

Is *Blume* singular or plural? Effects of L1 Dutch on L2 German plural processing

Bénédicte Grandon (Benedicte.Grandon@univ-nantes.fr)¹, Esther Ruigendijk²

¹Nantes Université & Laboratoire de Linguistique de Nantes, ²Oldenburg university & Cluster of Excellence Hearing4All

This study investigates how adult learners of German with Dutch L1 process plural markers in the L2 compared to L1 speakers. German has a complex noun plural marking system ranging from zero marking to one out of four possible suffixes (i.e., *-s/*, *-(ə)n/*, *-e/* and *-ə/*) which may occur alone or in combination with a stem-vowel alternation (i.e., umlaut). This results in a wide range of plural types with largely unpredictable selection [4]. This contrasts with the less complex Dutch system which is almost fully predictable as it comprises two main suffixes (i.e., *-s/* and *-ən/*) in near-complementary distribution [5]. In both languages, the stem's syllabic structure changes when combined with a syllabic suffix [2,3] and both exhibit a rule of word-final consonant devoicing [1,2]. Given these typological similarities and differences, how do learners with L1 Dutch process the more complex system of their L2 German: is there a benefit of the markers' familiarity (i.e., belonging to both the L1 and L2) and what happened with the less familiar markers (i.e., new in the L2)?

Adult speakers of L1 German (n=32) and L2 learners of German with Dutch as their L1 (n=32; B1 & lower: n=11, B2: n=17, C1-C2: n=3, Unknown: n=1) participated in a visual-world paradigm study using eye-tracking. Participants were asked to choose between two pictures depicting either one or two tokens of a referent for an orally presented target word (Table 1: 10 plural types x 8 items in plural and singular = 160 target items). Accuracy, Reaction times (RT) and gaze fixations (i.e., indicative of processing mechanism leading up to the decision) were analyzed using mixed-effects models (LMMs, GLMMs and GAMMs respectively).

Accuracy was overall higher for the L1 speakers (99.47%) than for the L2 learners (90.94%), $p < .001$. This between-group difference was also significant across plural types (Fig. 1.A), except for the *-s/* suffix (99.23% vs. 99.01%, $p = .76$). Learners identified each marker differently: with some plural types, they were highly accurate (above 90%) both for singulars and plurals, whereas Umlaut posed difficulties for both plural (67.86%) and singular (74.60%) forms. For the *-n/* suffix, accuracy was near ceiling for the plural forms (e.g., */blumən/ flowers*: 99.21%) but much lower for the singular forms (e.g., */blumə/ flower*: 67.46%). RT was shorter for the L1 speakers (Fig. 1.B) across plural types ($p < .001$), except for the *-s/* suffix ($p = .14$). Gaze fixation analyses revealed overall slower processing in learners (Fig. 2.A), again with no difference for *-s/* plurals (Fig. 2.B). Processing also improved with higher learner proficiency. Overall, the results indicate an influence of L1 Dutch in the identification and processing of plural forms: learners benefit from cues also available in Dutch plural formation (*-s/* suffix > resyllabification > *-n/suffix*), facilitating processing in the L2.

References

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Figures and Tables

Table 1: Plural types and number of differences between singular and plural forms

Number of differences Singular vs plural	Plural types	Examples (singular-plural pairs) With English translation
0	No change	Kissen-Kissen [kɪsən] - [kɪsən], <i>pillow</i>
1	Umlaut	Vogel-Vögel [fo:gəl] - [fø:gəl], <i>bird</i>
	-/s/ suffix	Auto-Autos [aʊto] - [aʊtos], <i>car</i>
	-/ə/ suffix	Tisch-Tische [tɪʃ] - [tɪʃə], <i>table</i>
	-/n/ suffix	Katze-Katzen [katʃə] - [katsən], <i>cat</i>
2	Umlaut + -/ə/ suffix	Ball-Bälle [bal] - [bɛlə], <i>ball</i>
	Umlaut + -/ɐ/ suffix	Schloss-Schlösser [ʃlɔs] - [ʃlœsɐ], <i>castle</i>
	Voiced stem-final C + /ə/ suffix	Pferd-Pferde [pʰɛʁt] - [pʰɛʁdə], <i>horse</i>
	Voiced stem-final C + /ɐ/ suffix	Kleid-Kleider [klaʔt] - [klaʔɐ], <i>dress</i>
3	Umlaut + Voiced stem-final C + /ə/ or /ɐ/	Wald-Wälder [va:lt] - [vɛ:ldɐ], <i>forest</i>

Figure 1: Accuracy (1.A) and RT (1.B) for each group and each plural type

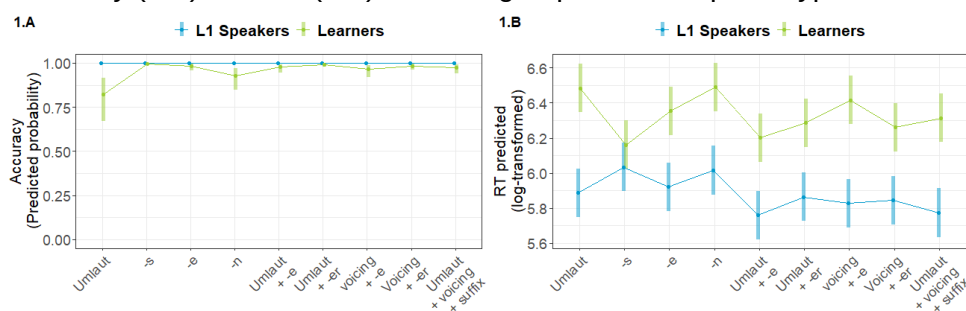


Figure 2: Difference in Gaze fixation towards target between L1 speakers and Learners for all plural types (2.A) and for the -s suffix (2.B) - 0-point: onset of singular-plural differences

