

*INCREASING SOCIAL INITIATIONS IN  
CHILDREN WITH AUTISM: EFFECTS OF  
A TACTILE PROMPT*

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An ABAB design was used to assess the effects of a tactile prompting device (i.e., a vibrating pager) as a prompt for the social initiations of 3 children with autism during free-play activities with typically developing peers. Results indicated that the tactile prompt was effective in increasing verbal initiations for all 3 children, and responses to peers' initiations were higher for 2 participants when the tactile prompt was used. Efforts to reduce the frequency of prompts while still maintaining rates of initiations were partially successful for 1 participant.

DESCRIPTORS: autism, social initiations, social interaction, tactile prompts

Procedures used to prompt verbal initiations in children diagnosed with autism have included textual prompts and photographic activity schedules (e.g., Krantz & McClannahan, 1993; McClannahan & Krantz, 1997). More recently, Taylor and Levin (1998) demonstrated that a tactile prompt (i.e., a vibrating pager) was an effective prompt for initiating language by a 9-year-old boy with autism. The results of their study indicated that in comparison to no-prompt and verbal-prompt conditions, verbal initiations increased across three play phases when the tactile prompt was used.

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The three goals of the present study were (a) to systematically replicate the study by Taylor and Levin by evaluating the device as a prompt for verbal initiations for 3 children with autism in play contexts with typically developing peers, (b) to extend the Taylor and Levin study by evaluating the collateral effects of the tactile prompt on participants' responses to peer initiations, and (c) to attempt to reduce the frequency of prompts while still maintaining appropriate rates of verbal initiations.

## METHOD

### *Participants, Setting, and Materials*

Participants (Mike, 6 years old; Nathan, 7 years old; and John, 7 years old) had a diagnosis of autism and attended general education kindergarten (Mike and Nathan) or first-grade (John) classrooms with support from an adult aide. All participants responded to questions and initiations from adults; however, they rarely made spontaneous initiations and preferred to play alone than

with peers. For Mike and Nathan, all training and intervention sessions took place in their schools (with a variety of peers in each classroom) and for John, all sessions took place in his home (with the same peer). Peers were not aware of the training provided to the participants and were given no instructions prior to or during the free-play sessions.

The tactile prompt was a JTECH Series 27 pager that vibrated for 3 to 5 s when activated by a remote control. The vibrating pager was small enough to fit in the participant's pocket.

#### *Data Collection and Response Definitions*

Data were collected using a 25-s noncontinuous partial-interval recording system.

*Verbal initiations.* Verbal initiations were any vocal verbalizations made by the participant that were related to the play activity and were directed to another child. For example, if the participant showed his toy to a peer and said, "Look what I have," this was recorded as a verbal initiation. Verbal initiations that were unrelated to the play context were not scored.

*Verbal responses to peer initiations.* Verbal responses to peer initiations were defined as any appropriate vocal response made to a peer's question or direction. For example, if a peer asked, "Do you want to play trains?" and the participant said "yes," a verbal response was recorded. Responses did not have to be affirmative; however, the participant had to follow through with his reply (e.g., if the participant answered "yes," he had to play with the peer).

#### *Interobserver Agreement and Independent Variable Integrity*

A second observer independently collected data during 30% of sessions for all participants. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus

disagreements and multiplying by 100%. Overall agreement across behaviors averaged 86% (range, 74% to 96%), 89% (range, 81% to 97%), and 94% (range, 91% to 99%) for Mike, Nathan, and John, respectively. Independent variable integrity (i.e., timely activation of the tactile prompt by the primary experimenter using a remote control) was collected during 17% of sessions by a second observer, and overall agreement was 100% for all participants.

#### *Procedure*

An ABAB design was used to evaluate the effects of the tactile prompt on verbal initiations and verbal responses to peer initiations.

*Baseline.* Data collectors scored verbal initiations and verbal responses to peer initiations during observations that were conducted during 10-min free-play sessions. No prompts were provided, and participants and peers were free to play with a variety of toys.

*Training.* After completion of the first baseline observation, separate training sessions were conducted to teach participants to make a verbal initiation toward an adult when the tactile prompt was activated. Three phrases (including "Look at this," "I have [object label]," and "Do you want to play?") were prompted in relation to a toy or play activity. During training, the adult sat on the floor with a participant and a variety of toys and activated the tactile prompt (which was placed in the participant's pocket) approximately every minute. Immediately after activation of the tactile prompt, the adult provided a verbal model of the initiation statement. Edible items were provided if the participant imitated the verbal model. The verbal models were gradually faded using a most-to-least prompting hierarchy until the participant made independent initiations when the tactile prompt was activated.

*Tactile prompt.* This condition was identical to baseline, except that the participant

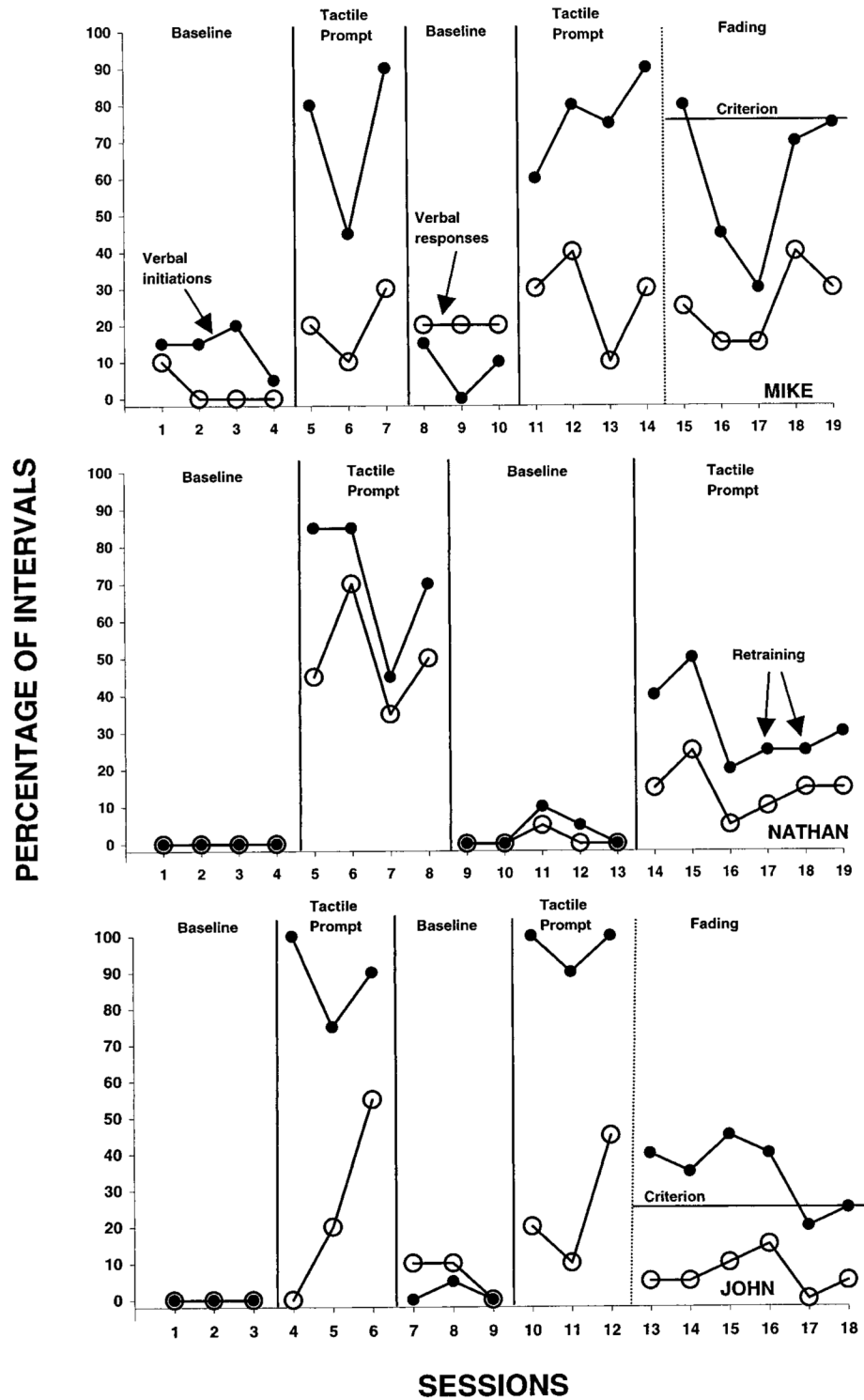


Figure 1. Percentage of intervals in which verbal initiations and verbal responses to peer initiations occurred for Mike (top panel), Nathan (middle panel), and John (bottom panel).

had the tactile prompt in his pocket. The tactile prompt was activated at least once during each 25-s observation interval and was activated a second time only if the participant did not emit a verbalization when the tactile prompt was activated the first time. The second activations of the tactile prompt averaged 5% for Mike, 42% for Nathan, and 13% for John across all phases of the study. No edible consequences were provided for verbal initiations or verbal responses to peer initiations, and no specific directions were provided to peers.

*Prompt fading.* Following replication of the second prompt phase, the frequency of prompts was reduced based on the normative frequencies of initiations emitted by the typical peers who participated in the free-play sessions. This phase was implemented only for Mike and John because Nathan's school year ended before prompt fading could be attempted.

Observations of three of Mike's peers (across three sessions), using the partial-interval recording procedure described earlier, revealed that they emitted a verbalization during approximately 75% of intervals. John's peer emitted a verbalization during approximately 25% of intervals (for one session). The discrepancy between the frequency of verbal initiations for Mike's and John's peers was most likely the result of the setting in which prompt training was conducted (for Mike, in his classroom with 12 to 15 other peers present; for John, in his home with only one peer). If Mike and John maintained verbal initiations at the level of their peers, the level of prompting was subsequently reduced. Reductions in prompting for Mike were set at a range of 10% to 30%, based on his average frequency of verbal initiations in prior prompt phases. For John, a smaller range of prompt reduction was set at 5% (due to decreases in Mike's percentage of initiations when prompts were reduced at a higher percentage).

## RESULTS

For all participants, verbal initiations and verbal responses to peer initiations increased when the tactile prompt was activated (Figure 1). When the device was in place, verbal initiations averaged 72%, 71%, and 88% of the intervals for Mike, Nathan, and John, respectively. Verbal responses to peer initiations also increased. For Mike, verbal responses increased from an average of 3% of intervals during baseline to an average of 20% of intervals when the tactile prompt was in place. For Nathan and John, verbal responses to peer initiations averaged 0% of intervals during baseline and increased to an average of 50% and 25% of intervals, respectively, when the tactile prompt was activated. Attempts at fading the device were partially successful for John. Activation of the tactile prompt was reduced from 100% of intervals (across the prompt conditions) to approximately 14% of intervals (during the fading phase), and John was still talking (e.g., "I'm going to make an airplane") in approximately 34% of intervals. Results for Mike indicated that when activation of the tactile prompt was reduced from 100% of intervals to approximately 78% of intervals, he kept talking in approximately 60% of intervals. The inability to maintain verbal initiations during fading may have been related to the criterion derived from Mike's peers.

## DISCUSSION

These results provide further support for the tactile device as an unobtrusive prompt for verbal initiations. Furthermore, attempts to reduce the frequency of prompts while still maintaining appropriate rates of verbal initiations were partially successful for 1 participant. These findings have important implications for promoting social interaction between children with autism and their typically developing peers. First, the tactile prompt effectively increased verbal initia-

tions. As participants talked more, opportunities to engage in play with peers increased. Second, by promoting social interaction in a natural setting with peers who were unaware of the prompting procedure, children with autism may be more likely to fit in and be less likely to be viewed as different.

There are at least three limitations of this study that need to be addressed. First, the number of phrases that were taught using the tactile prompt was limited to one or two phrases. Future research might evaluate methods for teaching children to make a variety of statements (e.g., incorporating scripts along with the tactile prompt). Second, this study did not account for the direct effects of the device on peers' rates of initiations. In other words, it would be worthwhile to determine if peers' initiations increased as a result of the participants' increased interactions. Finally, when reductions in prompts were implemented, rates of initiations decreased, and some prompting was necessary for participants to maintain initiations commensurate with peers. Additional studies might identify ways to more effectively eliminate the tactile prompt so

that children can continue to initiate and respond in the presence of naturally occurring stimuli.

In summary, this study provided additional support for the use of a tactile device as an unobtrusive prompt to increase social interactions between children with autism and typically developing peers. Additional strengths of this study included investigation of the tactile prompt in a naturalistic setting and an attempt to fade the device and decrease prompt dependency for social interaction among children with autism.

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