Selective Attention and Emotion Recognition in College Students Assessed with the AQ and RAADS-14

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Abstract

Emotion and facial recognition are crucial aspects of social interaction. The ability to comprehend one’s facial features related to emotions is a crucial social skill that allows people to communicate upon a deeper meaning. The current research topic is the ability of individuals with ASD to accurately recognize emotions in facial expressions. Many individuals with ASD are known to have deficits in emotion recognition but these deficits are still only poorly understood. In the present study, a pre- and post-test and a training phase were implemented to show the effect of training on attention to compound stimuli, especially photos of emotional facial expression. Participants were expected to show longer response times with emotional stimuli than with non-emotional stimuli because of the increased complexity of emotional stimuli. It was further expected that participants who score low (i.e., less “autistic”) on the AQ and RAADS-14 would be more accurate in responding to all stimuli than participants who score high especially with the emotional stimuli. Finally, we hope that this discrepancy is reduced thanks to the training on the iPad game. These results are important because they suggest an effective intervention to increase emotion recognition in individuals with ASD with the subsequent improvements in social skills.

Introduction

The past research literature shows that individuals with autism spectrum disorder (ASD) exhibit difficulties with the recognition of emotions expressed in faces. The present study represents an attempt to contrast the behavior-analytical approach with other common approaches. The present study proposes the behavior-analytic Stimulus Oversensitivity Hypothesis (Lovas, Schreibman, Koegel, & Rehm, 1971) or more generally, the Prioritization Deficit Hypothesis (Ploog, 2012; Ploog, Brooks, Scharf, & Aum, 2014). The purpose of this study is to determine what parts of the visual stimuli a participant attends to by playing an iPad game and completing a pre/post-test on the computer.

Methods

Materials

Materials used for this study were a video, an informed consent form, two adult autism assessment scales, an iPad game, a pre/post-test on the computer, and a brief consent form.

Procedure

The two groups will be compared for differences in response times and accuracy rates (Loth et al., 2018).

The purpose of the pre/post-test is to determine what parts of the image participants attend to, whether it is the top half or the bottom half of the image.

The purpose of the training phase is for participants to understand identity matching.

The response that the researchers aspired to note is that with each training block participants either increased in the number of correct responses and decreased response times.

Results

Table 1: Total Errors Per Type

Figure 1 shows the total number of errors participants made on the Pre/Post-test in the Emo condition. EO1: participant matches by the top features but not the bottom features. EO2: participant matches by the bottom features but not the top features. EO3: participant matches neither top or bottom features from stimulus to stimulus. “NO”: when the participant gives no response.

Figure 2 demonstrates one of the Non-Emo condition sample stimuli presented in the Pre/Post-test. These figures clearly demonstrate the format of how all sample stimuli in the Pre/Post-test were composed. Figure 2 and Figure 4 match for the same top features but mismatch for the bottom features. This is an EO2 error. Figure 3 matches for the same bottom features but mismatch for the top features. This is an EO3 error.

Figure 6 demonstrates one of the Emo condition set from the Pre/Post-test. The top image is the sample stimulus. The participants only see the sample stimuli for five seconds and are then given the options. There are four options given and participants must choose one that they believe best resembles the sample stimulus in order to move onto the next set.

Figure 7 demonstrates one of the Emo condition set from the Pre/Post-test. The same guidelines follow for the stimuli as for Figure 6. Participants experienced the most difficulty with this Emo condition stimuli due to the distinct human facial features. It was difficult to distinguish the difference between the option stimuli and the sample stimuli more easily, which increased to 14 errors made in the Post-test.

Figure 8 demonstrates one of the Emo condition sets from the iPad game during training phase. The fixation mark is the correct response, the incorrect response, + the top features match but the bottom features mismatch, and - the top features mismatch but the bottom features match. The facial features can be easily distinguished for this particular stimuli unlike, some of the other stimuli presented above Figure 7.

Findings and Discussion

• We are currently conducting the study and are working on data analysis.
• Our anticipated results are that participants in Group Emo will have longer response times in comparison to Group Non Emo. Due to the longer fixation durations needed in order to accurately match the stimuli with the correct response.
• We expect that participants who score low on the autism rating scales will be more accurate in responses to all stimuli versus participants who score high on the autism rating scales.
• We also expect a similar pattern to be present in the responses to the pretest.
• For the post-test we assume that Group Emo will have higher accuracy rates than Group Non-Emo.

Limitations

• This study required two sessions. Some participants did not attend the second session.
• The laboratory used to conduct the study did not have WIFI which caused an issue due to the data having to be uploaded to DropBox via WIFI.
• Some participants were noncompliant which caused some concerns for the researchers.
• Some participants were able to access their scores on the iPad game training sets, therefore, were able to further comprehend what was required of them to complete the training sets.
• The current pandemic did not allow researchers to conduct more trials of the study with participants who had signed up to participate for the study.

Future Research

• The current study was a pilot due to the limitations experienced.
• The next step would be to conduct the study with more participants. The current pandemic did not allow researchers to do so at this time.
• Researchers could also continue this research with other modalities such as Eye-Tracking Studies.

References


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