Pushing My Buttons:
Assessment and Treatment Stereotypic Activation of a Speech Generating Device

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INTRODUCTION

Individuals with autism often have deficits in the area of communication (Ferrara et al., 2021). There are a variety of alternative forms of communication, including speech generating devices (SGD), which aim to improve functional communication (Yuan et. al., 2024). In addition to more commonly observed problems in teaching these forms of communication, there also exists the possibility of unintended use of the device in the form of repetitive and/or stereotypic activation. This can impede individuals' performance in classroom or social settings and the device's auditory output can be disruptive to others. Amelioration of this issue may be informed by previous research on the assessment and treatment of automatically-maintained behavior such as vocal stereotypy. One such approach has been the successful use of auditory stimulation to treat vocal stereotypy. This study was completed with a 12-year-old non-vocal, male participant with autism spectrum disorder. This study demonstrates identification of stereotypic activation of a SGD, and effective treatment of stereotypy while maintaining access to the device for functional communication.

METHOD

Participants and Setting: The participant in the current study was a 12-year-old male diagnosed with autism spectrum disorder. The child used a tablet with the TouchChat app to augment his communication. All assessments were conducted at the participant's school in a 10'x7' breakout room. A breakout room is a small room connected to the main classroom where individual sessions can be conducted.

Data Collection: During the initial assessment, Phase 2 and Phase 3, data was collected on the latency to stereotypic activation of a speech generating device. During, treatment data was as a partial-interval time sample with 5-minute intervals.

PROCEDURES

- **Functional Analysis:** An alone screening (Querim et al., 2013) was completed initially. A 20 min session divided into 1 min intervals was conducted. Observers recorded whether the behavior occurred or not during the interval.
- **General Procedures:** Data was taken on latency to stereotypic activation. Each condition was five min. and was conducted in a breakout room. Before the start of a new condition the participant had access to the device for 30 seconds before being told to sit quiet. The participant sat at a table with his augmentative device in front of him and a timer was started.
- **Initial Assessment:** The conditions assessed were baseline (no headphones), normal volume, volume off, low volume, different voice (Damien), normal volume without a message bar, and no volume and without a message bar. The conditions were then repeated while the participant was wearing headphones that played music.
- **Phase 2:** The next phase of the assessment measured latency to stereotypic activation during speech sessions while wearing headphones.
- **Phase 3:** Based on the results of the initial assessment, low volume on the augmentative device, without the message bar, and wearing headphones that played music was chosen for the treatment analysis. These conditions were conducted during a speech session and with just his device in front of him with no engagement.
- **Treatment:** The participant will wear headphones non-contingently with his augmentative device volume set to low, with no message bar.

RESULTS

- **Functional Analysis:** In the functional analysis, the participant engaged in stereotypic activation of an SGD in 100% of intervals in the alone condition and 98% of intervals in the ignore condition. In the ignore condition, where the SGD had no volume, the participant engaged in stereotypic activation in 65% of intervals. This suggests stereotypic activation is automatically maintained.

Figure 1
Initial Assessment

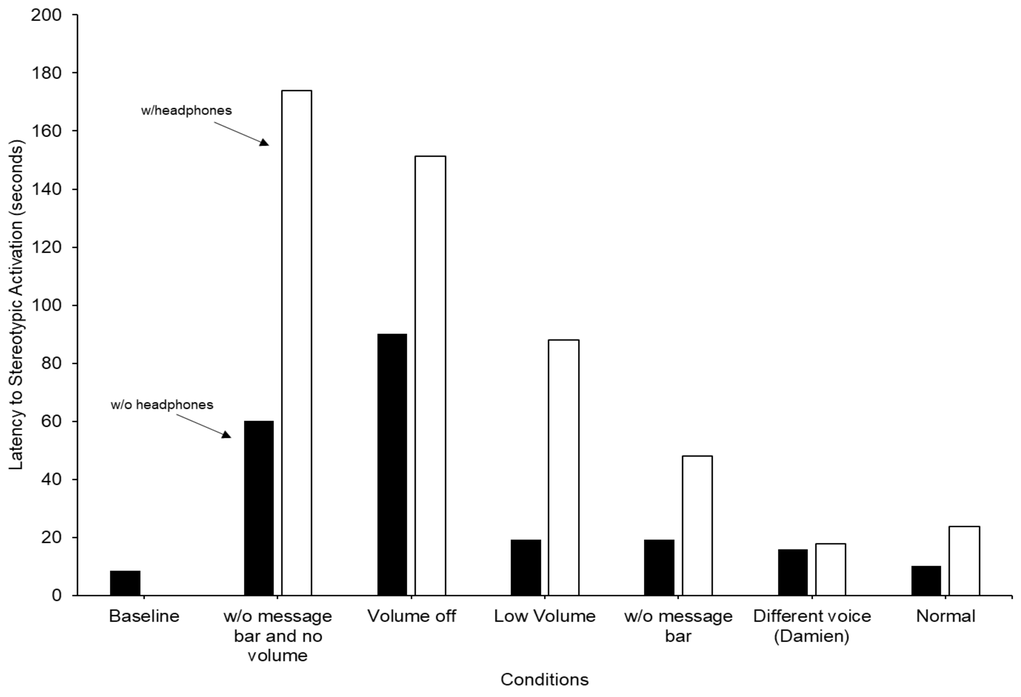
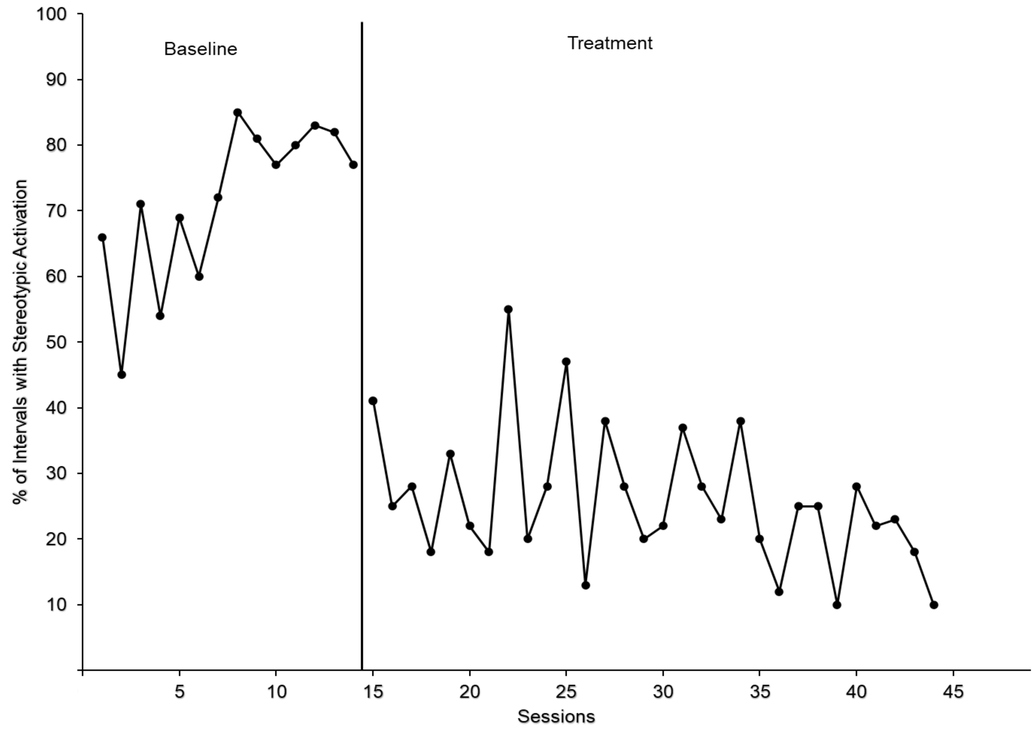


Figure 2
Treatment



RESULTS Cont.

- **Initial Assessment:** The initial assessment (fig. 1) showed that with headphones playing music, latency to stereotypic activation of an SGD was longer than without headphones. Figure 1 shows descending order of the SGD settings with headphones on.
- **Phase 2:** The results of phase 2 (not pictured) showed that during a speech session with headphones on led to an average of 300 seconds, no stereotypic activation during the session, when the SGD had no message bar or no volume, and when the SGD had no volume but the message bar was visible. No message bar resulted in an average of 159 seconds of latency to stereotypic activation, normal volume was an average of 143 seconds, low volume 98 seconds, and different voice 28 seconds.
- **Phase 3:** In phase 3 (not pictured), latency was longer in the speech with headphones and ignore with headphones conditions.
- **Treatment:** Treatment (Fig. 2) showed a decrease in stereotypic activation compared to baseline rates from 69% of intervals to 26% of intervals with the headphone with the augmentative device volume set to low, with no message bar.

DISCUSSION

General Discussion:

- In the extended alone FA, stereotypic activation of an SGD was shown to be automatically maintained as responding persisted absent social mediation.
- The initial assessment (fig. 1) demonstrated that volume and removing the message bar had a significant impact on latency to stereotypic activation.
- Phase 2 was conducted during speech sessions. Speech sessions were chosen as the test setting, as they required the participant to use the SGD to communicate appropriately. In this way, appropriate use of the device across different conditions was assessed.
- While No Message Bar and No Volume, and No Volume, were the conditions with the most latency to stereotypic activation of the SGD, the treatment components were chosen due to concerns that the No Volume condition would likely limit the effectiveness of the SGD.
- Treatment resulted in a significant decrease from baseline rates. However, the percentage of intervals with stereotypic activation were variable day to day.

Limitations:

- Generalization of the study may be limited as the study only had one participant.
- The study did not reduce stereotypic activation to zero levels.

Future directions:

- Future studies could compare the effectiveness of different auditory inputs through headphones in reducing stereotypic activation of a SGD, not just music.

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