

EXAMINING THE RELATIONSHIP BETWEEN SLEEP AND EMOTIONAL DYSREGULATION IN INDIVIDUALS WITH DISRUPTIVE *SETBP1* VARIATIONS

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Background

Variations in *SETBP1*, a gene that plays a role in DNA replication, can lead to *SETBP1*-haploinsufficiency disorder, which is implicated in neurodevelopmental disorders, including autism spectrum disorder (ASD), language disorders, and ADHD (Morgan et al., 2021). Individuals with *SETBP1*-haploinsufficiency disorder often suffer from sleep disturbances, a common symptom of ASD that may exacerbate problematic daytime behavior and are often associated with emotional dysregulation (Cohen, 2014).

Objective

We sought to test the relationship between sleep problems and emotional dysregulation. We hypothesized that within individuals with *SETBP1* variations, sleep disturbances would be associated with increased emotional reactivity as measured by the Emotional Dysregulation Inventory.

Methods

- 19 participants (F = 4, M = 15), aged 5 to 21 years
- Examined sleep outcomes include:
 - Struggling with bedtime
 - Waking up during the night
 - Difficulty waking up for the day
 - Sleepiness during the day
- The Emotion Dysregulation Inventory (EDI) is a parent-reported measure of emotional reactivity (e.g., mood instability, emotional outbursts, and prolonged emotional states) and dysphoria (Mazefsky et al., 2013); our analysis focused on reactivity.
- A simple linear regression (Figure 1) was used to examine the association between number of sleep problems and emotional reactivity scores.

Among individuals with *SETBP1* variations, sleep disturbances have a null, weak relationship with emotional reactivity.

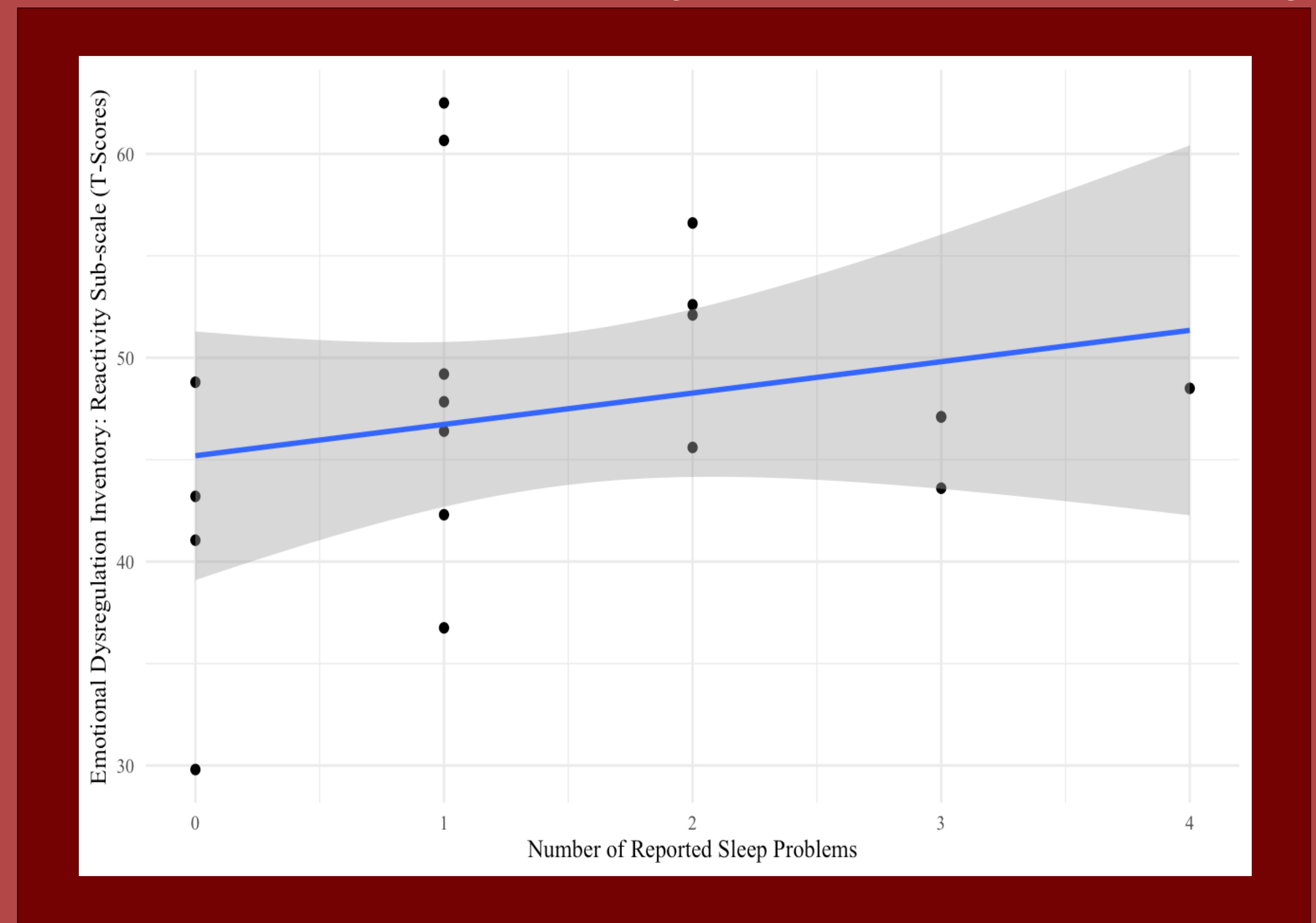


Figure 1. Relationship Between Number of Sleep Problems and EDI Scores.

We do not have enough evidence to suggest a relationship between number of reported sleep problems and EDI reactivity scores in individuals with a *SETBP1* mutation (R-squared=.05, $p=.34$).

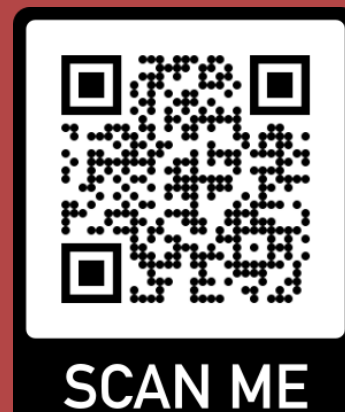
Table 1: Sleep Issues and Emotional Dysregulation in Participants

Sleep Problem	Percentage of Participants With Sleep Problem	Percentage of Participants with Clinically Elevated EDI Reactivity (7/19) With Sleep Problem
Struggles with bedtime	37% (7/19)	29% (2/7)
Wakes up during the night	32% (6/19)	50% (3/6)
Difficulty waking up for the day	21% (4/19)	50% (2/4)
Sleepiness during the day	42% (8/19)	25% (2/8)

These findings suggest that there is an insignificant correlation between the number of reported sleep problems and emotional reactivity, as measured by the EDI scores. Future research with a larger sample size, a more uniform age group, and a higher number of individuals with emotional dysregulation could provide more reliable data and clearer correlations extending beyond sleep-related issues.

Brain Research Across Development Laboratory

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References: Cohen, S., Conduit, R., Lockley, S. W., Rajaratnam, S. M., & Cornish, K. M. (2014). The relationship between sleep and behavior in autism spectrum disorder (ASD): A Review. *Journal of neurodevelopmental disorders*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4271434/>.

Morgan, A., Srivastava, S., Duis, J., & van Bon, B. (2021). *SETBP1* disorder. In M. P. Adam, G. M. Mirzaa, R. A. Pagon, S. E. Wallace, L. J. Bean, K. W. Grpp, & A. Amemiya (Eds.), *GeneReviews*®. University of Washington, Seattle. Last revision: May 9, 2024. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK575336/>.