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## Effects of the beta-adrenergic antagonist propranolol on anxiety and social functioning and relationship with heart rate variability in autism spectrum disorder


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Autism spectrum disorder (ASD) is a neurodevelopmental disorder that is characterized by persistent deficits in social communication and social interaction across multiple contexts. One of the main concerns that affects children with ASD is their ability to communicate socially, which affects their ability to interact with others and often results in reduced quality of life. Also, many people with ASD have high anxiety levels, and as a result, their social functioning is reduced which impacts their day to day lives. The present study examined the effects of propranolol, a beta-adrenergic antagonist with anxiolytic properties, over a 12-week open label clinical trial. We hypothesized that after participants take propranolol for 12 weeks, there would be a significant increase in their sociability and decreases in their anxiety.

Participants were youth and adolescents diagnosed with ASD (n = 51, M age = 14.02, SD = 4.7, range = 7-23, 10 females). Participants received propranolol in an open label fashion. Heart rate variability and Clinical Global Impression of Severity (CGI-S) of anxiety and social functioning were assessed at baseline and again after 12 weeks of taking propranolol.

Results indicate that anxiety and social severity decreased significantly after 12 weeks of propranolol. Heart rate variability significantly increased after 12-weeks of taking propranolol. These results suggest that propranolol may be used to treat social severity and anxiety in some individuals with ASD. Furthermore, increases in HRV after taking propranolol for 12 weeks suggests that the autonomic nervous system was in a “rest-and-digest” state, which may explain why social severity and anxiety decreased after taking propranolol. Future analyses will examine the effects of propranolol on social severity and anxiety in ASD from the double-blind portion of the trial.