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Stem-, Spraak- en Taalpathologie

13th International Science of Aphasia Conference

Preface

Saturday, September 8, 2012
09:30 Cognitive Models of Naming
13:30 Contributed Papers I
14:30 Poster Session I
16:00 Contributed Papers II
17:00 Poster Session II

Sunday, September 9, 2012
09:30 Functional Neuroanatomy of Naming
11:45 Contributed Papers III
14:00 Contributed Papers IV
15:30 Open Access Publishing
17:00 Poster Session III

Monday, September 10, 2012
08:50 Treatment
11:00 Contributed Papers V
14:30 Excursion and Dinner

Tuesday, September 11, 2012
08:50 Recovery
11:45 Contributed Papers VI
13:45 Added value to assessment and intervention through technology

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**Broad Focus versus Narrow Focus in Turkish Broca’s Aphasia**

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**Introduction**

In Turkish, grammatical relations are expressed by morphological marking, and certain pragmatic-discourse functions (e.g., topic, focus, stress) are given by word order. The interaction between grammatical and pragmatic-discourse functions of word order influence sentence production in Turkish agrammatic aphasia. For example, Turkish agrammatic speakers have more problems producing sentences in **syntactically** derived order (object scrambling, subject and object relatives) than sentences in base subject-object-verb (SOV) order (Yarbay Duman et al., 2007, 2008). When the patients fail to produce the right order, they produce sentences in base order. Accordingly, the sentences the patients produce are not only simplified in terms of syntactic complexity but also limited in their pragmatic-discourse functions e.g. Turkish patients hardly topicalize the object (Yarbay Duman et al., 2007). The question arises whether the effect of the interaction between grammatical and pragmatic-discourse functions of word order is bi-directional. More specifically, this study investigates whether pragmatic-discourse structure impacts word order as well when sentences are comparable from a syntactic point of view.

In Turkish, accusative-case-marked objects can appear to the right (subject-adverb-object-verb) or left (subject-object-adverb-verb) of the manner adverbs (see Table 1). In both positions, the accusative-case-marked object is assumed to have been moved from its base position to another position in the sentence (e.g., Untak-Tarhan, 2006). When the adverb is on the left of the accusative-case-marked object, the object is moved from its base position to [spec, AspP] and gets its case at the moved position. When the adverb is on the right of the accusative-case-marked object, the object moves to a higher position, namely to [spec, vP]. The latter order (object-adverb) is called object shift, which takes place at the phonological level. Object shift is a prosodically motivated displacement in Turkish although the same operation takes place in syntax in Dutch, i.e. scrambling, in which the object is **in situ** in adverb-object order (see

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²Note that I do not use the term scrambling since scrambling in Turkish refers to derived OSV order.
e.g., Neeleman and Reinhart, 1998; Nakipoglu-Demiralp, 2004; Untak-Tarhan, 2006). If the accusative-case-marked object is at a non-basic position in both orders in Turkish and the position of the object is determined on the basis of prosody, it can be assumed that object-adverb order and adverb-object order are equally complex at the syntactic derivation level. Note that the height of the syntactic elements in the phrase structure does not affect sentence production in Turkish agrammatic aphasia (Yarbay Duman et. al., 2007).

**Table 1:** Sentence Types and Examples in the testing format [the parts expected from the patients are in brackets]

<table>
<thead>
<tr>
<th>Sentence Type</th>
<th>Object/Focus Shift</th>
<th>Discourse Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-Adv-Obj-V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bu adam oturarak kitabı okuyor ve bu adam ...</td>
<td>no</td>
<td>broad focus</td>
</tr>
<tr>
<td>This man sitting the book reads and this man ...</td>
<td>[expected: uzanarak gazeteyi okuyor]</td>
<td></td>
</tr>
<tr>
<td>S-Obj-Adv-V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bu adam kitabı oturarak okuyor ve bu adam ...</td>
<td>yes</td>
<td>narrow focus</td>
</tr>
<tr>
<td>This man the book sitting reads and this man ...</td>
<td>[expected: gazeteyi uzanarak okuyor]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

However, sentences with and without object shift differ regarding their discourse structure i.e. their focus domain are different. There is narrow focus in the Object-Adverb order i.e. the focus is on small constituents (Kahnemijipour, 2004): the object is out of the VP and it can host only new information at that position (Nakipoglu-Demiralp, 2004). There is broad focus in the Adverb-Object order i.e. the focus is on VP/vP/IP (Kahnemijipour, 2004; Untak-Tarhan, 2006): the manner adverb takes the object in its scope, contrastively focus the object and form a VP/IP focus.

Object shift in Dutch, a syntactic operation, has been shown to be difficult for Dutch agrammatic speakers (Bastiaanse, Koekkoek, van Zonneveld, 2003). In sentences with object shift, the patients either descrambled or omitted the object or the adverb. In experiment 1, when the focus was on the object, the patients omitted the adverbs. In experiment 2, when the focus was on the adverb, the patients deleted the objects. These data suggest that knowledge of pragmatics-discourse structure is in general intact in Broca’s aphasia, i.e., Dutch patients are sensitive to the given/new distinction and delete only given information as in line with topic/focus theory. Similar findings have been reported for Turkish patients i.e. they do not delete new information in a sentence (Yarbay Duman et. al., 2007).

There are no aphasiological hypotheses that take different types of focus domain into account, i.e., broad focus versus narrow focus. If the deficit is
an integration problem, as proposed in the Integration Problem Hypothesis (IPH: Yarbay Duman et. al., 2011), sentences with broad focus/no object shift are expected to be more difficult than sentences with narrow focus/object shift since translating broad focus information into a structure is predicted to require a more complex integration process, i.e., the patient has to keep focused and non-focused elements (e.g., the object, verb) together, while contrastively focusing a specific constituent (i.e. the object) in preverbal position.

**Methods**

**Subjects**

Three individuals with Broca’s aphasia were tested. The diagnoses were based on the Gülhane Aphasia Test (Tanridag, 1993) and the clinical judgments of a speech therapist. All the patients were at least seven months post onset of left CVA, except one of the patients who had had traumatic brain injury. All were right-handed, and suffered from right-hemiplegia at the time of testing. Ten non-brain-damaged Turkish speakers participated (and performed at ceiling) on the test.

**Materials**

The agrammatic speakers were presented with two pictures in which the same person is performing the same action with a different object (e.g., book-newspaper) and in a different manner (e.g., sitting-lying) (see Figure 1). There were two conditions: sentences with broad focus/no object shift and sentences with narrow focus/object shift (14 items in each). The experimenter read aloud a prompting sentence, followed by an incomplete sentence (see Table 1). The subject was asked to complete the final sentence in a similar way. All the adverbs were morphologically derived manner adverbs. Half of them were with a noun and the other half with adverb root.

*Figure 1: Example Picture-Set*
Results
Sentences with broad focus/no object shift (23.8% correct) were significantly more difficult to produce than sentences with narrow focus/object shift (61.9% correct; chi² = 10.94, df = 1, p < 0.01). In the sentences with broad focus/no object shift most errors were production of sentences with narrow focus/object shift (chi² = 10.92, df = 1, p < 0.001). There was no significant difference between production of adverbs with a verb and a noun root (chi² = 0.34, df = 1, p > 0.05).

Discussion
There are two major findings. First, as correctly predicted by the IPH, producing sentences with broad focus/no object shift is more difficult than producing sentences with narrow focus/object shift for Turkish agrammatic speakers. Second, when agrammatic speakers are unable to translate broad focus information into a structure, they prefer producing sentences with less complex discourse-structure i.e. narrow focus, which, in turn, results in an easier syntactic frame for them (object-manner adverb). Apparently, it is easier to keep focused and non-focused elements separately in a syntactic frame by using narrow focus. The data indicate that the patients’ ability to produce sentences is influenced by the type of discourse-structure, which impacts word order.

Crucially, the easier discourse structure and/or syntactic frame for the patients might differ per adverb type used. For example, temporal adverbs, unlike manner adverbs, characterize entire events and they reside mostly out of the VP ‘today she reads the book’, and they do not contrastively focus the element that follows them. This study used only manner adverbs whereas manner and temporal-adverbs were mixed in the Dutch study.

The overall findings complement previous studies on Turkish and Dutch in that knowledge of pragmatics-discourse structure is in general intact (e.g. Bastiaanse, Koekkoek, van Zonneveld, 2003; Yarbay Duman et al., 2007; this study), although the patients cannot always adequately translate discourse-information such as broad focus into a structure. Furthermore, aphasiological data support different linguistic analysis of object shift in Turkish and Dutch.

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