



## Time reference through verb inflection in Turkish agrammatic aphasia

Tuba Yarbay Duman \*, Roelien Bastiaanse

Department of Linguistics, Graduate School for Behavioral and Cognitive Neurosciences (BCN), University of Groningen, P.O. Box 716, 9700 AS Groningen, The Netherlands

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### ABSTRACT

This study tested the production of tensed finite verbs and participles referring to the past and future in agrammatic speakers of Turkish. The agrammatic speakers did not make more time reference errors in tensed verbs than in participles. This is interesting because tense in general cannot therefore be the main problem, since time reference for participles lacking tense inflection is as difficult as for verbs with tense inflection. Besides that, the past tense/perfect aspect was found to be more difficult to produce for the agrammatic speakers than the future tense/imperfect aspect. None of the current theories on agrammatic deficits can explain why reference to the past/perfect aspect is more difficult than reference to future/imperfect aspect, although a similar finding was reported for Dutch by Bastiaanse [Bastiaanse, R. (2008). Production of verbs in base-position by Dutch agrammatic speakers: Inflection versus finiteness. *Journal of Neurolinguistics*, 21, 104–119]. We present a remoteness model of time reference to account for the data.

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### 1. Introduction

Agrammatism is considered to be a clinical symptom of Broca's aphasia and is primarily characterized by omissions and/or substitutions of inflectional morphemes in constrained tasks and in spontaneous speech. Some verbal affixes have been shown to be particularly prone to impairment (e.g., Burchert, Swoboda-Moll, & de Bleser, 2005; Friedmann & Grodzinsky, 1997; Varlokosta et al., 2006; Wenzlaff & Clahsen, 2005). Various proposals across several languages have been made to capture the generalization of impaired and spared verbal inflections in agrammatic aphasia.

Several recent hypotheses share the specific assumption that the agreement inflection is preserved better than tense (T) inflection because the tense node (TP) is inaccessible to agrammatic speakers, while the agreement node is available (Friedmann & Grodzinsky, 1997: Tree Pruning Hypothesis (TPH) for Hebrew)<sup>1</sup> or because tense is underspecified (Wenzlaff & Clahsen, 2005: Tense Underspecification Hypothesis (TUH) for German). The difference between TPH and TUH is that Friedmann and Grodzinsky (1997) assume that the tense problem is purely syntactic in nature. The syntactic tree is pruned, tense is high in the tree, and therefore tense is impaired on the basis of its position. Wenzlaff and Clahsen (2004, 2005) also found that tense is impaired. However, they tested for grammatical mood as well. In German, mood is supposed to be part

of the tense node and it is relatively well-preserved, whereas tense itself is impaired. Therefore, the authors assume that it is not the syntactic category of tense per se nor its position in the tree that is the cause of the problem, but the characteristics of tense, that is, the interpretability of the features that are used for time reference. Burchert et al.'s data (2005): Tense Agreement Underspecification Hypothesis (TAUH) for German) support these views only partially. According to these authors, tense and agreement can be affected independently. In other words, only some agrammatic speakers have problems with tense, whereas others have problems with agreement. What these theories have in common is that they focus on the tense and agreement nodes in the syntactic tree.

Bastiaanse (2008), however, suggests another reason why tense could be impaired. In her study she found that not only is the past tense more difficult than the present tense, but that participles (P) in present perfect constructions (auxiliary + participle) (e.g., *de jongen heeft de brief geschreven*: Lit. 'the boy has the letter written') are more difficult than (uninflected) infinitives (modal + infinitive) (e.g., *de jongen kan de brief schrijven*: Lit. 'the boy can the letter write') for Dutch agrammatic speakers. Problems with past verb forms have previously been reported for Greek, not only for tense but also for the grammatical aspect. Stavrakaki and Kouvara (2003) showed that the past tense is more difficult than the present tense and that the past tense with the perfective aspect (*diava - s - a*: Lit. read-perfective-past-1sg, 'I read') is more difficult than the past tense with the imperfective aspect (*diava - z - a*: Lit. read - imperfective - past - 1sg, 'I was reading') in spontaneous speech. Poorer performance in the perfective compared to the imperfective aspect has also been reported by Nanousi, Masterson, Druks, and Atkinson (2006: for Greek). Taken together, these findings are in

\* Corresponding author. Fax: +31(0)50 363 6855.

E-mail address: [T.Yarbay.Duman@rug.nl](mailto:T.Yarbay.Duman@rug.nl) (T. Yarbay Duman).

<sup>1</sup> The TPH (Friedmann & Grodzinsky, 1997) follows Pollock (1989) in assuming that tense and agreement head their own projections and that the agreement node is lower than the tense node in the syntactic tree.

line with Wenzlaff and Clahsen's (2005) and Burchert et al.'s (2005) idea that, at least for some agrammatic speakers, it is not primarily the syntactic aspect of tense, i.e. its position in the tree, that is difficult.<sup>2</sup> These authors suggest that inflection of the verb – i.e. tense as a functional category – is underspecified. However, these theories cannot adequately explain the data obtained by Stavrakaki and Kouvava (2003), Nanousi et al. (2006) and Bastiaanse (2008), since underspecification as such neither accounts for the dissociation between different tenses nor predicts difficulties with grammatical aspect. According to Bastiaanse (2008), it is not only tense inflection on the finite verb that is affected, but time reference, particularly the past. This description does not allow for a possible discrepancy between two 'past' constructions, i.e. it cannot explain the clash between the perfective and imperfective aspects as such in agrammatic speech.

The outcomes of the studies of verb forms referring to different time lines – 'present, past and future' – are controversial, not only with respect to the production of the past but also future verb forms. Stavrakaki and Kouvava (2003) predict that agrammatic speakers make errors in past forms of tense and aspect but not in future verb forms. However, according to Varlokosta et al. (2006: for Greek), not only is the agrammatic speakers' performance for the perfective and imperfective aspect indistinguishable but future tense forms are themselves prone to errors.

These findings have raised several questions, two of which will be addressed in this study. The first is whether reference to the past by tensed verbs and participles is difficult for Turkish agrammatic speakers. The second is whether only reference to the past is difficult or whether reference to the future is affected as well. None of the theories (TPH, TUH, TAUH) mentioned above are relevant to time reference and none of the studies mentioned tested the past and future participles expressed by a specific verb inflection, that is, without a modal verb or an auxiliary, or in the absence of a tense morpheme.

In this study, the focus will be on the interpretational, i.e. the semantic correlates of tense, and participles lacking tense. Finite verbs in the past tense (perfect aspect) and future tense (imperfect aspect) and non-finite verbs that are past participles (perfect aspect) and future participles (imperfect aspect) will be introduced. We will show that neither the syntactic (i.e. tree position) nor the morphological correlates of tense and participle (i.e. the particular verb inflection which refers to a given time point) are relevant to the difficulties the agrammatic speakers have with some verb forms over others. Rather, reference to the past, by finite verbs and participles, is difficult for Turkish agrammatic speakers and therefore parallels the results of Dutch agrammatic speakers as reported by Bastiaanse (2008).

### 1.1. Linguistic background

Turkish is an agglutinating language with the base subject–object–verb (SOV) order. Example 1 is a main clause where the *finite verb* is in the past tense/perfect aspect (see 1a, –DI) and in the future tense/imperfect aspect (see 1b – EcEK). Example 2 is a subordinate clause where the non-finite *participle verb* expresses the past with a past participle/perfect aspect (see 2a, –DIK)<sup>3</sup> and the future with a future participle/imperfect aspect (see 2b, – EcEK). Participles in Turkish are not inflected for tense (Aygen, 2004; Hank-

amer & Knecht, 1976; Kornfilt, 2000). Past and future verb forms, and the present, are different in terms of their aspectual features – past tense expresses the perfect aspect that introduces 'a completed event', whereas the future expresses the imperfect aspect – 'not complete and not progressive'.<sup>4</sup> Accordingly, another relevant factor to the grammatical aspect is 'factivity'. Factive sentences are accepted to be epistemically non-modal because they assert the certainty and the full commitment of the speaker to the truth of the utterance (Lyons, 1977). Factivity is thus not reserved to the subordinate contexts under verbs such as *remember*, *regret*. Past verb forms are 'factive', they express 'certainty of an event' – the speaker states his/her certainty with regards to the completion of the event (temporal completedness). A non-temporal factor involved is the 'epistemic certainty', in which 'completed' events are marked for some tense or aspect markers in various languages (e.g., in those years only men could vote). Future verb forms are 'non-factive', they express only the implication of an event. In the examples below, all the verbs are inflected with first person singular agreement (1sg). All the objects in the examples below are in the absolute case.<sup>5</sup> The inflections introduced (–DI, –DIK, –EcEK) are all subject to morphophonemic rules.

(1) Finite		
a. Past tense/Perfect aspect (–DI)		
ben	etek	ütüle-di-m
I	the skirt	iron-perfect/past-1sg
'I have ironed the skirt'		
b. Future tense/Imperfect aspect (–EcEK)		
ben	etek	ütüle-(y)eceğ-im
I	the skirt	iron-future-1sg
'I will iron the skirt'		

(2) Non-finite			
a. Past participle/Perfect aspect (–DIK)			
ben-im	t <sub>i</sub>	ütüle-diğ-im	etek <sub>i</sub>
I-gen		iron-perfect/past-1sg	the skirt
'the skirt that I have ironed'			
b. Future participle/Imperfect aspect (–EcEK)			
ben-im	t <sub>i</sub>	ütüle-yeceğ-im	etek <sub>i</sub>
I-gen		iron-future-1sg	the skirt
'the skirt that I will iron'			

The subordinate clauses we tested (see 2) are structurally more complex than the main clauses. This is because the object has to follow the participle, which is achieved by overt syntactic movement of the object to the end of the clause, as the trace (t) co-indexed with the empty object in its base-position shows (Aygen, 2005; Kornfilt, 2000). Notice that inflections with a tense function (finite –DI, – EcEK) co-occur with nominative subjects in the main clauses (see 1a and b) whereas others (non-finite –DIK, –EcEK) accompany genitive subjects in the participle clauses with object relativization (see 2a and 2b). The genitive subject agrees in number and person with the verb.

These morphemes (–DIK, –DI, –EcEK) appear in complementary structures: –DIK and –EcEK as participles in the subordinate

<sup>2</sup> In several languages, aspect is assumed to be lower than tense in a syntactic tree (e.g., see Philippaki-Warbuton, 1998 for Greek; Aygen, 2004 for Turkish).

<sup>3</sup> The –DIK participle in Turkish can refer to the present or the past, depending on the context (e.g., benim su anda ütlediğim etek 'the skirt that I am ironing now' versus benim dün ütlediğim etek 'the skirt that I have ironed yesterday'). We call –DIK a past participle/perfect aspect morpheme since we test this morpheme in the presence of the adverb 'yesterday'.

<sup>4</sup> Turkish has no distinction between perfect and perfective aspect.

<sup>5</sup> Following the work of Erguvanli (1984) and Aygen (2004), among others, we assume that these bare objects are in the absolute case assigned as a default case. The fact that these objects can be scrambled under certain discourse settings (e.g., etek ben giyerim 'skirt, I wear') provides further empirical evidence against an analysis based on varieties of incorporation.

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