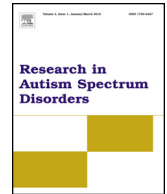




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The effect of a script-fading procedure on social interactions among young children with autism

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ABSTRACT

Background: Autism is a disorder characterized by a severe deficit in social-interaction skills. The script-fading procedure is an effective behavior-analytic strategy for teaching social-interaction skills to people with autism. Within the script-fading literature, however, few researchers have established cues in the natural environment as the discriminative stimuli for social interactions.

Method: The purpose of this study was to replicate the script-fading procedure used by Brown, Krantz, McClannahan, and Poulson (2008) to teach children with autism to interact with each other, and to assess generalization across untrained stimuli. The three participants, ages 6–9 years, demonstrated deficits in peer-interaction skills.

Results: During the baseline condition, the participants either did not interact with one another or emitted a variable and unreliable number of interactions. With the introduction of the script-fading procedure, however, interactions increased systematically. Moreover, stimulus generalization data indicated that the script-fading procedure effectively transferred the discriminative control for interacting from the scripts to stimuli in the natural environment.

Conclusions: These findings demonstrated the effectiveness of the script-fading procedure in teaching children with autism to interact with their peers. In addition, this study showed that establishing cues in the natural environment as discriminative stimuli for social interactions is a successful strategy to teach social-interaction skills to people with autism.

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1. Introduction

Autism is a disorder characterized by a severe deficit in social interaction skills (Volkmar, Klin, & Cohen, 2005). A core social-skill deficit of people with autism is the inability to initiate and to sustain conversation with other people (American Psychiatric Association, 1994). The script-fading procedure, however, is an effective behavior-analytic technique that can be used to teach social-interaction skills to people with autism. The script-fading procedure incorporates many of the responses required for engaging in social interactions, such as approaching others, initiating conversations, orienting to those who are speaking, waiting while other people talk, and emitting reciprocal responses (McClannahan & Krantz, 2005).

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A goal of the script-fading procedure is to observe an increase in the number of unscripted social interactions emitted by participants as the scripts are faded out. Unscripted social interactions are typically defined as statements that differ from the scripts that are provided in teaching by more than verb tense, conjunctions, articles, prepositions, or pronouns (Krantz & McClannahan, 1993). Many researchers have increased the number of unscripted social interactions emitted by people with autism by using the script-fading procedure. Krantz and McClannahan (1993) used written scripts to teach four children with autism to emit peer initiations during art activities. The authors provided each participant with a sheet of paper that contained a cue to talk and a list of ten different scripts pertaining to the stimuli present in the environment. The authors faded scripts by deleting words one at a time from the end of each script, until all scripts were blank. At the final fading step, only the blank sheet of paper with the cue to talk was present. The number of unscripted initiations emitted by the participants increased systematically as scripts were faded out. Nevertheless, the blank sheet of paper remained, and likely served as the discriminative stimulus for peer initiations rather than the natural stimuli in the environment (e.g., art supplies).

Some researchers have embedded scripts within activity schedules to increase the likelihood that social interactions will be emitted more frequently and without discriminative stimuli provided by the instructors. Krantz and McClannahan (1998) embedded Language Master[®] cards into activity schedules to teach three children with autism to initiate to adults about recent events. The authors attached written scripts, such as “Look” and “Watch me,” to photographs of objects in the activity schedules. The children were taught to obtain the object and to initiate to an adult by emitting the script that was attached to the relevant photograph. Scripts were faded out by removing words one at a time from the end of each script. The authors observed a systematic increase in the number of unscripted social initiations as the scripts were faded.

Similarly, Stevenson, Krantz, and McClannahan (2000) embedded audiocards within photographic activity schedules to teach four children with autism to emit social initiations to adults. Upon completion of activities in their schedules, the authors taught the four participants to approach an adult and to emit the scripts provided on the audiocards. Unscripted initiations increased systematically as script fading was introduced.

Other researchers have attempted to transfer the stimulus control of social interactions to natural stimuli in the environment. Wichnick, Vener, Keating, and Poulson (2010) used a script-fading procedure to teach three young children with autism to initiate to one another about toys. Each child had their own bin that contained 10 pairs of animal toys within Ziploc[®] bags. The children did not interact with one another during the baseline condition, but as the script-fading procedure was presented with the animal toys, the authors observed a systematic increase in the number of interactions emitted by the participants. The authors also observed response generalization, as was demonstrated by an increase in the number of novel utterances emitted by the participants as scripts were faded. This indicated that the participants had not merely memorized the language which had been taught. Nevertheless, generalization data across untrained stimuli were variable, and interactions were not observed outside of the research session. The lack of generalized behavior change to non training situations suggests that discriminative control may have been confined to the contrived arrangement of stimuli in training.

Sarokoff, Taylor, and Poulson (2001) used script fading with embedded textual stimuli to teach two children with autism to engage in conversation with peers. For example, the authors incorporated a package of Gummi Savers[®] into the script “Gummi Savers[®] are my favorite.” In this example, the embedded textual stimuli were the words “Gummi Savers” that appeared on the package. The authors faded scripts from end to beginning by deleting words one at a time. At the final fading step, the text that naturally appears on the package remained, and the package acquired discriminative control for engaging in conversation. The number of unscripted initiations to peers increased systematically with the introduction of the script-fading procedure. Although social initiations systematically increased in the presence of stimuli that would naturally be present in the environment, the authors did not report an assessment of stimulus generalization. Therefore, it is unclear the extent to which the relevant stimuli acquired discriminative control.

Reagon and Higbee (2009) trained three parents of young children with autism to use a script-fading procedure to increase the likelihood of verbal initiations to adults during play-based activities. Scripts were recorded on Mini-Me voice recorders and were placed on, or near, the toys used during training. Scripts were faded by removing one word at a time from the end of the script until all words were fully removed from the recorder. The introduction of this script-fading procedure led to a systematic increase in the number of scripted and unscripted verbal initiations emitted by the three participants. Moreover, the authors observed an increase in the number of verbal initiations emitted across toys that had never been presented with scripts. Although verbal initiations did increase in the presence of toys that had, and had not, been presented with scripts, the voice recorders were never fully removed, except during follow-up sessions, for two of the three participants. Therefore, it is possible that, for those two participants, the occurrence of verbal initiations during intervention was under the discriminative control of the blank voice recorders, rather than the natural stimuli in the environment (e.g., toys).

Brown, Krantz, McClannahan, and Poulson (2008) also used the script-fading procedure in an effort to transfer the discriminative control of social interactions from scripts to naturally occurring stimuli. The authors used a textual script-fading procedure to increase the likelihood of social interactions among three children with autism between the ages of 7 and 13 years old. The authors attached textual scripts directly onto stimuli in the participants’ environment. Stimuli included items commonly found in a convenience store, such as candy bars, in a sporting-goods store, such as a football, and in a video store, such as videotapes. The authors created mock stores in which to present the stimuli. During script fading, scripts were deleted one word at a time, and were removed progressively from the training stimuli. The authors also changed the location of the scripts on the stimuli with each fading step. As scripts were removed, the environmental stimuli evoked

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