

Associating speakers with their specific linguistic 'style'

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Speakers can recognize inter-speaker variability in various pragmatic phenomena (e.g., uncertainty expressions [1], or under-specification of adjectives [2]) and to adapt to the speakers' different preferences of language use, in cases where such distinctions facilitate the derivation of meaning from the utterances of a specific speaker. In this study, we asked whether speaker-specific learning can occur when the language use of different individuals does not entail different meanings, but instead is based on differences in stylistic preferences (see [3] for an account of syntactic-stylistic adaptation). We used the weak adjective ordering preferences in Hebrew (a post-nominal language, where adjectives appear after nouns) [4], such that choosing to use one order over another does not convey a meaning modification.

Methods Experiment 1: Native Hebrew speakers (N=60) took part in a learning paradigm consisted of an exposure phase, where one speaker used a certain order and the other a different order, and an explicit test phase that tested whether the participants learned these speaker-specific preferences. In the exposure phase, participants saw 96 images of shapes which had 3 distinctive visual features: size, color and pattern (Figure 1), and had to judge whether they matched an auditory description. In half of the cases, the descriptions matched the image, and in the other half, they did not. The adjective orders varied based on the speaker, in 3 between-subject conditions (the 3 combinations of the two most common orders (Noun-Size-Color-Pattern and Noun-Color-Size-Pattern), and the most deviant one (Noun-Pattern-Size-Color), based on [4]). The auditory descriptions were recorded by a male and a female to ease their discrimination. The characters always used the same adjective order in their 48 descriptions which were presented in 4 interleaved speaker blocks (pseudo-randomized and counter-balanced across participants and conditions). In the test phase, participants had to decide which speaker could have uttered 24 written three-adjective phrases, similar to those used in the exposure phase (Figure 2). Half of the descriptions included the adjective order used by one speaker and half included the order used by the other speaker, presented in a randomized sequence. Experiment 2: Native Hebrew speakers (N=20) took part in the same paradigm as in Experiment 1, but with a fourth condition in which both speakers produce less common orders [4], similar in form (Noun-Pattern-Size-Color and Noun-Size-Pattern-Color).

Results Participants who performed at above-chance level (as measured by individual-level binomial tests) were classified as 'learners'. Experiment 1: The conditions in which one common order was presented with the most deviant order (Noun-Size-Color-Pattern/Noun-Pattern-Size-Color & Noun-Color-Size-Pattern/Noun-Pattern-Size-Color) yielded substantially higher number of 'learners' (11/20 & 12/20, respectively; Figure 3) than the condition where the two common orders (Noun-Size-Color-Pattern/Noun-Color-Size-Pattern) were used (2/20; Figure 3). An equality of proportions test revealed that there were more successful learners in both conditions in which one of the speakers used the deviant order than in the condition in which both speakers produced a common order ($p < 0.01$). There was no significant difference between these two conditions ($p = 1$). Experiment 2: The condition in which both orders were uncommon but similar in form yielded higher Number of 'learners' (9/20) than the condition where the two common orders were used ($p = 0.03$).

Discussion When both speakers produced the most common adjective orders in Hebrew (with color, size and pattern adjectives), participants performed worse on the test phase than when a deviant order was included. This cannot be attributed to the similarity in form in these two orders, given the more successful learning in Experiment 2. The ability to distinguish between speaker-specific styles was enhanced when at least one of the speakers produced a deviant order. This suggests that listeners are better at detecting speaker-specific language use when such use deviates from common use, even when no change in meaning is associated with this variability. These results are in line with evidence regarding surprisal-driven learning [5], and can possibly indicate that entrainment to a speaker occurs beyond the lexical level [6].

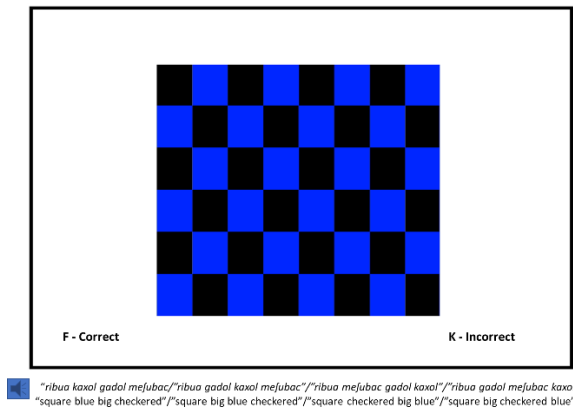


Figure 1. An example of a stimulus in the exposure phase. Each of the orders was produced either by Speaker A or by Speaker B. In half of the trials in the exposure phase the description and the image mismatched (one of the features was inappropriate for the image). Participants were required to press F if the description matched the image or K if it did not.

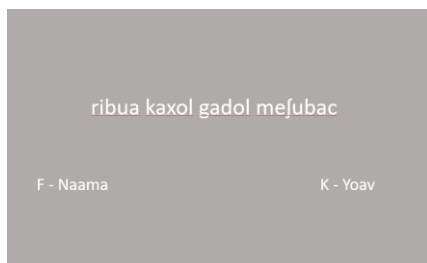


Figure 2. An example for a trial in the test phase. Participants were instructed to choose who of the speakers could have uttered the written descriptions. Originally, descriptions were presented in Hebrew with Hebrew letters. *Naama is a common female name and Yoav is a common male name and they are not used for both sexes.

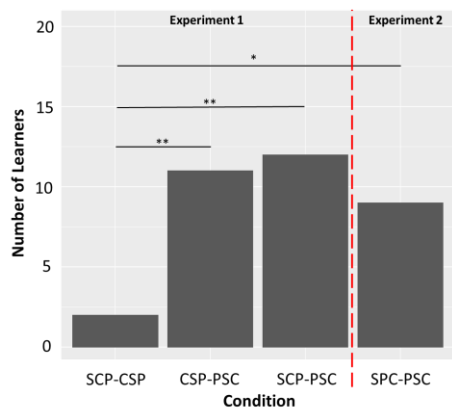


Figure 3. Correct answers on the test phase, by condition. SCP = Noun-Size-Color-Pattern; CSP = Noun-Color-Size-Pattern; PSC = Noun-Pattern-Color-Size, SPC = Noun-Size-Pattern-Color. SCP and CSP are the most common and natural adjective orders and PSC and SPC are uncommon. * $p < 0.05$; ** $p < 0.01$

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