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Abstract of PhD dissertation

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Basic problems of construing meaning and of contextualization in aphasia

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2013. Törökbálint

1. Subject and aim

In my dissertation I attempt at characterizing the speech disorder of aphasia from the perspective of cognitive functionalism, a perspective less common in Hungarian research. I examine the basic processes necessary for adequate functioning of meaning-construction, such as problems of storage, activation, frequency, and entrenchment, as well as those of categorization. As for contextualization, I analyse those features of discursive process, deixis, and non-verbal communication that are decisive for speech performance in aphasia. A key element in functionalist approach is taking into consideration the purpose of the speaker emphatically. This means to acknowledge that all performative efforts of persons with aphasia aim at a successful expression of the message intended, which they achieve in a way appearing most economic for them, often ignoring rules of grammar. This approach becomes relevant in a framework where thinking as a mental activity, grammar, and use of language are factors in close interaction.

2. Corpus analysed and methods

During my research, I have analysed spontaneous and semi-spontaneous, guided linguistic activity of patients with aphasia, and of a control-group of healthy persons recovered from aphasia. The corpus consists of an altogether nine-hour-long video recording of conversational of two fluent, two non-fluent patients with aphasia and two persons recovered, recorded at group therapeutic meetings of the Hungarian Aphasia Association. While building the body of the analysis, I have decided to collect the most available material from a few persons rather than to use scarce data from a large number of patients. For as there are no cases with identical abilities, performance in speech and understanding, social and cognitive background, even among patients diagnosed with an identical type of aphasia, I presume that, as for the questions asked in my dissertation, the widest possible individual analysis is more relevant for drawing conclusions than an analysis concerned with more persons but less detailed data.

3. Structure of dissertation

I discuss the problems of linguistic disorders in aphasia relevant for my purpose under three headings. In the theoretical and methodological introduction I offer an overview of the history

of the research in aphasia, its identification, diagnosis and therapy from the perspective of the questions asked by cognitive functionalist aphasiology. Thus I present the results of cognitive neuropsychology (e.g. Coltheart 1987; Lesser 1993; Lurija 1975; Marshall 2000; Pataky 2008; Whitaker 1971), which can be considered a precursor of the cognitive functionalist approach. Further, I discuss briefly the outcomes of the research into brain correlations (e.g. Coulson 2004, Crosson 2007, Kertesz 1994, Mildner 2008, Papahtanasiou 2003, Salmelin 2006, Stemmer – Whitaker 2008). Besides these, I present those theories advanced throughout the history of the study of aphasia that have led to the establishment of functionally oriented aphasiology. Subsequently I detail the basic types of linguistic aphasiology (e.g. Jakobson 1968), modular approaches (e.g. Bánréti 1999), natural language theory – which has not received due attention -- (Seewald 1998), and finally, pragmatically oriented approaches (pl. Ahlsén 2006; Becker 2001; Carlomagno 1994; Paradis 1998; Perkins 2005; Sarno 1998).

The second section of my dissertation I analyse the basic questions of construing meaning in the assertions of the persons examined. The success of construing is fundamentally dependent on the adequate functioning of storage and access processes. The prominent symptom of the speech disorder of aphasia is exactly malfunction of these two processes, which reveal close connections with practice, entrenchment, and frequency. I examine in detail these features in the corpus available to me. Among problems of accessing I consider the phenomena of paraphasias and perseverations that are decisive factors of speech performance in aphasia. I trace the effects of frequency and entrenchment by examining phrases, conventional idioms, discourse-deictic expressions, verbs and nouns in the corpus examined.

Further, I analyse processes of categorization and schematization, which are necessary both for thinking as a mental process, both for construing meaning during communication. I understand categorization in terms of holistic approach (Bybee 2010; Croft – Cruse 2004; Evans – Green 2006; Geeraerts 2010; Lakoff 1987; Langacker 2005; Rosch 1978; Taylor 1991; Tolcsvai Nagy 2011; Tomasello 2002). I argue that basic categories as the foundation of categorization processes are as a rule not affected even in grave cases of aphasia. I examine the use of schemes during discourse in aphasia, focusing on features of static epistemic frameworks, of dynamic scenarios, and of conventionalized linguistic expressions.

The third section of the dissertation discusses basic questions of contextualization in aphasic discourse. Context is not only indispensable for understanding discourse and situation alone, but its components exert crucial influence on speech production. I understand context along the lines of Croft – Cruse 2004, Tátrai 2004, and 2011. A basic claim of pragmatically oriented research into aphasia and schools of aphasia-therapy is that people with aphasia

perform better in face to face communicational situation on account of the perceptible speech situation and as a result of the alternative means of self expression provided by the context present communicate easier than their state diagnosed would allow (e.g. Ahlsén 1985; Basso 2003; Carlomagno 1994; Cummings 2008; Hegyi 1995).

As communication is necessarily an interpersonal process, while examining the construction of context, I consider also questions of cooperation and coordination, since their appropriate functioning is a condition for producing relevant utterances. Successful communication is also dependent on observing rules of social intercourse and politeness. People with aphasia can be injured in this aspect following the most curious patterns, while some possess these capacities intact. I attempt at tracing these processes in the corpus examined. Further, I analyse the phenomenon of redundancy, which appears so ambiguous in aphasic speech production. A closer observation, however, enables us to see that it is governed by absolutely logical processes. The effects of immediate linguistic context, i.e. cotext on speech production in aphasia are also barely examined in research concerned with aphasia. Thus I devote a subchapter to disclose these effects and the disorder of coreference.

The presence of deixis in discourse is closely related to both verbal and non-verbal elements of the context. For a person with aphasia, the possibility of referring to elements of the context by means of deixis without being able to name the concrete references significantly facilitates communication. Further, the egocentric structure of deixis also assists successful verbal activity in aphasia. Use of deictic forms of expression, such as space, time, person, and discourse deixis, is considered as one of the best strategies of compensation in aphasic speech production. My analysis supports the claim that the effect of the application of deixis in the successful transmission of information is indeed measurable. A separate subchapter deals with non-verbal communication, a factor closely related to contextualization especially in aphasic speech production. Within this sphere, I focus on gesticulation. These are among the main factors that enable a person with speech disorder to participate adequately in a discourse by making relevant assertions.

4. Results

My analysis of the disorder of activation and retrieval frequency and practice reveals that in case of the patients examined these processes show more or less similar patterns in each type of aphasia. I establish that disorder of activation in a given speaker is not constant or homogenous but is heavily dependent on speech situation and the task assigned. Further,

adequate functioning of processes related to attention also decide whether speech production is successful. If we accept that aspects of attention include both conscious and unconscious processes, it becomes clear that the border between these two spheres is defined by the amount of mental effort.

As for paraphasia and perseveration, I have drawn the following conclusions:

- I explain perseveration by an irregular functioning of attention and memory processes, which appear to be closely related to the severity of aphasia but are independent of fluency;
- perseveration is largely dependent on whether the activation of the word concerned is conscious, but differently in each case;
- in my analysis I have distinguished between internal – which has occurred precedingly in the speech of the given patient -- and external perseveration – which comes from a person other than the speaker;
- conscious perseveration is, as a rule, a result of compensation, while the occurrences of unconscious perseveration escape the notice of persons with aphasia, even retrospectively;
- in case of paraphasia disorder can be viewed simply as a disorder of activation; instead of the adequate but inaccessible unit another is produced by the patient, governed by some rule – i.e. phonological, visual or semantic similarity – during speech.

My analysis of the characteristics of frequency and entrenchment has led to the following observations:

- in a global aphasia, the most entrenched units alone remain accessible;
- severity of aphasia is related to the preference of linguistic forms of higher frequency; the more severe the damage is, the more entrenched unit is produced;
- the time passed since the injury influences the effects of entrenchment and frequency, as the number of units accessible increases in comparison to a recent damage;
- speech production of both persons with aphasia and those recovered reveal a larger amount of units repeated than can be observed in the control-group;
- because of the easier activation process, utterance schema and phrases can be implemented more economically than units other than phraseme; this phenomenon is related to word frequency;
- discourse markers enable us to express a rich semantic content with little phonological and mental effort; thus their occurrence in aphasic speech is higher than in speech production of healthy people;
- exact specification of entities proves difficult for patients, thus they compensate with expressing basic level categories;
- I claim that disorder concerning categories and elements in categories, as well as the damage of visual and cognitive schemas can be explained in terms of mutual interference and complexity of the damages of the above mentioned verbal, non-verbal and other cognitive functions.

Examination of categorization processes yields the following results:

- elements frequent in utterances of a given person are either basic level categories or elements common in the social environment of the person or in the speech situation concerned;
- persons with aphasia prefer basic level and prototypical categorical elements as well as expressions that assume their reference value from the context given;
- aphasic persons use less compound verbs, i.e. verbs with preverbs than persons recovered, or members of the control-group;
- verbs used often are connected with their disease and activities related to it; or with everyday subjects;
- nouns – as linguistic elements prototypically signifying objects – occur with a greater variety, which can be explained in terms of the referentiality of the noun following the typical pattern;
- by consequence, nouns can be more easily processed than verb.

Aphasic communication can thus be characterized by the dominance of prototypical or basic level categorial elements, which dominance is reduced in proportion to the recovery of the person concerned.

The analysis of the schemas show that, for a patient with any type of aphasia, recognition of epistemic frameworks and scenarios appropriated in a not exclusively verbal way is easier than the production of idioms and proverbs coded verbally. Idioms and proverbs, defined by convention and culture, appear to be damaged even in aphasic patients with a slight injury. While the production and understanding of these elements is based solely on verbal memory and certain linguistic conventions, general categories support the activation of automatisms by virtue of their flexibility both in speech and during the execution of different actions. For people with aphasia, activation of idioms and proverbs fit into rigid categories is more difficult than actions, movements or utterances produced by will. Thus it appears that it is the forms appearing conventional on the individual level that assist speech production the most.

For a person with aphasia, each factor of the context is an indispensable point of reference during speech production and understanding. I advance arguments that the importance of context is increased in proportion to the gravity of aphasia. Redundancy proves closely related to context. I have found that that redundant parts in utterance composed of unconscious, i.e. mainly perseverated, elements and the occurrence of redundant parts in stead of applying coreference equally characterise aphasic speech production, while consciously applied redundancy is uncommon in aphasic utterances.

The context based interpersonal character of linguistic activity requires coordination of the discourse and cooperation of the partakers, which as a rule are achieved following the Cooperative and Politeness Principle. Working of Politeness Principle in aphasic linguistic

activity is quite peculiar; its damage often leads to misunderstanding in a discourse between two persons with aphasia.

Coreference is a function decided – among other factors – by context. I argue that partial inability to produce coreference is resulted from the fact that, for an aphasic person, redundancy facilitates speech from the phonological, syntactical, as well as from the semantic point of view. Although in speech situations persons with aphasia often apply options to diminish redundancy, when understanding and producing immediate context, it is increase of redundancy that assist successful utterance.

Questions of coreference and context are closely connected to deixis. By analysing the different types of deixis in the corpus given, I have found the following connections in the pattern of the damage of the deixis:

- both persons with aphasia and recovered from aphasia use a narrower variety of expressions than the control-group;
- utterances of aphasic patients show much larger diversity in this respect than people in the control-group;
- both persons with aphasia and recovered from aphasia prefer proximal demonstrative pronouns to distal ones;
- production of spatial and temporal relations physically not perceivable or previously not experienced is difficult in aphasia;
- ability to express the temporal aspect of events subsequent the speech event is increased with advancement of recovery process;
- disorder of spatial cognition, an accompanying symptom in aphasia narrow down the possibilities of expressing space verbally;
- persons with aphasia prefer prototypical, more entrenched elements to the less prototypical ones in the same category;
- difficulty of expressing spatial and temporal deictic elements is correlated to the gravity of aphasia;
- production of spatial, temporal, and personal relations is narrowed down in direct proportion to the gravity of aphasia;
- in their utterances, persons with aphasia prefer brief deictic references to detailed expositions;
- discourse deixis with gesture is one of the most effective verbal compensatory strategies;
- reference to the disease is as a rule achieved by discourse deixis without naming the disease;
- working of personal deixis is correlated to the measure of injury; the more extensive brain lesion is, the less amount of first personal singular pronoun is used by the patient;
- restricted access to proper nouns is compensated by using personal pronouns with gestures;
- erroneous activation of proper nouns as a rule is not accidental; persons observed exchange the target word by other proper nouns belonging to the context.

Thus I have found connection between the severity of aphasia and its accompanying symptoms on the one hand, and the chosen forms of spatial and temporal deixis. The results corroborate the evidence that elements learnt during early language acquisition, which are thus more entrenched and more frequently used, survive better even in severe aphasias than more complex linguistic units acquired later.

The last chapter of my dissertation I analyse nonverbal signals as indispensable means of contextualisation in aphasic linguistic activity. My analysis shows that only those cognitive faculties provide compensation strategies

- that are not in a direct contact with the verbal capacities damaged;
- that are conditioned by certain nonverbal cognitive capacities;
- the activation of which requires less effort than the activation of the least injured function;
- that are not in a direct contact with the damages nonverbal capacities (unlike speech rate and pause and, by patients with hemiplegia, some kinetic faculties);
- that are independent of working memory;
- that are connected to nonverbal, i.e. visual thinking.

Besides, I have considered it important to examine the adequacy of gestures with a view to the success of communication. My results appear to support the view that in aphasia it is not language of the patient that is damaged, since adequate gesticulation is a nonverbal means of expressing verbalised semantic content and is thus a visual manifestation of verbal thinking.

The use of gestures as a compensational strategy is proven by the fact that

- 90% of gestures are contextually adequate;
- fragmentary utterances become comprehensible when accompanied by gestures;
- gestures precede the respective utterances by some centiseconds in nearly every case;
- only ca. 2% of the utterances accompanied with gestures is incomprehensible;
- in each case examined inadequate gestures belong to inadequate utterances;
- My analysis corroborates the view that gestures can relatively safely make the ideas of the patients more or less comprehensible and thus contribute a great deal to the success of communication.

5. Summary

In my dissertation I have attempted at explaining some features of aphasic speech disorder from a functional point of view. Specifically, I have endeavoured to trace the characteristics of aphasic discourse – at least the aphasic discourse of the patients examined – in contextualization and construction of meaning. My basic assumption was that the goal of a person with aphasia during linguistic activity is exactly same as that of a healthy person, i.e. to produce utterances that are contextually adequate and relevant as far as the content is

concerned. Thus I have understood and explained aphasic speech production as an interpersonal process embedded into context and determined by social and cultural factors as well as individuals properties.

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