Metaphor use in aphasia

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Chapter 1 Introduction

1.1 Metaphor about aphasia: the first example

"It's new and probably something they hadn't heard of. I didn't know what it was…I recall one nurse describing it as: 'Imagine you are in a foreign country and you are trying to tell someone about the refrigerator. You know it's a refrigerator. They know it's a refrigerator. However, the language barrier is keeping you from getting the story across.'" This is what an aphasia sufferer's wife said when she talked about her experience.[1] A nurse tried to explain to her what aphasia is and what it is like. The nurse set up a scene about a person's overseas experience to draw comparisons with experience and feelings of people with aphasia (PWA). The language barrier people face in a foreign country shares some similarities with the language difficulties that PWA are suffering from. If the speaker and the hearer use different languages, usually it is difficult for them to understand each other; and this resembles the plight that PWA face: their utterances are relatively unintelligible, or they have difficulty in understanding speech. Moreover, the language barrier in a foreign country is easier to understand for people who are not familiar with aphasia, like the family caregiver in this context. That is to say, the nurse described aphasia by comparing it to something else, which is more accessible for the recipient to understand.

When the nurse described aphasia, there is an example of metaphor use to help people know more about aphasia. In this thesis, the main objective to be explored is how metaphors are used in aphasia. In order to meet this objective, it is necessary to answer two questions: one is how metaphors are used by PWA; and the other is how people express their feelings on aphasia and form ideas on it by using metaphors. However, before discussing these two questions, we need to consider what metaphor is and what aphasia is. In this chapter, we will provide some background information on metaphor and aphasia in 1.2 and 1.3; 1.4 is an overview of metaphor use in aphasia; then, we will discuss research goals and the scope of this dissertation in 1.5; and lastly, there will be an outline of the whole dissertation.

1.2 Metaphor

1.2.1 Metaphor, from the perspective of traditional rhetoric

The word "metaphor" originates from Greek *metaphorá*, which means 'transference'. This term is taken from ancient rhetoric for a figure of speech (Bussmann, 1990/1996, p.744). As a figure of speech, in metaphor, a word or phrase literally denoting one kind of object or idea is used in place of another to suggest a likeness or analogy between them (Merriam-Webster, n.d.). In this tradition, metaphor use is a deviation from the normal (or literal) meaning to produce a rhetorical effect. For instance, in this line "shall I compare thee to a summer's day", the poet asked whether it was possible to make a comparison between the beloved one and a

[1] https://www.aphasia.org/stories/aphasia-threads-bob-lee-ann-and-samye/

summer's day. In the sonnet, qualities of a summer day were described in a detailed and vivid way to express how good and amiable the person was.

I. A. Richards (1936) made a distinction between two elements of a metaphor: the tenor and the vehicle. The tenor is the underlying idea or principal subject which the vehicle conveys. In that sonnet, "thee" is the tenor and "a summer's day" is the vehicle. The vehicle is metaphorically used to describe the tenor with attributes of "a summer's day".

In *The Poetics* and *The Rhetoric*, Aristotle examined metaphor use in poems. In his opinion, metaphor brings about learning and creates understanding and knowledge. One example is Homer who calls people's old age "the stubble", which conveys knowledge in a pleasant and easy way.[2] Cameron (1999) regarded this Aristotelian opinion as an essentially cognitive view on metaphor, as metaphor produces a new understanding on the tenor. However, the real cognitive turn of metaphor study did not come until the 20th century.

1.2.2 The conceptual metaphor theory, an overview

In 1980, the publication of *Metaphors We Live By* from Lakoff and Johnson marked a new epoch in metaphor study. The conceptual metaphor theory (CMT) first expounded in this book holds the view that metaphors are not a mode of language serving as "ornaments" in language, but they are matter of human thought. On the linguistic level, people use metaphorical expressions. On the conceptual level, metaphor use can reflect speakers' feelings and attitudes towards described entities; at the same time, people's perception of the world is influenced or even shaped by the use of metaphors. For example, in the metaphor at the beginning, the language barrier in a foreign country can evoke an image of embarrassment or frustration in communication, which may have an impact on how people understand and judge aphasia.

CMT did not come from nowhere. Mácha (2016) discussed similarities or affinities between CMT and previous classical theories of metaphor. For instance, Richards (1936, p. 94, as cited in Mácha, 2016) paid attention to metaphor in thought, as he said, "when we use a metaphor we have two thoughts of different things active together and supported by a single word, or phrase, whose meaning is a resultant of their interaction". In addition, before CMT, Reddy (1979, 1993) proposed a concept, the "conduit metaphor" based on his analysis of commonly used expressions on language, such as "Your real feelings are finally getting through to me.", that is, human language functions as a conduit that enable ideas and feelings to transfer between people. The conduit metaphor is the main category of figurative expressions when we talk about human communication or meta-language; and it is omnipresent and difficult to avoid when English speakers discuss human communication. Reddy is the pioneer who has pointed out that the core of metaphor study is thought, and metaphor is an indispensable part in everyday language to conceptualize the world (Lakoff, 1993). Similar ideas are also presented in the CMT, which considers metaphor use as a mode of thought, not only a rhetorical device.

In CMT, a conceptual metaphor is a connection between two semantic areas which are called "conceptual domains", and there is a metaphorical mapping

[2] http://people.wku.edu/jan.garrett/401s07/arismeta.htm

from a "source domain" to a "target domain" (Lakoff, 2014). Metaphors are ubiquitous in language, "and the metaphorical meanings are given by conceptual metaphorical mappings that ultimately arise from correlations in our embodied experience" (Lakoff & Johnson, 1980, p. 247). A frequently cited conceptual metaphor is ARGUMENT IS WAR. WAR is the source domain, and the notion of WAR is used to describe attributes of the target domain AGUMENT. For example, in the sentence "This was the opening shot in his argument.", the basic meaning of the noun "shot" is "an act of firing a gun", and the contextual meaning is "a remark that is intended to criticize someone". The metaphorical use of "shot" reveals the feature of an argument: it can be a heated debate in which people "attack" each other like in a war.

In the rhetorical tradition, metaphors are viewed as a semantic phenomenon, and the relationship between the vehicle and the tenor is based on the same or similar semantic features (Bussmann, 1990/1996, p. 744). As a figure of speech, metaphor was valued for the rhetorical effect in literary language. In contrast, the CMT has situated metaphors on the cognitive or perceptual level, and extended the metaphor study to everyday language.

Kövecses (2016) has concluded six principal characteristics of CMT: metaphors are all pervasive; there are systematic mappings between two conceptual domains; the mapping is from concrete domain to abstract domain; metaphors occur primarily in thought; conceptual metaphors are grounded; the provenance of source domains is multifarious.

As for the pervasiveness of metaphor, in fact, this is not a brand-new label stuck on metaphor, as Nietzsche considered "all language is metaphor" (Oakes, 2008). The Cognitive Linguistic Group in University of California at Berkeley compiled two editions of the list of conceptual metaphors in 1989 and 1991.[3] The compiling is based on the observation of recurrent patterns in authentic language use, which correspond with certain metaphorical structure. It is a reservoir that enumerates numerous examples of how metaphors conceptualize people, entities, and ideas in a systematic way. The arrangement is from a more general metaphorical framework to more specific ones under the broader conceptual construction. There are also sentences as examples under the specific metaphorical frameworks. All data were collected from published books, papers, student papers, and research seminars. For instance, with THEORY as the target domain, conceptual metaphors include THEORIES ARE CONSTRUCTED OBJECTS, THEORIES ARE BEINGS WITH LIFE CYCLES, THEORIES ARE COVERS FOR THE FACTS, etc. (Lakoff et al., 1991). There are specific cases under these frameworks forming a hierarchical order, such as,

(1) THEORIES ARE CONSTRUCTED OBJECTS
—THEORIES ARE MACHINES
—e.g. The theory was successfully fixed.
—THEORIES ARE BUILDINGS
—e.g. They constructed this theory from the ground up.

[3] http://araw.mede.uic.edu/~alansz/metaphor/METAPHORLIST.pdf

(2) THEORIES ARE BEINGS WITH LIFE CYCLES
—THEORIES ARE PEOPLE
—e.g. This theory fathered many others.

However, it is not inferred that every single metaphor can be or should be categorized into certain conceptual metaphor. After decades of hard work, CMT researchers have found thousands of conceptual metaphors from all kinds of genres, such as academic writing, fictions, poems, mass media, conversations, etc. (Kövecses, 2016).

The conceptual metaphor's definition emphasizes "source domain", "target domain", and "mapping". The linguistic realization of the "source domain" and "target domain" equates with the "vehicle" and "tenor" in rhetoric. Langacker (1987, p. 488) defined "domain" as "a coherent area of conceptualization relative to which semantic units may be characterized". The definition given by Kövecses (2010, p. 324) is "our conceptual representation, or knowledge, of any coherent segment of experience". This conceptual representation can be also called "concept". A domain can be a basic conceptualization, like space, smell, colour, and other sensations; in other cases, it can be complex with many details, like two domains TREATING ILLNESS and FIGHTING A WAR in TREATING ILLNESS IS FIGHTING A WAR.

In metaphors, the concept A (the target) is understood by means of the concept B (the source). A set of systematic correspondences can be found between the source and the target in the sense that constituent conceptual elements of B correspond to constituent elements of A. These conceptual correspondences are often called "mappings" (Kövecses, 2010, p. 7). For instance,

(3) He was born in 2010.

There is a "time as container" metaphor in this sentence. The preposition "in" is used metaphorically, as the metaphorical mapping is from the SPACE domain to the TIME domain— "in" from showing something or someone inside a container or building to indicating something occurs during certain time. The basis of this metaphor is also human experience of objects and containers: events and actions occur in bounded time spans, which resembles objects in certain containers. Therefore, on the basis of the observation of recurrent patterns of metaphorical uses of spatial prepositions to refer to temporal dynamics, the conceptual metaphor TIME IS SPACE or TIME IS A CONTAINER can be derived.

In CMT, the locus of metaphor is not about its linguistic form or the ornamental effects in literature, "but in the way we conceptualize one mental domain in terms of another" (Lakoff, 1993, p. 203). In general, the metaphorical mapping is from a concrete concept to a more abstract one, that is, people are apt to conceptualize and reason unfamiliar and abstract concepts in terms of more familiar knowledge and more concrete ideas (Gibbs, 1994, 2006; Lakoff & Johnson, 1980, 1999). As for the example "in 2010", people use a preposition for space when they talk about time, and compared with the visible space, the concept of time is more abstract (invisible and intangible). Similarly, for the LOVE IS A JOURNEY

metaphor, compared with the concept JOURNEY, LOVE is so complex and abstract that it is difficult to pin down precisely, and it is impossible to imagine using the notion of LOVE in the source domain to make JOURNEY more intelligible and accessible.

The CMT put its emphasis on metaphor use in thought, which is manifested in three aspects (Kövecses, 2016). Firstly, a conceptual metaphor helps people to perceive and conceive an entity or concept in the target domain. For example, when we talk about what "life" is, various conceptual metaphors may be utilized: LIFE IS A JOURNEY, LIFE IS A WHEEL/CYCLE (*Saṃsāra* in Buddhism), and so on. Secondly, when we have some reasoning about the target domain, we use implications from the source domain. In the two examples about LIFE, the source domains are JOURNEY and CYCLE. These two source domains may bring different outlook on life. If life is a "cycle" or "wheel", people can be guided to think about how to live the current life and prepare for the next "cycle", and it is less possible to draw such an inference in the LIFE IS A JOURNEY metaphor. Thirdly, metaphor processing involves the activation of source and target domains.

In the metaphor LIFE IS A JOURNEY, the concepts in the source domain and the target domain share some similarities. For instance, the human life also has a start point and an end; we may face some obstacles in our lives; we may come across guides in our lives; major choices in life are crossroads, etc. For these metaphors, the metaphoricity is grounded in similarity, which can explain why the pairing (like LIFE and JOURNEY) is not unexpected. However, in some metaphors, such as LOVE IS A FIRE/WARMTH (e.g. "My love for her still smoulders."), it is quite hard to find a resemblance between LOVE and FIRE. Love is a highly subjective emotion, and warmth is the sensorimotor experience brought by the rise of temperature. The mechanism in these metaphors is about the correlation in experience between intensity and fire. If someone engages in high intensity activities, the body temperature rises and the body produces heat (Grady, 1997; Kövecses, 2016). There is a correspondence between the intensity of love and the intensity of flame, and maintaining intensity is maintaining heat. Metaphors like LOVE IS FIRE or AFFECTION IS WARMTH can be viewed to be grounded in the correlation between abstract mental activities and physical sensations.

The provenance of source domains is complicated and diverse. It has been thoroughly elucidated by Gibbs (2017). To put it simply, metaphors emerge from the interplay of the brain, bodies, and the whole world; and they are ultimately explained as the product of an entire context-sensitive dynamical system. In another word, metaphors come from the complex and ongoing interaction between human body, culture, and context.

1.2.3 Some important concepts in CMT

Apart from those that have been mentioned, there are also some important terms in CMT, such as "image schema", "frame", "mental space", and "scenario".

"Image schema" was introduced by Mark Johnson (1987), and it was defined as "a recurring, dynamic pattern of our perceptual interactions and motor programs that gives coherence and structure to our experience" (Johnson, 1987, p. xiv). Hampe (2005) has concluded four characteristics of image schemas:

a) They are embodied prelinguistic structures.
Image schemas are structures relating to spatiotemporal relationships, which are acquired from the early infancy through all sensorimodalities. They are prior to the linguistic structure.

b) They are highly schematic gestalts.
That is to say, people cannot read many details from an image schema. It is a skeletal description of sensory-motor experience. For instance, for the SOURCE-PATH-GOAL structure, we cannot get any information on where the source and goal are, and who/what is on the path, etc.

c) They exist as continuous and analogue patterns beneath conscious awareness, and they are independent of other concepts.

d) They are internally structured and highly flexible.

"Internally structured" means they are made up of very few related elements. The flexibility of image schemas means they are manifested in different transformations in various contexts. To illustrate this with an example, the bodily experience and interaction with the world give rise to cognitive structures, like the spatiotemporal metaphorical mapping in Example 3 "He was born in 2010" that is based on the "CONTAINER" schema. Additionally, many other metaphors can be explained by the same image schema, in other words, numerous forms of manifestation can be found, for instance,

(4) How can I get out of this dilemma?
(5) She withdrew into herself.

In Example 4, a dilemma or a difficult situation is a container; the human body is a container for the self in Example 5.

The theoretical construct "frame" has been introduced and discussed for decades (Fillmore, 1975, 1982; Goffmann, 1967; Minsky, 1975) in different fields such as sociology, artificial intelligence and semantics. In Fillmore's frame semantics, a frame is a schematization of detailed everyday experiences, which is a knowledge structure in our long-term memory (Evans & Green, 2006, pp. 166, 222).

In metaphor study, sometimes it is difficult to distinguish between domains and frames. Scholars have given different explanations on their relation (Sullivan, 2013; Kövecses, 2017). According to Kövecses (2017), frames are conceptual structures that are less schematic than domains, and they have more conceptually specific information than domains. For instance, in LIFE IS A JOURNEY, the source domain JOURNEY can be expatiated by frames like TRAVELLER, GUIDE, ROUTE, etc. As a concept, the JOURNEY domain is elaborated by particular aspects, like "My teacher has shown me the way." (GUIDE), "the path of cooperation" (ROUTE), etc.

"Mental space" is a term in cognitive linguistics proposed by Fauconnier (1994). Stored in the working memory, mental spaces are real-time/online cognitive

constructs created in the current context (Birdsell, 2017). Just as Fauconnier (2007) said, "mental spaces are very partial assemblies constructed as we think and talk for purposes of local understanding and action. They contain elements and are structured by frames and cognitive models". So, mental spaces are structured from frames with more specific information from local discourse. Such conceptual specification is also called a "scenario", which is a specific subdomain category (Musolff, 2006). A scenario is regarded as the knowledge about a specific setting, and it includes "entities/participants, roles and relationships, possible goals, actions and events, and evaluations, attitudes, emotions, and the like" (Semino et al., 2016).

Still, take the JOURNEY domain as an example. As we have discussed, the frame ROUTE/PATH is an elaboration on it, with some specific information, such as it is a way "from one place to another". However, as the concept in a domain, the thought in a frame is also decontextualized conceptual information stored in people's long-term memory. If we go to utterances produced by individuals in real communication, it is not uncommon that we find sentences like

(6) This deal is a landmark in our company's international expansion.
(7) John has reached a crossroads in his career.
(8)

人生	并	不	都	是	康庄大道。
rénshēng	*bìng*	*bù*	*dōu*	*shì*	*kāngzhuāngdàdào*
life	actually	not	all	be	broad roads

Life is not always with a bright and good future.

In these examples, the scenario use involves "the conspicuous building along the path" and different types of "roads" in information-rich contexts. In everyday communication, the concepts in the PATH/ROUTE frame are embodied in various scenarios, like LANDMARK, CROSSROADS, BROAD ROAD (康庄大道 in Example 8), etc.; and these scenarios elaborate the frame. Typical and specific aspects of the source-situation emerge from these scenarios (Musolff, 2006).

Besides, what is notable is the term "metaphorical framing". Framing is a way of influencing people; and for metaphorical framings, we use metaphorical expressions to lead (or even direct) others to see an entity or idea in one way, rather than other ways (Enfield, 2022, p. 113). Like the first example at the beginning of this chapter, that nurse employed the FOREIGN COUNTRY framing to make the family caregiver understand difficulties in aphasic communication in terms of the language barrier people may face in a foreign country. The concept of "framing" should not be confused with the level of "frame" in metaphor analysis. However, in practice, it is possible to analyse how metaphors are framed on different levels.

1.3 Aphasia and types of aphasia

1.3.1 Aphasia

As for aphasia, the National Institute on Deafness and Other Communication Disorders of U.S. gave a definition on it:[4]

[4] https://www.nidcd.nih.gov/health/aphasia

Aphasia is a disorder that results from damage to portions of the brain that are responsible for language. Aphasia usually occurs suddenly, often following a stroke or head injury, but it may also develop slowly, as the result of a brain tumour or a progressive neurological disease. The disorder impairs the expression and understanding of language as well as reading and writing.

Stroke is the biggest reason for adult aphasia. About 85% of PWA are stroke patients (Bastiaanse, 2010, as cited in Bos, 2015), and around 25-40% of stroke survivors suffer from aphasia.[5] According to the estimate of the National Aphasia Association in U.S., over two million Americans are affected by aphasia.[6] In China, although no figure can be found on how many people acquire aphasia, there were more than three million in-patients with stroke from the hospital quality monitoring system in 2018 (China Stroke Statistics 2019 Writing Committee, 2020). It is not difficult to infer that the size of PWA in China must be quite large.

Signs and symptoms of aphasia may vary from person to person, as the locations of brain lesions and levels of severity are different. Because of the diversity and complexity of aphasia, in the history of aphasia diagnosis and treatment, there emerged a tremendous number of ways and approaches to categorize various aphasic syndromes and classify different types of aphasia. However, many scholars have adopted simple dichotomies to classify aphasia to avoid the intricacy when multiple criteria or indexes are taken into consideration (Murdoch, 1990, p. 67). One frequently used dichotomy is to distinguish one kind of aphasia from another by the criterion of fluency (Benson, 1967), that is, whether PWA can produce fluent utterances or not.

1.3.2 Types of aphasia

In spite of numerous ways of categorization in aphasiology, we adopt the Boston classification. The key diagnostic distinction is the speech fluency, and aphasia can be divided into fluent and non-fluent. Wernicke's, conduction, anomic and transcortical sensory are fluent aphasia; non-fluent aphasia includes Broca's, transcortical motor and global. In each subtype, types of aphasia are grouped according to other factors like comprehension and repetition. Table 1 is taken from Brookshire (2015, p. 200) to show characteristics of every type:

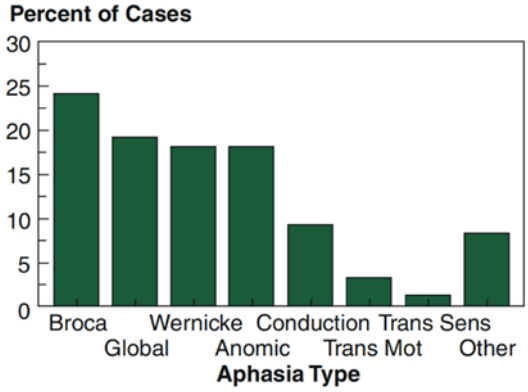
Table 1.1
Features of Aphasia Syndromes

[5] https://www.webmd.com/brain/aphasia-causes-symptoms-types-treatments#1
[6] https://www.aphasia.org/

Aphasia Syndrome	Lesion Location	Fluency	Speech	Word Retrieval	Repetition	Comprehension
Broca	Posterior inferior frontal lobe	Nonfluent, telegraphic	Phonetic dissolution	Fair, but misarticulated	Labored, misarticulated, telegraphic	Fair to good
Wernicke	Posterior superior temporal lobe	Fluent, empty	Verbal (semantic) paraphasia	Poor, with verbal paraphasias	Fluent, verbal paraphasias, grossly restricted retention span	Poor
Conduction	Parietal lobe	Fluent, sensical	Literal (phonemic) paraphasia	Fair, with literal paraphasias	Fluent, literal paraphasias, some restriction of retention span	Fair to good
Anomic	Temporal, parietal lobe	Fluent, sensical	Verbal (semantic) paraphasia	Fair, with verbal paraphasias	Good	Fair to good
Transcortical motor (anterior isolation syndrome)	Anterior, superior frontal lobe	Nonfluent, sparse	Variable	Variable, with delays in initiation	Good, but delays in initiation	Good
Transcortical sensory (posterior isolation syndrome)	Posterior, superior parietal lobe	Fluent, empty	Variable	Poor	Good	Poor
Global	Large, perisylvian	Nonfluent	Literal, verbal paraphasia, verbal stereotypies	Poor	Poor; literal, verbal paraphasias, grossly restricted retention span	Poor

Figure 1.1 illustrates percentages of each type of aphasia in a group of 444 aphasic adults seen in the Aphasia Research Center, Boston Veterans Administration Medical Center (Benson, 1979, as cited in Brookshire, 2015, pp. 200-201):

Figure 1.1
Proportions of PWA Exhibiting Various Aphasia Syndromes



It reveals that most cases with non-fluent aphasia are Broca's and global aphasia; in fluent aphasia, Wernicke's and anomic take a high proportion. Let's have a closer look at characteristics of two typical patterns: Broca's in the non-fluent aphasia group and Wernicke's in the fluent aphasia group.

Broca's aphasia

The classification 'Broca's aphasia' was named after the French physician and anatomist Paul Broca. He found the relation between the defect in speech production and the lesion in the left frontal lobe after the autopsies of his two patients. The most striking feature of people with Broca's aphasia is telegraphic speech. Here is an example when a person with Broca's aphasia tries to describe a drawing about a picnic (see Appendix for the picture) in the Western Aphasia Battery (WAB) (Dronkers & Baldo, 2009):

I see dog, boy, boy, sand, see book, people, boats, on boat...girl and man reading, man fishing...

Their utterances are labelled "telegraphic" and "agrammatic". One reason is that they are not fluent, with abnormal pauses and recurring of single words. Words are produced one by one, and polysyllabic words come out syllable by syllable, separated with singularly longer pauses compared with people with no language disorder. People with Broca's aphasia speak slowly with greater effort. Usually, the length of their utterances is limited to no more than four words. Moreover, content words (nouns, verbs, etc.) are more frequently used than function words (conjunctions, prepositions, etc.). For English speakers, it has been observed that "and" is always used to connect strings of content words (Brookshire, 2015, p. 194).

Wernicke's aphasia

Wernicke's aphasia was named after the German psychiatrist and neuropathologist Carl Wernicke. The most noticeable characteristic is the impairment of spoken and written language comprehension. People with Wernicke's aphasia can speak fluently, with normal rate. When a person with Wernicke's aphasia was asked to describe the picnic picture, the person replied as follows (Dronkers & Baldo, 2009):

The/goll//dz/George. It isn't correct. He guess – he/hamilz/in the the one guy who/stamilz/in the – oh I can't say it. This girl who has her own rain. She can see this/goll/who has a ride. A picnic – he is/kain/a you see the mai tai.

Here is an example when a person with Wernicke's aphasia was asked to talk about his home (four rooms downstairs and three rooms upstairs) (Brookshire, 2015, p. 195):

Well, it's a meender place and it has two…two of them. For dreaming and pinding after supper. And up and down. Four of down and three of up…

They can speak, and may speak much. Some Wernicke's aphasia sufferers can extend their speech with circumlocution and many empty words. Function words are not omitted, like "after", "in" and "up". Nevertheless, their fluent speech often becomes incomprehensible, like neologisms "meender" and "pinding" in the example.

1.4 Metaphor use in aphasia

From the first example at the beginning of this chapter, we know that through metaphors people can explain how it feels if someone acquires aphasia. Similarly, PWA can also use metaphors to convey their feelings in aphasic contexts, such as "My sudden stroke left me battling aphasia. I'm lost, sad, I lost my 20 years company."[7] In this example, the sufferer compared experiencing aphasia to a battle. So, metaphor and analogy may still be helpful comparative devices for PWA to explain something unknown, even though aphasia is a language disorder. In fact, narration, poetry, and metaphorical pictures are often employed in aphasic rehabilitation by speech-language pathologists (SLPs) to better hear the voices of their clients, caregivers and medical staff (Broussard, 2016, pp. 71-76; Ganzfried & Greenfield, 2016; Pound, 2013; Shafi & Carozza, 2011). Moreover, it is not only medical staff who use metaphor in rehabilitation, but it is also PWA who make use of metaphors in treatment and recovery (Mills, 2004), as it is also indicated by the metaphor of "battling aphasia" above.

Researchers have also studied what metaphors are used by PWA, their family caregivers and medical practitioners when they describe their experiences and feelings in PWA's hospitalization and rehabilitation (Barrow, 2008; Ferguson et al., 2010; Mitchell et al., 2011). For instance, through interviews with 11 PWA,

[7] https://identitytheftbook.org/meet-robert-a-fellow-author-who-wrote-to-motivate-stroke-survivors-during-their-recovery/

Mitchell et al. (2011) found that in their narratives, metaphors specific to aphasia included APHASIA IS A THIEF/BARRIER/GIFT/ENLIGHTENMENT, etc.

In Othenin-Girard (2015), the author is a therapist and aphasia sufferer. In the personal narrative about living with aphasia, the author used a vivid metaphor to express the feeling of dissonance: "aphasia is an abyss". Additionally, when narrating aphasic experience, metaphorical expressions containing "mist", "fog", "mask", "veil", "wall", and "exile" are commonly employed to depict a detachment from self and from others (Pound, 2013, pp. 11, 133-136).

From the previous research on metaphor use in aphasia, it can be concluded that many studies attempted to collect metaphors relating to aphasia and aphasia experience by means of interviews and personal narratives. Their findings give inspiration to us for our studies on how metaphors are used in aphasia. In this dissertation, we will choose some commonly used metaphors in aphasia settings, and they will be analysed in specific contexts. In doing so, conceptual metaphors need to be scrutinized in the scope of scenarios or mental spaces, considering characteristics of scenarios. That is to say, the scenario analysis (Musolff, 2006, 2016) will be adopted to detect how metaphors are used by PWA, caregivers, and practitioners, which will be expatiated in Chapter 5.

As for another paradigm of metaphor study, in Dorst (2011), Herrmann (2013), Kaal (2012) and Krennmayr (2011), it has been verified that metaphors are not distributed uniformly in every word class, and this uneven distribution of metaphors is also affected by how different word classes are divided in certain texts. For instance, compared with other genres, conversations feature the conspicuous use of verbs; and accordingly, in conversations, over 30% of all metaphors are verbs (Kaal, 2012), which take up the largest proportion in metaphor related words.

Their studies have revealed the relationship between metaphor, word class, and genre/register. For people with different types of aphasia, the word class distribution in their utterances can differ from each other. For instance, as we have mentioned, people with Broca's aphasia produce fewer function words, and people with Wernicke's aphasia do not omit them. Furthermore, for content words, a phenomenon called "the noun-verb dissociation" has been discussed in aphasiology (Goodglass et al., 1966; Laiacona & Caramazza, 2004). Specifically, for people with non-fluent aphasia (like the Broca's aphasia), it is more difficult to produce verbs; the production of nouns is more impaired for people with fluent aphasia (like the Wernicke's aphasia).

For people with different types of aphasia, their use of metaphors may show different characteristics, because word classes may not be divided equally in their utterances. In this dissertation, we will investigate the metaphor use by PWA from this perspective. In addition, what is noticeable is that all studies about aphasia and word classes we have mentioned are research based on observations of English-speaking PWA's language production. It can be interesting to ascertain the interaction between metaphor distribution, aphasia types, and word classes in another language, such as Chinese, and to see whether it is different from the one in English.

1.5 Research goals and the scope of the dissertation

The overall objective of this dissertation is to explore metaphor use in aphasia. To achieve this, we can frame this research from two perspectives: one is about how well or badly PWA produce metaphors, namely, their performance in metaphor production; and the other one is how metaphors express speaker's feelings and shape people's views on aphasia, viz., how metaphors work.

For the first perspective, we will follow the approach in Steen et al. (2010). They (ibid.) have developed a step-by-step method to identify metaphors from corpus data; and then chi-square tests were carried out to see how metaphors are distributed in word classes and registers (or genre). Two elements, word class and register, were taken into consideration because it was found that the distribution of metaphors could be explained by word class distribution in registers. For certain register/genre, in certain word class, there is a tendency for a higher/lower frequency of metaphors. As for our studies, we will not compare the inter-register differences. However, in order to see PWA's performance in metaphor production, it is workable to have a look at the inter-group differences, for instance, participants with different types of aphasia and the non-aphasic group. For the second perspective, we will adopt the CMT (Lakoff & Johnson, 1980) to investigate how metaphors conceptualize aphasia; and in this step, there will be exhaustive and thorough analyses on metaphorical framings used by PWA, caregivers and clinicians. We need to tailor some subgoals in specific studies to attain the overall goal of the research:

Subgoal 1 To probe into how metaphor frequencies interact with word classes and groups of participants;

Subgoal 2 To explore how metaphors work to conceptualize aphasia in contexts.

For the first subgoal, it will be achieved through two contrastive studies on English and Chinese data, which are from databases of AphasiaBank. So Subgoal 1 can be resolved into two parts:

Subgoal 1a To probe into how metaphor frequencies interact with word classes and groups of participants in English data;

Subgoal 1b To probe into how metaphor frequencies interact with word classes and groups of participants in Chinese data.

1.6 The overall structure of the dissertation

In this research, we will explore how metaphors are used in aphasia. The second chapter provides practical ways to identify metaphors. In Chapter 2, the distinctions between different kinds of metaphors will be discussed; and there will be identification procedures for different kinds of metaphors. All of these are the theoretical and methodological basis for the empirical studies in next chapters.

The next three chapters are the main body of this dissertation, which consist of three topics on metaphor use in aphasia:

Chapter 3 is a quantitative study on metaphor use on how metaphors are distributed in word classes and different groups of people (PWA and the control group). In order to get authentic linguistic materials, it is possible to select data from

an online database AphasiaBank. In this study, we focus on the performance of English speaking PWA.

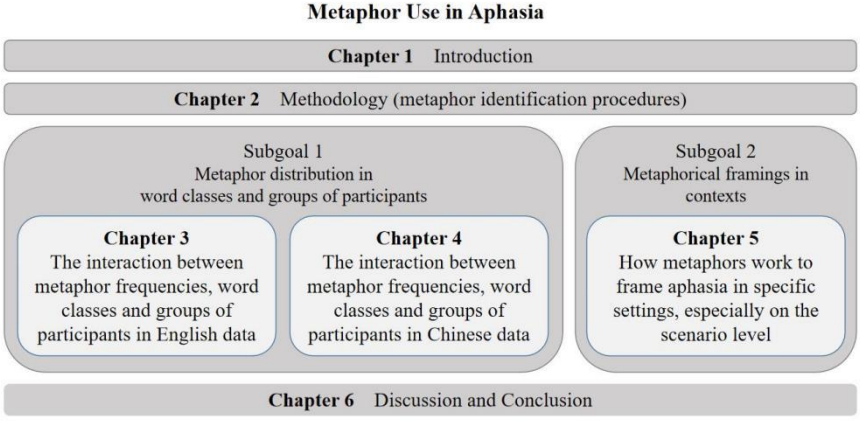
Chapter 4 investigates how metaphors are distributed in word classes and different groups of people (PWA and the control group). This study will follow the same approaches in Chapter 3, and we will also get data from AphasiaBank. However, in this study, we focus on the performance of Chinese speaking PWA. What is more, when it comes to Chinese, the features of this language need to be taken into account. If necessary, the method can be adjusted to the language.

In Chapter 5, there is a qualitative study on metaphor use in thought. For example, for PWA, caregivers and SLPs, this study will discuss how to convey their feelings and ideas on aphasia and aphasia rehabilitation by using metaphors.

The sixth chapter is the final part of the dissertation, and it is a conclusion of all studies: what the results tell us, implications of this research and suggestions for the future study. The following is an overview of the whole thesis:

Figure 1.2

Schematic Diagram of the Dissertation



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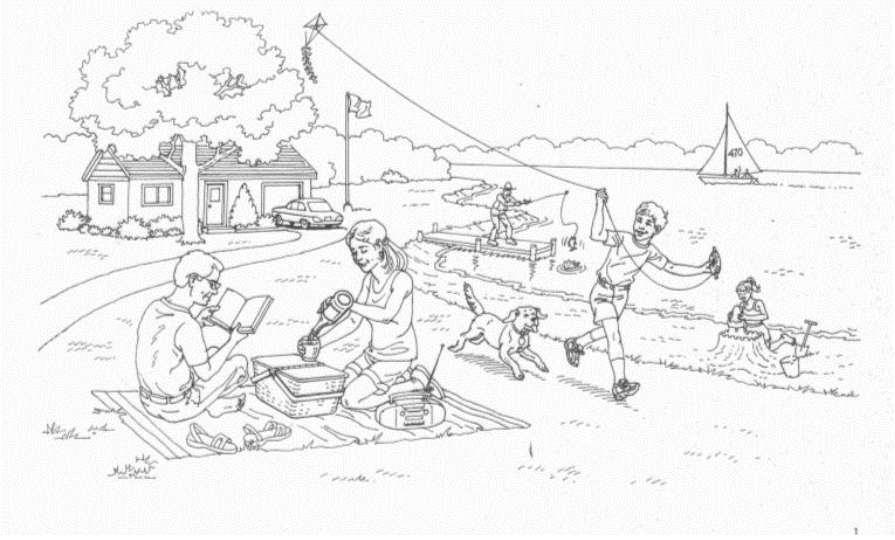
Appendix

Picnic, in Western Aphasia Battery (Kertesz, 2007)



Note. From Kertesz, A. (2007). *Western Aphasia Battery—Revised (WAB-R)*. Pearson.

Chapter 2 Metaphor theories and metaphor identification

2.1 Introduction

In Chapter 1, we have discussed what aphasia is, the taxonomy of aphasia, metaphor and metaphor theories. The emphasis of this chapter is how to identify metaphors. It provides requisite theoretical background for subsequent studies. We will differentiate between linguistic metaphors and conceptual metaphors. In addition, there are different methods to identify them in texts, which will be presented in this part.

2.2 Conceptual metaphor and linguistic metaphor

The conceptual metaphor theory (CMT) helps differentiate between conceptual metaphors and linguistic metaphors. Linguistic metaphors are metaphorically used linguistic expressions, including words (or lexical units) or phrases (e.g. phrasal verbs) in terms of a semantically unrelated domain (Thibodeau et al., 2017). They can be considered to be words (lexical units, or lexical items) or other linguistic expressions from source domains, that is, they are the realization of the conceptual metaphor on the linguistic level. Conceptual and linguistic metaphors are not an either-or division of metaphors. Instead, they are notions that are relating to metaphor study from two perspectives.

According to Lakoff (1993), metaphor is fundamentally conceptual in nature, and linguistic metaphor is a surface manifestation of conceptual metaphor. Similar viewpoints have been expressed by other scholars (Gibbs, 2008; Kövecses, 2003; Ortony, 1993). Steen (2011a) stated that metaphors can be studied as part of language or thought, and a three-dimensional model was proposed for metaphor study (Steen, 2008, 2011b), that is, "metaphor in language", "metaphor in thought", and "metaphor in communication". These three dimensions correlate with three approaches in metaphor study: semiotic, psychological/cognitive, and social. Under this framework, the first and the second dimensions correspond roughly to linguistic metaphors and conceptual metaphors, and our studies place emphasis on these two kinds of metaphors.

For a conceptual metaphor, usually, people can find more than one linguistic metaphor pertinent to it. Take the conceptual structure TREATING ILLNESS IS FIGHTING A WAR as an example, speakers and recipients have encyclopaedic knowledge about the source domain (FIGHTING A WAR) and the target domain (TREATING ILLNESS), and there is a mapping from the source domain to the target domain. This is a consideration from the conceptual or cognitive perspective. As for the concrete and specific realization of this metaphor, there can be a tremendous number of linguistic metaphors: "the so-called cure is no magic bullet"; "beating measles takes patience"; "he was attacked by an unknown virus"; etc. Three words "bullet", "beating", and "attacked" in these sentences are linguistic metaphors related to the source domain "FIGHTING A WAR".

2.3 Metaphor identification

Methodologically, the indispensable and logical step before beginning a process of metaphor analysis is to decide which linguistic expressions are potentially used metaphorically. It is practical and necessary to discriminate between metaphors and non-metaphors, since linguistic metaphors are the realization of conceptual metaphors in the linguistic form. Researchers on metaphors have formulated procedures to identify or extract metaphors. For instance, Barcelona (2002), Cameron (1999), Charteris-Black (2004, pp. 35-37) and Stefanowitsch (2006) searched for metaphors under the framework of CMT, namely, the presupposition being the existence of certain conceptual metaphors, with metaphorical mappings from one domain to another, or interaction between more conceptual spaces. The process involves identifying domains and mappings, or conceptual metaphor explanations. "My career is on the rocks" is determined to be metaphorical because of its relation to the conceptual metaphor LIFE IS A JOURNEY (Gibbs, 2017, p. 58; Steen, 2007, pp. 284-289). Some methods for identifying linguistic metaphors are not performed in this deductive way, like MIP (Metaphor Identification Procedure) designed by Pragglejaz Group (2007) and MIPVU, a procedure developed from MIP by Steen et al. (2010). These procedures work in a more bottom-up fashion (and the basic analysis unit is the lexical unit), without so much consideration on the conceptual structure.

In this study, MIPVU and the method to extract metaphors from corpora developed by Stefanowitsch (2006) are adopted to detect metaphors in given texts, especially in corpora.

2.3.1 Identifying linguistic metaphors via MIPVU

MIPVU provides a step-by-step protocol for identifying metaphors in discourse. The word is the unit of analysis when performing MIPVU, and MIPVU adopts the term "lexical unit", following the Pragglejaz Group (2007). The British National Corpus (BNC) has a special word category for so-called polywords, like "of course" and "by the way", which are regarded as single lexical units, and MIPVU follows this tradition. Given this starting point, MIPVU advocates the use of corpus-based dictionaries as tools to help identify metaphor related words (MRWs), in the following way (Steen et al., 2010, pp. 25-26):

① Find MRWs by examining the text on a word-by-word basis.

② When a word is used indirectly and that use may potentially be explained by some form of cross-domain mapping from a more basic meaning of that word, mark the word as metaphorically used (MRW, indirect).

③When a word is used directly and its use may potentially be explained by some form of cross-domain mapping to a more basic referent or topic in the text, mark the word as direct metaphor (MRW, direct).

④When words are used for the purpose of lexico-grammatical substitution, such as third person personal pronouns, or when ellipsis occurs where words may be seen as missing, as in some forms of co-ordination, and when a direct or indirect meaning is conveyed by those substitutions or ellipses that may potentially be explained by

some form of cross-domain mapping from a more basic meaning, referent, or topic, insert a code for implicit metaphor (MRW, implicit).
⑤ When a word functions as a signal that a cross-domain mapping may be at play, mark it as a metaphor flag (MFlag). Lexical flags include "like", "as if", "metaphorically", "resembling", etc.
⑥ When a word is a new-formation coined, examine the distinct words that are its independent parts according to steps 2 through 5.

MIPVU hence identifies three types of metaphor in language use: indirect metaphor, direct metaphor, and implicit metaphor:[8]

① Indirect metaphor occurs when there is contrast and comparison between the contextual and a more basic meaning.
In the sentence "There are always the twin problems of how to get the information and how to present it", the adjective "twin" is identified as an indirect metaphor. The contextual meaning is "closely connected", and from the *Macmillan Dictionary*, we can refer to the basic meaning of "twin", which is "forming a pair of two similar things". It shows a contrast between these two meanings.

② Direct metaphor occurs when there is no contrast between the contextual and a more basic meaning.
"He turned on me, like a snake". Here, the contextual meaning of "snake" is also the basic meaning, that is, a long and thin reptile without legs. So, there is no contrast or comparison between the contextual meaning and a more basic meaning, only a direct mapping from the source meaning "a long thin animal with no legs and a smooth skin, and some have a poisonous bite that can kill" to the target meaning "attacking suddenly and fiercely as a snake".

③ Implicit metaphor is due to an underlying cohesive grammatical and/or semantic link in the discourse which points to recoverable metaphorical material.
As for deciding implicit metaphors, the first step is to find the underlying cohesive link, usually substitution or ellipsis; the second step is to see whether the cohesive device is related to any MRW (Steen et al., 2010, pp. 39-40). The lexical unit "one" in "The line between art and life is a particular hard one to draw in Kahlo's case" is tagged as an implicit metaphor, because "line" is a word related to metaphor, and "one" is a substitution of this metaphorically used "line".

The VU Amsterdam Metaphor Corpus[9] adopted this method to categorise metaphors into indirect, direct, and implicit. Resources in it can serve as useful references in our research.

In addition to the above main categories for metaphor, MIPVU also has two special categories called WIDLII (When In Doubt, Leave It In) and DFMA (Discard For Metaphor Analysis). WIDLII can be tagged on cases that are borderline. For

[8] http://www.vismet.org/metcor/manual/index.php
[9] http://www.vismet.org/metcor/search/

example, people with aphasia often use percentages when talking about their recovery, "it (speech)'s eighty five percent". According to the *Macmillan Dictionary* of American English, the basic meaning of "percentage" is used in mathematics: "an amount or rate that is equal to a particular part of a total that you have divided by 100", and examples are about expressing the amount of more concrete things like land, population, money, etc. Percentages to evaluate recovery may be labelled "WIDLII" as borderline cases, because raters of the database could not reach a consensus on whether the contrast between the two situations was big enough.

As for DFMA, let's examine the following example: "And I just was starting to feel more back to normal, you know. I was feeling good about, you know, how I felt, you know, then…". Here, "I was feeling good about, you know…" is incomplete, and we do not know what the speaker's intention is after "about". So "about" should be tagged as DFMA.

2.3.2 Identifying metaphors based on CMT

For MIP and MIPVU, it is necessary to follow a word-by-word procedure to detect MRWs, which is time consuming. Compared with the close reading on texts, proposals in Stefanowitsch (2006) are more practicable and applicable when the size of sample is large, such as novels or data from large corpora. What is more, for this method, there must be a prerequisite: it is assumed that conceptual metaphors exist in the data. For corpora with no semantic annotations, there are four means of identification:

① Searching for source domain vocabulary

The precondition is that we have already known a certain semantic domain play a role in metaphorical expressions. The choice of the source domain vocabulary is based on the research goal. It can be selected according to a priori decisions; it can be all members on existing exhaustive lists; and it can be about a keyword analysis of texts. For example, when the researcher planned to probe into orientational metaphors like UP-DOWN and FRONT-BACK, "forward(s)" and "toward(s)" were chosen as keywords to see their lexical collocations in corpora (Partington, 2006). Then, the researcher needs to identify target domains where these lexical items appear.

② Searching for target domain vocabulary

If the research is concerned with the target domain in metaphorical mapping, the first approach is not adequate, as it only seeks words in the source domain that are likely to be relevant to the target domain. If we need to search for target domain vocabulary, in the first step, words relating to the target domain concept are chosen and searched for in the database; in the second step, it is necessary to check whether these items have embedded in the metaphorical mapping which is from the source domain to the target domain. One limitation of this strategy is that if the linguistic form of the target domain concept does not appear, we will miss that metaphor, for example, as for the LIFE IS A JOURNEY metaphor, "He's headed for great things" is more possibly to be excluded compared with "She's at a crossroads in her life".

③ Searching for sentences containing lexical items from both the source domain and the target domain

The tactics are the combination of the preceding methods. In order to search for sentences containing words of the source and target domain concepts, the prerequisites are that the corpus is well annotated for sentence boundaries, and exhaustive lists of vocabulary from both domains are available. However, to identify metaphors in this way has some shortcomings: it may be impossible to have exhaustive lists; this method can only locate expressions that manifest the known metaphor mappings, which may lead to a circular argumentation, like the aforementioned example "My career is on the rocks" in Gibbs (2017, p. 58).

④ Searching for metaphors based on 'markers of metaphor'

The so-called 'markers of metaphor' are equal to metaphor flags or signals in MIPVU. They are words or phrases to signal the comparison or analogy explicitly, such as "like", "as", "as if", and so on. It seems to be a promising and effective way to search for metaphorical expressions with these markers, although clearly it cannot reveal the existence of all metaphorical expressions in discourse.

To sum up, linguistic metaphors and conceptual metaphors are not mutually exclusive, and researchers have differentiated them by way of inspecting metaphors from two viewpoints (language and cognition). For linguistic metaphors and conceptual metaphors, we will identify and label them according to different procedures, viz. MIPVU (Steen et al., 2010) and the method in Stefanowitsch (2006).

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Chapter 3
Metaphor use by people with aphasia: a corpus-based study

Abstract

Background: As we mentioned in previous chapters, metaphors are omnipresent in human language, and most studies are based on observations of healthy people's metaphor use. Moreover, we know that people with aphasia (PWA) can use some metaphors to describe aphasia and express their feelings. It can be instructive to see how aphasic speakers and people without any language disorder use metaphors in their speech. In previous studies, it has shown that the metaphor distribution is associated with word classes and register variations (Dorst, 2011; Herrmann, 2013; Kaal, 2012; Krennmayr, 2011; Pasma, 2011). Conversations are featured by the use of verbs, and not coincidentally, verb metaphors are conspicuous in conversations (Kaal, 2012). As for PWA's utterances, though they are in the same genre (for example, conversations), researchers have found a phenomenon called the "noun-verb dissociation" (Goodglass et al., 1966; Laiacona & Caramazza, 2004) that people with fluent aphasia have more problems in noun production, and for people with non-fluent aphasia, it is more difficult for them to produce verbs. In addition, function words in the speech of people with fluent aphasia are more preserved, and non-fluent aphasic speakers may omit function words (Howard & Hatfield, 1987, p. 147, as cited in Brookshire, 2015, p.193). That is to say, for people with different types of aphasia, nouns and verbs are not evenly distributed in their speech; and they have different performance in function word production.

Aims: This study attempts to solve the problem that how metaphors are used by PWA. It aims to explore the use of linguistic metaphors by people with non-fluent aphasia, people with fluent aphasia and people without language disorder (three groups of participants). The research goal is to see how metaphor related words (MRWs) are distributed across word classes and groups. Additionally, how different metaphor types are distributed is also investigated.

Methods & Procedures: It is a corpus-based study, and all data were selected from AphasiaBank (English). Every word in the database has been labelled with (non-)MRW, the word class, the type of aphasia, the metaphor type, etc. Then, chi-square tests were carried out to determine the degree of association between metaphor, word class and participant group.

Outcomes & Results: Metaphor distribution in the control and fluent aphasic groups share similarities; for some word classes (like verbs and prepositions), metaphors are not evenly divided across groups. Results have also revealed that most words in our data are not metaphorically used, and the overwhelming majority of metaphors are indirect. The distribution of metaphor types varies between the three participant groups, especially for indirect metaphors.

Conclusions: In linguistic metaphor production, the performance of people with fluent aphasia is close to that of the non-aphasic speakers. This echoes the phenomenon that the language production of fluent aphasic speakers is intact or less

damaged than that of people with non-fluent aphasia. The noun-verb dissociation has been found in our data; however, the imbalanced metaphor distribution is only found in verbs: verb metaphors are used significantly less in aphasic participants, especially for the non-fluent aphasic group. In all lexical units, most of them are not metaphorical, and in all metaphors, the overwhelming majority is indirect metaphors, which are consistent with results in the metaphor study in conversations (Kaal, 2012). Through this study, we can have a clearer understanding on the metaphor use by PWA (including people with two types of aphasia). It can also be helpful when scholars probe into how metaphors are used by people with other language disorders.

3.1 Introduction

In a series of studies about the distribution of linguistic metaphors in discourse (Dorst, 2011; Herrmann, 2013; Kaal, 2012; Krennmayr, 2011; Pasma, 2011), it is revealed that metaphors are not divided evenly in word classes and registers. In their studies on metaphor use, all data are from the British National Corpus (BNC), and there are eight categories of word classes and four registers (fiction, academic texts, conversations, and newspapers). (Non-)MRW distribution has been examined across these word classes and registers. Their studies have highlighted the significance of the interaction between metaphor, word class and register. The background of their research includes the nature and properties of these four registers summarized in Biber (1988, 1989, 2006) and Biber and Conrad (2001). In their work, the informational production is taken as the standard, conversations are at the least informational end of the continuum; academic prose and news are the most informational; fiction is in the middle. That is, compared with conversations, academic discourse and news are produced with a more informational purpose. Furthermore, according to Biber's findings, near the informational end, there is conspicuous use of nouns, prepositions, and adjectives; for the other end, marked use of verbs has been found in conversations; and fiction lies between two extremes for the distribution of word classes.

Observations suggest that metaphor distribution in four registers is not a homogeneous phenomenon, namely, linguistic metaphor is in fact the sum of a set of frequencies of metaphorically used words distributed across word classes, and the interaction shows that the components of this sum vary in statistically reliable ways between the four registers (Steen et al., 2010, p. 197). In academic discourse, most metaphors are prepositions and nouns, and in conversations, over half of all metaphors are verbs and prepositions (Herrmann, 2013; Kaal, 2012; Steen et al., 2010, pp. 202, 206, 207). The distribution of metaphors can be explained by word class distribution in registers.

The research goal of this study is to find out how linguistic metaphors are distributed in utterances produced by PWA. All linguistic data in those former studies were selected from a general corpus, which was not designed for research on a language disorder. However, their studies afford us something that merits attention, especially for their research methods and results. In aphasiology, the noun-verb dissociation has been discussed for decades (Goodglass et al., 1966; Laiacona & Caramazza, 2004; Malyutina et al., 2016; Miceli et al.,1984). It contends that people with fluent aphasia have more difficulties in producing nouns than verbs, and people with agrammatic (non-fluent) aphasia have greater deficit in verbs than nouns. In

addition, for people with fluent aphasia (like the Wernicke's aphasia and the anomic aphasia), function words, such as prepositions and conjunctions, remain relatively intact in their speech; however, in utterances produced by non-fluent aphasic speakers, function words may be reduced and impoverished (Howard & Hatfield, 1987, p. 147, as cited in Brookshire, 2015, p.193; Mesulam, 2009).

Previous studies on metaphor distribution (Dorst, 2011; Herrmann, 2013; Kaal, 2012; Krennmayr, 2011) showed that the distribution of metaphors is closely related to word class distribution across registers; and in each register, words of some parts-of-speech (POSs) are more inclined to be used in a metaphorical way. In this case, we may suppose that the interaction between metaphoricity and word class can be different in the three groups of participants.

Distribution of metaphors can be examined from another perspective, namely, to inspect how metaphors are divided across registers in each word class. For specific word classes, verbs and prepositions are more often used in a metaphorical way in all four registers, and conjunctions are frequently used as non-MRWs. In most word classes, MRWs and non-MRWs are distributed remarkably differently across registers (Steen et al., 2010, pp. 210-213). For instance, metaphorical nouns account for 17.6% nouns in academic texts and 8.3% in conversations (Herrmann, 2013). Again, in our study about metaphors in aphasia, for certain word classes, metaphors may be distributed remarkably differently across groups. If we find noun-verb dissociation and imbalanced distribution of function words in our data, within these word classes, can we find the uneven distribution of metaphors across groups with different types of aphasia?

Besides the interaction between metaphor, word class and register, Dorst (2011), Herrmann (2013), Kaal (2012) and Krennmayr (2011) have also detected how different metaphor types (indirect, direct, implicit, and borderline metaphors) are distributed in these registers. The results in all four registers show that metaphors take up a small proportion in every register (from 7.7% to 18.5%), and most metaphors are indirect metaphors, which are used indirectly and can be explained by cross-domain mapping from more basic meanings of the words, like "gap" in "a significant gap in the Labour Party's education and training proposals" (Steen et al. 2010, pp. 25, 32-38). When the metaphor identification procedure MIPVU was introduced in Chapter 2, we explained different types of linguistic metaphors, such as the direct metaphor and the indirect metaphor, which are characterized by different mapping mechanisms. In a direct metaphor, there is a direct mapping between two basic meanings; like "iron" in "the earth was still as hard as iron", there is a direct mapping from the concept IRON to EARTH. In direct metaphors, more than 80% are from fiction and news, and the lowest percentage of direct metaphor use was found in conversations. As we intend to explore conversations in aphasic settings, results of former studies are foundational if we also probe into how metaphor types are divided in groups.

The former research (Kaal, 2012) on metaphor distribution is the starting point for the present study. On the linguistic level, MRWs and non-MRWs are not distributed equally across word classes. For metaphors, some word classes account for higher proportions than others. This reveals that the distribution of linguistic metaphors is related to word classes. Additionally, metaphors are not uniformly divided in four registers. In every register, the metaphor distribution shows some

peculiarities. Though we do not look at data from different registers in this study, metaphors may be distributed likewise vastly differently in our three groups, because PWA have language impairments, and people with non-fluent aphasia and fluent aphasia perform differently in language production relating to word classes, such as the noun-verb dissociation. This unequal division of word classes in different types of aphasia may lead to an imbalanced distribution of metaphors in different groups of participants. In this chapter, we plan to combine these two lines of research to find the interaction between metaphor, word class and group in our data. Then, the analysis on metaphor type distribution is carried out to see whether metaphor types are divided equally across groups. The research questions addressed in this chapter are the following:

RQ1: Within each group, how are linguistic metaphors distributed across word classes?
RQ2: In each word class, how are metaphors distributed across different groups?
RQ3: For different types of metaphors, like indirect metaphors and direct metaphors, how are they distributed in groups?

For the current study, we wonder whether there may be different features when metaphors interact with groups and word classes. So, we have made some hypotheses based on former studies:

HP 1: According to Steen et al. (2010, p. 189), most lexical units are not metaphorically used, and one in every seven and a half words is related to metaphor. The current study may have a similar result on metaphor type distribution as in Steen et al. (2010), that is, most words in our data are non-MRWs, and for MRWs, most of them should be indirect metaphors.
HP 2: As our study also delves into the metaphor used in conversations, compared with the result in Kaal (2012), it is expected that a similar pattern of metaphor distribution across word classes can be found in our data, especially with the control group in our study.
HP 3: For PWA, if the noun-verb dissociation and uneven distribution of function words are found in our data, we predict that the metaphor distribution in nouns, verbs and function words is imbalanced: it is possible that noun metaphors are markedly more used by people with non-fluent aphasic; and for fluent aphasic speakers, they may be characterized by conspicuous metaphorically used verbs and function words.

3.2 Method

3.2.1 Corpus

In this current study, we will apply a metaphor identification procedure to a public data set of language use by PWA in the AphasiaBank. The AphasiaBank is a medical database beginning in 2007, which has used a standardized protocol for collecting narrative, procedural, personal, and descriptive discourse from 2007. All data of the English-speaking PWA and control groups were contributed by more than 20 institutes and organizations in the U.S. and Canada. There are about 290 PWA, as well as 190 control participants in the English subset. Information in the ID

header of every transcript shows the age, sex, and type of aphasia of every aphasic speaker. In AphasiaBank, a distinction is made between non-fluent and fluent aphasia. Broca's, global and transcortical motor aphasia is categorized as non-fluent, while fluent aphasia includes anomic, transcortical sensory, Wernicke's and conduction aphasia. Inclusion criteria for PWA have been limited (with few exceptions) to individuals whose aphasia results from a stroke that can be verified through neuroimaging or a clear medical diagnosis (MacWhinney et al., 2011).

AphasiaBank files can be divided into two parts. The free speech part is personal narratives. The other part concerns picture descriptions, storytelling of Cinderella and procedural discourse on how to make a peanut butter and jelly sandwich. These are less "free" and elicited by a set of black and white drawings, a Disney cartoon book and photographs of peanut butter, bread and jelly. We focus on aphasic metaphor use in conversations in a more casual and natural way, viz. data from the free speech.

In the free speech part of the protocol, PWA were asked three questions on their speech, stroke and recovery, and important events in their lives. For the non-aphasic control group, three questions are about previous illnesses or injuries, experience with people who have difficulties in communicating, and important or scary events. The specific questions are as follows:

For PWA
1. How do you think your speech is these days? (Speech)
2. Do you remember when you had your stroke?
   What are your first memories after your stroke?
   Tell me about your recovery from your stroke. (Stroke)
3. Thinking back, can you tell me a story about something important that happened to you in your life? It could be happy or sad, or from any time, from when you were a kid or more recently. (Important Event)

For controls
1. I was wondering if you could tell me about any injury or illness that you have had. (Illness or injury)
2. I would like you to tell me about an experience with a group of people or with an individual when you've had a difficult time in communicating. (Communication)
3. Thinking back, can you tell me a story about something important that happened to you in your life?
   Or, were you ever in a situation where you were frightened or scared? (Important event or scary experience)

The protocol was designed to come across as maximally natural and conversational, and all interviews were video recorded and transcribed in CHAT format, developed by TalkBank.

3.2.2 Sampling

Data were downloaded at the end of April 2017, including 241 files of PWA and 160 of controls. These files all contain the three questions and answers in personal narratives, and excerpts are sampled from these 401 interview transcripts. We chose

90 participants' files from the database, and these participants consisted of 30 people with non-fluent aphasia, 30 people with fluent aphasia and 30 controls. Within each of the three groups, the selection of excerpts was balanced for sex and age. We divided all participants into five age groups: 35;0-44;11/ 45;0-54;11/ 55;0-64;11/ 65;0-74;11/ 75;0-84;11. In each age group we selected three males and three females. This selection per sex category was based on the quartiles of lengths of participants' utterances: we picked up the excerpt closest to the first quartile, the median and the third quartile. Excerpt length was based on total word tokens, calculated by the program CLAN in the database.[10] As a result, there were 90 files in total: three groups (non-fluent aphasic, fluent aphasic and control) by five age brackets by three length quartiles by two sexes (male and female). They are listed in Appendix A.

It should be noted that the excerpt lengths are uneven, and we can see the non-uniform distribution in the three groups: the word counts are 4,238 in the non-fluent aphasic group, 12,988 in the fluent aphasic group, and 21,383 in the control group. This pattern in the samples is a reflection of the varying abilities across groups to produce utterances, that is, people with fluent aphasia lie between the two extremes, the non-fluent aphasic speakers and the controls.

3.2.3 Metaphor identification by MIPVU

MIPVU (Steen et al., 2010) provides a step-by-step protocol for identifying metaphors in discourse. In this study, we intend to identify all linguistic metaphors via this method. For details of MIPVU, please refer to Chapter 2.

3.2.4 Database

Words in the AphasiaBank come with an independent POS tag in the transcripts' morphological tier. In total, more than 38,000 lexical units are included in the database. These data were transcribed by different researchers, resulting in some inconsistency, including, for instance, alternative spellings: "lymph nodes" and "lymphnodes". We took the American version of the *Macmillan dictionary* as our standard and made all word forms uniform accordingly, as in the VU Amsterdam Metaphor Corpus.[11]

Since POS tagging in the AphasiaBank was done by the program CLAN, it yielded a more elaborated POS tagging system than the one used in MIPVU. In the POS tagging system of AphasiaBank, for example, there are ten subclasses under pronouns, and nouns have subdivided into five categories. However, in MIPVU, the annotation system consists of adjective (AJ), adverb (AV), conjunction (CJ), determiner (DT), noun (N), preposition (PR), verb (V) and remainder (REM). In these eight word classes, the conjunction and preposition belong to function words. The remainder encompasses article, conjunction, cardinal number, possessive, existential 'there', interjection, ordinal number, pronoun, genitive marker, infinitive, unclassified, negative particle, and alphabetical symbol.[12] We hence converted the POS tagging in AphasiaBank into the simpler system used in MIPVU, grouping 39 smaller categories into eight encompassing ones (see Appendix B).

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10 https://dali.talkbank.org/clan/

11 http://www.vismet.org/metcor/documentation/annotation_procedure.html

12 http://www.vismet.org/metcor/manual/index.php#Getting_started

3.2.5 Reliability test

A reliability test was conducted to measure interrater agreement on a sample of the data, testing whether metaphor identification was sufficiently reliable. The reliability test followed the procedure in Steen et al. (2010, pp, 149-151). A 10% sample reliability test of this study was carried out to see the extent of agreement between two analysts when analysing data independently. Coder A was one of the researchers of this study and coder B was experienced in identifying metaphors with MIPVU. Nine files were chosen from all three groups together, three texts from each. Our selection procedure was as follows: the mean length was calculated in each group, and then we chose three texts which were closest to the mean. These samples accounted for 10.2% of all data (3,956/38,609). The two sets of coding obtained a reliability coefficient of Cohen's kappa of 0.64, which meant the agreement between two coders was substantial.

In order to make more objective and accurate judgments, coders met to reach a consensus on metaphorical usage and discussed how to tag words where there was disagreement in the reliability test. All differences between the two coders have been listed: there were 145 disagreements, 70 patterns. In order to resolve some differences effectively, the top patterns with high frequencies were selected from all divergence in the 10% samples (see Appendix C). The purpose of this approach was to collect enough differences between the coders, and after the rectification, it was anticipated that the Cohen's kappa could be promoted to at least 0.80. Coder A rechecked all utterances containing those 18 patterns in Appendix C in the whole database and adjusted or rectified tagging errors relating to those patterns. Correction of these 18 patterns in the test set has boosted Cohen's kappa to 0.82. 4,145 lexical units in the whole 38,609-word database have been rechecked along the same lines, and finally, 920 errors were corrected by coder A. Most of the errors accounted for words wrongly considered to be non-MRWs during the first judgement.

3.3 Analyses

Four analyses were conducted. The first analysis addresses word class distribution per participant group, with word class having eight levels (adjective, adverb, conjunction, determiner, noun, preposition, verb and remainder) and three groups (non-fluent aphasic, fluent aphasic and control). The second and third analyses address the interaction between participant group, word class and metaphor, which has two levels (MRW and non-MRW). Finally, the fourth analysis examines the relation between participant groups and metaphor types (indirect, direct, implicit, WIDLII and non-MRW), and these metaphor types have been discussed in Chapter 2.

3.3.1 Word class distribution within each group

A two-way frequency table was generated to visualise the relationship between groups and word classes. Although in this step, metaphoricity was not taken into account, this analysis is necessary because different word class distributions per group may partly explain the following two analyses addressing (a) metaphor distribution in word classes per group, (b) metaphor distribution in groups per word

class. Any differences between groups regarding word class distribution need to be taken into account in the interpretation of the subsequent analyses (cf. Steen et al., 2010). What is more, the uneven distribution lengths between the three groups do not affect the reliability of the chi-square test. The reason is that even for the shortest length (4,238 words in the non-fluent aphasic group), it is much larger than the minimal total sample size (204 words), when we calculated the sample size of the chi-square test in G*Power (see Appendix D).[13]

Through the chi-square test, or the Pearson's chi-square test, it is to investigate whether two categorical variables forming a contingency table are associated (Field, 2009, p. 783); and the value of this test (χ^2) is calculated in this way (Field, 2009, p. 688):

$$\chi^2 = \sum \frac{(observed\ count - expected\ count)^2}{expected\ count}$$

It is needed to have a value for each cell: first, we have the square of the difference between the observed count and the expected count, and then it is divided by the expected count. The χ^2 equals to the sum of all values from all cells. When the expected count is fixed, the larger the difference between the observed count and the expected count is, the larger the chi-square test value we will get.

There is a significant association between word class and group: $\chi^2(14) = 576.174$, $p < .001$; Cramer's $V = .086$. Cramer's V is a measure to indicate the strength of association between categorical variables, and it is calculated in this way:

$$V = \sqrt{\frac{\chi^2}{n \times \min(c-1, r-1)}}$$

χ^2 is the value of the chi-square test; n is the total count of values (in this case, 38,609); min (a, b) means to select the smaller one between a and b; c is the number of columns, and r is the number of rows in the contingency table. The interpretation of Cramer's V is related to min (c-1, r-1), which has been presented in Appendix E. In order to investigate this association in a more detailed way, we followed the method in Field (2009, pp. 698-699) to break down a significant chi-square test with standardized residuals (std. res.). The standardized residual is a ratio, and the formula is the observed count minus the expected count, and then the difference is divided by the square root of the expected count. Standardized residual values can indicate the degrees of contribution to chi-square values, according to their formulae. The positive values mean the counts are more than expected; the negative values indicate the observed counts are less than expected. Working with a 95% confidence level, standardized residuals should lie between -1.96 and +1.96 (rounding off to ±2 for convenience), while values exceeding ±2 deviate from expectation in a

[13] https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower

statistically reliable fashion. If the absolute value is bigger than 2, the standardized residual is considered to be significant (Field, 2009, p. 699).

Table 3.1
Word Class Distribution in Groups

			Group			Total
			Control	Fluent	Non-fluent	
Word Class	AJ	Count (%)	835 (3.9%)	402 (3.1%)	210 (5.0%)	1447 (3.7%)
		Std. Res.	1.2	-3.8	4.1	
	AV	Count (%)	1824 (8.5%)	1100 (8.5%)	269 (6.3%)	3193 (8.3%)
		Std. Res.	1.3	0.8	-4.4	
	CJ	Count (%)	1750 (8.2%)	1092 (8.4%)	327 (7.7%)	3169 (8.2%)
		Std. Res.	-0.1	0.8	-1.1	
	DT	Count (%)	744 (3.5%)	336 (2.6%)	79 (1.9%)	1159 (3.0%)
		Std. Res.	4.0	-2.7	-4.3	
	N	Count (%)	3349 (15.7%)	1728 (13.3%)	658 (15.5%)	5735 (14.9%)
		Std. Res.	3.1	-4.6	1.1	
	PR	Count (%)	1722 (8.1%)	784 (6.0%)	112 (2.6%)	2618 (6.8%)
		Std. Res.	7.1	-3.3	-10.3	
	V	Count (%)	4780 (22.4%)	2812 (21.7%)	747 (17.6%)	8339 (21.6%)
		Std. Res.	2.4	0.1	-5.6	
	REM	Count (%)	6379 (29.8%)	4734 (36.4%)	1836 (43.3%)	12949 (33.5%)
		Std. Res.	-9.4	5.7	11.0	
Total		Count (%)	21383 (100%)	12988 (100%)	4238 (100%)	38609 (100%)

Note. AJ=adjectives, AV=adverbs, CJ=conjunctions, DT=determiners, N=nouns, PR=prepositions, V=verbs, REM=remainders.

Only conjunctions are divided evenly across three groups. For other word classes, almost all significantly more used word classes in the control group are significantly less used by one or two aphasic groups. Specifically, determiners and prepositions are more used in the control group, and less used in both aphasic groups; nouns are more used in the control group, and significantly less used by people with fluent aphasia; verbs are more used in the control group, and significantly less used by people with non-fluent aphasia. Additionally, remainders are conspicuously less used by the control group, more used by PWA.

In Dorst (2011), Herrmann (2013), Kaal (2012), Krennmayr (2011) and Pasma (2011), the findings have shown that word class distribution in registers offers an explanation for (non-)MRW patterns in registers and word classes. In this study, we will also describe how metaphor interacts with word class and group on the basis of the word class pattern across groups.

3.3.2 Interaction between metaphor, word class and group

Analysis on the interaction between metaphor, word class and group have been designed to investigate the metaphor distribution in different groups and word classes. The second and third analyses were done by means of the log-linear analysis to see which model components can best account for our data. To be specific, it

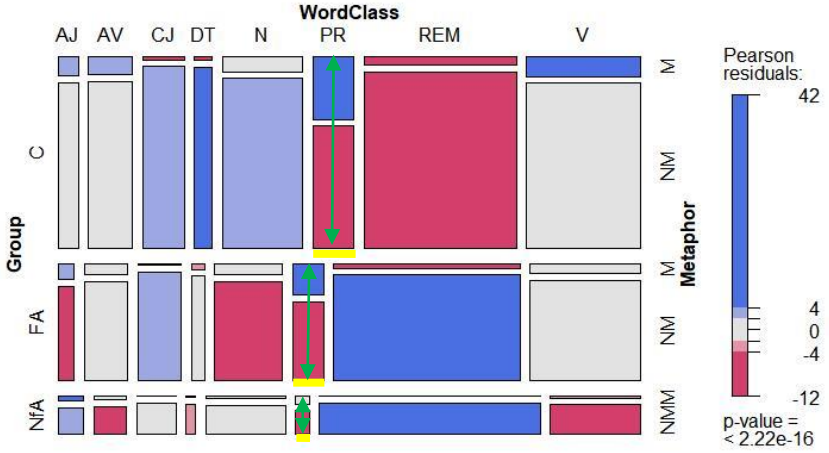
analyses situations in which there are over two categorical variables and we wanted to test for relationships between them (Fields, 2009, p. 789). For the results, the smallest expected count is 2.2 (>1), and there are only two cells (1.9%) with less than 5 observations, so assumptions of the log-linear analysis have been met. The three-way log-linear analysis has a model which can retain all effects. The likelihood ratio is $\chi^2(0) = 0$, $p = 1$, which shows that the highest-order interaction (metaphor × participant group × word class) is significant, $\chi^2(14) = 70.210$, $p < .001$. Hence, we take this as the starting point to scrutinize features of PWA's metaphor use.

As our research interest is to see how people use metaphors, we inquire into the three-way interaction between metaphor, word class and participant group from two perspectives: one concerns the interaction of metaphors and word classes in each group, and the other is the interaction of metaphors and groups within each word class (cf. Kaal, 2012). The aim of these analyses is to answer our research questions about the relation between groups (non-fluent aphasic, fluent aphasic, and the control), (non-)MRW distribution and lexical-grammatical features of expression (POSs). Figure 3.1 clearly shows the distribution of MRWs and non-MRWs. Horizontally, it reveals how (non-)MRWs are distributed across word classes in each group; vertically, it reveals how (non-)MRWs are distributed across groups in each word class. Rectangular areas represent proportions of MRWs and non-MRWs taken up; the widths, numbers of lexical units in eight word classes; the heights, numbers of lexical units in three groups. These points will be expanded on in next sections. Moreover, the next three sections will answer those three research questions. As anticipated above, the colours indicate residuals in the model. The blue shade means the observed count is larger than the expected, and the contrary is shown by the red shade. The formula of the Pearson residual is the same with the one of the standardized residual:

$$R = \frac{observed\ count - expected\ count}{\sqrt{expected\ count}}$$

Take prepositions as an example, horizontally, from the width (indicated by the yellow lines), we can have an idea on approximate numbers of every word classes in each group: in the control group, the numbers of prepositions, adverbs and conjunctions are similar; in the fluent aphasic group, still, the numbers of adverbs and conjunctions are close, but the number of prepositions is less than them, as the width is narrower; however, in the non-fluent aphasic group, prepositions are much fewer than adverbs and conjunctions, and it seems conjunctions are almost three times the width of prepositions. Vertically, from the height (indicated by the green arrows), we can see prepositions produced by the non-fluent aphasic speakers are the fewest; and the control group has more prepositions than two aphasic groups. Rectangular areas stand for proportions of MRWs and non-MRWs, and it is obvious that a small portion of words in each group are metaphorically used. In prepositions, crimson colours are found in non-MRWs in all three groups, which show that they are significantly less used; the dark blue is the indication of the significantly more used metaphors in the control and fluent aphasic groups.

Figure 3.1
Distribution of MRWs/non-MRWs across word classes and groups



Note. C=control, FA=fluent aphasia, NfA=non-fluent aphasia, M=metaphors, NM=non-MRWs; AJ=adjectives, AV=adverbs, CJ=conjunctions, DT=determiners, N=nouns, PR=prepositions, V=verbs, REM=remainders.

It might be quite unclear and abstract what these metaphors look like, if we merely present numbers. Metaphors were identified in every group, and these lexical metaphors were categorized into different word classes. Here are some examples of metaphors in different word classes produced by three groups of speakers:

(1) long time ago (AJ, non-fluent aphasia)
(2) I drove down to Washington (AV, fluent aphasia)
(3) she was back to where she was before it happened (CJ, control)
(4) that illness (DT, control)
(5) I was basketball star (N, non-fluent aphasia)
(6) how is my speech I would say is below average (PR, fluent aphasia)
(7) because it was broken and leg broken and it never fixed (V, fluent aphasia)
(8) this was at the end of October (REM, fluent aphasia)

"Long" in Example 1 is a metaphor because the contextual meaning "lasting for a large amount of time" is figurative compared with the basic meaning on concrete distance. In Example 2, "down" means "going toward the south", which shows a big contrast with its basic meaning, that is, "towards a lower place". In a dictionary, the basic meaning of "where" is to refer to a particular place, and here it means a situation before the speaker's mother got ill in Example 3. As a determiner or pronoun (remainder in MIPVU tagging system), the basic meaning of "that" is used for referring to someone or something that is not very near. When it comes before an abstract noun, like "illness" in Example 4, "that" is regarded as a determiner metaphor. "Star" in Example 5 refers to a popular person or celebrity in sports,

which is a metaphorical use of the concept of the celestial body. The basic meaning of "below" is "in a lower place", and the metaphorical meaning in Example 6 is "less than a certain level". The contextual meaning of "fix" in Example 7 is "to cure an injury or illness", which forms a sharp contrast with the basic meaning on "repair". In Example 8, the metaphorical use of pronoun (belonging to remainders) "this" is similar to that of determiner "that" in Example 4.

As for metaphor types, Examples 9-12 contain indirect metaphors, direct metaphors, implicit metaphors, and borderlines (WIDLIIs). All underlined words in Example 9 are indirect metaphors. "Come back" is a phrase with the basic meaning "to return to a place". Though "recovery" is frequently used with the sense relating to the process after illness or injury, the basic meaning is "the act of getting something again that was lost, stolen, or owed". "Disconnect" and "blowup" in Example 10 are direct metaphors, and "like" in the first sentence was labelled as a metaphor signal. "Recovery" and "with" in Example 11 are indirect metaphors; three "it"s are implicit metaphors, which are anaphora with a metaphorically used antecedent "recovery". In Example 12, the speaker used a range of concrete measurements ("from one to ten") to indicate pain degrees. After group discussion, we achieved a consensus that these figures ("one", "ten" and "six") should be categorized as borderline cases as we could not decide whether they were clear MRWs or clear non-MRWs.

(9) it's sure I came back and with the recovery I became slowly back
(10) but for me like I would love to read it's like a disconnect you know
it (the hurt) was like it was a blowup
(11) but the recovery it seemed longer than it really was but I did very well with it
(12) but it was like a pain that like on a scale from one to ten it was like maybe a six

Metaphor distribution in word classes per group

During this analysis, chi-square analysis between word class and metaphor has been performed in each group. This part tries to find out how MRWs and non-MRWs are distributed across word classes in every group. Standardized residuals with absolute values larger than 2 need to be highlighted to see which cells contribute more to values of chi-square tests. Additionally, (non-)MRWs in each word class are ranked in order of proportions they account for. Then, we can compare the rank orders of (non-)MRW percentages in all three groups.

Table 3.2
(Non-)MRW Distribution in Word Classes for the Control Group

Control

	Non-MRW	**MRW**	**Total**
Adjective Std. Res.	748 (3.9%) -0.4	87 (4.4%) 1.2	835 (3.9%)
Adverb Std. Res.	1651 (8.5%) -0.1	173 (8.8%) 0.4	1824 (8.5%)
Conjunction Std. Res.	1722 (8.9%) 3.3	28 (1.4%) -10.5	1750 (8.2%)

Determiner Std. Res.	731 (3.8%) 2.1	13 (0.7%) -6.7	744 (3.5%)
Noun Std. Res.	3080 (15.9%) 0.7	269 (13.7%) -2.2	3349 (15.7%)
Preposition Std. Res.	1141 (5.9%) -10.7	581 (29.6%) 33.6	1722 (8.1%)
Verb Std. Res.	4267 (22.0%) -1.1	513 (26.1%) 3.5	4780 (22.4%)
Remainder Std. Res.	6077 (31.3%) 3.7	302 (15.4%) -11.7	6379 (29.8%)
Total	19417 (100.0%)	1966 (100.0%)	21383 (100.0%)

For the control group, 9.2% of all lexical units are used metaphorically. The distribution of metaphors differs greatly within word class, $\chi^2(7) = 1585.588$, $p < .001$; Cramer's $V = .272$. In non-MRW conjunctions, non-MRW determiners, non-MRW remainders, MRW prepositions and MRW verbs, the values of standardized residuals are greater than 2. In Non-MRW prepositions, MRW conjunctions, MRW determiners, MRW nouns and MRW remainders, the values of standardized residuals are less than -2. They contribute the most to the chi-square value. Non-MRW and MRW adjectives and adverbs are distributed evenly.

Within non-MRWs, remainders and verbs comprise more than half of them, followed by nouns, conjunctions, adverbs, prepositions, adjectives, and determiners. For MRWs, over half of them are prepositions and verbs. For other word classes, from high to low in percentage, the rankings are remainders, nouns, adverbs, adjectives, conjunctions, and determiners. We can refer to the findings in Kaal (2012): in conversations, the rank order of non-MRWs is remainders, verbs, nouns, adverbs, determiners, conjunctions, prepositions, and adjectives; and the rank order of metaphors is verbs, prepositions, determiners, nouns, adverbs, adjectives, remainders, and conjunctions (see Figure 3.2). Compared with the results in Kaal (2012), in the control group, it is the same that over half of all non-MRWs are expressed by remainders, verbs, and nouns; and more than half of metaphors are verbs and prepositions. Similarly, in both studies, prepositions and adjectives take up low proportions in non-MRWs, and conjunctions in metaphors. Differences are found in the percentages of determiner and remainder MRWs between conversations in Kaal (2012) and the data of the control group in current study.

Figure 3.2 *Percentages of (Non-)MRWs in Kaal (2012)*

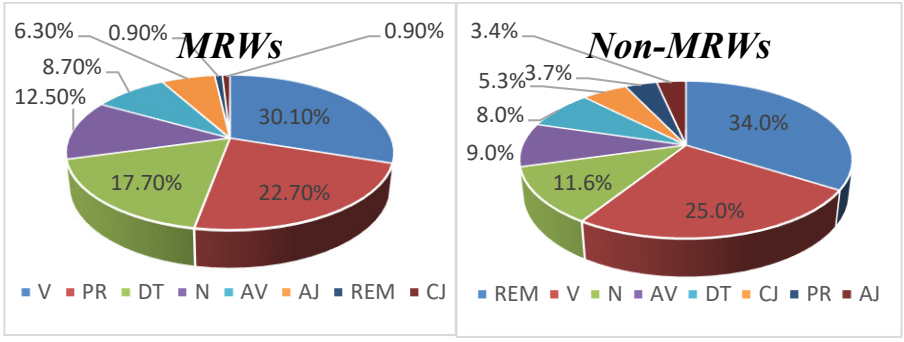


Table 3.3
(Non-)MRW Distribution in Word Classes for the Fluent Aphasic Group

Fluent Aphasia

	Non-MRW	MRW	Total
Adjective Std. Res.	345 (2.9%) -1.4	57 (5.8%) 4.8	402 (3.1%)
Adverb Std. Res.	994 (8.3%) -0.7	106 (10.7%) 2.4	1100 (8.5%)
Conjunction Std. Res.	1080 (9.0%) 2.2	12 (1.2%) -7.8	1092 (8.4%)
Determiner Std. Res.	320 (2.7%) 0.5	16 (1.6%) -1.9	336 (2.6%)
Noun Std. Res.	1566 (13.1%) -0.8	162 (16.4%) 2.7	1728 (13.3%)
Preposition Std. Res.	562 (4.7%) -6.0	222 (22.4%) 21.0	784 (6.0%)
Verb Std. Res.	2580 (21.5%) -0.4	232 (23.5%) 1.2	2812 (21.7%)
Remainder Std. Res.	4552 (37.9%) 2.7	182 (18.4%) -9.4	4734 (36.4%)
Total	11999 (100.0%)	989 (100.0%)	12988 (100.0%)

With regard to people with fluent aphasia, they produce 7.6% metaphors in total, and the distribution of metaphors differs largely within word class, $\chi^2(7) = 683.287$, $p < .001$; Cramer's $V = .229$. Significant deviation is found in MRW adjectives, MRW adverbs, non-MRW conjunctions, non-MRW remainders, MRW nouns, and MRW prepositions, with standardized residuals greater than 2; and in non-MRW prepositions, MRW conjunctions, and MRW remainders, standardized residuals are less than -2. There is balanced distribution of determiners and verbs in non-MRWs and MRWs.

Remainders and verbs together constitute more than half of the non-MRWs. Others' percentages in non-MRWs from high to low are nouns, conjunctions, adverbs, prepositions, adjectives, and determiners. In metaphors, verbs and prepositions take up higher percentages, followed by remainders, nouns, adverbs, adjectives, determiners, and conjunctions. Compared with the rank orders in the

control group, it has emerged that the orders in non-MRWs are the same, differences in metaphors are the reverse orders of verbs and preposition at the high proportion end and determiners and conjunctions at the low proportion end.

Table 3.4
(Non-)MRW Distribution in Word Classes for the Non-fluent Aphasic Group

Non-fluent Aphasia

	Non-MRW	**MRW**	**Total**
Adjective Std. Res.	179 (4.5%) -1.4	31 (13.4%) 5.8	210 (5.0%)
Adverb Std. Res.	238 (5.9%) -1.0	31 (13.4%) 4.3	269 (6.3%)
Conjunction Std. Res.	325 (8.1%) 0.9	2 (0.9%) -3.7	327 (7.7%)
Determiner Std. Res.	76 (1.9%) 0.2	3 (1.3%) -0.6	79 (1.9%)
Noun Std. Res.	598 (14.9%) -1.0	60 (26.0%) 4.0	658 (15.5%)
Preposition Std. Res.	84 (2.1%) -2.1	28 (12.1%) 8.9	112 (2.6%)
Verb Std. Res.	703 (17.5%) -0.1	44 (19.0%) 0.5	747 (17.6%)
Remainder Std. Res.	1804 (45.0%) 1.6	32 (13.9%) -6.8	1836 (43.3%)
Total	4007 (100.0%)	231 (100.0%)	4238 (100.0%)

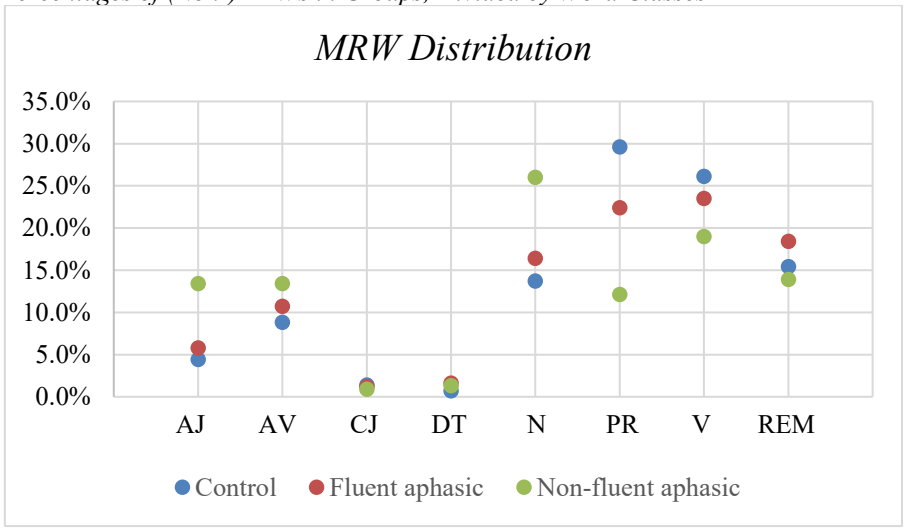
For people with non-fluent aphasia, they use 5.5% metaphors in all word class. The distribution of metaphors differs considerably within word class, $\chi^2(7) = 219.349$, $p < .001$, Cramer's $V = .228$, and one cell (6.3%) has expected count less than 5, and the minimum expected count is 4.31. Within some word classes, uneven distributions between non-MRWs and MRWs can be detected by observing standardized residuals. It shows that adjectives, adverbs, nouns, and prepositions are significantly more used in MRWs, whereas MRW conjunctions, non-MRW prepositions, and MRW remainders are significantly less used. These cells are major contributors to the chi-square value. Determiners and verbs divide equally in non-MRWs and MRWs.

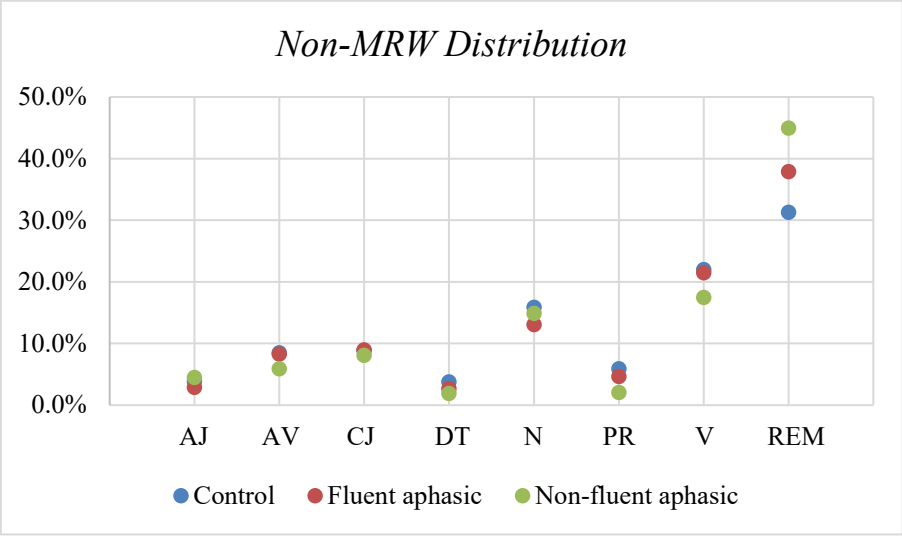
For non-MRWs, nearly half of them are remainders. In order, the proportions of the other word classes as non-MRWs are verbs, nouns, conjunction, adverb, adjective, preposition, and determiner. For metaphors, nearly half of them are nouns and verbs, followed by remainders, adverbs, adjectives, prepositions, determiners, and conjunctions. We can have a closer inspection on the rank orders in the control and fluent aphasic groups to see whether there are some deviations from them with the ones in the non-fluent aphasic group: for non-MRWs, the only difference is adjectives; for MRWs, different orders can be found in nouns and prepositions.

In these three groups, we can find significantly more used conjunction non-MRWs, remainder non-MRWs and preposition metaphors; and significantly less used preposition non-MRWs, conjunction metaphors and remainder metaphors in the control and fluent aphasic groups. For the control and non-fluent aphasic groups, both groups have significantly more use of preposition metaphors; significantly less used preposition non-MRWs, conjunction metaphors and remainder metaphors. For two aphasic groups, one noteworthy feature is that there is significantly more use of noun metaphors.

On proportions of (non-)MRWs in word classes, we can have a better understanding from diagrams in Figure 3.3 on relations of (non-)MRW patterns across word classes in the three groups in this study. In these scatter diagrams, the horizontal axes signify eight word classes, and the vertical axes, percentages. The points represent proportions of MRWs or non-MRWs in certain word classes. Through the (non-)MRW percentages in word classes, it is clear that for non-MRWs, the differences are minor, but for MRWs, the patterns of the control and fluent aphasic groups share more similarities, however, metaphoricity of the non-fluent aphasic group deviates from others, especially on nouns and prepositions. After a check on noun metaphors in all three groups, it turns out that over half of metaphorically used nouns in the non-fluent aphasic group are "stroke" (32 out of 60); the word "stroke" used as a metaphor appears 28 times in the fluent aphasic group (162 noun metaphors in total); for the control group, the frequency of it is the lowest (11 out of 269). As for verb metaphors, the proportion of the non-fluent aphasic speakers is lower than the ones of other two groups.

Figure 3.3
Percentages of (Non-)MRWs in Groups, Divided by Word Classes





Metaphor distribution in groups per word class

The cross tabulation "participant group, metaphor and word class" is shown in Table 3.5, which indicates the interaction between group and metaphor in eight word classes. Metaphor distribution of every group across word classes can be also seen in Figure 3.1.

Table 3.5
(Non-)MRW Distribution in Group per Word Class

Word Class			Group			Total
			Control	Fluent	Non-fluent	
Adjective	Non-MRW	Count (%)	748 (51.7%)	345 (23.8%)	179 (12.4%)	1272 (87.9%)
		Std. Res.	0.5	-0.4	-0.4	
	MRW	Count (%)	87 (6.0%)	57 (3.9%)	31 (2.1%)	175 (12.1%)
		Std. Res.	-1.4	1.2	1.1	
	Total	Count (%)	835 (57.7%)	402 (27.8%)	210 (14.5%)	1447 (100%)
Adverb	Non-MRW	Count (%)	1651 (51.7%)	994 (31.3%)	238 (7.5%)	2883 (90.3%)
		Std. Res.	0.1	0.0	-0.3	
	MRW	Count (%)	173 (5.4%)	106 (3.3%)	31 (1.0%)	310 (9.7%)
		Std. Res.	-0.3	-0.1	1.0	
	Total	Count (%)	1824 (57.1%)	1100 (34.5%)	269 (8.4%)	3193 (100%)
Conjunction	Non-MRW	Count (%)	1722 (54.3%)	1080 (34.1%)	325 (10.3%)	3127 (98.7%)
		Std. Res.	-0.1	0.1	0.1	
	MRW	Count (%)	28 (0.9%)	12 (0.4%)	2 (0.1%)	42 (1.3%)
		Std. Res.	1.0	-0.6	-1.1	
	Total	Count (%)	1750 (55.2%)	1092 (34.5%)	327 (10.3%)	3169 (100%)
Determiner	Non-MRW	Count (%)	731 (63.1%)	320 (27.6%)	76 (6.6%)	1127 (97.2%)
		Std. Res.	0.3	-0.4	-0.1	
	MRW	Count (%)	13 (1.1%)	16 (1.4%)	3 (0.3%)	32 (2.8%)
		Std. Res.	-1.7	2.2	0.6	
	Total	Count (%)	744 (64.2%)	336 (29.0%)	79 (6.8%)	1159 (100%)
Noun	Non-MRW	Count (%)	3080 (53.7%)	1566 (27.3%)	598 (10.4%)	5244 (91.4%)
		Std. Res.	0.3	-0.4	-0.1	
	MRW	Count (%)	269 (4.7%)	162 (2.8%)	60 (1.0%)	491 (8.6%)
		Std. Res.	-1.0	1.2	0.5	
	Total	Count (%)	3349 (58.4%)	1728 (30.1%)	658 (11.5%)	5735 (100%)
Preposition	Non-MRW	Count (%)	1141 (43.6%)	562 (21.5%)	84 (3.2%)	1787 (68.3%)
		Std. Res.	-1.0	1.2	0.9	

	MRW	Count (%)	581 (22.2%)	222 (8.5%)	28 (1.1%)	831 (31.7%)
		Std. Res.	1.5	-1.7	-1.3	
	Total	Count (%)	1722 (65.8%)	784 (29.9%)	112 (4.3%)	2618 (100%)
Verb	Non-MRW	Count (%)	4267 (51.2%)	2580 (30.9%)	703 (8.4%)	7550 (90.5%)
		Std. Res.	-0.9	0.7	1.0	
	MRW	Count (%)	513 (6.2%)	232 (2.8%)	44 (0.5%)	789 (9.5%)
		Std. Res.	2.9	-2.1	-3.2	
	Total	Count (%)	4780 (57.3%)	2812 (33.7%)	747 (9.0%)	8339 (100%)
Remainder	Non-MRW	Count (%)	6077 (46.9%)	4552 (35.2%)	1804 (13.9%)	12433 (96.0%)
		Std. Res.	-0.6	0.1	1.0	
	MRW	Count (%)	302 (2.3%)	182 (1.4%)	32 (0.2%)	516 (4.0%)
		Std. Res.	3.0	-0.5	-4.8	
	Total	Count (%)	6379 (49.3%)	4734 (36.6%)	1836 (14.2%)	12949 (100%)
Total			21383 (100%)	12988 (100%)	4238 (100%)	38609 (100%)

In adjectives, a lower proportion of adjective metaphors are used by the control group than by PWA. But the chi-square test shows that there is no reliable difference of distribution of metaphors between all three groups, $\chi^2(2) = 5.253$, $p > .05$; Cramer's $V = .060$.

In adverbs, the proportions of adverb metaphors are close in the control and the fluent aphasic groups. People with non-fluent aphasia seem to be more likely to use adverb metaphors. These differences between groups are not statistically significant: $\chi^2(2) = 1.122$, $p > .05$; Cramer's $V = .019$.

Among conjunctions, the percentages of MRWs in conjunction are low, both in control and fluent aphasic group. There are no significant differences of distribution of MRWs between groups, $\chi^2(2) = 2.711$, $p > .05$; Cramer's $V = .029$. One cell (16.7%) has an expected count less than 5, and the minimum expected count is 4.33.

In determiners, a lower proportion of determiner metaphors is used by the control group than the ones by people with fluent aphasia and people with non-fluent aphasia. The chi-square test shows that there are considerable differences of distribution of MRWs between all three groups, $\chi^2(2) = 8.174$, $p < .05$; Cramer's $V = .084$. One cell (16.7%) has expected count of less than 5, and the minimum expected count is 2.18. Determiner metaphors used by people with fluent aphasia are the main contributor to the chi-square value.

In nouns, PWA use a higher percentage of noun metaphors compared with the percentage in the control group. However, this difference is not significant: $\chi^2(2) = 2.920$, $p > .05$; Cramer's $V = .023$.

In prepositions, the percentage of MRWs is the highest among all word classes. The distribution of MRWs differs considerably between three groups, $\chi^2(2) = 9.768$, $p < .05$; Cramer's $V = .061$. The proportion of MRWs in the control group is the highest; the fluent aphasic group, in the middle; the non-fluent aphasic group, the lowest.

Metaphorical verbs are significantly more used in the control group than in aphasic groups. The distribution of MRWs differs remarkably between three groups, $\chi^2(2) = 24.947$, $p < .001$; Cramer's $V = .054$. MRW verbs are significantly more used by the control group, and standardized residuals of metaphorical verbs used by PWA are less than -2.

In remainders, the proportion of MRWs used by the controls are the highest. The percentage is the lowest in non-fluent aphasia group. The distribution of MRWs differs considerably between three groups, $\chi^2(2) = 33.727$, $p < .001$; Cramer's V

= .051. MRW remainders used by the control group and the non-fluent aphasic speakers contribute most to the chi-square value.

There is a significant association between metaphor and group in four word classes: determiners, prepositions, verbs and remainders. That is to say, metaphorically used determiners, prepositions, verbs and remainders are distributed significantly differently in these three groups. Metaphorical determiners are significantly more used by people with fluent aphasia. MRW verbs are significantly more used by the controls, and significantly less used by aphasic speakers. The controls significantly more use remainder metaphors, and they are significantly less used by people with non-fluent aphasia. For other four word classes, there is no significant association between metaphor and group.

From Table 3.5, we can also get the information about percentages of MRWs within each word class. The highest is in prepositions, followed by adjectives, adverbs, and verbs; and the proportion of preposition metaphors is much higher than that of adjective metaphors.

In the analysis of interaction between word class and group, without regard to metaphor, the rankings are remainders, verbs, nouns, adverbs, conjunctions, prepositions, adjectives, and determiners (the control group); remainders, verbs, nouns, adverbs, conjunctions, prepositions, adjectives, and determiners (the fluent aphasic group); remainders, verbs, nouns, conjunctions, adverbs, adjectives, prepositions, and determiners (the non-fluent aphasic group).

When metaphoricity is taken into consideration, these analyses are implemented from two points of view: how metaphor interact with word class per group, and how metaphor interact with group in each word class. From these two analyses on (non-)MRW distribution in word class and group, it can be concluded that the three-way interaction between metaphor, word class and participant group is significant. From the first perspective, the rank orders of (non-)MRWs in percentage of every group tell us that compared with the non-fluent aphasic speakers, the fluent aphasic group has a similar pattern with the one of the control group. The non-fluent aphasic group has more deviations from the other two groups.

From the second perspective, in determiners, prepositions, verbs and remainders, there is a significant association between metaphor and group. From standardized residuals, it is clear that metaphorical use is typical for the control group in verbs and remainders; metaphorical use is typical for the fluent aphasic speakers in determiners, and it is atypical for them in verbs; metaphorical use is atypical for the non-fluent aphasic participants in verbs and remainders. In adjectives, adverbs, conjunctions and nouns, no significant association is found between metaphor and group, and in these word classes, (non-)MRWs are distributed evenly across groups.

Metaphor types per group

In MIPVU, metaphor types are also tagged for further analysis, and in this part, we probe into the distribution of clear non-MRWs, borderline metaphors (WIDLIIs), indirect metaphors, direct metaphors, and implicit metaphors in every group. Since four cells (26.7%) have expected count less than 5, which is higher than 20%, we decided to combine implicit metaphors into indirect or direct metaphors, as implicit

metaphors are substitutions of those related metaphors, to see the interaction between the non-MRWs, WIDLIIs, indirect metaphors, direct metaphors and the three groups (the control, fluent aphasic, and non-fluent aphasic). After this combination, only one cell (8.3%) has an expected count less than 5, and the minimum expected count is 4.06. Then, the chi-square analysis reveals that there is a significant association between metaphor type and group, $\chi^2(6) = 151.198$, $p < .001$; Cramer's $V = .044$.

Table 3.6
Distribution of Metaphor Types in Each Group

	Group			
Metaphor Type	Control N=21,383	Fluent N=12,988	Non-fluent N=4,238	Total N=38,609
Non-MRW	19418 (90.8%)	11999 (92.4%)	4007 (94.5%)	35424 (91.8%)
Std. Res.	-1.4	0.8	1.9	
WIDLII	7 (0.0%)	50 (.4%)	6 (.1%)	63 (.2%)
Std. Res.	-4.7	6.3	-0.3	
Indirect	1932 (9.0%)	930 (7.2%)	223 (5.3%)	3085 (8.0%)
Std. Res.	5.4	-3.3	-6.3	
Direct	26 (.1%)	9 (.1%)	2 (.0%)	37 (.1%)
Std. Res.	1.2	-1.0	-1.0	
Total	100%	100%	100%	100%

In Table 3.6, clear non-MRWs take up substantial portions in all three groups. For WIDLIIs and direct metaphors, their percentages are low. Though the proportions are low, there are some direct metaphors in the controls and people with fluent aphasia, and only a few direct metaphors produced by people with non-fluent aphasia. The results also indicate that indirect metaphors take the highest proportion in all clear MRWs in every group. Direct metaphors contribute minimally to the interaction with a group. The control group has the highest percentage of indirect metaphors, the lowest is of the non-fluent aphasic group; and the proportion of the fluent aphasic samples is in the middle. Furthermore, WIDLII and indirect metaphor distribution in three groups is significantly imbalanced, and there is significant deviation from normality.

3.4 Discussion

In the preceding section, several analyses have been carried out to answer research questions we proposed in the first part.

The first question is **within each group, how are linguistic metaphors distributed in word classes**? In reply, by the analysis of metaphor distribution in word classes per group. For these three groups, metaphor proportion in the control group is the highest; in the non-fluent aphasic group, it is the lowest; and in the fluent aphasic group, it is in the middle. In all three groups, the distribution of (non-)MRWs is imbalanced across word classes. For these three groups, the patterns of proportions of non-MRWs in eight word classes are quite similar. The rank order of proportions of metaphors in word classes of the control group shares more similarities with the one of the fluent aphasic group, and the one of the non-fluent aphasic group has more deviations from the other two, which demonstrates differences in metaphor use compared with the control and fluent aphasic groups. A

relevant fact is that people with non-fluent aphasia are impaired more on speech production, and the speech of people with fluent aphasia is preserved to a certain extent, like fluency and word retrieval.

For the metaphoricity in aphasic settings, the verb metaphors in the fluent aphasic group take a larger proportion than the one in the non-fluent aphasic group; however, the noun metaphors in the non-fluent aphasic group account for a larger percentage than the one in the fluent aphasic group. These patterns are in accord with the noun-verb dissociation and the word class distribution in each group in the previous analysis. However, after a check on what these noun metaphors look like, it seems that for people with non-fluent aphasia, certain nouns of high frequencies are tagged as metaphors according to MIPVU, like "stroke", which are not that commonly used by other participants. Therefore, based on current corpus data it is hard to assert that the high proportion of noun metaphors produced by people with non-fluent aphasia is determined by the noun-verb dissociation in aphasia or the participants' lexical preference. Besides, compared with the control group, a shared feature of aphasic groups is the significantly more used noun metaphors, if we look at standardized residuals. So, we suggest that the use of noun metaphors in PWA, especially in people with non-fluent aphasia, was influenced by speakers' lexical choices during their talks on certain topics, such as their illnesses (stroke) and aphasia.

Another notable feature is that for certain metaphorically used function words, that is, preposition metaphors. The percentages of them are higher in the control group and the fluent aphasic group, whereas they occur in a lower proportion in the utterances produced by people with non-fluent aphasia. This phenomenon can be linked to the imbalanced distribution of prepositions across three groups: frequencies of prepositions in aphasic groups are less than the expected counts, especially for the non-fluent aphasic group; and prepositions are significantly more used by non-aphasic participants.

For preposition metaphors in the control group, they take up the highest proportion in MRWs; and most metaphors produced by non-aphasic speakers are prepositions and verbs. Compared with the data in Kaal (2012), most metaphors in conversations are verbs and prepositions. It shows there is no huge discrepancy between results of the current study and Kaal (2012).

As for the second research question, **as a linguistic feature of metaphors, in each word class, how are metaphors distributed across different groups**? To answer it, we have made a thorough enquiry into how (non-)MRWs are distributed across groups in each word class. In this analysis, significant association between metaphor and group can be found in determiners, prepositions, verbs, and remainders. Non-MRWs of every word class are divided evenly across all three groups. What is noticeable is the distribution of metaphorical verbs and remainders. Verb metaphors are significantly more used by the control group and less used in both aphasic groups. However, in word class distribution across three groups, verbs are not less used by people with fluent aphasia. This shows that the fluent aphasic group is deficient in the production of verb metaphors. What is more, non-fluent aphasia's standardized residual value is lower than fluent aphasia's, which may be explained by the less use of verbs by non-fluent aphasic participants in the analysis of word class distribution across groups. Interestingly, the situation in remainders

cannot be explained by the word class distribution in groups. The remainder distribution is uneven across groups. Though they are less than the expected count in the control group, and more in aphasic groups, remainder MRWs are significantly more in the control group, and significantly less in non-fluent aphasic group. This indicates that people without aphasia are more likely to produce remainder metaphors.

It is also found that in all eight word classes, the highest percentage of metaphors is in prepositions. On comparison with results in Kaal (2012), we found the same phenomenon. This can be explained by characteristics of prepositions. They are a class of function words usually expressing relations like place, position, time or method. Unlike open word classes (such as verbs and adjectives) in English, prepositions are practically finite, and members in prepositions are almost fixed. Furthermore, common prepositions are often used in a metaphorical way, for instance, "on", "in", "to", "with", "about", "at", "after", etc. (Kaal, 2012). An example is "in 2010", which we have discussed in Chapter 2.

The third research question is about metaphor types: **how are different types of metaphors distributed in groups**? The last analysis has answered how different types of metaphors are distributed per group. In all three groups, the overwhelming majority is non-MRWs, and then indirect metaphors; the shares of direct metaphors and WIDLIIs are very small. Borderline metaphors and indirect metaphors are not divided equally across groups. More borderline metaphors are discovered in the fluent aphasic group, and most of them are numerals about figures and percentages. They are significantly less used by the non-aphasic people and significantly more used by fluent aphasic participants in this study. People with fluent aphasia are more apt to employ very concrete and exact percentages and scales to refer to how much they have rehabilitated. As for indirect metaphors, they are significantly more used by the control group and less used by aphasic speakers, and non-fluent aphasic group's absolute value of standardized residual is the largest, which shows the biggest contribution to the chi-square value. Also, this has echoes of the metaphor proportions in each group: the percentage of metaphors in the control group is the highest; that in the non-fluent aphasic group is the lowest.

Through these analyses, some hypotheses can be verified. The first hypothesis is that **this current study may have a similar result on metaphor type distribution in Steen et al. (2010), that is, most words in our data are non-MRWs, and for MRWs, most of them should be indirect metaphors.** Like the findings in Herrmann (2013) and Steen et al. (2010, p. 189), most words in our data are not metaphorically used, and most MRWs are indirect rather than direct metaphors. Not many direct metaphors were reported in Kaal (2012), which is the same in aphasic conversations. It seems to be universal that metaphors with direct comparisons are rare, and the majority of MRWs are indirect metaphors. Different from indirect metaphors, in direct metaphors, there is no contrast between the contextual meaning and the basic meaning. Direct metaphors arouse a direct cross-domain mapping and involve topic shifts, and many of them are signalled by metaphor flags, such as "like", "as if", etc. For example, when a non-aphasic participant talked about the injury, the person said, "I probably bled like a stuck hog." The direct online comparison is between a person's bleeding and an animal's bleeding. The rarity of direct metaphors occurred in all three groups, and it may

arise out of characteristics of direct metaphors and the stylistic features of conversations. Direct metaphors are more possibly linked to the novel or unconventional use of metaphors, and indirect metaphors usually associate with conventionality and entrenchment (Herrmann, 2013). In "I probably bled like a stuck hog", the conventional metaphorical sense of "hog" in dictionaries does not fit, and the contextual meaning of it is the same with its basic meaning in a dictionary "a pig". For daily talks, especially conversations in healthcare settings, the priority is how to convey information clearly and accurately, and novelty or creativity is not as crucial as in poems or fiction.

For the second hypothesis, **as our study also delves into the metaphor use in conversations, compared with the result in Kaal (2012), it is expected that a similar pattern of (non-)MRW distribution across word classes can be found in our data, especially with the control group in this study.** It has been largely confirmed according to the rank orders of (non-)MRW proportions, and differences occur at certain word classes, like remainders and determiners. Overall, metaphor distribution in interviews with non-aphasic people from AphasiaBank share many similarities with the one in more casual conversations from BNC in Kaal (2012).

The last hypothesis is about the noun-verb dissociation and function word distribution in aphasia. **For PWA, if we find noun-verb dissociation and imbalanced distribution of prepositions and conjunctions in our data, it may explain the (non-)MRW distribution in groups with different types of aphasia.** The phenomenon of noun-verb dissociation has been detected in our data: nouns in the fluent aphasic group and verbs in the non-fluent aphasic group are less than expected according to the first analysis. However, in some cases, it is impossible to fully explain (non-)MRW distribution relating to nouns and verbs with the noun-verb dissociation. For instance, when PWA talk about their aphasia experiences, a strong bias is evident in use of the noun MRW "stroke", which is identified as a metaphor by MIPVU, and it is not that common in the speech of the people without aphasia or stroke. We have found the deficiency in preposition production for both aphasic groups, especially for people with non-fluent aphasia, and this can account for how preposition metaphors are divided in three groups of participants; but it did not appear in conjunction production.

In conclusion, the current study has explored the (non-)MRW distribution across eight word classes and three groups of participants, who are people with two types of aphasia and the non-aphasic speakers. Apart from this, we have ascertained how metaphor types are distributed in every group. Considering what we have experienced in the analysis, it is expected that in the future, researchers on metaphors should find an approach to eliminate the effect of the lexical preference as much as possible.

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Appendices

Appendix A Sampling

Type of Aphasia	Sex	Age Group	Number of Samples
Non-fluent Aphasia	Male	35;0-44;11	3
		45;0-54;11	3
		55;0-64;11	3
		65;0-74;11	3
		75;0-84;11	3
	Female	35;0-44;11	3
		45;0-54;11	3
		55;0-64;11	3
		65;0-74;11	3
		75;0-84;11	3
Fluent Aphasia	Male	35;0-44;11	3
		45;0-54;11	3
		55;0-64;11	3
		65;0-74;11	3
		75;0-84;11	3
	Female	35;0-44;11	3
		45;0-54;11	3
		55;0-64;11	3
		65;0-74;11	3
		75;0-84;11	3
Control	Male	35;0-44;11	3
		45;0-54;11	3
		55;0-64;11	3
		65;0-74;11	3
		75;0-84;11	3
	Female	35;0-44;11	3
		45;0-54;11	3
		55;0-64;11	3
		65;0-74;11	3
		75;0-84;11	3

Appendix B POS Tag Recoding from CLAN to MIPVU

POS Tags in CLAN	Full Terms	Corresponding Tags in MIPVU
adj	adjective	AJ
adv	adverb	AV
adv:int	adverb:interrogative	AV
adv:tem	adverb:temporal	AV
aux	auxiliary	V
co	convention	REM
conj	conjunction	CJ
coord	coordinate	CJ
cop	copula	V
det:art	determiner:article	REM
det:dem	determiner:demonstrative	DT
det:num	determiner:numeral	DT

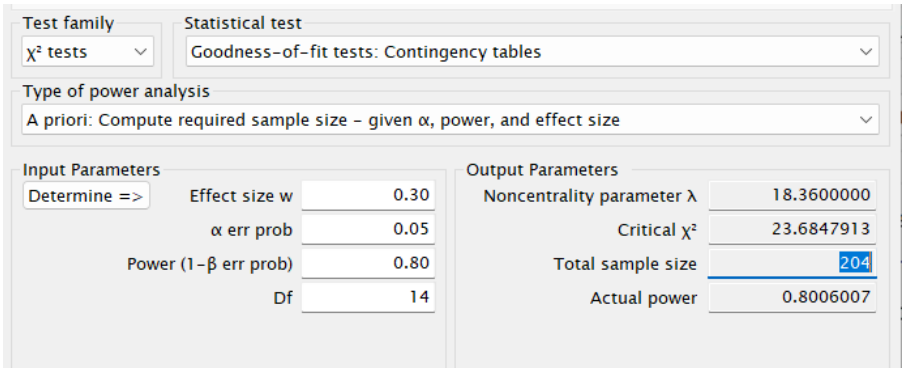
det:poss	determiner:possessive	DT
inf	infinitive	REM
meta	metalanguage	N
mod	modal	V
mod:aux	modal:auxiliary	V
n	noun	N
n:gerund	noun:gerund	N
n:let	noun:letter	REM
n:prop	noun:proper name	N
n:pt	noun:plurality	N
neg	negative	REM
on	onomatopoeia	REM
part	participle	V
poss	possessive	REM
prep	preposition	PR
pro:dem	pronoun:determiner	REM
pro:exist	pronoun:exist	REM
pro:indef	pronoun:indefinite	REM
pro:int	pronoun:interrogative	REM
pro:obj	pronoun:object	REM
pro:per	pronoun:personal	REM
pro:poss	pronoun:possessive	REM
pro:refl	pronoun:reflexive	REM
pro:rel	pronoun:relative	REM
pro:sub	pronoun:subject	REM
qn	quantifier	DT AV
v	verb	V

Appendix C Disagreement Patterns after the Reliability Test

	Incorrect in reliability test	**Frequency in reliability test**	**Incorrect rate in reliability test**	**Frequency in database**	**Estimated incorrect in database**
that, those	20	62	32.3%	694	223.9
thing, things, stuff	12	14	85.7%	176	150.9
this, these	9	15	60.0%	145	87.0
in	4	50	8.0%	526	42.1
on	6	26	23.1%	181	41.8
have, has, had, having	4	61	6.6%	615	40.3
up	4	16	25.0%	161	40.3
out	5	15	33.3%	111	37.0
feel, feels, felt, feeling, feelings	5	7	71.4%	47	33.6
fine	2	2	100.0%	29	29.0
with	2	17	11.8%	180	21.2
happy, happier, happiest	2	3	66.7%	30	20.0
a lot, lots, lot	3	13	23.1%	83	19.2
take, takes, took, taken, taking	2	13	15.4%	122	18.8

to	2	100	2.0%	939	18.8
great. greater, greatest	2	3	66.7%	17	11.3
before	1	6	16.7%	28	4.7
after	1	9	11.1%	61	6.8

Appendix D Calculation of the Sample Size



Appendix E Interpretation of Cramer's *V* [df = min (c-1, r-1)]

df	Small	Medium	Large
1	0.10	0.30	0.50
2	0.07	0.21	0.35
3	0.06	0.17	0.29
4	0.05	0.15	0.25
5	0.04	0.13	0.22

Chapter 4
Metaphor use by Chinese people with aphasia: evidence from AphasiaBank

Abstract

Background: Chapter 3 is a corpus-based study conducted to explore how linguistic metaphors are used by people with aphasia (PWA), and all data were selected from AphasiaBank (English). We have discussed the interaction between metaphors, word classes and participant groups (non-fluent aphasic, fluent aphasic, and control). The results have shown that the distribution of metaphors in groups and word classes is not homogeneous. For instance, in the fluent aphasic group and the control group, the patterns of metaphor distribution are similar; in some word classes, like verbs, metaphors are not divided evenly across groups. Besides these, we investigated the metaphor type distribution in each group. Different types of metaphors include direct metaphors, indirect metaphors, and borderline cases.

Aims: The previous study on English data is enlightening, as we are curious about how linguistic metaphors are used in aphasic settings in another language. In this study, we have language materials from AphasiaBank (Mandarin) to see how Chinese metaphors are used in conversations. The research goal is to find out how (non-) metaphor-related words (MRWs) are distributed in word classes and participant groups, and the relation between metaphor types and groups is also included in the research aim. In addition, it is predicted that the Chinese metaphor distribution in word classes may show some different features compared with the one in English data.

Methods & Procedures: This study adopted the same approach in Chapter 3, that is, quantitative analyses were carried out to detect the distribution of (non-)MRWs and different types of metaphors. All data are from the database AphasiaBank (Mandarin). They are utterances produced by people with fluent aphasia and non-aphasic speakers as the control group.

Outcomes & Results: The results have revealed that most words in our data are not metaphorically used, and the overwhelming majority of metaphors are indirect in their use, which correspond with findings in Chapter 3. Furthermore, in the control and fluent aphasic groups, the (non-)MRW distribution differs greatly across word classes; for some word classes (classifiers, nouns, and remainders), metaphors are not evenly divided across groups; the distribution of metaphor types varies between three groups, especially for indirect metaphors. Compared with results in Chapter 3, in Chinese data, the noun-verb dissociation cannot be found; moreover, metaphors are distributed differently in groups and word classes.

Conclusions: From these findings, it can be concluded that metaphor are divided differently in two groups; and in classifiers, remainders and nouns, metaphors are distributed unevenly. The distribution of metaphor types across groups corresponds with the one in English data. However, for the metaphor distribution in groups and

word classes, we can find disparate results in Chapter 3 and Chapter 4, which indicate differences of metaphor use in aphasia in two languages.

4.1 Introduction

As it has been mentioned in the first chapter, about 25 to 40 percent of stroke survivors suffer from aphasia, and in 2018, there were over three million patients who were hospitalized for stroke in China. Potentially, there may be an enormous number of people suffering from aphasia every year. Additionally, as an isolating language, the Chinese language may show some differences compared with English, when it comes to the use of linguistic metaphors.

Despite the existing body of evidence on aphasia in Sinitic languages, research reports on PWA who speak Sinitic languages are much fewer than the ones on English-speaking PWA (Law & Kong, 2019). Law and Kong (2019) had a review on former studies about oral production and comprehension of Mandarin or Cantonese speaking PWA. As for previous research on Mandarin-speaking PWA, most of them are experimental studies on the lexical and sentence processing, through tasks like picture naming, word/sentence-picture matching, reading aloud, storytelling, etc. So far, however, there has been little discussion about the use of figurative language in PWA's more spontaneous speech. It is expected that the study on metaphor use in more natural language environments, like in conversations, can give us new insights into the linguistics metaphor production by PWA.

This study aims to probe into how linguistic metaphors are used by Chinese PWA, and whether their metaphoric language use is different from people without aphasia. The study hereby presented is structured and embedded within the same theoretical framework of the study reported in Chapter 3. In the previous chapter, we have discussed metaphor use by English-speaking PWA, with conversational materials from AphasiaBank (English), and the current study is also a corpus-based one that we take Mandarin data from AphasiaBank to see how linguistic metaphors interact with word classes and participant groups in conversations. For metaphor identification, we will follow the same procedure: MIPVU (Steen et al., 2010). On the basis of our former study in Chapter 3, we have formulated research questions for the current study:

RQ1: What are the features of Chinese PWA's and non-aphasic speakers' use of linguistic metaphors? That is, how do metaphors, word classes and groups of people interact with each other?
RQ2: How do metaphor types distribute across participant groups?

In addition, as previously mentioned, according to Dorst (2011), Herrmann (2013), Kaal (2012), Krennmayr (2011) and our former study on English data, most lexical units are non-MRWs, and the great majority of all metaphors are indirectly used. Therefore, we predict that these findings may be also true in the Chinese data, and we put forward the first hypothesis:

Hypothesis 1: Most words are not metaphorically used, and for metaphors, most of them are indirectly used. PWA produce a lower percentage of metaphors than the healthy speakers.

As a group of languages in the Sino-Tibetan language family, Chinese languages or Sinitic languages share some characteristics different from English. We may find some differences about metaphor use in Chinese in contrast to that in English, especially in metaphor distribution in word classes. Furthermore, in Chapter 3, it has been confirmed that the noun-verb dissociation exists in our data produced by English speaking PWA, namely, a deficit on nouns is found among people with fluent aphasia, and for non-fluent aphasic speakers, they produce fewer verbs. How about the noun and verb distribution in Chinese speaking PWA's utterances? There is no such former study can be found, yet some research on healthy people's Chinese noun and verb processing has shown that unlike English, the noun bias is weaker in lexical development (P. Li & Shu, 2010, p. 74), and for Chinese speakers, there is no significant differences between nouns and verbs in their brain activation patterns (P. Li et al., 2004). Tardif (2006) pointed out the prevalence of verbs in adult Chinese. One reason for this is most verbs are shorter and have higher frequencies in Chinese than in English (P. Li & Shu, 2010, p. 75). What is more, word class distribution in discourse can explain how metaphors are divided across word classes. As a consequence, in Chinese data, the distribution of noun and verb metaphors may show some different characteristics. So, we can propose the second hypothesis:

Hypothesis 2: It is possible that there are some differences about (non-)MRW distribution in Chinese data in contrast to that in English. For example, the noun-verb dissociation is not likely to be found in Chinese data. There may be some different features on how noun and verb distribution which can influence metaphor distribution across word classes and participant groups.

4.2 Linguistic issues relating to metaphor study in Chinese

As we have mentioned in previous chapters, the basic analysis unit of MIPVU is the lexical unit or word. These words may activate concepts in mind which postulate referents in discourse (Steen et al., 2010, p. 12). However, some problems need to be tackled if we adopt this procedure to identify linguistic metaphors in Chinese. One reason lies in the difficulties of how to define "word" and demarcate word boundaries in Chinese. "Word" is a notion rooted in the tradition of Indo-European language studies, and what is more innate in Chinese speakers is *zì* (字), which refers to a morpheme in spoken language or a written character (Hoosain, 1992; Packard, 2004, pp. 14-15). For instance, in history the most popular primers for children include *Three Character Classic* and *Thousand Character Classic*. The character is the basic unit for people to learn how to read and write; and in Chinese, 识字 [*shízì*; (*lit*. knowing characters)] means literate. What needs to be clarified is that it does not indicate there are no words in Chinese. The concept of "word" was first introduced into Chinese grammar at the early 20th century (Chang, 1907). Chinese lexicology flourishes from the 1950s partly because of the normalization of modern Chinese and Chinese lexicon. Just as in English, in modern Chinese, words are the smallest and relatively independent meaning carriers on the lexical-semantic level; and syntactically, they are the smallest permutable and substitutable

constituents of sentences (Bussmann, 1990/1996, p. 1285). However, compared with other categories of linguistic description, the concept of "word" is more controversial, especially for the definition and identification (Bussmann, 1990/1996, p. 1285; Crystal, 2008, pp. 521-522), and it is often debated in some languages, like Chinese, which we will discuss later.

Another problem is word classes in Chinese. In VU Amsterdam Metaphor Corpus and Steen et al. (2010), English and Dutch lexical units are sorted in eight word classes: adjective, adverb, conjunction, determiner, noun, preposition, verb and remainder.[14] This categorization is workable and efficient for metaphor analysis in these two Germanic languages. Is this universal? What about Chinese? Can we use the same part-of-speech (POS) system when analysing Chinese metaphors?

In order to apply MIPVU to Chinese, we need to review and summarize former studies on Chinese words/wordhood, and word classes in Chinese in the following part; some related questions will also be discussed.

4.2.1 Wordhood and word segmentation

In Chinese linguistics, there are many discussions on word and wordhood in modern Chinese (Duanmu, 2017; C.-R. Huang & Xue, 2015; Packard, 2004, pp. 7-20). Not as in alphabetical writing systems, the word boundary in Chinese is much fuzzier as there is not a natural space between Chinese words. As an analytic language, no more than a dozen affixes have been reported in modern Chinese (Duanmu, 2017). The lack of affixes also determines the different word formation and identification in Chinese. In addition, Duanmu (2017) pointed out two problems in defining "word" in Chinese: first, contemporarily most monosyllables are not free and they are not words; second, in many cases, disyllabic, trisyllabic and tetrasyllabic words (words with more than one *zi*) are not easy to distinguish from phrases and compounds that can be divided into single words. For instance, in the Contemporary Chinese Dictionary (现代汉语词典, *Xiàndài Hànyǔ Cídiǎn*, XHC), 热心肠 [*rèxīncháng*; (*lit.* warm heart and intestine); warm-heartedness] is a single word; for 蛇蝎心肠 [*shéxiē xīncháng*; (*lit*. snake and scorpion, heart and intestine); the sinister and vicious nature of people], it is regarded as a compound with two words: 蛇蝎 [*shéxiē*; (*lit*. snake and scorpion); sinister vicious people] and 心肠 [*xīncháng*; (*lit*. heart and intestine); state of mind]. According to MIPVU, 蛇蝎 [*shéxiē*; (*lit*. snake and scorpion); sinister vicious people] is an MRW; however, here 热 [*rè*; warm] is a bound root in a lexical unit, and it is not counted as a metaphor.

Despite these various opinions, for word segmentation of Chinese, we can adopt a working definition of "word", viz., a word is the smallest element that may be uttered in isolation,[15] and it is necessary to have an acceptable and reliable way to deal with word demarcation in Chinese. In regard to the problems on syllabicity and compounds, we will examine them in the next part. Note that in Chinese, nearly all components of words are invariably isolatable morphemes comprised of single syllables. That is to say, the morpheme and the syllable are almost coextensive

[14] http://www.vismet.org/metcor/manual/index.php

[15] The Word Segmentation Standard of Contemporary Chinese Language for Information Processing (GB13715)

(Packard, 2004, pp. 129-130), and we use these two terms interchangeably in this study.

4.2.2 Compounds

Syllabicity and compound problems are related to wordhood and word segmentation in Chinese. Historically, Chinese might be considered to be a monosyllabic isolating language, but what about modern Chinese? C.-R. Huang et al. (2002) calculated the distribution of syllabicity in Sinica Corpus, which is a balanced modern Chinese corpus with POS tagging. Their study has shown that in modern Chinese, the percentages of momosyllabic, disyllabic and trisyllabic words are 2.73%, 46.05% and 32.41%, and most Chinese words are compounds. Some compounds can be split by adding constituents between compound components. For instance, C. N. Li and Thompson (1981, pp. 62-65, 73-76) discussed the separability of verb-object compounds (VOCs) and resultative verb compounds (RVCs). What matters is that the split of these compounds makes the decision about metaphoricity a challenge. That is, the separation of certain VOCs and RVCs has an impact on word segmentation; a portion of a VOC/RVC is labelled as a single word, and this word might be considered to be metaphorically used after the application of MIPVU. This topic was also mentioned in former studies on the application of MIPVU in Chinese (Lu & Wang, 2017; Wang et al., 2019).

VOCs

VOCs are composed of two constituents having the syntactic relation of verbs and their direct objects (C. N. Li & Thompson, 1981, p. 73). Some VOCs are relatively 'stable' and inseparable, such as 念旧 [*niànjiù*; keep old friendship in mind]. No insertion can be put between these two morphemes 念 [*niàn*; think of] and 旧 [*jiù*; old], and the word 念旧 [*niànjiù*; keep old friendship in mind] is used as an indivisible whole.

In contrast, for other VOCs, it is possible to insert other constituents between morphemes. C. N. Li and Thompson (1981, pp. 73-76) listed four separation processes in VOC: they can be divided by aspect markers (asp), measure phrases and modifiers of the object constituents; and for some VOCs, the object constituents can be placed in a position preceding to the verb constituents of the compounds. For instance, 动心 is a disyllabic word:

(1)	动	心
	dòng	*xīn*
	change the place or position of sth., move one's desire, enthusiasm or interest is aroused	heart

It is possible to insert aspect markers 了 (*le*) and/or modifiers between verb and object constituents, such as 动了恻隐之心:

(2)	动	了	恻隐	之	心
	dòng	*le*	*cèyǐn*	*zhī*	*xīn*

move	asp	feel compassion for somebody's suffering	heart

one's compassion is aroused
了 [*le*; used after a verb or an adjective to indicate the completion of an action or a change]
之 [*zhī*; used between an attribute and the word it modifies]

In this example, 动心 [*dòngxīn*; (*lit.* move heart); one's desire, enthusiasm or interest is aroused] is a single lexical item with the meaning of "aroused, affected or attracted", which is not metaphorical in usage. However, with intervening elements like 了 (*le*) between 动 [*dòng*; move, provoke] and 心 [*xīn*; heart], 动了心 [*dòng le xīn*; (*lit.* move heart); one's desire, enthusiasm or interest has been aroused] or 动了恻隐之心 [*dòng le cèyǐn zhī xīn*; (*lit*. move compassion heart); one's compassion is aroused] is more like a phrase which is derived from a compound. Two morphemes 动 [*dòng*; move, provoke] and 心 [*xīn*; heart] should be separated and regarded as two lexical units, and both of them are MRWs, as the contrasts between basic meanings and contextual meanings are big enough: "to move" vs. "to arouse" in 动 (*dòng*), and "heart" vs. "feeling" in 心 (*xīn*). Therefore, when we discuss metaphor use in Chinese compounds, VOCs in different usages should be taken into consideration: like 动心 [*dòngxīn*; (*lit.* move heart); one's desire, enthusiasm or interest is aroused] and 动了心 [*dòng le xīn*; (*lit.* move heart); one's desire, enthusiasm or interest has been aroused], the separability of compounds is related to metaphoricity when applying MIPVU in Chinese, because the word (or lexical unit) is the unit of analysis in MIPVU and the insertion in VOCs has changed word boundaries.

RVCs

RVCs are composed of two verbal elements in a causal relation: V_1 is the causing event, while V_2 is the resulting event (Basciano, 2017). For example, if the V_1 is 想 [*xiǎng*, think or consider], two RVCs are listed here:

(3) 想 到
xiǎng *dào*
think arrive
think of, consider
到 [*dào*; as the complement of a verb indicating the result of an action]

想 起来
xiǎng *qǐlái*
think rise come
recall, remember
起来 [*qǐlái*; used after a verb to indicate the completion of an action or attainment of a goal]

C. N. Li and Thompson (1981, pp. 56-67) discussed the separability of RVCs and 'metaphorical RVCs'. For instance, potential markers 得 (*de*) and 不 (*bù*) can be inserted between morphemes in all these examples. 得 (*de*) is used between V_1 and V_2 to indicate possibility (can), and with the negative signal 不 (*bù*), it means to do something is impossible (cannot). Take 想到 [*xiǎngdào*; (*lit*. think arrive); think of] as an example, when 不 (*bù*) is inserted between 想 [*xiǎng*; think] and 到 [*dào*; arrive], we can have a sentence as follows:

(4) 想 不 到
xiǎng *bu* *dào*
think not arrive
cannot think of, never expected

我 想 不 到 处理 办法。
wǒ *xiǎng* *bu* *dào* *chǔlǐ* *bànfǎ*
I think not arrive tackle way, method
I cannot think up a way to tackle it.
不 [*bù*; negation marker]

In this example, two morphemes 想 [*xiǎng*, think] and 到 [*dào*; arrive] are segmented as independent words; 到 [*dào*; arrive] is regarded as a metaphor, as there is a distinct contrast between its basic meaning "arrive, or reach" and the contextual meaning "as the complement of a verb indicating the result of an action". However, 想不到 [*xiǎngbudào*; unexpectedly], as a whole, is a word with an entry if we look it up in a Chinese dictionary. The reason is that in many cases, it can also serve as an adverb:

(5) 想不到
xiǎngbudào
unexpectedly

想不到， 老手 也 出 了 事故。
xiǎngbudào *lǎoshǒu* *yě* *chū* *le* *shìgù*
unexpectedly old hand also exit asp accident
Unexpectedly, the old hand also had an accident.
出 [*chū*; (*lit*. proceed from inside to outside); meet with (an accident)]

There are some exceptions like 想不到 [*xiǎngbudào*; unexpectedly] as a word, but for the most part, the split constituents of a RVC should be divided into different words. Then a question may emerge that when there is an insertion, whether the RVC is considered as separated lexical units or a single word. Moreover, this challenge of word segmentation is also pertinent to the identification of metaphors. If 想不到 [*xiǎngbudào*; unexpectedly] is a single lexical unit used as an adverb, it is not metaphorical; however, 到 [*dào*; arrive] is an MRW when 想不到

[*xiǎng bu dào*; (*lit*. think not arrive); cannot think of] is divided into three words in Example 4. The answer is to refer to Chinese dictionaries when necessary. With the help of dictionaries, we can have a clearer idea on the word demarcation, word class (part-of-speech) and its meaning in certain discourse.

Additionally, C. N. Li and Thompson (1981, p. 66) have listed some RVCs that contain resultative V_2 which are often used in metaphorical senses, which means the second parts of these RVCs have metaphorical senses, like 累死 [*lèisǐ*; (*lit.* tire dead); tire to death] and 想出来 [*xiǎngchūlái*, (*lit*. think exit come); think out]. Their study provides us with some information about potential metaphors, which may be helpful when we analyse metaphoricity of RVCs and separated RVCs in texts.

The separability of VOCs and RVCs in Chinese is linked to the identification of metaphors because it affects word boundaries. Changes in word boundaries have an effect on the application of MIPVU. In addition, although in most cases, two split constituents of these compounds are deemed as separated words, some exceptions should not be overlooked, like 想不到 [*xiǎngbudào*; unexpectedly], which can be proved to be single words with the help of dictionaries.

4.2.3 Unique word classes in Chinese

Van Lier (2009, pp. 7-64) had a review on studies on POS and universality of word classes within the scope of functional typology. Hengeveld's approach regards word classes in terms of syntactic slots that they can fill in sentences, and Hengeveld has distinguished four syntactic slots which correspond to four word classes: verbs, nouns, adjectives, and manner adverbs (Hengeveld, 1992; as cited in Van Lier, 2009). Cross-linguistically, individual language may display different patterns for these word classes and syntactic functions. For Croft and Van Lier (2012), lexical categories (or word classes) are language-specific and word classes are non-universal, because the language construction is not universal: "even if there is a functionally comparable construction available in two languages, this construction may carve out a specific lexical class in one language, but a very different one in the next". In this study, we follow the second viewpoint that word class systems vary from language to language. As for word classes in Chinese, Cheung (2016, pp. 269-286) has stated that three categories are unique in Chinese, but not in Indo-European languages, namely, classifiers, localizers, and sentence final particles (SFPs). It is very likely that different word classes bring about some different features of the interaction between metaphors and word classes in Chinese compared with that in English.

However, in modern Chinese, SFPs do not carry any referential meaning, though they serve various functions. Hence metaphorical meanings cannot be conveyed by SFPs, and their usage does not have much impact on our study. Next, we will discuss classifiers and localizers, and the metaphorical use of them.

Classifiers

Classifiers refer to the morphosyntactic category serving the semantic function of marking noun classes (Ahrens & C.-R. Huang, 2016, p. 169). It must occur with a

number and/or a demonstrative, or certain quantifiers before the noun (C. N. Li & Thompson, 1981, p. 104). World languages can be divided into classifier languages (especially some East and Southeast Asian languages) and non-classifier languages by using classifiers as a typological criterion (Jiang, 2017, p. 1). As for Chinese noun phrases, one of the most striking features for English-speaking people is classifiers (C. N. Li & Thompson, 1981, p. 104). For instance, in English, we say "two people" and "this book", that is, no element is needed between numerals/demonstratives and nouns. However, in Chinese, they can be expressed as 两个人 [*liǎng gè rén*; two people] and 这本书 [*zhè běn shū*; this book]. 个, or 個/箇(*gè*) in traditional Chinese, is the most commonly used classifier, before nouns like person, problem, hour, chance, egg, etc. From the logographs of 个/箇 (*gè*) and 本 (*běn*) and their meanings in dictionaries, we know that the basic meanings of these two classifiers: bamboo and a plant's root or stem. So, for the classifier 本 (*běn*), it can be used for flowers as well, especially in formal expressions, like 菊花十本 [*júhuā shí běn*, (*lit*. chrysanthemum ten plants); ten chrysanthemum plants]. Historically, both 个 (*gè*) and 本 (*běn*) are developed from nouns, but as classifiers, they have very different functions compared with nouns.

For the taxonomy of classifiers, it involves terms like "sortal classifier" and "measure word". We take definitions given by Cheung (2016) that sortal classifiers (like 本, *běn*) often reflect the intrinsic features of the nouns they classify, and usually, they are encoded with specific semantic information, such as shape, animacy, etc. Sortal classifiers are rare in English, like "head" in "five head of cattle" (Bussmann, 1990/1996, p. 185). Measure words are employed to denote the quantity or amount of the entity named by a noun. Measure words are also common in English, like "cup" in "a cup of tea", and "pints" in "two pints of milk".

Sortal classifiers are more prototypical, and their usage is more stable, viz., certain sortal classifiers are always associated with certain nouns, and they show inherent features of the nouns they classify (Cheung 2016, p. 271). For instance, 栋 (*dòng*) accompanies buildings; 出/齣 (*chū*) goes with chapters of operas or plays; 棵 (*kē*) classifies plants. Both sortal classifiers and measure words can be used metaphorically. For instance, the sortal classifier 缕 (*lǚ*) is derived from the noun 缕 [*lǚ*; thread]. As a classifier, it is used before something thin and long, like in 一缕麻 [*yī lǚ má*; a strand of flax] and 一缕头发 [*yī lǚ tóufa*; a lock of hair]. In 一缕新凉 [*yī lǚ xīn liáng*; a touch of refreshing feeling], 缕 (*lǚ*) is metaphorically used, as it classifies an abstract feeling, instead of a tangible entity. It is a metaphor pertinent to synaesthesia, viz., to express the feeling of coolness in terms of the visual and tactile experience.

(6) 一 缕 头发
yī *lǚ* *tóufa*
one cl hair
a lock of hair
(cl=classifier)

一	缕	新	凉
yī	*lǚ*	*xīn*	*liáng*
one	cl	freshness	coolness

a touch of refreshing feeling

The idiom 一衣带水 (*yīyīdàishuǐ*) literally means "a strip of water". It contains a measure word 衣带 [*yī dài*; strip or belt]. In practice, it is used figuratively to indicate the water between two countries is quite narrow (as wide as a strip):

(7)

一	衣	带	水
yī	*yī*	*dài*	*shuǐ*
one	clothes	strip	water

two neighbouring countries separated by a narrow strip of water

中日两国是一衣带水的邻邦，有着悠久的传统友好的历史。
China and Japan are neighbouring countries, separated only by a strip of water with a long history of traditional friendship.

Another phenomenon relating to classifiers as metaphors is about the use of so called "event classifiers" (Ahrens & C.-R. Huang, 2003; Zhang, 2017, p. 627). They belong to sortal classifiers, and appear with the event denoting words, like 场 (*chǎng*) in 两场表演 [*liǎng chǎng biǎoyǎn*; (*lit*. two cl show); two shows]. An event classifier can be associated with a nominal phrase or a verbal phrase (Zhang, 2017, p. 627). Here is an example:

(8)

他	吃	了	一	顿	海鲜。
tā	*chī*	*le*	*yī*	*dùn*	*hǎixiān*
he	eat	asp	one	cl	seafood

He has had seafood.

他	被	妈妈	训	了	一	顿。
tā	*bèi*	*māma*	*xùn*	*le*	*yī*	*dùn*
he	passive	mother	scold	asp	one	cl

He was scolded by his mother.

In dictionaries, the first meaning of 顿 (*dùn*) as a classifier with a noun is "to indicate frequency of food", like in 一顿海鲜 [*yī dùn hǎixiān*; (*lit*. one seafood)]; and the second is associated with a verb, the contextual meaning is about negative experiences, that is, "to indicate frequency of reproach, admonishment, beating, etc.". The first meaning is more basic and concrete. When 顿 (*dùn*) is used in the second meaning, like in 训了一顿 [*xùn le yī dùn*; (*lit*. scold one)], it can be explained by the cross-domain mapping from food to reproach. So here this classifier can be seen as a metaphor.

Localizers

Localizers express the spatial location of the entities denoted by nouns (Cheung, 2016, p. 279). They can be morphemes or morpheme complexes, for instance, 前 [*qián*, front], and 前边 [*qiánbiān*, (*lit.* front side); front]. Chao (1968/2011, pp. 634-638) listed 19 monosyllabic localizers (simple or monomorphemic localizers as Chao called them), and there are more disyllabic localizers. Most disyllabic or complex ones are formed by adding suffixes to the monosyllabic localizers, just like 前边 [*qiánbiān*, (*lit.* front side); front], with a suffix 边 [*biān*, side] after 前 [*qián*, front]. As new members are rarely added, localizers are usually sorted into the closed class(es) in the POS system. They are usually used with nouns, especially for monosyllabic localizers, like 房前 [*fáng qián*, (*lit*. house front); in front of the house], and 考试前 [*kǎoshì qián*, (*lit*. examination front); before the examination]. In 考试前 [*kǎoshì qián*, (*lit*. examination front); before the examination], 前 [*qián*, front] is used in a metaphorical way and the mapping is from the LOCATION domain to the TIME domain.

The controversy on Chinese localizers' lexical category/categories has continued for more than one century, from the beginning of the westernized grammar study in 1898. Some linguists believe that monosyllabic localizers are start-bound clitics or nominal roots (C. Li, 2019; F. Liu, 1998; Sun, 2006, pp. 81-87). When they are regarded as free words, possible classification includes adjectives (Ma, 1898/2010, p. 114), adverbs (J. Li, 1924/1992, pp. 129-130; Ma, 1898/2010, pp. 234-235), postpositions (Djamouri et al., 2013; Ernst, 1988; Tai, 1975), and circumpositions (D. Liu, 2002). However, more scholars on Chinese linguistics have agreed that localizers, especially monosyllabic localizers, can be counted as nouns or deviations of nouns (C.-T. J. Huang et al., 2009, p. 14; C. Li, 2019; Y. Li, 2009; Y.-H. A. Li, 1990, pp. 4, 31). Similar to nouns, a preposition and a localizer can form a prepositional phrase: 朝东 [*cháo dōng*, towards the east], 在上头 [*zài shàngtou*, (*lit.* at above head); at the top], etc. Moreover, in sentences, they can function as subjects, objects, and adverbials. For example, in 里面有不少吃的 [*lǐmiàn yǒu bùshǎo chīde*, (*lit*. inside has a lot of food); there is a lot of food inside], 里面 [*lǐmiàn*; inside] serves as the subject.

However, to treat localizers as nouns or deviations of nouns is also questionable. Unlike prototypical nouns, localizers are not modified by numeral-classifier construction or adjectives; in addition, monosyllabic and disyllabic localizers have different syntactic functions:

(9) 里面 有 不少 吃的。
lǐmiàn *yǒu* *bùshǎo* *chīde*
inside has a lot of food
There is a lot of food inside.

*里 有 不少 吃的
**lǐ* *yǒu* *bùshǎo* *chīde*
inside has a lot of food

It is not grammatically acceptable for the monosyllabic localizers alone, like 里, to serve as subjects or objects of sentences. If localizers are deemed to be a part of nouns, the collection of Chinese nouns seems to be rather heterogeneous and diverse. One explanation is the super noun category in Chinese (Larson, 2009; Shen, 2016). Instead of the deviation of nouns (C.-T. J. Huang et al., 2009), Shen (2016, 2017) has asserted that this is about class inclusion (Lyons, 1977, p. 156) because of the evolution of Chinese language. In view of localizers' various functions in different contexts, Chappell and Peyraube (2008), Cheung (2016) and Chu (2006) held the idea that Chinese localizers can be considered autonomous. In this study, we adopt this viewpoint and regard the Chinese localizer as an independent grammatical category.

4.3 Method

4.3.1 Data

We downloaded all transcripts in AphasiaBank (Mandarin) in April 2019. There are 17 files of aphasic speakers and 40 files of participants without any language disorder as the controls. They are conversations between medical practitioners and PWA (the aphasic group), and their caregivers (the control group). All videos were recorded during October 2014 to May 2018, and 93% of these conversations took place in 2017 and 2018. PWA and their caregivers spoke Lower Yangtze Mandarin (a Mandarin dialect) or standard Mandarin (Putonghua). Some of them may have accents. As all videos of these interviews have been transcribed, the use of that dialect does not pose a problem to understanding, and it shares the same word classes with standard Mandarin.

In order to keep consistent with the previous study, we only take excerpts of the free speech parts in these two groups, rather than tasks of picture description, storytelling and the procedural task, like describing how to cook egg and ham fried rice. In these free speech parts, for PWA, interviewers asked them to talk about their stroke stories, coping with the stroke, and important events in their lives; while for the controls, they were only asked to describe the important events. 17 files of the aphasic speakers are utterances produced by 14 PWA (two of them were with non-fluent aphasia, and others were fluent aphasia sufferers): one participant was interviewed twice, and one speaker received three interviews. In this study, we only chose utterances produced by people with fluent aphasia from all aphasic files. The data size of this group is 2172 words. In the control group, there are 40 files produced by 40 speakers, which is comprised of 4665 words.

4.3.2 Applying MIPVU to Chinese

As we did in the previous chapter, the first step in metaphor analysis is to identify MRWs using a practical tool. Lu and Wang (2017) and Wang et al. (2019) have discussed how to identify Chinese metaphors with MIPVU; and in practice, they have built up a Chinese metaphor corpus.[16] Metaphors were annotated following the basic protocol of MIPVU. Apart from their application of MIPVU to Chinese, Ahrens and Zeng (2017), Ahrens et al. (2018) and Tay (2015) have also identified

[16] http://www.personal.psu.edu/xxl13/downloads/cmc.html

Chinese metaphors with MIPVU. Here is a table to show what tools they used when applying MIPVU to Chinese metaphor identification:

Table 4.1
Application of MIPVU to Chinese

	Word Seg. & POS Tagger	Dictionaries
Ahrens and Zeng (2017) Ahrens et al. (2018)	Stanford Word Segmenter, Stanford POS Tagger	Chinese WordNet, Suggested Upper Merged Ontology (SUMO) The Contemporary Chinese Dictionary
Tay (2015)	*Pangu Fenci* segmentation software	*Xinhua Zidian* Dictionary
Lu and Wang (2017) Wang et al. (2019)	ICTCLAS	Chinese WordNet A Standard Dictionary of Modern Chinese, A Learner's Dictionary of Modern Chinese

As for the texts in the AphasiaBank (Mandarin and Cantonese), word demarcation and POS tagging are generated by MOR grammars for morphosyntactic analysis in the CHAT format. The MOR grammar is separated programs to automatically tag each language in the TalkBank.[17] The Mandarin segmenter of the MOR grammar is supported by the CKIP Group of the Academica Sinica.[18] The MOR tagger reaches 98% accuracy for English-speaking adult corpora (MacWhinney, 2012). Kong and Law (2019) stated that the tagger in Cantonese AphasiaBank had a comparable but slightly lower tagging accuracy. Though there is no report on Mandarin AphasiaBank, we asked the principal investigator on it, and received a similar answer on tagging accuracy. Moreover, after the automatic annotation, all data were also manually annotated by Mandarin-speaking researchers (Lin, personal communication, 4 April, 2019).

In relation to the aforementioned linguistic issues in Chinese language, we have discovered how the word segmentation tool in TalkBank demarcates Chinese compounds: most VOCs are seen as single words, like 熬夜 [*áoyè*; (*lit.* boil or stew night); burn the midnight oil, stay up late]; whereas many RVCs are divided into two or three lexical units, for instance, there are two words, 昏 (*hūn*) and 过去 (*guòqù*), in 昏过去 [*hūn guòqù*; (*lit.* faint pass by); pass out]. When other elements are inserted into them, the split VOCs and RVCs are recognized as separate words. In Example 10, the VOC 结婚 [*jiéhūn*; marry] and RVC 看见 [*kànjiàn*; see] are single words. When there are insertions, like morphemes 了 (*le*) and 不 (*bù*), the word boundaries change. We will follow the word demarcation in the database in the analysis part.

(10) 结 婚

[17] https://talkbank.org/morgrams/

[18] https://ckip.iis.sinica.edu.tw/, https://ckip.iis.sinica.edu.tw/project/wordsegment/

jié	*hūn*
have a kind of connection	marriage
marry; get married	

看	见
kàn	*jiàn*
look at	see
catch sight of; see	

结		了	婚
jié		*le*	*hūn*
have a kind of connection		asp	marriage
get married			

看	不	见
kàn	*bù*	*jiàn*
look at	not	see
cannot see		

As for Chinese classifiers, they include both sortal classifiers and measure words, like the unit of time 年 (*nián*) in 一年 [*yī nián*; one year]. In contrast, measure words in the English data in Chapter 3 were mainly labelled as nouns. For the POS system, the POS tagger in TalkBank labels 37 subclasses of lexical categories to all words. We switch this categorization into a less refined system: there are eight word classes in Steen et al. (2010), plus classifiers and localizers. Therefore, the annotation system consists of adjectives, adverbs, classifiers, conjunctions, determiners, localizers, nouns, prepositions, verbs, and remainders. In this way, we can have a better understanding on the interaction between metaphors and word classes in Chinese.

We adopt three Chinese dictionaries to decide word meanings: Chinese WordNet (CWN), the Contemporary Chinese Dictionary (XHC), and 800 Modern Chinese Words (现代汉语八百词, *Xiàndài Hànyǔ Bābǎi Cí*, XHBC). The CWN is an online Chinese lexical semantic resource developed by Academia Sinica. It subsumes over 8,700 lemmas and 23,000 senses (C.-R. Huang et al., 2010). The information for each lexical entry includes POS, sense description, illustrative examples, corresponding English synsets from the Princeton WordNet, lexical semantic relations, etc. (Lee et al., 2009). We put the CWN on the top of our dictionary list for its clear division of POSs, detailed definitions of senses, corpus-attested examples, and for convenience. In addition, we refer to XHC and XHBC. The XHC is the first medium sized modern Chinese dictionary, which was compiled by the Institute of Linguistics, Chinese Academy of Social Sciences. The most recent revised edition is the seventh edition published in 2017. This edition includes 70,000 entries, with dialects, cyber slang, and loan words. Though the revised edition of XHBC in 1999 only includes a little more than 1,000 words, it gives exhaustive explanations on word usage, especially about Chinese function words,

which is helpful for making judgements of the meanings and metaphorical use of function words.

4.4 Reliability test

The data were first tagged by Coder A who has experience in identifying English metaphors through MIPVU. Coder B was trained and then commenced to tag metaphors in 10% samples of all data. Both coders are native speakers of Mandarin. When MIPVU is applied to identify metaphors in our data, the following instructions are complied with:

a. Some utterances can be incomplete or illogical, especially for those produced by PWA. The contextual meanings of lexical units in them may be too ambiguous to decide, and they should be discarded for metaphor analysis.

b. The lack of inflection in Chinese sometimes make it hard to decide the word classes of lexical units. When looking a word up in a dictionary, the sense we refer to should be recorded under the same word class, and it is determined by the contextual meaning.

c. We only tag clear metaphors, so borderline metaphors should be labelled as "non-MRWs". Borderline metaphors are those cases on which coders cannot reach agreement. They include 多 [*duō*; many, much, more], 少 [*shǎo*; few, little, less], 感情 [*gǎnqíng*; emotion, affection], 心情 [*xīnqíng*; feeling], 个 [*gè*; a classifier], some of 这 [*zhè*; this], 这些 [*zhèxiē*; these], 那 [*nà*; that], 那些 [*nàxiē*; those], etc. Some numerals and adverbs, like 半 [*bàn*; half] in 半呛 [*bàn qiàng*; half choked], are also identified as borderline metaphors. Here are two examples:

(11) 淹 得 半 呛
yān *de* *bàn* *qiàng*
drown half choke
near drowning
得 [*de*; used after certain verbs to indicate possibility]

我	跟	我	奶奶	的	感情	特别	好。
wǒ	*gēn*	*wǒ*	*nǎinai*	*de*	*gǎnqíng*	*tèbié*	*hǎo*
I	with	my	grandma		affection	particularly	good

I have deep affection for my grandma.

半 [*bàn*; half] in 半呛 [*bàn qiàng*; half choked] looks similar to "half" in "half dead". 半 [*bàn*; half] does not refer to the number, amount, or percentage. Instead, it is about the degree. 半呛 [*bàn qiàng*; half choked] here means someone has swallowed some water and been nearly drowned. The uncertainty lies in whether this contrast between two meanings is large enough. The basic meaning of 感情 (*gǎnqíng*) is "emotion; sentiment; strong psychological reaction to outside stimulation"; and the contextual meaning is "love; concern and favour about

somebody". However, both meanings are about human emotion and psychology, and it is difficult to judge whether there is a cross domain mapping or not. For all these unclear cases, we have given them "borderline" labels and excluded them from MRWs if we could not reach consensus after discussion.

d. Some gap fillers can be discarded for metaphor analysis, for instance, 这个 [*zhège*; this], 那个 [*nàge*; that], and 就是说 [*jiùshìshuō*; that is to say], etc. These highly formulaic expressions serve functions mainly on the textual level, rather than on the lexical level.

e. If the word is used in contemporary Chinese or informal context, we do not refer the historical meanings or formal usage of lexical units in classical Chinese, although there are very clear tracks of semantic change from ancient to modern meanings for many lexical units. For instance, the basic meaning of 兵 (*bīng*) in archaic Chinese (the weapon) is not considered in the analysis of 当两年兵 [*dāng liǎng nián bīng*; (*lit*. work as two years a soldier); work as a soldier for two years], in which 兵 (*bīng*) bears a modern meaning "soldier". We emphasize this point because dictionaries of modern Chinese also list the frequently used historical meanings.

f. There are some cases which may be difficult to decide whether they are MRWs or not in our data, such as 会 [*huì*; able to; likely to], 给 [*gěi*; give; for the sake of; dative marker; passive marker], 叫 [*jiào*; shout; make, order], 做 [*zuò*; do, make], 快 [*kuài*; quick; soon], 来 [*lái*, come], 去 [*qù*; go], 有 [*yǒu*; have], 在 [*zài*; in, at], and so on. We have considered these cases and decided how to tag them in various specific contexts.

After two rounds of tests, the Cohen's kappa value between two coders increased from 0.48 to 0.57, which means the interrater agreement is moderate (Landis & Koch, 1977). A meeting was held in order to find out the reason why the agreement is relatively low. The divergence between two raters was listed: in all 731 lexical units, 35 of them were tagged as metaphors by coder A, non-MRWs by coder B (A1B0); 44 were tagged as non-MRWs by coder A, metaphors by coder B (A0B1). After discussion, in A1B0, 26 were considered as metaphors; in A0B1, 41 were non-MRWs. That is to say, the discrepancy between two coders typically resulted from coder B's mistakes. After we had a close look at those errors, it showed that the reason for many errors in A1B0 is that coder B failed to identify some metaphorically used 这, 这个, 那, and 那个; for errors in A0B1, the reason is that some incomplete or illogical utterances, which should be discarded for analysis, were analysed and tagged by code B. If all the interrater errors can be rectified, the reliability coefficient of Cohen's kappa will rise to 0.93. Therefore, our analysis on the data will follow annotations added by coder A.

4.5 Analyses

In this section, we plan to perform a series of analyses on how two groups of participants use metaphors across word classes. As has been discussed, for Mandarin word classes, we have taken classifiers and localizers into consideration.

The first analysis shows how lexical units' word classes are distributed in these two groups without regard to metaphoricity. In the second and third analyses, metaphor distribution in participant groups and word classes is under scrutiny. The last analysis introduces metaphor types, and the interaction between groups and metaphor types is examined.

4.5.1 Word class distribution per group

First, the interaction between ten word classes and two groups is analysed through a chi-square test. The association between them is significant, although the effect size is small: $\chi^2(9) = 85.616$, $p < .001$; Cramer's $V = .112$. No cell has an expected count less than 5. In order to understand which cell(s) contribute the most to the chi-square value, we reviewed the standardized residuals (std. res.).

Table 4.2 tells us that most word classes distribute evenly in these two groups. In the control group, determiners are significantly less used; in the aphasic group, adjectives are significantly less used and determiners are significantly more used. Classifiers in the aphasic group are also a major contributor to the chi-square value.

Table 4.2
Word Class Distribution in Groups

			Group		Total
			Control	Aphasic	
Word Class	Adjective	Count (%)	252 (5.4%)	87 (4.0%)	339 (5.0%)
		Std. Residual	1.4	-2.0	
	Adverb	Count (%)	736 (15.8%)	369 (17.0%)	1105 (16.2%)
		Std. Residual	-0.7	1.0	
	Conjunction	Count (%)	109 (2.3%)	32 (1.5%)	141 (2.1%)
		Std. Residual	1.3	-1.9	
	Classifier	Count (%)	112 (2.4%)	82 (3.8%)	194 (2.8%)
		Std. Residual	-1.8	2.6	
	Determiner	Count (%)	1 (0.0%)	27 (1.2%)	28 (0.4%)
		Std. Residual	-4.1	6.1	
	Localizer	Count (%)	71 (1.5%)	41 (1.9%)	112 (1.6%)
		Std. Residual	-0.6	0.9	
	Noun	Count (%)	740 (15.9%)	323 (14.9%)	1063 (15.5%)
		Std. Residual	0.5	-0.8	
	Preposition	Count (%)	116 (2.5%)	44 (2.0%)	160 (2.3%)
		Std. Residual	0.7	-1.0	
	Verb	Count (%)	1032 (22.1%)	525 (24.2%)	1557 (22.8%)

		Std. Residual	-0.9	1.4	
	Remainder	Count (%)	1496 (32.1%)	642 (29.6%)	2138 (31.3%)
		Std. Residual	1.0	-1.4	
Total		Count (%)	4665 (100%)	2172 (100%)	6837 (100%)

From this analysis on word class distribution in two groups, we cannot find evidence to support noun-verb dissociation. As all data in the aphasic group are from individuals with fluent aphasia, if we inspect their usage of nouns, it is clear that nouns are divided uniformly, and the deficit on noun production is not detected.

4.5.2 Relation between metaphor, group, and word class

In this part, the interaction between metaphor, group and word class is under scrutiny. As there are three categorical variables, a log-linear analysis is needed to test the relationships between them. The three-way log-linear analysis has a model which can retain all effects. The likelihood ratio is $\chi^2(0) = 0$, $p = 1$. This shows that the highest-order interaction between metaphor, group and word class is significant: $\chi^2(9) = 33.271$, $p < .001$.

In total, 9.8% of all lexical units in our data are identified as metaphors. Here are some examples produced by both groups:

(12) 想到 自己 手术 的 这 件 事
xiǎngdào *zìjǐ* *shǒushù* *de* *zhè* *jiàn* *shì*
think arrive oneself surgery this cl matter
think of my surgery

(13) 在 我 生命 中
zài *wǒ* *shēngmìng* *zhōng*
at my life middle
in my life

(14) 让 那个 医生 看看
ràng *nàgè* *yīshēng* *kànkàn*
let that doctor see see
ask that doctor to treat me

(15) 打击 非常 大
dǎjī *fēicháng* *dà*
hit very big
it's a great blow

(16) 这个 病
zhège *bìng*
this illness

(17) 一直 处于 昏迷 状态

yīzhí	*chǔyú*	*hūnmí*	*zhuàngtài*
constantly be in a coma	be in (a state)	coma	state

In Example 12, 件 (*jiàn*) in 这件事 [*zhè jiàn shì*; this matter] is a classifier metaphor, as for its basic meaning, it is used with clothes or accessories, like in 这件大衣 [*zhè jiàn dàyī*; (*lit*. this cl coat); this coat]. As for 这件事 [*zhè jiàn shì*; this matter], the "matter" is an abstract affair or event, and therefore we code 件 (*jiàn*) as an MRW. Most classifier metaphors in our data are 件 (*jiàn*) used with 事 [*shì*; matter]. In Example 13 在我生命中 [*zài wǒ shēngmìng zhōng*; in my life], 在 [*zài*; at, in] is a preposition used in a metaphorical way, and 中 [*zhōng*; middle] is a localizer metaphor, as their basic meanings are about concrete places or locations. The sentence in Example 14 contains verb metaphor 看看 [*kànkàn*; (*lit*. see see)]; and the basic meaning of it is "to see; to look at", which indicates a noteworthy contrast with its contextual meaning "(of a doctor) treat". For 打击非常大 [*dǎjī fēicháng dà*; it's a great blow] (Example 15), the blow is not a physical hit, so 打击 [*dǎjī*; hit, blow] is regarded as a noun metaphor and 大 [*dà*; big, great] is a metaphorically used adjective. In our data, PWA use determiners like 这个 [*zhège*; this]: 这个病 [*zhège*; this illness] in Example 16. In cases like this, 这个 [*zhège*; this] can be tagged as metaphors, because the basic meaning of 这个 [*zhège*; this] is to refer to a person or a thing that is close to you in space. 一直 [*yīzhí*; constantly] in Example 17 is a metaphorically used adverb, as the basic meaning of it is "indicating one direction", like in 一直走 [*yīzhí zǒu*; (*lit*. straight go); go straight ahead]. However, conjunction metaphors in Mandarin are quite rare, and one example is the 连…带… [*lián…dài…*; include…include…] structure:

(18)

他们	连	吃	带	喝，	花 了	一万	多。
tāmen	*lián*	*chī*	*dài*	*hē*	*huā le*	*yīwàn*	*duō*
they	include	eat	include	drink	spend	10,000	more

They were eating and drinking, and spent more than 10,000 yuan.

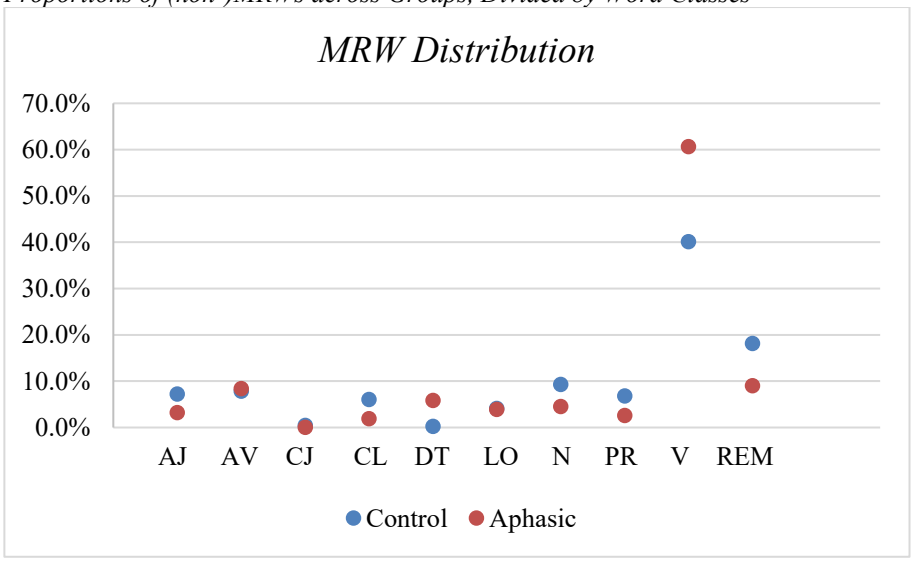
The contextual meaning of 连…带… [*lián…dài…*; include…include…] in Example 18 is "indicating two actions almost taking place at the same time". However, the basic usage of it is to join two concrete items, such as 连皮带籽 [*lián pí dài zǐ*; (*lit*. include shells include seeds); shells and seeds].

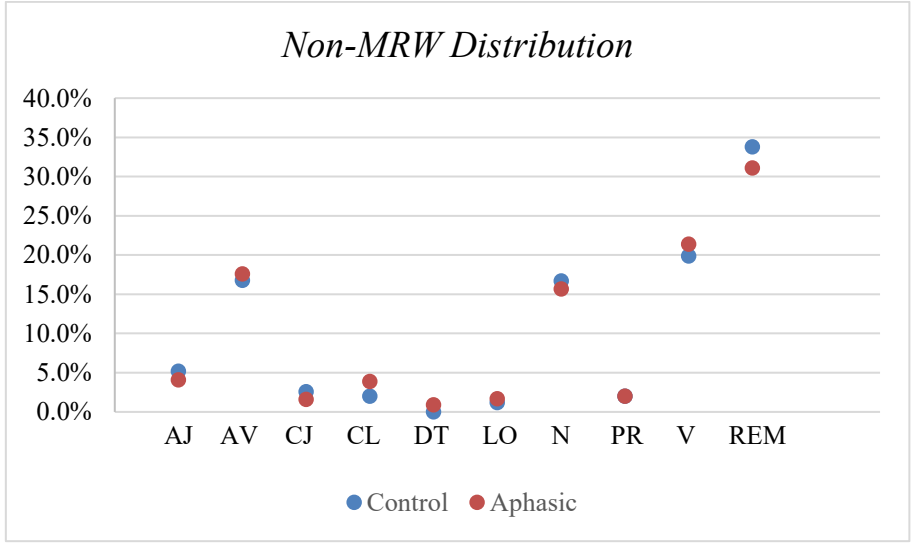
Metaphor distribution in word classes per group

One perspective is to detect the relation between (non-)MRWs and word classes in each group. The following figure shows the percentages of MRWs and non-MRWs in word classes per group. For non-MRWs, the rank orders are very similar: most non-MRWs are remainders, verbs, adverbs, and nouns in both groups. In MRWs, most of them are verbs and remainders. Compared with the controls, aphasic participants have a higher percentage of verb metaphors and lower proportion of

remainder MRWs. Noun metaphors in the control group and adverb metaphors in the aphasic group also take up high proportions.

Figure 4.1
Proportions of (non-)MRWs across Groups, Divided by Word Classes





Note. AJ=Adjectives; AV=Adverbs; CJ=Conjunctions; CL=Classifiers; DT=Determiners; LO=Localizers; N=Nouns; PR=Prepositions; V=Verbs; REM=Remainders.

If we perform the chi-square test to see the interaction of (non-)MRWs and word classes in two groups, it shows that in the control group, two cells (determiner non-MRWs and metaphorical determiners) have expected count less than 5, and the minimum expected count is 0.11. Hence, we have decided to combine determiners and conjunctions (CJ+DT) in our study. Here are the results of chi-square tests:

Table 4.3
(Non-)MRW Distribution across Word Classes in the Control Group

Control

		Non-MRW	MRW	Total
Word Class	**Adjective** Std. Res.	215 (5.2%) -0.6	37 (7.2%) 1.8	252 (5.4%)
	Adverb Std. Res.	696 (16.8%) 1.6	40 (7.8%) -4.6	736 (15.8%)
	CJ+DT Std. Res.	107 (2.6%) 0.9	3 (0.6%) -2.6	110 (2.4%)
	Classifier Std. Res.	81 (2.0%) -1.9	31 (6.0%) 5.3	112 (2.4%)
	Localizer Std. Res.	50 (1.2%) -1.7	21 (4.1%) 4.7	71 (1.5%)
	Noun Std. Res.	692 (16.7%) 1.3	48 (9.3%) -3.7	740 (15.9%)
	Preposition Std. Res.	81 (2.0%) -2.2	35 (6.8%) 6.2	116 (2.5%)
	Verb Std. Res.	826 (19.9%) -3.0	206 (40.1%) 8.7	1032 (22.1%)
	Remainder Std. Res.	1403 (33.8%) 2.0	93 (18.1%) -5.6	1496 (32.1%)
Total		4151 (100.0%)	514 (100.0%)	4665 (100.0%)

For the participants without aphasia, 11.0% of all lexical units are identified as metaphors. The metaphor distribution differs significantly across groups, $\chi^2(8) = 269.493$, $p < .001$, Cramer's $V = .240$. No cell has an expected count less than 5. Significantly more use is found in classifier, localizer, preposition and verb metaphors, and remainder non-MRWs. For adverb MRWs, CJ+DT metaphors, metaphorical nouns, remainder metaphors, preposition non-MRWs and verb non-MRWs, their standardized residuals are less than -2, which indicate they are also major contributors to the chi-square value.

Most non-MRWs are remainders and verbs, followed by adverbs, nouns, adjectives, CJ+DT, and prepositions. For MRWs, verbs and remainders take a large proportion. Others are nouns, adverbs, adjectives, prepositions, CJ+DT, from high to low percentages.

Table 4.4
(Non-)MRW Distribution across Word Classes in the Aphasic Group

Aphasic

		Non-MRW	MRW	Total
Word Class	**Adjective** Std. Res.	82 (4.1%) 0.1	5 (3.2%) -0.5	87 (4.0%)
	Adverb Std. Res.	356 (17.6%) 0.7	13 (8.4%) -2.6	369 (17.0%)
	CJ+DT Std. Res.	50 (2.5%) -0.6	9 (5.8%) -2.6	59 (2.7%)
	Classifier Std. Res.	79 (3.9%) 0.3	3 (1.9%) -1.2	82 (3.8%)
	Localizer Std. Res.	35 (1.7%) -0.5	6 (3.9%) 1.8	41 (1.9%)
	Noun Std. Res.	316 (15.7%) 0.9	7 (4.5%) -3.3	323 (14.9%)
	Preposition Std. Res.	40 (2.0%) -0.1	4 (2.6%) 0.5	44 (2.0%)
	Verb Std. Res.	431 (21.4%) -2.6	94 (60.6%) 9.2	525 (24.2%)
	Remainder Std. Res.	628 (31.1%) 1.3	14 (9.0%) -4.7	642 (29.6%)
Total		2017 (100.0%)	155 (100.0%)	2172 (100.0%)

With regard to aphasic individuals, 7.1% of words are used metaphorically. The association between metaphor and word class is significant, $\chi^2(8) = 146.309$, $p < .001$, Cramer's $V = .260$. Verb metaphors are significantly more used. Cases with standardized residuals beyond -2 can be found in adverb metaphors, CJ+DT metaphors, noun metaphors, remainder MRWs, and verb non-MRWs. Balanced division is found in adjectives, classifiers, localizers, and prepositions.

Most non-MRWs are remainders and verbs, and from high to low in percentage, others are adverbs, nouns, adjectives, classifiers, CJ+DT, prepositions, and localizers. Over half of all metaphors are verbs, followed by remainders, adverbs, CJ+DT, nouns, localizers, adjectives, prepositions, and classifiers.

Metaphor distribution in groups per word class

For each word class, relationships of metaphors and groups are shown as follows:

Table 4.5
(Non-)MRW Distribution in Groups per Word Class

Word Class	Group		Non-MRW	MRW	Total	χ^2	*Cramer's V*
Adjective	Control	Count (%)	215 (63.4%)	37 (10.9%)	252 (74.3%)	4.757	0.118
		Std. Res.	-0.4	1.0			
	Aphasic	Count (%)	82 (24.2%)	5 (1.5%)	87 (25.7%)		
		Std. Res.	0.7	-1.8			
	Total	Count (%)	297 (87.6%)	42 (12.4%)	339 (100%)		
Adverb	Control	Count (%)	696 (63.0%)	40 (3.6%)	736 (66.6%)	1.967	0.042
		Std. Res.	-0.2	0.8			
	Aphasic	Count (%)	356 (32.2%)	13 (1.2%)	369 (33.4%)		

		Std. Res.	0.3	-1.1			
	Total	Count (%)	1052 (95.2%)	53 (4.8%)	1105 (100%)		
Conjunction + Determiner	Control	Count (%)	107 (63.3%)	3 (1.8%)	110 (65.1%)	7.335	0.233
		Std. Res.	0.5	-1.7			
	Aphasic	Count (%)	50 (29.6%)	9 (5.3%)	59 (34.9%)		
		Std. Res.	-0.6	2.4			
	Total	Count (%)	157 (92.9%)	12 (7.1%)	169 (100%)		
Classifier	Control	Count (%)	81 (41.8%)	31 (16.0%)	112 (57.7%)	18.897*	0.312
		Std. Res.	-1.2	2.6			
	Aphasic	Count (%)	79 (40.7%)	3 (1.5%)	82 (42.3%)		
		Std. Res.	1.4	-3.0			
	Total	Count (%)	160 (82.5%)	34 (17.5%)	194 (100%)		
Localizer	Control	Count (%)	50 (44.6%)	21 (18.8%)	71 (63.4%)	3.172	0.168
		Std. Res.	-0.5	0.9			
	Aphasic	Count (%)	35 (31.3%)	6 (5.4%)	41 (36.6%)		
		Std. Res.	0.7	-1.2			
	Total	Count (%)	85 (75.9%)	27 (24.1%)	112 (100%)		
Noun	Control	Count (%)	692 (65.1%)	48 (4.5%)	740 (69.6%)	8.550**	0.090
		Std. Res.	-0.4	1.6			
	Aphasic	Count (%)	316 (29.7%)	7 (0.7%)	323 (30.4%)		
		Std. Res.	0.6	-2.4			
	Total	Count (%)	1008 (94.8%)	55 (5.2%)	1063 (100%)		
Preposition	Control	Count (%)	81 (50.6%)	35 (21.9%)	116 (72.5%)	7.691	0.219
		Std. Res.	-0.7	1.3			
	Aphasic	Count (%)	40 (25.0%)	4 (2.5%)	44 (27.5%)		
		Std. Res.	1.2	-2.1			
	Total	Count (%)	121 (75.6%)	39 (24.4%)	160 (100%)		
Verb	Control	Count (%)	826 (53.1%)	206 (13.2%)	1032 (66.3%)	0.946	0.025
		Std. Res.	-0.2	0.5			
	Aphasic	Count (%)	431 (27.7%)	94 (6.0%)	525 (33.7%)		
		Std. Res.	0.3	-0.7			
	Total	Count (%)	1257 (80.7%)	300 (19.3%)	1557 (100%)		
Remainder	Control	Count (%)	1403 (65.6%)	93 (4.3%)	1496 (70.0%)	15.391*	0.085
		Std. Res.	-0.5	2.1			
	Aphasic	Count (%)	628 (29.4%)	14 (0.7%)	642 (30.0%)		
		Std. Res.	0.7	-3.2			
	Total	Count (%)	2031 (95.0%)	107 (5.0%)	2138 (100%)		

Note. *$p < 0.001$; **$p < 0.005$.

After the chi-square test, one cell (25%) has an expected count less than 5 (CJ+DT metaphors in the aphasic group), and the minimum count is 4.2. Therefore, it is necessary to have a correction to the Pearson formula, that is, Yates' continuity correction (Yates, 1934):

$$\chi^2 = \sum \frac{(|observed\ frequency - expected\ frequency| - 0.5)^2}{expected\ frequency}$$

After the correction, the *p* value is 0.007.

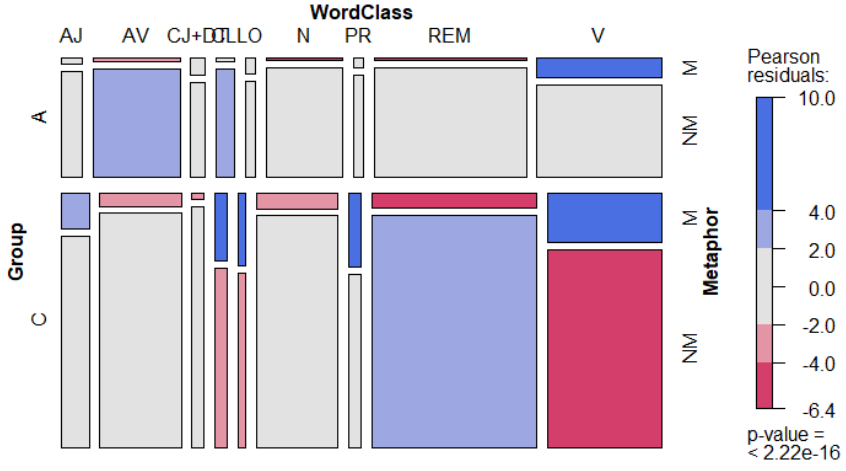
From Table 4.5, we can see that the interaction between metaphor and group is significant in classifiers, nouns, and remainders. In other word classes, (non-)MRW distribution does not differ greatly.

For standardized residuals, in classifiers and remainders, metaphors are significantly more used by the controls, and less used by aphasic speakers. CJ+DT metaphors are significantly more used by PWA. In nouns and prepositions, metaphors used by PWA are major contributors to the chi-square values (with standardized residuals less than -2).

The following chart makes the (non-)MRW distribution easier to understand. In Chapter 3, we have mentioned what these rectangle areas, widths, heights, and colours stand for.

Figure 4.2

Distribution of MRWs/non-MRWs across Word Classes and Groups



Note. C=Control; A=Aphasic; NM=Non-MRWs; M=MRWs.

Metaphor types across groups

Metaphor types tagged in MIPVU are non-MRWs, indirect, direct, implicit metaphors, metaphor signals, borderline metaphors (or WIDLIIs) and DFMAs. In this research, there is no direct metaphor or metaphor signal in our data, and only one implicit metaphor can be found, which is a substitution of a related indirect metaphor. We can combine this implicit metaphor into indirect metaphors and explore how non-MRWs, WIDLIIs and indirect metaphors are distributed in the control and aphasic groups.

Table 4.6

Metaphor Type Distribution in Each Group

	Group		
Metaphor Type	Control N=4665	Aphasic N=2172	**Total** N=6837

Non-met	4122 (88.4%)	1998 (92.0%)	6120 (89.5%)
Std. Res.	-0.8	1.2	
WIDLII	29 (0.6%)	19 (0.9%)	48 (0.7%)
Std. Res.	-.7	1.0	
Indirect	514 (11.0%)	155 (7.1%)	669 (9.8%)
Std. Res.	2.7	-3.9	
Total	100%	100%	100%

The chi-square test reveals that the association between metaphor type and group is significant, $\chi^2(2) = 26.356$, $p < .001$, Cramer's $V = .062$. No cell has expected count less than 5. The major contributors of the chi-square value are indirect metaphors in both groups. Non-MRWs and WIDLIIs are distributed evenly across groups.

4.6 Discussion

We have raised two research questions in this study, and additionally, two hypotheses were proposed on the basis of former research. In this part, we will discuss how these research questions are answered and whether the hypotheses can be confirmed.

With reference to the hypotheses, first, similar to results in Chapter 3, most lexical units in this study should be non-MRWs; most MRWs are indirect metaphors; and PWA produce a lower percentage of metaphors than the control group. Second, we have predicted that compared with results in Chapter 3, the (non-)MRW distribution in Chinese data is different from that in English data. Both predictions have been proven true. Specifically, there are some similarities shared by Chinese and English speaking PWA: they produce fewer metaphors than people without language disorder; most lexical units are not figurative; the vast majority of MRWs in their utterances are indirect metaphors.

Apart from these similarities, we have found differences on metaphor distribution between Chinese and English. The noun-verb dissociation cannot be found in Chinese data, viz., nouns are divided evenly in the fluent aphasic group and the control group. Determiners and classifiers are significantly more used by people with fluent aphasia and adjectives are less used by them; and for the control group only determiners are significantly less used. For people with fluent aphasia in this study, most metaphors are verbs, remainders, and adverbs; however, in Chapter 3, most metaphors used by fluent aphasia speakers are verbs, prepositions, remainders, and nouns. For the control groups in these two studies, in Chinese data, remainders, verbs, adverbs, and nouns are in the majority of all metaphors; in English data, most metaphors are prepositions, verbs, remainders, and nouns. The most remarkable difference is that preposition metaphors take up lower proportions in Chinese data, especially in the aphasic group. In our data, most metaphorically used prepositions are 在 [*zài*; in, at] and 对 [*duì*; with regard to].[19]

In order to reply to the first research question on the features of metaphor use by Chinese PWA and healthy speakers, we need to scrutinize the interaction

[19] As a preposition, the basic meaning of 对 (*duì*) is "towards", which is followed by a direction.

between linguistic metaphors, word classes and participant groups. For metaphor distribution across word classes in two groups, most metaphors are verbs and remainders.

For the rank orders of (non-)MRWs, the differences in the non-MRWs of these two groups are not noteworthy, as the non-MRW distributions in word classes are similar. Nevertheless, as for the rank orders of how metaphors are divided in word classes, the distribution lines of two groups suggest substantial differences in metaphor use. Aphasic participants have a higher percentage of verb metaphors and a lower percentage of remainder metaphors than the healthy controls; the proportion of determiner metaphors is a little higher in the aphasic group; for PWA, their noun and preposition metaphors take slightly lower percentages compared with the control group; and the proportion of classifier metaphors is somewhat lower in the aphasic group than in the healthy speakers.

When we delve into the metaphor distribution in two groups per word class, it reveals that metaphors are divided unevenly in classifiers, nouns, and remainders. To be specific, in nouns and remainders, metaphors are significantly less used by PWA; for classifiers, MRWs are significantly more used by the control group and significantly less used by aphasic speakers. We can conclude that for classifiers it is particularly difficult for fluent aphasic speakers to use them metaphorically, considering the significantly more use of classifiers in the aphasic group. Moreover, after an inspection, we found the metaphorically used classifiers are mainly 件 (*jiàn*); and in the aphasic group, this word's frequency of occurrences is much lower than that in the control group. It seems that the classifier metaphor distribution is heavily influenced by the lexical occurrences.

What has also been manifest is that in nouns, prepositions, and remainder, in fluent aphasic group, they are significantly less used as metaphors. This finding reflects PWA's difficulties in producing as many metaphors as the healthy people do, though they do not show significant differences in the production of these three word classes, as imbalanced division of nouns, prepositions, and remainders cannot be detected in two groups.

The second research question is how metaphor types are divided between the two groups of participants. Only the indirect metaphor distribution is imbalanced; and in our data, there is no direct metaphors in the category of clear metaphors. Results of this analysis indicates people with fluent aphasia have a poor ability to produce metaphors.

To sum up, though we cannot seek out the deficit on noun production in fluent aphasic utterances, PWA have shown that it is difficult for them to produce noun metaphors. Except for this, prepositions and remainders are also not apt to be used metaphorically. For Chinese people with fluent aphasia, their metaphor distribution in word classes shows features which are different from English speaking people with fluent aphasia.

In this study, we have had a detailed investigation on metaphor use by Chinese fluent aphasic participants and the healthy speakers; and as a reference, metaphor use by English speaking PWA has been taken for comparison to explore whether there are some differences when they produce linguistic metaphors. All of these findings are on the linguistic level, that is, about the interaction between

metaphors, lexical categories (word classes), and participant groups. In the next step, hopefully, we can explore PWA's use of metaphor on the conceptual level and enquire into the role of metaphor in medical communication.

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Chapter 5 Metaphorical framing in discourse on aphasia

Abstract

Background: According to the conceptual metaphor theory (CMT), one idea or concept can be understood in terms of another one through metaphors. Conceptual metaphors are omnipresent in our daily communication. In aphasia treatment and recovery, it is also possible to find many conceptual metaphors when people talk about aphasia, the aphasic brain, the recovery, etc.

Aims: This study aims to explore how aphasia is conceptualized and framed by metaphors in discourse. In order to reach this goal, we have examined conceptual metaphor use by people with aphasia (PWA), their caregivers, and clinicians on different levels: image schema, domain, frame and scenario (or mental space), and the emphasis is placed on the scenario level.

Methods & Procedures: Various source domains are employed when PWA, their family caregivers, and speech therapists talk about aphasia itself and its relations with people. We have carried out qualitative analyses to explore how metaphors are framed by some patterns on each level of conceptual metaphors, especially on the scenario level. All examples were chosen from a self-built database, with texts from an online aphasia forum.

Outcomes & Results: We categorised metaphor usage into six metaphorical framings: WAR, JOURNEY, MOTION IMPEDIMENTS, THEFT, FOREIGNNESS, and GAME. Within each framing, through the investigation into metaphor use in individual settings, the analysis has revealed diverse source spaces in real usage which conveyed information on different situated use of metaphors by PWA, their caregivers, and medical staff.

Conclusions: On the scenario level, conceptual metaphors about aphasia are elaborated in various and detailed ways. It is hoped that through this study people can have a deeper and more comprehensive understanding on the metaphorical framing of aphasia, and our analyses will be helpful for family caregivers and medical staff when they communicate with PWA.

5.1 Introduction

In contrast to previous chapters on the distribution of linguistic metaphors, this chapter aims to explore how aphasia is conceptualized and framed by metaphors in discourse under the framework of CMT, which we have discussed in the first two chapters. To begin, let's have a look at some examples about conceptual metaphor use in aphasic contexts.

When an aphasia sufferer talked about this disorder, the aphasic brain was analogized to a damaged computer and broken keys on the keyboard, "I am like a computer screen trying to reboot...My computer brain gets jammed, locked, frozen like my laptop's broken keys."[20] In this example, one comparison is between

[20] https://www.aphasia.org/stories/aphasia-analogies-metaphors/

PWA's brain and the malfunctioned keys. The keyboard is used to operate the computer, and we cannot input information with broken keys. The aphasic brain has difficulty in processing language; in many cases, PWA have a defect in language understanding. There is a correspondence between them, that is, both damaged hardware and impaired brain are not able to work properly to receive and process information. In another case, when a family caregiver talked about her husband's aphasia, she said, "My husband lost speech, writing, reading he can't use the speaking device to communicate."[21] In this sentence, "the speaking device" refers to the vocal organs. The basic meaning of "device" in dictionary is "a machine or piece of equipment that does a particular thing". Whether it is computer keys or a device, in both examples, the material basis of language has been compared to a machine or tool. When a machine breaks down, people need to fix it or buy a new one. Then what about aphasia and the aphasic brain? "It's terrifying, feels like drowning to me. I know we have to fight this, work hard together to repair this."[22] This is a family caregiver's reply. In the circumstances, her husband's aphasia was frightening, and the couple had to try hard to "repair" the impaired brain. In dictionary, the basic meaning of "repair" is "to fix something that is broken or damaged", and its contextual metaphorical meaning is "to take action in order to improve a bad situation".

All of these three descriptions on aphasia contain metaphors relevant to the concept "MACHINE", viz., "keys", "device" and "repair" are all relating to the notion "MACHINE". In other words, it can be regarded as a small set of the MACHINE metaphor when PWA and their family caregivers talk about aphasia. From examples of the MACHINE metaphor, apparently, some metaphor use about aphasia is not accidental or unsystematic, and we may search for rules and patterns behind it. At the same time, in specific contexts, the conceptual structures contain rich details on how the target topic (aphasia in our case) is perceived by speakers (PWA and their caregivers). Specifically, in THE APHASIC BRAIN AS BROKEN KEYS and THE VOCAL ORGANS AS A DEVICE, though both of the source domains are about the concept of MACHINE, they refer to different organs in discourse. As for the MACHINE metaphor, the analysis on the discoursal level provides more information on how aphasia is conceptualized through metaphors.

In this study, we therefore investigate how metaphors about aphasia are framed in discourse. We propose two research questions:

a. What are existing conceptual metaphors on aphasia?
b. How are these metaphors framed in specific co-texts and contexts?

For the first question, we plan to identify commonly used conceptual metaphors about aphasia itself and people's (PWA, caregivers, and health professionals) relationship with aphasia. For the second question, these metaphors will be precisely delineated in discourse. To do so, it is necessary to introduce what metaphorical framing is; levels of metaphor also need to be explained, and our analyses will follow this hierarchical order.

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[21] https://www.aphasia.org/stories/aphasia-hacks/

[22] https://www.aphasia.org/stories/aphasia-threads-kim-mary-and-cheryl/

5.1.1 Metaphorical framing

It is believed that metaphors like THE HUMAN BRAIN IS A COMPUTER impact on people's communication. Specifically, these metaphors offer a particular way of thinking about a topic or a social interaction, which is called a "frame", and the process of using language to form frames is "framing" (Ritchie, 2013, p. 106). Enfield (2022, p. 113) elaborated further on framing, as not only a different way of regarding something, but also a public act to influence people. How to use metaphors to establish a particular way of thinking about a topic or a social interaction is regarded as metaphorical framing. In Steen (2008), the conceptual function of metaphor is "to offer conceptual frameworks for concepts that require at least partial indirect understanding", and this process is called framing. Entman (1993, p. 52) has explained how framing works in communication and argued that "framing essentially involves selection and salience. To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described". Entman's comments echo Lakoff and Johnson's (1980, pp. 10-13) assertion, that is, the selection of the metaphor's source domain makes certain aspects of the target domain more prominent, and it hides some other aspects. For example, THE HUMAN BRAIN IS A COMPUTER metaphor highlights the fact that the brain can accomplish particular tasks (calculating, processing information…) like a computer; however, it conceals some features, like the plasticity of the brain. The choice of the source domain makes certain concepts map onto the target domain, resulting in particular entailments or inferences (Demjén & Semino, 2020). As for THE HUMAN BRAIN IS A COMPUTER metaphor, its entailments include that if someone gets brain damage, the brain can be fixed.

A metaphorical framing model was proposed by Ottati et al. (2014). It consists of two cognitive stages: activation and application. The first stage is about the activation of root metaphors explicitly or implicitly. A root metaphor (or a basic metaphor) contains an image, central theme, or storyline that is associated with the entity or event being described. The second stage is the application of metaphors. Metaphorical images affect people's attitudes and evaluation of entities or issues being described in communication in a direct or indirect manner. Why people choose a particular framing is also a reflection of their moral evaluation of a certain situation (Enfield, 2022, p. 113).

Some research has examined the metaphorical framing effect in social policy planning and political communication (Jia & Smith, 2013; Landau et al., 2009; Schön, 1979, 1993; Thibodeau & Boroditsky, 2011, 2013). In Thibodeau and Boroditsky (2011, 2013), subjects were asked to read about crime as a virus or a beast, and then to talk about solutions for coping with the crime. When crime is regarded as a virus, it is necessary to make people immune to the virus, and behaviour modification is important to prevent crimes; if crime is a beast, the solution is to make it caged up, so stricter law enforcement and increasing punishment are more stressed in preventing crimes. Results have shown that there is a close correspondence between people's reactions and metaphors they have read. In our social communication, people receive various conceptual metaphors, and these

metaphors influence recipients' attitudes and evaluation on particular topics. Reijnierse et al. (2015) designed two experiments about how VIRUS and BEAST frames affected readers' opinions (or not). They (ibid.) extended the two metaphorical frames in texts by increasing numbers of sentences with these frames, and predicted it would make readers display higher ratings of perceived effectiveness of policy measures to reduce crimes that were in line with each frame. The result showed a trend in the expected direction of this prediction, and the premise was that participants' political affiliation should be controlled.

5.1.2 Levels of metaphors

As it has been mentioned, one research question of the present study is to explore the metaphorical framing about aphasia in specific situations. To answer it, we will first identify conceptual metaphors in the data and then analyse them on different levels of metaphors. It is necessary to expatiate levels of metaphors, because the "conceptual domain" explained by Lakoff and Johnson (1980) in CMT is "too broad to account for the complexity and variety of manifestations of metaphor in discourse" (Demjén & Semino, 2020). For instance, here are some levels for the metaphorical framework LOVE IS A JOURNEY (Lakoff et al., 1991):

(1) a. Relationships, like sharks, have to keep moving to stay alive
b. Their marriage has really gone off the track.

In Example 1a, the relationship is an animal; in Example 1b, the relationship is a train. Both of them are the instantiation of the metaphorical framing THE RELATIONSHIP IS A MOVING OBJECT. Furthermore, THE RELATIONSHIP IS A MOVING OBJECT is seen as a sub-domain framing of LOVE IS A JOURNEY. If we need to scrutinize metaphor use in specific settings, it is necessary to have a close look at how metaphors are framed on different levels, which can reveal how conceptual units in conceptual metaphors work in metaphorical mappings.

Scholars have proposed different hierarchical structures on metaphorical framing (Dancygier & Sweetser, 2014, pp. 43-72; Gibbs, 2017, p. 27). Kövecses (2010) distinguished levels of generality; he further discussed the conceptual structures of metaphors and divided them into four tiers according to the degree of schematicity (Kövecses, 2017). Schematicity is defined as the "relative precision of specification along one or more parameters" (Langacker, 1987, p. 492). The four tiers are image schema, domain, frame, and mental space (please refer to Chapter 2 for more information on these terms). The image schema is at the highest level of schmaticity, like the CONTAINER, VERTICALITY, WHOLE-PART and SOURCE-PATH-GOAL schemata. The mental space is the most specific, which equates to the term "scenario" used by Musolff (2006, 2016). Domain and frame can be seen as two independent levels of metaphor between image schema and mental space, although the boundary between domain and frame is not clear-cut (Kövecses, 2017). Frames are conceptual structures that are less schematic than domains, and they have more conceptually specific information than domains. Different from domains and frames, mental spaces are not conventionalized conceptual structure, instead, they are online representations of human's experience and ideas operating in

working memory. Moreover, they provide "a platform to link the conceptual side of metaphor to its usage patterns in socially situated discourse" (Musolff, 2006, p. 36; Semino et al., 2016). Owing to the richness and specificity of cognitive information in the mental space, it is an ideal interface for us if we are interested in metaphor use in discourse.

If we adopt Kövecses' levels of metaphor, tiers of conceptual metaphor analysis can be depicted as follows:

Level 1: image schema
(e.g. BODIES ARE MACHINES)
Level 2: domain
(e.g. THE HUMAN BRAIN IS A COMPUTER)
Level 3: frame
(e.g. THE DAMAGED BRAIN IS A BROKEN COMPUTER)
Level 4: mental space or scenario
(e.g. THE APHASIC BRAIN IS BROKEN KEYS ON A KEYBOARD)

What needs to be clarified is that the term "frame" in this section is different from the "framing" in the previous section. In order to eliminate the terminological confusion, we will use "frame" as a noun only when it signifies the third level in the metaphoric structure.

5.2 Metaphorical framing in discourse

When we talk about "metaphor in discourse", it means spontaneous metaphor use in real contexts. This is also related to the function of metaphorical expressions, as Halliday and Matthiessen (2004) pointed out that one metafunction of language is interpersonal, that is, the function of establishing and maintaining relations between speakers and listeners in actual language use. For the metaphorical framing in discourse on aphasia, it means we probe into how metaphors are employed to build up people's understanding on aphasia and the subsequent rehabilitation, viz., how to conceptualize aphasia and recovery in real aphasic settings. It is noticeable that it involves not only aphasia itself (signs, symptoms, and mechanisms), but also its relations with PWA, caregivers, speech-language pathologists (SLPs), and volunteers.

As this study explores metaphor use relating to aphasia, the next section presents an overview of research on metaphors in medical discourse in order to draw insights from previous research on metaphors and metaphor frames in medical discourse.

5.2.1 Metaphorical framing in medical discourse

Discussions of metaphorical framing effect in medical discourse emerged in recent years (Demjén et al., 2016; Hendricks et al., 2018; Semino et al., 2015; Semino et al., 2016). Demjén et al. (2016) interviewed palliative healthcare professionals to request descriptions of 'good' and 'bad' deaths. Different metaphors were found for the evaluation and framing of different types of deaths. Here are two examples: "where both the patient and the family have reached the stage of saying this is now

where where it needs to end" (good death) and "where there is some tension or discord and it almost gets amplified" (bad death).

In medicine, two most prototypical metaphorical structures that have been scrutinized and analysed are the MILITARY metaphor[23] and the JOURNEY metaphor. Some former studies on metaphor use in medical texts focused on these two conceptual metaphors, such as the VIOLENCE metaphor and the JOURNEY metaphor for cancer, AIDS, end of life, etc. (Demjén et al., 2016; Nie et al., 2016; Semino et al., 2018).

Discussions on these two framings are not limited to studies by metaphor scholars as some medical practitioners have publications on the WAR metaphor in their workplaces. Most of them did not consider it to be necessary and helpful; they asserted that the WAR metaphor in clinical discourse might bring more harm, and it could be replaced by the JOURNEY metaphor.

In AIDS care research, Nie et al. (2016) regarded the MILITARY metaphors to be ironic, unfortunate, and unnecessary. To be specific, to heal patients and to declare war are contradictory, which is ironic, as one is peaceful and curative and the other is deadly and fatal; unintentionally, the WAR metaphor might later stigmatize patients, that is, if the struggle against HIV fails, patients may feel guilty and disempowered that it is their own fault not to "fight" hard enough; the MILITARY metaphor is not necessary because there are underused positive alternatives, such as the JOURNEY metaphors. Instead, they (ibid.) proposed that aggressive meanings of the WAR metaphor should be weakened, and the WAR metaphor needs to be substituted with more peaceful metaphors, like the JOURNEY metaphor.

For cancer, some oncologists have appealed to colleagues for "waging war on war metaphors in cancer" (Halperin, 2017; Marron et al., 2020). They (ibid.) hold that though some patients, caregivers, and practitioners may find the WAR metaphor beneficial, it is doubtful whether the WAR metaphor is accurate, scientific, and neutral enough when the professionals communicate with cancer patients. Both positive and negative implications of the VIOLENCE metaphor have been listed in Marron et al. (2020). For example, in the BATTLE framing of cancer, one scenario is PATIENTS ARE HEROES: patients can be empowered by this metaphor, and the cancer treatment is acknowledged as a difficult process; however, other efforts may be minimized or neglected, like drug discovery, cancer control and risk reduction. Nevertheless, these scholars have also pointed out that their studies focus on practitioners' use of metaphors, and it is crucial to listen to patients' first-person narratives to interpret how they use metaphors to reflect and facilitate feelings and understandings on their illnesses.

In the field of metaphor study, several experiments have been designed and implemented to test BATTLE and JOURNEY metaphors' emotional implications for people's mindset about cancer (Hendricks et al., 2018). Participants were asked to read vignettes on how a person experienced cancer, and the narration was framed by these two metaphors. Then readers were asked to answer questions about the story. Results show that the BATTLE framing encourages people to believe that the

[23] In many cases, the MILITARY metaphor equals to WAR and BATTLE. They all belong to the VIOLENCE conceptual structure.

protagonist is more likely to feel guilty if the recovery does not go smoothly. On the contrary, the JOURNEY framing is more likely to suggest that patients can make peace with the situations they face than the BATTLE metaphor. In addition, in Semino et al. (2015) and Semino et al. (2016), metaphors from online data on cancer have been identified and analysed on different levels (cognition, discourse and communication). One important finding is that both VIOLENCE and JOURNEY metaphors can be used in positive and negative ways. For instance, "I feel such a failure that I am not winning this battle" and "I am ready to kick some cancer butt" reflect patients' different spirits towards cancer, and the second narrator has presented a more humorous and determined attitude to treatment. Such different usage could also be found in the JOURNEY framing. A cancer patient said, "my journey may not be smooth but it certainly makes me look up and take notice of the scenery!" Conversely, another person expressed a negative feeling that cancer was a journey that she did "not even want to be on". As a result, in real communication, the BATTLE metaphor is not by default negative and the JOURNEY metaphor is not by default positive in the conceptualization of cancer.

Therefore, it seems that metaphorical framing should be examined in specific contexts. Furthermore, without such scrutiny, perhaps it is hard to draw a conclusion that one framing is definitely better than the other one in communication pertaining to a certain illness or disorder; and it is debatable whether one metaphoric structure (for instance, the JOURNEY metaphor) should be encouraged and another one (for instance, the MILITARY metaphor) should be restrained in medical settings.

5.2.2 Metaphorical framing in aphasia discourse

The BATTLE metaphor and the JOURNEY metaphor are also common in narratives about aphasia (Ferguson et al., 2010; Mitchell et al., 2011). Specifically, in Ferguson et al. (2010), for all conceptual metaphors used by PWA, family members and SLPs, the proportions of the BATTLE metaphor and the JOURNEY metaphor are 34.8%, 63.2% and 48.4% respectively. In other words, it has shown that these two frameworks are important when people talk about aphasia and the rehabilitation metaphorically. However, one important fact cannot be overlooked, that is, aphasia is a behavioural symptom mainly caused by stroke and brain trauma, rather than a disease. By contrast, cancer and AIDS are chronic illnesses: it is difficult to cure AIDS victims according to current treatments, and in many cases, the malignant tumour is not easy to control. For HIV infected people, the heterogenous virus attacks human immune system; humans can have cancer cells in our own bodies and they may spread to different parts; as for aphasia, it is an impairment of language functions after brain lesions. Compared with AIDS and cancer, characteristics of aphasia may have some different impacts on metaphorical framings WAR and JOURNEY. Moreover, what is noteworthy is that whether BATTLE and JOURNEY is homogeneous or not when people of different identities talk about aphasia. Or, do PWA, caregivers, and medical staff use same metaphorical patterns, such as "the rehabilitation of aphasia is a battle" and "living with aphasia is a journey"? What is more, apart from these two framings, are there any special conceptual structures pertaining to aphasia? To put it in a nutshell, metaphor use relating to an illness like cancer or AIDS reflects how people conceptualize physical conditions in which a tumour or a virus harms people's health; it is interesting to see how metaphors are

framed when people talk about a behavioural symptom, instead of diseases like cancer and AIDS.

As for this language disorder, previous research has reported how metaphors are used by PWA, their family caregivers, and medical practitioners when they describe their experiences and feelings in PWA's hospitalization and rehabilitation (Barrow, 2008; Ferguson et al., 2010; Mitchell et al., 2011).

Barrow (2008) interviewed one woman with aphasia, her son, her brother, and some therapists; and the author (ibid.) has advocated the RESTITUTION narratives in aphasic settings, instead of the conceptual metaphor DISABILITY AS LESS THAN WHOLE. These two examples are the representations of the two narratives: the person with aphasia does "all the things necessary to get her speech back" (speech is a physical object), and "some areas still missing" (speech is an incomplete object).

Ferguson et al. (2010) have found that all participants suffering from mild aphasia used metaphors. They (ibid.) adopted MIP (Pragglejaz Group, 2007) to identify metaphors from interviews with five PWA, five family caregivers, and eight SLPs. After the categorization of all metaphors, for PWA and therapists, the most frequently used metaphors are JOURNEY, PRODUCT, BATTLE and BODY; for family caregivers, most figurative language is about framings JOURNEY, PRODUCT, BATTLE and SPORT.

Mitchell et al. (2011) had interviews with 11 PWA and found 13 conceptual metaphors from the transcriptions:

LIFE AS A JOURNEY/BATTLE/GAME/PUZZLE
BRAIN AS A LIVING/MACHINE
SPIRITUALISM AS UP
PROGRESS AS UP/RE-LEARNING
APHASIA AS A THIEF/GIFT/BARRIER/ENLIGHTENMENT

The previous work provides us a list of conceptual metaphors that are used when talking about aphasia, and it can be the start point of our study. We pick up four frequently-used figurative structures from Ferguson et al. (2010) and Mitchell et al. (2011):

EXPERIENCING APHASIA IS A BATTLE
EXPERIENCING APHASIA IS A JOURNEY
APHASIA IS A THIEF
APHASIA IS A BARRIER

As what has been mentioned, in this study, metaphor structures we search for and analyse are not narrowed down to those about aphasia itself, but also include PWA, caregivers, and the professionals' feelings and comments on experiences relating to aphasia: the diagnosis, treatment and recovery after aphasia, its influence on everybody, etc. Just like the aforementioned example of the metaphor about cancer "my journey may not be smooth...", the illness itself is not a "journey", while "curing from cancer" or "living with cancer" is comparable to a "journey". That is to say, this study covers both phenomenological and evaluative data on aphasia: its

own features and its relationship with people (Demjén et al., 2019). In these four framings, the WAR and JOURNEY are metaphors concerning people's personal experience, their relations with it and their views on it. APHASIA IS A THIEF and APHASIA IS A BARRIER seem to be structures more about the nature of aphasia, like some examples given by Mitchell et al. (2011):

(2) For somebody er… something to take it away in a blink of an eye. That's something else. It's (aphasia) robbed me.
(3) A: Once I overcame the first hurdle she was there to help.
B: It (aphasia) was like a brick wall.

For metaphor use in aphasia, the VIOLENCE/WAR metaphor and the JOURNEY metaphor also take high percentages in all metaphors (Ferguson et al., 2010). As for the BARRIER and THIEF framings in aphasia discourse, it invokes ideas that accord with characteristics of aphasia, as its symptoms include losing the ability to speak, read, or write, word finding difficulties, etc. This is the main reason why we chose these four structures as the basis of our study.

Previous research also gave some examples in each framing. When PWA regarded the treatment and rehabilitation as a "journey", they said, "...for me, going to [name of rehabilitation hospital] was, that's a journey to go back to work. To me the journey was going to end there and let's run with it, get along with life" (Ferguson et al., 2010); "(the life after stroke is) a very long and convoluted passageway" (Mitchell et al., 2011). For different speakers, the aphasia journey can be purposeful and linear, and it may be with twists and turns. However, none of these former studies dug deeper into the dataset to find out how these metaphors (for instance, metaphors in the JOURNEY framing) were framed in particular contexts. The current study highlights the importance of analysing metaphors according to different levels, and in this way, we can grasp metaphorical framings in aphasic settings in a more in-depth and comprehensive manner.

Besides aforementioned four metaphorical framings, we can adopt another way to detect metaphors in aphasia discourse: seeking for metaphors by recognition of metaphor signals/flags. "Lexical signals/flags of cross-domain mappings are those words which alert the language user to the fact that some form of contrast or comparison is at play" (Goatly, 1997, as cited in Steen et al., 2010, p. 40). So, through these ways, we can identify some existing metaphorical framings, and it is anticipated to answer the first research question "what conceptual metaphors on aphasia are". For each single framing, like EXPERIENCING APHASIA IS A JOURNEY, to ascertain how this metaphor is framed we need to analyse every level of the metaphor, and this is a reply to the second research question "how these metaphors are framed in specific contexts".

5.3 Method

In order to achieve these goals, it is necessary to collect language materials on metaphor use when people talk about aphasia. In this study, we will analyse authentic language data to inquire into the metaphorical framing in aphasia.

5.3.1 Data

We have built a corpus of texts on aphasia, which was named the "Aphasia Story Database" (AS Database). We collected data from a forum about aphasia: on the website of the National Aphasia Association (NAA) of America,[24] there was a channel called "Stories & News". All posts were contributed by registered affiliates of NAA, who were professionals (SLPs, researchers, program directors), PWA, and aphasia advocates who disseminated knowledge about aphasia and let the public have a better understanding on this language disorder.[25] In this forum, we could read news on aphasia, popular science articles, stories told by PWA, caregivers, and medical staff, and visitors have offered comments on every post. With these aphasia forum texts, our database has been constructed by the corpus manager Sketch Engine. When building a new corpus, we provided a list of URLs, and then Sketch Engine served as a corpus building software that automatically created a corpus containing all texts of these relevant web pages. All texts in the NAA forum (from the beginning till 8 February, 2021) have been input into Sketch Engine, and it generated a corpus with more than 450,000 tokens, or over 390,000 words. Each token in this text corpus has been tagged automatically to indicate grammatical features like the part-of-speech, case, and tense. Sentences have also been segmented.

In practice, we have adopted two strategies outlined by Stefanowitsch (2006) for the metaphor extraction: one is to find source domain vocabulary; the other is to search for metaphors via metaphor flags or signals.

In the first way, it is necessary to have an exhaustive and detailed list of the source domain words. The source domains of these metaphorical framings are BATTLE/WAR, JOURNEY, THIEF and BARRIER. As for the word lists, the relevant lexical units of metaphorical framings are powerful tools, which are provided by the MetaNet Metaphor Wiki. It is a conceptual metaphor repository as a part of the MetaNet Project in UC Berkeley.[26] Take the source concept BARRIER as an example, on the list, related words in it include "barrier, obstacle, blockage, block, obstruct, boundary, border, line, wall, threshold, blockade, roadblock, road-block, road block, blocked, barred, bottleneck, blockade" and so on. For conceptual metaphors that are not covered by the MetaNet Metaphor Wiki, we used the tools in Sketch Engine, specifically, word sketches and thesaurus search to find related words within the same concept. Through these functions, it is easy to automatically find words with similar meanings or appearing in the same or similar context. For instance, we observed words under the domain JOURNEY, like "travel, trip, tour, path, pilgrimage, adventure, voyage, destination, road", etc. Through this method, it is possible to find examples relating to four framings WAR, JOURNEY, THIEF and BARRIER. Within each framing, these lexical units should be tagged as "framing-related words" (FRWs).

With reference to the second method, the explicit lexical devices to signal directly expressed metaphors are called flags or signals of metaphors (Steen et al., 2010), such as "like", "metaphorically", "figuratively", and "as if". We referred to

[24] https://www.aphasia.org/

[25] https://www.aphasia.org/affiliate/login/

[26] https://metaphor.icsi.berkeley.edu/pub/en/index.php/Category:Frame

the list of metaphor flags in VU Amsterdam Metaphor Corpus,[27] and attempted to search for metaphors with these lexical signals.

5.3.2 Identifying metaphors

We followed the metaphor identification method MIPVU (Steen et al., 2010) in this study (see Chapter 2). For texts with or without metaphor signals, identification procedures are different.

In the first method, when we use lexical units, like "wall" as the search word for the frame BARRIER, this sentence group appears in the results: "Paul has what is known as fluent aphasia. Every few sentences he hits a blank wall in speech. The word he wants is locked in the cerebral files and those brains cells are still perversely on strike."[28] The expression "blank wall" is usually used as a chunk, in fact. The basic meaning is "an impenetrable obstacle"; here the contextual meaning is "a situation in which further progress is impossible". It is impossible to hit a real and concrete wall in speech, of course, and the contrast between these two meanings is evident. Therefore, this "wall" in this context is an MRW.

The second method is to detect metaphors by signals. For sentences containing metaphor flags, like "Aphasia affects the entire family. As a caregiver I have often felt like I was being buried alive.",[29] "I was being buried alive" was used directly to talk about the feeling of being a caregiver of a person with aphasia. The metaphorical mapping is from "being buried alive" to "the feeling to be a caregiver". In the current study, we will not dig into the dataset for all metaphors with flags. In the next section, we will analyse some metaphorical framings as a supplement to the four metaphoric structures.

5.3.3 Identifying metaphorical framings on aphasia

After the aforementioned steps, we can find metaphorical expressions from the data. Now it is crucial to determine whether they are about aphasia or the aphasic brain, and whether they reflect feelings and understandings on this language disorder. That is to say, some metaphor use cannot be categorized into the framing on aphasia. Here are two examples in the database:

(4) When asked what message he would wish to transmit to other people with aphasia, he answers "Keep pushing yourself forward, and every time you look back along the path you traveled to get here, you see how far you've come." (To be found online: https://www.aphasia.org/stories/aphasia-nova-scotia/)

(5) Employment decisions after aphasia are just as personal and varied as career advice without aphasia...So if you are currently working or can see a path forward toward a job in the future, weigh in with your words of advice.

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27 http://www.vismet.org/metcor/search/testReport2.php?query=table_signals&report=table_signals

28 https://www.aphasia.org/stories/brain-on-strike/

29 https://www.aphasia.org/stories/beau-biden-aphasia/

(To be found online: https://www.aphasia.org/stories/job-search-work-aphasia/)

There is a PATH metaphor in each case. In Example 4, living with aphasia or the aphasia rehabilitation is like walking along a "path"; however, in Example 5, it is a "path" toward a job, that is, if you take action, you will get a job. Although Example 5 is talking something relevant to aphasia (employment after aphasia), the PATH metaphor here points to a way to find a job, which is far away from the topic aphasia. Therefore, "path" in Example 5 cannot be seen as an MRW relating to aphasia; the PATH metaphor in Example 4 is categorized as a case in the JOURNEY framing about aphasia, and it can be tagged as an aphasia-related metaphor (ARM). According to levels of metaphor, PATH is a frame under the JOURNEY domain, and the example here is a scenario or mental space APHASIA RECOVERY IS GOING ALONG A PATH.

In a nutshell, it is necessary to explicitly tag every example, that is, to add a note on the metaphor, for instance, the metaphor with "path" in Example 5 can be labelled in this fashion.

5.3.4 Reliability test

As our step-by-step procedure to find metaphors under each framing involves manual identification and labelling of aphasia-related metaphors, it is critical to perform a reliability test to see whether there is an acceptable degree of agreement between different coders. In this study, all data have been tagged by one researcher, and then some of them were extracted as samples for the reliability test, which was done by a second coder. Both of the coders were familiar with MIPVU and had experience in identifying metaphors through it. In this test, we used the Cohen's kappa coefficient to measure the inter-rater reliability. To do so, at first, we calculated the Cohen's kappa sample size on the Real Statistics website. It is a platform to enable people to perform statistical analysis using Excel.[30] By systematic sampling, we got 151 samples from 756 items containing frame-related words. For MRW identification, the Cohen's kappa coefficient is 0.68; for aphasia-related metaphors (ARMs), the value is 0.75. They indicate that the agreement between two raters is substantial. The following table shows numbers of FRWs, MRWs and ARMs:

Table 5.1
Numbers of FRWs, MRWs and ARMs

Framing	**Framing-related words (FRWs)**	**Metaphor-related words (MRWs)**	**Aphasia-related metaphors (ARMs)**
WAR	337	324	226
JOURNEY	293	87	68
BARRIER	110	59	40

[30] https://www.real-statistics.com/reliability/interrater-reliability/cohens-kappa/cohens-kappa-sample-size

THIEF	16	15	13
Total	756	485	347

5.4 Analyses

EXPERIENCING APHASIA IS A BATTLE/JOURNEY, APHASIA IS A THIEF/BARRIER are metaphorical framings that we found in former studies. Another two framings (FOREIGNNESS and GAME) will also be analysed, and they were detected through metaphor flags. In this part, the analysis will place its emphasis on levels of metaphor, namely, image schema, domain, frame, and mental space/scenario, especially for the last level of analysis. That is to say, detailed and specific information in scenarios (the minimal and context-dependent metaphorical structures) needs to be investigated to see how these six metaphorical framings are formed. All examples were chosen from the AS Database. Examples are the elaboration of these six metaphors, and at the same time they are the linguistic realization of conceptual framing. Typos in these examples are not corrected. In brackets after each example, there is information on the speaker's identity (it can be an excerpt from a new report); as all materials in the database were taken from the Internet, we will also provide the URL where each example comes from.

5.4.1 Metaphorical framing WAR

In this study, we do not have a strict distinction between concepts WAR, BATTLE and MILITARY, and they are interchangeably with each other. According to the schematicity, we can put WAR on the second level of metaphors, that is, domain. Concepts in image schema are the most schematic in the four-level system, and the information in it is the most general one about human perception. In contrast, elements in mental spaces are metaphors in cognition used by individuals. Here is a table to show these four levels, and we also give examples to illustrate how metaphors on aphasia are framed on the scenario level.

Table 5.2

Four Levels of Conceptual Structures Relating to WAR

Image schema	VIOLENCE; PHYSICAL COMPETITION
Domain	WAR; BATTLE
Frame	ENEMY; FOE; ALLY; WEAPON; BATTLEFIELD; FIGHT; DEFEAT; VICTORY, CONQUERED…
Mental space	THE ASSISTANCE DOG IS A WEAPON IN APHASIA RECOVERY. THE PERSON WITH APHSIA IS A WARRIOR. THE CAREGIVER IS DEFEATED BY APHASIA. …

In the "fight" against aphasia, helpful and cooperative "weapons" are indispensable, such as the assistance dog in Example 6. Similarly, the ALLY scenario is also common in texts about aphasia, that is, THE PUBLIC IS AN APHASIA ALLY. Though it is not expressed explicitly, the "enemy" of this "ally" must be aphasia. The speaker talked about the goal of their work—to generate more enormous publicity among the general public, and make people help and support PWA. WARRIOR is also an important concept under the WAR domain. A "warrior"

is a fighter who is brave and experienced. When others call PWA "warriors" or "fighters", usually it is because these sufferers work hard after an aphasia diagnosis to try to get back their modes of communication, and the recovery goes smoothly. The WARRIOR scenario is often used when the speaker encourages or praises the person with aphasia.

(6) My assistance dog Luna from Dogs With Wings Assistance Dog Society is my greatest weapon in the fight to get my body and my mind back. She gives me a reason to get up every morning, keep on schedule, plan, think, problem-solve, and walk outside every day. And even exercise my speech. I actually talk to her a lot! (PWA; https://www.aphasia.org/stories/aphasia-threads-veronika-sharon-and-paula/)
(7) We worked together to make sure that the general public not only learned the term "aphasia," but they understood best communication practices and how they can be an aphasia ally. (Professional; https://www.aphasia.org/stories/bringing-aphasia-awareness-2/)
(8) she still struggles to express herself. she has replaced a bike with a trike and has biked in the tour d'palm springs for the past 2 years completing 25 miles each time. she gets better all the time. she is a warrior. (Family caregiver; https://www.aphasia.org/stories/aphasia-today-show/)

If we inspect experiences of aphasia with the WAR metaphor, it is natural that some battles you win, and battles you lose, like the VICTORY and DEFEATED scenarios:

(9) Don't quit. Take breaks if you need to, just don't quit. You deserve to be the president of your own fan club. Celebrate the smallest of victories because they are what add up to your overall success. (PWA; https://www.aphasia.org/stories/aphasia-threads-melissa-audrey-and-michelle/)
(10) I'm at a loss feel so defeated what can I do? (Family caregiver; https://www.aphasia.org/stories/aphasia-threads-wright-rose-and-taryn/)

In Example 9, slight improvements in recovery are compared to small victories; and in Example 10, the caregiver could be defeated by difficulties brought by aphasia.

5.4.2 Metaphorical framing JOURNEY

The JOURNEY framing is frequently used when people talk about aphasia. On the image schema level, it corresponds to the MOTION structure, or, more specifically, the concept SOURCE-PATH-GOAL. More detailed ideas have been listed on the frame level, such as the start and end points of the journey. Additionally, the information in mental spaces is the most exhaustive and context-dependent, like in "it (an aphasia guide for caregivers) contains helpful information for every type of aphasia on every point of your family's aphasia journey: from newly-diagnosed to living with aphasia." Not only the start and the end, but also every point is mentioned in this scenario, which resembles every place in a real trip.

Table 5.3
Four Levels of Conceptual Structures Relating to JOURNEY

Image schema	MOTION; SOURCE-PATH-GOAL
Domain	JOURNEY
Frame	TRAVELLER; VEHICLE; START; PATH; DIRECTION; SPEED; VEHICLE; GUIDE; LANDMARK; DESTINATION…
Mental space	SPEECH THERAPY IS A JOURNEY BACK TO COMMUNICATION. THE END OF THE REHABILITATION IS THE END POINT OF A JOURNEY. SLOW PROGRESS IS WALKING WITH SMALL STEPS. …

Experiencing aphasia is a journey for both PWA and family caregivers (in Example 11 and Example 12). In Example 13, working with a client is also a journey for the SLP, when walking beside the client along the way. In addition, both Example 11 and Example 12 contain a scenario that THE END OF THE REHABILITATION IS THE END POINT OF A JOURNEY. There are DIRECTION-related mental spaces in Example 12 and Example 13. One is about "moving forward", and the other is about "taking a step back". As for "steps" in the aphasia journey, the SMALL STEP scenario is embodied in Example 12 and Example 14. To be specific, recovery from aphasia is slow and gradual, and PWA walk along the way with small steps.

(11) Having a loved one with aphasia takes you down a road you never dreamed of travelling. Every individual's journey looks different so don't let anyone tell you that your loved one has reached the end of what is possible! (Family caregiver; https://www.aphasia.org/stories/aphasia-threads-ann-susan-and-julie/)

(12) During this training, I have been keeping a detailed spreadsheet of my progress. This spreadsheet has been critical in my journey. If I only look ahead, I might let the fear win and give up. The spreadsheet lets me look back at the improvements that I have made thus far. It empowers me to keep moving forward…It's a reminder that today doesn't look like last week, and while you may not have reached your personal end point yet, you are working towards it. Consider keeping a spreadsheet or list where you write down all the small steps along the way. (PWA; https://www.aphasia.org/stories/celebrate-small-victories-aphasia/)

(13) What I've Noticed Along the Way: Working with someone with aphasia is a very slow process most times, however taking a step back and looking at the big picture of how far they've come since first stepping foot in your office is definitely when I feel the most joy! One of the biggest frustrations is walking beside the patient as they grieve the loss of the person they once were, but one of the biggest joys is being a part of their acceptance of the new person they are becoming and realizing what they still have to give in this new life! (Professional; https://www.aphasia.org/stories/aphasia-threads-michael-eileen-and-emily/)

(14) I'm not yet there, but my recovery has been nearly miraculous. I just have to be patient and continue with small steps. (PWA; https://www.aphasia.org/stories/aphasia-threads-george-jo-and-tsgoyna/)

Mental spaces in Example 15 and Example 16 refer to where the path leads in the aphasia journey. One is to go back to normal communication in the past: SPEECH THERAPY IS A JOURNEY BACK TO COMMUNICATION. The other is to go through emotional "milestones" along the way and shape a "New Kelly", or a "new self": UNDERGOING THERAPY IS MOVING THROUGH MILESTONES.

(15) I enjoy getting to meet you for the first time and am honored that I get to be in community with you as you take this long, sometimes frustrating, journey back to communication. (Professional; https://www.aphasia.org/stories/aphasia-threads-cheryl-karen-and-shatonda/)
(16) Aphasia after a stroke sometimes comes with improvement through speech therapy. Towards the end of the book, Kelly moves through several milestones she wanted to reach in order to feel like a new version of her old self. (Book review; https://www.aphasia.org/stories/emotional-milestones-aphasia/)

5.4.3 Metaphorical framing THEFT

For the metaphoric structure THIEF is put on the third level, frame. It belongs to a more schematic concept THEFT on the domain level, and THEFT is a subcase of the image schema CRIME.

Table 5.4
Four Levels of Conceptual Structures Relating to THEFT

Image schema	CRIME
Domain	THEFT
Frame	THIEF; ROBBER; VICTIM; POSSESSIONS; IDENTITY THEFT…
Mental space	APHASIA ROBS THE BRAIN OF LANGUAGE. APHASIA STEALS TWO THINGS FROM THE VICTIM. …

In our data, the APHASIA IS A THIEF metaphor is found in Example 17. Personified as a thief, aphasia robs or steals all or some language ability from PWA. The connotations of "aphasia" include the loss of the ability to produce and understand language and speech; for theft, it results in property loss. The language ability has been referred to as the "favourite thing" and "manna" in Example 18 and Example 19.

(17) (From The New York Times, May 2, 2011, "A Thief That Robs The Brain of Language") My aphasia was a shock to me. I'm still getting used to it. (PWA; https://www.aphasia.org/stories/i-have-aphasia/)
(18) I love it–exercise and words! Two of my Moms favourite things. Two things the stroke has tried to steal from her and two things she is fighting to get back in her life. (Family caregiver; https://www.aphasia.org/stories/win-a-copy-of-stroke-survivor-fitness/)
(19) Taking words from Paul was like emptying his toy chest, rendering him a deadbeat, switching his identity, severing his umbilical to loved ones and

stealing his manna. That love is what led him to find his way back to writing. (Family caregiver; https://www.aphasia.org/stories/profiles-aphasia-paul-west/)

Different from earlier examples on WAR and JOURNEY, here aphasia itself is put on a label "thief", rather than experiencing aphasia. It answers the question "what aphasia is"; similar to WAR and JOURNEY metaphors, these examples also reflect some aspects of the relation between aphasia (the thief or robber) and people (the victim).

5.4.4 Metaphorical framing MOTION IMPEDIMENTS

APHASIA IS A BARRIER is placed on the frame level, and it expatiates the conceptual domain MOTION IMPEDIMENTS. On the same metaphorical level, we can find other structures, like TRAP and LOCKED HOUSE, from metaphorical expressions with signals.

Table 5.5
Four Levels of Conceptual Structures Relating to MOTION IMPEDIMENTS

Image schema	MOTION
Domain	MOTION IMPEDIMENTS
Frame	BARRIER; LOCKED HOUSE; TRAP…
Mental space	APHASIA IS A ROAD WITH A DRAWBRIDGE. WORDS ARE TRAPPED. EXPERIENCING RECEPTIVE APHASIA IS LIKE BEING OUT OF A HOUSE. …

The APHASIA AS A ROAD WITH A DRAWBRIDGE metaphor in Example 20 depicts the mechanism of aphasia. When the bridge is pulled up, the traffic on the road stops. This traffic interruption is comparable to the disconnection of neutral pathways which leads to language disorders. Example 20 also portrays why it is difficult for some PWA to produce speech:

(20) I explained it (aphasia) as a road with a drawbridge. From time to time a sailboat passes and the bridge raises to allow passage. That's when traffic on the road stops. Nothing can get across. The brain and words are on one side of the bridge. The mouth and words are on the other side. When the bridge is up, the connection is broken. That's why sometimes the words can't get out properly. (One user's comment; https://www.aphasia.org/stories/talking-kids-aphasia/)

The explanation is that words in mind and words to be articulated are on the two sides of the bridge, and the connection is broken, which forms a barrier to prevent people from speaking. Example 21 has explained this symptom in the same way, that is, words are blocked by barriers.

(21) His nouns are blocked. He cannot say names of people, places, or things…If there is any way to unblock his nouns so he can say them, that

would be very helpful. (Family caregiver; https://www.aphasia.org/stories/research-aphasia-language-comprehension/)

However, in Example 22, we can see how the difficulty in comprehension is explained by the BARRIER metaphor. Here, aphasia itself is not the barrier. Instead, the printed text of a book (the target structure) is a wall that makes the person with aphasia unable to understand the meaning behind it. That is to see, the medium of communication is the barrier. In this case, the TEXT IS A WALL scenario has elaborated the BARRIER metaphor.

(22) Suddenly I'd gone from being an avid reader to not even wanting to look at a book because that wall of text hurt so much to process. (PWA; https://www.aphasia.org/stories/everyones-aphasia-unique/)

As we have mentioned, some scenarios pertinent to the LOCK HOUSE and TRAP frames have been found out by means of detecting metaphors with signals (for instance, "like" and "as"). They express the feelings of enduring aphasia. As for Example 23 and Example 24, though they share a similar source space (BEING OUT OF A HOUSE), emphases are placed on different aspects of it. In Example 23, it is about how to speak in a roundabout or indirect way when someone has word finding difficulties caused by aphasia; it is like trying to crawl towards the cellar as someone does not bring the front door key. The scenario can be described as CIRCUMLOCATION IS LIKE TRYING TO GET INTO A LOCKED HOUSE. In Example 24, what OUT OF A HOUSE conveys is a feeling of loneliness and isolation: the person with aphasia is cut off from what are happening in that house. As a metaphor, it is a vivid illustration of communication deficit after aphasia. Additionally, the scenario EXPERIENCING APHASIA IS LIKE BEING IN PRISON is also not unusual when people talk about this language disorder.

(23) When you can't find a word, it's like you are locked out of your own house. You check the windows to see if any of them are open. They aren't. You check the side doors to see if they were left ajar. But they are sealed shut. So you go under your house, squeezing through a crawl space, hoping to access the cellar that way. Since you can't go to the front of your language, you circumlocate. (Professional; https://www.aphasia.org/stories/more-aphasia-analogies/)
(24) My husband said when he entered into aphasia— "it is like standing outside the window of a house and watching everything that is happening in it...and you can't enter in." He lived in a bubble of silence for 7 years. He lost comprehension to speech from others for 6 years. (Family caregiver; https://www.aphasia.org/stories/aphasia-analogies-metaphors/)
(25) Aphasia can feel like a prison. (Professional; https://www.aphasia.org/stories/aphasia-analogies-metaphors/)

Following examples have adopted the TRAP metaphor, yet their target spaces are not the same. Two scenarios are WORDS ARE TRAPPED and PWA ARE TRAPPED respectively.

(26) i just can't talk to anyone about anything the words u know hard to find like its trapped that's pissing me off tbh. (PWA; https://www.aphasia.org/stories/how-do-you-treat-aphasia/)
(27) As you can see we are all desperate for help—not only is Aphasia a nightmare for the stroke survivor, like being trapped in a box with no way out, it is also a nightmare for the caregiver who everyday is in search for some kind of answer. (Family caregiver; https://www.aphasia.org/stories/game-changer-people-with-aphasia/)

5.4.5 Metaphorical framing FOREIGNNESS

The FOREIGNNESS framing is sought out from metaphors with flags. On the mental space level, there are divergent patterns to manifest how this metaphor framework is employed in aphasic discourse.

Table 5.6
Four Levels of Conceptual Structures Relating to FOREIGNNESS

Image schema	OUTSIDE-INSIDE; EXTERIOR-INTERIOR
Domain	FOREIGNNESS
Frame	FOREIGN COUNTRY; FOREIGN LANGUAGE; FOREIGNER; IMPORT; EXPORT…
Mental space	EXPERIENCING APHASIA IS LIKE STAYING IN A FOREIGN COUNTRY. EXPERIENCING RECEPTIVE APHASIA IS LIKE LISTENING TO A FOREIGN LANGUAGE. …

It is interesting to have a comparison between Example 29 and Example 30. We noticed the FOREIGN LANGUAGE as the source space in both of them. However, Example 29 talks about the defect of language production; in Example 30, it is a condition with Wernicke's aphasia, which brings about difficulties in language understanding. Therefore, scenario use in various contexts can reflect different situations of individual cases concerning aphasia and aphasia recovery.

(28) I recall one nurse describing it as: "Imagine you are in a foreign country and you are trying to tell someone about the refrigerator. You know it's a refrigerator. They know it's a refrigerator. However, the language barrier is keeping you from getting the story across." (Family caregiver; https://www.aphasia.org/stories/aphasia-threads-bob-lee-ann-and-samye/)
(29) Aphasia is like trying to get around in a foreign country where you can't speak the language. It's like spending 24 hours a day with your words right on the tip of your tongue. (Professional; https://www.aphasia.org/stories/aphasia-analogies-metaphors/)
(30) Damage to a part of the brain known as Wernicke's area can lead to receptive aphasia…The person may feel as if others are speaking in a foreign language. (Report; https://www.medicalnewstoday.com/articles/315075)

5.4.6 Metaphorical framing GAME

The GAME/SPORT source domain was also mentioned in Ferguson et al. (2010). In our data, for metaphors with flags "like" or "as", some of them contain the GAME concept serving as the source domain.

Table 5.7
Four Levels of Conceptual Structures Relating to GAME

Image schema	RECREATIONAL COMPETITION
Domain	GAME; SPORT
Frame	PLAYER; REFEREE; SCORE; PRIZE; OUTCOME; COACH; LOSER; WINNER; TEAM…
Mental space	COMMUNICATION AFTER APHASIA IS LIKE A GAME OF CHARADES. PWA AND CAREGIVERS ARE TEAM MEMBERS. THE SPEECH THERAPIST IS THE COACH. …

If we go to the mental space level, we can perceive some distinctions on the metaphor use under different circumstances. For instance, Examples 31-33 are metaphors about PWA's conversations after aphasia. All of them have deficiency in language production. In Example 31, if the communication is like charades, this metaphor conveys an expression to readers that the aphasia sufferer's speaking has been heavily damaged and maybe she could only express herself with gestures. In Example 32, the speaker has explained the source space CROSSWORD PUZZLE. Some utterances are clear and easy to follow; some speech slurs, and because of word finding difficulties, others need to guess what he has said. The GAME metaphor in Example 33 clearly states Graham's symptom: in communication, the aphasic speaker can only reply "yes" or "no".

(31) Our friends have slowly disappeared because it can be so stressful having a conversation with her. Especially if I'm not there to translate. It can be like a game of charades that lasts far too long. (Family caregiver; https://www.aphasia.org/stories/aphasia-threads-john-darryl-and-donna/)
(32) I can read, but speaking and writing I've got to work on. Then there's memory: I forget words. I like to refer to my life now as a crossword puzzle: some answers are apparent, some you have to search for. (PWA; https://www.aphasia.org/stories/aphasia-threads-louis-david-and-annalise/)
(33) But Graham Pawley is an unusual case in that he can understand everything but say virtually nothing back. He has to get by with "yes" and "no". Communicating with Graham is a bit like playing that game where you have to keep asking yes and no questions until someone gets the right answer. (Professional; https://www.bbc.com/news/magazine-34524285)

In Example 34, the SLP's client and caregivers form a team, and the coach is the clinician. "End game" is a term in chess, which means the final stage of a game of chess. Then, the speaker switched to another game. She compared the speech therapy to a marathon training. The SPEECH THERAPY IS A MARATHON scenario appears in more than a dozen cases, like Example 35. It

focuses on one feature of the therapy that is similar to marathon: it is a long-term treatment and requires a lot of patience and effort.

(34) When the patient and caregivers are working as a team with the "coach" (the SLP), the end game will be a success. A favorite statement I offer to new patients and caregivers is reminding them that this is going to be like training for a marathon. I will be your coach, but I cannot do the work alone. (Professional; https://www.aphasia.org/stories/aphasia-threads-shaun-evangelina-and-alison/)

(35) More hours of therapy are not harmful, but they won't necessarily produce different results. Instead, speech therapy should be looked at like a marathon vs. a sprint. It's better to have steady, quality therapy over time than it is to have intensive therapy condensed into a short period and then stop. (Report; https://www.aphasia.org/stories/new-study-looks-at-quality-and-quantity-of-aphasia-therapy/)

5.5 Discussion

Going back to the research questions raised in the first part, we discuss whether our analyses can answer these questions: what conceptual metaphors on aphasia we can find, and how these metaphors are framed in discourse.

In this study, we have analysed six conceptual metaphors: EXPERIENCING APHASIA IS A BATTLE, EXPERIENCING APHASIA IS A JOURNEY, APHASIA IS A THIEF, APHASIA IS A BARRIER, EXPERIENCING APHASIA IS LIKE SPEAKING/LISTENING TO A FOREIGN LANGUAGE, and EXPERIENCING APHASIA IS LIKE PLAY A GAME. We settled on these six metaphorical framings by two means. One is to refer to former studies on metaphor use in aphasia; and the other is to find some conceptual metaphors by searching for metaphor signals in our database.

Kövecses (2017) distinguished four levels of metaphor: image schema, domain, frame and mental space/scenario (from the most schematic to the least schematic). According to his statement, these six metaphors do not occur on the same level, and we have tried to put them on the appropriate levels. Accordingly, the source domains of these six metaphors are WAR/BATTLE, JOURNEY, THEFT, MOTION IMPEDIMENTS, FOREIGNNESS, and GAME/SPORT.

However, in order to answer the second research question, we need to scrutinize these metaphors on the mental space level, because of the richness and specificity of contextual information in mental spaces. Hence in this study we adopted the scenario analysis (Musolff, 2006, 2016) to examine the metaphorical framing in the discourse of aphasia.

In the WAR framing on aphasia sufferers' experiences, relevant source spaces include ALLY, WEAPON, WARRIOR, VICTORY, DEFEAT, etc. The whole society is a close "ally" of PWA, caregivers, and clinicians, and we need to unite to "fight" against the "enemy"—aphasia. During this "fight", good "weapons" are indispensable for everyone that has involved into it. As it has been mentioned, Marron et al. (2020) pointed out that scenarios like HERO and WARRIOR emphasized patients' initiative, and they asserted that these metaphors could lead to

a neglect of other efforts in treatment, such as new technologies and medicine. To solve this problem, it is possible to use the WEAPON scenario to highlight roles of other factors in treatment, like medicine, medical skills, community support, etc. That is to say, in some cases, the metaphor can be reframed with different mental spaces in discourse. What needs to be brought to attention is the DEFEAT scenario, in which PWA and their caregivers may feel sad and frustrated. In communication, for SLPs, it is advisable to take other scenarios, like more scientific and detailed "tactics" to try to turn the tables; or it is also feasible to switch to another framing, such as EXPERIENCING APHASIA IS A JOURNEY.

In the JOURNEY framing on aphasia experience, relevant source spaces include END POINT, SMALL STEP, MILESTONE, etc. The JOURNEY metaphor is applicable and hence highly valuable, not only for PWA and their family caregivers, but also for therapists. Like a real journey, the "journey" of treatment also has a "start" and an "end point". During this "travelling", everyone involved in the care and rehabilitation process needs to keep "moving forward". However, at the same time, it is also necessary for PWA to "take a step back" and reflect on how "far" they have come. In addition, as aphasia is chronic and the recovery from aphasia is a slow progress, PWA and caregivers are often reminded that they should "go" along this long and rough "road" with "small steps". Another interesting point is the elaboration of the DIRECTION frame. A question is whether the end point of the rehabilitation is to "go back" to the normal communication; or, perhaps it is much more realistic in many cases that PWA can "reach" one "milestone" after another, and they return to be an acceptable and confident new self, rather than getting back the old self. Where the "destination" of this aphasia "journey" is and how to frame the concept "living with aphasia" with metaphors are worth thinking about for the professionals who work with PWA.

In the THEFT and MOTION IMPEDIMENTS framings, some of the mental spaces describe the characteristics of aphasia itself, such as APHASIA IS A THIEF and APHASIA IS LIKE A ROAD WITH A DRAWBRIDGE. Especially for the latter one, with the metaphorical framing, the speaker can explain the mechanism of aphasia in a vivid and accessible way. Under the MOTION IMPEDIMENTS domain, the OUT OF A HOUSE frame can be elaborated in diverse scenarios to illustrate different situations after people acquire aphasia. It is always better to have a concrete analysis in specific contexts. In both framings, metaphors have also conveyed speakers' feelings about aphasia. For instance, after the "robbery" by aphasia, PWA were deprived of language communication, which was their valuable property.

In the FOREIGNNESS framing, relevant source spaces include STAYING IN A FOREIGN COUNTRY and LISTENING TO A FOREIGN LANGUAGE. In our examples, when these ideas about aphasia were framed on the scenario level, they convey information on experiences of different types of aphasia. This metaphorical framing is useful when PWA describe their symptoms.

In the GAME/SPORT framing, relevant source spaces include CHARADES, CROSSWORD PUZZLE, MARATHON, TEAM, etc. Still, for various scenarios with the GAME concept, readers can gauge the different performances of PWA in their communication and make a credible judgement on their language ability, even though we have not talked with any of them.

We can have a conclusion of these framings. All of them can express speakers' attitudes towards aphasia, that is, the relationship with aphasia (the 'Evaluative' Column in Table 8). Metaphors in framings of THEFT and MOTION IMPEDIMENTS show the nature and properties of aphasia, that is, the phenomenology of aphasia.

Table 5.8
Six Framings, a Conclusion

Framings	**Pheno.**	**Evalu.**	**Source Spaces**
WAR		+	VICTORY, DEFEAT, ALLY, WEAPON…
JOURNEY		+	STEP, DIRECTION, MILESTONE, END POINT…
THEFT	+	+	THIEF, STOLEN GOODS, ROBBERY…
MOTION IMPEDIMENTS	+	+	DRAWBRIDGE, TRAP, PRISON, WALL…
FOREIGNNESS		+	FOREIGN LANGUAGE, FOREIGN COUNTRY…
GAME		+	MARATHON, CHARADES, COACH, TEAM…

Note. Pheno.=Phenomenological, Evalu.=Evaluative.

It is hoped that this study goes some way in providing relevant empirical evidence for aphasia researchers, SLPs, PWA, and their family with regard to how to frame aphasia with metaphors. It may give some insights and alternative perspectives to family caregivers and medical staff, especially in their communication with PWA. Through different metaphorical framings, clinicians and caregivers can have an estimate of PWA's mental states. More importantly, the scenario analysis has revealed the diversity of each framing: for the WAR framing, there are scenarios about victories and defeats, and the WEAPON and ALLY metaphors underline roles of medicine, therapy and community support; for the JOURNEY metaphor, medical staff need to consider where this "road" goes to, and a certain phase in the rehabilitation corresponds to a leg of long journey; if the experience after aphasia is like facing the language barrier in a foreign country, it is reasonable to compare a speech therapy to foreign language learning; for the GAME framing, it would be inspiring in SLP-client communication when all people are in the same team and their coach is the therapist. In our data, when aphasia itself was compared with a "thief" or a "road with a drawbridge", it may cause PWA feel that they had been robbed, or they were stuck. If these framings bring much negative impact on how people perceive aphasia, it might be necessary for medical staff to conceptualise it in another way to make it more scientific and acceptable.

In future studies, we can collect data from interviews with PWA, caregivers, and SLPs to offer further knowledge and understanding on metaphor and metaphorical framing in communication with people experiencing aphasia. One methodology for us to adopt in the future is the experimental study performed by Hendricks et al. (2018): participants were asked to read texts with diverse metaphorical framings, and then they needed to answer questions. Answers to these questions were signals of these framings' implications. For instance, we can present

a vignette about an aphasia sufferer with THEFT metaphors, and after reading it, readers will be asked questions like, “What do you think about the protagonist’s daily experience?”, “How will this experience affect the protagonist’s recovery?”, etc. Through this empirical study, we can have clearer ideas on the impact and roles of metaphorical framings in aphasic settings.

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Chapter 6 Discussion and conclusion

6.1 Introduction

This dissertation aimed to probe into how metaphors are used in aphasia through an examination of metaphor use from two dimensions, language and thought. We designed and carried out three studies to understand how people with aphasia (PWA) use metaphors on the linguistic level, and how conceptual metaphors about aphasia are framed. The linguistic materials we analysed were not only utterances produced by PWA, but also descriptions and comments on aphasia, collected from online databases in AphasiaBank and an online forum on aphasia.

This final chapter serves as a conclusion. First, we will offer an overview of the research: in Chapter 1 and 2 we introduced aphasia, the theory of conceptual metaphor and explored metaphor use in language and thought; in Chapter 3 and 4, the study proper was outlined with linguistic materials selected from two databases in AphasiaBank that included data of two languages, one being data from English speakers and the other is Mandarin; in Chapter 4, we also attempted to apply the metaphor identification procedure MIPVU to Chinese; and in Chapter 5, the metaphorical framing in aphasia was scrutinized on four levels: image schema, domain, frame, and scenario. Next, there is a summary of the main findings from these studies. Then, we highlight implications of this research and our hope that findings from these studies can be used to advance understanding and compassion for PWA in speech therapy, clinician-client interaction, and even family or caregiver relations in aphasic settings of treatment and rehabilitation. Lastly, we will discuss limitations of this research, and raise some suggestions for future study.

6.2 Brief overview of the research

We began our research following the premise of conceptual metaphor theory (CMT) that there are two dimensions in metaphor study, language and thought. A linguistic metaphor is a lexical unit that is used to describe somebody/something else. The linguistic function of metaphor is "to fill lexical (and other formal) gaps in the language system" (Steen, 2008). As for metaphor in thought, metaphor is regarded as a cognitive mechanism, namely, knowledge about more concrete phenomena and experiences is projected onto a more abstract idea (Steen, 2011); and this process is called metaphorical mapping in CMT. In CMT, linguistic metaphors are surface manifestations of conceptual metaphors.

Linguistic materials in Chapter 3 and Chapter 4 were selected from two databases in AphasiaBank. One is data from English speakers; the other is Mandarin. In Chapter 4, we also attempted to apply the metaphor identification procedure MIPVU to Chinese. We explored how linguistic metaphor use in Chinese data because China has an enormous number of PWA, and Chinese and English belong to different language families. This study gave new insights into the metaphor use by Chinese PWA and revealed some differences compared with English speaking PWA's use of metaphors. In Chapter 5, we tried to combine cognitive and discoursal

approaches via scenario analysis (Musolff, 2006, 2016, 2019). The scenario level offers a link between the conceptual system of metaphors and metaphor use in discourse.

6.3 Main findings

In order to answer the research question "how metaphors are used in aphasia", we have implemented three studies. In **Chapter 3**, we have designed a quantitative study on data from AphasiaBank (English) to see how metaphors are distributed in eight word classes and three groups (non-fluent aphasic, fluent aphasic and control). The background of this study is the previous research on the interaction between metaphor, word class, and register (or genre). The distribution of word classes is closely related to the genre of the text, that is, certain word classes are more likely to be used in certain genre(s). More importantly, the distribution of linguistic metaphors in different genres is heterogeneous: there is significant association between metaphor frequencies and word classes across genres (Steen et al., 2010). Although our study does not involve various genres, former research in aphasiology (Howard & Hatfield, 1987, p. 147, as cited in Brookshire, 2015, p.193; Goodglass et al., 1966; Laiacona & Caramazza, 2004; Mesulam, 2009) suggested the noun-verb dissociation and imbalanced distribution of function words in fluent aphasia and non-fluent aphasia.

Therefore, one question was proposed based on these previous studies: how linguistic metaphors interact with word classes and different groups of speakers. After the chi-square analysis, we have found in each group, the metaphor distribution differs significantly in word classes; and in determiners, prepositions, verbs, and remainders, the association between metaphor frequencies and groups is significant.

For people with non-fluent aphasia, most metaphors in their utterances are nouns, verbs, remainders, adjectives, and adverbs; for people with fluent aphasia, most metaphors are prepositions, verbs, remainders, nouns, and adverbs; for non-aphasic speakers in the control group, most metaphors are verbs, prepositions, remainders, nouns, and adverbs. For metaphor distribution patterns, the fluent aphasic group and the control group share more similarities. In determiners, metaphors are significantly more used in people with fluent aphasia; in verbs, metaphors are significantly more used in the control group, and less used in two aphasic groups; in remainders, metaphors are significantly more used in the control group, and less used in non-fluent aphasic group.

In **Chapter 4**, we followed the same approaches in Chapter 3. In this study, data are conversations in Mandarin, and there are two groups of participants (fluent aphasic and control). Considering characteristics of Chinese, classifiers and localizers were added to the word class system. Results showed that in each group, the metaphor distribution differed significantly in word classes; and in classifiers, nouns, and remainders, the association between metaphor frequencies and groups proved significant. For people with fluent aphasia, most metaphors in the data are verbs, remainders, and adverbs; for people without language disorder, most metaphors are verbs, remainders, and nouns. In classifiers and remainders, metaphors are significantly more used in the control group, and less used in the aphasic group; in nouns, metaphors are significantly less used in the aphasic group.

In addition, how metaphor types are distributed in groups has also been explored in these two studies. We have discovered similarities in English and Mandarin data: most lexical units are not metaphorically used; most MRWs are indirect metaphors; indirect metaphors are significantly more used by the non-aphasic speakers, and less used by PWA.

The last study is quite different from the previous two. In **Chapter 5**, the object of study is the conceptual metaphor, rather than linguistic metaphor. This study aims to investigate conceptual metaphors on aphasia, and how these metaphors are framed in specific settings. We analysed six metaphors used by people to talk about aphasia itself and their relationship with aphasia: WAR/BATTLE, JOURNEY, THEFT, MOTION IMPEDIMENTS, FOREIGNNESS and GAME/SPORT. These concepts are source domains, and we probed into the metaphorical framing on the scenario level. The conclusion is that these six metaphors are elaborated in various ways in discourse; under the same source domain, metaphors can be framed differently, and they convey diverse information about aphasia. Like the former study on the WAR metaphor in medical settings, Marron et al. (2020) appealed for abandoning this metaphor. However, after the scenario analysis on WAR metaphor, we found it is possible to dispel the cognitive bias caused by one scenario (e.g. PATIENTS ARE HEROES) through using another one (e.g. MEDICAL EFFORTS ARE WEAPONS) under the WAR metaphor. As a result, it is difficult to deny a metaphorical framing use in certain circumstances without a thorough investigation into it.

6.4 Implications of this research

This dissertation has investigated how linguistic metaphors are used by PWA and how people use conceptual metaphors to describe aphasia and express their feelings of aphasia. In these three studies, it has shown that metaphor use by PWA has different features compared with how healthy speakers use metaphors; and metaphors are framed in various ways in communication when people talk about aphasia, aphasia treatment, and aphasia rehabilitation. Results of three studies have methodological and empirical implications for the interdisciplinary research on metaphor and aphasia.

6.4.1 Methodological implications

The application of MIPVU to Chinese in Chapter 4 can be read for reference when it is needed to find linguistic metaphors from Mandarin data. MIPVU was proved to be a feasible procedure to identify linguistic metaphors in English and Dutch (Steen et al., 2010). For Chinese, in order to make MIPVU practicable, we needed to tackle problems about the analysis unit (what is a word or lexical unit) and unique word classes in Chinese.

In Chinese, sometimes it is difficult to decide whether a structure is a word or phrase, especially for verb-object compounds (VOCs) and resultative verb compounds (RVCs). When other elements are inserted in these compounds (the separability of VOCs and RVCs in Chinese), it is necessary to refer to dictionaries and judge carefully where the word boundaries are. When applying MIPVU to Chinese metaphor identification, classifiers and localizers should be tagged and analysed, which is different from the word class system in English.

Additionally, from image schema to scenario (or mental space), metaphorical framings are more specific and context-dependent; and only on the scenario level, language in the real communication influences metaphorical conceptualization (Kövecses, 2017). The scenario analysis in Chapter 5 can be adopted in metaphor study about other topics and contexts. In view of the level of generality of domains, in many cases, it is difficult to perform thorough and in-depth analyses on the use and effects of metaphorical framing founded on the classical theory of CMT alone. Through elaborated analysis on the scenario level, researchers can get overall and detailed ideas on how metaphors are framed about certain topics.

6.4.2 Empirical implications

In Chapter 3 and Chapter 4, we accomplished two empirical studies about the distribution of linguistic metaphors. SLPs can refer to them during their work with PWA (English speaking clients with non-fluent aphasia or fluent aphasia; Chinese speaking clients with fluent aphasia). We recognise that metaphors are not ornamental features in language; instead, metaphor is an important and integral device for people to conceptualize the whole world, and we also use metaphors to express ourselves in daily life. The recovery of metaphors for PWA should not be regarded to be meaningless or insignificant. Some points need to be stressed, for example:

① Verb metaphors are significantly less used in English speaking people with fluent aphasia, though there is no significant reduction use of verbs in them.
② Noun metaphors are significantly less used in Chinese speaking people with fluent aphasia, though there is no significant less use of nouns in them.

At the same time, we have found that almost all direct metaphors in our data are verbs or nouns, such as “stroke numb you know I burst” and “it (the hurt) was like it was a blowup”. For these groups of clients, the language impairments about verb/noun metaphor production may be a reflection of some defects of direct or more creative metaphorical thought, which needs to be further investigated by neurocognitive scientists and aphasiologists.

For caregivers and therapists, it is beneficial to use proper metaphorical framings, and endeavour to recognise and understand PWA’s metaphors in communication. Chapter 5 has listed some metaphors about aphasia and aphasia experience. More importantly, we gave examples and detailed analyses on every source domain. Hopefully, these can be helpful when caregivers and practitioners interact with PWA. For instance, when explaining the slow progress of aphasia recovery, it is viable for SLPs to adopt STEP, MARATHON, COACH, and TEAM metaphors to empower their clients. Moreover, when PWA, family caregivers and medical staff are conceptualised as team members in a game, aphasia sufferers and their family members may feel supported and more confident when dealing with tough issues during recovery.

6.5 Limitations and suggestions for future studies

This dissertation explores how metaphors are used in aphasic contexts. Metaphors have been analysed and discussed from two perspectives: language and thought. However, current study does not talk much about metaphor in communication. It is a rather complex topic that many scholars have discussed from different aspects (Cameron & Deignan, 2006; Gibbs, 2017; Gibbs & Cameron, 2008; Steen, 2008; Steen, 2017). Take the dynamical systems view as an example (Gibbs & Colston, 2012, pp. 121-126), as an individual's behaviours, metaphor production and understanding depend on the interaction of human brain, body, and environment. It emphasizes "how various cognitive, linguistic, social and cultural forces simultaneously shape" the use and comprehension of metaphors (Gibbs & Cameron, 2008). As for this current research, all three studies are corpus-based, and we have explored the metaphor use with data from corpora, which are products of metaphorical behaviours. It is impossible to cover all elements about metaphor in communication (individual minds and bodies, cultural and social impacts, etc.).

Another limitation is the relatively small size of the Mandarin data. In the future, if more interview materials are added, it would improve research design to have a group of participants with non-fluent aphasia. In this way, we can have a better comparison between metaphor use in English speaking PWA and Chinese speaking PWA.

For future studies on metaphor use in aphasia or other discourse, metaphor in communication can be included in the research framework. In practice, we can learn from some previous research about methods and approaches. For instance, researchers can get people's evaluations on metaphors through carrying out interviews (Demjén et al., 2016) and reading online comments (Fuoli et al., 2021). Experiments were also designed and implemented to collect subjects' opinions on metaphor use (Hendricks et al., 2018; Thibodeau & Boroditsky, 2011). Participants were asked to read passages containing certain metaphorical framings, and then they were requested to answer some questions in or der to see whether metaphors can affect readers' perception or understanding on a particular matter.

Furthermore, in examples of Chapter 5, we found some extended metaphors and mixed metaphors when people described aphasia and aphasia experience. As for extended metaphors, people can elaborate a single metaphor structure at length throughout a whole paragraph, like the example of APHASIA IS LIKE A ROAD WITH A DRAWBRIDGE in Chapter 5; and sometimes, the speaker combines two or more different metaphors, for instance, a SLP mixed two scenarios CHESS and MARATHON and compared these two games to speech therapy. Analysis of extended metaphors or mixed metaphors may bring us some new understanding on metaphor use in aphasia.

We discussed linguistic metaphor in Chapter 3 and Chapter 4; however, multimodal metaphors can also be found in videos of interviews in AphasiaBank. For PWA, because of the speech impairment, many of them tended to use gestures to express themselves. Even for stroke survivors with hemiplegia, they could gesture with the unaffected hand. For instance, when a person with anomic aphasia talked about his language after stroke, he said, "a whole bunch of sentences".[31] At the same time, he raised his hand with the palm down. This metaphorical gesture

[31] https://sla.talkbank.org/TBB/aphasia/English/Aphasia/BU/BU05a.cha

corresponds with the MRW "bunch". To study the multimodality of metaphors used by PWA can broaden the horizons of metaphor use in aphasia, and it will be helpful for therapists and caregivers to guide PWA for gesture use in communication; and of course, it will be a big project that needs a great deal of work.

Figure 6.1
The Gesture for "A Whole Bunch of Sentences"

To sum up, in this dissertation, we have answered the overall question "how metaphors are used in aphasia". The main research goal is attained by achieving subgoals in three studies. From the perspectives of language and thought, this research has built up a picture on how metaphors interact with word classes and different types of aphasia, and metaphorical framings on aphasia have been analysed on the mental space level to see how they work in discourse.

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Summary

Metaphor use in aphasia

One of the main tenets of conceptual metaphor theory (CMT) is that metaphors are ubiquitous in our everyday language, for instance, in daily conversations, 7.3% of lexical units are metaphorically used. Moreover, in this genre, the distribution of metaphors is not equal in every word class: most metaphors in conversations are verbs and prepositions. This is also consistent with the assertion that conversations feature the conspicuous use of verbs. Previous research showed the interaction between frequencies of metaphor related words (MRWs), word classes and registers/genres (conversations, fiction, newspapers, and academic texts). These former studies are about observations based on the linguistic metaphor (or metaphorically used linguistic forms) use by people without any language disorder.

This dissertation tried to make a thorough enquiry into how linguistic metaphors are used by people with aphasia (PWA). Aphasia is an acquired language disorder that affects people's language production and understanding. Aphasia can be divided into two types: non-fluent and fluent, according to the fluency of sufferers' speech. Some former studies have revealed deficiencies of certain word classes produced by PWA. To be specific, for people with non-fluent (or agrammatic) aphasia, their verb production is more impaired; and people with fluent aphasia have more difficulties in noun production. This phenomenon is called "noun-verb dissociation". In addition, people with non-fluent aphasia produce fewer function words compared with that of people with fluent aphasia. It was predicted that the uneven distribution of word classes has an impact on how the distribution of linguistic metaphors in word classes and participant groups. Apart from linguistic metaphors, the metaphor use in aphasia can be also discussed under the scope of CMT. Specifically, in people's speech about aphasia, aphasia treatment, and rehabilitation, we can find conceptual metaphors and analyse them in order to see how aphasia is conceptualized in discourse.

The overall research goal of this dissertation is to examine how metaphors are used in aphasia; the main goal was divided into two subgoals: one is to explore how linguistic metaphors interact with word classes and groups of participants, and the other is to investigate how metaphors are framed when people talk about aphasia and aphasia experience. Within the first subgoal, we designed two empirical studies to probe into linguistic metaphor use in English and Mandarin data.

In Chapter 1, we introduced metaphor (including the conceptual metaphor and CMT) and aphasia (including types of aphasia). Research goals and the structure of this dissertation were also expatiated in this chapter.

Chapter 2 is about the method of metaphor identification. In this part, we teased out linguistic metaphor identification, plus how to find conceptual metaphors. In this thesis, we adopted MIPVU (Metaphor Identification Procedure VU University Amsterdam) to identify linguistic metaphors from our English and

Chinese data; for conceptual metaphors, people can find them in various ways: searching for source domain vocabulary and/or target domain vocabulary, and searching for metaphor signals, like “like” and “as if”.

The subsequent three chapters are empirical studies to attempt to attain research goals. In Chapter 3, all data were chosen from the online database AphasiaBank (English), and they are conversations between medical staff and PWA/their caregivers; all lexical units in these conversation transcripts were categorized into eight word classes (adjectives, adverbs, conjunctions, determiners, nouns, prepositions, verbs, and remainders); there are three groups of participants: people with non-fluent aphasia, people with fluent aphasia, and the control group consisted of speakers without language disorder. We could find the noun-verb dissociation in our data; and for preposition production, it is more impaired among people with non-fluent aphasia. Compared with the control group, PWA produced fewer metaphors in their speech; and for non-fluent aphasic speakers, the percentage of MRWs is lower than that in the fluent aphasia group. Outcomes of this study also showed that metaphor are not equally distributed in word classes and participant groups. Metaphor distribution patterns in fluent aphasic speakers and the control group share more similarities. In determiners, prepositions, verbs, and remainders, metaphors are distributed unevenly across three groups.

Linguistic materials in Chapter 4 were taken from AphasiaBank (Mandarin). For Chinese, one problem is the fuzzier word boundaries, as the lexical unit (or word) is the basic analysis unit in MIPVU. In addition, Chinese has a different word class system, and we took classifiers and localizers into consideration. In this study, there are ten word classes, and two participant groups (the fluent aphasic and the control). After our analyses, it revealed some different features compared with metaphor use in English data. The noun-verb dissociation was not detected in Chinese data, that is, for people with fluent aphasia, nouns are not significantly less used. In each group, metaphors are not divided evenly across word classes; and for the fluent aphasic group, one noticeable fact is the high percentage of verb metaphors. In classifiers, nouns, and remainders, metaphor distribution is imbalanced in two groups.

Chapter 5 is about a qualitative study on conceptual metaphor use when people talk about aphasia, and it has discussed how metaphor are framed on different levels (image schema, domain, frame, and scenario/mental space). We put emphasis on metaphorical framings on the scenario level, because it can be served as the interface between cognition and context. A database was built with materials from an online aphasia forum. In this study, we researched into six metaphorical framings: WAR, JOURNEY, THEFT, MOTION IMPEDIMENTS, FOREIGNNESS, and GAME. Through painstaking exploration of these metaphor use on the scenario level, results showed kaleidoscopic patterns of these framings when people described aphasia under various circumstances.

The last chapter is a conclusion of the whole dissertation. It highlighted main findings of the research, discussed its implications, and raised some suggestions for future studies.

This dissertation contributes to the future investigation into how linguistic metaphors are used by PWA, and how people employ conceptual metaphors to express their understanding of aphasia, and their feelings and attitudes towards this language disorder. These findings have shown some features of PWA’s production

of linguistic metaphors in some word classes; and in some word classes, metaphor distribution is not balanced in different types of aphasia. By analysing the interaction between metaphor, word class, and participant group, we can have a deeper understanding of metaphor use (or deficits of metaphor production) by people with different types of aphasia. The study on Mandarin data reflected some differences in metaphor distribution compared with findings of the study on English data. As for the analysis of metaphorical framings about aphasia and aphasia recovery, it can be helpful for practitioners and family caregivers to communicate with PWA in the rehabilitation process. Moreover, metaphorical framings on aphasia shape how we think about aphasia and PWA.

Samenvatting

Metafoorgebruik bij afasie

Een van de belangrijkste uitgangspunten van de conceptuele metafoortheorie (CMT) is dat metaforen alomtegenwoordig zijn in ons dagelijks taalgebruik; zo wordt in dagelijkse gesprekken 7.3% van de lexicale eenheden metaforisch gebruikt. Bovendien is in dit genre de verdeling van metaforen niet in elke woordklasse gelijk: de meeste metaforen in gesprekken zijn werkwoorden en voorzetsels. Dit strookt ook met de bewering dat in conversaties opvallend veel werkwoorden worden gebruikt. Eerder onderzoek toonde de interactie aan tussen frequenties van metafoorgerelateerde woorden (*metaphor related words*, MRW's), woordklassen en registers/genres (conversaties, fictie, kranten en academische teksten). Deze eerdere studies gaan over observaties op basis van het taalkundig metafoorgebruik (of metaforisch gebruikte taalvormen) bij mensen zonder taalstoornis.

In dit proefschrift is getracht grondig te onderzoeken hoe taalkundige metaforen worden gebruikt door mensen met afasie (*people with aphasia*, PWA). Afasie is een verworven taalstoornis die de taalproductie en het taalbegrip van mensen aantast. Afasie kan worden onderverdeeld in twee types: niet-vloeiend en vloeiend, naar gelang van de vloeiendheid van de spraak van de patiënten. Sommige vroegere studies hebben tekortkomingen aangetoond van bepaalde woordklassen die door PWA worden geproduceerd. Bij mensen met niet-vloeiende (of agrammatische) afasie is hun werkwoordproductie meer aangetast; mensen met vloeiende afasie hebben meer problemen met de productie van zelfstandige naamwoorden. Dit fenomeen wordt "zelfstandig naamwoord/werkwoord-dissociatie" genoemd. Bovendien produceren mensen met niet-vloeiende afasie minder functiewoorden dan mensen met vloeiende afasie. Er werd voorspeld dat de ongelijke verdeling van woordklassen gevolgen heeft voor de verdeling van linguïstische metaforen in woordklassen en deelnemersgroepen. Naast linguïstische metaforen kan ook het metafoorgebruik bij afasie besproken worden in het kader van CMT. Met name in uitspraken van mensen over afasie, afasiebehandeling en revalidatie kunnen we conceptuele metaforen vinden en analyseren om te zien hoe afasie in het discours wordt geconceptualiseerd.

Het algemene onderzoeksdoel van dit proefschrift is te onderzoeken hoe metaforen worden gebruikt bij afasie; het hoofddoel werd opgedeeld in twee subdoelen: het ene is te onderzoeken hoe linguïstische metaforen interageren met woordklassen en groepen deelnemers, en het andere is te onderzoeken hoe metaforen worden geframed wanneer mensen over afasie praten. Binnen het eerste subdoel ontwierpen we twee empirische studies om het gebruik van linguïstische metaforen te onderzoeken in Engelse en Mandarijnse data.

In Hoofdstuk 1 hebben we metafoor (inclusief de conceptuele metafoor en CMT) en afasie (inclusief typen afasie) geïntroduceerd. Ook de onderzoeksdoelen en de structuur van dit proefschrift werden in dit hoofdstuk uiteengezet.

Hoofdstuk 2 gaat over de methode van metafooridentificatie. In dit deel hebben we de linguïstische metafooridentificatie en het vinden van conceptuele metaforen uitgewerkt. In dit proefschrift hebben wij MIPVU (Metaphor Identification Procedure VU Amsterdam) gebruikt om taalkundige metaforen te identificeren in onze Engelse en Chinese data. Voor conceptuele metaforen kunnen mensen ze op verschillende manieren vinden: zoeken naar brondomeinwoordenschat en/of doeldomeinwoordenschat, en zoeken naar metafoorsignalen, zoals "zoals" en "alsof".

De volgende drie hoofdstukken zijn empirische studies gericht op het realiseren van de onderzoeksdoelen. In Hoofdstuk 3 zijn alle data gekozen uit de online database AphasiaBank (Engels), en komen deze uit gesprekken tussen medisch personeel en PWA/hun verzorgers; alle lexicale eenheden in deze gesprekstranscripties werden ingedeeld in acht woordklassen (bijvoeglijke naamwoorden, bijwoorden, voegwoorden, determinatoren, zelfstandige naamwoorden, voorzetsels, werkwoorden en restwoorden); er zijn drie groepen deelnemers: mensen met niet-vloeiende afasie, mensen met vloeiende afasie en een controlegroep die bestond uit sprekers zonder taalstoornis. In onze data troffen we de zelfstandig naamwoord/werkwoord-dissociatie aan; voor voorzetselproductie is deze meer verstoord bij mensen met niet-vloeiende afasie. Vergeleken met de controlegroep produceerden PWA minder metaforen in hun spraak en bij sprekers met niet-vloeiende afasie is het percentage MRW's lager dan bij de groep met vloeiende afasie. De resultaten van deze studie toonden ook aan dat metaforen niet gelijk verdeeld zijn over woordklassen en deelnemersgroepen. Metafoorverdelingspatronen bij sprekers met vloeiend afasie en de controlegroep vertonen meer overeenkomsten. In determinatoren, voorzetsels, werkwoorden en restwoorden zijn de metaforen ongelijk verdeeld over de drie groepen.

Het taalmateriaal in Hoofdstuk 4 is afkomstig uit de AphasiaBank (Mandarijn). Voor Chinees vormen de vagere woordgrenzen een probleem, aangezien de lexicale eenheid (of het woord) de basisanalyse-eenheid is in MIPVU. Bovendien heeft het Chinees een ander woordklassensysteem, en hebben wij rekening gehouden met classificeerders en lokaliseerders. In deze studie zijn er tien woordklassen, en twee deelnemersgroepen (mensen met vloeiende afasie en de controlegroep). Na onze analyses bleken er enkele verschillende kenmerken te zijn vergeleken met metafoorgebruik in Engelse data. De naamwoord/werkwoord dissociatie werd niet gedetecteerd in de Chinese data, dat wil zeggen, er worden niet significant minder naamwoorden gebruikt door mensen met vloeiende afasie. In elke groep zijn metaforen niet gelijkmatig verdeeld over de woordklassen en voor de groep met vloeiende afasie valt het hoge percentage werkwoordmetaforen op. Bij classificeerders, zelfstandige naamwoorden en restwoorden is de metafoorverdeling in twee groepen onevenwichtig.

Hoofdstuk 5 gaat over een kwalitatief onderzoek naar conceptueel metafoorgebruik wanneer mensen over afasie praten en gaat in op hoe metaforen op verschillende niveaus (beeldschema, domein, frame en scenario/mentale ruimte) worden ingekaderd. Wij leggen de nadruk op metaforische framing op het scenarioniveau, omdat dit kan dienen als interface tussen cognitie en context. Er werd een database opgebouwd met materiaal van een online afasieforum. In deze studie onderzochten we zes metaforische frames: OORLOG, REIZEN, DIEFSTAL,

BEWEGINGSBEPERKINGEN, BUITENLANDSHEID en SPEL. Door deze metafoorgebruiken nauwgezet te onderzoeken op scenarioniveau, toonden de resultaten caleidoscopische patronen binnen deze frames wanneer mensen afasie beschreven onder verschillende omstandigheden.

Het laatste hoofdstuk vormt de conclusie van het hele proefschrift. Het belicht de belangrijkste bevindingen van het onderzoek, bespreekt de implicaties ervan en doet enkele suggesties voor toekomstig onderzoek.

Dit proefschrift draagt bij aan het toekomstige onderzoek naar hoe taalkundige metaforen door PWA worden gebruikt, evenals naar hoe mensen conceptuele metaforen gebruiken om hun begrip van afasie en hun gevoelens en houdingen ten opzichte van deze taalstoornis uit te drukken. De bevindingen lichten enkele kenmerken uit van de productie van linguïstische metaforen door PWA in sommige woordklassen; en in sommige woordklassen blijkt de verdeling van metaforen niet evenwichtig bij verschillende typen afasie. Door de interactie tussen metafoor, woordklasse en deelnemersgroep te analyseren, kunnen we meer inzicht krijgen in het gebruik van metaforen (of tekorten in de productie van metaforen) bij mensen met verschillende soorten afasie. De studie van de Mandarijnse data liet enkele verschillen in metafoorverdeling zien, vergeleken met de bevindingen van de studie van de Engelse data. De analyse van metaforische kaderingen over afasie en afasieherstel kan nuttig zijn voor behandelaars en mantelzorgers om tijdens het revalidatieproces te communiceren met mensen met afasie. Bovendien beïnvloeden metaforische kaders over afasie de manier waarop we denken over afasie en PWA.

About the author

Jie Fu (China, 1983) received a BA degree in English at Hebei University of Technology, in Tianjin, China (2005). In 2009, she obtained her research Master's degree in Linguistics from Beijing International Studies University, and she was ranked as one of the outstanding graduates of universities in Beijing by the Beijing Municipal Commission of Education. Her MA thesis discussed anaphora processing in English and Chinese discourse. Jie works as a lecturer at Xingtai Medical College (China) from 2010.

In 2016, Jie began her PhD project "Metaphor Use in Aphasia" at ACLC, the University of Amsterdam, which resulted in this dissertation. During her PhD study, she participated in many academic activities relating to metaphor research and cognitive linguistics. She was a member of the Metaphor Lab Amsterdam, a research group in ACLC.