

The double identity of doubling: one language faculty, two channels

Does knowledge of language consist of abstract principles, or is it fully embodied in the sensorimotor system? Consider, for example, the ban on identical phonological elements (e.g., the two coronals in *dla*). Do such violate abstract grammatical rules (e.g., the OCP(1)) or are they avoided only because they are difficult to perceive and articulate(2)

To address this question, we investigate the double identity of doubling. Doubling (generally, XX, where X stands for a phonological constituent) presents a case of structural ambiguity. At the phonological level, doubling (e.g., *cocoa*) is encoded as repeated phonological elements, i.e., as phonological identity (XX). But when the same input is parsed as morphological reduplication (e.g., in the Ilocano word *hoe-hoe* ‘to paddle continuously’, from *hoe* ‘to paddle’), doubling is encoded as a single constituent, X, and its copy “X_c” (*hoe_c*, where subscript “c” stands for copy) (3), or generally, as XX_c.

These different parses each violates distinct constraints within the grammar (see Tableau 1). Phonological identity, XX, (e.g., *cocoa*) violates a putatively universal ban on identical elements (i.e., the Obligatory Contour Principle, OCP (1)) and consequently, phonological identity is worse formed than no-identity controls (e.g., *cocoa* < *copo*). Viewed as morphological reduplication (e.g., *hoe-hoe*), however, doubling is represented as a single constituent *hoe* and its copy (*hoe_c*) (3), akin to a person and her image in a mirror, so the phonological ban on identity is inapplicable. In fact, morphological reduplicative forms are superior to the non-reduplicative alternative (e.g., *hoe-po*) inasmuch as they add no new material to the base (i.e., in line with DEP (4)).

This analysis predicts that doubling preferences should *shift* depending on its level of analysis. Viewed as phonological identity, doubling should be disliked, but when parsed as morphological reduplication, the doubling aversion should turn into a preference. Our investigation tests this proposal.

In Exp.’s 1-4, participants were asked to make a forced choice between a matched pair of novel English words exhibiting either (partial) doubling (e.g., *slaflaf*) or no doubling (e.g., *slafmak*). Results showed that, when these words were presented in isolation, as pure phonological forms (in Exp. 1), people systematically disliked doubling (see Figure 1). But once doubling was presented as morphological plurality (by first pairing the base *slaf* with a single object, and next presenting *slafla* or *slafmak* as possible names for a homogeneous object set), the doubling aversion shifted in a reliably preference. Exp.’s 3-4 established that this shift *only* occurs when a morphological interpretation is viable. Specifically, we found no doubling preference when the base was omitted (in Exp. 3) or when the plural set was heterogeneous (in Exp. 4a), in violation of the conditions for semantic plurality. But once the morphological link between the base and doubling was re-introduced (by presenting them as names for an object vs. a homogeneous set), the doubling aversion turned into a preference (in Exp. 4b). Since the stimulus is unchanged, these conflicting preferences must reflect competing linguistic principles, rather than the sensorimotor demands imposed by the stimulus itself.

We next demonstrate that English speakers without experience in sign language spontaneously project these principles to novel signs in American Sign Language (ASL). The procedure closely followed Exp.’s 1-4, except the stimuli consisted of novel signs. Results showed that, when presented with signs as names for a single object (i.e., as purely phonological forms), people systematically disliked reduplicated (XX) signs compared to non-reduplicated (XY) controls (see Figure 2). But once doubling was presented as a morphological operation (by first pairing the base X along with a single object, and next eliciting a forced choice between XX and XY forms as names for a homogeneous object sets), the doubling disliked shifted into a reliable preference. Exp.’s 6-8 established that this shift only occurred when a morphological analysis was viable, as no doubling preference obtained when the base was paired with a heterogeneous object set (Exp. 6b; Exp. 8a), or when the base was removed (in Exp.’s 7a-7b). However, once the base was repaired with a homogeneous object set, the doubling preference reemerged (Exp. 8b).

Together, these results show that linguistic preference doubly-dissociate from the sensorimotor demands of linguistic stimuli. A single linguistic form can elicit contrasting preferences, depending on its level of analysis—the phonology vs. morphology. Yet, these preferences remain invariant despite radical changes to the sensorimotor characteristics of the input—from speech to sign. These results challenge the possibility that linguistic preferences are *directly* determined by the motor system. However, these findings are fully in line with intermediate view, where sensorimotor pressures shape the design of the system indirectly, in ontogeny and phylogeny, to favor the emergence of a “functionally sensible” system of abstract universal grammatical rules (5).

Tableau 1. Constraint violation at the phonological and morphological levels.

	Example	Structure	OCP	DEP
Phonology:	<i>cocoa</i>	XX	*	
	<i>copo</i>	XY	✓	
Morphology:	<i>hoe-hoe_c</i>	XX _c		✓
	<i>hoe-po</i>	XY		*

Figure 1. Doubling preferences for novel English words. Scatter plots present the reduplication responses of individual participants, columns indicate the means, and chance level is marked by the dotted line.

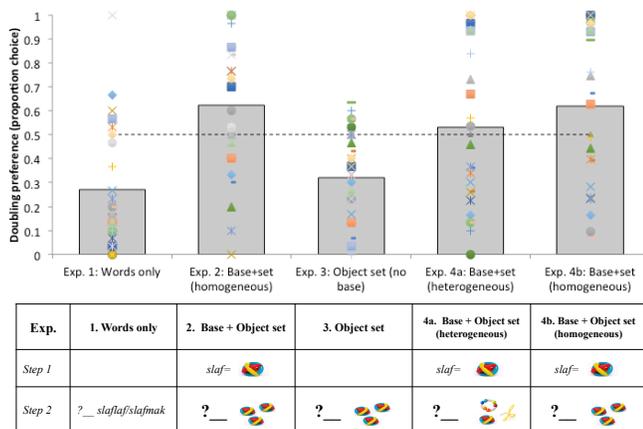
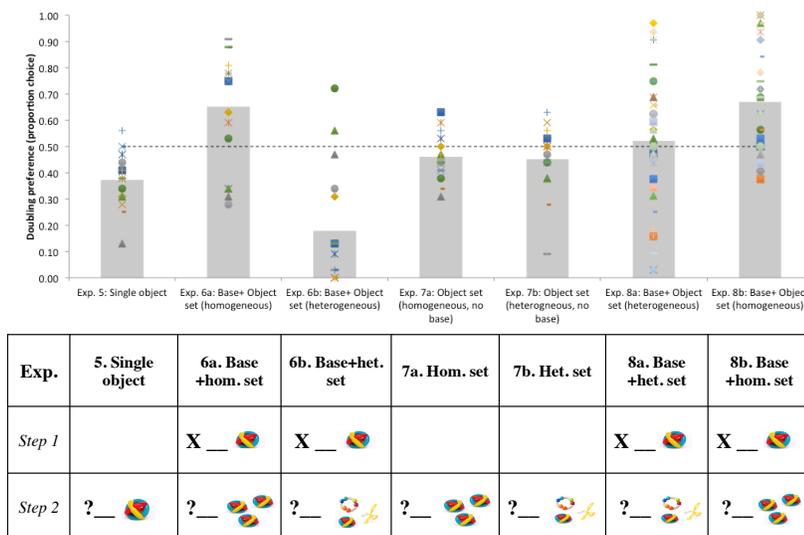


Figure 2. Doubling preferences for novel ASL signs. Scatter plots present the reduplication responses of individual participants, columns indicate the means, and chance level is marked by the dotted line.



References

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