



Effects of Echoic Response Interference on Emergent Naming

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Introduction

This study examined how name-object exposure – 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) is a theory of language learning rooted in Skinner's (1957) analysis of verbal behavior. According to this theory, overt or covert repetition (echoing) of a spoken object name while looking at its visual referent may produce stimulus control by the object over the child's vocal production of the name. Only if this echoic response occurs during name-object exposure will the child later show *emergent naming* – that is, correctly name the object without any direct practice.

Currently, this proposed role of the echoic in emergent naming has little or no empirical support:

- No correlation between overt echoic responses during name-object exposure and subsequent vocal naming (Byrne, Rehfeldt, & Aguirre, 2014; Delfs, Conine, Frampton, Shillingsburg, & Robinson, 2014; Haq, Zematic, Kodak, LeBlanc, & Ruppert, 2015)
 - Requiring overt echoic responses during name-object exposure does not increase emergent naming (Petursdottir, Lepper & Peterson, 2014)
 - Manipulating stimulus presentation to affect the probability of covert echoing while the visual stimulus is present does not affect emergent naming (Petursdottir, Neaves, & Thomas, under review)
- Nevertheless, the idea that the echoic plays a role has been disseminated as important to consider in language intervention for children with language delays, and is therefore in need of further investigation.

The present study examined the effects of an attempt to interfere with echoic responses during name-object exposure on emergent naming.

Method

Participants. Participants were recruited from a local preschool and had no language or developmental delays according to parent report.

Table 1
Participants' chronological ages and PPVT-4 standard scores.

Participant	Age	PPVT-4 Standard Score
Daniel	3y, 11 mo	121
Ivy	4y, 4mo	115
Anne	4y, 0mo	106
James	4y, 9mo	118
Tina	4y, 11mo	123

Stimuli. Visual stimuli were presented on the screen of a laptop computer on backgrounds that varied in color. Auditory stimuli, pre-recorded in a male voice, were played through the speaker.



Figure 1. The figure shows the three stimulus sets used in the experiment. For each participant, the three sets were randomly assigned to three stimulus pairing conditions: Echoic condition, blocking condition, and no response requirement (NRR). The printed country names were not displayed to the participants.

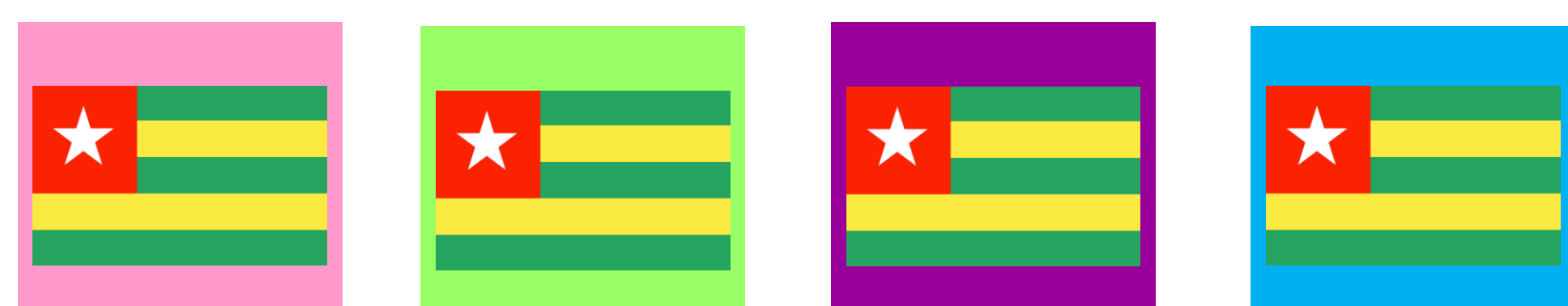


Figure 2. Visual stimuli were presented against four colored backgrounds that varied across trials such that each stimulus was presented equally often on each of the four backgrounds.

Data collection and Reliability. The primary dependent measure was correct responses in tact probes at the end of each stimulus pairing session. Data were also collected on (a) overt echoic responses during pairing trials, and (c) vocal color tacts during pairing trials. Interobserver agreement was assessed in at least 46% of all sessions for each participant, and averaged 99.8% (range, 99% to 100%) across sessions.

Procedure.

Name-object exposure: 16 trials per session (4 for each stimulus)

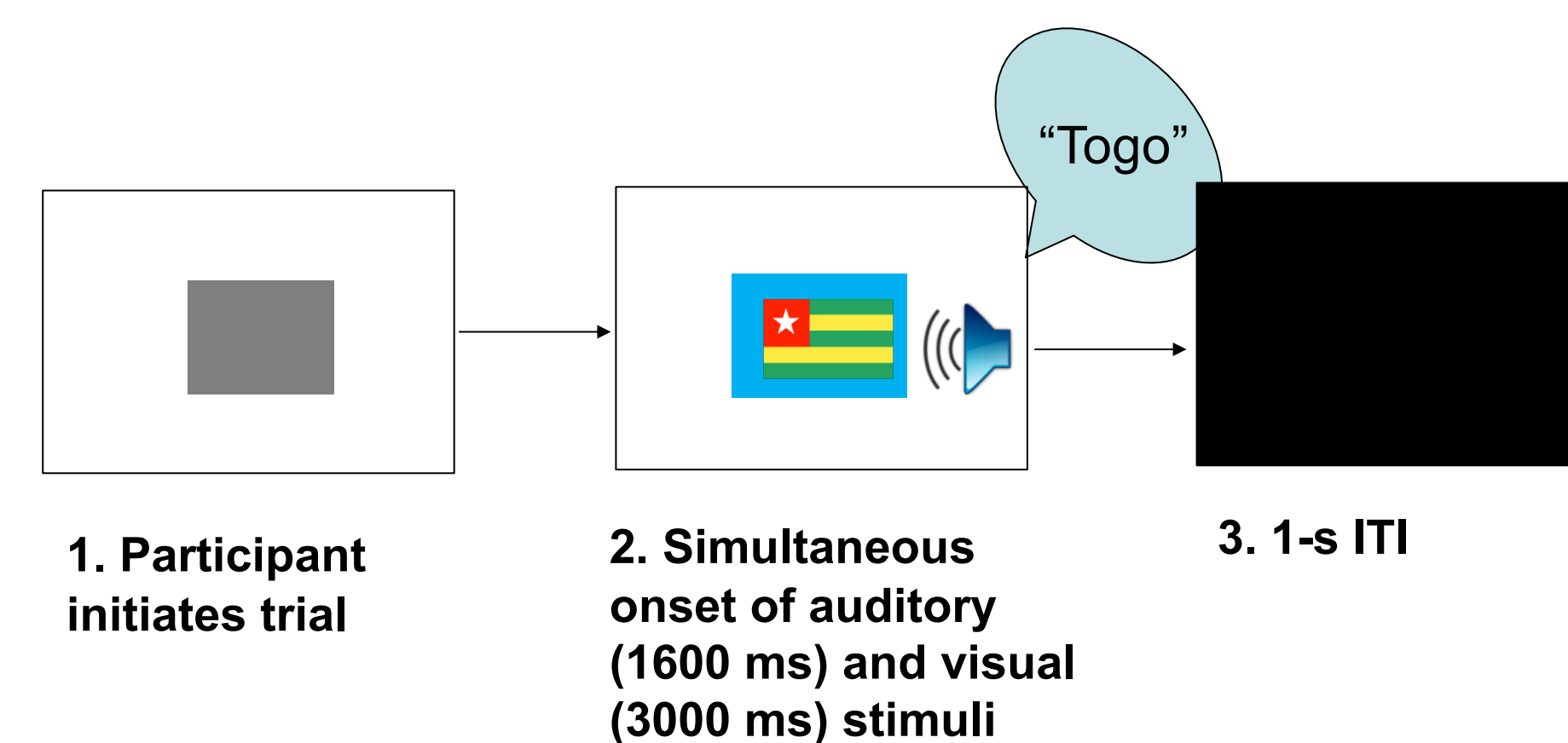


Figure 3. Sequence of events in each exposure trial (excluding participant vocal responses).

- Echoic condition: Participant overtly echoes each country name presented in the session (e.g., "Togo"); prompted as needed
- Interference condition: Participant overtly names the background color of each flag presented in the session (e.g., "blue"); prompted as needed
- NRR: Participant not instructed or prompted to make any particular response to the stimuli

Naming probes: 8 per session (2 for each stimulus)



Figure 4. In naming probes, one flag was presented at a time and the experimenter asked "Which flag is this?"; no feedback was provided on correct or incorrect responses.

Results and Discussion

All children's participation was discontinued prior to naming mastery in any condition due to (a) discontinued or sporadic attendance at the child care center, (b) lack of upward trend in tact probes, or (c) child's unwillingness to continue.

Two participants (Daniel and Ivy) never made any correct responses in naming probes, whereas the other three made correct responses in on or more conditions (Figure 5, top panels).

Only Anne's data (Figure 5, middle panel) were consistent with a role of echoic responding during name-object exposure in emergence. Anne was close to reaching mastery in the echoic condition, made some correct responses in the NRR condition, but never responded correctly in naming probes with stimuli from the interference condition.

By contrast, James responded with similar accuracy in the interference and the echoic conditions, and Tina made some correct responses to stimuli in the interference condition but none to stimuli in the echoic condition (Figure 5, bottom panels).

It is possible that the interference procedure did not sufficiently interfere with echoic responses during the name-object exposure. All participants made some overt echoic responses in this condition along with naming the background colors (Figure 6).

Nevertheless, the results are consistent with those of other studies that have failed to find evidence supporting the role of echoic responding during name-object exposure in emergent vocal naming.

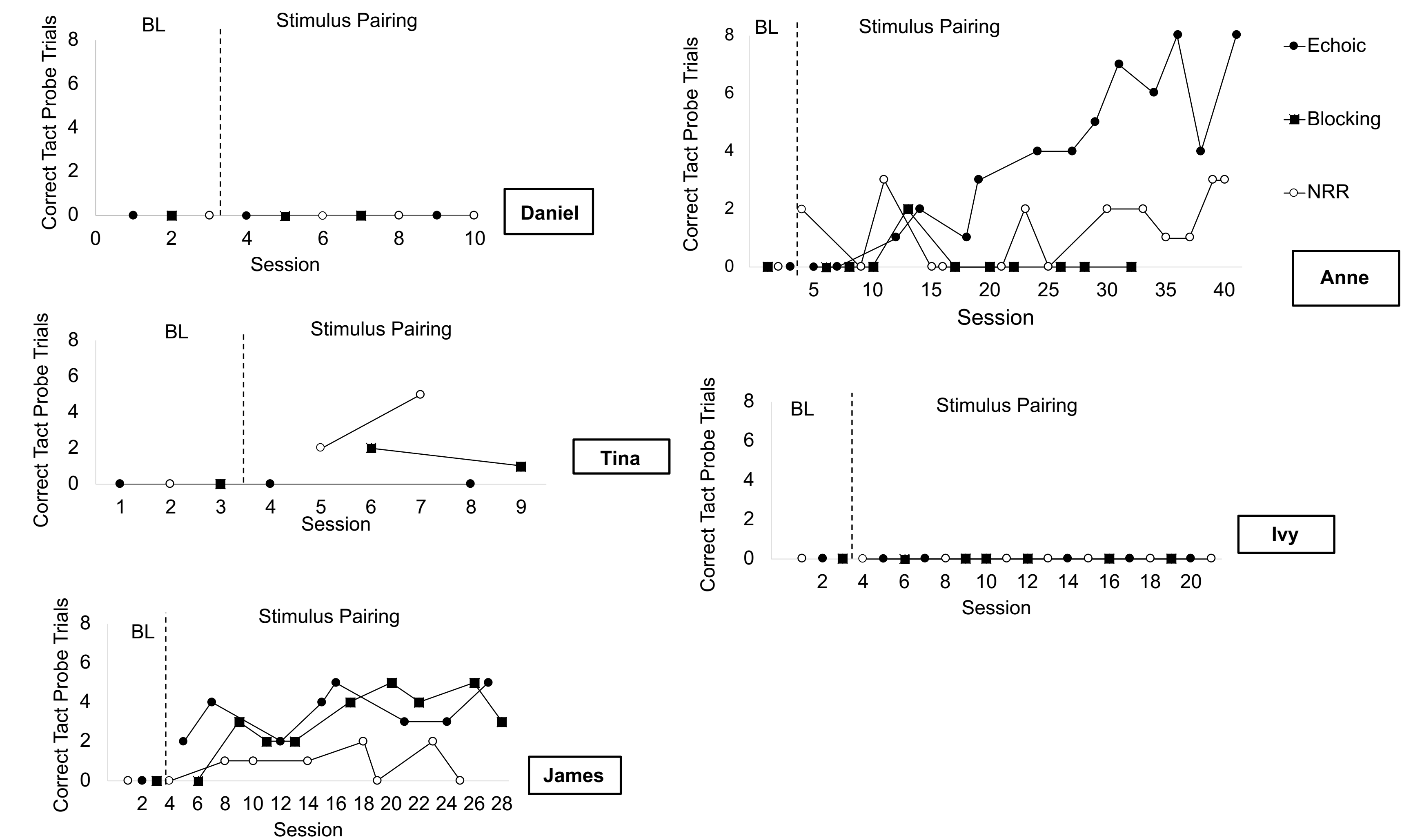


Figure 5. Session-by-session performance in naming probes.

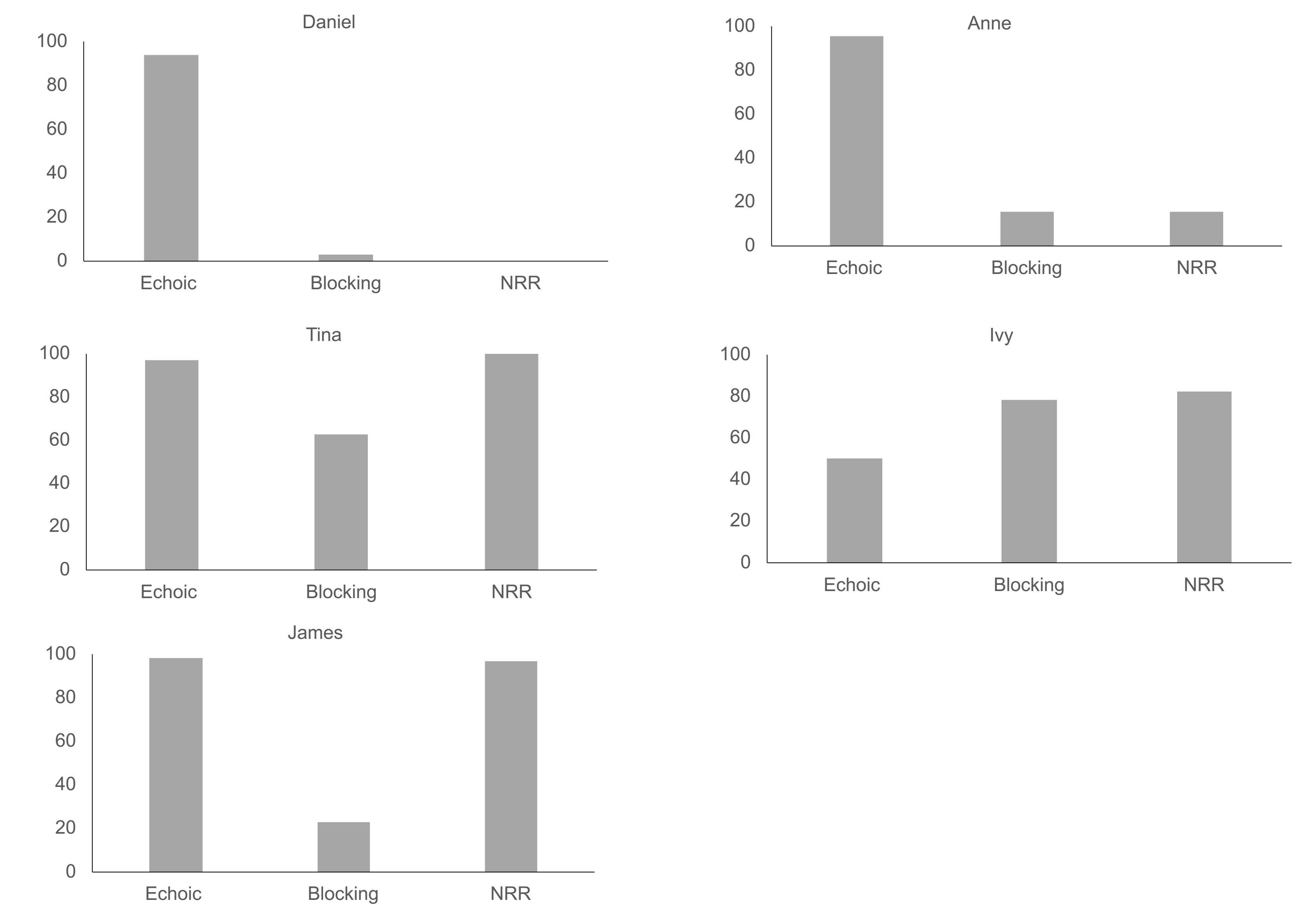


Figure 6. Percent of trials with unprompted overt echoic responses.

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