Article Summary of Gallagher 2013: "Learning the Identity Effect as an Artificial Language: Bias and Generalization" Phonology 30: 253-295

In the present paper, Gallagher explores two artificial grammar models to determine which is better in distinguishing between identical and non-identical pairs, and if this distinction can be learned as a broad generalization of the identity effect. The identity effect is a phenomena that occurs in many languages where the phonotactic restrictions that exist for non-identical segments do not reside over identical segments. For example, the Bolivian Aymara language allows a word with either a single ejective or two ejectives that are identical to each other (ex. *p'ap'i*). However, two ejectives that are different cannot reside in the same word (ex. **p'eq'e*). The identity effect is autosegmentally represented as being doubly linked to two prosodic positions, and therefore operates as a single segment. This process avoids violating Obligatory Contour Principle (OCP) constraints.

The two models compared in this study are the baseline model and copying model. The baseline model does not have any representation for identity. Therefore, the identity effect must have specific constraints for each pair of segments that are unattested. This analysis bears two predictions. The first, is that the identity effect and an arbitrary pattern should be learned equally well. Secondly, the distinction between identical and non-identical pairs should not extend to novel forms. On the other hand, the copying model represents the identity effect and is learned as a single, general constraint for all pairs of non-identical segments. Unlike the predictions made by the baseline model, this one deems that the identity effect is more general compared to an arbitrary pattern, and also that it would extend to novel forms.

In order to test the predictions of the baseline and copying model, the author conducted two experiments. The first was designed to test how well an individual can learn the distinctions between identical and non-identical pairs of consonants compared to that of an arbitrary pattern. For example, a participant may expect an identical prompt and response to be paired together (e.g. [babu], [babu]) or a non-identical prompt and response pair (e.g. [badu], [batu]) in the identity condition. Whereas the segmental condition would involve a different pattern such that the consonants are paired like so: labial…coronal, coronal…dorsal, or dorsal…labial. The latter condition would also have an identical prompt and response pair (e.g. [badu], [badu]) or a non-identical prompt and response pair (i.e. [bagu], [baku]). The author found that participants learned the identity and segmental patterns, but the identity pattern was learned better. The results are consistent with the predictions of the copying model and suggest that the representation of the identity pattern allows the participant to make broader generalizations than the arbitrary pattern.

The second experiment was designed to test whether the distinction between identical and non-identical pairs would extend to novel identical and non-identical forms. It was found that participants do, in fact, learn a broad generalization and apply it to new items. As predicted by the copying model, the distinction can be learned when there is a direct reference to identity.

In conclusion, both experiments demonstrated that the copying model is the most successful in representing the identity effect in phonological generalizations. Gallagher has shown that using a model that represents identity allows for a greater distinction between identical and non-identical segments, therefore participants can make broader generalizations. Furthermore, unlike the baseline model, the identity effect pattern is learned better and can be extended to novel forms.