

## Does implicit training lead to generalization? Evidence from an understudied construction

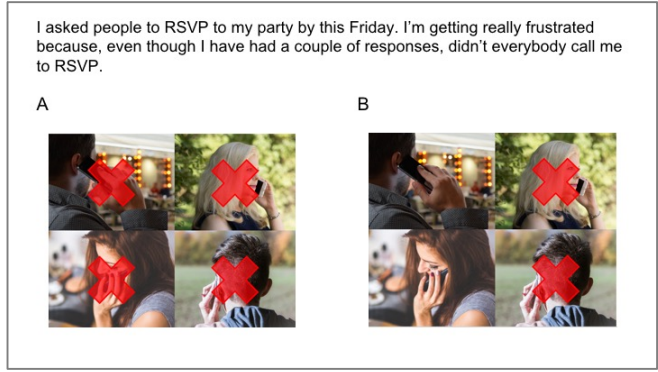
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This paper explores whether implicit training on a novel dialectal variant leads to generalization regarding its syntactic and semantic properties. Previous research shows that speakers process novel dialectal variants more easily following repeated exposure, leading researchers to hypothesize a shift to generalized knowledge, where sufficient linguistic cues are provided to facilitate generalization (Kaschak & Glenberg, 2004; Fraundorf & Jaeger, 2016). This paper probes this conclusion using the Negative Auxiliary Inversion (NAI) construction. These have the linear order of a yes-no question and the interpretation of a declarative (e.g., *didn't everybody eat*, with the meaning 'not everybody ate'; *didn't many people eat*, with the meaning 'not many people ate'), and are found in multiple vernacular varieties of English (Matyiku, 2011).

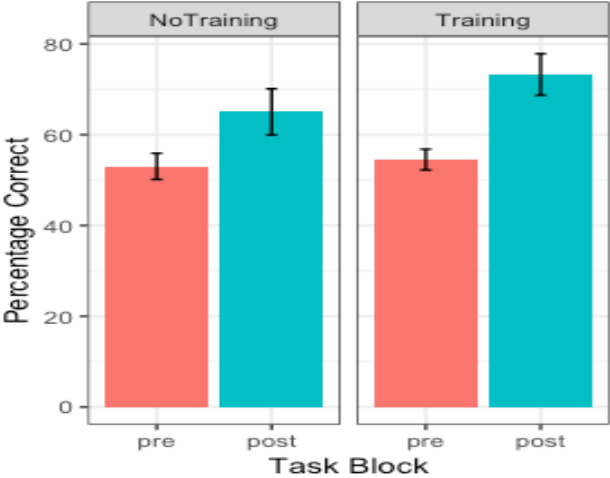
This study capitalizes on two properties of NAI. One is semantic: while sentences like *everybody didn't eat*, with a sentence-initial subject, are ambiguous between a wide scope every ('no one ate') and a wide scope negation reading ('not everybody ate'), NAI generates only the wide scope negation reading (Foreman, 1999). The other property is syntactic: NAIs are incompatible with certain subjects, including *few* (e.g. *\*didn't few people eat*). Native English speakers unfamiliar with NAI performed an interpretation task in which they had to select from two images depicting either a wide scope negation or a wide scope every interpretation of NAI sentences with *every* subjects (Fig. 1). The No Training Group ( $N=64$ ) received only a pre-training and a post-training block, in which the NAI sentences were presented in semantically ambiguous contexts. The Training Group ( $N=72$ ) received a training block mid-task, in which only the correct wide scope negation reading was possible based on the contexts provided. Following the interpretation task, a generalization task prompted participants to rate the naturalness of NAI sentences in wide scope negation and wide scope every contexts. Sentences containing acceptable *many* and unacceptable *few* subjects were also included, to test whether generalization extends to properties of NAI not previously encountered in the experiment.

**Interpretation Task Results.** The No Training and Training groups had similar rates of wide scope negation responses in the pre-training block (Fig. 2). Even though only one group received training, both groups displayed a reliable increase in target-like responses in the post-training block (Fig. 2). However, a marginal interaction between Group and Task Block suggests that training modulated post-training responses: Training group participants displayed greater improvement in the rate of wide scope negation responses post-training than their No Training counterparts. **Generalization Task Results.** Analyses of naturalness ratings revealed a marginal interaction between group and context type for the *every* subject items, with higher naturalness ratings for target-like wide scope negation contexts versus nontarget-like wide scope every contexts in the Training group only (Fig. 3). Both groups gave reliably higher ratings for *many* than for *few* sentences, with no independent effect of training (Fig. 3).

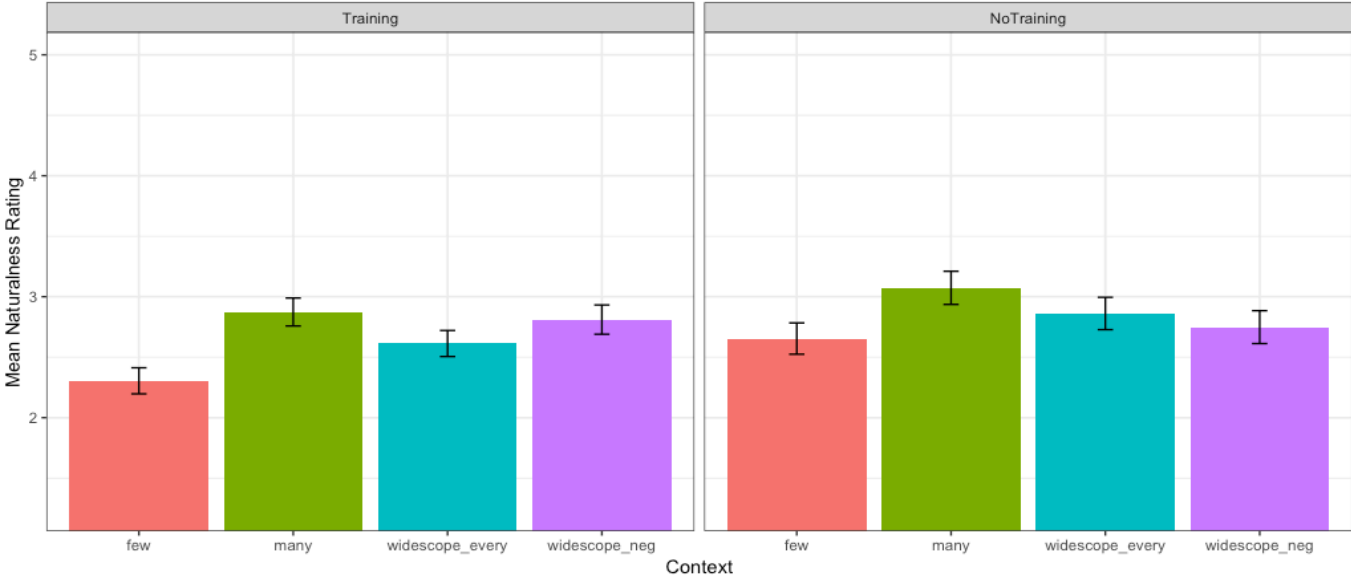
Taken together, these results reveal a more complex picture of how and what people learn about novel syntactic structures than previous work suggests. Even a brief period of exposure to the novel NAI construction (i.e., the No training group) led to more consistent (and target-like) interpretations of this construction, akin to previous research demonstrating rapid adaptation, as measured via processing speed, to novel dialectal variants (e.g., Kaschak & Glenberg, 2004; Fraundorf & Jaeger, 2016). However, additional exposure to unambiguous input via an implicit training block that supported only the wide scope negation reading (i.e., the Training group), had a positive impact on both the post-training interpretation responses and participants' ability to reliably distinguish target-like from nontarget-like contexts on the generalization task. Together, these results underscore that while some degree of learning can occur even via simple exposure to a novel dialectal variant, exposure to semantically unambiguous input that pushes participants to develop more target-like form-meaning connections may be necessary for fostering a deeper understanding of the linguistic constraints governing unfamiliar syntactic structures.



**Figure 1.** Sample Interpretation Task Item with Unambiguous Target Wide Scope Negation Reading (Training Block; presented to Training Group only; correct response: B)



**Figure 2.** Wide Scope Negation Response Rates by Group in the Pre- and Post-Training Blocks



**Figure 3.** Naturalness Ratings by Group for the NAI Items in the Generalization Task