

## Pitch Perception and Encoding Pitch Contours in College Aged Individuals with Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by deficits in communication and social interaction. Previous research has suggested that individuals with ASD exhibit deficits in the identification of verbally-expressed emotions. Emotion is carried by a property of speech known as prosody, which is characterized by dynamically changing pitch patterns and temporal attributes. The auditory brainstem is responsible for the proper encoding of the changing pitch. However, it has been found that in people with ASD, the auditory brainstem is not able to track and encode prosody correctly. Therefore, it is extremely difficult for people with ASD to accurately perceive emotion. The current experiment investigated whether pitch perception training can result in improved perception of pitch and, consequently, improved identification of emotion. Pitch perception and emotional identification were assessed prior to training and again after six perceptual training sessions. During each training session, participants listened to synthesized pitch contours that were originally derived from speech. During each session, participants listened to a stimulus, either a rising or descending pitch, and then indicated using the keyboard the direction of the pitch change. Accuracy was reinforced with immediate feedback. Participants were exposed to more than 600 changing pitches over the duration of the study. They also completed two emotional recognition tasks, one before the first pitch tracking session and one after the last session. For this task, participants listened to 57 phrases that communicated happiness, sadness, or anger. Results, which will indicate whether the training resulted in improved pitch perception, emotional recognition, or both, will be discussed.

*Keywords: Autism Spectrum Disorder, Autism, Prosody, Emotion, Pitch Perception*