasia based on clinical assessment using standardised language assessments in English and Greek that could be best characterised as anomia ranging from mild to moderate in both languages.

Elicitation of stroke narratives

Participants were asked to tell the story of their stroke in Greek and English at least ten days apart by the author using the prompts “Tell me about your stroke. What happened?”, “Take your time” and “Try to remember as much as you can” for both languages. The languages were counterbalanced between participants (i.e., three participants told their stroke story first in Greek and later in English and the remaining three participants did the reverse). Stroke narratives were elicited in the home in each case using a “willing listener” approach wherein participants produced their stories spontaneously with minimal interruption by the clinician. Responses were audio-recorded and transcribed verbatim.

Analyses for length, content and structure

Stroke narrative transcripts were analysed for length, content and structure in each language as well as on all qualitative measures reported below by three independent evaluators who were native speakers of Greek and English, respectively, and had some formal linguistic training. Data were analysed descriptively, without any statistical analyses strictly following the published procedure outlined by Ulatowska and colleagues (Ulatowska et al., 2013).

Qualitative analyses were used to determine the level of coherence and clarity using a 3-point scale for each. Analysis of coherence (*coherent, somewhat coherent, not coherent*) and clarity (*clear, somewhat clear, not clear*) for each stroke narrative was subjectively based in L1 (Greek) and L2 (English). To classify as coherent the overall semantic meaning and “wholeness” of the narrative had to be preserved for the listener to make sense of the narrative. In contrast, stroke narratives were classified “not coherent” when the narrative did not make sense to the listener, particularly in cases where the speaker had difficulties with referential aspects of the narration and temporal-causal organisation. Similarly, a stroke narrative was “clear” when overall meaning of the stroke story was intact. Stroke narratives that were vague or off topic were rated as “not clear”. Furthermore, a 3-point scale was developed to describe preservation of temporal causal relations (*preserved, somewhat preserved, not preserved*) and a 4-point scale (*none, mild, moderate, severe*) for the number of disruptions of reference. Also, given that stroke

samples were produced in the two languages and that both languages are activated during language processing (Schroeder & Marian, 2014) a code-switching category was introduced to quantify instances of code-switching (either from L1 to L2 or vice versa) using a 4-point range (*none, low, mid, high*). In addition, a 4-point content rating scale was developed to evaluate the similarity of information reported in L1 vs. L2 stroke narratives (*identical content, very similar content, somewhat similar content, not similar content*). Finally, Greek (L1) narratives were compared to English (L2) narratives to determine where significant differences in event recall occurred across the languages.

Reliability

Three independent evaluators for each language, native speakers of either Greek or English, rated the narratives for length, content and structure (see above). Point-by-point interrater reliability ranged from 89% to 94% across areas reported above. These were independent judgements that were compared. In the case of disagreement, consensus was reached after discussion or decided upon by the author.

Results

Narrative competence of bilingual people with aphasia was evaluated based on personal stroke stories told in L1 (Greek) and L2 (English). Overall, bilingual people with aphasia produced a sufficient amount of language as measured by the number of propositions in the stroke narratives for each language. Propositions were calculated as a semantic unit consisting of a main predicate with its argument (Olness, Matteson & Stewart, 2010). Stroke narratives in Greek (L1) had a mean of 35.3 propositions (range 25–47) and in English (L2) a mean of 28 propositions (range 10–51). Results of a Wilcoxon test of dependent samples revealed non-significant differences between L1 and L2 narratives for length ($z=.943$, $p=0.35$). Generally speaking, bilingual people with aphasia produced longer stroke narratives in their native language, with the exception of one participant (JY) who produced a longer narrative in English (L2: 51 propositions) vs. Greek (L1: 30 propositions). By and large, there was a wide range in the number of

propositions produced in Greek and English stroke narratives with evidence for both long and short stories.

Furthermore, ratings of coherence, clarity, preservation of temporal causal relations, breakdowns in reference and instances of code-switching are reported in Table 3. Finally, the content of the two stroke narratives produced by each participant was evaluated for similarity of events told and any additional meaningful information reported in Greek but not English was recorded (see Table 4).

All results are reported in detail below.

Overall coherence and clarity

Stroke narratives were rated as coherent and somewhat coherent in L1 (Greek) and L2 (English). There were no narratives assessed as being noncoherent for either language. At the individual level, two participants (NL and DK) produced coherent stroke narratives in both languages, two (JI and MM) produced coherent stroke narratives in L1 (Greek) and somewhat coherent in L2 (English) and two (TK and JY) produced somewhat coherent narratives in both languages. Similarly, for clarity, narratives were evaluated as clear and somewhat clear in Greek and English with no evidence of an unclear narrative in either language. The same pattern as reported above at the individual level for coherence was evident for clarity. Individual results are reported in Table 3.

Table 3: Global measures of coherence and clarity, disruptions in reference, preservation of temporal-causal relations and instances of code switching in L1 (Greek) and L2 (English) personal stroke narratives of each participant

	Coherence		Clarity		Temporal causal sequences		Reference (DoD)		Code-switching	
	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2
NL	3	3	3	3	3	3	4	3	3	4
DK	3	3	3	3	3	3	4	4	1	4
TK	2	2	2	2	3	2	2	2	1	1
Jl	3	2	3	2	3	3	4	3	3	4
JY	2	2	2	2	2	2	2	2	4	4
MM	3	2	3	2	3	3	4	3	3	4
Mean	2.6	2.3	2.6	2.3	2.8	2.8	3.3	3.0	2.5	3.5

bPWA=bilingual person with aphasia; ratings of coherence= 3 point scale (3=coherent; 2=somewhat coherent; 1=not coherent); ratings of clarity= 3 point scale (3=clear; 2=somewhat clear; 1=unclear); temporal causal sequences= 3 point scale (3=preserved; 2=somewhat preserved; 1=not preserved); DoD=degree of disruptions which refers to a breakdown in reference=4 point scale (4=none; 3=mild; 2=moderate; 1=severe); code switching ratings (4=no code switching; 3=mild code switching (<4 instances); 2=moderate code switching (>than 5 instances); 1=high code switching (>10 instances) in L1 (=to English) and L2 (=to Greek).

Preservation of temporal-causal relations

Basic narrative structure (temporal-causal organisation, a setting, the stroke event and a resolution(s) (Labov, 1972) was evident in all stroke narratives for both languages. Temporal-causal relations were well-preserved in stroke narratives (see Table 3) for both L1 (Greek) and L2 (English). The majority of the bilingual people with aphasia (4/6) demonstrated correct logical and chronological sequencing of events in Greek and English. In contrast, one individual (JY) showed somewhat preserved temporal causal sequences in L1 (Greek) and L2 (English). Finally, one individual (TK) showed a mixed pattern: preserved temporal-causal relations in L1 (Greek) but somewhat preserved in L2 (English).

Breakdown in reference

Reference which was evaluated by the degree of disruptions or breakdown in reference (see Table 3), and only one participant (DK) showed preserved reference in both Greek and English stroke narratives whereas two participants (TK and JY) demonstrated a moderate breakdown in both languages. The remaining participants (NL, JI and MM) had a mixed pattern: preserved reference for L1 (Greek) and a mild breakdown of reference in L2 (English).

Code switching

A code-switching category was added to the descriptive analyses of the stroke narratives given the bilingual background of the participants with aphasia. The individual patterns (see Table 3) were as follows: one participant (JY) showed no code-switching behaviour for either language; one participant (TK) showed extensive code-switching in both languages, that is, using English words and phrases when narrating his stroke story in Greek and vice versa; one participant (DK) showed extensive code switching in Greek but no evidence in English; and the remaining three participants (NL, JI and MM) showed mild code-switching to English in the Greek narrative but no code switching in the English narrative to Greek. Overall, code-switching was more prominent for bilingual people with aphasia when narrating in their native language, Greek, versus their L2, English.

The example below is from participant DK's L1 (Greek) narrative describing her adult children's visit to see her in hospital after her stroke. DK's Greek stroke story was rated as demonstrating a high amount of code-switching as there were greater than ten instances of code-switching to English in the Greek story. The translation follows in the parenthesis:

To **first time** δεν ήρθα εδώ. Τα παιδιά μου ήταν όλα εκεί και **κάνανε worry**.
 Έγινε **mistake ... wrong** . Εγώ δεν το ξέρω τα παιδιά μου το **λένε τώρα..με**
λένε mummy hard me to say because you have a little bit ... you lost it.

[I did not come here the first time. All my children were there, and they were worrying. There was a mistake ... wrong. I do not know but my children tell me now ...]

In the case of DK but also all other participants, the code-switching behaviour observed in the context of aphasia was not pathological but typical of the linguistic and cultural group the bilingual people with aphasia are members of.

Content of bilingual stroke narratives

The similarity in content of bilingual stroke narratives in Greek (L1) and English (L2) are reported in Table 4.

Table 4: Rated similarity in content between L1 (Greek) and L2 (English) stroke narratives, and additional relevant information or events provided exclusively in L1 (Greek) and not in L2 (English)

	Content rating	Additional information provided in L1	# of events
Participant			
NL	2	-Described physical symptoms related to stroke experienced in church (throat, arm, tremor) -Reported drinking water after the symptoms -Told his wife he was not feeling well	3
DK	3	Described waking up husband -Referred to tablets she was on -Reported carrying medication with her in ambulance -Described the weather (It was raining) -Reported where she waited for the ambulance (on her house veranda)	5

TK	2	-Reported that his wife had rung him during his stroke episode	1
JI	3	-Described the MRI procedure -Described heart examination	2
JY	3	-None	0
MM	2	-Reported on the number of strokes she had suffered so far -Told her husband she was not feeling well -Described not being able to move her arm -Reported on the length of stay in hospital (3 weeks) + name of hospital -Reported on the length of stay in rehab (3 weeks) + name of rehab centre -Described her current symptoms (3 fingers being numb) -Commented on the outcome of physio treatment (no change/difference) -Reported on the number of heart attacks (4) she had previously suffered	8
Mean	2.5		

bilingual content rating of stroke narrative = 4-point scale (4=identical in L1 & L2; 3=very similar in L1 & L2; 2=somewhat similar in L1 & L2; 1=not similar in L1 & L2); #=number of additional information.

Overall, narratives in the two languages were evaluated in the range of “somewhat similar” to “very similar”, but most bilingual people with aphasia (5/6) provided additional information in L1 (Greek) (ranging from 1–8 events) not reported in L2 (English). The additional information reported covered the following areas (i) stroke-related information (e.g., physical symptoms, medical procedures); (ii) health-related issues (e.g., medication); and (iii) other (e.g., the weather at the time).

Discussion

The narratives of bilingual immigrants with aphasia were evaluated for global coherence, clarity, temporal-causal sequencing, and referential language in both their native language Greek (L1) and their second language English (L2) based upon work pioneered by Ulatowska and colleagues (Olness & Ulatowska, 2011, 2017; Armstrong & Ulatowska, 2007; Ulatowska et al., 2011; Ulatowska et al., 2013) for monolingual speakers of English with aphasia. In addition, a code-switching category was incorporated in the narrative analyses given the bilingual status and cultural identity of both the people with aphasia and the clinician (author) collecting the stories (Fivush et al., 2011; Schroeder & Marian, 2014). Also, the series of events reported by bilingual people with aphasia in their stroke narratives for each language were evaluated for similarity (or not) of semantic content, and any additional meaningful events reported in the native language (L1: Greek) but not L2 (English) were recorded. It is important to note that Greek was better preserved in all cases after stroke and was considered by most participants their dominant language.

This is the first research on narrative competence in bilingual aphasia, with a particular focus on immigrants who reside in a country where their mother tongue or native language has the status of a heritage language, and access to health services after stroke requires proficiency in the English language.

On the whole, stroke narratives in both the languages of bilingual people with aphasia had a sufficient amount of language to make the story “tellable” to the listener. Some bilingual people with aphasia produced long narratives while others produced shorter stories. For the majority of bilingual people with aphasia (4/6), longer stroke stories were produced in the native language, Greek compared to English, but the opposite was also observed for one individual. This finding of individual differences in amount of language produced is in line with what is reported on the wide range in length of stroke narratives produced by monolingual people with aphasia (Ulatowska et al., 2013).

With regards to the first research question concerning coherence and clarity, this group of bilingual immigrants, with mild to moderate anomic

aphasia, produced coherent and clear narratives in both their native language (Greek) and their second language (English) despite disruptions brought about by word-retrieval deficits typical of anomia. In general, stroke narratives were more coherent and clearer in Greek compared to English, but this finding was not unexpected, since the Greek language was better preserved for most participants several years after stroke and is currently considered their dominant language despite residing in Australia and living in an English-dominant society. The finding that bilingual people with aphasia show no major difficulties producing coherent narratives in both their L1 (Greek) and L2 (English) is line with what has been consistently reported by Ulatowska and colleagues for monolingual English speakers with mild–moderate aphasia.

The results of the second research question on the use of story elements in L1 and L2, are discussed below in relation to: (i) the use of temporal-causal sequences; (ii) the degree of disruptions in the use of reference; and (iii) code switching behaviours demonstrated by bilingual people with aphasia when narrating their stroke story.

All bilingual people with aphasia in this study demonstrated narrative competence in L1 and L2 because of preserved temporal-causal structure of the stroke stories (logical beginning, middle, and end) that fostered overall coherence. There were no differences between Greek and English for the use of temporal causal sequences, revealing that this non-language specific element was preserved in both languages of bilingual people with aphasia after stroke. Reference (specific characters and their activities) was preserved in the majority of stroke narratives in L1 but in only one narrative in L2. Half of the participants demonstrated a mild breakdown in reference in L2 narratives, while two participants demonstrated a moderate breakdown in reference for both languages. Breakdown in reference was most obvious when more than two characters were mentioned or information unrelated to the stroke story (e.g., refurbishing a house by TK) dominated the narrative. It is well-established from the monolingual aphasia literature that most people with aphasia have difficulties with reference when producing narratives (Olness & Ulatowska, 2017). The findings regarding reference in this study suggest first, that referential language can be an area of difficulty for bilingual people with aphasia particularly in their

less-dominant or less-proficient language and second, if a breakdown in reference is moderate (or worse) in one language, then in all likelihood difficulties with reference will be present in the other language(s) as well.

Code-switching was evident predominately in L1 stroke narratives where bilingual people with aphasia codeswitched to English phrases and single words. Code-switching in this case could be considered an additive strategy to develop a colourful story structure. It also permits alleviation of the word finding deficit if the speaker can find the word/expression in the other language. However, it presupposes that the listener is from the same language background and cultural group. Code-switching is typical behaviour for the bilingual Greek community residing in Australia, particularly among Greek immigrants and their families (Tamis, 2009). In reality, code-switched story telling may be a practical way to enhance narrative skills for bilingual speakers with aphasia, but this needs to be explored further using hypothesis-driven research.

Finally, in relation to the third research question, as demonstrated by the participants in this study, bilingual individuals may produce additional information regarding their stroke experience, health needs and the impact of aphasia on interpersonal communication in their native (dominant) language than in their second language. This finding has serious implications for societies with large bi-/multilingual immigrant populations who need to access health services in a non-dominant language. This is an area that needs to be seriously explored further in light of the associations between bilingualism, ageing, neurological disease and healthcare.

Conclusion

This preliminary exploration revealed that bilingual immigrants with chronic aphasia residing in a country where their native language is a heritage language can produce coherent narratives in their native and second language. However, it is very important that bilingual individuals after stroke are given the opportunity to tell their stroke story in both their languages. Policy-makers must be mindful of the needs of bilingual immigrants with stroke disabilities who are not dominant speakers of the host language and require access to health and social services.

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