



Birds and Words: Recall of Verbal Labels after Overlapping Stimulus Presentation

Orlexia Thomas and Anna Ingeborg Petursdottir

Texas Christian University

Introduction

The purpose of this study was to examine how exposure to contiguous presentation of spoken words and visual referents, as when a child is shown a novel object and told its name, may produce vocal object naming.

The Naming Hypothesis (Horne & Lowe, 1996), which is rooted in Skinner's (1957) analysis of verbal behavior, posits that overt or covert repetition (echoing) of the spoken object name while looking at the visual referent during word-referent exposure may produce stimulus control by the object over the child's vocal production of the name.

The Naming Hypothesis predicts a greater effect of contiguous stimulus presentation on vocal naming if the child has an opportunity to continue looking at the visual object after the spoken name is presented. As a result, there should be an advantage to hearing the spoken name before the visual object is presented (enabling an echoic response while looking at the object), relative to hearing the spoken name only after the visual stimulus has disappeared.

Data from two recent experiments (Petursdottir, Neaves, & Thomas, in preparation) suggest that, in fact, the order of stimulus presentation does not impact children's subsequent vocal naming performance. A limitation of these experiments, however, is that the computer screen was always blank while the spoken name was being presented. This sometimes caused the participants to look away from the screen, which in the name-first condition may have caused them to sometimes miss or partly miss the presentation of the visual stimulus, biasing the results against that condition.

The present experiments replicated the first experiment by Petursdottir et al. (in preparation) with the same stimuli (pictures of birds and their English species names) but a slight procedural modification: Instead of sequential stimulus presentation, the presentation of spoken names and visual stimuli overlapped. In the word-first condition, a bird image and its spoken name were presented simultaneously and the bird then remained on the screen for the participant to view. In the bird-first condition, the bird was first presented by itself and then disappeared off the screen as soon as the spoken word had been presented.

Method

Participants. Participants were four typically developing children between the ages of 3 years, 10 months and 5 years, 8 months. The investigators met with the participants either in home or preschool settings.

Procedure. Visual stimuli were six sets of images of birds; each set included four training stimuli representing four different bird species, and eight generalization stimuli (see Figure 1). Three stimulus sets were randomly assigned to each of two conditions, bird-first and word-first (see Figure 2). Effects on bird naming were evaluated in an alternating-treatments design such that participants received three exposure sessions in each condition. Each exposure session lasted 20 trials and was followed by a 16-trial naming test that included both training and generalization stimuli (see Figure 3).

SET 6: TRAINING STIMULI



Dark-eyed Junco ("Junco")



Bells Vireo



Horned Lark



Pine siskin

SET 6: GENERALIZATION STIMULI

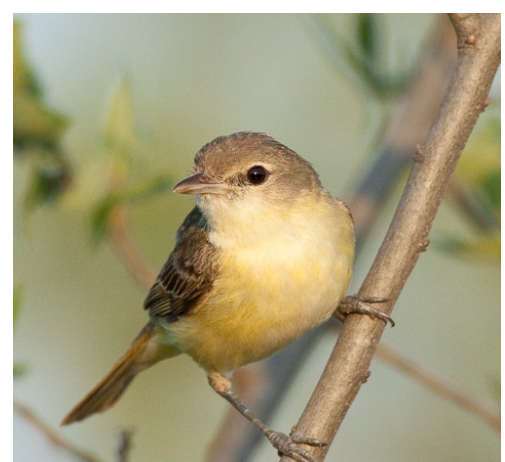
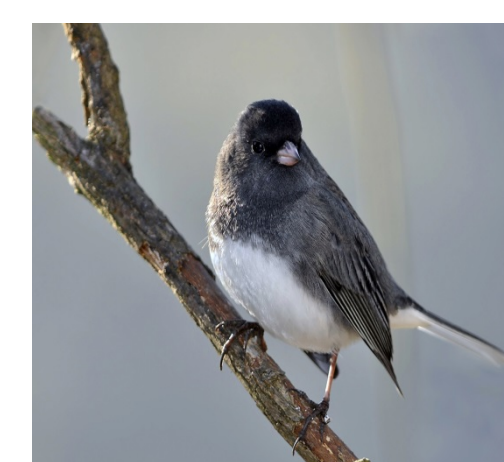
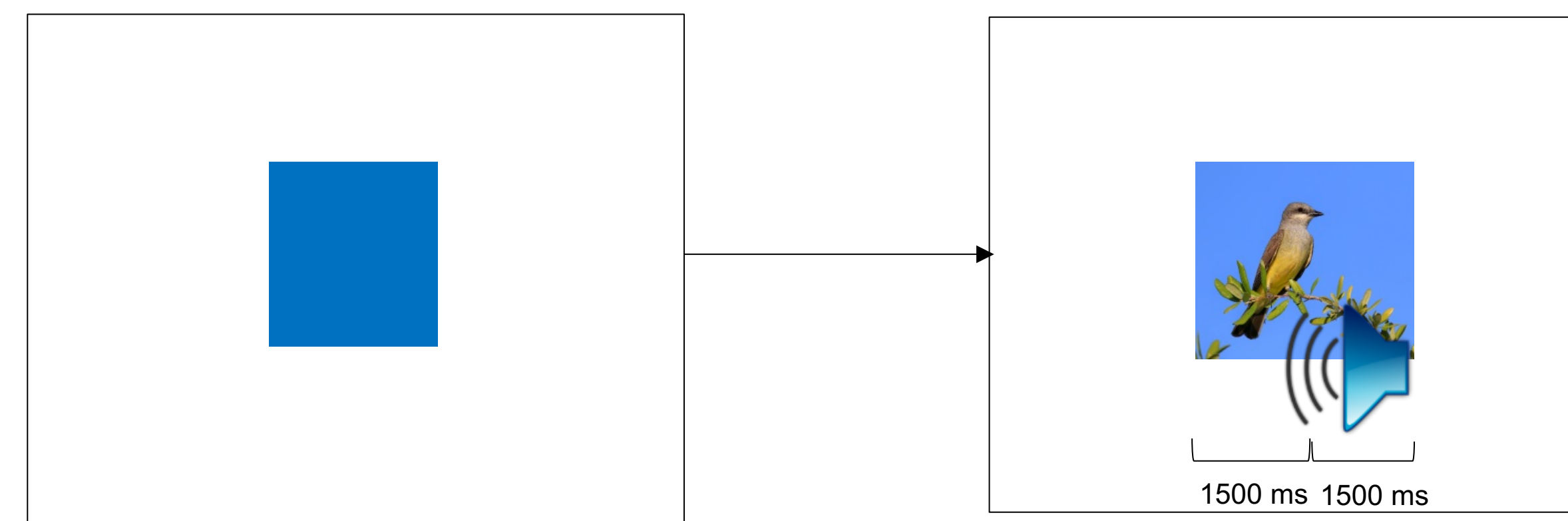


Figure 1. The figure shows one of the six stimulus sets used in the experiment. The top row shows the training stimuli, along with the birds' names. The bottom two rows show generalization stimuli. [Image source: www.shutterstock.com]

BIRD-FIRST EXPOSURE TRIAL



WORD-FIRST EXPOSURE TRIAL

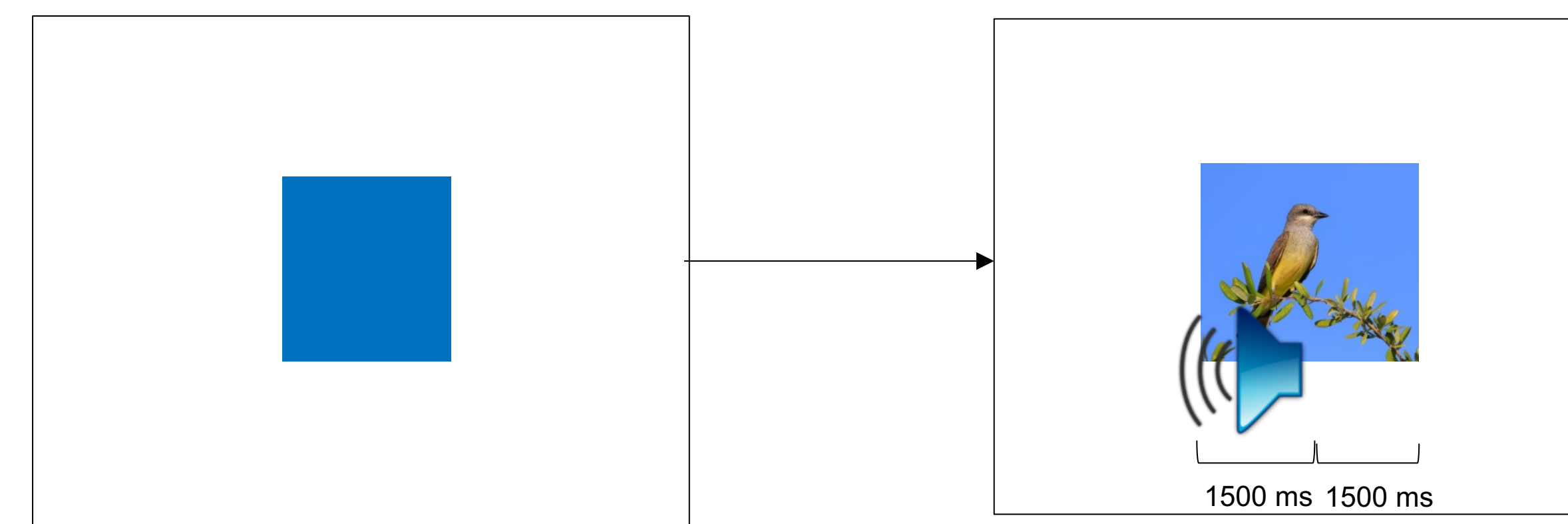


Figure 2. An exposure trial started when the participant made a trial-initiation response. In each bird-first trial, the trial-initiation response produced a bird image. After 1500 ms, an audio recording was played of a female voice producing the bird name. The bird image disappeared off the screen simultaneously with the offset of the auditory stimulus. In a word-first trial, the trial initiation-response simultaneously produced the bird image and the audio recording, following which the bird image remained on the screen for 1500 ms. In both conditions, a 3-s intertrial interval followed before the participant had an opportunity to initiate the next trial.

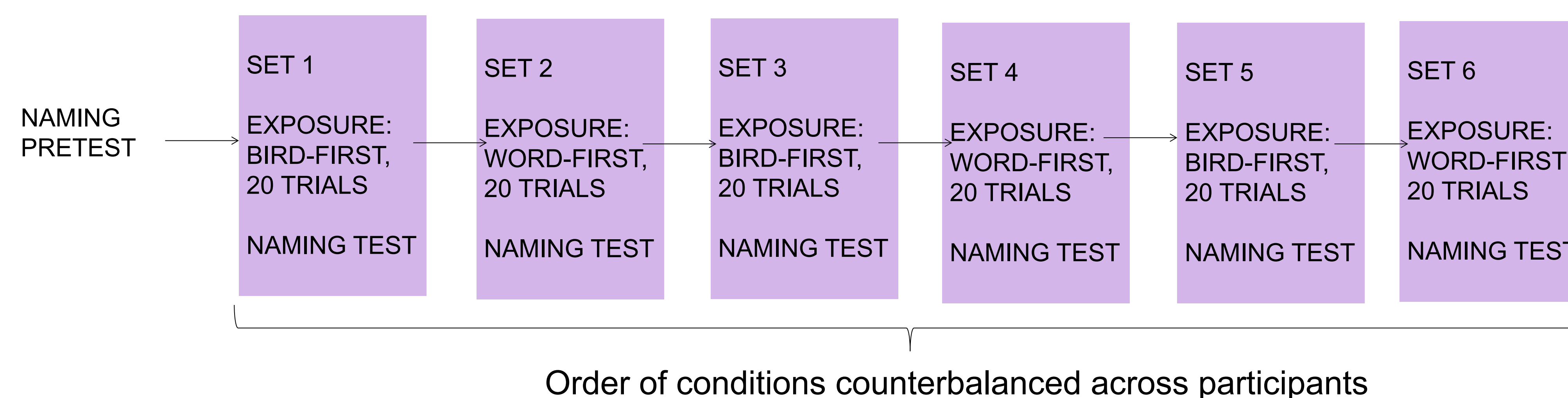


Figure 3. Temporal order of study procedures.

Results and Discussion

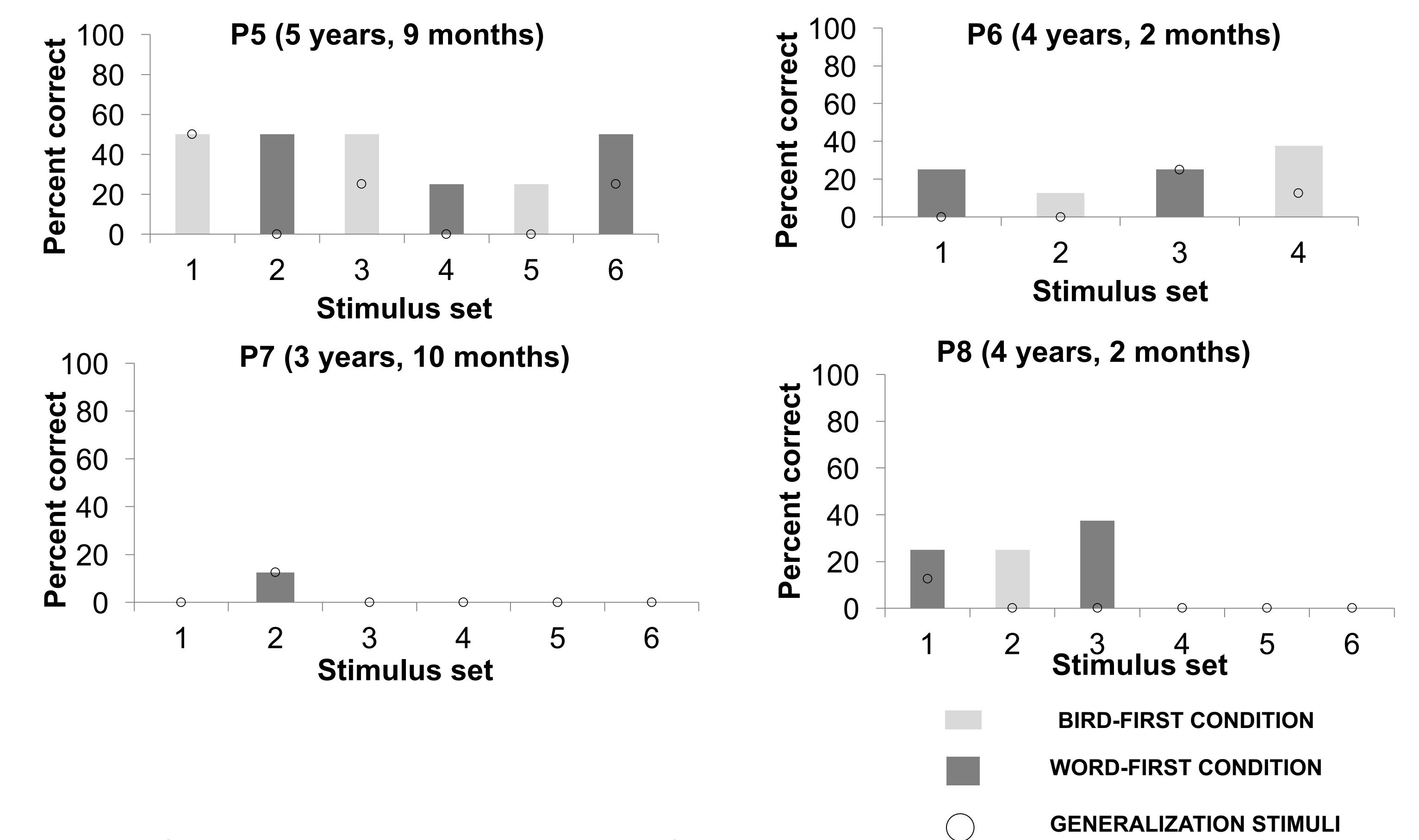


Figure 4. Session-by-session naming test performance.

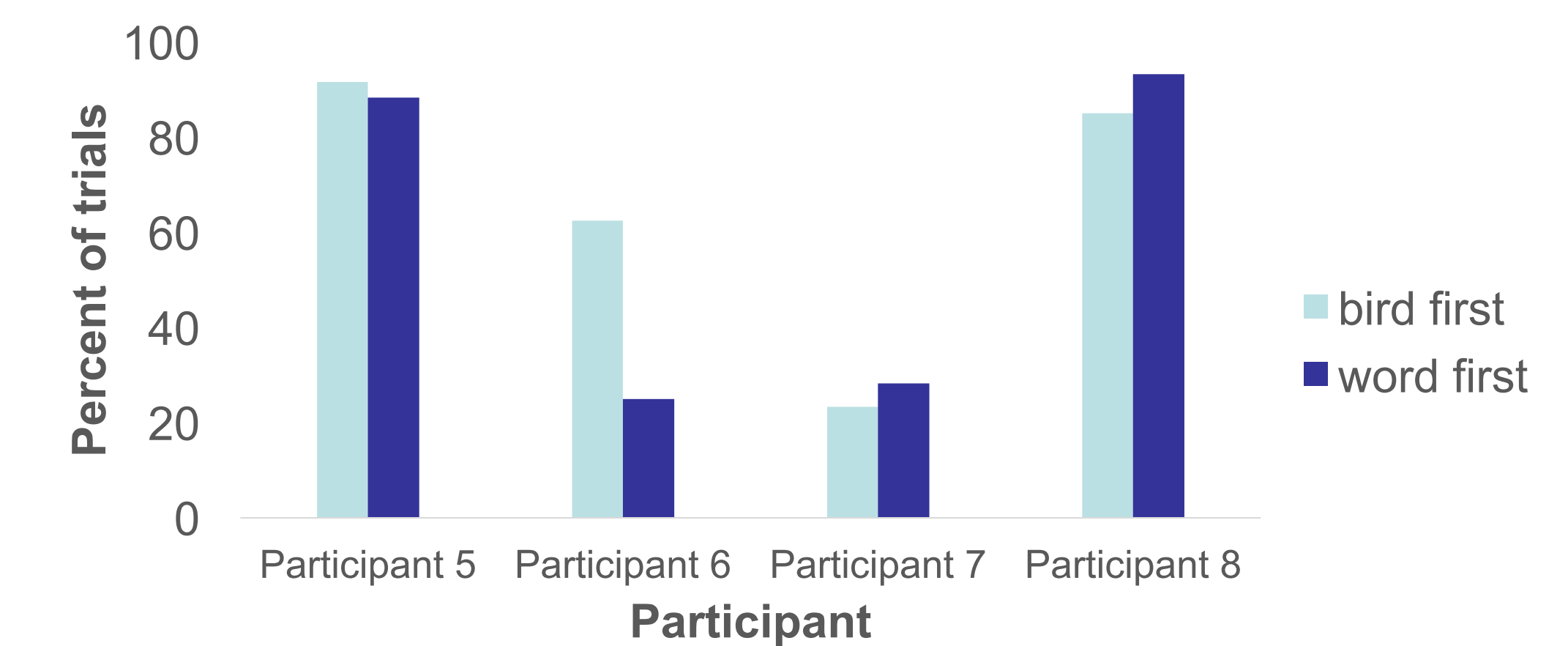


Figure 5. Echoic responses in training trials by training condition.

Only four sets were completed for Participant 6 due to time constraints; other participants completed training and testing on all six sets. Participants 5 and 6 named either one or two training images correctly after each training session, though generalization to novel bird images was minimal. Participant 7 made only one correct naming response in the entire study, whereas Participant 8 made correct responses after the first three sessions and none after that. For no participant did the order of stimulus presentation appear to affect performance on the naming test. Additionally, participant success was uncorrelated with the number of overt echoic responses they made in each training session.

These results agree with those from previous experiments in this series (Petursdottir et al., in preparation) and previous studies (Delfs, Conine, Frampton, Shillingsburg, & Robinson, 2014; Petursdottir, Lepper, & Peterson, 2014; Vladescu & Kodak, 2013) on the role of echoic responding in emergent stimulus control over vocal production. We conclude that an influence of echoic responding on emergent vocal naming has yet to be demonstrated empirically.

The Naming Hypothesis (Horne & Lowe, 1996) is often invoked in support of clinical practices in behavioral language intervention programs, but in the absence of an empirical demonstration of this crucial element of the theory, caution should be exercised in exporting its predictions to practice.

References

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