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Effects of the beta-adrenergic antagonist propranolol on adaptive and problem behavior and relationship with heart rate variability in patients with autism spectrum disorder

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Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects many individuals in the United States. According to the CDC, its prevalence is on a continual rise with a 15 percent increase nationally affecting 1 in 68 children in the United States. Rates of ASD are more prevalent in young adolescent boys then compared to girls. One of the main issues that affects children with ASD is their ability to communicate and their behavior. People, who suffer from ASD, have difficulty with social communication and social interaction, causing them to behave in socially unacceptable ways at times. As such, it is important to find ways to help increase socially-appropriate behavior in ASD and maximize their social communication and interaction. Multiple studies indicate that ASD may be characterized by hyper-restrictive associative networks, which may be related to increase noradrenergic signaling in the brain. These findings suggest the potential benefit of a pharmacological agent aimed at the noradrenergic system for this population. Research indicates that propranolol, a pharmaceutical drug that blocks the brain and body's use of norepinephrine both centrally and peripherally, reduces noradrenergic system activity. As a result, propranolol also decreases blood pressure and reduces anxiety. A previous study in our lab examined the effects of serial doses of propranolol, on social interactions and secondarily on language tasks, anxiety and adaptive behavior in high functioning adults and adolescents with ASD. We found that when taking the serial doses of propranolol for 15 weeks, it helps benefit people with autism in the realm of social interaction and anxiety.