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Subjective experience of word production difficulties in aphasia: a metaphor analysis of autobiographical accounts

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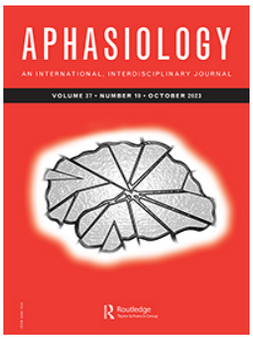

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Subjective Experience of Word Production Difficulties in Aphasia: a Metaphor Analysis of Autobiographical Accounts

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ABSTRACT

Background and aims: The subjective experience of neurological symptoms provides useful information for assessment, intervention and care. However, research in the subjective experience of aphasia is limited. Word production difficulties are universal to aphasia, and interdisciplinary research has produced sophisticated models of the multiple stages and processes involved. Critically, this word-production research does not incorporate the subjective experience of symptoms. We carried out a metaphor-led discourse analysis on autobiographical accounts written by people with aphasia, to determine whether subjective descriptions of word finding difficulties are consistent with the stages and processes of psycholinguistic models.

Method: Metaphor-led discourse analysis was used to identify, code and interpret metaphorical expressions describing word production difficulties in 12 English-language autobiographical accounts written by people with aphasia. These expressions were then analysed to determine the systematic metaphors (i.e., the related concepts which are used consistently to describe a particular topic). Two distinct types of systematic metaphor emerged in the analysis: conventional systematic metaphors frequently recurring throughout all or most of the accounts; novel systematic metaphors used in one or two extended passages in an overlapping subset of the accounts.

Results and discussion: 4020 metaphorical expressions described word production, predominantly using conventional metaphors about communication and cognition. The conventional metaphor WORD-PRODUCTION AS MOVING OBJECTS OUT OF A CONTAINER was the most prevalent, with elaborations and variations allowing mapping of different symptoms. Other conventional metaphors included: WORD PRODUCTION AS A JOURNEY/HUNTING/HERDING THROUGH A LANDSCAPE, allowing description of effortful or partial retrieval, neuroplastic recovery, and internal strategies; APHASIA AS BODILY IMPAIRMENT, which described various symptoms in terms of different body parts, including self-monitoring difficulties; and APHASIA AS FRAGMENTATION AND PERSONIFICATION OF SELF and SELF AS MACHINE/COMPUTER to describe a disrupted sense of agency and attention. Novel systematic metaphors were used to describe certain symptoms: APHASIA AS SILENCE and APHASIA AS SPIRITUAL EXPERIENCE were used to describe a lack of 'inner speech',

KEYWORDS
metaphor analysis; naming; aphasia; systematic metaphors; autobiography

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and APHASIA AS A DISMEMBERED TREE to describe problems making semantic associations.
Conclusions and implications: This research demonstrates the many consistencies of subjective descriptions of word production difficulties in aphasia with theoretical models, but also shows that some subjectively salient symptoms, in particular attentional and self-monitoring difficulties, and a lack of inner speech, are not captured by all theoretical models. Careful attention to the way that people with aphasia describe their symptoms can provide a valuable source of information to be integrated with objective measures.

Background

Clinically, the subjective experience of neurological symptoms provides useful information for assessment, intervention and care, in some cases providing the main source of information for diagnosis. This can include descriptions of common experiences such as pain or fatigue, and of more unusual symptoms such as perceptual distortions. Subjective symptoms can differentiate behaviourally similar disorders, for example, self-reported mood can distinguish between pseudobulbar affect and depression as the cause of crying episodes following brain injury (Engelman et al., 2014). Emerging research suggests that subjective experience sheds light on the neuropsychological profile of complex and heterogenous syndromes such as dementia (Zwijsen et al., 2016). In aphasiology there is limited research on subjective experience, likely primarily due to the difficulty of describing symptoms when communication is impaired. This study demonstrates that despite the difficulties, there is valuable diagnostic information to be gained from subjective descriptions of aphasia.

The potential contribution of subjective experience to understanding the underlying dynamics of word production can be illustrated with the example of a semantic fluency task. After such a task (e.g., listing animals) a client might say: "I can hear it in my head, but I can't say it," which suggests successful phonological activation but difficulty with articulation; or "another word gets in the way," perhaps suggesting a selection difficulty; or "the word keeps slipping away" suggesting working memory problems. These subjective reports appear to be indicative of difficulties at particular stages (e.g., semantic, phonological, articulatory) and also of how processing is affected (e.g., activation, selection, retention). This information is not available in the behavioural measures of this task such as the number of correct words. Thus there are missed opportunities when such insights into language impairment are not routinely captured.

This research focuses on word production difficulties, as these are a universal feature of aphasia, regardless of subtype or severity. Extensive psycholinguistic and neuropsychological research has resulted in sophisticated models of word production, which explain the different presentations of word production difficulties in terms of impairment to semantic, phonological or articulatory stages. Models differ on the degree of modularity of these stages, and on how integral self-monitoring through receptive language networks, and cognitive processes such as attention, are to word production (e.g., compare Nozari et al., 2011 and Roelofs, 2014). Critically, while discussions about the relative merits

of such models draw on a range of methodologies, they omit much of the information available in subjective experiences of word finding difficulties. This is therefore an under-explored source of valuable information on hard-to-observe underlying processes.

Subjective experience of aphasic symptoms

The subjective experience of aphasia, while currently often neglected, was foundational in the establishment of scientific aphasiology. Lordat's (1843) first-hand account of transient word production difficulties was much discussed by early theorists such as Wernicke (1874) (see Bay, 1969). In the intervening two centuries, autobiographical accounts of aphasia have increased in number, length, the severity of symptoms described, and demographic diversity, due to better medical treatment and widespread access to education and the means to write and publish. However, as aphasiology has become more specialised, the insights available in first-hand accounts have become detached from theoretical research.

Luria is a notable exception, as he routinely included patients' descriptions of symptoms in *Traumatic Aphasia* (e.g., "Everything immediately flew away" . . . "the words fell to pieces," p128, 1970), and edited and contextualised his patient Zasetsky's autobiographical journal in *The Man with a Shattered World* (1972). In this work he combined subjective descriptions with behavioural testing to prise apart the stages of processing, for example "We have already pointed out that he could not recall a word immediately but had to search actively for it, often finding that other words occurred to him instead . . . How, then, was he to select the right word when his memory was cluttered with words . . . ?" (p107, 1972). Yet this close attention to the subjective experience has not had the same influence as the objective aspects of Luria's work which it informed (Sacks, 2014).

There have been sporadic attempts to integrate the subjective perspective with fine-grained pyscholinguistic theory. Rolnick and Hoops (1969) suggest that subjective symptoms can provide "insight into the underlying dynamics of the disorder." Their analysis of interview data from six individuals with aphasia found descriptions of processes such as self-monitoring, the effect of speaking rate on word finding, and difficulty with certain syntactic categories. More recently, Fama et al. (2022) carried out a thematic analysis of interview data from fifty-three people with aphasia. Much of the analysis concerns the impact-level factors, but under the theme 'mechanism' there is some exploration of how word production were described at the level of impairment (World Health Organisation, 2001). For example, subjective descriptions of problems with word 'memory' as likely referring to a 'failure of lexical access/retrieval.' While this work shows the greater rigor made possible by modern qualitative methods and analysis of a larger amount of data, it does not analyse descriptions of impairment systematically and at the same level of detail as Rolnick and Hoops (1969).

Three other recent studies interpret subjective reports in terms of specific fine-grained psycholinguistic theory (Ardila & Rubio-Bruno, 2018; Morin, 2009; Skipper, 2022). These studies do not attempt methodological rigour, but select short extracts of subjective accounts which provide illustration or anecdotal evidence for the authors' theoretical interests. Taking a different approach there are studies which demonstrate that subjectively reported symptoms in aphasia can be confirmed to correlate with objective measures, such as the occurrence of tip-of-the-tongue states (Goodglass et al., 1976), or intact

inner speech (Fama & Turkeltaub, 2020). These studies show that subjective data can be integrated in a rigorous way, but with the limitation that participants are asked whether or not they agree with a statement which is predetermined by the researchers. Such an approach loses the fine-grained detail and the ability to capture novel insights which are available with a bottom-up approach.

Through the novel application of metaphor-led discourse analysis to subjective descriptions of impairment in aphasia, this study brings together the systematic and bottom-up application of formal qualitative methods with the granularity of detail found in psycholinguistic models. This method is ideally suited to the exploration of a large quantity of autobiographical writing from multiple authors, as it can accommodate the heterogeneity of experience represented in these accounts while still allowing meaningful comparisons to be made. Taking such an empirical linguistic approach lessens the impact of researchers' preconceptions and interests on the analysis (Cameron & Maslen, 2010).

Metaphor-led discourse analysis for exploring the subjective experience of aphasia

Metaphor-led discourse analysis is a rigorous approach to exploring subjective experience through qualitative analysis of discourse data such as interviews or written accounts (Cameron & Maslen, 2010). In healthcare, the most influential application of this method has been Semino's work on people's experience of cancer and its treatment (e.g., Semino et al., 2015). Emerging work demonstrates that this method can be applied not only to physical illnesses or to questions of impact, but to impairment-level exploration of symptoms of neurological and psychiatric conditions. To give a noteworthy example, metaphor analysis of clinical interview transcripts can differentiate epileptic from non-epileptic seizures, highlighting the potential for this approach to reveal the underlying mental processes behind similar observable behaviours by systematically capturing information in the subtleties of description (Plug et al., 2009). This information may be of a type which an experienced clinician is sensitive to, but which is neither transparent to introspection nor easily formalised, and therefore not readily available to report and teach. A review of various psychiatric conditions such as depression and schizophrenia established that complex and heterogenous alterations of cognitive and affective processes can be effectively explored through metaphor-led discourse analysis (Littlemore, 2019). These studies provide a firm grounding to extend the approach, to explore whether the details of the cognitive and linguistic processes affected in word production difficulties in aphasia are reflected in the metaphors used to describe the experience.

The use of metaphors to explore experience is based on an understanding of metaphors as more than a matter of rhetoric. According to Conceptual Metaphor Theory, metaphors play a central role in shaping our understanding of abstract and complex 'target domains' through the mapping of more familiar and concrete 'source domains' (Lakoff & Johnson, 1980). Through metaphorical mappings, we relate some aspects of the source domain to relevant or salient aspects of the target domain, giving us a structure for understanding it. Thus by analyzing the metaphorical language used to describe cognitive or linguistic processes, we can gain insight into the underlying patterns of thought and experience. To give an example which has been discussed in the metaphor literature,

UNDERSTANDING AS SEEING[1] maps the source domain of vision onto the target domain of cognition, as in "I *see* what you mean." Close analysis of the use of this metaphor in discourse data shows that it is used specifically to describe the process of gaining an understanding of another person's perspective (Deignan & Cameron, 2009), demonstrating how empirical methods can reveal nuances unavailable to intuition.

The Current Study

Written autobiographies provide a unique source of discourse data on the subjective experience of symptoms, to which a metaphor analysis can be applied. In this study 12 autobiographies were selected, written by authors with a wide range of aphasia types and severity (from mild and transient with full recovery, to global aphasia with significant persisting difficulties), different aetiologies (ten stroke, one traumatic brain injury, one cancer), male (four) and female (eight), ranging in age from 27 to 79, and spanning a range of styles and genre, from factual and reflective self-published journals such as Broussard's (2016) *Stroke Diary*, to the creative memoir of a novelist, *The Shadow Factory*, (West, 2008), and Taylor's (2009) professionally published popular science best seller *My Stroke of Insight*.

Long form written accounts have advantages over interview data as the author does not need to make pragmatic compromises in their word choice because of the time pressures of an interview, nor is their choice of language as influenced by the clinical or research environment. As the method does not place undue weight on any single metaphorical expression, but looks for systematic application of similar metaphors, any distortion of the authors' words due to editorial processes should not affect the analysis. Metaphor analysis has been carried out on published first-hand accounts in other areas; Vidali (2010) includes autobiography, poetry, and academic writings produced by authors with disabilities in her discussion of embodied metaphor. Published works are considered as directly attributable to their authors, despite the ways in which the world of publishing deviates from that of carefully controlled research. The unknown contribution of support with editing and writing is offset by the inclusion of a range of types of texts produced and published in a wide variety of ways, including the inclusion in some of the accounts of extracts of unedited contemporaneous journal entries. The selection bias that may arise from a sample of individuals who are able to write and publish their own accounts is minimized through careful and constrained interpretation of the analysis. All of these accounts contain the detailed reports of years of intensive work on language recovery by intelligent and highly motivated people, some of whom have relevant prior expertise, such as Jill Bolte Taylor's background in neuroscience or Carol Maloney's experience working in education and dyslexia, or who apply expertise and analytical tools from other disciplines, such as Thomas Broussard's engineering-informed development of tools and systems for collecting information about his impairment and careful logical analysis of the information thus gained. Each account offers a depth of reflection on a particular case of aphasia which is available from no other source.

All metaphors used to describe word production in these accounts were identified following Cameron and Maslen (2010), see methods. The use of metaphorical language in describing aphasia symptoms may be in the form of a single word (such as "evaporated") or a longer phrase or sentence (such as "the fragments of my broken

speech scattered around me"). These linguistic units are termed the metaphor 'vehicles.' The vehicle terms were coded in an iterative procedure into 'vehicle groups' based on the semantic meaning of the source domain (e.g., 'evaporation,' or 'disintegration'). Subsequently, through repeated examination of the sorted data, with consideration of the meaning in context of the coded expressions, systematic metaphors were identified, for example, WORD PRODUCTION DIFFICULTIES AS A LOSS OF SOLIDITY.

Through exploration of how these systematic metaphors are used in the autobiographical accounts, the commonalities and differences of the authors' symptoms can be explored, and insight gained into the range of experiences described (Littlemore, 2019). Consideration of the way in which these metaphors are used, with reference to the contextual information provided about the authors' symptoms, allows for suggestions to be made about whether different theoretical descriptions of impaired processing could account for the symptoms described.

Models of word production agree on the existence of different stages of processing, with broad agreement that distinctions can be made between semantic, phonological and motor levels. These levels may be differentially impaired. Models differ in various dimensions: the degree to which these levels are sequential and encapsulated modules or to which activation occurs between levels before each has selected a representation; whether self-monitoring is primarily within the domain of receptive language networks or part of motor planning and prediction; the role of cognitive processes such as attention in word production (e.g., compare Nozari et al., 2011 vs. Roelofs, 2014). The current study offers a way of examining these differences through the descriptions of subjective experience of people with aphasia. To give an example, the 'evaporation' of a word appears to describe the successful retrieval of a phonological word form followed by difficulty retaining it in working memory, whereas the 'melting' or 'disintegration' of a word is used to describe successful activation followed by difficulty with motor planning or articulation (these metaphors are explored and illustrated in Results). This example shows the value of analysing a large amount of data in identifying the way that different symptoms may be conceptualised using different mappings available within a particular systematic metaphor. This systematicity means that this work can form the basis for future mixed methods work.

Research in metaphor has identified numerous conventional metaphors, which are those that a linguistic community uses to conceptualise a particular target domain. The conventionality or novelty of the systematic metaphors found in this analysis was considered, that is, whether the metaphors used conformed to the usual ways in which we conceptualise language use. This allows us to identify the aspects of the experiences described which are subjectively more unusual. These unusual experiences are perhaps harder for clinicians, researchers and family members to understand empathically. Attention to the metaphors used has the potential to facilitate understanding of such symptoms and to improve clinical rapport.

The aims of this study are 1) to explore which metaphors are used to describe the subjective experiences of word finding difficulties in written accounts by people with aphasia, 2) to consider whether these descriptions reflect the details of the cognitive and linguistic impairment as described by psycholinguistic theory, and 3) to consider whether particular processes or symptoms which are described are not accounted for in some models or theories.

Method

Data Source

Search engines and library catalogues were used to find accounts written in English by a person with aphasia. Twelve autobiographical accounts of aphasia were included (eleven books, one short extract), these were: *Stroke Diary* (Broussard, 2016), *My Stroke of Luck* (Douglas, 2002), *Until Further Notice I am Alive* (Lubbock, 2012), *Finding My Voice with Aphasia* (Maloney, 2013), *A Stitch in Time* (Marks, 2017), *A Mind of My Own* (Mills, 2004), *Without Utterance* (Resch, 2012), *Crossing the Void* (Schultz, 2010), *My Stroke of Insight* (Taylor, 2009), *The Shadow Factory* (West, 2008), *Aphasia, my world alone* (Wulf, 1973), and a short extract by 'Maria,' from *Jumbly Words, and Rights Where Wrongs Should Be: The Experience of Aphasia from the Inside* (eds. Edelman & Greenwood, 1992). See Appendix A for a summary of background information and aphasia characteristics provided in the accounts analysed.

Metaphor identification, coding and analysis

A five-stage process of metaphor identification, coding and analysis was used, following Cameron et al.'s (2009) metaphor-led discourse dynamic method (see Figure 1). Metaphor identification and coding were carried out by the first author, a Speech and Language Therapist with clinical experience in aphasia, and three research assistants (Speech and Language Therapy students), each of whom worked with the same 3-5 books for each step of the analysis. Description and interpretation of systematic metaphors was carried out by the first author. We provide details in Appendix B of the measures undertaken to increase rigour, reduce bias and enhance replicability at each of the five steps of analysis. Researchers wishing to explore to the dataset are invited to contact the corresponding author for access.

Step 1. Familiarisation with Texts and Selection of Descriptions of Language Processing

First, all researchers familiarised themselves with the texts and identified all descriptions of the subjective experience of word-production. For each text a minimum of two researchers independently identified relevant sections, with discussion of any points of disagreement. An inclusive approach was taken to difficult cases, for example with the

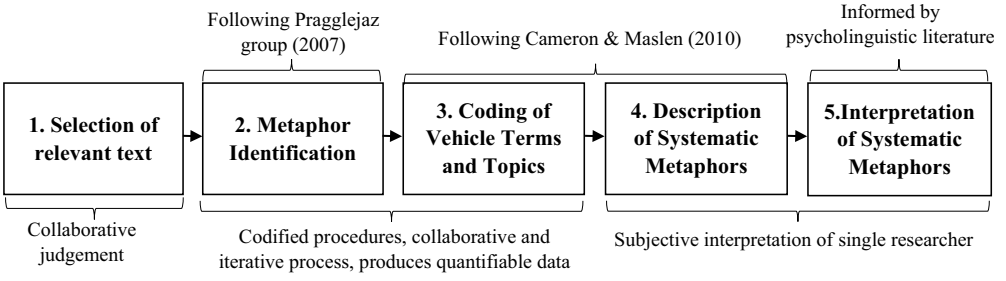
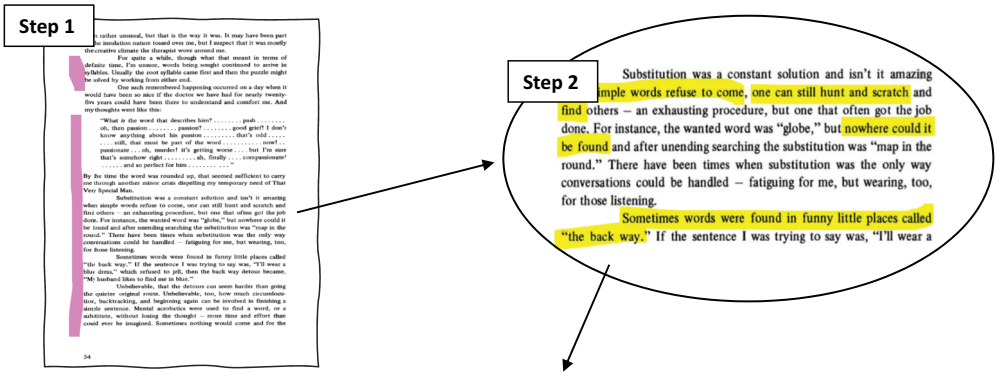


Figure 1. Five stage process of metaphor identification, coding and interpretation



author	vehicle terms (and context)	page #
Wulf	isn't it amazing when simple words refuse to come	54
Wulf	one can still hunt and scratch and find others	54
Wulf	the word was "globe" but nowhere could it be found	54
Wulf	There were times when substitution was the only way conversations could be handled	54
Wulf	Sometimes words were found in funny little places called "the back way"	54

Step 3

vehicle group 2	vehicle group 1	author	vehicle terms (and context)	page #
personification/animation	summon/return/appear	Wulf	isn't it amazing when simple words refuse to come	54
physical objects/structure	possession/lost/found	Wulf	one can still hunt and scratch and find others	54
physical objects/structure	possession/lost/found	Wulf	the word was "globe" but nowhere could it be found	54
physical objects/structure	handle/grasp/carry	Wulf	There were times when substitution was the only way conversations could be handled	54
journey/landscape	possession/lost/found	Wulf	Sometimes words were found in funny little places called "the back way"	54

Figure 2. Illustration of Metaphor Identification and Coding into Vehicle Groups 1 & 2 using an Extract from Wulf (1973)

inclusion of descriptions of speech, writing and inner speech, and descriptions of the general state of having a language impairment, as well as descriptions of online processing (see Appendix B).

Step 2 - Metaphor Identification

Identification of metaphorical expressions was carried out following Cameron and Maslen's (2010) modified version of the Pragglejaz Group's (2007) Metaphor Identification Procedure. The selected passages were reread, and possible metaphorical expressions were identified. These were checked for:

(1) meaning in the discourse context;
(2) the existence of another, more basic meaning;
(3) an incongruity or contrast between these meanings and a transfer from the basic to the contextual meaning (Cameron & Maslen, 2010).

This can be illustrated using the first highlighted expression in Figure 2. The description of words which 'refuse to come' has 1) the meaning in context of attempted word-finding, 2) a more basic meaning of a person or other agent being

unwilling to physically move, therefore there is 3) a contrast in meaning between the mental processes of word-finding and working memory and the actions and attitudes of an agent. There is a transfer in meaning from the latter to the former through conceptualisation of the words as animate individuals, the mind as a place, and so on. All expressions which met these criteria were entered into a spreadsheet.

The identification of a more basic meaning inevitably involves a judgment by the researcher. The intuitions of the native English-speaking researchers, consultation of dictionaries and etymologies, and comparison of frequency of different usages in Internet search engine results, were used to increase the reliability of this judgment. This procedure was performed independently by at least two researchers for each text, with group discussion of unclear cases and documentation of the principles on which these cases were decided to ensure consistency. The two versions were then combined with further discussion of any points of disagreement. The first author checked each text and its data against the final document of agreed inclusion principles.

Step 3 - Coding of Vehicle Terms and Topics

The words used metaphorically (e.g., 'rounding up') are referred to as the 'vehicle' terms. These terms were coded into semantically related 'vehicle groups.' This was done at two levels of generality following Cameron and Maslen (2010): 'Vehicle Group 1' remaining as close to the specific meaning of the term as possible, and 'Vehicle Group 2' creating broader overarching semantic categories. If a metaphorical expression could be included in two categories, it was duplicated and coded in each. Figure 2 shows an extract of the coded data. This process was carried out iteratively and collaboratively by at least two researchers, including the first author, with consensus decision-making on points of disagreement. Following the coding of the data into Vehicle Groups, the data was also coded by topic, according to predetermined broad categories of language modality or level: spoken language, thinking/cognition/state of mind, reading, writing/typing, understanding spoken language, role/communicative ability, self-monitoring, non-verbal communication, and discourse/dialogue.

Step 4 - Description of Systematic Metaphors

A subset of the data was extracted for this analysis which addressed word production (this was not restricted by topic codes, as items coded as topics other than spoken language were relevant, for example, writing/typing and discourse/dialogue). The description of systematic metaphors was carried out by the first author through repeated examination of this narrower dataset, sorted by vehicle group, topic and author, and through reference to context, pattern of use and discourse function in the entire texts and in the entire dataset (for example to examine similarities with the descriptions of receptive language). Figure 3 shows multiple vehicle terms which were coded as the same Vehicle Group 2, of 'personification/animation.' As can be seen from these examples, there is not a straightforward translation of vehicle group codes into systematic metaphors, as different target domains (mental processes, body parts, linguistic units) are mapped using the same source domain (personification).

vehicle group 2	vehicle group 1	author	vehicle terms (and context)	page #
personification/animation	controller/guard	Wulf	The judge and jury in my head decided their prisoner ought to attempt to recite the alphabet	56
personification/animation	animate/movement	Wulf	for the bit of information the salesperson wanted flew out of mind	57
personification/animation	animate/movement	Wulf	There are so many ideas, all hurrying to be said	58
personification/animation	having thoughts/feelings	Wulf	Even thoughts get impatient	58
personification/animation	having thoughts/feelings	Wulf	when the brain balks	58
personification/animation	hunting/fugitive	Wulf	When words escape me,	61
personification/animation	controller/guard	Wulf	the guard attending to that area seemed to know when something was amiss and notified me	62

Figure 3. Examples of Data Sorted (by Vehicle Group 2, Author, and order of occurrence) for description of Systematic Metaphors

Step 5 - Interpretation of Systematic Metaphors

The interpretation of systematic metaphors in the light of psycholinguistic theory was carried out by the first author. These judgements are based on clinical and theoretical knowledge, and on the partial objective information provided in the accounts. In some instances the process was straightforward, where the authors themselves explicitly mentioned the symptom described, for example with more than one author linking descriptions of APHASIA AS SILENCE to "a lack of inner speech." In cases where the connection is more speculative, multiple examples are provided to support these interpretations. The application of the systematic approach of metaphor-led discourse analysis to a heterogenous range of accounts means that the results produced in this way can form the basis of hypotheses to be tested in future work.

Results and Discussion

The research aims to systematically analyze written accounts by people with aphasia to understand their subjective experiences of word production difficulty through metaphor-led discourse analysis, to compare these subjective accounts to existing psycholinguistic models, and to identify symptoms not currently included in these models. To achieve this all descriptions of language processing or impairment were excerpted for analysis, which was carried out through the identification of metaphor vehicle terms. These vehicle terms were coded into vehicle groups, first at a fine-grained level of coding which remained as close as possible to the text, ('Vehicle Group 1'); and then at a more general level to allow for a broader understanding of the systematic use of related metaphors throughout and across the texts ('Vehicle Group 2'). Both of these levels of coding were used to sort the data for repeated examination in the description of systematic metaphors. The coded Vehicle Group 2 categories are reported here to give a descriptive quantitative overview of the data before the qualitative exploration of systematic metaphors. Two distinct types of systematic metaphor emerged in the analysis, with related conventional systematic metaphors frequently recurring throughout all or most of the accounts, and some more

novel systematic metaphors used in one or two extended passages in an overlapping subset of the accounts.

Quantitative Overview

Of 8148 total vehicle terms relating to language processing, 4080 metaphorical expressions addressed word production. There were 34 Vehicle Group 2 categories, with PHYSICAL OBJECTS/STRUCTURE predominating. Figure 4 shows the distribution of the 22 most frequent Vehicle Group 2 categories, including all of those discussed in this paper. Table 1 shows a breakdown by author of the most frequent twelve groups, which each contained over 100 instances across texts, and together accounted for 78% of expressions. There was consistency across the texts in the distribution of the most frequent vehicle groups, with the exception of Douglas (2002) who used a low absolute number of metaphorical expressions.

Qualitative Analysis – Systematic Metaphors

To explore how people with aphasia conceptualise and reason about their word production difficulties, eight systematic metaphors used to describe word production and its impairment are described. This was done on the basis of repeated examination of the data, sorted in different combinations by Vehicle Group 1, Vehicle Group 2 and author, with frequent reference to the context of the vehicle terms in the books. Five conventional metaphors were used across all or most accounts. The conventional metaphor of WORD PRODUCTION AS MOVING AN OBJECT OUT OF A CONTAINER predominated, with elaborations or

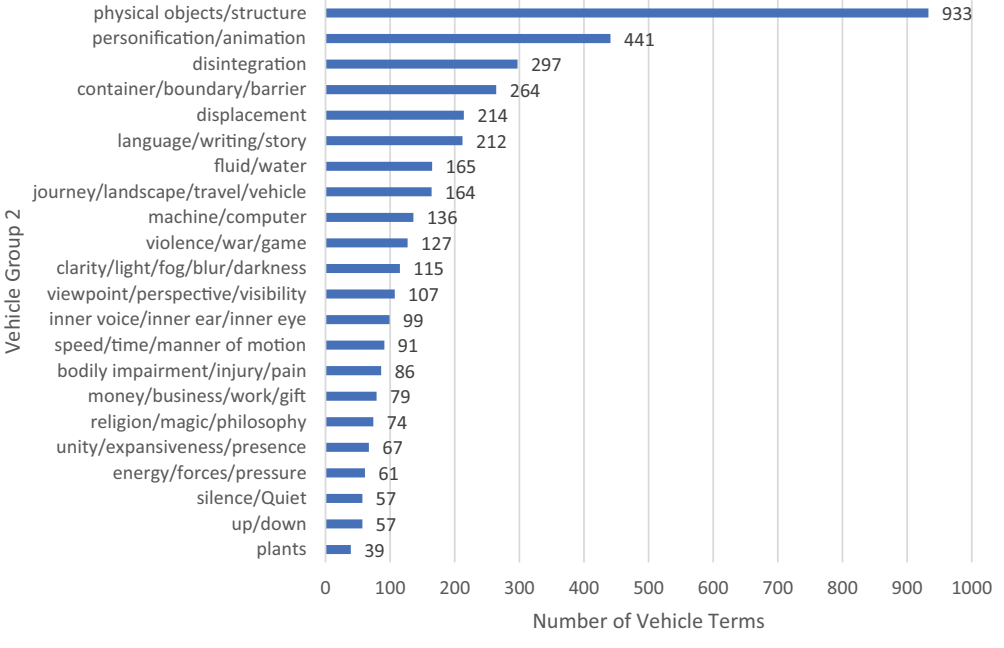


Figure 4. Total count of the twenty-two most frequent Vehicle Group 2 Codes

Table 1. Twelve most frequent Vehicle Group 2 Codes, that is, the broader semantically related groupings of vehicle terms which allow for comparison across accounts.

Vehicle Group 2	Broussard	Douglas	Lubbock	Maloney	Maria	Marks	Mills	Resch	Schultz	Taylor	West	Wulf	Total
PHYSICAL OBJECTS/STRUCTURES "the message I wanted to *get out*" (Marks, p. 340)	126	2	43	19	8	77	107	82	227	83	86	73	**903**
PERSONIFICATION/ANIMATION "I've been *hunting* the word capillary" (Wulf, p. 86)	14	0	9	3	5	21	16	88	78	95	54	58	**441**
DISINTEGRATION/FRAGMENTATION "a *"third person" talking to a "first person"*" (Broussard, p. 57)	25	1	3	5	0	12	32	80	16	80	26	17	**297**
CONTAINER/BARRIER "that word . . . would *slide into a more accessible area* for future use" (Maria)	23	0	5	4	2	10	30	74	1	73	17	25	**294**
DISPLACEMENT "Words . . . belong to *another world*" (Mills, p. 361)	0	0	2	6	0	16	46	80	5	41	15	3	**214**
FOREIGN/ALIEN LANGUAGE; CREATIVE WRITING "I am learning English as a *second language*" (Schultz, p. 157)	12	0	10	3	0	11	11	87	15	23	35	5	**212**
FLUID/WATER "*showers* of gibberish" (West, p. 177)	11	0	1	2	1	18	5	36	10	43	11	27	**165**
JOURNEY/LANDSCAPE "words were *found in funny little places called 'the back way'*" (Wulf, p. 54)	26	0	1	2	1	17	8	16	13	17	24	39	**164**
MACHINE/COMPUTER "my mind and speech had been *short-circuited*" (Maloney, p. 46)	10	0	12	7	0	13	8	10	17	40	7	12	**136**
VIOLENCE/COMPETITION "*my outright war* with the other consonants and vowels" (West, p. 165)	5	1	2	0	0	8	9	36	18	10	16	22	**127**
CLARITY/DARKNESS "Cannot find the words *through the fog*" (Schultz, p. 8)	7	0	9	2	1	8	10	14	19	19	14	12	**115**
VIEWPOINT/VISIBILITY "I have difficulty obtaining a general *overview* of my mental field" (Lubbock, p. 33)	11	0	4	0	0	8	25	31	6	12	5	5	**107**

variations of this metaphor used to emphasise particular aspects of experience (e.g., WORDS AS LOST/STOLEN POSSESSIONS). Other conventional metaphors for cognition (Lakoff, 1994) used across all or most accounts were WORD PRODUCTION AS A JOURNEY/HUNT, APHASIA AS BODILY IMPAIRMENT, APHASIA AS FRAGMENTATION AND PERSONIFICATION OF SELF and SELF AS MACHINE/COMPUTER. These conventional metaphors were used to describe symptoms and to make fine-grained distinctions between different levels of representation and types of disrupted processing. Three novel metaphors used in an overlapping subset of the accounts to describe a pervasive qualitatively different experience arising from certain specific symptoms: APHASIA AS SILENCE, APHASIA AS A SPIRITUAL EXPERIENCE and APHASIA AS A DISMEMBERED TREE.

Conventional Systematic Metaphors

The majority of vehicle terms made use of conventional metaphors, which were used recurringly throughout all of the texts, with the 'conduit metaphor' COMMUNICATION AS PHYSICAL TRANSFER (Reddy, 1979) making up around half of all instances. To describe the nuances of word production difficulties these conventional metaphors were adapted in various ways: made more specific, elaborated in unusual ways, and idioms were made more vivid and explicitly metaphorical. Here the four most frequent metaphors which occurred in the book are described (including several different variations of the first of these).

WORD PRODUCTION AS MOVING AN OBJECT OUT OF A CONTAINER. Unsurprisingly the conventional representation of COMMUNICATION AS PHYSICAL TRANSFER predominated, primarily as WORD PRODUCTION AS MOVING OBJECTS OUT OF A CONTAINER and WORD PRODUCTION AS MOVING OBJECTS OUT OF THE BODY. Details of the impairment could be mapped through the specification of particular properties of WORDS AS OBJECTS, and MIND AS CONTAINER. Numerous variations of this metaphor occurred, which are explored in detail below. This metaphor and its close variants are used by most authors to describe the initial symptoms or the acute experience of aphasia. Some authors, such as Schultz, retain this metaphor throughout their accounts. However other authors, like Broussard, explicitly reject it in favour of a different metaphor which better maps the nuances of their symptoms; yet others, like Taylor, make gradual increasing use of alternative metaphors throughout their description of recovery.

WORDS AS LOST/STOLEN POSSESSIONS and MIND AS EMPTY CONTAINER. These related metaphors were primarily used to describe the early experience of word production difficulties in acute aphasia, and in the context of describing the severity and strangeness of the experience to others, drawing an explicit contrast with more ordinary experiences of language difficulty. While these are both used idiomatically in English to describe transient linguistic or cognitive difficulties, for example, "robbed of speech," "my mind is a sieve," several accounts used more emphatic descriptions of complete loss and emptiness, using words such as "void," "chasm" and "abyss."

MIND AS CLOSED/LOCKED CONTAINER. An alternative way to describe the overall experience, or the severity of symptoms, through metaphors of objects and containers was through representing the container as closed or locked, that is as a difficulty with *access*. Taylor and Resch made ongoing use of this metaphor, describing changes in recovery using metaphors of specific containers, 'filing cabinets' and a 'black box' respectively (see Table 2). Through these metaphors Taylor describes both online word

Table 2. Variations of the conventional metaphor WORD PRODUCTION AS MOVING AN OBJECT OUT OF A CONTAINER used across all or most accounts to describe the initial or overall experience of word production difficulties, or to emphasize their severity or strangeness.

Metaphorical expression *(vehicle words in italics)*	Author	Page #
WORDS AS LOST/STOLEN POSSESSIONS		
I had *lost* my academic terminology	Taylor	126
I became aware there were words *in* my brain that weren't *lost*	Broussard	27
if I don't get tired and exhausted and *run out of words*	Mills	72
But they don't *lose* words like I do!	Resch	33
a young woman who had loved words and then her words had been *taken away* from her	Marks	191
I had a stroke. - It *took* my words	Schultz	100
I *move* fewer and fewer words *around*	Lubbock	143
MIND/PART OF MIND AS EMPTY CONTAINER		
where there had once been *vacancy* there was now clutter	Marks	102
the name of the firm "had *fallen out* of my mind"	Wulf	126
the journey I took into the *formless abyss* of a silent mind	Taylor	1
then it was because that part of my brain *had a hole in it*	Taylor	119
the *sucking empty hole* that is my brain	Schultz	67
She could not have known how *empty* my brain still was	Schultz	149
MIND AS CLOSED/LOCKED CONTAINER		
Even though my brain remained *lined with filing cabinets it was as if all the drawers had been slammed shut.*	Taylor	48
I kept repeating the word to *find* those *files, open them* and remember.	Taylor	85
A *black box*, words locked inside, no door, only a few words drifting outside	Resch	7
But *most of the pieces are still in the black box. I clutch at the door, wrestle to pry it open . . . reach in, and scramble around to find pieces to fit.*	Resch	30
Even this far out from the stroke, *I can't open the black box of words at will.*	Resch	60
the black box of words gone.	Resch	129

production, and the process of rehabilitation in terms of finding and tidying files, and Resch describes the changes in her word production abilities in terms of the properties of the container.

WORD PRODUCTION AS MOVING OBJECTS THROUGH THE BODY. This metaphor is used by all of the authors, often to describe the sequential nature of word production, with a contrast made between "head" vs "mouth" to describe a subjective awareness of distinct stages of processing (see Table 3). There does not appear to be a precise and consistent set of mappings between level of impairment and place in body, but there is a distinction made between relatively more central lexical processes being described as in the 'head' or 'brain,' and more peripheral sub-lexical ones as in the 'mouth' or 'throat.'

WORDS AS MANIPULABLE, MESSY OR DISGUISED OBJECTS. The ability to use a word was often described in terms of the manipulability of an object, particularly through 'grab' or 'grasp.' This metaphor was used more for receptive than productive language, but was sometimes used to describe difficulty in maintaining a representation in working memory, or to describe a subjective awareness of self-monitoring difficulties in language production (i.e., aspects of word production which may involve receptive language processes). Manipulability was also used to describe articulatory difficulties in terms of the ease of moving an object from the mouth.

Table 3. Variations on the conventional metaphor WORD PRODUCTION AS MOVING AN OBJECT OUT OF A CONTAINER used to describe more specific aspects of word production difficulties.

Metaphorical expression *(vehicle words in italics)*	Author	Page #
WORDS AS OBJECTS MOVING THROUGH THE MIND AND BODY		
the spelling of his name finds *its place in my head* then *a place in my mouth*	Schultz	96
the *laborious task of forcing* an idea *through my caved-in brain* to the paper	Wulf	122
until the word finally rattled *off my tongue* correctly: Tarantula!	Marks	82
I . . . set a cupped hand in front of my face as though I were waiting for a word *to fall into it*	Maria	85
you *disentangle the least bit of wiry fluff* that has been haunting your tongue for half an hour	West	93
A few others *slid easily off my tongue*	Mills	63
there are no words *coming to* my mouth!	Resch	2
smooth words *fall out of* my mouth	Resch	108
WORDS AS MANIPULABLE OBJECTS		
I cannot *grasp, in my mind*, the words I'm using ready for the next time they *slip away*	Lubbock	111
However, I couldn't *grab it* in time to say it in a normal conversation.	Broussard	82
I cannot *grasp* [numbers] reliably when I am saying them or . . . hearing them.	Schultz	133
you *disentangle the least bit of wiry fluff* that has been haunting your tongue for half an hour	West	93
WORDS AS MESSY/JUMBLED OBJECTS		
all the facts are *jumbled* in your mind	Maloney	48
my *cluttered and fully occupied* mind	Mills	152
I remember those *jumbled* thoughts only too well	West	10
a *futile clutter of grossly amalgamated* syllables	West	99
a *gallimaufry* of phonemes	West	108
WORDS AS DISGUISED/WRONG CONTAINER		
A small idea *disguised* as a word is not a word at all. For instance Robitracing or my own word Turps.	West	51
I heard a cry of Inderal *pretending to be* the anti-hypertensive Cozaar and of Cozaar *pretending to be* Inderal. (Or even of Cozaar *pretending to be* Cortazar!)	West	69
I was unaware of the *contents* of what I was saying	Broussard	78
the "*empty words*" I used meant the item or object which appeared in my mind.	Broussard	82
PERIPHERAL WORD PRODUCTION DIFFICULTIES AS WORDS MELTING/ DISINTEGRATING		
when said aloud are a *mess of slop*	Wulf	58
the sounds I was making were a *sludge of language*	Marks	119
your speech really *disintegrates*	Douglas	163
PHONOLOGICAL WORKING MEMORY DIFFICULTIES AS WORDS EVAPORATING/ DISAPPEARING		
Phrases came to me in a flash, and I wrote them down immediately, before they *disappeared* and became irretrievable.	Mills	105
words will *cascade* . . . from my mind, and if not captured in type instanter, it may be too late. They were such right words - why must they *evaporate* so soon?	Wulf	72
I tried to say things (and sometimes came close) that had a *"fading"* quality	Broussard	66

Another way in which more detail could be given about the nature of the impairment was through the addition of details about the properties of the physical objects. Metaphors of 'jumble' and 'clutter' were often used to describe difficulty with identifying and using a target 'idea' or 'fact' from various alternatives, suggesting selection difficulties at a lexical semantic level. This metaphor was, less frequently, applied to other levels as well, with West using it to describe difficulty selecting the required sublexical units. Other elaborations of WORDS AS OBJECTS which similarly describe difficulty distinguishing words from one another were the use by West and Broussard of WORDS AS DISGUISED and WORDS AS (WRONG) CONTAINERS to describe a mismatch of semantic and phonological representations. Examples of metaphors which attribute additional properties to WORDS AS OBJECTS are given in Table 3.

WORD PRODUCTION DIFFICULTIES AS A LOSS OF SOLIDITY. With successful word production represented as the transfer of a physical object, there were mappings

available for word production difficulties through metaphors of a loss of solidity. There were two groups of such metaphors: melting or disintegration, and evaporation (see Table 3). Melting or disintegration was used to describe the erroneous production of a successfully retrieved wordAn object that melts or disintegrates is something still perceptible to others, but which has changed shape and is difficult to manipulate, thus providing an apt mapping for the production of phonological paraphasias or articulatory difficulties. In contrast, when something evaporates, it is not perceptible. This metaphor was used to describe a difficulty prior to speech, in which no attempt at production was made.

WORD PRODUCTION AS A JOURNEY/HUNT. Metaphors of animals and people moving through landscapes were used by most authors (see Table 4). This metaphor is similar in its basic logic to WORD PRODUCTION AS MOVING AN OBJECT OUT OF THE BODY, but with additional mappings available in the scaled-up metaphorical environment. This was used to describe the effortful and time-consuming nature of word retrieval in terms of distance or barriers in the landscape; the possibility of partial activation as being 'near' a word; internal self-cuing and circumlocution as finding alternative routes; and neuroplastic improvement as the repeated travel of a path creating a better path. The animation of words provides mappings for processes occurring outside of the person's sense of control, often in terms of hunting or herding disobedient or reluctant animals or people, a metaphor used by West to describe disordered activation and production of speech errors. A more idiosyncratic metaphor of animacy was Mills' descriptions of sleeping or drowsy 'thoughts' or 'ideas,' possibly reflecting a subjective difference arising from the different aetiology of TBI.

APHASIA AS BODILY IMPAIRMENT. Distinctions between more central and more peripheral difficulties could also be made using a metaphor of WORD PRODUCTION DIFFICULTIES AS BODILY IMPAIRMENT, or as a 'problem' with a particular body part (see Table 5). The use of these metaphors of the 'place' of the difficulty as a way to metaphorically map different levels of impairment is made especially clear by the authors who use this metaphor to describe difficulty at multiple stages of word processing. This metaphor also provided a mapping for the description of difficulties with self-monitoring stages of processing as a problem with 'hearing,' used by Schultz, Broussard and Marks. A different use of this metaphor was the description of MOTOR PLANNING/ ARTICULATORY DIFFICULTIES AS PROBLEMS WITH WALKING, with the self, the tongue, speech activity, or words themselves are represented as the person having difficulty walking. This metaphor could also describe successful speech as running or walking, compensatory strategies as aids to walking, and in one instance as a phenomenologically distinct form of self-monitoring of errors where in contrast to the more common descriptions of 'hearing' an error, Broussard (2016) uses the metaphor of an interrupted motor movement: "Not unlike *stubbing a toe, I could feel it* . . . in the same way I could feel an error" (p.83).

Table 4. Examples of the conventional metaphor WORD PRODUCTION AS A JOURNEY/HUNT, with an emphasis on MIND AS LANDSCAPE used to describe effort, difficulty and use of strategies, and an emphasis on WORDS AS ANIMATE to describe a lack of control, or production of errors.

Metaphorical expression *(vehicle words in italics)*	Author	Page #
WORD PRODUCTION AS A JOURNEY/HUNT (MIND AS LANDSCAPE)		
First *stumbling all about* the phrase . . . then *stumbling* further as *I worked each word in turn through the mazes* of my corrupt language.	West	164
the information kept *getting lost traveling* around my brain *looking for an open bridge to cross* from one lobe to another	Mills	13
I used opposites as a *short-cut* to recall words. This search method allowed me to *overcome (bypass really) the linguistic roadblocks* of my aphasia	Mills	185
Sometimes words were found in funny little places called "the back way." If the sentence I was trying to say was, "I'll wear a blue dress" . . . *the back way detour became* "My husband likes to find me in blue"	Wulf	54
I had to continue to use my voice,*find pathways and plod over them* often enough to *make them visible* to thoughts sent from my mind and less likely to be *erased from lack of trodding*	Wulf	55
When I couldn't find a word, it felt like *a bridge leading* to the word *had been burned* . . . I could *get there* (eventually) by *looking for other (less complicated) bridges*.	Broussard	121
Frustration . . . with fatigue . . . *chokes out my flimsy path* to words like *brambles concealing roses*.	Resch	36
WORD PRODUCTION AS A JOURNEY/HUNT (WORDS AS ANIMATE)		
Every time I settled on an idea that would give me courage, it *flew from me at top speed and left me floundering in its wake like a rodeo dancer*	West	119
Of all those [words] *milling around in self-evident joy*, it's hard from my point of view to distinguish them from each other.	West	126
decided to go on a slightly different route from the one prescribed for it	West	155
the *misbehavior* of ordinary words . . . some of the right words cannot be said and *others take their places without mercy*	West	175
to *persuade* the right words, or any words, to leave their *cozy nest* in my mind to *traverse the rocky road* through my brain to the outside world	Wulf	134
The ideas are there, but they're . . . well, *asleep, dormant, waiting for a transfusion*	Mills	297

APHASIA AS FRAGMENTATION AND PERSONIFICATION OF SELF and SELF AS MACHINE/COMPUTER. A different metaphor type with which difficulties were related to different body parts was the fragmentation and personification of parts of the person (see Table 6). 'Brain,' 'mind,' 'mouth' were all personified, as were mental processes and aspects of language, such as 'inner voice,' and 'monitor.' 'Brain' or 'mind' were used in juxtaposition with the self and were described as carrying out high level cognitive tasks that would in conventional language be ascribed to the self, as in Schultz' "my head slowly and deliberately thinks out my condition." These uses of personification were often used to describe complicated disruptions to feelings of agency and control vs automatic processes occurring outside the self in speech production and self-monitoring. MIND AS MACHINE/COMPUTER was similarly used, though less often, to describe similar disruptions to a sense of agency. These metaphors were also used by Lubbock to describe the variability of his symptoms, as he describes different aspects of his language 'stalling' and 'glitching' or 'working automatically' at different times.

Table 5. Examples of conventional metaphor APHASIA AS BODILY IMPAIRMENT used to specify and differentiate impairment at different stages of word production.

Metaphorical expression *(vehicle words in italics)*	Author	Page #
WORD PRODUCTION DIFFICULTIES AS BODILY IMPAIRMENT		
I felt like my *tongue had been cut out*	Douglas	91
My *tongue gets twisted* as well as my *brain*	Wulf	127
all the words are lost. Then there is a *problem with my mouth*.	Schultz	65
I am not *hearing* the word I have said myself	Schultz	118
I was starting to actually *hear* my language *hiccups*	Marks	105
my *ears weren't on right*, my *mouth wasn't on right* either	Marks	0
Something had gone *wrong with my face, including the head, the mucous membranes, and the jaw that was sealed up beyond all repair*	West	88
Your *throat is in spasm*	Maloney	48
I had been saying things (literally, talking out loud) for a month before I realized I needed to *hear* what I had been saying	Broussard	80
WORD PRODUCTION DIFFICULTIES AS PROBLEMS WITH WALKING		
I continued to *stumble over* my words	Marks	340
My *tongue trips* over each part of each word.	Schultz	129
Talking *plods and bumps and limps in last.*	Wulf	15
The speaking solution here is sometimes not to be slow, careful, not trying, but *running at it swiftly*, casually, and it will come out fluently	Lubbock	112
Not unlike *stubbing a toe, I could feel it* . . . in the same way I could feel an error.	Broussard	83

Novel Systematic Metaphors

While most of the metaphors used drew on conventional metaphors for communication, a subset of authors used novel metaphors to describe particular symptoms. A small range of such metaphors occurred, with overlap in the authors who used them. Their pattern and function was different than the recurring use of conventional metaphors, as they appeared less often, usually in extended passages, were often marked as important or metaphorical by the author, and in the context of describing the difficulty of conveying their experience, or the strangeness of their symptoms.

APHASIA AS SILENCE and APHASIA AS A SPIRITUAL EXPERIENCE. Several authors used metaphors of silence to describe a lack of inner speech (see Table 7). Taylor and Marks describe this state of mind in the greatest detail and accord it the most importance. Resch uses the same metaphors, although she is describing an apparently milder language impairment and does not link these metaphors as clearly to specific language processes. West and Wulf make briefer use of them in reference to the acute stage of aphasia, as does Lubbock towards the end of his account of increasing loss of language. The authors who used this metaphor also described this experience of silence as a positive mental state, often using spiritual or religious terms, and sometimes involving a sense of expansion, unity or fluidity and bliss. The return of inner speech is described as, at least in some ways, a painful loss, and a return of 'noise' and anxiety.

APHASIA AS A DISMEMBERED TREE. The novel metaphor APHASIA AS A APHASIA AS A DISMEMBERED TREE was used by Marks, Resch and Maria, and elaborated in detail by Maria and Marks, who used in extended descriptions, in the context of rejecting or elaborating

Table 6. Examples of APHASIA AS FRAGMENTATION AND PERSONIFICATION OF SELF and SELF AS MACHINE/COMPUTER

Metaphorical expression *(vehicle words in italics)*	Author	Page #
APHASIA AS FRAGMENTATION AND PERSONIFICATION OF SELF (BRAIN/MIND/MENTAL PROCESS PERSONIFIED)		
While my *monitor is usually on duty* there are too many times when fatigue *whispers "don't pay attention to him"* and I don't	Wulf	55
I omitted to *tell* my brain the *speaker had a voice*	West	127
and then for the brain to *consciously say* the correct word . . . And somehow your head *hears it and makes sense of it*	Schultz	173
My brain *could compare* the difference between what was right and what was wrong, *without being conscious* of it.	Broussard	93
My mind *was attempting* to speak	Maloney	44
APHASIA AS FRAGMENTATION AND PERSONIFICATION OF SELF (MOUTH/THROAT PERSONIFIED)		
Talking is tiring and if done too much at a time muscles controlling speech *get very uppity and scream at me "We're not gonna struggle thru one more word"*	Wulf	55
I could only make sense of the lines I was trying to say by *catching my mouth off guard*	West	165
My tongue *builds the formation of* each sound long after my mind *directs it*	Schultz	65
SELF AS MACHINE/COMPUTER		
The rhythm is delivered, but the words, the phonemes, are chaotic, or simply the articulation *stalls entirely*	Lubbock	31
There have been small dysphasic *glitches* . . . since the start	Lubbock	137
I heard myself stuttering *like a car engine*	Marks	82
to *run it back through* re/who're/your head as a *check spell?*	Schultz	173
then I put my brain *back on scan* and eventually I *access the right data*	Taylor	48
thoughts must be *programmed* through one's brain	Wulf	125
The *manual process* slowly disappeared as the *automatic sequence* took over.	Broussard	44
In order for me to say a word, my brain requires me to use a *signal or a switch* . . . to move my hand slowly across a table or across my other hand as I verbalize the word.	Maloney	51
language seems to enact a *signal or a mesmeric function, to the distress of the signaler or mesmerist*	West	111

on conventional metaphors suggested by others (see Table 7). In describing how the parts of the previously entire entity are still present, but the connections between them have been damaged or destroyed, this metaphor describes the subjective experience of difficulty in making semantic associations. Marks, Maria and Resch all describe an effect of aphasia on cognition, initial receptive problems, and semantic paraphasias.

Relating Metaphors to Psycholinguistic Models/Theory

The symptoms described using these metaphors can be interpreted in light of psycholinguistic theories and models. Table 8 summarises the hypothesised links between the systematic metaphors used and psycholinguistic descriptions. The results do not align strictly with one single theoretical approach or model, but indicate the importance of considering certain processes which may be better described by some models than others. Below is a summary of the main aspects of psycholinguistic theory which relate to the metaphors described above.

Table 7. Examples of novel metaphors APHASIA AS SILENCE, APHASIA AS A SPIRITUAL EXPERIENCESPIRITUAL EXPERIENCE and APHASIA AS A DISMEMBERED TREEDISMEMBERED TREE

Metaphorical expression *(vehicle words in italics)*	Author	Page #
APHASIA AS SILENCE		
the Quiet . . . was much more interesting than my medical state	Marks	4
the Quiet had become harder to access as my *inner and outer voices had become louder*	Marks	138
those *little voices*, that brain *chatter* . . . were delightfully *silent*.	Taylor	42
the *dramatic silence that had taken up residency inside* my head	Taylor	75
The *silence I heard* after the stroke	Resch	127
the balm only found in the *quiet of the infinite*	Wulf	34
I more than once yearned for a *quiet world*, akin to the world that once blighted me	West	47
Getting *quiet* . . . Writing, there is *no voice* . . . *Quiet* but still something?	Lubbock	144
APHASIA AS A SPIRITUAL EXPERIENCE		
floating in this *meditative state*	Marks	18
I didn't want to give up *Nirvana*	Taylor	132
Beginner's mind is here now . . . No words required	Resch	140
In the beginning hours of aphasia . . . were moments of *refreshment, of clarity, of truth glimpsed, of immanent peace*.	Wulf	144
It was all a matter of *comparative illusion*, best taken care of by some poor sucker anxious for *cosmic aggrandizement*	West	39
APHASIA AS A DISMEMBERED TREE		
like a *tree of wisdom which has been uprooted, dismembered bit by bit, branches, leaves, roots and fruit, and that the trunk has been totally severed. Like a trunk, branches, leaves, roots and fruits, words and phrases float around in my head.*	Maria	82
Like the *tree, I am stripped of the branches* of my speech.	Resch	79
Aphasia was like a *mad gardener that sliced the branches and limbs away from the trunk. This sparse topiary cut me off* from my usual points of reference, keeping me from associating my thoughts with one another	Marks	101

Modularity

The subjective symptoms align with a broadly modular language architecture even in breakdown. The level of detail varied, with a general distinction made between central and peripheral processes, which could potentially map onto more than one psycholinguistic level. However, even when multiple processing levels were affected, descriptions highlighted the distinct phenomenology of these impairments, as seen in West's account of acute global aphasia. These distinctions were made with reference to different places in the body (see Table 8, CONTAINERS AND OBJECTS and BODILY IMPAIRMENT).

Connectionist Processes

Despite these broad distinctions between modular levels, there were aspects of the subjective descriptions which reflect processing within, and interactively between, these levels. These can be seen through descriptions of difficulties with the activation, selection, and retention of phonological word forms as solidification or disintegration (see Table 8 CHANGE OF STATE, FLUIDITY, SOLIDITY). Partial activation, internal self-cuing, and neuroplasticity were also described, in particular using metaphors of travel through landscapes (see Table 8 JOURNEYING THROUGH A LANDSCAPE).

Cognitive Processes

Multiple authors highlighted difficulties with attention and cognitive processes as contributing to their word production difficulties; conversely the authors who described

Table 8. Summary of the suggestions made in this study about how metaphors used in subjective descriptions may align with our objective understanding of word-production difficulties.

Vehicle Domain		Target Domain
CONTAINERS, OBJECTS		**WORD-PRODUCTION; MIND; LEXICON; MENTAL PROCESSES/REPRESENTATIONS**
Objects	→	Words; Cognitive processes/skills
Container	→	Mind/Part of mind; Words
Looking for an object in a container	→	Attempt to retrieve phonological word-form
Locked/closed containers	→	General difficulty with word-retrieval
Theft or loss of objects	→	General difficulty with word-retrieval
Locating/moving object in 'brain'	→	Relatively central word-finding processes
Locating/moving object in 'mouth'	→	Relatively peripheral word-production processes
CONTAINERS; OBJECTS		**WORDS; SYNTACTIC, SEMANTIC AND PHONOLOGICAL REPRESENTATIONS**
Containers	→	Phonological lexical representation; syntax/sentence
Contents	→	Semantic or conceptual representation; emotion or other non-linguistic mental state
Disguise/mismatched contents/empty	→	Phonological lexical representation used to express erroneous or idiosyncratic meaning
Slot	→	Syntactic information/ lemma
COMPUTER; MACHINE		**MIND; LANGUAGE; WORDS**
Computer; telecommunication system;	→	Mind; brain
Program	→	Mental process
File	→	Word
BODILY IMPAIRMENT		**LANGUAGE IMPAIRMENT**
Problem with brain or head	→	Relatively central word-finding processes; cognition
Problem with mouth, throat or tongue	→	Relatively peripheral word-finding processes
Problem with ears	→	Problem with receptive language, including self-monitoring
Problem with walking or mobility	→	Difficulty with fluency, or general word-production
CHANGE OF STATE; FLUIDITY; SOLIDITY		**WORD-PRODUCTION; PERCEPTION**
Solid object	→	Phonological lexical representation, word
Fluid	→	Concept or emotion; successful connected speech
Solidification	→	Phonological access; word production
Evaporation	→	Failure to maintain (phonological) activation
Turning to 'mush;' melting	→	Erroneous production of correctly retrieved phonological lexical representation
The sea/general fluidity	→	Severe aphasia; Perceptual experience
HUNTING OR HERDING ANIMALS; JOURNEYING THROUGH A LANDSCAPE		**ONLINE WORD-PRODUCTION; WORD-PRODUCTION STRATEGIES**
Animals/people/animate beings	→	Words
Locations	→	Words
Landscape	→	Mind/mental processing, or word/language
Herder/hunter/traveller	→	Person with aphasia
Pathways	→	Semantic to phonological lexical access
Closeness to animal or location	→	Partial phonological retrieval
Creating/clearing a path	→	Neuroplastic improvement of phonological lexical access
Destruction of paths or landscape	→	Difficulty with phonological lexical access
Shortcuts, back-routes	→	Internal word-retrieval strategies; circumlocution
Animal escaping	→	Failure to maintain activation of word
Animal/person overpowering or tricking another	→	Erroneous word-production
Difficulty recognising person or animal	→	Difficulty selecting correct phonological lexical representation
FRAGMENTATION AND PERSONIFICATION OF PARTS OF SELF		**LEVELS OF IMPAIRMENT; MENTAL PROCESSES**
Mind	→	Processes of conceptualisation/lexical retrieval
Brain	→	Processes of lexical retrieval
Mouth/tongue	→	Sublexical processes of phonological assembly and motor control/dysarthria
Persons/conscious agents (non-self)	→	Mental processes; self-monitoring; inner voices

(*Continued*)

Table 8. (Continued).

Vehicle Domain		Target Domain
DISMEMBERED TREE		**SEMANTIC SYSTEM; APHASIA**
Tree	→	Language; semantic system
Parts of tree	→	Words or concepts
Person dismembering tree	→	Aphasia; stroke
Severed connections	→	Difficulty with semantic association
SILENCE		**IMPAIRED INNER SPEECH**
Voices, chatter, personified part of mind	→	Inner speech
Silence	→	Lack of inner speech
Spiritual experience/bliss	→	Emotional/cognitive effects of lack of inner speech

semantic and inner speech impairments described an impact of language impairment on cognition. Authors also described a disrupted sense of agency and conscious control over language production (see Table 8 COMPUTER OR MACHINE; FRAGMENTATION AND PERSONIFICATION OF PARTS OF SELF).

Self-monitoring

Self-monitoring was primarily described through personification of aspects of the self (see Table 8 FRAGMENTATION AND PERSONIFICATION OF PARTS OF SELF) and through metaphors relating to 'hearing' or 'catching' the words (see Table 8 CONTAINERS AND OBJECTS or BODILY IMPAIRMENT). A single instance of a different metaphor was used to describe self-monitoring, in Broussard's description of 'feeling' an error as being "Not unlike stubbing a toe" (p.83), which he contrasts explicitly with 'hearing' mistakes (see Table 8 BODILY IMPAIRMENT).

Inner Speech

The authors who described impaired inner speech identified this as the key feature of their aphasia, affecting cognition and sense of self, as well as affecting language production, engagement in rehabilitation and conceptualisation of 'recovery' (see Table 8 SILENCE).

Final conclusions

We set out to 1) explore which metaphors are used to describe the subjective experiences of word finding difficulties in written accounts by people with aphasia, 2) to consider whether these descriptions reflect the details of the cognitive and linguistic impairment as described by psycholinguistic models, and 3) to consider whether particular processes or symptoms which are described are not accounted for in some models or theories. These research questions are addressed in order below.

Predominantly conventional metaphors for communication and cognition are used to describe the subjective experience of word finding difficulties in aphasia. That is, the everyday metaphors that we use can be extended and elaborated to map many aspects of disrupted word production in aphasia. Certain symptoms were described using more novel metaphors, which were also explicitly highlighted as being unusual, pervasive and hard to explain to others. These novel metaphors were used by an overlapping subset of authors who experienced impairment of inner speech, cognitive involvement, difficulty making semantic associations, and initial receptive symptoms. It is a clinically important

finding that some people with aphasia experience a profound alteration of experience, which is hard to describe even after recovery of adequate language (requiring creative use of novel metaphors), and which affects motivation, sense of self and attitudes about recovery and language use.

A reported lack of inner speech was particularly noteworthy as a symptom which multiple novel metaphors were employed to describe, in strikingly consistent ways across several accounts. The authors who emphasized this symptom described not merely recovering or losing language, but renegotiating their relationship with language and verbal thought, and confronting spiritual and existential questions, regardless of their premorbid beliefs or interests. It is important for speech and language therapists to understand that some people with aphasia may be preoccupied with such experiences and questions. It may lead to complex emotions about language recovery and engagement in therapy as described in these accounts. It is also useful for psychologists, hospital chaplains, and the family and friends of those with aphasia to be aware of as an important experience which may affect a person's values and personality. Mumby and Roddam (2021) provide a valuable tool to support people with aphasia in communicating about these topics.

The details of the subjective experience of word finding difficulties aligns with psycholinguistic and neuropsychological theory. Even when multiple levels of processing were affected for an individual, the subjective description distinguished these different aspects of the impairment. The level of detail was not always as fine-grained as psycholinguistic theory: often a general distinction was made between more central and more peripheral processes, with these experiences possibly mapping onto more than one psycholinguistic level. However, at times distinctions were made which map onto specific levels of processing and even the way in which processing is disrupted within that level. The differences between difficulties with activation, selection and retention of a phonological word form were consistently described by multiple authors. It is useful for clinicians to know that impairment of different stages of word production difficulties in aphasia can be experientially very distinct, even when behaviourally similar and when there are multiple severely impaired stages. Careful attention to the way that people with aphasia describe their symptoms can provide a valuable source of information to be integrated with objective measures.

This suggests that clinical practice should make wider use of more complex and synthesising models of word production such as Roelof's WEAVER++/ARC (2014), which includes processes of attention and self-monitoring, goal-referenced control, selection, and spreading activation. Assessment with reference to a model which allows for description of impairment to these processes has the potential to improve understanding and communication about the aspects of impairment which are salient to people experiencing aphasia. Such a model also draws our attention to the role of consciousness in word production, as a part of typical processing, as potentially disrupted by impairment, and as being able to contribute to compensation or recovery.

Limitations and Future Directions

Certain limitations arise unavoidably from the use of published autobiographies. The primary limitation is that these accounts were not produced in controlled research settings,

and the degree of editorial support or alteration is unknown. The sample of people with aphasia included in the analysis is not representative, as the writing and publishing of a book requires considerable internal and external resources (language and cognitive skills, time and energy, access to publishers or the knowledge or support to publish independently, etc.). Triangulation with other methods will strengthen these results, such as interview-based metaphor analysis, which can use rigorous controls, obtain objective behavioural and neurological data, and would allow for checking of codes with participants.

Certain aspects of language processing are more available to conscious awareness than others. For instance there were numerous descriptions of self-monitoring consistent with a receptive-language based theory of self-monitoring, but this may be because a methodology which takes the reported contents of consciousness as its data finds a fit in models which incorporate consciously accessible representations. The single instance of a description of self-monitoring which is consistent with the alternative account of a production-based monitor was provided by Broussard, who describes a particularly deliberate and nuanced process of reasoning about the nature of his language processing, and so might be expected to report some aspects of word production which are less apparent to introspection or less amenable to description. Thus on the basis of this data we may argue for the inclusion of self-monitoring through receptive language networks in clinical models as a salient aspect of language production, but not against the possibility that much self-monitoring may be production-based.

Further analysis of this data will explore in greater depth the role of inner speech, and the use of metaphors for metacognition about impairment and recovery. Future work will explore the use of metaphor to describe symptoms of word production difficulties in aphasia through other methodologies, such as semi-structured interview, group discussions, questionnaire or through visual materials. Such work would also allow for neurological information to be obtained and incorporated into the analysis.

Continued research in this area would support the development of a communication tool for the visual and verbal presentation of metaphors to improve clinical communication between speech and language therapists and their clients with aphasia. The 'Metaphor Menu for people living with Cancer' (Semino, 2019) provides a model for such a tool. This research illustrates that careful attention to the way that people with aphasia describe their symptoms can provide a valuable source of information to be integrated with objective measures, in research and in clinical practice.

Note

1. The typographic convention of SMALL CAPS is used to distinguish these abstracted systematic metaphors from the actually used vehicle terms that occur in the data.

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References

Bay, E. (1969). The Lordat case and its import on the theory of Aphasia. *Cortex*, *5*(3), 302–308. https://doi.org/10.1016/S0010-9452(69)80038-9.

Broussard, T. (2016). *Stroke Diary*. St. Augustine, Florida: Stroke Educator Inc.

Cameron, Maslen & Low (2010). Finding systematicity in metaphor use. In Cameron, L., & Maslen, R. (Eds.). *Metaphor analysis*. Equinox.

Cameron and Maslen (2010). Identifying metaphors in discourse data. In Cameron, L., & Maslen, R. (Eds.). *Metaphor analysis*. Equinox.

Cameron, L., Maslen, R., Todd, Z., Maule, J., Stratton, P., & Stanley, N. (2009). The Discourse Dynamics Approach to Metaphor and Metaphor-Led Discourse Analysis. *Metaphor And Symbol*, *24*(2), 63–89. https://doi.org/10.1080/10926480902830821

Dell, G. S., Schwartz, M. F., Martin, N., Saffran, E. M., & Gagnon, D. A. (1997). Lexical access in aphasic and nonaphasic speakers. *Psychological review*, *104*(4), 801–838. https://doi.org/10.1037/0033-295x.104.4.801

Douglas, K. (2002). *My Stroke Of Luck*. London: Piatkus.

Edelman, G., & Greenwood, R. (1992). Jumbly words and rights where wrongs should be: The experience of aphasia from the inside. Far Communications.

Engelman, W., Hammond, F. M., & Malec, J. F. (2014). Diagnosing pseudobulbar affect in traumatic brain injury. *Neuropsychiatric disease and treatment*, 10, 1903–1910. https://doi.org/10.2147/NDT.S63304

Fama, M. E., Hayward, W., Snider, S. F., Friedman, R. B., & Turkeltaub, P. E. (2017). Subjective experience of inner speech in aphasia: Preliminary behavioral relationships and neural correlates. *Brain and Language*, 164, 32–42. https://doi.org/10.1016/j.bandl.2016.09.009

Fama, M. E., Henderson, M. P., Snider, S. F., Hayward, W., Friedman, R. B., & Turkeltaub, P. E. (2019b). Self-reported inner speech relates to phonological retrieval ability in people with aphasia. *Consciousness and Cognition*, 71, 18–29. https://doi.org/10.1016/j.concog.2019.03.005

Fama, M. E., Lemonds, E., Levinson, G. (2022). The subjective experience of word-finding difficulties in people with aphasia: A thematic analysis of interview data. *American Journal of Speech-Language Pathology*, *31*(*1*), 3–11. https://doi.org/10.1044/2021_AJSLP-20-00265

Fama, M. E., Snider, S. F., Henderson, M. P., Hayward, W., Friedman, R. B., & Turkeltaub, P. E. (2019). The subjective experience of inner speech in aphasia is a meaningful reflection of lexical retrieval. *Journal of Speech, Language, and Hearing Research*, *62*(1), 106–122. https://doi.org/10.1044/2018_JSLHR-L-18-0222

Fama, M., & Turkeltaub, P. (2020). Inner Speech in Aphasia: Current Evidence, Clinical Implications, and Future Directions. *American Journal Of Speech-Language Pathology*, *29*(1S), 560–573. https://doi.org/10.1044/2019_AJSLP-CAC48-18-0212

Gigerenzer, G. & Goldstein, D.G. (1996) Mind as Computer: Birth of a Metaphor, *Creativity Research Journal*, 9:2–3, 131–144. https://doi.org/10.1080/10400419.1996.9651168

Goodglass, H., Kaplan, E., Weintraub, S., & Ackerman, N. (1976). The "tip-of-the-tongue" phenomenon in aphasia. *Cortex*, 12, 145–153. https://doi.org/10.1016/S0010-9452(76)80018-4

Hayward, W., Snider, S. F., Luta, G., Friedman, R. B., & Turkeltaub, P. E. (2016). Objective support for subjective reports of successful inner speech in two people with aphasia. *Cognitive Neuropsychology*, 33(5–6), 299–314. https://doi.org/10.1080/02643294.2016.1192998

Lakoff, G. (1994). *Index of Metaphors*. Conceptual metaphor home page. Retrieved February 9, 2023, from http://www.lang.osaka-u.ac.jp/~sugimoto/MasterMetaphorList/MetaphorHome.html

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.

Littlemore, J. (2019). *Metaphors in the mind: Sources of variation in embodied metaphor*. Cambridge University Press. https://doi.org/10.1017/9781108241441

Lubbock, T. (2014). Until further notice, I am alive. Granta.

Luria, A. (1970). *Traumatic Aphasia*. Berlin, New York: De Gruyter Mouton. https://doi.org/10.1515/9783110816297

Luria, A. R. (1972). The man with a shattered world: The history of a brain wound. Harvard University Press.

Maloney, C. (2013). Finding My Voice With Aphasia: Walking Through Aphasia. Iuniverse.Com.

Marks, L. (2017). *A Stitch Of Time*. NY: Simon & Schuster

Maslen (2010). Working with large amounts of metaphor data. In Cameron, L., & Maslen, R. (Eds.). *Metaphor analysis*. Equinox.

Mills, H. (2004). A mind of my own: memoir of recovery from Aphasia. Authorhouse.

Mumby, K., & Roddam, H. (2021). Aphasia and spirituality: The feasibility of assessment and intervention using wellhead and shalom. *Aphasiology*, *35*(7), 925–949. https://doi.org/10.1080/02687038.2020.1752907

Nozari, N., & Novick, J. (2017). Monitoring and control in language production. *Current Directions in Psychological Science*, *26*(5), 403–410. https://doi.org/10.1177/0963721417702419

Plug, L., Sharrack, B., & Reuber, M. (2009). Seizure metaphors differ in patients' accounts of epileptic and psychogenic nonepileptic seizures. *Epilepsia*, *50*(5), 994–1000. https://doi.org/10.1111/j.1528-1167.2008.01798.x

Pragglejaz Group (2007). MIP: A Method for Identifying Metaphorically Used Words in Discourse. *Metaphor And Symbol*, *22*(1), 1–39. https://doi.org/10.1080/10926480709336752

Reddy, M. J. (1979). The conduit metaphor: A case of frame conflict in our language about language. In A. Ortony (Ed.), *Metaphor and Thought* (pp. 284–310). Cambridge: Cambridge University Press.

Resch, R. (2012). *Without Utterance*. Everett, WA: Starseed Publications.

Roelofs, A. (2014). A dorsal-pathway account of aphasic language production: The WEAVER++/ARC model. *Cortex*, *59*, 33–48. https://doi.org/10.1016/j.cortex.2014.07.001

Sacks, O. (2014). Luria and "Romantic Science" In A. Yasnitsky & M. der Veer René van, Ferrari (Eds.) *The Cambridge Handbook of Cultural-Historical Psychology*. Cambridge University Press https://doi.org/10.1017/CBO9781139028097.028

Schultz, C. (2010). *Crossing The Void*. Bellingham, WA: Chuckanut Enterprises, LLC.

Semino, E. (2005). The Metaphorical Construction of Complex Domains: The Case of Speech Activity in English. *Metaphor And Symbol*, *20*(1), 35–70. https://doi.org/10.1207/s15327868ms2001_2

Semino, E. (2019). *A "metaphor menu" for people living with cancer*. "Metaphor, cancer and the end of life" project. https://wp.lancs.ac.uk/melc/the-metaphor-menu/

Semino, E., Demjén, Z., Demmen, J., Koller, V., Payne, S., Hardie, A., & Rayson, P. (2015). The online use of Violence and Journey metaphors by patients with cancer, as compared with health professionals: a mixed methods study. *BMJ Supportive & Palliative Care*, *7*(1), 60–66. https://doi.org/10.1136/bmjspcare-2014-000785

Taylor, J. (2009). *My Stroke Of Insight*. New York, N.Y.: Penguin

Vidali, A. (2010). Seeing what we know: Disability and theories of metaphor. *Journal of Literary & Cultural Disability Studies*, *4*(1), 33–54. https://doi.org/10.1353/jlc.0.0032

Wernicke, C. (1874). *Das aphasische Symptomencomplex*. Cohn & Weigert.

West, P. (2008). *The shadow factory*. Lumen Books.

World Health Organization (2001). International classification of functioning, disability and health: ICF. World Health Organization, Geneva

Wulf, H. (1973). *Aphasia, My World Alone*. Detroit: Wayne State University Press.

Zwijsen, S. A., van der Ploeg, E., & Hertogh, C. M. P. M. (2016). Understanding the world of dementia. how do people with dementia experience the world? *International Psychogeriatrics*, *28*(7), 1067–1077. https://doi.org/10.1017/s1041610216000351

Appendix A Summary of biographical factors and aphasia characteristics in the accounts analysed.

This table summarises the information provided in the books about the author's background and impairment. Descriptive clinical terms are applied for clarity which are not used in the texts, for example, 'non-fluent' for speech described as 'slow and halting.'

Book	Author	Aetiology	Aphasia Characteristics	Biographical Factors
Stroke Diary: The Secret of Aphasia Recovery (2016)	Broussard	Ischaemic stroke at around 60yrs.	Fluent aphasia, semantic & neologistic paraphasias, 'empty' speech with use of fillers. Difficulties with insight, self-monitoring and working memory.	First career as naval engineer, later PhD and employment in workforce development. Living with wife.
My Stroke of Luck (2002)	Douglas	Stroke at 79yrs.	Non-fluent aphasia, apraxia & dysarthria. Unimpaired comprehension and cognition, intact inner speech.	Actor. Living with wife.
Until Further Notice I am Alive (2012)	Lubbock	Left temporal lobe tumour progressing over two years, leading to his death at 53yrs.	Gradually worsening aphasia, fluctuating symptoms, variation in which modalities most affected. Periods of relatively preserved writing.	Arts journalist. Living with wife and young child.
Finding My Voice with Aphasia: Walking through Aphasia (2013)	Maloney	Left temporal lobe stroke in early 50s.	Receptive and expressive language difficulties, short-term memory problems.	Teacher with interest in dyslexia. Previously an accountant. Living with father.
A Stitch in Time: The year a brain injury changed my language and life (2017)	Marks	Left middle cerebral artery haemorrhage at 27yrs, damaging perisylvian area and basal ganglia.	Expressive language difficulties, and apraxia. Initial lack of inner speech and receptive aphasia, impacting self-monitoring of speech. Difficulties with reading, writing, executive functioning and working memory. Emotional, social and personality changes.	Actor and doctoral student. Moved back in with parents after stroke.
A Mind of My Own: memoir of recovery from Aphasia (2004)	Mills	Penetrating parietal-occipital injury in a motorcycle accident at age 32.	Post-traumatic amnesia, "significant nonfluent" aphasia with initial receptive/auditory processing difficulties. Memory problems. Difficulties with pragmatics, concrete thinking. Altered time perception and cognition.	Classics professor. Moved back in with mother and brother.

(*Continued*)

(Continued).

Book	Author	Aetiology	Aphasia Characteristics	Biographical Factors
Without Utterance: Tales from the Other Side of Language (2012)	Resch	Ischaemic left internal carotid artery stroke at 44yrs. Additional neurological impairments at 69yrs.	Expressive difficulties with retrieving words and with speech fluency, also affecting cognition and inner speech. Some initial difficulty with receptive language and/or auditory processing. Later impairment worsened speech and language and affected executive function and sensory integration.	Psychoanalyst and child development researcher. Amateur artist.
Crossing the Void: My Aphasic Journey (2010)	Schultz	Ischaemic left posterior middle cerebral artery stroke at 53yrs.	Fluent aphasia with variable expressive language, sometimes producing neologistic jargon. Some difficulties with understanding, especially of abstract concepts. Reading and writing impaired.	Co-owner with her husband of an outdoor activities shop. Jehovah's Witness.
My Stroke of Insight: A brain scientist's personal journey (2009)	Taylor	Left hemisphere haemorrhagic stroke, affecting parietal, temporal and frontal lobes, at 37yrs.	Nonfluent expressive aphasia, initial impairment of receptive language and inner speech. Altered cognition and perception, memory problems, difficulty with mental time-travel.	Academic and neuroanatomist, involved in science communication and mental health research.
The Shadow Factory (2008)	West	Stroke while in hospital with an infection at 73yrs.	Global aphasia, with initial delirium and amnesia. Recovery through one syllable perseveration, to being able to speak and write with use of circumlocution and semantic substitutions.	Novelist. Living with wife.
Aphasia, my world alone (1973)	Wulf	Stroke at 57yrs.	Difficulties primarily with expressive language. Phonological and mixed paraphasias. Initially receptive involvement persisting as difficulties with auditory scene analysis and attention. Self-monitoring impacted by fatigue. Typing easier than speech or handwriting. Reading difficulties, phonological and word-order errors in silent reading.	Small business co-owner with husband.

(*Continued*)

(Continued).

Book	Author	Aetiology	Aphasia Characteristics	Biographical Factors
Jumbly Words, and Rights Where Wrongs Should Be: The Experience of Aphasia from the Inside (eds. Edelman & Greenwood, 1992)	'Maria' (short extract)	Stroke at 25yrs.	Anomia, semantic paraphasias, difficulty with self-monitoring of speech. Reading of paragraphs impaired. Cognition and personality affected.	Not given.

Appendix B Overview of how methodological trustworthiness was ensured at each stage of the analysis.

Identification of metaphors was carried out following the procedure outlined by Pragglejaz Group (2007) and Cameron and Maslen (2010), coding of Vehicle Groups and topics and description of systematic metaphors following the recommendations of Cameron, Maslen & Low (2010), and recommendations on working on large amounts of metaphor data were incorporated following Maslen (2010).

Step 1: Familiarisation with Texts and Selection of Descriptions of Language Processing

Familiarity with the texts through reading and rereading was a necessary foundational step in reducing researcher expectation and bias. It was crucial initially for understanding idiosyncratic expressions used to communicate about aspects of language processing. These expressions can involve unique metaphors, abstract concepts, or shorthand phrases that encapsulate complex, contextually rich aspects of their experience of aphasia. Thus to identify relevant sections for analysis it was necessary to understand that for example, any reference by Marks (2017) to 'the Quiet,' by Wulf (1973) to 'the extra room in my head,' or by West (2008) to 'the BBC man' refer to aspects of language processing. The selection of relevant passages before the identification of potential metaphors reduced the risk of missing metaphors due to researcher expectations (Cameron & Maslen, 2010). An inclusive approach was taken to selection of relevant passages as it was not always possible to draw a clear distinction between descriptions of impact and of the impairment. The inclusion of disputed cases allowed for as comprehensive a dataset as possible to be compiled, while reducing the risk of missing relevant metaphors and lessening the influence of researchers' subjective decision-making on case-by-case decisions.

Step 2: Metaphor Identification

Trustworthiness was maximised through initial training, consensus decision-making and documentation of decisions, and a final check for consistency, following the recommendations of Cameron and Maslen (2010). Two group workshops with the research assistants were conducted, followed by individual training sessions and checking of expressions identified until a reliability rate of >80% for twenty consecutive items was reached (with this process repeated for each book). Once a consistent standard of identification was established, regular group discussions were implemented to maintain this consistency. Decisions on inclusion and exclusion criteria which resulted from problematic cases were recorded (see Appendix C), and the first author carried out a final check using these criteria across all of the sources. Familiarity with the texts also supported the next stage in the analysis as some conventional metaphors may not be immediately conspicuous, or their metaphoricity may not be apparent from a single instance. However, when such metaphors appear repeatedly, or are in some instances elaborated and more obviously metaphorical, this provides justification for their inclusion.

Step 3: Coding of Vehicle Terms and Topics

Reliability in coding of vehicle groups was maximised through collaborative decision-making in regular group discussions between the first author and research assistants, and cross-checking of all data by at least two researchers, with each book checked by the first author and at least one research assistant (Cameron, Low & Maslen, 2010). A two-level coding system was used. 'Vehicle Group 1' codes used language close to that of the source texts, whereas 'Vehicle Group 2' provided a higher level of abstraction. This structure helped ensure that broad categories or over-interpretations did not overshadow the nuance of the original data. It also allowed easy cross-checking of 'Vehicle Group 2' labels against 'Vehicle Group 1' codes, ensuring they were true to the original expressions. We grouped metaphor vehicles before adding topic codes, following Cameron Low and Maslen's (2010) recommendation that this helps researchers to "avoid trying to second guess what the speakers meant and concentrate on the words they actually said."

Step 4: Description of Systematic Metaphors

The first author led the description of systematic metaphors, due to the need for familiarity with the entire dataset and the full autobiographical accounts. To triangulate this process, another researcher conducted an analysis on four accounts, identifying five systematic metaphors which were used to describe word production. This independent analysis agreed on the two most prevalent metaphors (with minor variation in wording and emphasis: LANGUAGE/WORDS AS OBJECTS, and WORDS AS SPATIALLY LOCATED). SELF AS MACHINE/COMPUTER was also found, as in the current study; the remaining two metaphors WORD-FINDING AS FIGHT, and SELF AS CHILD, are present in the larger dataset but are not discussed in the current study as they did not feature as prominently as the metaphors which are included. Thus there was considerable agreement across these two independent interpretations of the data, with agreement on the two most prevalent metaphors, and differences in the description of less common metaphors which are consistent with use of a narrower dataset.

Following Maslen's (2010) recommendation that "it is important to avoid treating the dataset as contiguous data, losing touch with the contextual meaning of its original context," the original full accounts were regularly consulted during this stage of analysis. Care was taken not to introduce theoretical preconceptions into the analysis, with the interpretation of systematic metaphors carried out without reference to specific models of word production. The description of systematic metaphors were carried out without the imposition of preconceived theoretical models.

Step 5: Interpretation

The first author engaged in regular discussions with the second and third authors to reflect on her interpretation of the data, and to address issues related to expectation and bias. To minimise the influence of theoretical preconceptions, the description and interpretation of systematic metaphors was carried out without prior commitment to one or more specific models of word production. Rather, psycholinguistic concepts were applied in a piecemeal and pragmatic way in response to the data. That the findings provide support for symptoms represented by different types of model provides evidence that this was effective. The emergence of themes which were not anticipated, and which were not pre-existing research interests of the authors (such as spiritual experiences relating to inner speech) also reflect success in reducing the impact of theoretical preconceptions on description of systematic metaphors.

Many of the autobiographical accounts include objective reports or descriptions of their symptoms. While these do not constitute directly collected objective data, they do provide some evidence for the validity of the interpretations given here. A further source of internal evidence is in the robustness of the relationship between the vehicle groups identified, and the specific aspects of word production which they describe. Cameron, Low and Maslen (2010) state that "the more robust the relationship [between semantically similar metaphor vehicles and the topics they express], the stronger the claim that can be made about the underlying factors it reveals." That there is high consistency within and across accounts between use of particular vehicle groups and the aspects of word production being referred to is evidence of the systematicity of the metaphors described

Appendix C

Collaborative decisions made on inclusion criteria through discussion of initial problematic cases.

- Include similes and explicit or marked metaphors
- Include common verbs and nouns (e.g. 'make')
- Include conventionalised metaphors (e.g. 'word-finding')
- Include personification
- Include negated/rejected similes and metaphors (e.g. 'words were not lost')
- Metaphor vehicles can be multi-word
- Include metaphorical reference to language or communication (e.g. 'the word spoke')
- Include descriptions of 'inner speech' and mental imagery ('I heard/saw the word in my head')

Appendix D

Extract of the final list of Vehicle Group 2 codes and the Vehicle Group 1 codes which they include (most frequent twelve shown here).

physical objects/structure: change shape or state, cover/disguise, connection/touch, construction/make/attach, empty/void/gap, exist/thing, handle/grasp/carry, moving through mind/body/environment, object of perception, possession/lost/found, share/give/receive, tidy/messy/match/sort/broken, tool

personification/animation: animate/moving, breed/evolve/grow, controller/guard, criminal/rebel/trickster, having thoughts/feelings, hunting/fugitive, monster, negotiation/competition, social/personal relationship, soldier/employee/servant, summon/return/appear/materialise, teach, waking/sleeping

disintegration/fragmentation: body/mind as parts, decomposition/crumbling/bits and pieces, language as broken, self as multiple, world as fractured

container/barrier: barrier, being in/in/searching inside, clothes/cover/disguise, container size/capacity, specific container (if not other VG1), empty/void/gap/blank, file/folder/filing cabinet, freedom/escape, full/empty, house/wall/window/door, in, limit/boundary/beyond, locked/closed/key/hidden in/prison/cage, open, pierce, putting in/taking out, searching inside
displacement: alien/foreign, detached, different planets/space/earth, different world/inner vs outer world, displaced identity, far away, isolation, reality/unreality, self as other,

foreign/alien language/creative writing: code/idiosyncratic meaning, dictionary, foreign/translation/language(s), grammar, language community/dialogue, poetry, story/narrative, voice/spoken language, wordplay/games, writing/orthography/text,

fluid: absorb/osmosis/soak, air/gas/evaporate/cloud, drown/flounder, float/drift, flowing/seeping/raining/erupting, fluid/water, mud/mire/bog/wading, pond, river/stream, sea, swimming/sinking, tank/reservoir/pump

journey/landscape: advance/travel, adventure/quest/explore, hill/climb, landscape/scene, led/follow/guide/map, road/path/avenue, setback/block/false start/dead end/lost

machine/computer: car/train/vehicle, computer/info processing/circuitry, mechanical/electrical/hydraulic

violence/competition: battle/war; blast/barrage, dangerous, defeat, defence/siege, fatal/lethal, force/seize, game/sport/physical effort, physical fight/assault/struggle, retreat/advance/battlefield, revenge, shock/stun/silence, soldier/army, survive, victim, weapons/resources

clarity/darkness: clarity/lucidity/light, darkness, fog/blur

viewpoint/visibility: fractured/distorted vision, insight/see in, invisibility, obscured vision, perspective/focus, reflect/mirror