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ESTABLISHING DERIVED REQUESTING SKILLS IN ADULTS WITH SEVERE DEVELOPMENTAL DISABILITIES

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This project examined whether a history of reinforced relational responding would result in derived requesting skills in 3 adults with disabilities. Participants were first taught to request preferred items using pictures; they were then taught conditional discriminations between pictures and their dictated names and between dictated names and their corresponding text. Finally, requests for preferred items using corresponding text were evaluated. All 3 participants demonstrated derived requesting skills.

DESCRIPTORS: request, mand, derived stimulus relations, mental retardation

The mand, defined as "a verbal operant in which the response is reinforced by a characteristic consequence and is therefore under the functional control of relevant conditions of deprivation or aversive stimulation" (Skinner, 1957, pp. 35–36), is often an early focus of language training for individuals with severe disabilities. Providing a reinforced history of relational responding during training may expand the mand repertoire (Barnes-Holmes, Barnes-Holmes, & Cullinan, 2000). For example, if an individual learns to request (a form of manding) preferred items using pictures via the picture exchange communication system (PECS; Frost & Bondy, 1994), he or she might be taught to conditionally relate the picture and its dictated name and the dictated name and its corresponding text. Subsequent emergent requests in the form of a text exchange, which was never directly reinforced, have been termed a *derived mand* (see Barnes-Holmes et al.). Other likely emergent responses include naming the picture (tacting), reading the text (textual behavior), and matching the picture and text. The purpose of this project was to determine if individuals with severe mental retardation would show derived requesting skills after being taught to conditionally relate pictures of preferred items, their dictated names, and their corresponding text. We use the terms *derived mand* or *request* to refer to a request for a visible preferred item following a reinforced history of relational responding (see Barnes-Holmes et al.). The mands trained in this procedure may be considered impure mands because the preferred items presented on each trial may have controlled responding (partial tact).

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METHOD

Participants

The 3 participants had severe mental retardation and demonstrated rudimentary or no functional communication skills. Sam (20 years old, IQ of 21) and Kenny (34 years old, IQ of 30) had limited, unintelligible speech, and Carl (27 years old, IQ below 25) was nonvocal. Sam took 10 mg of Zyprexa® daily, and Kenny took 50 mg of Zoloft® daily for aggression. Carl took 6 mg lorazepam daily for anxiety and 15 mg of Zyprexa® daily for aggression. All medication doses were stable throughout the study.

Setting and Stimulus Materials

Training and test sessions were conducted in a secluded classroom at the participants' day-treatment facility. Materials included a three-ring binder with four strips of hook-and-loop tape on each page spaced at least 5.08 cm apart, digital photographs of preferred items (5 cm by 10 cm), text printed on cards (5 cm by 10 cm), and a stimulus placement board. Preferred items were identified using empirically validated procedures; the items were not available outside training sessions on training days. Sam preferred tracing words, listening to a cassette tape, and doing a puzzle. Kenny preferred pizza rolls, sandwiches, and coloring with markers. Carl preferred M&Ms®, Lifesavers®, and tracing words.

Design

A multiple probe design across participants was used with repeated probes for derived stimulus relations and derived requesting skills. The onset of PECS training followed stability in pretest probes for the 1st participant. PECS training was followed by conditional discrimination training, and each subsequent participant began PECS training when the previous participant demonstrated criterion performance during test probes following conditional discrimination training. Sessions were held 3 to 5 days per week for 20 to 40 min.

Procedure

Pretraining and posttraining relational probes. Initial tests determined whether the participant would select from an array a picture of a visible preferred item and exchange it for access to the item. Next, we tested identity relations between one-word printed names and preferred items. Participants were directly trained on the identity relations if necessary. All subsequent probes were conducted in nine trial blocks with intermittent praise for effort but no reinforcement (e.g., access to item) for correct responses.

We tested four relations between dictated names and corresponding pictures (A-B relations) and dictated names and corresponding text (A-C relations): naming pictures (tact), reading text (textual behavior), matching pictures to text (B-C), and vice versa (C-B). On picture-naming and reading trials, a single stimulus was presented with the question, "what's this?" On matching trials, one picture or printed word and an array of three pictures or printed words were presented, along with the instructions to "put with same." Derived request probes tested whether participants would request a visible preferred item by exchanging the corresponding text. An item was presented with an array of printed names of three preferred items and two distracter words.

PECS training. Participants were taught selection-based mands to request their three preferred items using the procedures for the first three phases developed by Frost and Bondy (1994). Throughout all training phases, verbal praise and 30-s access to preferred items were provided contingent on correct requests.

Conditional discrimination training. Conditional discrimination training began after mastery of the first three phases of PECS. Participants were taught to match dictated names to corresponding pictures (A-B training) followed by training to match dictated names to corresponding printed words (A-C training) to a criterion of eight of nine correct trials. The instructor dictated the name of an item, and the participant delivered the picture or text to indicate his choice of three options (positions varied across trials). Each dictated name was presented three times per nine-trial block and correct matches resulted in verbal praise. A-B trials were presented every two to four trials throughout A-C training. Participants also requested preferred items using pictures every two to four trials. Gestural prompts and graduated prompt delay were used to teach Sam the A-C relations. Positional prompts (i.e., correct word closest to participant and gradually moved

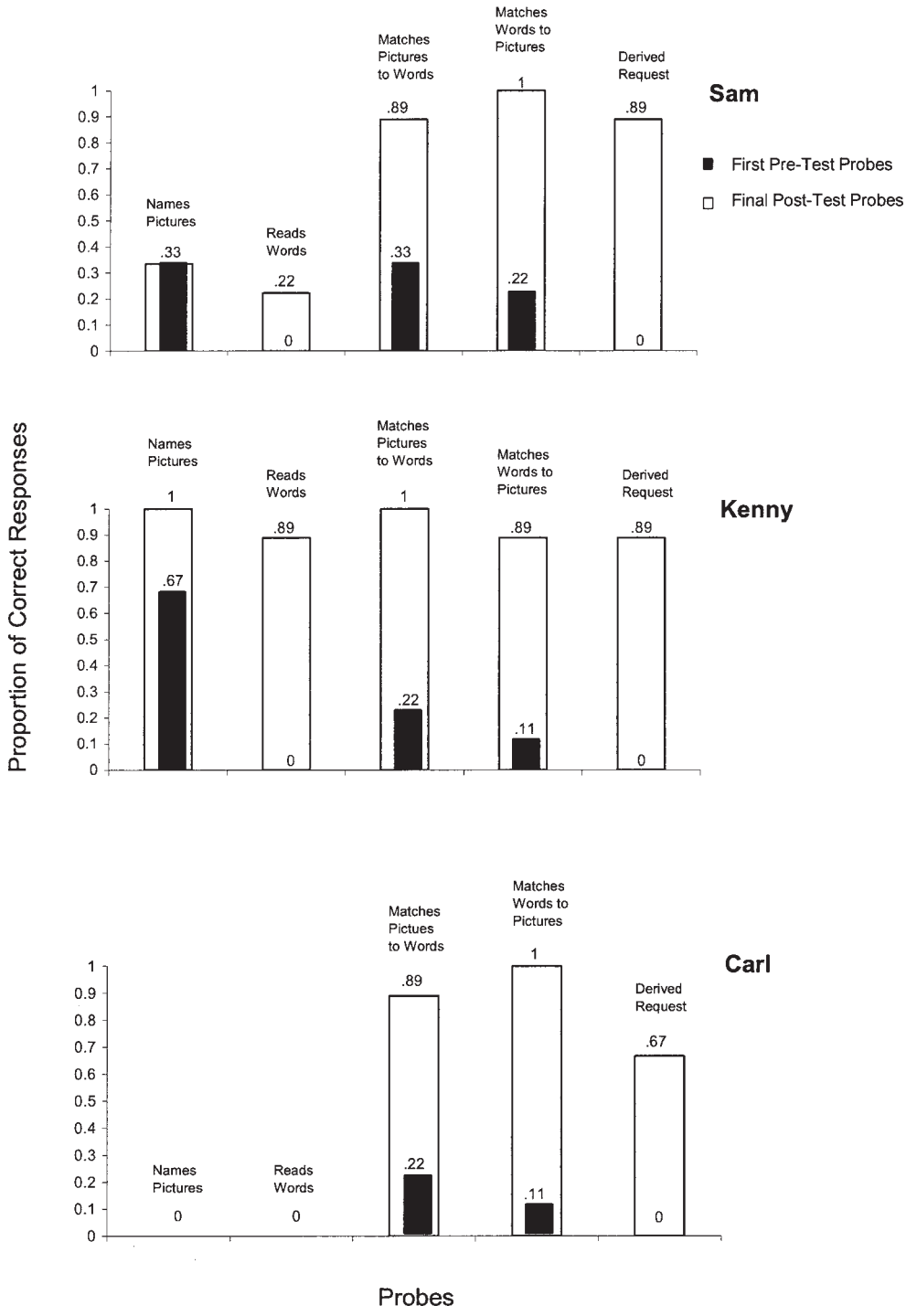

Figure 1. Proportion of correct responses per nine-trial block during the first pretest and final posttest probes for all participants.

to equal distance) using one word, two words, and three words at a time were used to teach Carl and Kenny the A-C relations.

Data Collection and Interobserver Agreement

The dependent measures were the proportion of correct responses during derived request and derived relations probes and PECS and conditional discrimination training. Interobserver agreement was recorded on 37% of all training and test sessions with at least 31% of sessions for each phase, and was calculated by dividing agreements by agreements plus disagreements and multiplying by 100%. Average agreement across all phases was 98%.

RESULTS AND DISCUSSION

During initial testing, no participants requested preferred items using pictures, and all but Carl identity matched without training. Figure 1 shows participants' performances during the first pretest and final posttest probes. No participant reliably (i.e., in eight of nine trials) named pictures (tacted), read words (textual behavior), matched words to pictures, matched pictures to words, or used text to request preferred items (derived requests) during pretraining. Posttest probes showed that all participants matched words to pictures and pictures to words with at least 89% accuracy. Only Kenny named pictures (tacted, 100% accuracy) and read words (textual behavior, 89% accuracy). All participants demonstrated derived requesting for at least two preferred items. Sam and Kenny performed correctly on 89% of the derived request test trials. Carl performed correctly on 67% of trials, consistently requesting two preferred items while consistently making errors (e.g., choosing distracter words) for the third item. No participant met criterion on any probe trials prior to completion of conditional discrimination training. Figure 2 shows that participants learned to use PECS to request items after 11 to 15 blocks of training trials. All demonstrated mastery criterion on the A-B and A-C relations in 10 to 62 total trial blocks.

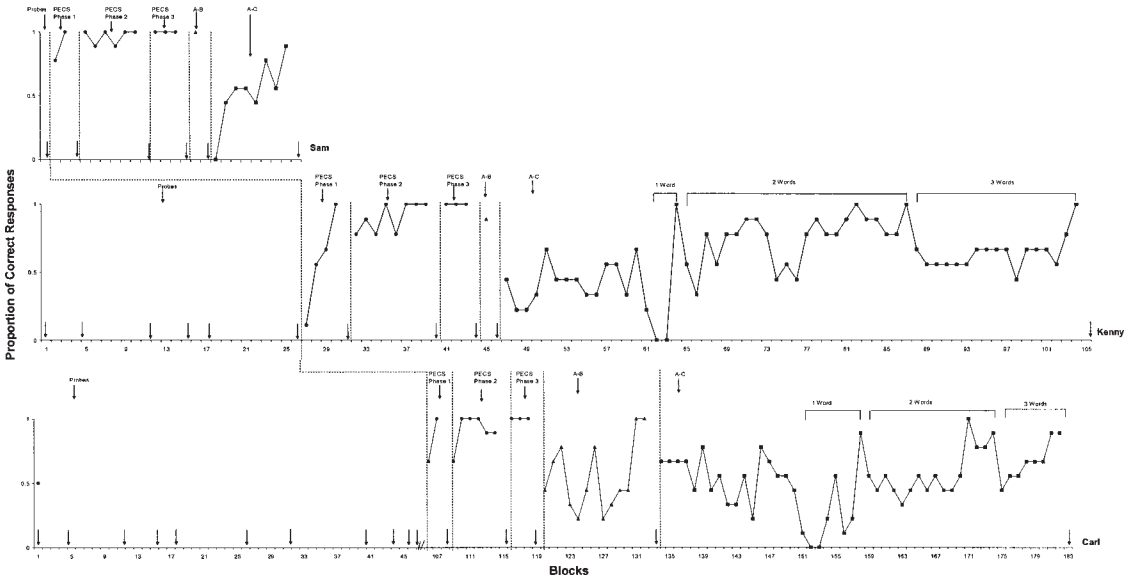

Figure 2. Proportion of correct responses per nine-trial block during PECS and conditional discrimination training for all participants. Arrows indicate when probe trials were presented. The *x* axis is discontinuous on Carl's figure to account for a period during which probes were not conducted.

These results illustrate that a reinforced history of relational responding is sufficient for the emergence of derived requesting skills in individuals with severe developmental disabilities. The emergence of picture–word and word–picture matching skills was also observed for all 3 participants, and 1 participant showed emergent picture-naming (tacting) and word-reading (textual behavior) skills. Thus, a history of reinforced relational responding may facilitate the emergence of novel forms of requesting and other verbal skills.

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