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Teaching Social Initiation Skills to Young Children with Autism Using Video Self-Modeling with Video Feedback

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Abstract

The purpose of this study was to examine the efficacy of video self-modeling with video feedback using iPads for establishing mands and greeting to peers in three young children with autism using a multiple probe single subject design across participants. Findings demonstrated that the intervention was effective for improving the target behaviors of two of the three participants. Independent mands generalized and were maintained, both short and long term, for two participants. Greetings generalized and were maintained in the short-term for one participant. Social validity results indicated that the raters viewed the intervention as beneficial for improving mands and greetings to peers.

Keywords: Autism; Children mands; Greeting; Video self-modeling; Video feedback

Introduction

Autism is known as a spectrum disorder because the way that it affects individuals can vary, with some persons showing mild symptoms and others more moderate or severe symptoms. Despite where an individual falls on the continuum, most fail to demonstrate adequate social communication and interaction [1]. A substantial body of research has identified effective interventions that may alter the developmental trajectory of individuals with autism [2]. One such effective procedure is mand training, which has been shown to establish spontaneous and functional communication skills in children with autism. Mands are considered a type of social initiation that refers to what is usually termed a "request, demand or command." By definition, a mand is controlled by a motivating operation (MO). A MO is an environmental event, operation, or stimulus that increases the probability that a person will display a request, demand or command related to the MO [3]. For example, the deprivation of water is a MO that increases the probability that a person will request water [4]. Mands, the term that will be used throughout the study, will refer to requests that are controlled by MOs and represent independent performance on the part of the children with autism.

Mand training consists of exposing a child to an environment that is rich with preferred stimuli and then providing frequent reinforcement for communicative behavior [2]. Two studies [5,6] investigated teaching mands to children with autism in order to improve their social initiation skills to adults and peers. Taylor et al. [6] explored manipulation of the MO in order to increase the social initiations of three children with autism to their peers. Pellecchia and Hineline [5] taught three preschool children with autism to mand for preferred items, while investigating the degree to which a mand repertoire generalized across parents, instructors, siblings and peers. Although mands were acquired by the participants in both studies, each study concluded that mands to peers should be taught separately from mands to adults due to the lack of generalization effects from adults to peers. Emphasis on the high value of reinforcers for achieving better outcomes was accentuated in both studies. It was noted that MOs had powerful influences on reinforcer values and all children emitted faster acquisition of mands when items used had a history of functioning as reinforcers. Another common feature in these studies was the use of prompting, fading procedures, and differential reinforcement as a treatment package. In another study by Thomas et al. [7], this treatment package resulted in a significant increase in mand repertoires for three participants with autism and generalization of mands across settings and items for two of the three.

One of the barriers associated with mand training is the lack of integration of socially appropriate behaviors with mands. Taylor et al. [6] indicated that commenting before manding for preferred items or embedding a social interaction into reinforcers may be more likely to increase the probability of appropriate mands and facilitate other types of social initiations. Given that social reinforcement is not as strong a reinforcer for children with autism as for typically developing children, one of the study's speculations was that the integration of social interactions into reinforcers delivered during mand training is more likely to increase the sensitivity to social reinforcers and the frequency of other types of social initiations.

An intervention along these lines that may enhance mand training is video-based instruction (VBI), which is an umbrella term for interventions that include any procedures that use video footage for modeling target behaviors [8]. VBI is a possible intervention for establishing mands, because it allows children to observe an evocative event, produce the target mand as a result of that evocative event, and have the communication partner provide consequences to the child [9]. Video modeling, a VBI approach, used by Plavnick and Ferreri [9] was effective for establishing a vocal mand repertoire in four children with autism who displayed severe language impairment. In experiment 1, they determined the function of mands using a functional analysis and then in experiment 2, they used peers as models in the video vignettes and adults as communication partners to teach three vocal mand pairs (e.g. open it). Acquisition of mands in two conditions, function and non-function-based, was investigated. Although results showed that all participants demonstrated mand acquisition for the function-based compared to the nonfunction-based targets, it is worth mentioning that two participants needed several modifications in order to acquire the

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target behaviors with one of the participants acquiring picture exchange mands instead of vocal mands.

Both video self-modeling and video feedback are VBI approaches that may have some advantages for teaching children with autism to mand to peers and to display other social initiations. Video self-modeling allows children to view their own exemplary behaviors that might be slightly above their present ability [10]. Video feedback consists of the participant watching non-edited videos of their own behavior and then co-reviewing it with the teacher to evaluate the behavior(s) and to discuss adjustments in future performance [11]. Video self-modeling has proven effective for spontaneous requesting of young children with autism to adults [12], vocal and physical initiations with typical peers in a playground setting [13] and social engagement [14] and social initiations with typical peers [15,16]. Evidence for video feedback has also been demonstrated to improve social initiations of children with autism. In Deitchman et al. [11], the participants were trained to evaluate appropriate and inappropriate initiations first and then in a 10 min clip from the participants' previous day, they were asked to evaluate their performance using a self-monitoring chart. Based on the accurate discrimination of their behaviors, they received rewards of their choice. Thiemann and Goldstein [17] implemented procedures for video feedback similar to Deitchman et al. [11]. However, they used social stories and textual cues in addition to video feedback. Both studies rewarded their participants upon successful discrimination of appropriate vs. inappropriate behaviors.

Among the studies that used video self-modeling, one used Discrete Trial Training to teach acquisition of requests to participants before the start of the study [12]; others reported all or several participants who did not respond to the intervention [13,18] and none of the studies addressed mands to peers as target behaviors. Studies that used video feedback, on the other hand, added or combined other strategies in order to improve the social initiations of their participants, suggesting perhaps that video feedback is not powerful enough to elicit social initiations without the support of other strategies (e.g. reinforcement, self-monitoring). Therefore, it would be valuable to investigate the efficacy of video self-modeling with video feedback for the improvement of mands to peers in children with autism. Currently, there are no published studies that examined the efficacy of video self-modeling with video feedback using iPads for establishing mands to peers while also incorporating another social initiation skill. Accordingly, the purpose of this study is to examine the efficacy of video self-modeling with video feedback using iPads for establishing mands to peers with autism while also targeting another social initiation behavior. This study will address the following research questions: a) Is video self-modeling alone, delivered via iPad, effective in establishing mands and greeting behaviors to peers? and b) Is video self-modeling with video feedback using iPads effective in establishing mands as well as greeting behaviors to peers? In order to conduct this study, permission by the Institutional Review Board was granted prior to the start of the study.

Methods

Participants

The participants were three preschool-aged children with autism who attended school in an autism therapy center. Participants were selected in accordance with the following five criteria: a) a diagnosis of autism spectrum disorder, b) age between 3 and 6 years, c) ability to express wants and needs using at least one word or an augmentative and alternative communication (ACC) device, d) low or nonexistent levels of social initiation skills with peers, and e) inability to produce independent mands for preferred items to peers. The names used in the study are pseudonyms and the characteristics are sufficiently generic that the children are not otherwise identifiable.

Lily: Lily, who was diagnosed with mild to moderate autism, was five years and three months old at the beginning of the study. She used speech as her communication mode, exhibiting well-developed expressive and receptive language skills. Results of The Assessment of Basic Language and Learning Skills – Revised (ABLLS-R) [19] administered by center staff and goals on her individualized treatment plan revealed that she neither spontaneously initiated interactions nor requested to peers. Increasing social interaction skills was a long-term goal. At the start of the study on the ABLLS-R, she had mastered four out of 15 programs (27%) in the area of appropriate and functional play skills with peers; seven out of 34 programs (21%) in the area of social interactions with peers and adults; four out of 29 programs (14%) in the area of requests for items and activities. None of the programs mastered included requesting items independently or initiating social interactions with peers. Lily's goals for the study were greeting a peer and manding independently using two to three word phrases to a peer for a turn to use an iPad.

Tom: Tom, who was diagnosed with severe autism, was three years and nine months old when the study started. According to Tom's individualized treatment plan, he had difficulty in functional communication and social interaction skills in addition to other areas. Results of ABLLS-R showed that he had mastered two out of 15 programs (13%) in the area of appropriate and functional play skills with peers; seven out of 34 programs (21%) in the area of social interactions with peers and adults; two out of 29 of programs (6.8%) in the area of requests for items and activities. Programs mastered did not include requesting items independently or initiating social interactions with peers. Although Tom had been using augmentative and alternative communication as a primary means of communication, he started to communicate his wants and needs verbally (i.e., single words) at the time of the study. Consequently, the study targeted verbal communication. Tom's goals for the study were greeting peers verbally and using a two to three-word phrase to independently mand to peers for a turn to use an iPad.

John: John, who was diagnosed with mild to moderate autism, was three years and nine months old at the beginning of the study. Results of ABLLS-R, administered by the center staff, and goals on his individualized treatment plan revealed that he lacked functional communication and social interaction skills. At the start of the study on the ABLLS-R, John had mastered one out of 15 programs (7%) in the area of appropriate and functional play skills with peers; one out of 34 programs (3%) in the area of social interactions with peers and adults; one out of 29 of programs (3%) in the area of requests for items and activities. None of the programs mastered included requesting items independently to peers or initiating social interactions with peers. Although John had been using AAC to communicate his wants and needs, since he was able to verbally mand using single words when prompted at the start of the study, the study targeted verbal communication. John's goals for the study were greeting the peer and using a three-word phrase to mand independently to peers for snack food items.

Peers: Since the study took place in an autism center, other children with autism who were more advanced in their social communication were selected as peers. Two peers with autism, one boy and one girl, were identified by teachers as peers who were likely to cooperate and respond to requests of adults and peers. Anna, who was paired with Tom and John, was five years old and was diagnosed with high functioning autism. She had well developed communication skills. She exhibited social interactions skills with peers and adults. Ben, who was paired with Lily, was five years old and had mild autism. He also exhibited expressive and receptive language skills. These two peers served as generalization peers. However, only Anna participated during maintenance since Ben was no longer receiving services at the center.

Materials and Procedure

Setting

The study was conducted at an autism therapy center in a small Midwestern town. The setting consisted of six specialized classrooms or "pods" with partitioned instructional areas for one-on-one instruction (called cubbies). Children were assigned their own cubby. The common area within a pod, which was located outside the cubbies, was considered the natural environment setting. The natural environment included dramatic and library areas. The preference and self-recognition assessments as well as video viewing took place in each child's cubby; the activity sessions were conducted in the natural environment setting and set up in the same manner as in the video. Participants and peers were from different pods.

Materials

The natural environment contained typical teaching materials (i.e., tables, chairs, toys, books) while a cubby contained a child size table and a chair. A video camcorder for video recording and an iPad for video viewing were used in both settings. Highly preferred reinforcement items for the participants and peers were used in the natural environment.

Preferred items: Based on the preference assessment results, the most highly preferred item for Tom and Lily was the iPad game Educational Rooms™ whereas for John food items (i.e., chips, fruit snacks) were the most highly preferred. The game on the iPad had a clear beginning and ending, which lasted between 10-20 s, allowing for multiple manding opportunities between the participant and the peer. The iPad game was located on a second iPad reserved specifically for using the game. A minimum of 10 pieces of food was provided for John.

Video vignettes: Prior to the start of the study, short video vignettes of less than one minute were created for each participant, using each participant as the primary model. A video vignette consisted of the participant in the natural environment displaying the target behaviors. The vignettes were edited to remove the experimenter's prompts and depict the participants' exemplary behavior. For John's video, the words "I want" using another child's voice were also added before the food name as John did not yet display three-word utterances.

Video vignette for iPad turns: The content of the video vignette for iPad turns consisted of the participant independently approaching the peer who was seated at a child's size table playing a game on the iPad in the natural environment setting. The participant greeted the peer saying "Hi (name)" and the peer responded back "Hi (name of participant)." Then after the peer finished a round of the game, the participant independently manded a turn by saying "My turn" to the peer. The peer granted the iPad to the participant as requested by saying "(Name's) turn." The participant then took the iPad and played a round in the game. After the participant finished a round of the game, the peer then said "My turn." The participant granted the iPad to the peer as requested by saying "(Name's) turn." In order for the video vignette to be short in length but still to incorporate several opportunities of manding for the item, both peer and participant were shown taking turns on the iPad but not completing the games from beginning till the end.

Video vignette for food items: The content of the video vignette for food items consisted of the participant independently approaching the peer who was having snack while seated at the child size table in the natural environment. The participant greeted the peer saying "Hi (name)" or simply "Hi" or "Hello" and then independently manded "I want (name of the snack item)" for the food item that was displayed in front of a peer. Then, the peer granted a piece of the food to the participant as requested by saying something like "Here you go." The participant took that piece of food, consumed it, and then manded independently for the other pieces. The video vignette ended with the participant manding for the last piece of snack item in front of the peer.

Pre-experimental procedures: Before the start of the study, parent consent was received for all three participants and their peers. In addition, center staff also consented to participate in the study. In order to determine the participants' abilities, the experimenter conducted three different assessments: a) preference assessment using a paired stimulus procedure b) self-recognition assessment, and c) attendance to the video.

The ABLLS-R [19] was administered for each of the participants by the staff at the center in a regular basis. Results of this assessment were used to design an Individualized Treatment Plans (ITP). The skills targeted in this study were selected based on the goals that these children had on their ITP's in agreement with the staff center and parents of the participants.

Research design

A multiple probe single subject design across participants was utilized to demonstrate experimental control and establish a functional relationship between the independent and dependent variables. The independent variable consisted of video self-modeling with video feedback using an iPad. Video feedback used in this study, however, differed from the video feedback used in other studies in a few key ways. The participant did not have to discriminate or evaluate his own performance using a self-monitoring chart. While watching the video footage on the iPad, which was brought into the activity session, the experimenter provided feedback on the participants' exemplary behavior (e.g. "Lily, you requested the iPad when (name of peer) finished his turn"). This component is often called "feed forward," a unique feature of video self-modeling. No tangible reward system was implemented at any point during the intervention.

The dependent variables consisted of (a) independently greeting the peer and (b) manding independently to the peer. *Independent greeting* was scored if the participant said "Hello (name of the peer)" or "Hi" to the peer whereas *independent manding* was scored if the participant (a) initiated a mand for a preferred item that was in his/her peer's possession using a two-to three-word mand phrase for Lily and Tom (i.e., "My turn" or "It's Lily's turn") or a three word mand phrase for John (i.e., "I want (name of item);" (b) waited for the peer to grant the item requested, and (c) completed the activity (i.e., for Lily and Tom, completing the game and then handing the iPad to the peer; for John consuming the food item). Independent greeting and manding to the peer were expected to occur in the natural environment after watching the video vignette in the cubby before the 10 min activity session.

Criterion performance consisted of the participant displaying independent mands to the peer for 80% of the opportunities within an activity session. Each activity session was designed to provide 10 mand opportunities during a 10 min session, although there were some sessions when more or less mand opportunities occurred.

The design consisted of a) baseline, b) video self-modeling only (VSM); c) video self-modeling plus video feedback (VSM-FB), d) short-term maintenance, e) generalization and f) long-term maintenance.

Baseline: Partington Participants were observed for a minimum of four 10 min probe sessions in the natural environment with the peer playing with the iPad or snacking while seated at the child size table with an empty chair across the table. The participant was brought into proximity to the table by a staff member. If the participant or the peer left the area, the staff member physically prompted the child to return to the table. During the session, the staff member stood close to the peer to prompt an appropriate response if the participant manded.

Intervention: Intervention consisted of two conditions (a) video self-modeling and (b) video self-modeling with video feedback.

Video self-modeling: Although video self-modeling can be a powerful stand-alone intervention for some children [14], for other children additional supports in the activity session, such as video feedback proposed for this study, are necessary for the children to acquire and/or achieve criterion performance on the targeted behaviors. To determine the impact of video self-modeling alone on the participants in this study, a video self-modeling condition was instituted. The video self-modeling intervention consisted of the participant watching a video vignette (less than one min) on the iPad. At the beginning of the intervention session the experimenter invited the participant to watch a video (e.g. "(Name) let's watch the video") in the cubby. Then, the experimenter invited the participant to the activity session, which was set up in the same manner as in the video, by saying, "(Name), let's do the same as in the video" and led the participant to the activity area. If the peer did not grant the iPad/food item upon the participant's mand then s/he was prompted by the experimenter/staff to grant the toy/food item to the participant.

Video self-modeling with video feedback: Children began the video self-modeling with video feedback condition, once it was clear that the video self-modeling condition was insufficient for acquiring criterion performance on the targeted behaviors. The video self-modeling with video feedback condition consisted of (a) viewing the video in the cubby as described in the video self-modeling condition above, and (b) receiving video feedback during the activity session whenever the participant did not display the target behavior expected. Video feedback consisted of inviting the participant to watch the video segment of the target behavior as in the video self-modeling condition with comments from the researcher pointing out the participant's exemplary behaviors (e.g., "Lily is waiting for her turn"). In addition to video feedback physical blocking was implemented if the participant attempted to grab the item (e.g., chip, iPad). Physical blocking consisted of the experimenter putting a hand on the item to keep it on the table as soon as the participant attempted to grab the item.

Short-term maintenance: Three 10 min activity sessions similar to baseline in the natural environment setting were conducted on consecutive days in order to determine if the participants maintained the target behaviors without watching the video.

Generalization: Three 10 min generalization sessions, also similar to baseline, were conducted for 3 consecutive days following short-term maintenance. One of the generalization sessions was conducted in a different setting, one with a different peer, and the last one with a novel item not used during training (e.g. new iPad game or snack item).

Long-term maintenance: Three 10 min sessions in the natural environment arranged similar to baseline were conducted for 3 consecutive days one month after the intervention was withdrawn. This determined if the participants maintained treatment gains across time.

Data collection and analysis

All sessions were videotaped for subsequent data collection, including the determination of reliability and fidelity. The experimenter scored occurrences of the dependent measures with a graduate student serving as the reliability observer. Video vignettes depicting children with ASD displaying target behaviors were used for reliability training. A scoring manual containing operational definitions of the target behaviors, examples and non-examples of the target behaviors and a scoring protocol was provided to the reliability observer. Initial training consisted of the reliability observer engaging in a practice session during which she identified and recorded target behaviors while watching the aforementioned video recordings, which were then compared to the experimenter's recordings. Training continued in this fashion until 90% agreement with the experimenter was reached for three consecutive sessions.

Inter-observer agreement

The reliability observer reviewed randomly selected session videos, independently scoring 27-40% of sessions across conditions for Lily, 33-50% for Tom and 27-33% for John. The inter-observer agreement was calculated by dividing the total number of agreements by the total number of agreements plus disagreements multiplied by 100. Average inter-observer agreement for Lily was 94% (range: 88%-100%); for Tom, 96% (range: 85%-100%); for John 96% (range: 92%-100%).

Procedural fidelity

To determine whether the intervention procedures were implemented accurately and consistently, procedural reliability data sheets were developed for all conditions. The graduate student who served as the reliability observer was also a procedural fidelity observer. She used the checklist to review the video recordings and evaluate whether the experimenter was following and accurately implementing each step of the intervention following the formula: total number of steps completed accurately divided by the total number of steps completed accurately plus the total number of steps missed multiplied by 100. Procedural fidelity was 100% for the 27-50% of random sessions selected for measuring procedural fidelity across participants and conditions.

Data Analysis

The percentage of independent performance of greetings and mands was calculated by dividing the number of occurrences of the target behavior by the number of opportunities to display the target behavior in a ten-minute session. These data were then graphed in order to visually determine the effect of the intervention on the occurrence of independent greetings and mands.

Social validity

Upon completion of the study, four center staff who worked with the participants and Lily's and John's mothers participated in a social validity assessment. They rated one baseline and one intervention video using a 5-point Likert rating scale (1-strongly disagree to 5-strongly agree) based on the target behaviors observed in pre-and-post videos, the importance of targeted behaviors for children with autism, practicability of the intervention, motivation of children to participate in intervention, recommendation of the intervention to other children with autism, and generalization of skills across peers, settings and items. A comments section encouraged respondents to further evaluate the efficacy and/or acceptance of the intervention more indirectly.

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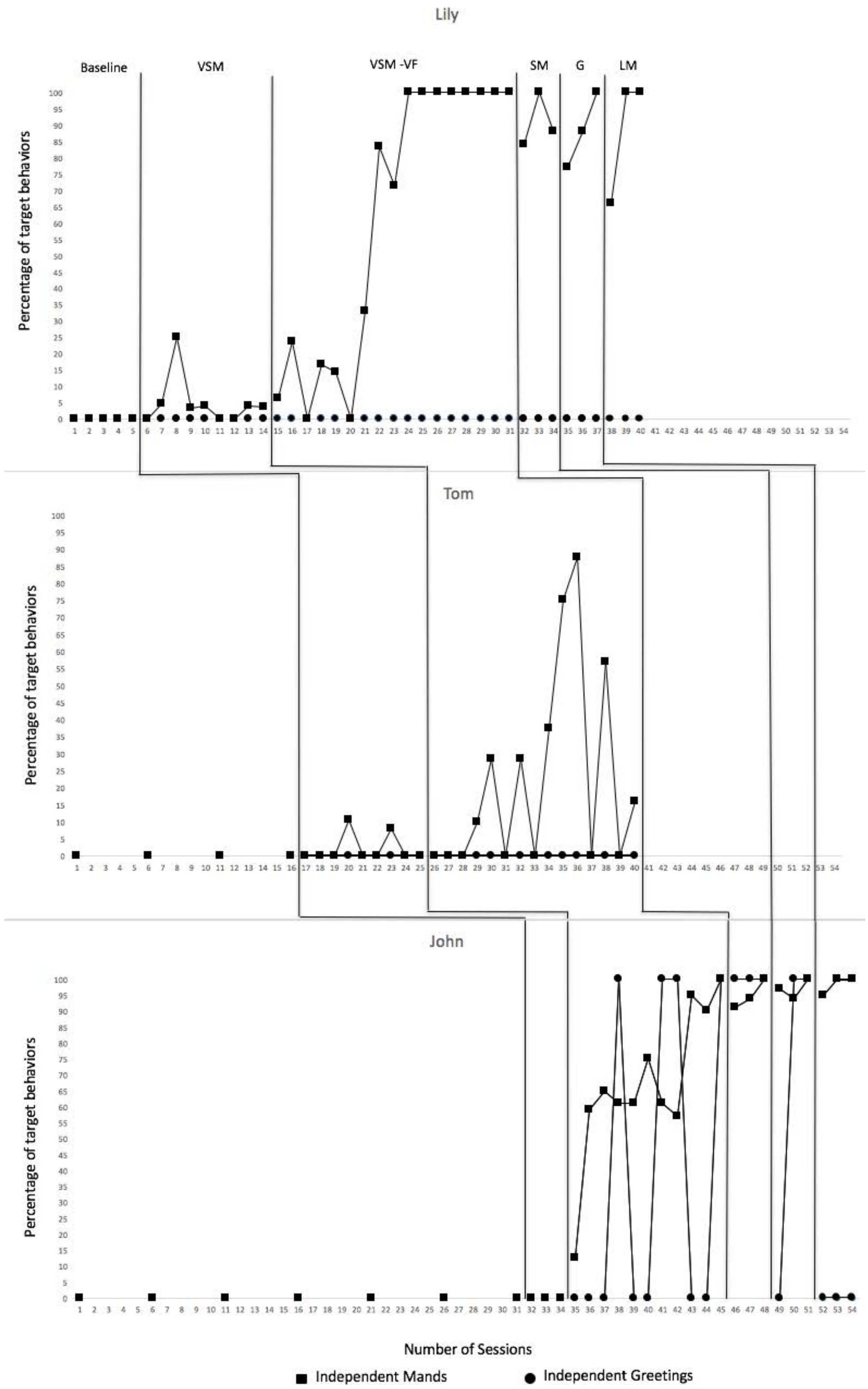
Results

Percentages of independent greeting and independent mands are presented in Figure 1 for each participant across five phases: baseline, intervention, short-term maintenance, generalization and long-term maintenance.

Lily: During five consecutive 10 min baseline sessions, Lily did



Note* VSM: Video Self-Modeling; VSM-VF: Video Self-Modeling with Video Feedback; SM: Short-term Maintenance; G: Generalization; LM: Long-term Maintenance

Figure 1: Percentage of independent greeting and independent mands for all participants.

not display any independent mands to the peer. She did not use any greeting behaviors towards the peer either. When video self-modeling was implemented, she started displaying independent mands in the second session. However, she did not meet the criterion for independent manding after nine sessions or start greeting the peer. After the third session she started using the mand frame "my turn" independently, but she did not allow the peer to complete the game. She just offered the iPad saying "(peer's name) turn" or "my turn" and got the iPad back without giving him the opportunity to complete the game. In addition, she ignored the peer's request after she completed the game. These were considered incorrect responses. Therefore, video self-modeling with video feedback was implemented to provide additional support for acquiring the appropriate behaviors.

During first seven sessions of video self-modeling with video feedback condition, Lily's performance varied from four independent mands in the second session to no independent mands in two sessions (i.e., third and sixth). Then, her performance changed in the eighth session when she met the criterion independently to the peer and her performance remained high after that.

Although Lily reached the 80% criterion for manding by session twelve, further attempts were made in order to improve greeting behavior. Prompting (i.e., Say "Hi (name of peer)" was also added to facilitate greeting behavior starting from the ninth session. She greeted the peer after the prompt for the last three sessions of this condition, but never displayed it independently Independent mands continued to remain at high frequency.

In the short-term maintenance condition, Lily was able to maintain independent manding without watching the video. The number of independent mands remained high in all three sessions (M=8.6; range, 7-11). Greeting was not displayed.

Lily demonstrated generalization of independent mands across peers, items (new iPad game) and across settings (M=6.6; range, 5-8). In all three sessions although Lily had not seen the peer before the session started, she did not greet the peer.

Even one month after the intervention was withdrawn Lily was still able to independently mand to a peer while playing appropriately with the peer on the iPad games. At the first session she displayed four independent mands whereas in other two sessions she manded independently six and eight times (M=6; range, 4-8). She did not greet the peer.

Tom: Since Lily reached 25% improvements after Tom's fourth 10-minute baseline session, only four baseline sessions were conducted in which he displayed neither independent mands nor greetings. While in the video self-modeling condition, Tom did not show any improvements until the fourth session when he displayed two independent mands. However, during the third session he used the mand frame "my turn" independently but grabbed the iPad from the peer without giving the peer time to grant the item to him. Therefore, this was not scored as correct response. Based on this occurrence, the video self-modeling condition continued. There were two instances in the seventh session when he displayed independent mands, but overall he did not meet the criterion.

As in Lily's case, the video self-modeling with video feedback condition was implemented. After three unsuccessful sessions, prompting was added. Although Tom began displaying independent mands after this modification, they remained below criterion. Greeting was still nonexistent. A new iPad game was introduced in session 6 to offset Tom's waning interest in the original game. Tom displayed seven independent mands, the highest number ever, in session seven; however, after this session the frequency of mands decreased dramatically to zero. Since Tom did not meet the criteria even after 15 sessions, the intervention was stopped and he was withdrawn from the study.

John: During seven 10 min baseline sessions, John did not display independent mands or greet his peer. In the video self-modeling condition, it became clear after 3 sessions that video self-modeling alone had no discernible effect on facilitating the targeted behaviors. Consequently, the video feedback condition was begun.

Video self-modeling with video feedback showed rapid improvement in the target behavior. John showed consistency regarding independent mands across 10 sessions starting from the second session. John's greetings to peers, however, varied within and across sessions. In the third session, he just waved to the peer; in the fourth session, he greeted the peer five times. However, greeting was scored only once at the beginning of the session.

In the short-term maintenance condition, John was able to maintain the target behavior without watching the video. The number of independent mands remained high in all three sessions (M=16; range, 12-21). He also greeted the peer at the start of each session.

John generalized independent mands to a new peer (M=22; range, 13-39), displaying the maximum number of mands throughout the study with a new item (i.e., fruit snack) as well as greeting in a new setting and with new items.

Even one month after the intervention was withdrawn, John maintained a high frequency of independent manding to a peer (M=18; range, 16-21), but not greeting.

Social validity: Four professionals and two mothers (N=6) who participated in the social validity assessment were very supportive of the intervention. All respondents disagreed or strongly disagreed that during baseline the participants displayed the target behaviors whereas all respondents noticed improvements in the target behaviors during the intervention, generalization, and maintenance. See Table 1 in Appendix A for detailed results of social validity assessment.

Discussion

This study hypothesized that when children with autism watched themselves on the iPad and when video feedback on their exemplary behaviors was provided to them, they would independently greet and then mand to the peer for preferred items. A functional relationship was established between video self-modeling plus video feedback and manding for two of the three participants. Two participants, Lily and John, made substantial gains manding to peers, given that they neither displayed the target behaviors during baseline nor reached criterion using video self-modeling alone. Both Lily and John also maintained and generalized their manding skills to peers across settings, items, and peers. John also learned to independently greet a peer under these same intervention conditions, which was maintained and generalized in the short-term. Tom, however, did not meet the criterion for the target behavior even after 24 sessions so he was withdrawn from the study in agreement with his parents and the staff center.

Findings of this study corroborate evidence from previous studies (e.g. Bellini et al. [14] and Buggey [16]) that video self-modeling is an effective intervention in improving social initiations. However, as noted in the review by Kabashi and Kaczmarek [20], it is not atypical to use additional strategies in the activity session when video self-modeling alone fails to promote the target behaviors, as was the case with this study. The additional strategy used in this study was video feedback in which the experimenter pointed out the participants' exemplary behaviors while showing the same video that had been shown prior to the activity session. By pointing out, for example, how the child was waiting his turn, behaviors that might not have been obvious to the child in the initial viewing of the video become more salient. This promoted the display of the target behaviors and reduced any inappropriate behaviors, similar to a study by Kabashi and Epstein [21].

Following recommendations of Taylor et al. [6] regarding social interactions embedded during mand training, all video vignettes in this study embedded greeting behavior. However, this intervention was not powerful enough to elicit independent greeting to the peer for Lily. One speculation why the intervention failed to establish such behavior could be attributed to the limited number of opportunities to view greeting in the video and to display the behavior in the activity session. For mands, there were multiple opportunities in which the target behavior was depicted in the video vignette in addition to numerous opportunities for the target behavior to be applied during the activity session. Using prompting as an additional strategy to establish greeting similar to Litras et al. [22], Lily did display greeting behavior when prompted during the VSM with video feedback condition. However, she, like Tom, never learned to greet independently. Interestingly, Lily's teachers videotaped her during dramatic play showing her playing with two big bears in which she imitated the intervention scenario, including greeting, independently manding for a video game, and waiting for her turn patiently in her seat while saying "(name)'s turn."

Another important aspect of this study is that it highlights the efficacy of video self-modeling with video feedback for increasing the utterance length in children with autism. Usually video self-modeling is seen as an intervention that works with children who have the skills targeted within their repertoire [10]. John, however, was still not able to use a three-word utterance when the study started. The experimenter edited his audio by adding the voice of a peer who had a similar voice to John's so he would be exposed to the mand phrase "I want (name of item)" every time he watched the video. The video self-modeling allowed John to see himself displaying the skills that were slightly above his abilities and he increased the number of words in his requests to the peer from one to three. This result supports Smith et al.'s theory [23] on the impact of feed forward, "a future action of skill to achieve a valued goal" for the improvement of children's target behaviors.

Although Tom did not meet the criterion for any of the target behaviors, he still displayed up to seven independent mands during the video self-modeling with video feedback condition when prompting was also incorporated. Several assumptions could explain Tom's poor performance. The first assumption concerns the severity of autism. He was the only participant whose treatment education plan indicated severe symptoms of autism. This is similar to the findings of Nikopoulos and Keenan [24], who failed to improve the social initiations of two participants with severe diagnoses of autism. The second assumption is related to Tom's attention to the video. Although at first Tom watched the video vignette before the activity session started without any problems, towards the middle of the video self-modeling intervention he started closing his eyes and covering his ears with both hands whenever the video vignette was shown to him, behavior that continued throughout the rest of the intervention. The experimenter prompted him several times to open his eyes and uncover his ears when viewing the video vignette. The role of attending to the video has been greatly emphasized by video self-modeling supporters [10]. Another speculation may be the inconsistency of items serving as potential reinforcers for Tom. While mand training "focuses on motivation as an important antecedent and tries to use direct reinforcement (rewards that are directly related to the activity) as a tool to increase children's use of skills across time and environment" [1] Tom's motivation to play with the iPad game decreased as soon as he learned how to complete that game. While he was interested in the iPad game at the beginning of the study, his interest declined as the study progressed. In some occasions, he would return the iPad to the peer without playing, even when the peer granted the iPad upon the completion of her round. When a new iPad game was used, his independent mands to the peer increased up to seven. However, his interest declined again as soon as he figured out the game. This supports findings of other researchers regarding the high value of reinforcers when teaching mands in young children with autism [6].

Limitation

One limitation of the study was the use of children with autism as peers. Although they truly represented the participants' peers, at the start of the study the peers often inconsistently responded to the participants' requests, requiring the center staff member to prompt a response that was sometimes met with noncompliance. This initially reduced somewhat the number of opportunities that the participant had to mand to the peer. It is likely that if typical peers had been available, they might have learned the routine more quickly.

In regard to independent manding to peers, this study used the participants' preferred items: preferred snacks vs. the educational app on the iPad. Participants' preferred items determined the type of skills required in order to establish and maintain appropriateness of independent mands. While the participant having snack would simply consume the item granted by the peer, the participant who played in the iPad had to wait patiently for the peer to finish the game and grant the iPad upon her independent mand, which required waiting for the turn, a skill that is quite challenging for children with autism.

Conclusion

Findings of the present study suggest that video self-modeling with video feedback using iPads is a promising intervention for establishing mand repertoires in children with autism. However, the results also support previous findings that this intervention might not be as beneficial for children who have severe autism, who are not motivated to watch videos of themselves or for whom stimuli are not powerful enough reinforcers. Thus, more research needs to be focused on the characteristics of children for whom the use of video for modeling target behaviors is likely to be successful.

An increased number of children have been identified in the last decade, a large percentage of who are being educated in general education classrooms [25]. It is critical that teachers have evidenced-based strategies that are easy to implement in classrooms without taking too much time away from other children. Investigating the efficacy of teacher-implemented or assistant teacher-implemented video self-modeling with video feedback in classrooms via iPad to improve social initiations of children with autism with typically developing peers would be a logical next step for future studies. If peers with autism in this study were able to learn to respond to other children with autism who spoke and initiated less, than surely typically developing children would also be able to learn the appropriate routines as well.

In addition, including other types of social interactions other than greeting (e.g. commenting on the item, complimenting the peer) in conjunction with teaching independent mands is worth exploring, especially since greeting seems to be a particularly difficult skill to teach using video modeling as demonstrated in this study and other video-based instruction studies (e.g. Litras et al. [22]). Finally, firmly establishing a set of prerequisite skills that are necessary to benefit from video-based instruction approaches appears justified.

References

1. Donaldson AL, Stahmer AC (2014) Team collaboration: The use of behavior principles for serving students with ASD. Lang Speech Hear Serv Sch 45: 261-276.
2. Harris SL, Delmolino L (2002) Applied behavior analysis: Its application in the treatment of autism and related disorders in young children. Infants Young Child 14: 11-17.
3. Michael J (1993) Establishing operations. Behav Anal 16: 191-206.
4. Michael J (1982) Distinguishing between discriminative and motivational functions of stimuli. J Exp Anal Behav 37: 149-155.
5. Pellecchia M, Hineline PN (2007) Generalization of mands in children with autism from adults to peers. Behav Anal Today 8: 483-491.
6. Taylor BA, Hoch H, Potter B, Rodriguez A, Spinnato D, et al. (2005). Manipulating establishing operations to promote initiations toward peers in children with autism. Res Dev Disabil 26: 385-395.
7. Thomas BR, Lafasakis M, Sturmey P (2010) The effects of prompting, fading and differential reinforcement on vocal minds in non-verbal preschool children with autism spectrum disorders. Behavioral Interventions 25: 157-168.
8. Rayner C, Denholm C, Sigafoos J (2009) Video-based intervention for individuals with autism: Key questions that remain unanswered. Res Autism Spectr Disord 3: 291-303.
9. Plavnick JB, Ferreri SJ (2011) Establishing verbal repertoires in children with autism using function-based video modeling. J Appl Behav Anal 44: 747-766.
10. Buggey T, Hoomes G (2011) Using VSM with preschoolers with autism spectrum disorder: Seeing can be believing. Young Exceptional Children 14: 2-12.
11. Deitchman C, Reeve SA, Reeve FR, Progar PR (2010) Incorporating video feedback into self-management training to promote generalization of social initiations by children with autism. Educ Treat Children 33: 475-488.
12. Wert BY, Neisworth JT (2003) Effects of VSM on spontaneous requesting in children with Autism. J Posit Behav Interv 5: 30-34.
13. Buggey T, Hoomes G, Sherberger ME, Williams S (2011) Facilitating social initiations of preschoolers with autism spectrum disorders using VSM. Focus Autism Other Dev Disabl 26: 25-36.
14. Bellini S, Akullian J, Hopf A (2007) Increasing social engagement in young children with autism spectrum disorders using VSM. School Psych Rev 36: 80-90.
15. Boudrey J, Harvey MT (2013) Increasing recreating initiations for children who have ASD using video self-modeling. Educ Treat Children 36: 49-60.
16. Buggey T (2005) Video self-modeling applications with students with autism spectrum disorder in a small private school setting. Focus Autism Other Dev Disabl 20: 52-63.
17. Thiemann KS, Goldstein H (2001) Social stories, written text cues, and video feedback: Effects on social communication of children with autism. J Appl Behav Anal 34: 425-446.
18. Buggey T (2012) Effectiveness of video self-modeling to promote social initiations by 3-year-olds with autism spectrum disorders. Focus Autism Other Dev Disabl 27: 102-110.
19. Partington JW (2006) Assessment of basic language and learning skills-revised (the ABLLS-R). Walnut Hill CA: Behav Anal Inc.
20. Kabashi L, Kaczmarek LA (2016) Evaluating the efficacy of video-based instruction (VBI) on improving social initiation skills of children with autism spectrum disorder (ASD): A review of literature. Review J Autism Dev Disord 4: 61:81.
21. Kabashi L, Epstein A (2017) Teaching independent transitioning to young children with autism using video self-modeling with video feedback via iPads. World Journal of Educational Research 4: 367-387.
22. Litras S, Moore DW, Anderson A (2010) Using video self-modeled social stories to teach social skills to a young child with autism. Autism Res Treat.
23. Smith J, Hand L, Dowrick PW (2014) Video feed forward for rapid learning of a picture-based communication system. J Autism Dev Disord 44: 926-936.
24. Nikopoulos CK, Keenan M (2007) Using video modeling to teach complex social sequences to children with autism. J Autism Dev Disord. 37: 678-693.
25. Leach D, Duffy ML (2009). Supporting students with autism spectrum disorders in inclusive settings. Interv Sch Clin 45: 31-37.

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