

# Balance and Alignment in German Sentence Comprehension and Production

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Though it has been repeatedly shown that prosodic information is used to discriminate between different syntactic structures (e.g. Kjelgaard & Speer, 1999; Marslen-Wilson et al., 1992; Snedeker & Trueswell, 2003), recent studies suggest that prosodic cues are not exclusively informative with respect to disambiguation. In particular, prosody-inherent factors like balance (i.e. a tendency of grouping prosodic phrases into units of comparable size) have been shown to affect the production of ambiguous constructions (e.g. Fodor, 1998; 2002; Shaked, 2007). Moreover, prosodic balance has also been shown to guide interpretive preferences in *silent* sentence comprehension (e.g. Augurzky, 2008; see also Kentner, 2009, for an effect of rhythmic constraints on silent reading). The present study examines whether the demand for edge alignment of syntactic constituents (e.g. Selkirk, 2000; Truckenbrodt, 1999; Shaked, 2007) affects the production and the silent reading of German argument structure ambiguities, comparably to balance and rhythm, and whether different prosody-inherent factors interact.

In the first study, a production experiment, sentences as in (1) were recorded, in which the prepositional phrase *von der RichterIn* was either realized as a verbal argument as in (1a) or as part of a possessive construction as in (1b). Prosodic balance was held constant by using an uneven number of accented elements (i.e. a total of three accented words).

- (1) a. ✓ ... , dass der Fährer # von der RichterIn geschwáermt hat.  
... , *that the driver of/from the judge adored<sub>TRANS</sub> has*  
... , "that the driver adored the judge"
- b. ? ... , dass der Fährer # von der RichterIn geschwítzt hat.  
... , *that the driver of/from the judge sweated<sub>INTRANS</sub> has*  
... , "that the driver of the judge sweated"

In (1), the demand for left edge alignment of German prepositional phrases (Augurzky, 2006) forces a prosodic break between the first noun phrase and the following PP. This realization was shown to correlate with a transitive reading (1a), but is not compatible with intransitive constructions as in (1b) (e.g. Augurzky & Schlesewsky, 2007; Gollrad & Sommerfeld, 2008). Acoustic analyses suggest that speakers abide by the alignment constraint: A boundary following the first noun phrase was realized irrespective of verbal transitivity. By contrast, rather than referring to prosodic phrasing, argument structure was indicated by different prominence patterns (i.e. a weaker accent on the verb for the transitive condition). Interestingly, this deaccentuation pattern contrasts with former findings from prepositionless constructions, in which disambiguation was realized by boundary placement alone (e.g. Augurzky, 2008). The production results thus suggest an alternative disambiguation strategy caused by the decreased informativity of phrasing due to the need to obey the edge alignment constraint. A second production experiment showed that this prosodic pattern can be additionally modulated by prosodic balance.

In the third study, an off-line comprehension task, the silent reading of globally ambiguous sentences was examined. Clause-final verbs differed in their tendency to be interpreted as transitive (strong vs. weak tendency, as determined in an off-line rating pre-test), and participants had to choose one of the two possible readings. Results from this study indicate that the implicit-prosodic influence of balance on argument structure interpretation is superior to edge alignment: Though the alignment constraint should favor an early boundary and thus support a transitive bias across the board, interpretational preferences were solely constrained by prosodic balance.

In sum, the present results indicate that in German, prosody-inherent factors are able to constrain both argument structure production and comprehension.