

COMPOSITIONAL AND HOLISTIC REPRESENTATIONS IN MULTIWORD EXPRESSIONS

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Recent studies have found that multiword expression frequency modulates processing time, such that more frequent expressions are recognized faster [1]. This is consistent with usage-based theories which claim that frequent phrases may be explicitly represented as holistic chunks in addition to being built up from single words compositionally [2]. Here, we test this claim more directly in a training experiment. We use binomial expressions, phrases of the form “X and Y”. They can occur in two word orders, “X and Y” or “Y and X” (e.g., “alive and well”/“well and alive”), while maintaining the same words and formal semantic and syntactic structure. Previous research has shown that there are frequency effects in binomials for word order frequency [3]. In this experiment, we use both frequently attested expressions (such as “alive and well”), and completely novel expressions (such as “deposed and murdered”). Participants read the expressions in one order in a training phase, and later they read the expressions again in the same or different order.

Predictions: If both attested and novel expressions are represented only compositionally, then comprehenders should get a training benefit for the individual words within the expression, but not for the exact form (i.e., word order) of the expression. However, if attested expressions are also represented holistically, they should show a training benefit for exact form, but show less of a training benefit for the individual words within the expression.

Methods: 207 native English speakers participated in a self-paced reading experiment. In the first part of the experiment (training), subjects saw each binomial expression within sentence contexts either 3 times or not at all in the XY or YX order. In the second part of the experiment (testing), participants saw each binomial in a sentence context in the XY or YX order. We manipulated binomial type (novel vs. attested) and train order–test order match (match vs. mismatch vs. untrained). We analyzed per-word average residual reading times from the first word of the binomial through the penultimate word of the sentence for test sentences.

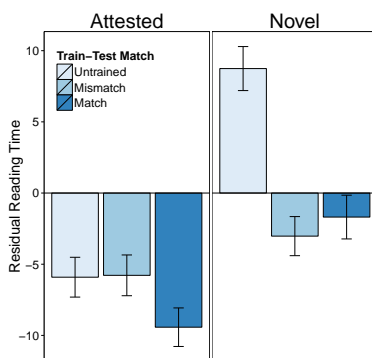


Figure 1: Residual RTs.

Results and Discussion: We found a binomial type x train-test match interaction ($p < .004$). 2x2 comparisons revealed that in novel expressions there was an RT advantage for both of the training conditions compared to the untrained condition, with no such advantage in attested expressions ($p < 0.04$). We also found a marginal interaction between type and the match and mismatch training conditions ($p = 0.073$). Pairwise comparisons revealed that within attested expressions, the match condition was read faster than the mismatch condition ($p = .057$), while there was no difference in novel expressions ($p = .9$). That attested expressions exhibit a word order-specific training benefit, but no overall training benefit, suggests that they are represented holistically on the basis of exact form.

Novel expressions show no word order-specific benefit but an overall training benefit, suggesting that they are represented compositionally without keeping track of exact form.

Conclusions: We show that highly frequent attested multiword expressions show a training benefit for exact form, but not an overall training benefit, while novel expressions show an overall training benefit, but no benefit for exact form. Comprehenders' ability to adapt their processing to within-experiment distributions for attested but not novel items suggests that attested expressions are stored holistically

[1] Arnon & Snider, JML 2010 [2] Bybee, Language 2006 [3] Siyanova-Chanturia et al., JEP:LMC 2011