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Low level auditory processing of simple and complex sounds in autism

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The documented dissociation between enhanced and diminished auditory processing performance in autistic listeners may be linked to the neural complexity required to process auditory stimuli. To test this hypothesis, four discrimination experiments were designed targeting pitch, spectral envelope, vocal timbre, and loudness. A range of pure- and complex-tone stimuli, with or without frequency or amplitude modulation, varied along spectral and temporal dimensions. An adaptive procedure was used to assess the auditory discrimination thresholds of groups of high-functioning participants with autism (HFA), Asperger syndrome (ASP), and typically developing individuals (TDs). Our research question was whether increasing the level of spectral and/or temporal complexity would have a detrimental impact on autistic listeners' ability to discriminate between acoustic stimuli. Preliminary results suggest that auditory discrimination performance of the latter group is not as dependent on levels of spectro-temporal complexity as originally predicted. The results will be interpreted in the context of current perceptually based models of enhanced and diminished perceptual functioning in autism.