

Title: The Role of Sleep Quality, and its Relationship to Perceived Stress, in Overall Quality of Life for Autistic Adults

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Introduction: Sleep has been shown to be particularly problematic among autistic children and adolescents, with a high rate of reported sleep problems compared to the typically developing population and children with other forms of I/DD (Richdale, 1999). Sleep is one of the major concerns consistently reported by parents of autistic children. Little is known, however, about whether autistic adults are at-risk of poor sleep quality and whether their sleep quality is associated with overall quality of life. An association between higher perceived stress and lower quality of life in autism is well-established (Bishop-Fitzpatrick et al., 2018). In the general population, research has demonstrated a relationship between poorer sleep quality, higher perceived stress, and lower quality of life (LeBlanc et al., 2007). In this study therefore, we aimed to expand upon our previous work that documents the association between perceived stress and quality of life in autistic adults to examine the contribution of sleep quality to quality of life.

Method: Data were prospectively collected from 40 autistic adults who were enrolled in an active comparative effectiveness study of two psychosocial treatments for autistic adults (Eack, et al., 2018). All participants who were enrolled in this clinical trial were sent informational letters about the study, and the first 40 to respond and who additionally met the eligibility criteria were enrolled. Eligibility criteria included satisfying expert clinical opinion and research criteria for ASD based on the Autism Diagnostic Observation Schedule or Autism Diagnostic Interview-R, ranging in age 18-55 years, and meeting an intelligent quotient (IQ) > 80 as assessed by the Wechsler Abbreviated Scale of Intelligence. An additional cohort of 26 community volunteers matched to the autistic group on age, biological sex, and race were also recruited. These participants had no current psychiatric disability. Sleep Quality was measured through the Pittsburgh Sleep Quality Index, Perceived Stress was measured through the Perceived Stress Scale, and Quality of Life was measured through the Brief Version of the World Health Organization Quality of Life Scale. We ran OLS regression models to examine the association between study group, perceived stress, sleep quality, and QoL. We first tested for main effects of study group (i.e., autism or community volunteer), sleep quality, and perceived stress, adjusting for demographic characteristics. Then, we tested the interaction between study group and sleep quality. Finally, we tested a three-way interaction between group, sleep quality, and perceived stress.

Results: Autistic adults reported significantly worse sleep quality compared to community volunteers ($Mean_{ASD} = 6.21$, $SD_{ASD} = 3.12$; $Mean_{Control} = 3.50$, $SD_{Control} = 2.73$). The size of differences was large, with a Cohen's d value of 0.91 for Sleep Quality. There was a significant main effect of sleep quality on quality of life for all participants in the study, $B = -1.45$, $p < .01$, when controlling for study group, age, sex, full scale IQ, and perceived stress. As expected, based on our previous work, there was a significant main effect of study group and perceived stress on quality of life. We found neither a significant interaction effect between study group and perceived stress, nor between study group and sleep quality on quality of life. However, we did find a statistically significant three-way interaction effect between study group, perceived stress, and sleep quality on quality of life, $B = -3.11$, $p < .01$.

Discussion: Overall, autistic adults reported worse sleep quality compared to community volunteers. Poorer sleep quality was significantly associated with lower quality of life for all participants in the study. Findings from the three-way interaction indicated that perceived stress further exacerbated the relationship between sleep quality and quality of life for autistic adults. These findings highlight the need for additional research concerning interventions that target both sleep quality and perceived stress in autistic adults in order to improve quality of life for this growing population.

References:

- Bishop-Fitzpatrick, L., Mazefsky, C. A., & Eack, S. M. (2018). The combined impact of social support and perceived stress on quality of life in adults with autism spectrum disorder and without intellectual disability. *Autism*, 22(6), 703-711.
- Eack, S. M., Hogarty, S. S., Greenwald, D. P., Litschge, M. Y., Porton, S. A., Mazefsky, C. A. and Minshew, N. J. (2018), Cognitive enhancement therapy for adult autism spectrum disorder: Results of an 18-month randomized clinical trial. *Autism Research*, 11: 519-530. doi:[10.1002/aur.1913](https://doi.org/10.1002/aur.1913)
- LeBlanc, M., Beaulieu-Bonneau, S., Merette, C., Savard, J., Ivers, H., & Morin, C. M. (2007). Psychological and health-related quality of life factors associated with insomnia in a population-based sample. *J Psychosom Res*, 63(2), 157-166.
- Richdale, A. L., & Schreck, K. A. (2009). Sleep problems in autism spectrum disorders: prevalence, nature, & possible biopsychosocial aetiologies. *Sleep Med Rev*, 13(6), 403-411.

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