The Effects of Picture Prompts on the Acquisition of Receptive Language in Children with Autism

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Evaluating the Effectiveness of Picture Prompts on the Acquisition of Receptive Language in Children with Autism

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EFFECTS OF PICTURE PROMPTS ON RECEPTIVE LANGUAGE

The present study evaluated the effectiveness of picture prompts in the acquisition of receptive language. Receptive language training is the ability to listen to and understand what is being communicated (Miller, Carp, Petursdottir, 2009). Receptive language training requires the acquisition of auditory-visual conditional discriminations. In receptive language training the child must attend to the auditory and comparison stimuli. This is sometimes an issue for children with autism. Previous research has shown that receptive language training can be facilitated through the use of picture prompts (Fisher, Kodak, & Moore, 2007). The participant for the study was 3 years old. He was selected from an Early Special Education Classroom that follows a behavioral curriculum. The current intervention was a replication of the study conducted by Fisher, Kodak, and Moore (2007). The intervention assessed the effectiveness of picture prompts (which were systematically faded out) with an already existing procedure in the school’s curriculum. Results demonstrated that the picture prompts led to faster acquisition of target objects than with the use of the standard least to most prompting strategies previously utilized. Acquisition of receptive language will lead to the acquisition of the necessary skills to succeed in future educational settings.
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Evaluating the Effectiveness of Picture Prompts on the Acquisition of Receptive Language in Children with Autism

The current study looks at a procedure that teaches receptive language training using match-to-sample tasks. Receptive language training is the ability to listen to and understand what is being communicated (Miller, Carp, Petursdottir, 2009). This type of training requires the acquisition of auditory-visual conditional discriminations. Most listener skills require auditory-visual conditional discriminations. Simple tasks like “pick up shoe” requires the learner to respond appropriately by picking up the shoe. Reinforcement for selecting a particular visual stimulus is conditional on the presence of a particular auditory stimulus (Carp, Peterson, Arkel, Petursdottir, & Ingvarsson, 2012). Acquisition of auditory-visual conditional discriminations can be difficult for both typically developing individuals, as well as learners with autism. Many learners in the Early Childhood Special Education (ECSE) classroom have had much difficulty progressing through the standard receptive identification procedures used in the classroom. The purpose of the current study is to evaluate whether picture prompts might enhance acquisition for learners with limited or no auditory-visual conditional discrimination repertoires. Research has shown that auditory visual match-to-sample training is often necessary to teach complex academic skills to more advanced learners. By having auditory-visual conditional discrimination in their repertoire, these students will be able to successfully move through the curriculum. In this study we chose to add a prompt to minimize errors and increase the probability that the student will have contact with reinforcement. Previous research has shown that receptive language training can be facilitated through the use of picture prompts (Fisher, Kodak, & Moore, 2007). In the replication and extension of Fisher, Kodak, and Moore (2007), Carp, Peterson, Arkel, Petursdottir, and Ingvarsson, embedded a picture prompt into the typical least-to-most
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prompting sequence. They found that picture prompts have a greater effect than pointing prompts because responding to a picture prompt requires the learning to compare the other stimuli instead of just pointing where the therapist points. There has been little research done on this subject matter, which is why the current study looks to further evaluate the effectiveness of picture-prompts as opposed to the standard least to most prompting strategy.

Method

Design

The current study used an AB design. The experimenters chose to alter an already existing procedure in the classroom’s curriculum. The independent variable used was a picture card, which was used as a picture prompt instead of the typical physical prompt. The dependent variable in this procedure was a correct response made by the student. The procedure was conducted in a booth at a table with three chairs. The student sat in one seat, while the experimenters sat in the other two. The space ensured that the student was able to have minimal distractions while running the procedure. Effective reinforcers were identified for each student before each testing period. Once an effective reinforcer was chosen, experimenter 1 labeled the first three objects placing each on the table in front of the student. Experimenter 2 then held up the corresponding picture card (set A) and said “name of object”. When student B attempted to reach for the picture prompt he was full physically prompted to the correct object on the table. Experimenter 1 then provided the student with the preferred edible reinforcer and also included social praise. Once the student made two correct unprompted responses on the same object, the next set of picture prompts (set B) was used. Each set faded the picture by 25% intensity. Once the student moved through sets A-E of picture prompts for all three objects, the student was
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moved to the next phase. In the second phase of the procedure, three new objects were added and the SD is the same. The experimenters only had the three new target objects on the table. The criterion for change on phase two was the same as the previous phase. Three new objects were added in each phase. The criterion for change stayed the same throughout the procedure. Students were considered to meet mastery criteria once he/she successfully moved through each phase of the procedure.

Participants

In the current study the students were selected from an Early Intervention Special Education Classroom. Experimenters selected the students based on 3 criteria that were necessary to be included in the study. If the student previously had an auditory visual discrimination procedure but were unable to progress through the phases in a reasonable amount of time or remained on the same phase for an extended period of time, they were considered for the study. The main inclusionary criteria were that the student must have matching in their repertoire and were not previously exposed to the materials used in the current study. One student was selected for this study. The student was a male between the ages of 2-5 who had been diagnosed with an autism spectrum disorder.

Settings and Materials

The current experiment was run in the student’s Early Childhood Special Education classroom in West Michigan. The experimenters chose to run the procedure in the student’s typical learning setting. That setting was a booth that included a table and three chairs. The student sat at one end of the table while one experimenter sat next to the student and the other sat directly across from the student. In the current study, experimenters used a list of ten everyday
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items that had not previously been target items for the students. The three dimensional items included a plate, train, bear, toothbrush, airplane, etc. The picture prompts were printed on 4x4-laminated cards and corresponded to each 3-dimensional item. A total of five sets of picture prompts were made; each set faded the picture by 25% intensity. Set A the picture was 100%, set B 75%, set C 50%, set D 25%, and set E 0% (blank card). Once a student reached criteria to progress to the final picture prompt intensity, a blank card replaced picture prompt D. The experimenters faded the pictures to fade the prompt over time. Data were collected on premade data sheets. An example of the data sheet is included in the appendices A. Each data sheet had a data key. The key included what each item should be labeled as. The top of the data collection area had a place for the date and which experimenter was implementing the procedure. The actual data section had 12 rows for the collection. Each row had a place for correct/incorrect, prompted/unprompted, and what object was tested. The final row in the data sheet included a spot for total percentage correct. For both students who participated in the study, experimenters used their most highly preferred reinforcers. Edibles, tangible items, and social reinforcers were combined and unique for each student.

Procedure

The current study was ran two to three times a week in the students’ typical learning setting. Prior to running the procedure each day, experimenters gathered the materials, data sheets, and fresh edible reinforcers. Once in the booth, experimenters did a preference assessment between two reinforcers. Once an effective reinforcer was found, the experimenters began the procedure. At the beginning of the first training session, experimenter 1 placed the first three 3-dimensional objects. Experimenter 1 placed the 3-dimensional comparison stimuli, labeling them every other trial. Labeling occurred in the first phase only. Once the objects were
labeled experimenter 1 said “the name of object”. If the student made an incorrect response or did not make one at all within 5 seconds experimenter 2 held the corresponding picture prompt in front of the student and repeated the discriminative stimulus (SD) “the name of object”. If the student still did not make a response experimenter 1 full physically prompted him/her to select the correct object. If the student made a correct response the experimenters would immediately deliver the preferred reinforcer and social praise. For the beginning of the experiment, experimenters would deliver the reinforcer regardless of correct or incorrect responding. They did this to make sure the student was receiving adequate access to reinforcement. Once the student had two correct unprompted responses on the same object, unprompted meaning no picture or physical prompts, then experimenters moved on to the next set of picture prompts. Ex: from set A to set B. To move onto the next phase, the student had to get two unprompted (picture or physical) responses on the same item. After this the experimenter moved to picture prompt B (75% color intensity). This method was repeated for each of the first three targets in order for three new objects to be added. Picture prompts for all three objects had to be faded to picture prompt E (0% color intensity, a blank card) and the student was able to make ten independent correct responses out of a total of twelve trials, in three consecutive training sessions or eleven independent correct responses out of twelve trials, in two consecutive training sessions. Each new phase of the procedure added a new object and to move through each object the criteria for change was the same. Data was collected on a premade sheet. The data sheet included 12 rows, for the 12 trials conducted. The data collectors would document if the response was incorrect (-), correct(+), prompted(P), unprompted (UP), picture prompt (PP), and what object was tested. Once the 12 trials were over, the data collector would calculate how many correct trials over
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incorrect to determine the percentage correct. It is important to note that each target object was presented the same number of times, as well as randomly rotated.

Results

The experimenters found that the use of picture prompts has a positive effect on receptive language training. Overall performance for the student increased from 17% correct responding during baseline to 92% correct responding in session ten. Unprompted correct responses increased from 2% during baseline to 60% in session ten. The experimenters also found that correct responses following a picture prompt increased from 0% in baseline to 50% correct following a picture prompt in session ten. Experimenters faded the picture prompts after two consecutive unprompted (correct) responses were made on each object. By session ten, one object was completely faded to a blank card, while the other two were faded two times (to picture prompt B). Only one incorrect response following a picture prompt was made during the 10th session. By session 32 the student reached mastery criteria for six out of the ten target objects. Based on the data the experimenters were able to determine that the use of picture prompts increased the amount of correct responding in both overall and unprompted responses.

Discussion

The experimenters found that picture prompts do increase the amount of correct responses in an auditory match-to-sample procedure. This outcome was a direct result of the student having two visual stimuli to look at before making a response. The student’s extensive echoic repertoire may have resulted in faster acquisition of the target responses. This variable may have made the research seem like picture prompts were increasing the responses when the student’s echoic repertoire may be to blame. The experimenters could use students who do not
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have echoic repertoires to see if acquisition of the targets remained. This research could be used further in the early childhood special education classroom for other students who are unable to move through this procedure. Future research should focus on the role of echoics compared to picture prompts and the acquisition of receptive language.
Appendices

Appendix A: Intervention Data Sheet

<table>
<thead>
<tr>
<th>Data Key</th>
<th>Plate: PL</th>
<th>Flower: FL</th>
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<tbody>
<tr>
<td>Correct: +</td>
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<td>Incorrect: -</td>
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<tr>
<td>Prompted: P</td>
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<tr>
<td>Unprompted: UP</td>
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<tr>
<td>Train: T</td>
<td>Glasses: G</td>
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<tr>
<td>Toothbrush: TB</td>
<td>Crayon: C</td>
<td></td>
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<tr>
<td>Bear: B</td>
<td>Fork: F</td>
<td></td>
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<tr>
<td>Keys: K</td>
<td>Airplane: A</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Date:</th>
<th>Tutor:</th>
<th>+/- Prompted/Unprompted</th>
<th>Object</th>
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Total(%):
Appendix B: Graph

![Graph showing the number of incorrect responses, correct responses, and unprompted correct responses over sessions.]

Appendix C: List of Objects in Order of Training

1. Plate
2. Train
3. Bear
4. Fork
5. Keys
6. Crayon
7. Airplane
8. Glasses
9. Toothbrush
10. Flower
References


