# Not all are equal: On the Interaction between Substance, Locality and Amount of Exposure in the Acquisition of Morphophonemic Alternations

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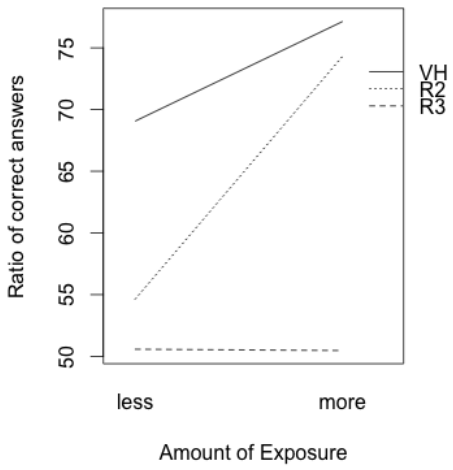
Morphophonemic alternations are among the central issues in phonology but little is known about their acquisition (2). We discuss what factors might influence their acquisition. Our focus is on the question what mechanisms are available to the learner; we investigated the degree to which learners rely on phonetic substance, locality and amount of exposure in the acquisition of alternations. We found that all factors influence the acquisition of alternations, but to a different degree. Current acquisition models do not take these factors into account although a growing amount of evidence shows the necessity of implementing them: An alternation that is grounded in phonetics – substantively motivated – is learned more easily than an alternation that is not (4; 5; 6). A local dependency is learned with the more ease than a non-local one (3). Also, amount of exposure is very important: An alternation the learner is exposed to frequently is learned with the more ease than an alternation that the learner is exposed to infrequently (1). With our experiment we provide evidence for the primary role of phonetic substance and the secondary role of locality and amount of exposure: A local, substantive alternation is easier than a local, non-substantive alternation. A non-local, non-substantive is even more difficult.

In order to investigate the mechanisms at work during the acquisition process we used the artificial language paradigm, which allowed us to carefully control our material. 120 German adult participants were exposed to singular and plural forms of an artificial language, where CVC words are singular forms and plural is formed by adding a morpheme consisting either of a front or a back vowel to the stem. The choice of the allomorph was dependent on a fully regular rule. However, the type of rule differed across experimental groups. There were 3 different rules, and each participant was exposed to items following only one of these rules. The first rule (VH) was a vowel harmony in which the choice of the plural morpheme was dependent on the backness of the stem vowel. VH is a local dependency and it is grounded in phonetics. In the second rule (R2) the choice of the same morpheme was dependent on the tenseness and length of the stem vowel. Contrary to VH this dependency is local but not phonetically grounded. In the third rule (R3) the choice of the morpheme was dependent on the sonorancy of the initial consonant. This dependency is neither local nor phonetically grounded.

40 participants have been exposed to one of these rules, respectively, half of them were presented with 50 % plural forms and the other half with fewer plural forms (25%). These conditions were created to investigate the influence of amount of exposure and to catch two different moments during the acquisition of the rule. After an exposure phase with strictly controlled number and type of items participants were presented with new CVC singular items and were asked for plural forms. We measured the ratio of their rule-appropriate answers, results are given in the figure below.




Results show that VH is learned best. Rule R2 is learned less well. After only little exposure, the local substantive alternation is generalized more than the local non-substantive alternation: Initially phonetic substance causes a boost in the acquisition process. Moreover, in the infrequent condition R2 learners of the local non-substantive dependency do not differ from R3 learners of the non-local non-substantive dependency: both still perform at chance level. R2 learners who have been exposed to more plural forms, however, then caught up and perform as good as participants from the VH condition. As a second factor the locality was crucial: R3 learners still failed completely. Overall, the amount of exposure plays a crucial role: The more often the plural forms are presented the better the learning effect.

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