

Alternating Treatment Design Article

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**Learning a Foreign Language: Effects of Tact and Listener Instruction on the
Emergence of Bidirectional Intraverbals**

**Marielle Diniz Cortez, Leticia dos Santos, Ana Elisa Quintal, Marcelo V. Silveira,
Julio C. de Rose**

(2020)

Purpose, Subject(s), Setting(s)

The purpose of this study was to apply two different treatments to foreign language acquisition with six Brazilian children. All six children, aged 7 to 9, resided in Brazil, spoke Portuguese as a native language, did not have any previous formal instruction in English, and were categorized as “typically developing” by the investigation team (Cortez et al., 2020). “Sessions were conducted three to four times per week in a lab room and lasted 10 to 15” minutes (Cortez et al., 2020). The historical perspective and paradigm for this research was based on Skinner’s paradigm of verbal behavior.

Method

The adapted alternating treatment design (AATD) used four trial baseline (pretest) and ending baseline (posttest) after treatment conditions. Pretest and posttest mastery criteria were the same (100% correct responses for three consecutive trials). Five participants were responsible for twelve terms in English (dependent variable/target behavior) categorized in 6-stimulus sets (i.e., “Set A: Fruits”; “Set B: Animals”). The

sixth participant knew some of the terms in English from “Set A: Fruits” during the pretest. This participant was given “Set C: Kitchen appliances” in place of “Set A: Fruits.” This culminated in “Set B” and “Set C” for the respective repertoire of twelve terms for Participant 6. The sets of terms with their respective pictures were shown on page 487, “*Figure 1. Stimuli used in baseline, test and instructional trials*” (Cortez et al., 2020).

“Prior to instruction, we tested two types of intraverbal responding: Portuguese-English and English-Portuguese. Both intraverbal directions were tested for each of the two 6-stimulus sets. A block of 12 trials was conducted with each stimulus set, comprising six presentations of Portuguese-English and six presentations of English-Portuguese trials” (Cortez et al., 2020).

Direct instruction was used for both directional scenarios of Portuguese-English and English-Portuguese pretest: “How do we say [Portuguese name] in English?...What does [English name] mean in Portuguese?” (Cortez et al., 2020). Tact (independent variable) was evoked in this experiment by seeing a picture and being asked to respond with the correct term in English. Conversely, listener instruction (independent variable), the participants heard a word in English and were asked to point to the correct picture associated with the word from three choices of pictures. No differential consequences for correct or incorrect responses were presented during baseline sessions” (Cortez et al., 2020).

All participants were given a maximum of 10 seconds for responses during pretest, intervention, and posttest. No correct responses were recorded during the pretest

baseline phase. The randomized stimuli were delivered during all sessions and trials of the terms and varied across participants. Participants varied in mastery of target behavior from approximately 35 to 75 trial blocks before acquisition of the target behavior during the intervention phase. The observer used differential consequences during intervention sessions (i.e., praise for correct responses; pointing or vocalization for incorrect responses).

Direct observation was recorded on data sheets and digital video was used for the Interobserver agreement for all participants were above 97.2% for test and instructional sessions. Data points were plotted on a line graph, “*Figure 2. Number of correct responses in Portuguese-English and English-Portuguese intraverbal tests and during tact and listener instruction for both stimulus sets*” (Cortez, et al., 2020). The ordinate line recorded correct responses (0-6) and the abscissa line graphs recorded number of trial blocks.

Results and Discussion

The AATD design was appropriate for this experiment because of the nonreversability of the foreign language acquisition. A functional relationship was established by comparison of pretest-posttest conditions. Visual analysis of the data graph shows increased levels of correct responding for both treatments, but tact instruction exceeded listening instruction. Cortez et al. (2020), ascribe the tact response creating “full emergence of intraverbal responses in both directions (English-Portuguese and Portuguese-English)...[leading] to the emergence of a bidirectional intraverbal repertoire whereas listener instruction did so less reliably.

This study aimed to replicate and show more experimental control than a previous study by Petursdottir, Olafsdottir et al. (2008) which was designed as a multiple baseline with no within-subject participants. Cortez et al. (2020), created an AATD design that is a within-subject design providing more experimental control. A stable baseline provided predictability, the alternating treatments provided verification during the trials of randomly alternating treatments, and efficacious results during the intraverbal posttest provide more verification of the independent variables treatment ability. The authors describe some extraneous variables that may have skewed the validity of the study (e.g., popular culture references in English, Disney, etc.) and the topographical nature of tact. “Intraverbal tests required verbal topography...[t]act instruction required and reinforced those topographies, whereas listener instruction required only pointing to one of three visual stimuli” (Cortez et al. 2020). The authors go on to say that tact instruction was the most effective treatment, but further study should include variations of instructional listening and tact coupled with prompt delays, generalizations, and maintenance conditions.

Bibliography

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