The inflectional paradigm for the German strong determiner is one obvious renunciation of the standard view that meaning can be associated with one grammatical form: *den* is ambiguous between accusative masculine singular (ACC.MASC.SG) and dative plural (DAT.PL). The aim of our research is to test whether this collapse of grammatical forms impacts human language processing (cf. Opitz & Pechmann, 2014; Opitz, Regel, Müller, & Friederici, 2013; Penke, Janssen, & Ei- senbeiß, 2004).

Are multiple grammatical meanings mentally represented by one form? In order to approach this question, we posit that inflected word forms are represented in an underspecified fashion. Accordingly, syncretisms are captured by reducing redundant case, gender, and number features (cf. Blevins, 1995). The basic idea is that the human parser may make use of such features in cases of ambiguity by comparing features of already processed material with features of incrementally incoming words.

In an ERP experiment (with 22 participants), we investigated the feature matching mechanism of the built-up process of grammatical clause-medial nominal phrases across four conditions for the accidentally syncretic determiners *der* and *den* (see glosses in Figure 1 below):

a. *Gestern hat der Bäcker den Konditor gesehen.*

b. *Gestern hat der Kundin der Konditor geholfen.*

c. *Gestern hat den Bäcker der Konditor gesehen.*

d. *Gestern hat den Bäckern der Konditor geholfen.*

The parser’s behavior with its individual parsing steps for the structures (a-d) and the expected reanalyses are outlined in Figure 1 below. We predicted differing processing costs depending on the specification of determiner and noun with the noun in (d) eliciting the most pronounced effect for processing cost followed by the noun in (b) in comparison to the noun in (a): In particular, failing feature retrievals or feature incompatibility should lead to higher processing load. *Den* in (c & d) differs from *der* in (a & b) because *den* is incompatible with the expected subject’s (derived from the subject-first preference (SP)) [−OBJ, −OBL] specification. Determiner disambiguation occurs at the noun position. A costly feature retrieval should occur for *Kundin* relative to *Bäcker* since *Kundin* is radically underspecified (cf. Blevins, 1995; Opitz & Pechmann, 2014; 2016). Hence, the syntactic context has to be adjusted from NOM to DAT. *Bäckern* differs from *Bäcker* insofar as the former is incompatible with an ACC context. Hence, the syntactic context has to be adjusted from ACC to DAT.

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**Figure 1:** Parses of conditions (a-d). Circles: word input. Squares: associated features. Regular arrows: incremental parsing steps; integration of word input and then its features. Dashed arrows originating in one color and changing to another: input of the prediction’s deviant. Wavy arrows: reanalysis back to a point in the analysis where the incompatible specification occurred and which then has to be dismissed.
Electrophysiological data showed that processing costs occurred for *den* in (c & d) relative to *der* in (a & b) (N400, failing feature retrieval) because integration of *den* is effortful due to features that are incompatible with the initial subject preference. Rather unexpectedly, no positivity was found for *den* in comparison to *der*. For (a) no processing load was detected on the noun since its features are compatible to previously parsed material. In (b) the noun is assumed to carry no features resulting in a mismatch with the previously integrated features. This engendered a more pronounced effect for the feature matching mechanism (N400) and for adjusting the syntactic context from NOM to DAT (P600). In (c), the syntactic context has to be adjusted from NOM to ACC at the determiner. In comparison to that, (d) was more effortful than (c) at the noun due to failing feature retrieval and incompatibility which results in adopting a DAT analysis. Also unexpected was a negativity for the noun in (c) in comparison to (a). Curiously, the noun in (b) was harder to process than the one in (d) which can be seen in Figure 2. This leads to the proposal that *Kundin* may not only carry an incompatible [+F] feature but that the high number of failed feature retrievals severely affects processing.

Our study shows that the parser incrementally compares previously analyzed material with new incoming material and that fine-grained morpho-syntactic feature differences affect on-line processing. This is reflected in processing cost due to failed feature matching (N400) and revision of syntactic context (P600). The data provide new evidence that syncretisms are captured in inflectional system and that an underspecification approach is a good way to model its architecture.

**Figure 2**: ERP effects (n=22) observed at the noun position. NOM,MASC,SG; DAT,FEM,SG; ACC,MASC,SG; DAT,PL. The time window spans from 200 ms before noun-onset to 1200 ms after (onset at vertical bar). Negativity is plotted upwards.

### References


