Session 2: *„You reap what you sow"*

A group of sentence processing researchers investigate the processing of temporarily ambiguous English sentences in native German L2 learners of English. In a self-paced reading study, a sample of 40 native speakers of German read 12 temporarily ambiguous garden-path sentences such as (1a) below:

(1a)   *While the man hunted the deer ran into the wood.*[1]

When reading a sentence such as (1a) from left to right, the noun phrase *the deer* initially looks like a direct object of the verb *hunted*. In reality, however, *the deer* is instead the subject of the upcoming main clause, while the subordinate verb *hunted* is used intransitively. If a readers already start to compute a representation of the syntactic structure of sentences well before they reach the end of the sentence, and initially activate an analysis in which *the deer* is considered the direct object of *hunted*, this should cause problems when they reach the main verb *ran*, simply because *ran* is a verb which requires a subject. If *the deer* has already been used as a direct object, however, there are no possible subjects for *ran* left. Sentences with a structure such as (1a) have therefore been extensively used in studies investigating the on-line computation of syntactic representations during reading.

As a control condition, the design contained 12 control sentences such as (1b), which are unambiguous, but possess an otherwise similar structure as (1a):

(1b)   *While the farmer fed the horse, the sheep ran into the forest.*

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[1]As a side note, an English teacher would probably tell you that, in order to avoid the ambiguity, sentences such as (1a) should include a comma after *hunted*, so that the ambiguity is ruled out from the very start, which makes things easier for the reader. However, at least according to the English comma rules, such a comma is technically optional. Also, in corpora, sentences with a structure such as in (1a) do show up without commas.

For both conditions, the authors measure reading times for the main clause verb *ran*, which constitutes the critical disambiguating segment in sentences such as (1a). A considerable number of previous studies on native speakers found a significant effect of ambiguity for such temporarily ambiguous sentences, with longer reading times for the disambiguating segment in temporarily ambiguous than in unambiguous control sentences. If syntactic processing in L2 speakers is similar to native processing in the sense that L2 speakers also already start computing a syntactic structure before they reach the end of the sentence, they should show a similar effect, again with slower reading times for ran in sentences such as (1a) than in (1b).

In addition to the 24 Experimental sentences, the participants also read 72 filler sentences with a variety of different structures, to conceal the true purpose of the study. The mean reading times for the critical disambiguating segment are shown in Figure 1:
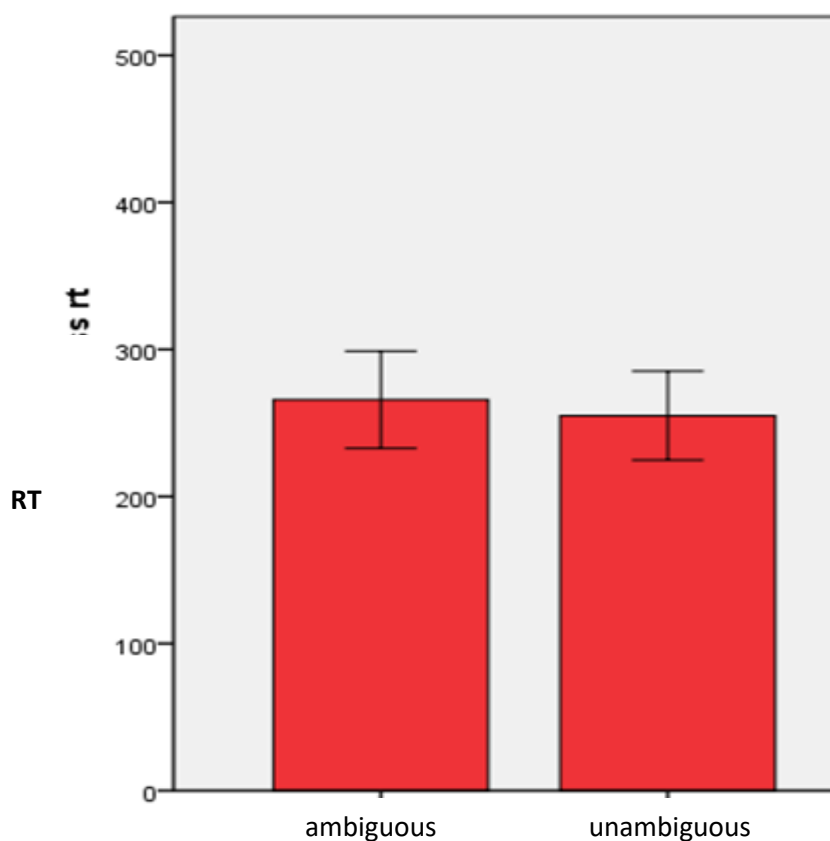

Figure 1. Mean reading times for the disambiguating main verb by condition.

As revealed by a linear-mixed effects model performed on log-transformed reading times in Table 1, the effect of ambiguity is non-significant.

Table 1. Fixed effects from linear-mixed effects model analysis.

	estimate	std. error	t	
intercept	6.575782	0.035603	184.697	***
Ambiguity (ambiguous vs. unambiguous)	-0.000403	-0.017362	-0.730	ns
Trial (centered)	-0.000145	-0.00005	-2.95	*

In contrast to previous studies on native English speakers, the L2 speakers in the present study showed no difference in reading times between the two conditions. The authors explain this through native-language influence: As German subordinate clauses are verb-final, German speakers may, when reading sentences such as (1a) from left to right, decide to close the subordinate clause immediately when they get to the verb *hunted*, and may thus go for the ultimately correct analysis straight away.

1) Check the Experimental design for potential confounding variables.

2) Are the key conclusions sufficiently justified by the data pattern and by the results from the statistical analyses?

3) How would you modify and/or extend the experimental design so that the study allows for conclusions about the research question?

4) In your extended Experimental design, which main effects and interactions would the inferential analysis have to contain? What does each of these main effects and interactions tell you with regard to research question?