Visual Cues: The Use of Signaling to Reduce Perseverative Mands Made by a Child with ASD

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Abstract
This case study illustrates the development of a visual cue system for a student who engaged in perseverative mands which significantly impacted his productivity during the school day (loss of functional instructional time and limited appropriate social interactions with others). A visual cue to reduce perseverative mands was implemented, resulting in considerable behavioral improvement for the student.

Introduction
Many studies have investigated the benefits of using behavioral techniques such as differential reinforcement of alternative behavior (DRA), visual cues, extinction, and functional assessments. Additionally, several studies have investigated the use of these strategies to reduce perseverative verbalizations made by adults and children with ASD. Although there is a large evidence base for the strategies mentioned above, the use of these behavioral strategies as an intervention package to reduce perseverative verbalizations has not been widely examined in this population.

Rehfeldt and Chambers (2003) evaluated the functional relationship between perseverative verbalizations and maintaining environmental variables. The authors found that perseverative verbalizations were maintained by social attention. Additionally, the authors were able to significantly reduce perseverative verbalizations after manipulating environmental.

Vandbauk, Antzen, Gisnaas, Antonsen, and Gundhus (2012) trained multiple classes of verbal behavior, resulting in a significant decrease in perseverative speech in an individual with autism. The authors suggested that perseverative speech could be changed by environmental interventions. It has also been suggested that individuals with ASD who engage in repetitive verbalizations were more likely to miss events in their natural environment leading to missing learned opportunities (Guzinski, Chilton, & Eshelman, 2012).

Reese, Richman, Zarcone, and Zarcone (2003) found that there was a significant relationship between the frequency of perseverative verbal behavior and the frequency of problem behavior (e.g., aggression, destruction, screaming, etc.) in children with ASD. The authors suggested that decreasing perseverative behavior while also teaching appropriate replacement behaviors could potentially reduce problem behavior.

Ganz, Kaylor, Bourgeois, and Hadden (2008) used visual cues to decrease perseverative requests and teaching conversational speech. Additionally, West (2008) found that pictorial cues were more efficient and effective when teaching functional skills to children with ASD.

Method
Participants: The participant, an 11 year old boy with a diagnosis of ASD, had been enrolled in an intensive center-based program for at least 6 years. Prior to the intervention, the student engaged in high rates of perseverative mands (e.g., 48 mands in 15 min) which interrupted daily instruction and led to problem behavior (aggressive and destructive behavior).

Setting and Materials: The intervention took place in the student’s classroom, a self-contained autism class with 8 students and 2 teachers. A visual cue with two distinctly different sides was placed in a central location in the classroom and a smaller version of the visual cue was placed on the subject’s desk. Side A of the visual cue displayed text and picture symbols of the word yes. Side B of the visual cue displayed text and picture symbols of the word no. Additionally, side A of the visual was color coded red and side B was green. Both sides of the visual cue contained picture symbols of items and activities that the subject manded for repetitively.

DRA = Extinction: Instructions differentially reinforced novel mands with 10 seconds of attention (e.g., honored mands, replied to the mand with a comment, smiled, made eye contact with the subject). Alternatively, instructors ignored all repetitive mands targeted for decrease unless side B of the visual cue was present.

Baseline: A baseline phase was used to determine the frequency of the subject’s perseverative mands in the absence of intervention.

Intervention: Signaling: Instructors placed side A of the visual cue in view of the subject, signaling to him that reinforcement would not be available for his repetitive, high frequency mands, and then set a visual timer for 30 minutes. Instructors ignored all perseverative phrases targeted for decrease when side A of the visual was present. After 30 minutes had passed, instructors flipped the visual cue over to side B, signaling to the subject that reinforcement was available for the target phrases. Once side B of the visual cue was in view, instructors set another visual timer for 10 minutes and honored the first 2 mands made by the subject. The subject had access to the manded activity for the duration of the 10 minute interval (e.g. child manded to go outside and then played outside for 10 minutes).

Data Collection and Design: Throughout all phases of the intervention, including baseline, data were collected using whole interval recording on the frequency of perseverative phrases. Data were taken in 15 minute intervals 3 times per week. A reversal design was used to evaluate the effects of the intervention on perseverative phrases.

Functional assessment: As a part of the subject’s educational program, his instructional team collected antecedent, behavior, consequence (ABC) data to determine the function of his perseverative mands. His team proposed that perseverative mands were multiply controlled by escape from instructional demands and access to social attention.

Results
The mean counts of each baseline and intervention phase are presented in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Perseverative Requests</td>
<td>25.2 (range, 27-31)</td>
<td>2.6 (range, 0-8)</td>
</tr>
<tr>
<td>Functional Mands</td>
<td>26.1 (range, 14-35)</td>
<td>6.5 (range, 0-31)</td>
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</table>

Instances of perseverative phrases decreased following the introduction of the intervention procedure. Instances of perseverative phrases across baseline and intervention phases are depicted in Figure 3. In baseline, perseverative phrases were variable; however the last 3 to 4 intervals showed an ascending trend. Upon implementation of the intervention procedure, perseverative phrases decreased, but remained somewhat variable. The data indicate that the intervention was successful in reducing the subject’s perseverative mands each time the intervention was in effect, relative to the baseline. Additionally, the cumulative number of functional mands is presented in Figure 3.

Discussion
This intervention resulted in significant behavioral improvement for the subject. Following the initial implementation of the intervention, a 23% decrease in perseverative mands was observed. Following the second implementation of the intervention a 34% decrease in perseverative mands was observed. Most importantly, the subject increased his repertoire of functional mands (e.g. help me, take a break, open my snack, etc.), and made progress on academic, social, and adaptive living goals that were a part of his individualized education plan while enrolled in the center-based program. It could be suggested that because the subject engaged in less perseverative mands and more functional mands, he was more likely to attend to his environment which increased the probability that he actively engaged in learning opportunities within his classroom.

References