

The Role of Linguistic and Conceptual Feature Properties in Native and Non-Native Processing and Memory

Previous research focusing on differences in memory of linguistic verbatim vs. content information suggests that memory of formal information (e.g., word order, grammatical voice) begins to decay rapidly shortly after processing (Garnham & Oakhill, 1996; Gurevich et al., 2010), while propositional meaning is more likely to be retained in the long-term memory. In addition, non-native (L2) speakers manifested better memory for formal aspects of language than native (L1) speakers (Sampaio & Konopka, 2013; Bordag et al., 2021).

In the present study, we explored and compared the processing and memory of features in the morphosyntactic domain. We investigated how differently salient *formal and conceptual properties* contribute to retention of grammatical information during reading. Empirically, we focused on the German number and tense features. Typically, differences in grammatical number also correspond to imageable conceptual differences in meaning. In generic contexts, however, generic singular marking refers to a whole class, and the morphosyntactic distinction between singular and plural does not correspond to meaning differences (see Table 1). In the German tense system (Table 2), similar (e.g., past in preterite and perfect) or different (e.g., present vs. preterite) temporal meanings can be expressed by similar or different formation types (analytically by affixation only vs. synthetically via auxiliaries).

Research Question: What is the role of conceptual and formal salience in processing and retention of morphosyntactic information (i.e., tense, number)? Is this different in native (L1) versus non-native (L2) processing?

Methods: 64 L1 German speakers and 64 L2 German learners (L1 Czech, B2-C1 proficiency) read single sentences that were repeated (12-16 intervening sentences) either identical or changed according to the experimental manipulations. Eye movements were tracked, and gaze durations measured and analyzed (mixed effects models).

Rationale: Participants' registering of grammatical changes (e.g., singular to plural, or preterite to perfect) should be reflected in longer fixation times at the changed regions compared to rereading an unaltered sentence, if they retained the grammatical/conceptual information from the first reading in memory.

Results (see also Figure 1): Non-native participants (L2) showed retention/registration effects (longer reading times in changed condition) only if the manipulation involved *salient formal changes* (affixation vs. analytic forms). No effects were observed for less prominent formal changes (i.e., affixation), irrespective of conceptual changes (e.g., number manipulation).

For native participants (L1), effects of retention were observed for grammatical changes that were related to imageable *conceptual differences* (e.g., specific readings in the number manipulation), or if both *prominent formal and conceptual changes* were involved at the same time (present↔perfect). Non-imageable alternations of tense that were not accompanied by salient formal changes were not registered (present↔preterite).

We conclude that formal aspects of grammatical features play a pivotal role for information processing and retention in L2. In L1, the impact of formal aspects on retention is less pronounced and comes into play only if it is accompanied by salient conceptual (functional) changes.

	Contrast in Meaning	Contrast in Formation	Examples
Specific	salient	similar	<i>Das Schwein wurde</i> beim Transport am Bauch verletzt. <i>Die Schweine wurden</i> beim Transport am Bauch verletzt. 'The pig/pigs was/were injured in the abdomen during transport.'
Generic	similar	similar	<i>Der Elefant wird</i> in vielen Ländern immer noch illegal gejagt. <i>Die Elefanten werden</i> in vielen Ländern immer noch illegal gejagt. 'The elephant/elephants is/are still hunted illegally in many countries.'

Table 1. Number Alternation: Examples

	Meaning	Formation	Examples
Present ↓ Perfect	different (present/ past)	different	<i>Der Chemiker vermischt vorsichtig die beiden Substanzen.</i> <i>Der Chemiker hat vorsichtig die beiden Substanzen vermischt.</i> 'The chemist carefully mixes / mixed the two substances.'
Present ↓ Preterite	different (present/ past)	similar	<i>Der Mechaniker lagert die Ersatzteile in der Garage.</i> <i>Der Mechaniker lagerte die Ersatzteile in der Garage.</i> 'The mechanic stores / stored the spare parts in the garage.'
Preterite ↓ Perfect	similar (past)	different	<i>Der Dirigent eröffnete das Dorffest mit einer Rede.</i> <i>Der Dirigent hat das Dorffest mit einer Rede eröffnet.</i> 'The conductor opened/opened the village festival with a speech.'

Table 2. Tense Alternation: Examples

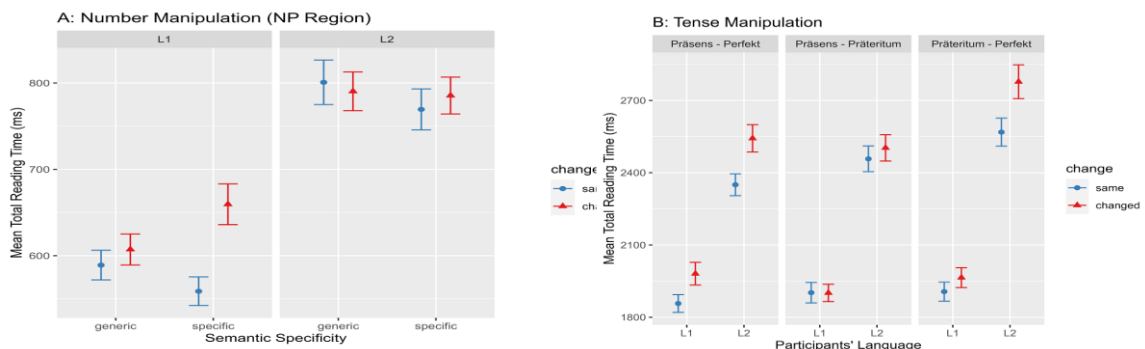


Figure 1. Results. Mean Reading Times for Critical Regions in the Number (A, left) and Tense (B, right) Manipulation

References

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