Tense, Aspect, Modality in Three Populations: Typically Developing Children, Children with Specific Language Impairment (SLI) and Individuals with Broca's Aphasia

Yarbay Duman, T.; Kurada, H.Z.; Topbaş, S.

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Tense, Aspect and Modality in Three Populations: Typically Developing Children, Children with Specific Language Impairment (SLI) and Individuals with Broca’s Aphasia
Tuba Yarbay Duman, Hazel Zeynep Kurada & Seyhun Topbaş

Introduction
The production and comprehension of finite verbs that are inflected for tense and aspect can be compromised in several language-impaired populations. In Broca’s aphasia, difficulty with tense and aspect is often regarded as a deficiency with past time reference (Yarbay Duman, 2009; Yarbay Duman et al., 2011; Bastiaanse et al., 2011). Although time-reference is mostly expressed through tense, it also highly interacts with aspect and modality in many languages. While tense presumes the concept of a temporal axis along which events are ordered with anteriority-posteriority relations with respect to a time-point, aspectual morphology informs about semantic distinctions regarding temporal characteristics like progression or completion of events (Aksu-Koç, 2006). Completion, for example, coincides with past tense since an event regarded as completed is, in general, anterior to the moment of speech or to some other point in time. Epistemic modality (the degree of certainty the speaker has with respect to her proposition- or her ‘modes of knowing’ in general) codes grammatical morphology used for Tense and Aspect. For example, in Turkish, the speaker uses simple past tense with perfective (rather than perfect) aspect to indicate certainty that an event has happened and that this event was witnessed by the speaker. Linguistic information on Tense, Aspect and Modality in a sentence needs to be integrated to indicate time-reference of an event since time reference is a semantic characteristic of a verb complex as a whole.

Yarbay Duman (2009) proposed the Integration Problem Hypothesis (IPH), stating that past time reference is more difficult than non-past time reference for agrammatic speakers because interpreting the temporal information in tense and aspect is more difficult for agrammatic speakers when there is certainty of past i.e. certainty that an event has happened or completed (see also Yarbay Duman et al., 2011). However, the IPH also predicts that integrating semantic information about aspect and morphosyntactic information about tense will be difficult for agrammatic speakers. Dragoy and Bastiaanse (2013) presented evidence from a Russian study supporting this hypothesis: in Broca’s aphasia, reference to the non-past (present imperfect and future imperfect) was better preserved than reference to the past (past imperfect). This non-past time advantage, however, disappeared for future perfect when a perfective Russian verb was used to refer to a future time.

1 Corresponding author. E-mail address: T.YarbayDuman@uva.nl (T. Yarbay Duman)
Although studies in Broca’s aphasia report that problems with tense and aspect extend beyond a pure morphosyntactic impairment, tense-related problems in SLI have primarily been characterized as a result of incomplete or optional feature specification of tense features within the functional category T/Infl (e.g., omission of finiteness markings and insensitivity to tense omissions in English) (Rice & Wexler 1996). Leonard and Deevy (2010) argued that aspect is not intact in children with SLI as these children have problems understanding completeness cues in past tense contexts compared to the present tense contexts. Our present study investigates whether tense in Turkish children with SLI is impaired as a functional category T/Infl or whether tense-related difficulties are by-products of an integration problem (such as that observed in Broca’s aphasia).

In typical development, children initially use aspect to mark tense before passing through four stages to acquire the tense/aspect/modality system of Turkish (Aksu-Koç, 2006): (1) differentiating static and ongoing events; (2) using –DI and –IYOR to comment on COMPLETED versus ONGOING events within the boundaries of the immediate present; (3) use of modal functions (e.g., –DI marks for certainty that an event has happened) and a past non-past distinction is made (non-past includes modal future) and (4) all tense/aspect/modality inflections are used to place events in time and to add perspective.

Methods

Participants

13 children with SLI (mean age 6.9, SD 1.1) and 23 age-matched TD children (mean age 6.5, SD 0.6) were tested. All the children with SLI were receiving speech therapy for their language impairment. They had nonverbal IQ scores within the average limits (mean 90, SD 8.7). Their scores on the standardized TOLD-P:4-Turkish (Topbaş & Güven, 2013) confirmed their inclusion in this study as SLI: 12 children performed 1.5 to 2 SD and 1 child 1SD below the normal mean range on the total spoken composite index and on speaking composite respectively.

Materials

The Test for Assessing Reference of Time (TART: Bastiaanse, Jonkers, & Thompson, 2008; Turkish version: Yarbay Duman & Bastiaanse, 2008) was used. The test involves sentence–picture matching in three conditions (Table 1): past tense/perfective aspect, present tense/imperfect aspect and future tense/ imperfect aspect. TART is a forced-choice task (Figure 1). The present tense picture was used as a foil in the future tense and the past tense conditions.

Results

A repeated measures ANOVA with Condition (present-past-future) as the within-participants variable and Group (SLI-TD) as the between-participants variable was run. There was a significant main effect for Condition ($F(1, 34) = 33.26, p < .001, \eta^2 = .50$) and Group ($F(1, 34) = 29.59, p < .001, \eta^2 = .47$) and a significant interaction between Condition and Group ($F(1, 24)= 7.93, p = .001, \eta^2 = .19$). In the SLI group, present tense comprehension was better than the past tense ($t(12)=-6.31, p <.001$) and future tense was better than the past tense ($t(12)=-$.
3.12, p = .009) but worse than the present tense (t(12)=3.17, p = .008). In the TD group, present tense comprehension was better than both the past tense (t(22)=3.77, p = .001) and the future tense (t(22)=4.64, p < .001). There was no significant difference between comprehension in the past and the future tenses (t(22)=-.86, p = .401).

**Discussion**

The first main finding is that tense-related problems in SLI do not stem from a deficit in functional category T/INFL since comprehension of tense/aspect forms that refer to the past, present and future are differentially impaired. The second main finding is that tense-related problems do not stem from a deficit merely in aspect (i.e. event completion: both present and future are ‘not complete’, but they are differentially impaired) or solely in past time reference (i.e. non-past is also affected: future is more difficult than the present), but stem from a problem with integrating aspectual and tense information to indicate time-reference of a sentence. Evidence for this comes from the difference between past and present on the one hand and future and present on the other.

Children with SLI are unable to acquire adequate information on modality functions of verb inflections and cannot use aspectual distinctions efficiently to build up their tense system (stage 3), which has repercussions for the development of the past non-past distinction, including the future. Interpretations of children with SLI might thus be often reflective of COMPLETION versus ONGOING distinction with reference to immediate present (here-and-now) information (e.g., saying ‘kağıt bitti’, paper over-past, while writing something: stage 2). This is in line with the double opposition between past & present and future & present, also confirming our assumption on modality.

The findings show a clear resemblance between SLI and Broca’s aphasia. In Broca’s aphasia, comprehension of past is also most difficult and future falls between past and present: worse than present (Bastiaanse et al., 2011, for comprehension) and better than past (Yarbay Duman & Bastiaanse, 2009, for production). The findings suggest that both populations have problems with the process of building a sentence, since linguistic functions of verb inflections cannot be efficiently integrated to indicate time-reference.

**References**


Table 1. The mean number (SD) and proportion of correctly identified sentences in each condition.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Example</th>
<th>SLI M (SD)</th>
<th>SLI Proportion</th>
<th>TD M (SD)</th>
<th>TD Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAST Tense/Perfective Aspect (Completed)</td>
<td>Adam süt-ü iç-ti (The man milk-acc drink-past/3sg)</td>
<td>12.15 (2.9)</td>
<td>0.61</td>
<td>17.56 (2.5)</td>
<td>0.89</td>
</tr>
<tr>
<td>PRESENT Tense/Imperfect Aspect (Ongoing)</td>
<td>Adam süt-ü iç-iyor (The man milk-acc drink-present/3sg)</td>
<td>16.46 (2.5)</td>
<td>0.82</td>
<td>19.04 (1.3)</td>
<td>0.95</td>
</tr>
<tr>
<td>FUTURE Tense/Imperfect Aspect (Incomplete)</td>
<td>Adam süt-ü iç-ecek (The man milk-acc drink-future/3sg)</td>
<td>14.15 (3.2)</td>
<td>0.71</td>
<td>17.95 (2.0)</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Note. SLI= specific language impairment; TD= typically developing; M=mean; SD=standard deviation. All verb forms are regular in Turkish. Time reference morphemes are in italics.