Exposure to Plurals Can Help or Hurt Plural Production

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Research Question

Child language researchers have long sought to explain the "U-shaped" pattern of children's grammatical development. For example, after a brief period of using irregular plurals such as *mice*, many children go through a period of changing their production to *mouses*, demonstrating over-application of the regular plural *-s* rule. Recent work from a discriminative learning perspective has emphasized how the learning of inflectional morphology (and exceptions) depends on both positive and negative evidence (Baayen et al., 2011). Consistent with this perspective, Ramscar et al. (2013) found that massed exposure to regular plurals caused counterintuitive changes in the production of irregular plurals by children with typical development (TD). Children with TD early in the acquisition of irregular plurals learned from the exposure in a *positive* way, demonstrating an *increase* in overregularization of irregular plurals compared to a pretest. Older children with TD learned from the exposure in a *negative* way, demonstrating a *decrease* in overregularization. Importantly, both groups received the same exposure to regular plurals, suggesting that a child's learning from plurals in the input depends crucially on what the child currently knows.

This has important implications for children with developmental language disorder (DLD), who demonstrate much difficulty learning irregular plurals (e.g., Oetting & Rice, 1993). In the current study, we examined how exposure to plural nouns affects the production of irregular, zero, and regular plurals (e.g., *mice*, *deer*, *cats*) in children with DLD and with TD.

Method

Our participants included 20 four-to-five-year-old children with DLD and 20 age-matched children with TD. Children completed a pretest in which they named six images each of irregular, zero, and regular plurals. The children were then exposed to 96 images of regular plurals; half had appeared on the pretest. As a cover task, the children said whether those things were on the pretest but the words were not spoken. After this intervention, the children received a posttest identical to the pretest to examine the influence of the intervention on plural production.

We predicted that children with DLD would demonstrate less accuracy than children with TD. We therefore expected that the effect of the intervention for children with DLD would differ from that for children with TD because the effect of the intervention was shown to be dependent on the accuracy of production by Ramscar et al. (2013). We also expected that the intervention would have a positive effect on regular plurals and an effect on irregular and zero plurals that was dependent of children's knowledge of these plurals.

Analysis and Results

The accuracy of the children's production of plural nouns was analyzed in a mixed-effects logistic regression model. The results of the model are presented in Table 1 and Figure 1. We found better posttest than pretest performance for irregular and zero plurals despite the fact that the intervention consisted of regular plurals only, though the groups did not demonstrate different effects of the intervention as predicted. We also found that regular plurals demonstrated a decrease in accuracy from pre- to posttest for both groups.

Implications

The results were in part consistent with prior work in that posttest performance improved compared to pretest for irregular and zero plurals. However, the finding that regular plurals demonstrated a decrease in performance suggested that children were not just responding to the intervention but also to the words on the tests. This suggests that plural acquisition and processing depend on a complex mix of factors: the specific stimuli heard and seen, the

frequency of the stimuli in contrast to their frequency in the language as a whole, and the state of children's knowledge. These results also have important implications for the assessment and teaching of plurals in children with DLD.

Table 1. Statistical model results.

Effect	*df*	X^2	*p*
Group	1	4.83	.028 *
Test	1	0.17	.682
Type	2	33.04	<.001 ***
Freq	1	10.42	.001 ***
Group x Test	1	0.26	.608
Group x Type	2	18.43	<.001 ***
Test x Type	2	7.45	.024 *
Group x Test x Type	2	0.42	.813

Note. Random intercepts for participant and item were included. *p* values are based on likelihood ratio tests. Test = pre- or post-test; Type = irregular, zero, or regular plurals; Freq = log frequency of lemma in CHILDES; Group = TD or DLD.

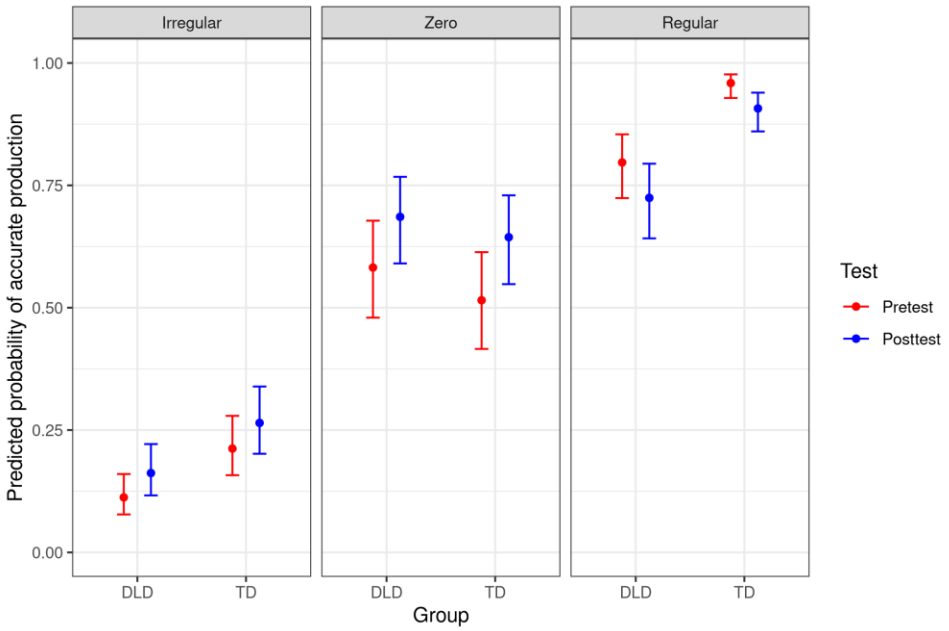

Figure 1. Model predictions for accurate production during pre- and posttest for regular, irregular, and zero plurals. Error bars are standard errors. The likelihood of correct production of each type of plural was significantly different from the others. The TD group demonstrated significantly more accuracy than the DLD group for all plural types except for zero plurals, where there was no significant group difference. The effect of test was significantly different between irregular and regular plurals and between zero and regular plurals, but not between irregular and zero plurals. Pretest accuracy was poorer than posttest accuracy for irregular and zero plurals but better for regular plurals. The effect of test did not significantly differ between groups.

References

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