TEACHING CHILDREN WITH AUTISM TO ENGAGE IN CONVERSATIONAL EXCHANGES: SCRIPT FADING WITH EMBEDDED TEXTUAL STIMULI

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A multiple baseline across three sets of stimuli was used to assess the effects of a script-fading procedure using embedded text to teach 2 children with autism to engage in conversation statements about the stimuli. Both students stated all the scripted statements, and unscripted statements also increased. Generalization was assessed with novel peers and with untrained stimuli.

DESCRIPTORS: autism, script fading, language acquisition, developmental disabilities, antecedent control

Script-fading procedures have been used to increase the communication skills of children with autism. Krantz and McClannahan (1993, 1998) used scripts to prompt conversation among adolescents with autism and the statements "look" and "watch me" in preschoolers with autism. In the present study it was hypothesized that if stimuli were used that had a naturally embedded textual cue (e.g., the word "Skittles" on a Skittles® package), all supplementary textual stimuli (i.e., the actual scripts) could be faded, and children with autism would engage in conversation in the presence of the stimulus itself (e.g., the package of Skittles®).

METHOD

Participants attended a day education and treatment center for children with autism. Both were able to read at least 50 sight words. Lou, age 8 years, attended the center for half the day and a typical class with support. Stanford-Binet revealed borderline intellectual functioning. Jack, age 9 years, attended the center all day. Wechsler Intelligence Scale for Children–III showed moderate range of mental retardation. Sessions were conducted in a classroom, a treatment room, and an activities room located in the students' school.

Two sets of snacks and one set of video game cases with embedded text were used. Each item was placed on letter-sized paper that displayed a textual script. Each script contained six to seven conversation statements related to the item. The first word in

each script was on the item (e.g., the words "Gummi Savers" on the package began the sentence "Gummi Savers are my favorite"). Each participant had his own script, and the scripts corresponded to one another.

The dependent measures were number of scripted and unscripted statements made by each participant during 3-min sessions. Scripted statements were verbalizations that were identical to the written script. It was not necessary for the textual script to be present for a statement to be scored as scripted. Unscripted statements were unprompted statements not present in the script.

Interobserver agreement was obtained during 80% of sessions. Observers were located on opposite sides of the room and recorded a check on a data sheet next to a statement when it was recited. Any unscripted statements were recorded word for word. An agreement was defined as both observers marking a check or the absence of the check next to a scripted statement printed on the data sheet, or as recording the same words for any unscripted statements. Interobserver agreement was calculated by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying by 100%. Agreement during intervention was 93% (range, 88% to 100%) for Lou and 96% for Jack (range, 90% to 100%), and during baseline it was 100% for both.

A multiple baseline across three sets of stimuli was used to assess the effects of script fading using embedded text to increase conversation statements between the participants. Prior to baseline, participants were taught to read their portion of the script with a teacher. Verbal praise and tokens followed accurate responding.

Textual scripts and prompts were not provided during baseline. Participants were seated across from one another in the assigned setting. A verbal instruction (e.g., "have a snack" or "play video games") along with the stimuli (i.e., snack items or video games) signaled the beginning of a session. The par-

ticipants were allowed to consume the snack or play the game if they chose.

During intervention the participants were seated across from one another. Scripts containing the embedded text were presented. Participants consumed the snack or played the video game when a scripted statement prompted them to do so (e.g., "let's eat our snacks"). If necessary, students were prompted to attend to their script with gestural prompts. Verbal models of statements were not provided. Subsequent scripts corresponding to the other stimuli were introduced after five sessions of 50% correct responding on the current script. When each participant read his script for two sessions, a five-step script-fading procedure was introduced (Krantz & McClannahan, 1993). In Step 1, 25% of the words were faded from back to front; in Step 2, half of each sentence was faded; in Step 3, the package and first letter of each line remained; in Step 4, the paper was presented with the package; and in Step 5, only the package remained.

To assess generalization, six 3-min follow-up sessions were conducted 1 and 3 months following the initial intervention. During assessment to novel stimuli, participants were given new snacks in packages that contained embedded text that they could read. No scripts were provided. In addition, generalization with a novel peer was assessed. During these sessions, both the peer and the participant were provided with snacks, but only the novel peer had a script.

An additional six 3-min assessment sessions were conducted 1 month following the initial intervention in a small room with an intercom and a one-way mirror to determine if participants would engage in scripted statements in the absence of verbal instructions and when adults were not present in the room.

RESULTS

Figure 1 shows the number of scripted and unscripted statements by Lou and Jack.
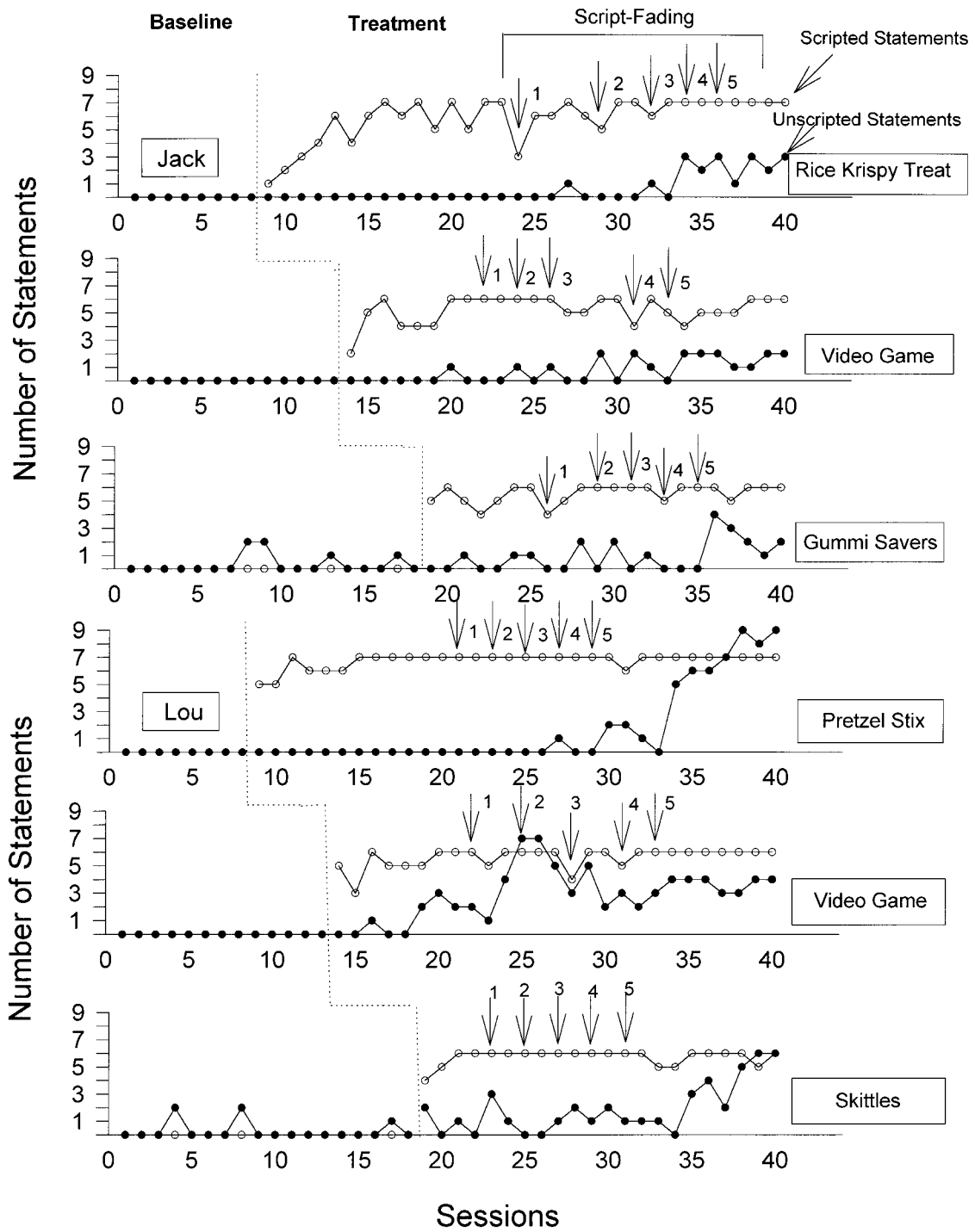
Figure 1. The top three panels show the number of statements by Jack and the bottom three panels show the number of statements by Lou during baseline and treatment. Filled circles represent unscripted statements. Open circles represent scripted statements. Arrows indicate the five steps used to fade the script.

Lou talked during baseline only when Skittles® were presented. Following the introduction of scripts, he learned to engage in all of the scripted statements and also began to engage in unscripted statements (e.g., "Hey, look it's Hades" and "I'll open my candy"). In baseline, Jack made several statements, but statements quickly increased when scripts were introduced.

Assessments of generalization to novel stimuli revealed that Lou engaged in a mean of 7.5 unscripted statements and Jack engaged in three unscripted statements. In sessions with a novel peer, Lou and Jack engaged in a mean of seven and five scripted statements, respectively, and 9.5 and 0 unscripted statements, respectively.

Further assessments revealed that both Lou and Jack continued to engage in scripted statements when the adult left the room ($M = 6$ for Lou and $M = 5$ for Jack) and when the instructions "have a snack" or "play video games" were not stated.

DISCUSSION

The use of scripts along with stimuli containing embedded text were effective in teaching 2 children with autism to engage in conversation statements about the stimuli. When script fading began, all supplementary text was faded and the participants maintained conversation statements in the presence of the items. Both participants' scripted statements generalized to novel stimuli and when a novel peer participated in the snack or video game sessions. Additional assessments indicated that the adult and the verbal instruction were not necessary to occasion scripted statements. Unscripted statements were not observed, however, suggesting that the adult or the instruction was prompting

unscripted statements. It is possible that the absence of unscripted statements may have been a function of mands included in the scripted statements and the procedures used by the adult to prevent access to the items.

This study has a few limitations. First, snacks and games were available noncontingently during baseline. Motivation may have increased during treatment because access to these items was contingent upon reading the scripts. Second, the use of embedded text as a treatment component may have limited applications to prompt conversation about past and future events because text may not always be available in the natural environment. Third, this study did not systematically assess responding in the absence of the embedded text. For example, after responding was demonstrated in the presence of the items containing text, it would have been useful to show that responding persisted after the packages were no longer present (e.g., the snack on a plate). Finally, generalization assessments should be interpreted cautiously because no pretreatment data were collected.

In summary, this study supports the advancing work of script-fading procedures to promote language in children with autism. A unique contribution of this study is the use of stimuli containing embedded text along with script-fading procedures.

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