

On the limits of shared syntactic representations:

When word order variation blocks priming between an artificial language and Dutch

Merel Muylle (Ghent University), Sarah Bernolet (University of Antwerp), Robert J. Hartsuiker
(Ghent University)

merel.muylle@ugent.be

In a recent study, we used an artificial language (AL) learning paradigm to investigate structural priming between languages in early phases of learning (Muylle, Bernolet, & Hartsuiker, 2020). The presence of such priming would indicate that syntactic representations are shared across these languages. The study found priming for transitives (active vs. passive) and ditransitives (DO vs. PO) between AL versions with either SVO (subject-verb-object) or SOV (subject-object-verb) word order and Dutch SVO sentences in L1 speakers of Dutch. Interestingly, there was no difference between the AL versions in the priming pattern of transitives, suggesting that differences in word order do not hinder the sharing of syntactic representations across languages. However, it is not clear whether this sharing would also take place if both the same and different word order existed in the AL. Behavioral learning studies have shown that learning the association between an unconditioned stimulus (e.g., a flashing light) and a conditioned stimulus (e.g., food for Pavlov's dog) becomes more difficult, when this unconditioned stimulus (i.e., the flashing light) is presented together with another unconditioned stimulus (e.g., a bell) that was already associated with the conditioned stimulus (i.e., the food). This phenomenon is referred to as the Kamin blocking effect (Kamin, 1969). It is possible that similar blocking mechanisms are also present in L2 acquisition processes. In other words, the presence of AL structures with SVO word order (which is the same as in Dutch) may block the learning of AL structures with SOV word order in L1 speakers of Dutch.

To study this hypothesis, Experiment 1 tested 48 L1 speakers of Dutch on an AL version that admitted both SVO and SOV order in transitive and ditransitive sentences (see Table 1 for examples and Figure 1 for the paradigm). We predicted that a) there would be structural priming within the AL, and b) the presence of SVO sentences in the AL would block priming to Dutch from SOV sentences, but not from SVO sentences. Surprisingly, no priming was observed between languages and even within the AL, there was only a very small significant effect for ditransitives (see Figure 2). Because the current experiment only differed from our previous study in two ways, there were two possible explanations why no priming was observed here. On the one hand, it might be more difficult to learn the AL syntax, because, in this experiment, there were no related conditions (i.e., priming with verb overlap), in contrast to Muylle et al. (2020). On the other hand, it is also possible that the presence of both word orders within the AL, instead of between two AL versions complicates the formation of AL representations in general. Moreover, the absence of cross-linguistic priming for ditransitives after one learning session was also observed by Muylle et al. (2020).

In order to find out which of the abovementioned differences can explain the absence of priming in the current study and to investigate further whether there are blocking effects in priming, we conducted Experiment 2, consisting of two sessions, in which we administered both related and unrelated priming conditions (i.e., with and without verb overlap) to another 48 participants. Here, we did find priming in most conditions and, as predicted, the effects were stronger for transitive SVO vs. SOV AL primes, both within the AL and from the AL to Dutch, in line with the blocking hypothesis (see Figure 3). This difference was not due to poorer learning of the SOV order, given that accuracy scores throughout learning were similar for both word orders. Finally, there were no significant differences in priming between the first and second learning session.

In conclusion, we found evidence for a blocking effect in the acquisition of AL structures with a word order that differs from their L1 counterparts because of the presence of AL structures with the same word order as L1. Furthermore, the finding that the inclusion of a verb overlap condition was crucial for the presence of priming in conditions without verb overlap suggests that experiencing lexically aided priming (i.e., lexical boost effects) can help in the formation of abstract syntactic representations and their integration with existing L1 representations.

Figure 1. Overview of the different learning blocks in the AL ("PP02") learning paradigm.

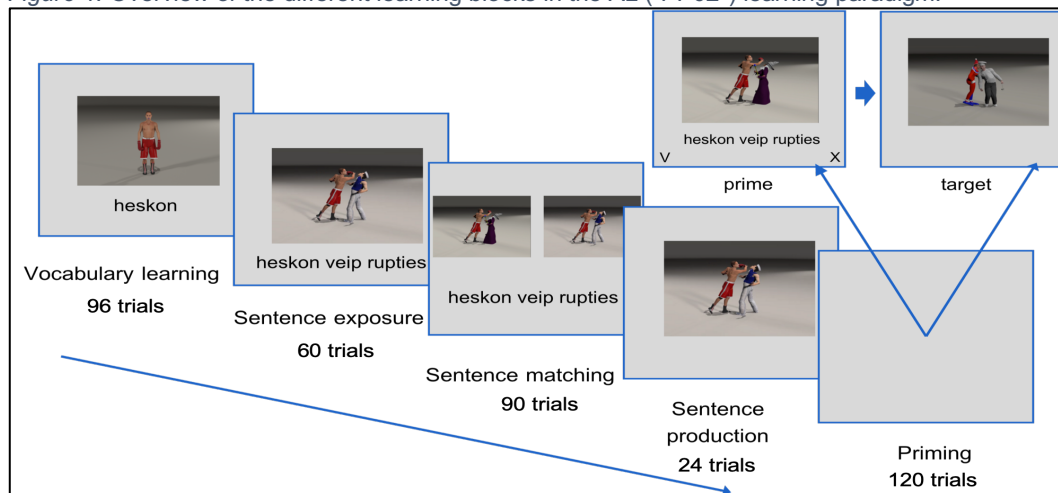


Figure 2. Structural priming in Experiment 1.

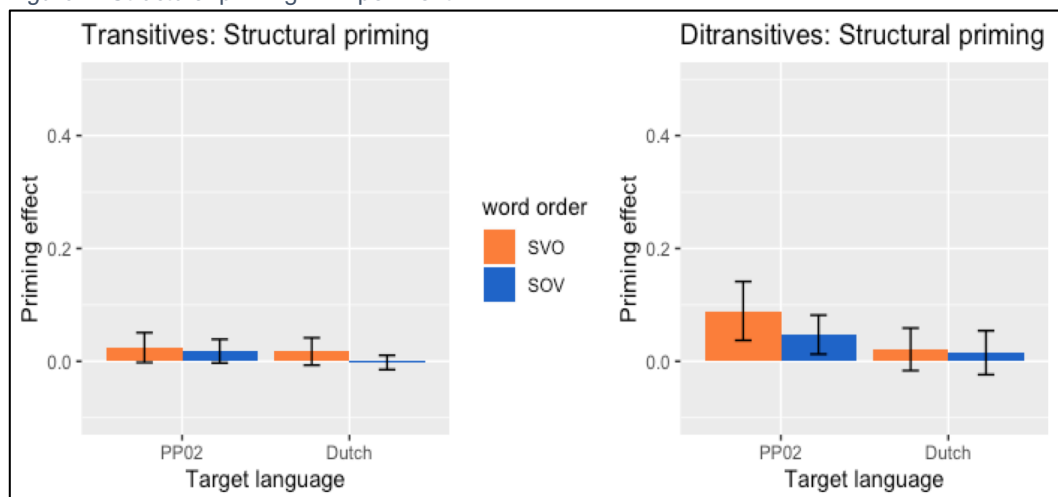
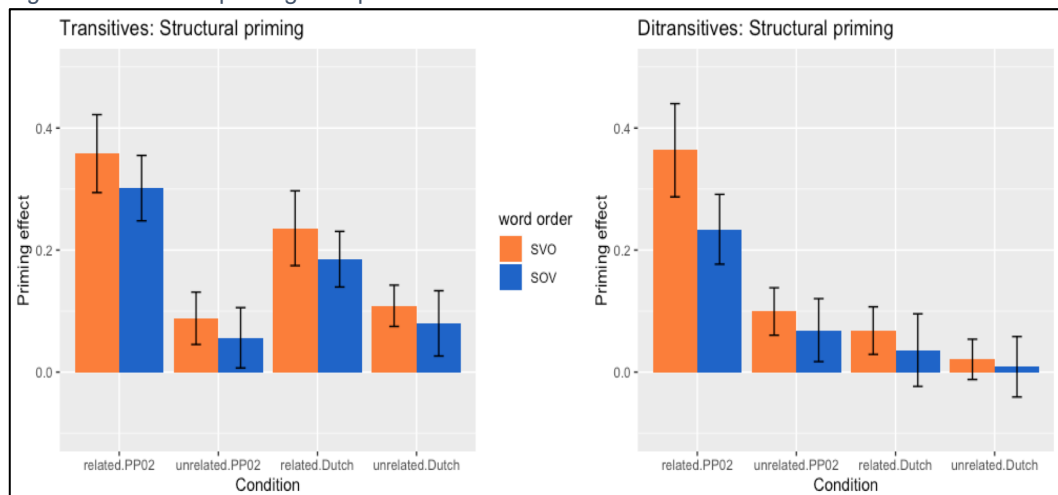


Figure 3. Structural priming in Experiment 2.



References

- Kamin, L. J. (1969). Predictability, surprise, attention and conditioning. *Punishment and Aversive Behavior*.
- Muylle, M., Bernolet, S., & Hartsuiker, R. J. (2020). The role of case marking and word order in cross-linguistic structural priming in late L2 acquisition. *Language Learning*, 70(S2), 194–220.

Table 1. Examples of each structure for both word orders in the AL ("PP02").

| | SVO | SOV | Dutch |
|--------------------------|---|---|---|
| Intransitive (filler) | Dettus jaltsi <i>Clown waves</i> | Dettus jaltsi <i>Clown waves</i> | De clown zwaait <i>The clown is waving</i> |
| Active | Dettus zwifsi fuipam <i>Clown kisses cook</i> | Dettus fuipam zwifsi <i>Clown cook kisses</i> | De clown kust de kok <i>The clown is kissing the cook</i> |
| Passive | Fuipam nast zwifo ka dettus <i>Cook is kissed by clown</i> | Fuipam ka dettus nast zwifo <i>Cook by clown is kissed</i> | De kok wordt gekust door de clown <i>The cook is being kissed by the clown</i> |
| DO-dative | Dettus heufsi fuipam sifuul <i>Clown gives cook hat</i> | Dettus fuipam sifuul heufsi <i>Clown cook hat gives</i> | De clown geeft de kok de hoed <i>The clown is giving the cook the hat</i> |
| PO-dative | Dettus heufsi sifuul bo fui- pam <i>Clown gives hat to cook</i> | Dettus sifuul bo fuipam heufsi <i>Clown hat to cook gives</i> | De clown geeft de hoed aan de kok <i>The clown is giving the hat to the cook.</i> |