

## Dative Alternation in Norwegian: the effect of givenness and pronouns on RTs

Dative Alternation (DA) is found in a number of Germanic languages. The alternation consists of the language having two different structures for expressing ditransitive verbs; the double object dative (DOD, *Erik gave **the girl** a car*) in which the recipient precedes the theme, and the prepositional dative (PD, *Erik gave **the car** to the girl*) with the opposite object order.

The question of what determines the choice of structure in ditransitives has been a long standing one. Several studies on languages with dative alternation such as English and Danish, employing a variety of tasks measuring reaction times (RT), have found that the DA is affected by givenness. While the DOD is preferred when the recipient is given (placing given>new arguments), the PD does not seem to be sensitive to information structure (Brown, Savova, & Gibson, 2012; Clifton & Frazier, 2004; Kizach & Balling, 2013). The fact that both word orders are generally accepted suggests that this preference is due to information structure rather than grammaticality.

Norwegian has DA: *Erik ga **jenta** en bil-DOD, Erik ga **bilen** til jenta-PD*. The current study investigates the alternation between PD and DOD in order to test whether the same sensitivity to information structure can be found in the dative alternation in Norwegian. We ask: (i) To what extent are ditransitive structures that violate the given>new principle accepted as grammatical in Norwegian? (ii) Is this reflected in RTs as in Danish and English? And, (iii), how are violations of given>new perceived when the given object is realized by a pronominal object as opposed to a DP? We included pr-objects because of the strong connection between pronominality and givenness: only given objects may be expressed with pronouns (Gundel, Hedberg, & Zacharski, 1993). We predicted that pr-objects would result in faster RTs in pronoun>non-pronoun orders as these reinforce the given>new order. Otherwise, Norwegian was expected to behave like Danish and English.

We used a speeded grammaticality judgement task designed in Open Sesame (Mathôt, Schreij, & Theeuwes, 2012). All test sentences were preceded by a context introducing either the theme (1) or the recipient (2); given elements were expressed by definite DPs or pronouns, while new objects were realized by indefinite DPs. RTs were measured from when the test sentence (3a-h) appeared on the screen, and the participants had to rate the sentences as either “good” or “bad”. There were three dependent variables: the structure (PD vs. DOD), given object (theme vs. recipient), and the referring expression of the given object (DP vs. Pronoun), giving us a 2x2x2 (=8) matrix of target sentences for each example. There were 12 examples of each type, amounting to a total of 96 test items in the task: each participant saw only half of the test items. 26 native speakers of Norwegian participated in the task.

The results are summarised in Table 1. and reveal both similarities and differences with previous studies on other Germanic languages. Similarly to other studies, DODs appear to be more sensitive to information structure than PDs in Norwegian: items violating given>new are significantly slower than orders obeying this principle (p-value=0,0476 with linear mixed effects). However, our results also reveal a significant qualitative difference between two structures as theme-given DODs were consistently regarded as less acceptable (63% and 44%). The result of the logistic regression reveals that new>given orders have a lower acceptance ratio for both DP (p-value=2.81e<sup>-11</sup>) and pronominal objects (p-value=0.0041), but the interaction suggests a larger effect on the latter (p-value=4.62e<sup>-05</sup>). This is reflected also on the RTs as items with given themes were significantly slower to rate than items with given recipients for both DP objects (p-value=0.0018) and pronouns (p-value=0.0065).

Furthermore, our results suggest that the PD is not as contextually-independent as previously claimed as we find significant effects, for both qualitative and quantitative measures. The logistic regression revealed a higher acceptance ratio when the theme was given (p-value=0.00839). With regard to RTs, these were significantly slower with given recipients for

DPs (p-value=0.0181), while for pr-objects, only a marginal effect was found (p-value=0.052), but note that items with pronouns were overall slower.

Thus, DA in Norwegian is similar to other Germanic languages as the DOD is more contextually sensitive than the PD. However, two key differences emerge: First, there may also be a qualitative difference between the two structures as we found a surprisingly low acceptance ratio of DOD structures when the given>new principle was violated, especially when the given object was a pronoun (example 3e; acceptance: 44%). Second, the PD is also contextually sensitive, most clearly with DP objects. This entails that both structures are dependent on context, but we found that speakers perceive the PD as contextually appropriate more quickly than they do the DOD.

A relevant difference between the current study and previous investigations of DA is the inclusion of pr-objects. Our results suggest that these yield faster RTs within the DOD (as predicted) but has the opposite effect on the PD. A possible reason for this discrepancy is that the PD has generally been described as cognitively less complex because of the use of a PP to mark the recipient. Within the DOD the thematic roles are disambiguated based on their position only, and thus the presence of the pronominal object will speed up processing, precisely because givenness reliably predicts word order. Hence, not only context but also referring expressions influence how the speakers process the two alternates.

Structure	Realization of given objects	Recipient given (IO)		Theme given (DO)	
		RT (ms)	% Accepted	RT (ms)	% Accepted
DOD	Definite DP	3812	92 %	4480	63%
PD	Definite DP	3251	92%	2765	98%
DOD	Pronoun	2906	98%	3833	44%
PD	Pronoun	4176	73%	3563	95%

Table 1. Mean RTs and acceptance rates; the pragmatically felicitous conditions appear in shaded cells.

Examples – provided in English for convenience

- (1) Eric was cleaning out the fridge and found **an open can of tuna** in it. He was unsure whether **it** was good enough to eat, but he also didn't want to throw **it** away. -THEME GIVEN
- (2) Eric was woken up by **a cat** meowing under his balcony. **The cat** was small and cute, and Eric wanted to help **it** so... -RECIPIENT GIVEN
- (3) a. He gave a cat the tuna. / b. He gave the tuna to a cat. / c. The gave the cat tuna.  
 d. He gave tuna to the cat. / e. He gave a cat it. / f. He gave it to a cat.  
 g. He gave it tuna. / h. He gave tuna to it.

**References:** **Brown, M., Savova, V., & Gibson, E.** (2012). Syntax encodes information structure: Evidence from on-line reading comprehension. *Journal of Memory and Language*, 66(1), 194-209. doi:<http://dx.doi.org/10.1016/j.jml.2011.08.006>; **Clifton, C., & Frazier, L.** (2004). Should given information come before new? Yes and no. *Memory & Cognition*, 32(6), 886-895.; **Gundel, J. K., Hedberg, N., & Zacharski, R.** (1993). Cognitive status and the form of referring expressions in discourse. *Language*, 274-307.; **Kizach, J., & Balling, L. W.** (2013). Givenness, complexity, and the Danish dative alternation. *Memory & Cognition*, 41(8), 1159-1171. doi:10.3758/s13421-013-0336-3; **Mathôt, S., Schreij, D., & Theeuwes, J.** (2012). OpenSesame: An open-source, graphical experiment builder for the social sciences. *Behavior Research Methods*, 44 (2), 314-324.