

ACTIVITY RECALL BOARD: A VISUAL CUE FOR CHILDREN WITH LANGUAGE DELAYS

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Abstract

The current study sought to determine if using a visual cue was an effective method of stimulation for a child with language delays. While there is a vast amount of evidence supporting the use of visual aids in the population of individuals with Autism Spectrum Disorder, there is a lack of research concerning visual stimulation in individuals with Down Syndrome. This study attempted to contribute to the growing body of evidence supporting visual cues for children with language delays.

Literature Review

Trisomy Twenty-One, also known as Down Syndrome, is a genetic disorder where the defect is located on the twenty-first pair of chromosomes. While also characterized by physical abnormalities, the disorder often causes intellectual delays in areas such as working auditory memory, language development, and task persistence. (Feeley, Jones, Blackburn, & Bauer, 2011). Down Syndrome causes deficits in areas which impact communicative abilities, including language development and IQ. While both receptive and expressive language are impacted, receptive language is typically impacted less severely than expressive language. (Laws & Bishop, 2003). By the mental age of thirty-seven months, children with Down syndrome can be expected to have production skills which are six months behind in mental age. (Laws & Bishop, 2003.) It has also been suggested that children with Down Syndrome could have difficulties with storage and or retrieval of information in comparison to typically developing, age-matched peers. (Milojevich & Lukowski, 2016). Studies have been conducted using visual aids to assist individuals with Down Syndrome in decision making, and after two months, the participants recalled with no assistance how to implement the visual aid. (Fisher, Bailey, & Willner, 2012).

Modeling and reinforcement have both been utilized effectively when teaching new skills to both children with delayed and normal development. Albert Bandura demonstrated that when models who are positively reinforced are presented to children, the children are considerably more likely to reproduce the behavior themselves. (Bandura, 1965). The study also showed a greater incidence of the female participants reproducing the target behavior when a response-contingent reinforcement was given than male participants. While it is often thought of as being the most effective method, hand-over-hand modeling has been demonstrated as less effective for children with Down Syndrome than passive observation. (Biederman, Fairhall, Raven, & Davey, 1998).

A study by Bauer, Jones, & Feeley (2014) demonstrated the effectiveness of behavior analytic intervention in young children who have Down Syndrome when error correction, prompting, and reinforcement are used. Moreover, an earlier study demonstrated that social reinforcement and specific prompts also yielded an increase in verbal imitation. (Feeley, Jones, Blackburn, & Bauer, 2011). As well, it has been evidenced that imitation is a highly effective method of teaching new skills to children with Down Syndrome. (Rast & Meltzoff, 1995).

All of these methods were implemented in this study to determine if using visual imitation could aid in a child's ability to express the events of his or her day. That skill of recalling the day's events is one which many parents desire their children to possess. The current study sought to explore the effectiveness of the previously discussed methods:

1. Would a visual aid enable a child with Down Syndrome to increase the percentage of daily events reported to her speech-language clinician in response to the question, "Tell me what you did today?"
2. Would using a model be an effective mode of training a child in how to use a visual stimulation board?
3. Is reinforcement an effective method of motivation to encourage the continued use of a visual stimulation board?
4. Would the use of the visual stimulation board be able to be generalized to a new setting?
 - a. Would the use of a visual stimulation board be able to be generalized when implemented by the parents of the client and paired with reinforcement?

Method

The client selected for this study, Lilly, was five-years, four-months-old with a diagnosis of trisomy twenty-one. The criteria for client selection included the ability to use verbal language, the presence of a speech and language disorder, and a lack of the ability to retell events of one's day. Lilly used spoken English as her primary means of communication, received speech and language services weekly for one hour at the University of Montevallo's Speech and Language Center, and was enrolled in the public school system.

The intervention consisted of a visual stimulation board created using Boardmaker, as shown in Appendix One. The board contained eleven images of common therapy activities, as well as one blank entry to allow the clinician to draw in an activity which was conducted during therapy but was not reflected in one of the pre-selected images. During her regularly scheduled speech and language therapy session, after each therapy activity was completed, the clinician would place the visual aid in front of the client and focus her attention there. The clinician would then state in a complete sentence what activity was just completed and circle the correlating image on the board.

Two data points were collected during each session, across phases. Baseline data was collected during the first two sessions of the semester and procedures were as follows. Without employing the intervention, the clinician conducted the sessions per a normal routine. After both thirty minute portions of the session, the clinician asked the client "what did you do with Ms. Emma today?" The baseline phase allowed for a greater understanding of the client's ability to answer the target question without aid. For a response to be considered correct, it was required to have been an activity which was completed during that therapy session. The researcher observed each session and recorded the activities as well as the responses.

The first phase of intervention was also two sessions in duration. This data was collected by implementing the visual aid throughout the session and the clinician posed the question "tell me what you did with Ms. Emma today" after both thirty minute increments of the hour-long session. The client was given the completed visual aid to use when providing her responses. Because the participant did not demonstrate a change in behavior with the implementation of the visual aid, a second intervention phase was instituted with both modeling and reinforcement.

The second phase of intervention consisted of both a model and a reinforcement of target behavior paired with the visual aid. The clinician implemented the visual aid during the session and the researcher entered the room after both thirty minute increments of the session to execute the data collection. The researcher first modeled the use of the visual aid by putting the visual aid in front of the clinician and asking "What did you do today, Ms. Emma?" The clinician would then respond by stating in a sentence what she had done that day while pointed to the circled items on the visual aid. The clinician was then rewarded with candy. After the modeling was complete, the client was then given the visual aid and asked by the researcher "What did you do with Ms. Emma today?" The client was rewarded with chocolate candy when the target response was elicited.

Intervention with reinforcement was the third phase of this research. As in the previous phase, the clinician employed the visual aid during the session and the research entered the therapy room in thirty minute increments to ask the target question. During this phase, the client was not given a model, but was still reinforced when a target response was given.

The fourth phase was generalization to a new setting. This phase consisted of the researcher going to the home of the client. During this phase, the researcher went to the client's home and preformed preschool level teaching activities with the client for one hour each, to simulate a typical therapy session. Items which had been used in previous therapy sessions were used. The visual aid was implemented by the researcher throughout the session in the same manner utilized during prior sessions. Again, after thirty minutes the researcher would ask the client "What did you do with Ms. Emily today?" The client was rewarded with candy after a target response was given.

During the final phase, the researcher continued to see the client in-home implementing the intervention throughout the activities. Reinforcement was provided during data collected. After thirty minutes, the parent would enter the room and ask the client "What did you do with Ms. Emily today?" This phase allowed for generalization to the parents, which was the ultimate goal of the intervention. At the completion of this phase, the parents of the client were given a social validity questionnaire to complete to evaluate their opinions of the research strategy. (Appendix Two).

Results

Figure 1 illustrates the levels of success had by the participant during each stage of the intervention. During phase one, the participant's performance decreased as she was unable to recall any daily activities. To demonstrate how to make use of the visual aid, a model was presented to the client as well as a reward. Once the model was introduced, the client had a 100% success rate recalling all of the activities of the sessions. The client maintained a 100% success once the model was removed as well as when the setting and people changed, for a total of four points above baseline level of achievement.

The social validity survey given to the parents of the client on the final day of data collection allowed the parents to express their opinions concerning the importance and effectiveness of the intervention. The client's parents reported that their child's ability to communicate the events of her therapy session as well as use verbal speech to communicate with them were both very important. They also reported that having the tools to help their child communicate with them was very important. Concerning the effectiveness of the intervention, the client's parents reported they strongly agreed that the activity recall board was effective in helping their child communicate the events of the therapy session and that the activity recall board was

easy implement. Lilly's parents further reported that they agreed the activity recall board was effective in helping her communicate with reduced verbal output.

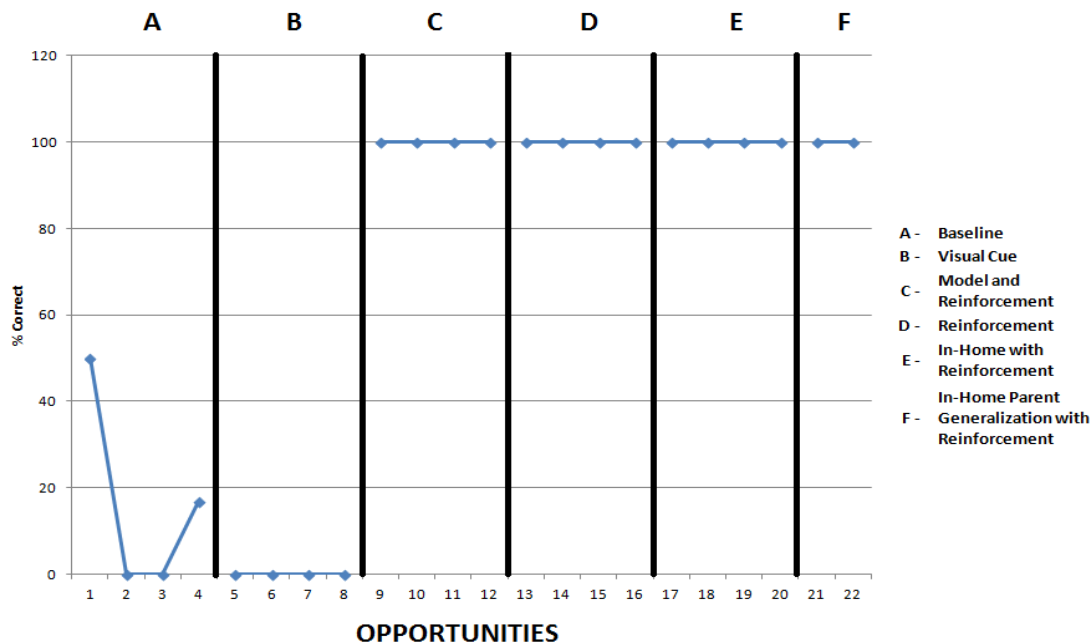


Figure 1

Discussion

While further research is necessary to fill the void of studies completed using a visual aid to elicit responses to questions from children with Down Syndrome, this study broadened the amount of research conducted using visual stimulation boards. The results demonstrated the activity recall board, once modeled, was able to be implemented by the client to result in greater accuracy when retelling the day's events when supported by positive reinforcement. In a further study, it would most likely be in the client's best interest to begin implementing the intervention with a model to allow the client a greater access to understanding the visual aid.

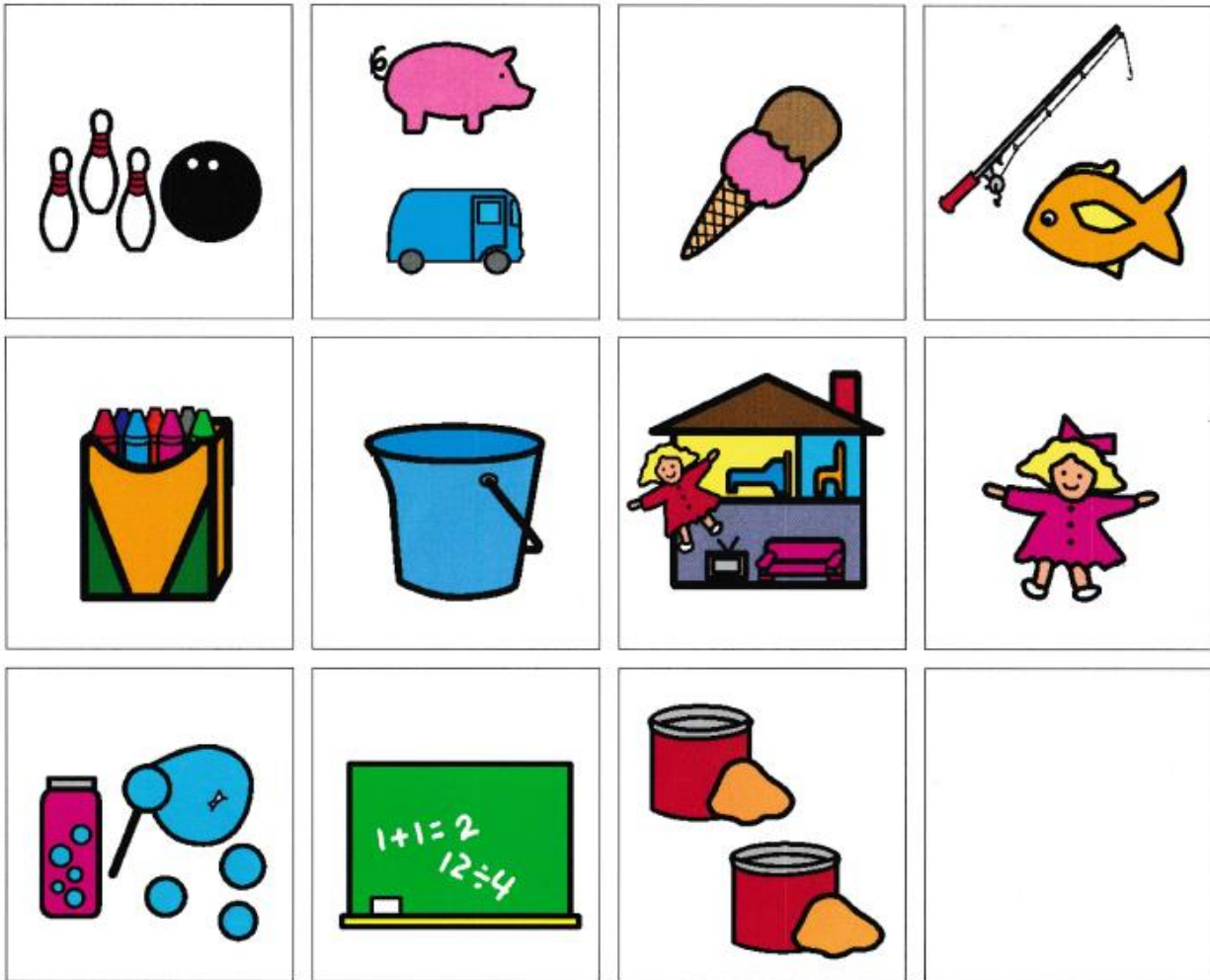
The intervention did allow for an increase in the client's ability to respond to the question, "Tell me what you did today?" Although, without a model and positive reinforcement, it is not predicted that the client would have performed with the same amount of accuracy.

Responses given by the client before and after the model was presented illustrated the effectiveness of the model. Prior to seeing another individual utilize the visual aid, it did not appear that the client understood how to implement the aid herself. After observing a single model, the client showed immediate improvement in her response to the target question.

Reinforcement was a large motivator for the participant of this study. It was assumed that without the reinforcement of candy being present, the client would have had a negative emotional response. The negative response had the potential of being great enough to have jeopardized the findings due to a lack of client cooperation. For this reason, after the positive reinforcement was introduced, implementation was continued for the duration of the intervention.

The client was able to generalize the skill across multiple environments and individuals while the intervention was being implemented. Furthermore, the parents of the client reported that the board was effective in helping their child communicate the events of the therapy sessions and was also easy to implement. A larger study conducted with experienced clinicians and a large group of research participants would potentially lead to clearer results.

Appendix One



Appendix Two

Social Validity Questionnaire

Please rate the following items according to their degree of importance for your family and return to Emily Miller or Dr. Linda Murdock.

	Not Important	Somewhat Important	Very Important
1. How important is it for your child to communicate with you about the events of his/her therapy session?	1	2	3
2. How important is it for you to have tools that help your child communicate with you?	1	2	3
3. How important is it for your child to use verbal speech to communicate with you?	1	2	3

Please rate each of the following items according to your agreement with each statement.

	Not Important	Somewhat Important	Very Important
4. The activity recall board was effective in helping my child communicate the events of the therapy session.	1	2	3
5. The activity recall board was effective in helping my child communicate with reduced adult verbal prompting.	1	2	3
6. The activity recall board was easy to implement.	1	2	3

Please use this space to write any comments you have about the activity recall board intervention.

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