Teaching Language to Infants/Toddlers at Risk for Autism: A Comparison of Methods
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Abstract

The purpose of this study is to compare two methods of teaching language to infants/toddlers diagnosed or at risk for autism. Researchers randomly assigned participants (18-36 months) in a reversal design using 3 conditions, vocal imitation or mand training. Vocal imitation requires a child to imitate specific sounds or words when presented by a speaker. Mand training requires a child to imitate specific sounds or words when presented by a speaker. Vocal imitation training is thought to be one of the earliest classes of verbal behavior that emerges in language development. If vocal imitation training is used, the form of the response is under the control of a relevant establishing operation for a specific vocal imitation condition. Vocal imitation training is functional communication.

Introduction

Many infants/toddlers diagnosed with autism have significant language delays. Past research assessed some cases of autism may be shaped in at-risk children by contingencies of reinforcement occurring before the age two years old. Vocal imitation training is assessed at the age of two years old. If verbal and social behaviors are shaped before a child reaches two years of age and before autistic like behaviors occur, children may no longer be at risk for autism (Drash & Tudor, 2006). Teaching verbal operants (mand, tact, intraverbal, and echoic) to infants/toddlers is the key to increasing their language ability. Mand training is the most effective method of teaching vocalizations apart from traditional vocal imitation. In addition, mand training with edible reinforcers was also the most effective than traditional vocal imitation training with two out of our three participants.

Method

Participants
- Three male participants (19-29 months) diagnosed with autism.
- All participants were enrolled in ABC’s Infant/Toddler Development Program in Northern California.
- All participants were assessed below developmental levels in language development.

Materials
- The Carolina Curriculum assesses children 0-36 months across developmental domains. The only section used in this study was functional communication.
- Edible reinforcement included chips, cookies, juice, popcorn chicken, and fruit snacks.

Procedures
- ABAB reversal design

Participants
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<thead>
<tr>
<th>Participant</th>
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<th>3rd Condition</th>
<th>4th Condition</th>
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<tbody>
<tr>
<td>Brandon</td>
<td>A</td>
<td>C</td>
<td>A</td>
<td>B</td>
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<tr>
<td>John</td>
<td>A</td>
<td>C</td>
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<tr>
<td>Scott</td>
<td>B</td>
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Method A = Vocal Imitation
Method B = Vocal Manding using non-edible reinforcers
Method C = Vocal Manding using edible reinforcers

- Each participant was assessed using the Carolina Curriculum for Infants/Toddlers with Special Needs.
- Conditions lasted approximately 2-6 weeks.
- Vocal imitation condition consisted of researchers giving participants an instruction and requiring them to imitate specific sounds or words. Vocal manding conditions consist of establishing a mand repertoire (determining at least 2-3 highly preferred reinforcers tangible and edible).
- Researchers would provide participants with a reinforcing item/edible and let him play with the item or eat the edible. The item/edible was then moved out of the child’s reach but still in sight. For example researchers would say, “Do you want train? Say, “Train.” Once the child makes an approximation, the research would reinforce the child immediately.
- Trial by trial data was collected for every response across conditions.

Results
Participant 1: Brandon
- Data indicates Brandon’s correspondence (correct imitation) rate for vocal manding with edibles increased significantly, 92%, compared to 44% in the traditional vocal imitation.
- Overall, Brandon’s responding rates were relatively high (consistent) throughout the four conditions.
- When the traditional vocal imitation was reintroduced, responding decreased slightly, yet correspondence increased slightly.
- Overall, Brandon’s data indicates vocal manding with non edibles proved to be the most effective model, with vocal manding with edibles being the second best.

Participant 2: John
- Data indicates John’s response rate for vocal manding with edibles increased significantly, 97%, compared to 36% in traditional vocal imitation.
- In addition, John’s correspondence increased from 25% (in traditional vocal imitation) to 82% with manding with edibles.
- John’s responding (88%) and corresponding (80%) decreased slightly when reintroducing vocal imitation, however, after introducing manding with non edibles, his responding (94%) and correspondence (75%) increased.
- Overall, John’s data indicates mand training with edibles proved to be the best method to teach vocalizations, compared to traditional vocal imitation. Finally, manding with non edibles were slightly lower than with edibles, however it was still significantly higher than traditional vocal imitation.

Participant 3: Scott
- Scott’s data indicates a high level of vocal responding across all conditions.
- Correspondence data indicates the lowest percentages in the traditional vocal imitation condition (49%).
- The highest percentages were in manding with edibles (73%)
- Overall, Scott’s data indicates mand training with edibles proved to be the best method to teach vocalizations, compared to all other conditions. Manding with non edibles were also slightly higher than traditional vocal imitation.

Discussion
All participants made progress during this study, establishing verbal operants including mands and echoic behaviors that were not exhibited initially. They are also vocalizing words and frequent speech sounds at moderate to high rate. It was hypothesized infants/toddlers would more likely vocalize in the mand training condition and more significantly vocal manding with edibles. The results support our original hypothesis that vocal manding was the most significant condition. In addition, data indicated the two of the three participants showed greatest acquisition in the vocal manding with edibles.

After analyzing these results, we can apply our findings for future programming. When an infant/toddler initially enters the program with limited vocalizations and correspondence, starting with vocal manding with edibles or without edibles may increase acquisition of a child’s verbal behavior. However, all participants demonstrated gains within the area of functional communication. One limitation was the data was not started or collected at the same time. More substantial conclusions could have been made if all three participants followed the same length in each condition. Future research could continue with the reversal design with manipulating the conditions more systematically. Increasing the sample size would also increase the accuracy of the results from this study. It is also important to see if the participants generalize these skills by spontaneously making appropriate vocalizations.

References


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