Case assignment by prepositions in Russian aphasia
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CHAPTER I

INTRODUCTORY REMARKS

This chapter provides an introduction to the phenomenon of aphasia, its main characteristics, types and classifications. The first section of this chapter starts with a short overview of the history of aphasiology development and the study of aphasia from a scientific point of view. Subsequently, the definition of aphasia as a language disorder is provided, with descriptions and clinical characteristics of the two most prevalent aphasic syndromes, which have generated much research and investigation: Broca’s aphasia and Wernicke’s aphasia. Phenomena of the agrammatism and paragrammatism associated with Broca’s and Wernicke’s aphasias, respectively, are also discussed.

The present study investigates the linguistic abilities of Russian speakers with aphasia, which is why the second section of this chapter deals with an examination of aphasia by Russian neuropsychologist Alexander Luria, who proposed classification of aphasic syndromes into the six main types still practiced in Russia. A short explanation of each type of aphasia proposed by Luria, with descriptions of the lesion sites and the linguistic disabilities involved, is also presented.

History of aphasiology: a short overview

Language impairments and language loss are as old as the phenomenon of human language itself. Disturbances of language and the ability to talk were mentioned as far back as 3000 BC by Egyptian surgeons (Luzzatti & Whitaker, 1996). They were also
noted in Greek and Roman references, and in Renaissance descriptions (Prins & Bastiaanse, 2006). However, little attention was paid to aphasic syndromes from medical and linguistic perspectives until the middle of the nineteenth century when, it is generally acknowledged, scientific studies began into language impairments in adults after completed language acquisition. It started with the first attempts to find direct localization of language in the brain by Gall (1806), which later caused a long-standing debate between the supporters of the idea of locationism and the advocates of holism, such as Flourens (1842), who claimed that the brain functions holistically. In 1861, Paul Broca first discovered that a lesion of the posterior parts of the left third frontal gyrus results in impaired speech production. This was subsequently named Broca’s area. A few years later, in 1874, Carl Wernicke published a paper in which he described another ‘speech center’ important for speech comprehension in the posterior part of the superior temporal gyrus. He proposed the idea of ‘connectionism’, in which two basic language areas (the ones discovered by Broca and himself) are connected with fiber bundles. Wernicke predicted that disruptions between the two areas would cause another syndrome, which he called ‘conduction aphasia’. Over the next decades, the views of Broca and Wernicke were supported, attacked and overcome in attempts to find other explanations of brain–language relations. However, these two findings have become the cornerstones of this area of study, and have been used for developments in the understanding of aphasia; they are accepted as the start of the scientific research into aphasic disturbances of language breakdown. Much research into a variety of languages, combining the different scientific approaches of medicine, (neuro)psychology, (neuro)linguistics, and (neuro)anatomy, has now been done towards a better understanding of aphasia. The results of these investigations and observations of aphasia provide material for the analysis of the structure of human speech.

**Aphasia as a language disorder**

Aphasia is a language disorder that usually results from a brain injury to the left hemisphere (in right-handed persons) due to traumatic accident, oxygen deprivation
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during a cerebral vascular incident (also referred to as ‘a stroke’), or as a result of brain
tumors or specific infections, like encephalitis. Aphasia should be differentiated from
developmental language disorders, language disorders due to hearing impairment or
aging, and from speech impairments due to loss of muscle control. Aphasia causes
disruptions in all language modalities; both language production and language
comprehension are affected in oral and/or written form. Also, one or more levels of
linguistic production – phonology, morphology, semantics, syntax – can be impaired.
Depending on the site and severity of the brain injury, different language abilities may be
impaired to a different degree; this provides a basis for a differentiation of diverse types
of aphasia with various linguistic and neurological characteristics. Several aphasic
syndromes have been reported in the literature. They can be diagnosed by standardized
tests, such as the Boston Diagnostic Aphasia Examination (BDAE) (Goodglass &
Kaplan, 1983), the Western Aphasia Battery (WAB) (Kertesz, 1982), or the Aachen
Aphasia Test (AAT) (Huber, Poeck, Weniger, & Willmes, 1983). However, such factors
as the site of the lesion, time post onset, and the behavioral profile of the aphasic speaker
may cause some difficulties or controversies in the classification of aphasic syndromes.
The contemporary typology includes seven aphasic syndromes: Broca’s, Wernicke’s,
conduction, global, anomic, transcortical sensory, and transcortical motor aphasias
(Wertz, Dronkers, & Ogar, 2003). The first two types of aphasia prevail and have yielded
most interest and scientific investigation.

Broca’s aphasia

As outlined above, Broca’s aphasia is named after the French physician and anatomist
Paul Broca. Using results from the autopsy of a 57-year-old patient, Monsieur Leborgne,
and the speech examination of several other patients, Broca discovered that lesions to
“the posterior parts of the third frontal convolution of the left hemisphere” (later specified
as the posterior part of the third frontal gyrus) led to specific speech impairments.\(^2\)

\(^2\)Broca called this ability to articulate words “langage articulé”. In French, *langage* denotes any form of
symbolic expression; as stated in Larousse, 2006, “*Langage s’est capacité, observée chez tous les hommes,*
(Brodmann’s areas 44–45). Monsieur Leborgne lost almost all his ability to speak, and could produce only one utterance, “tan” (the patient is also referred in the literature as Monsieur Tan). He had relatively well-preserved comprehension and a right-sided paresis. In the post-mortem autopsy, Broca found “a chronic and progressive softening of the third convolution of the left frontal lobe” (Shiller, 1992: 182). Broca referred to this speech phenomenon as “l’aphémie, perte de la parole” (Broca, 1861a: 384).

Contemporary characteristics of Broca’s aphasia include difficulties in articulation, non-fluent, laborious, and effortful speech production without clear-cut intonation patterns, and relatively preserved comprehension. More specifically, Broca’s aphasic speakers are reported to rely heavily on content words, namely nouns, in their speech; in the most severe cases, speech production can be limited to yes/no answers. They omit or substitute so-called ‘function’ or ‘closed-class’ words, such as articles, auxiliaries, and prepositions. They also have difficulties in naming, repetition, and writing; grammatical aspects of language are particularly problematic; building up syntactic relations and dependencies among the sentence constituents is very difficult for them.

Agrammatism

Agrammatism is the production of syntactically malfunctioning speech, which is frequently observed as a prominent characteristic in Broca’s aphasia: it is sometimes even used as its synonym. The speech of agrammatic speakers is characterized by poor grammar; it is non-fluent, laborious and produced at a slower than normal rate. Over the years, several descriptions of agrammatism have been proposed. At present, however, agrammatism is largely regarded as a disorder of language production characterized by lack of free grammatical morphemes (articles, prepositions, pronouns, and auxiliary verbs are often omitted), overuse of infinitival verb forms, difficulties in grammatical
agreement, syntactic structure simplification and morphosyntactic difficulties, such as problems with bound grammatical morphemes (Goodglass, 1976). It has also been claimed that the agrammatic aphasic speakers who omit function words are also unable to interpret syntactic structures where function words provide the main clues to the relational meaning (Zurif, 1980). Linguistic research into languages with rich morphological systems (for example, German, and also Slavic languages, such as Russian, Polish, Serbo-Croatian) has contributed to this general picture of agrammatism, since the overarching aim is to find similarities in the underlying disturbances of agrammatic aphasic speakers.

A few words on the theories of agrammatism

In the literature, several hypotheses and theories have been proposed to account for the performance of agrammatic aphasic speakers. Some of them relate to modalities, production and comprehension, while others account for only one of these aspects. Some researchers even claim that the agrammatic population is too heterogeneous for generalizations to be possible and so a unitary theory cannot account for their performance (Miceli, Silveri, Romani, & Caramazza, 1989). However, this thesis deals with production of bound morphemes (case-marking morphemes) and free grammatical morphemes (prepositions), and here a short overview of some hypotheses and theories are given, which are relevant to the present research. The accounts presented here can be tentatively divided into three main streams: phonological, morphological, and syntactic. Meanwhile, some researchers also suggest psychologically motivated theories, such as the Adaptation Theory (Kolk & Heeschen, 1996), or theories that associate agrammatic difficulties with cognitive deficits, such as the Mapping Account (Linebarger, Schwartz, & Saffran, 1983), or theories of the limited capacity of working memory, such as the Single Resource Theory (Caplan & Waters, 1999), described briefly below.

In the 1970s, one of the theories proposed to account for agrammatism suggested that it should be regarded as a “purely phonological impairment” (Kean, 1977: 10). Kean assumed that all aspects of language are intact in agrammatism, except phonology. The
central concept in this theory was a ‘phonological word’, which was defined as a “string of segments, marked by boundaries, which function in the assignment of stress to a word” (Kean, 1977: 22). Agrammatic speakers, it was argued, omit those elements that do not bear stress or do not play a role in the stress pattern of a sentence. Kean claimed that “a Broca’s aphasic tends to reduce the structure of a sentence to the minimal string of elements which can be lexically construed as phonological words in his language” (Kean, 1977: 25). Specifically for Russian, it was suggested that Russian Broca’s aphasic speakers would “delete all overt conjugational and declensional endings and their sentences will have the appearance of being a string of nouns in the nominative singular masculine” (Kean, 1977: 34). The author states that “in Russian by a productive process a stem may be inflected as either a noun or a verb” (Kean, 1977: 34). The following examples were provided:

(1) word stem: *rod*- verb: *rod+i+t* “to give birth”
    *rod+i+l+a* “she gave birth”
    noun: *rod* “a gender” (nominative case, singular number, masculine gender)
    *rod+a* “gender’s” (genitive case, singular number, masculine gender)

(2) word stem: *khod*- verb: *khod+i+t* “to walk”
    *khod+i+t* “she/he walks”
    noun: *khod* “a walk” (nominative case, singular number, masculine gender)
    *khod+a* “walk’s” (genitive case, singular number, masculine gender)

The statement is indeed true for the examples provided above; the two word stems in (1) and (2) can be converted either to nouns or verbs via inflections. However, this is not always the case; rather, it is a rare occurrence. Despite the fact that Russian has a rich morphology, and flexible and extensive derivation, it is not always as straightforward as
proposed by Kean. Not all word stems in Russian are derivationally productive. As discussed in chapter II, in Russian, case is always morphologically realized for nouns. Nouns of the masculine gender, first declension, as shown in examples (1) and (2), above, have a zero morpheme in the nominative singular case: rod-ø, hod-ø; therefore, in the nominative singular form they correspond to a bare word stem. Nouns of the feminine gender, second declension, on the other hand, have an obligatory a-/ja- morpheme in the nominative singular form: rabot-a: “job/work”; ohot-a: “hunting”; knig-a: “book”; lamp-a: “lamp”. In general, production of noun stems without case-morphology results in nonsensical words; this effect is more obvious in nouns of the feminine gender, second declension class, and it is neutralized in nouns of the masculine gender, first declension class. Therefore, if a feminine noun of the first declension class is deprived of an overt inflection (case-marking morphemes), the remaining letter string does not result in a noun in nominative case-form but in a non-word. Moreover, Russian has a flexible or floating word stress. As seen from the case-paradigms below, Russian word stress varies not only across case-paradigms but also within a case-paradigm of a single noun. Contrary to the predictions of Kean, Russian Broca’s aphasic speakers do not produce noun stems deprived of case-morphology (Ruigendijk, 2002; Avrutin, 2001; Grodzinsky, 19843), even when a case morpheme is unstressed. Table 1.1 presents case-paradigms4 for the following nouns: an inanimate feminine noun of the second declension – reka: “river”; an animate feminine noun of the second declension – sobaka: “dog”; an inanimate masculine noun of the first declension – les: “forest”; an animate masculine noun of the first declension – kon’: “steed”. The word stress is shown in capital letters within a word in the table below.

3 To be discussed in chapter III.
4 Chapter II of the present thesis will deal more extensively with the grammatical structure of the Russian language, and case-paradigms in particular.
Table 1.1 Examples of Russian case-paradigms for the nouns reka: “river”, sobaka: “dog”, les: “forest”, and kon’: “steed”

<table>
<thead>
<tr>
<th>Case</th>
<th>reka</th>
<th>sobaka</th>
<th>les</th>
<th>kon’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominative</td>
<td>rekA</td>
<td>sobAka</td>
<td>lEs</td>
<td>konj</td>
</tr>
<tr>
<td>Genitive</td>
<td>rekI</td>
<td>sobAki</td>
<td>lEs</td>
<td>konJA</td>
</tr>
<tr>
<td>Dative</td>
<td>rekE</td>
<td>sobAke</td>
<td>lEs</td>
<td>konJU</td>
</tr>
<tr>
<td>Accusative</td>
<td>rEku</td>
<td>sobAku</td>
<td>lEs</td>
<td>konJA</td>
</tr>
<tr>
<td>Instrumental</td>
<td>rekOJ</td>
<td>sobAkoj</td>
<td>lEsom</td>
<td>konÊM</td>
</tr>
<tr>
<td>Prepositional</td>
<td>rekE</td>
<td>sobAke</td>
<td>lEse</td>
<td>konE</td>
</tr>
</tbody>
</table>

Kean claimed that a phonological account was the only possible interpretation of agrammatism (Kean, 1977, 1979), which indeed received considerable attention. Later, however, the results of broad cross-linguistic research, also done on morphologically richer languages than English, showed that problems of agrammatic aphasic speakers cannot be explained by phonological deficits alone. This triggered the question of what the main underlying disorder in agrammatism might be. Can it be accounted for in the framework of morphological deficits or is it a syntactic issue?

A morphological account attributes the problems of agrammatic aphasic speakers to the underlying morphological deficit. The Competition model proposed by Bates and colleagues (Bates & MacWhinney, 1987; Bates, Wulfeck, & MacWhinney, 1991; Bates, Devescovi, & Wulfeck, 2001) predicted “fewer differences between aphasic syndromes, but more differentiation as a function of language type” (Bates et al., 1991: 126). The theory has two main concepts: ‘cue validity’, which is the information value of a given phonological, lexical, morphological, or syntactic form, and ‘cue cost’, which is amount and type of processing associated with the activation and deployment of a given linguistic form. With respect to agrammatic speech, within a given language elements that are higher in cue validity (elements are also high in applicability and reliability) should be better retained, and elements which are high in cue cost will be (selectively) impaired.
However, the growing research in morphologically rich languages shows that morphology is not always impaired; or, rather, morphology as such is not impaired or problematic for agrammatic aphasic speakers as long as no syntactic operation is involved. The so-called ‘syntax dependent morphology’ is affected in agrammatism, while all other morphemes are preserved (Luzzatti & De Bleser, 1996). Syntactic theories relate omissions and substitutions of grammatical morphemes in agrammatic speech to the underlying problems with syntactic encoding, which reflect the underlying syntactic deficit of agrammatic aphasic speakers (Bastiaanse, Jonkers, Ruigendijk, & van Zonneveld, 2003). Several studies support this idea, and these will be described in further detail in chapter III (Luzzatti & De Bleser, 1996; De Bleser, 1996; Ruigendijk, van Zonneveld, & Bastiaanse, 1999; Ruigendijk & Bastiaanse, 2002).

Other theories, such as Adaptation Theory, suggest that (most) agrammatic aphasic speakers have two options: either to speak in complete sentences or to make use of simplified expressions – in other words, to speak in a ‘telegraphic style’ (Kolk & Heeschen, 1996). The latter is regarded as an “adaptation to the impairment, a strategic adaptive choice” (Heeschen & Schegloff, 1999: 376); it is not necessarily conscious and does not directly reflect the underlying impairment. According to Adaptation Theory, aphasic speakers adopt this strategy, also referred to as ellipsis, to avoid using the deficient grammatical system.

Wernicke’s aphasia

As mentioned above, at the end of the nineteenth century, German neurologist Carl Wernicke reported on patients with lesions to the posterior part of the superior temporal gyrus. These patients had problems with speech comprehension, while their speech production was fluent, although characterized by phonological and semantic errors. Wernicke called this impairment ‘sensory aphasia’. Subsequently, this type of aphasia was named after him, as ‘Wernicke’s aphasia’. Much research has shown that Wernicke’s aphasic speakers display rather fast fluent and effortless speech, which is, however, semantically ‘empty’, and marked by use of filler words (for example, thing), literal and
verbal paraphasias, and neologisms. In severe cases, speech can turn into ‘a word-salad’, called ‘jargon aphasia’. Wernicke’s aphasic speakers have speech rates similar to neurologically intact speakers, but their speech variety is rather poor. They do not show any articulation distortions or deficits, and some tend to provide lengthy and fluent answers to simple questions – a phenomenon referred to as ‘logorrhea’. Speech comprehension, naming, repetition, and the reading abilities of Wernicke’s aphasic speakers are typically severely impaired; their writing mirrors their speech output, and they are not usually aware of their language disability. The deficit in Wernicke’s aphasia is said to affect the lexical–semantic domain and cause lexical-retrieval difficulties (Bastiaanse & Edwards, 2004). The speech of Wernicke’s aphasic speakers is marked by substitutions rather than omissions of function words and grammatical morphemes: it is a “confused and erroneous syntax” (Butterworth & Howard, 1987: 2.), with ill-formed syntactic structures (Edwards, Bastiaanse, & Kiss, 1994), and production of incomplete and incorrect grammatical word-forms (Martin & Blossom-Stach, 1986). The speech problems of Wernicke’s aphasic speakers are generally referred to as “less syntactically focused” (Zurif, 1995: 383) and their speech pattern as ‘paragrammatic’.

Paragrammatism

Paragrammatism has two meanings: the first refers to an ungrammatical utterance with syntactic errors, such as word order errors, or errors in grammatical morphology (Butterworth & Howard, 1987). Another meaning was primarily suggested by Kleist, who introduced the term ‘paragrammatism’ in 1916 to denote a disordered mode of expressing oneself, which is also distinguished by these errors. Paragrammatic speech has been attributed to the word-finding difficulties of fluent aphasic speakers; it has been regarded as a ‘leitsymptom’ of Wernicke’s aphasia, and has been contrasted with the agrammatism associated with Broca’s aphasia.

Over the course of time, and as a result of a number of cross-linguistic studies, these views underwent several transformations. Paragrammatic speech was characterized by superfluity and morphological substitution errors, while agrammatism was illustrated
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by non-fluent speech of a telegraphic type with omissions of functional morphology. Some authors suggested that errors of both syndromes could occur in one speaker (Butterworth & Howard, 1987). Moreover, it was claimed by some that the speech phenomena often found in paragrammatism “are not peculiar to the fluent aphasics, but are found in normals and some of them at least, in dysfluent agrammatic patients” (Butterworth & Howard, 1987: 35), whereas others opposed the idea of the two syndromes. For example, Adaptation Theory (Kolk & Heeschen, 1992) claimed that while agrammatic aphasic speakers adapt to their syntactic impairment and adopt strategies to avoid using their disrupted abilities, paragrammatic fluent aphasic speakers do not. The authors argued that “paragrammatic output, as observed in the spontaneous speech of Wernicke’s aphasics, results from a lack of such strategic adaptation” (Kolk & Heeschen, 1992: 89). Results of a number of studies showed that fluent Wernicke’s aphasic speakers also suffer from the disruption of syntactic abilities and “may not have full control over syntactic processing” (Martin & Blossom-Stach, 1986: 198). Difficulties in the lexical domain alone cannot necessarily prevent them from using the complete set of grammatical forms, and paragrammatism, among other deficits, is also characterized by “confused and erroneous syntax” (Butterworth & Howard, 1987; Edwards & Bastiaanse, 1998). General difficulties of paragrammatic aphasic speakers were also explained in the framework of Integration Theory, which suggests that when complex grammatical material has to be processed in aphasia, “the integration of lexical and grammatical processes breaks down” (Bastiaanse & Edwards, 2004: 101).

In the second section of this chapter a view of aphasia by Russian neuropsychologist Alexander Luria is presented. The present study investigated the linguistic abilities of Russian aphasic speakers; therefore, it is essential to present here the typology and classification of aphasic syndrome practices in Russia, as proposed by Luria.
Alexander Luria’s view of aphasia

According to Luria (1977), language should be regarded as a complex functional system of codes, with its own structure and logic created during social development. It includes phonology, lexicon, morphology, semantics, and syntax, which all are products of social history and development. These subsystems provide human linguistic competence and result in linguistic performance, which are both realized by the human brain. The human brain is “a product of a different (this time – iological and bio-social) evolution, and which is another system, constructed according to different principles” (Luria, 1977: 12). Collaboration of many brain areas, or cortical zones, each having a certain input, is important for successful linguistic behavior. Therefore, damage to any of the cortical zones does not evoke direct disruption of a specific language component, but leads to the disturbance of linguistic behavior. According to Luria, it is important to distinguish the main components of linguistic behavior, to discover the main factors important for its realization and to investigate the roles of the different brain areas in enabling these factors (Luria, 1977). In order to obtain reliable information on organization of the speech processes in the brain, it is essential to provide a precise psychological analysis of the verbal communication processes, to pick out basic components of these processes, and to analyze how these processes are disturbed in localized brain damage (Luria, 1973b).

Luria claimed that an understanding of forms of aphasia should be based not only on the differentiation of sensory and motor disturbances, but it should also lead towards more complex forms based on the relations and connections between these primary deficits. According to the classification of aphasia types suggested by Luria, aphasias fall into six types, which differ with respect to the localization of the lesion in the brain and the resulting linguistic impairments. These types are sensory aphasia, acoustic-amnestic (also referred to as acoustico-mnestic) aphasia, afferent (or kinaesthetic) motor aphasia, efferent (or kinetic) motor aphasia, semantic aphasia, and dynamic aphasia. Schematic diagrams of the lesion sites in different forms of aphasia are presented in figure 1.1. This study focuses on two aphasia types – efferent motor aphasia and sensory aphasia; however, a brief overview of all six types is presented below.
Figure 1.1 Schematic diagrams of lesion sites in the left hemisphere in different forms of aphasia. Numbers represent different patients in Luria (1947): A – sensory aphasia; B – acoustic-amnestic aphasia; C – afferent motor aphasia; D – semantic aphasia; E – efferent motor aphasia; F – dynamic aphasia.
CHAPTER I

Luria’s classification of the aphasic syndromes

Sensory aphasia

Sensory aphasia results from damage to the posterior part of the superior temporal gyrus of the left hemisphere. The primary deficit in this form of aphasia is the disturbance of “phonemic hearing” (Luria, 1977: 50), which is not necessarily accompanied by the disintegration of other sounds – for example, pitch differences. Disturbance of phonemic hearing leads to difficulty or inability in distinguishing speech sounds, and thus interferes with correct word repetition. Moreover, it also prevents word comprehension; due to the deficit in phonemic hearing, speakers might perceive words as incoherent complexes of sounds without distinct meaning. For example, speakers with sensory aphasia do not understand the difference between the words dochka: “a daughter” and tochka: “a dot”. Object naming can also be impaired in sensory aphasia. According to Luria, vulnerability of word sound structures impedes correct word retrieval, so that prompting the speakers with the first word sound does not help. In severe cases, speakers with sensory aphasia are unable to recognize the speech of others, and exhibit the phenomenon known as “alienation of word meaning” (Luria, 1977). To conclude, deterioration of phonemic hearing is the primary underlying deficit that causes other secondary problems, including difficulties in word meaning perception, object naming, and writing to dictation.

Acoustic-amnestic aphasia or acoustico-mnestic aphasia

Damage to the temporal brain area does not always result in sensory aphasia; for example, impairments of the central sections of the left temporal lobe can spare the secondary areas of the auditory cortex but bring them into a “pathological state” (Luria, 1977: 51). As a result, phonemic hearing remains relatively intact – speakers are able to repeat phonemes and even simple words, but they face difficulty when the amount of information increases, and when they are required to repeat a series of morphemes or sounds. For example, speakers with acoustic-amnestic aphasia can repeat correctly
separated words, even when they are similar in sound, but make errors when required to repeat a sequence of the same words: zabor: “a fence”; sabor: “a cathedral”; zapor: “bolt”. This might lead to difficulties in remembering longer sentences and in naming objects. This is referred to as acoustic-amnestic aphasia in Luria’s classification. In general, speakers with acoustic-amnestic aphasia have difficulty keeping in mind information received orally.

Motor aphasia

According to Luria, motor speech requires a combination of two factors: first, the kinaesthetic scheme for articulation has to be supplied; second, fluency of speech has to be provided. Each aspect can be disturbed independently, which leads to two forms of motor aphasia. Motor aphasia may result from a lesion to two different cortical zones with different underlying factors, which results in two different forms of motor aphasia. Damage to the operculum Rolandi (the lower part of the posterior region of the inferior frontal gyrus of the frontal lobe in the left hemisphere), results in what Luria terms afferent (or kinaesthetic) motor aphasia, whereas damage to Broca’s area induces efferent (or kinetic) motor aphasia. Each of these types of motor aphasia involves its own underlying deficits and linguistic disabilities. Afferent and efferent motor aphasias are discussed in more detail below.

Afferent (or kinaesthetic) motor aphasia

The word afferent is derived from the Latin verb affere, which is composed of a preposition – ā – one meaning of which is “to, towards”, and a verb – ferre – which means “to bear, to carry”. The verb affere thus means “to bring, to supply” and the adjective afferent can be translated as bearing, supplying or directed towards something. As mentioned above, afferent motor aphasia results from lesions to the lower part of the posterior region of the inferior frontal gyrus of the frontal lobe in the left hemisphere. In
milder cases, such damage results in “cortical afferent ataxia or apraxia” (Luria, 1977: 53). According to Luria, accomplishment of any movement is only possible when afferent synthesis is provided. When the synthesis is impaired or impossible, there is a failure of the directional impulses involved in the work of speech muscles and organs. This results in “deafferenentation” of motor speech processes (Luria, 1973b: 962). According to Luria, the basic disturbance of speakers with afferent motor aphasia is “positional apraxia of the speech organs and search for the articulatory movements appropriate for specific sounds” (Luria, 1970: 152). In other words, they cannot find a combination of movements of the articulatory muscles necessary for the pronunciation of certain speech sounds. This is “disturbance of articuleme” (Luria, 1977: 53) which, according to Luria, is the primary deficit in this form of aphasia. Sometimes speakers with afferent motor aphasia can articulate voluntarily but not on request; their word repetition and even writing can be impaired; they produce literal paraphasias.

**Efferent (kinetic) motor aphasia**

The adjective *efferent* is derived from the Latin verb *effero*, composed of a preposition – *e* – “from, out, out of”, and a verb – *ferre* – “to bear, to carry”. Thus, *effere* means “to take out”, and *efferent* means *directed from something*. Efferent motor aphasia is caused by lesions to the posterior parts of the third frontal convolution of the left hemisphere, which is Broca’s area (Brodmann’s area 44–45). According to Luria, the syndrome has two main characteristics: the inner structure of the speech act is lost and the inertia of neurodynamic processes is increased (Luria, 1970: 187). To put it another way, speakers have no difficulty in articulating individual sounds, but have problems pronouncing the same sounds in serial combination; switching from one articulation act to another is particularly difficult. The “sequential or serial organization of articulation” (Luria, 1977: 54) is impaired. Speakers with efferent motor aphasia lose the inner “schemata of words” (Luria, 1970: 187), and the ability to shift smoothly from one articulatory position to another. The loss of the dynamics of speech activity results in difficulties in pronunciation and repetition, in production of perseverations, errors in writing, and
broken telegraphic speech, which in severe cases can be manifested as the serial naming of objects.

As mentioned above, the most prominent difficulty for speakers with efferent motor aphasia is transition, or switching from the pronunciation of separate sounds to the pronunciation of a whole word or phrase, which is not observed in afferent motor aphasia. Hence, when speakers with efferent aphasia are required to repeat a multisyllabic word, they may only be able to repeat the first syllable and then make several attempts to produce the next one, while speakers with afferent motor aphasia would repeat the whole word incorrectly.

**Semantic aphasia**

According to Luria, impairment of the parieto-temporal-occipital areas leads to the disturbance of “simultaneous and spatial structures … transferred to a higher (symbolic) level”, which is characteristic of semantic aphasia (Luria, 1973: 154). Unlike in other forms of aphasia described above, in semantic aphasia, the acoustic speech structure and semantic word meaning are preserved, while the complex system of logico-grammatical relations is disturbed. Speakers with semantic aphasia have difficulties that include constructions with prepositional phrases, complex case constructions (specifically in Slavic languages; for example, *brat otca*: “father’s brother”), comparative constructions, constructions with double negation, such as “I am not used to not submitting to the rules” (Luria, 1977: 57), and inversions. According to Luria, this type of aphasia, as a rule, includes deterioration of orientation in space, constructive apraxia, and problems with computation (Luria, 1973a).

**Dynamic aphasia**

Dynamic aphasia results from lesions to the anterior parts of the ‘speech areas’ of the cortex. Speakers with dynamic aphasia do not manifest any deficits either in “external
(auditory or motor), or in internal (logico-grammatical) organization of speech” (Luria, 1977: 59). They have no problems in articulation, repetition, object naming, or in comprehension of word meaning. The fundamental and primary deficit in this form of aphasia is the disturbance of inner speech, which is essential for the transformation of an idea or a thought into an expanded pronounced statement. When a speaker with dynamic aphasia is requested to narrate a story or respond to specific questions in more detail, this deficit becomes obvious. The speaker fails to produce a connected speech passage and instead answers the questions with clichés. According to Luria, speakers with dynamic aphasia are unable to use speech for generalization or for expression of thoughts and desires (Luria, 1970: 199). They are able to utter words, name objects, and to repeat sentences but they are totally deprived of spontaneous speech: “the linear schemata of phrase” is disturbed (Luria, 1973a).

The aphasia types outlined in Luria’s classification are employed in Russia and Eastern European countries by speech therapists and neurologists. In English-speaking countries and in Western Europe, the Wernicke-Lichtheim scheme and its variations (Benson & Geschwind, 1971; Goodglass & Kaplan, 1972; Kertesz, 1979) are more popular. Indeed, it has been noted that “the variety of syndromes presented in the literature has made aphasia one of the most overclassified disorders in neurology” (Benson & Ardila, 1996: 112). This might seem rather confusing, since several different terms can represent the same phenomena in different approaches. However, a careful examination of the main aphasic features characteristic of the aphasic syndromes described by different authors show that they “agree on the major clinical configurations of aphasic symptoms and on the typical lesion sites associated with them” (Goodglass & Kaplan, 2001: 57). Several attempts have been made to correlate the different approaches; Goodglass and Kaplan in “Assessment of aphasia and related disorders” (2001) refer the reader to an extensive table provided by Benson (1979), which reviews various classifications of aphasia types. Later this approach was reviewed further and resulted in an adapted table for the classification of aphasic syndromes. Figure 1.2 shows some of the classifications provided by Benson and Ardila (1996).
As shown in figure 1.2 Benson and Ardila, in “Aphasia: a clinical perspective” (1996), combined the two types of aphasia described by Luria, namely, *semantic aphasia* and *acoustic-amnestic aphasia*, into *semantic amnestic* aphasia, but they provided no explanation for this. Goodglass and Kaplan suggested the following counterparts to some of the aphasia types in Luria’s classification: acoustic-amnestic aphasia – anomic aphasia; afferent motor aphasia – conduction aphasia; efferent motor aphasia – Broca’s aphasia; dynamic aphasia – transcortical motor aphasia. The equivalents of *sensory aphasia* and *semantic aphasia* described by Luria were not provided, and the counterpart of Wernicke’s aphasia was suggested to be *acoustic aphasia*. Therefore, it should be noted that distribution of aphasic speakers within any classification of aphasic types is not straightforward, since aphasic syndromes hardly ever occur in a pure form, in any case, and usually consist of symptoms characteristic of several aphasic syndromes.
Summary

The first chapter of this thesis was planned as an introductory chapter, which proems the phenomenon of aphasia in general, and considers its main characteristics, types, and classifications. Aphasia is a language disorder that usually results from a brain injury to the left hemisphere (in right-handed persons) as the results of a traumatic accident, a cerebral vascular accident, brain tumors or specific infections. Depending on the site and severity of the brain injury, different language abilities may be impaired to a different degree; this provides a basis for the differentiation of diverse types of aphasia with various linguistic and neurological characteristics. The two most prevalent types of aphasia are Broca’s aphasia and Wernicke’s aphasia, and they differ with respect to the lesion site and the linguistic abilities that are impaired. Broca’s aphasic speakers are characterized by difficulties in articulation, non-fluent, laborious, and effortful speech production, which, in most the severe cases, can limit speech production to yes/no answers, and relatively spared comprehension. Wernicke’s aphasic speakers, on the contrary, have fairly fluent and rather fast speech production, which is, however, semantically ‘empty’, and marked by use of filler words (for example, thing), literal and verbal paraphasias, and neologisms. In severe cases, their speech can turn into ‘a word-salad’, called ‘jargon aphasia’. Speech comprehension, naming, repetition, and the reading abilities of Wernicke’s aphasic speakers are typically severely impaired; their writing mirrors their speech output. Broca’s and Wernicke’s aphasia are two types of aphasia distinguished within the Wernicke-Lichtheim scheme of aphasic classification that is in use in English-speaking countries and in Western Europe. This thesis examines the linguistic abilities of Russian aphasic speakers, who were diagnosed in accordance with another classification of aphasia proposed by Luria, and which is used in Eastern European countries. Therefore, in this chapter the view of aphasia proposed by Luria, and various types and characteristics of aphasia, have also been discussed. In Luria’s model, Broca’s aphasia corresponds to efferent motor aphasia, and Wernicke’s aphasia to sensory aphasia. However, whatever the classification of aphasia types, an aphasic syndrome seldom occurs in its pure form.
INTRODUCTORY REMARKS

The next chapter presents the linguistic background relevant to this thesis, and discusses the notion of case and its related phenomena. The chapter also deals with prepositions, their functions, meanings and relation to case, and also provides an introduction to the basic aspects of the Russian language that are indispensable for this thesis.