



# Effects of an Echoic Response Requirement on Object Naming

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## Introduction

The Naming Hypothesis (Horne & Lowe, 1996) is a theory of children's language learning that is rooted in Skinner's (1957) analysis of verbal behavior and assumes that stimulus control over vocal or other verbal responses is a product of primarily operant (as opposed to Pavlovian) conditioning. The theory focuses on explaining why such stimulus control is often observed in the apparent absence of prior reinforcement.

The Naming Hypothesis has generated practical applications in the area of teaching language and associative concepts to children with autism spectrum disorder (e.g., Lee, Miguel, Darcey, & Jennings, 2015). Nevertheless, the central role that overt and covert echoic responses during language experiences play in the theory remain to be demonstrated empirically. All published studies that have attempted to evaluate this role using correlational (Delfs, Conine, Frampton, Shillingsburg & Robinson, 2014; Vladescu & Kodak, 2013) or experimental (Petursdottir, Lepper, & Peterson, 2014; Petursdottir, Neaves, & Thomas, in preparation) evidence have failed to find supportive evidence.

The Naming Hypothesis assumes that a receptive language learning experience, as when a child is praised for pointing to a specific object upon hearing it's name, will increase the probability of correct production (the child vocally naming the object) only if the child overtly or covertly echoes the heard name during the receptive experience. Petursdottir et al. (2014) compared the effects of receptive instruction in which the child was required to make an echoic response in each trial to receptive instruction without an echoic response requirement. There was no effect of the echoic response requirement on performance in vocal naming probes that occurred intermittently throughout instruction. However, it is possible that the participants were echoing covertly in the condition without the echoic requirement.

The purpose of the present study was to replicate Petursdottir et al. (2014) with an additional control condition in which the children had to make a color naming response, unrelated to the acquisition target, in each trial. The purpose of this manipulation was to interfere with any covert echoic responding that might occur in the learning trial. If echoic responding is crucial to correct production in naming probes, probe performance should be relatively poor in the interference condition.

## Method

**Participants.** So far, two children have been enrolled in the study. Participant 1 was 4 years, 2 months old at the beginning of the study, and Participant 2 was 4 years, 4 months old. The study was conducted at the participants' preschool in a quiet area away from other children.

**Procedure.** Visual stimuli were three sets of images of national flags; each set included four flags (see Figure 1). The primary dependent variable was the participants' vocal production of the name of the country associated with each flag.

For each participant, the three stimulus sets were randomly assigned to three receptive instruction conditions: An echoic response requirement condition, an interference condition, and a no response requirement (NRR) condition. In all conditions, the flags were presented on colored backgrounds that varied across trials, but the participant only had to pay attention to the background color in the interference condition.

Following baseline assessment, 16-trial receptive instruction sessions were alternated across stimulus sets according to the logic of an adapted alternating-treatments design. Each instruction session was immediately followed by an 8-trial vocal naming probe in which no feedback was provided on the child's responses.



Figure 1. The figure shows the three stimulus sets used in the experiment. For each participant, one set was assigned to each of three receptive instruction conditions; echoic, interference and NRR.

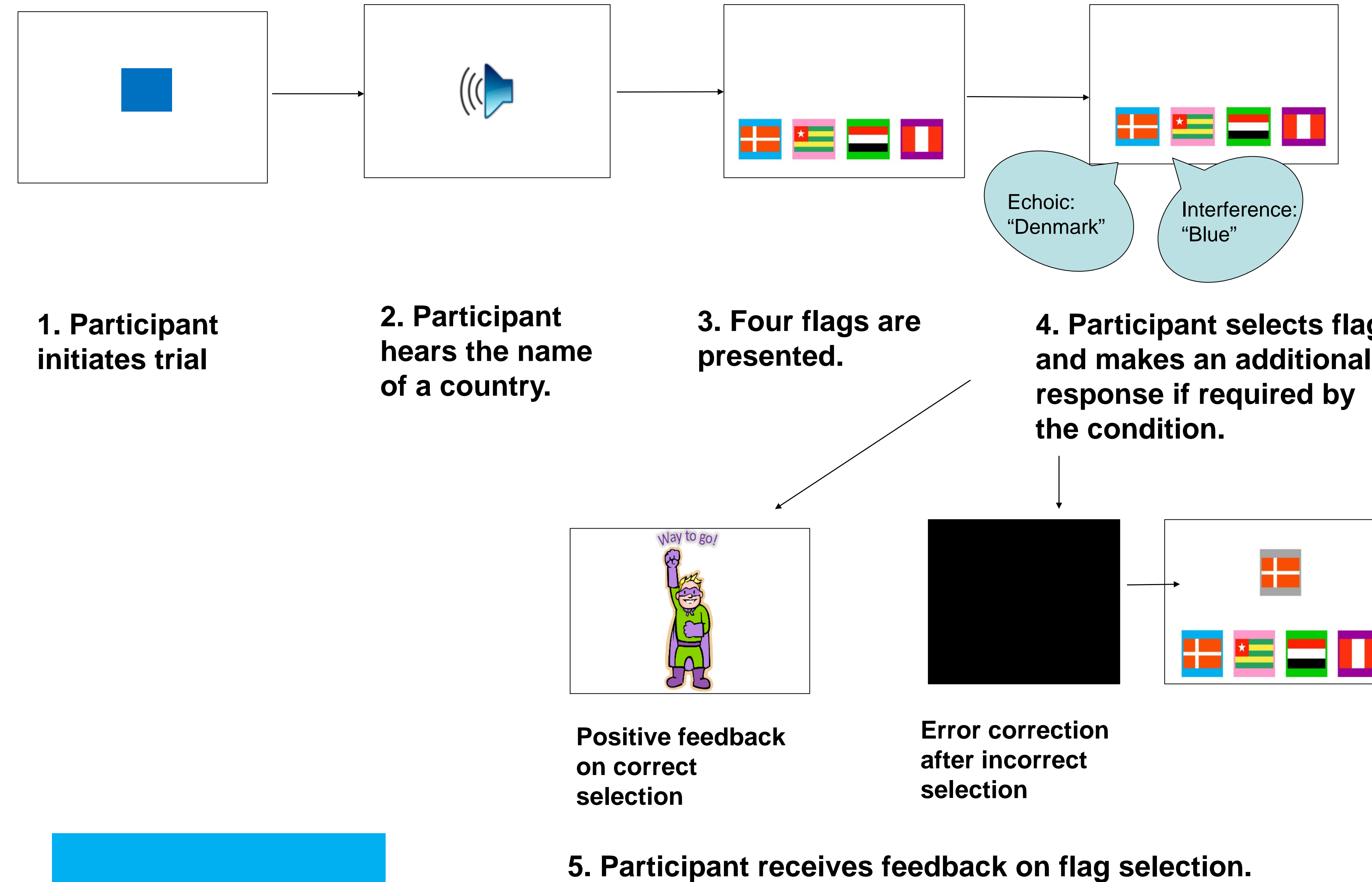


Figure 3. In naming probes, one flag was presented at a time and the experimenter asked "Which flag is this?"

## Results and Discussion

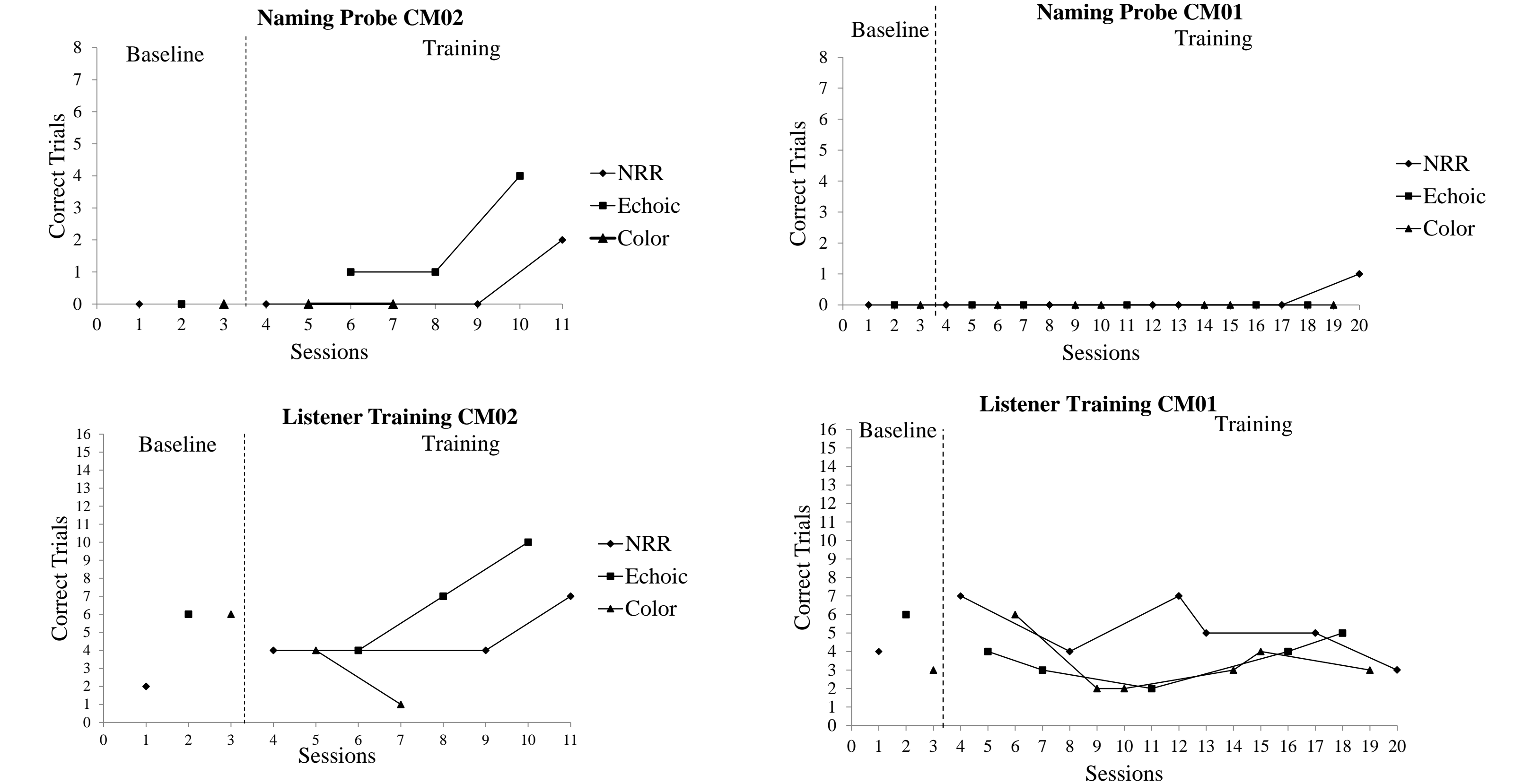


Figure 4. Session-by-session performance in naming probes (upper panels) and session-by-session accuracy in receptive instruction (lower panels).

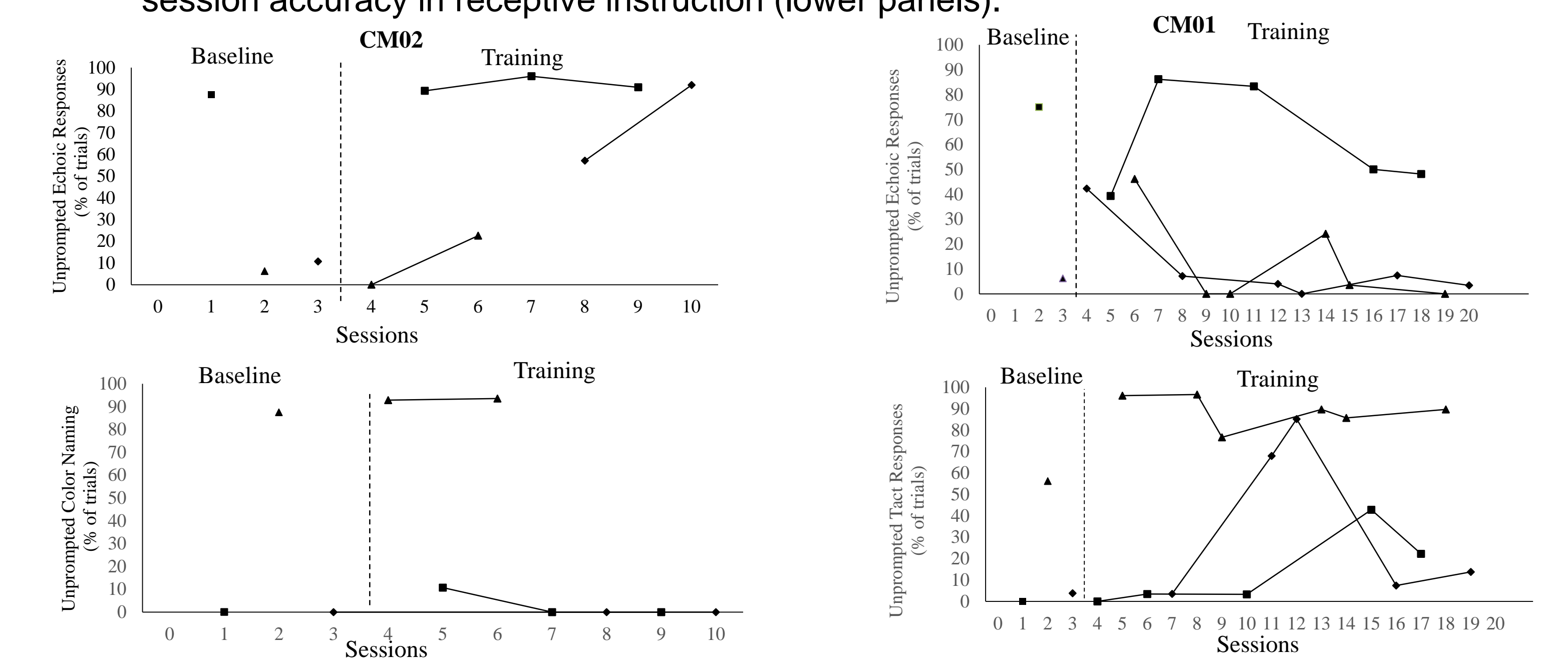


Figure 5. Session-by-session unprompted echoic responses (upper panels) and color-naming responses (lower panels).

Data collection is currently in progress. Participant 2 excused himself from the study after 11 sessions, apparently due to being bored with the task. At this time, naming performance in the echoic condition was superior to the NRR condition, which in turn was superior to the interference condition. These results are consistent with the predictions of the Naming Hypothesis. These data, however, mirror the rate of receptive acquisition in the three conditions, so it is possible that interference primarily disrupts receptive acquisition but has no specific impact on subsequent vocal naming. In order to assess specific impact on naming performance it is necessary to have information on the accuracy of naming performance at the point mastery is achieved in each condition of receptive instruction. Additional data from Participant 1 and future participants are expected to shed light on this issue.

At this time, Participant 1 is responding at chance level in all conditions of receptive instruction and has not made any correct responses in naming probes. Instruction will continue for several more sessions to determine if learning will occur with continued exposure to the task.



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