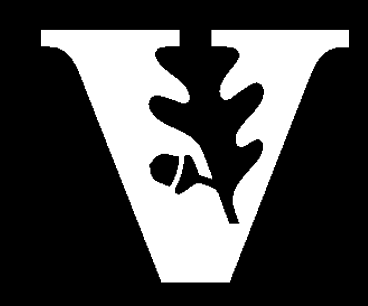


# Investigating Relation between Behavioral Responses to Social Evaluative Threat in Adolescents with and without ASD



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## Background

### Autism Spectrum Disorder (ASD) and Social Interactions

- Autism Spectrum Disorder is characterized by deficits in social interactions and communication (APA, 2013).

### Stress and Displacement Behaviors

- Displacement behaviors are defined as behaviors that are associated with the psychological experience of stress (Troisi, 2002).
- Additional studies have shown that displacement behaviors help people to cope with stressful social situations (Mohiyeddini et al. 2013).
- Since displacement behaviors are a quantifiable way to measure perceived stress, they may be used to behaviorally determine a person's level of stress.

### Stress and Social Evaluative Threat in ASD

- Youth with ASD often have heightened physiological stress to social interactions (e.g., Corbett et al., 2014).
- However, they have an atypical response to social evaluative threat (e.g., Corbett et al., 2021).
- This necessitates more investigation into the effect of social evaluative threats in the ASD population.

### Hypotheses

Based on previous research, the following hypotheses were made:

- It was hypothesized that the frequency of displacement behaviors would be significantly different between youth with and without ASD. Youth with ASD were predicted to demonstrate fewer displacement behaviors compared to youth with typical development (TD).
- It was hypothesized that the amount of time spent silent would be significantly greater in youth with ASD, while time engaged with the task would be significantly lower for ASD compared to TD.

## Methods

### Participant Demographics

- Participants at the time of testing ranged in age from 10 to 13 years old.
- Out of N=208 participants, 118 participants had ASD, and 90 participants had TD.

### Trier Social Stress Test (TSST; Buske-Kirschbaum, 1997)

- The TSST is an established, 20-minute protocol of social evaluative threat.
- The task involves a speech and serial subtraction task in front of two neutral judges.
- Interactions were video-taped for future behavior coding.

### Behavioral Coding

The following displacement behaviors were used in the data:

- Lip press/bite:** Any lip movement that is unrelated to speech production.
- Face contact:** Any hand contact with the face or neck.
- Fidgeting:** Continuous movement of the torso, upper body, or lower extremities.
- Fumbling:** Continuous or repetitive movement of the hands, fingers, or forearms
- On-topic:** The participant is engaged with the speech or math.
- Silent:** The participant is neither speaking nor engaged.

### Statistics

- A series of independent t-tests were conducted between diagnostic group (ASD/TD) for each displacement behavior (lip press/bite, face contact, fidgeting, and fumbling) and each section (speech and math) of the TSST
- Independent t-tests were conducted for verbal engagement (on-topic and silent) with the task.

## Results

### Frequency of Displacement Behaviors

- For the speech portion, between-group comparisons of the diagnostic groups showed that the ASD group had a significantly reduced lip press/bite frequency ( $p=0.017$ ) and higher frequency of face contact ( $p=0.029$ ) (Figure 1).

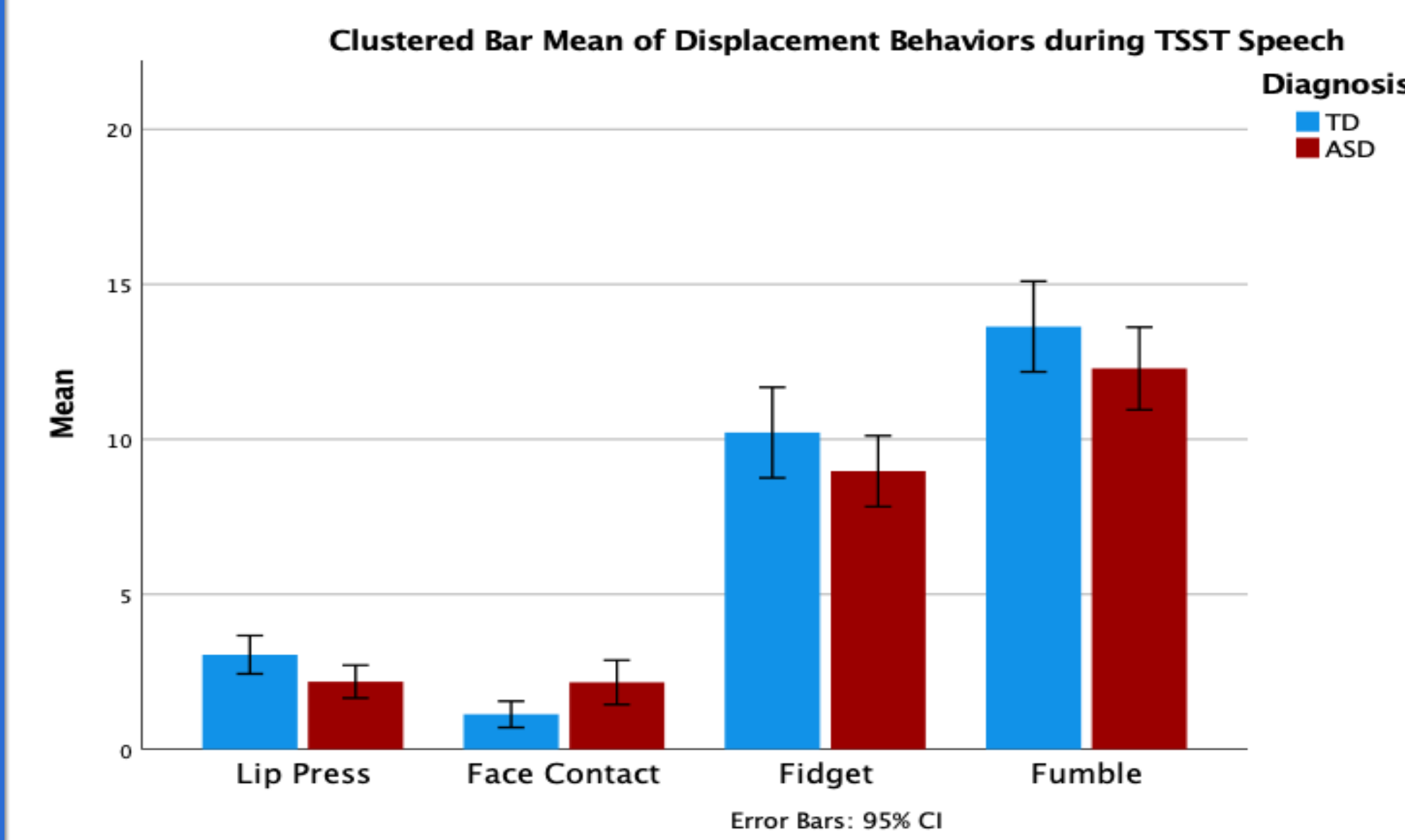


Figure 1. Youth with ASD had decreased mean frequency of lip presses/bites and increased face contact behaviors during the speech section of the TSST.

- For the math section, the ASD group had significantly greater frequency of face contact ( $p=0.003$ ). There were no other significant differences.

### Duration of Task Engagement

- The percentages of time spent silent and on-topic were significantly different between diagnostic groups for both the speech (Figure 2) and math sections of the TSST (all  $p<0.05$ ).

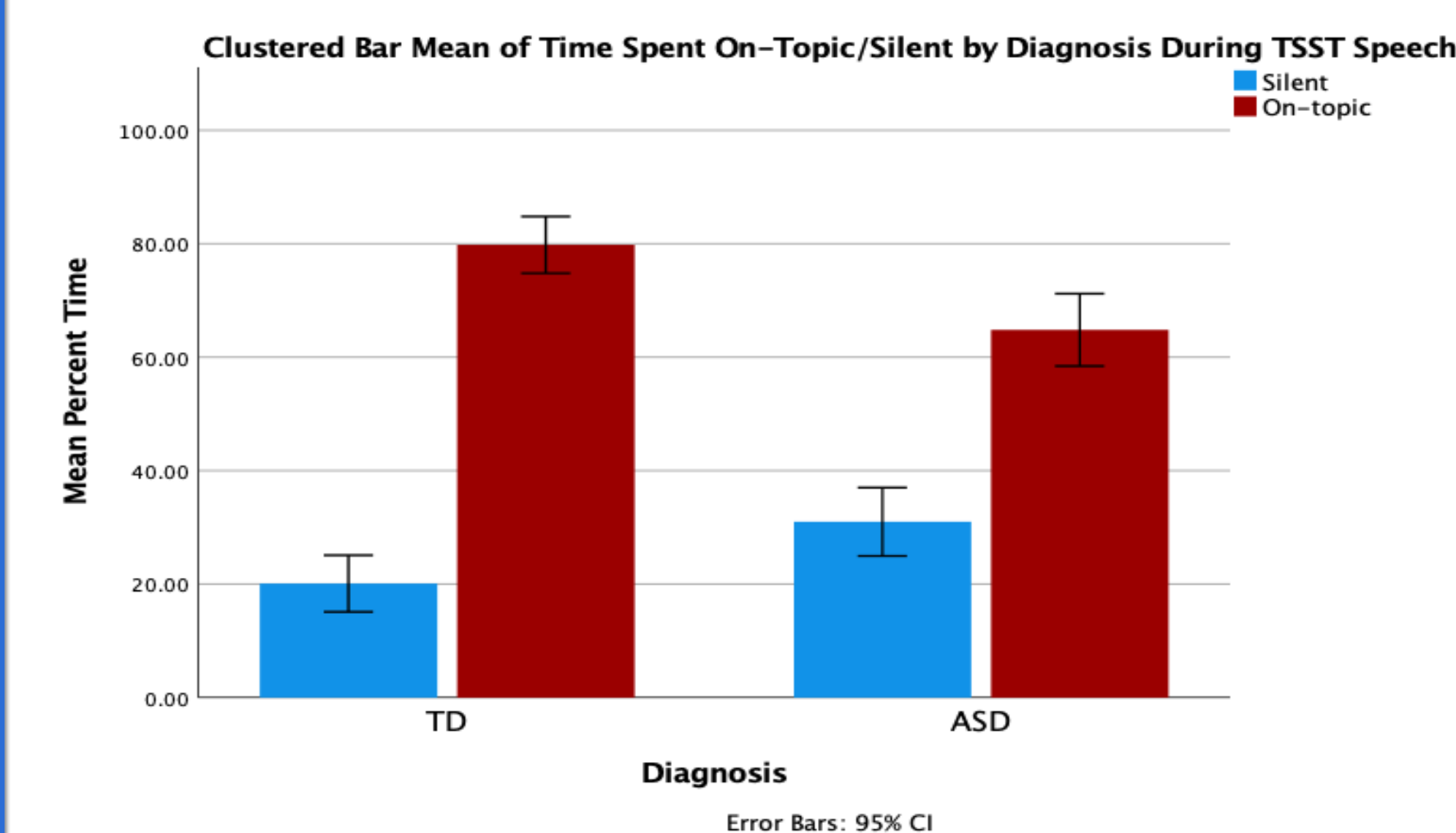


Figure 2. Youth with ASD demonstrated more time silent and less time on-topic relative to TD peers.

## Discussion

### Summary

- There were significant differences in the frequency of displacement behaviors between youth with ASD and TD. These findings are consistent with previous research (Edmiston et al. 2017).
- The findings of distinct behavioral responses to social evaluative threat underscore the unique perception of and response to social stress in individuals with autism.

### Limitations

- Current analyses do not take into consideration demographic differences that may play a role in behavioral stress response (e.g., age, sex, pubertal status).

### Future Directions

- Future studies should investigate stress behaviors exhibited during non-stressful social situations in ASD youth by using data collected from other social paradigms (e.g., TSST-Friendly).
- Associations between behavior and physiological response may provide clues into unique ASD profiles.
- Additionally, the effect of pubertal stage on behavioral response should be investigated.

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