The Association between Quality of Sleep and Quality of Social Relationships among Adolescents.

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Introduction

- Studies on adolescents have demonstrated that sleep deprivation can increase the risk for psychiatric disorders such as major depression emotional irritability (Roberts & Duong, 2014), (Raniti et al., 2017).
- Recent neurobiological studies have demonstrated that poor sleep quality can lead to neurological impacts on the activity of cortical regions that regulate feelings of interpersonal withdrawal and loneliness (Ben Simon & Walker, 2018).
- Associations between the number of aversive interpersonal ties and poorer sleep support structures were related to poorer sleep among adults aged 48 to 47 (Kent, Uchino, Cribbet, Bowen, & Smith, 2015).
- It is not as well understood as to whether associations between quality of sleep and perceived social relationships are related to one another when controlling for psychosocial disorders among a nationally representative adolescent sample.

Research Questions

- Is quality of sleep associated with variables related to perceived quality of interpersonal and social relationships such as social acceptance among adolescents?
- Does the association between sleep quality and perceived social acceptance differ for individuals with and without psychiatric mood disorders such as depression and loneliness?

Methods

Sample

- Adolescent respondents (n=6,504 in grades 7-12) were drawn from the first wave (1994) of the National Longitudinal Study of Adolescent Health (AddHealth).
- The Addhealth survey is a multi-survey longitudinal study of a nationally representative sample of 20,000 adolescents in the United States.
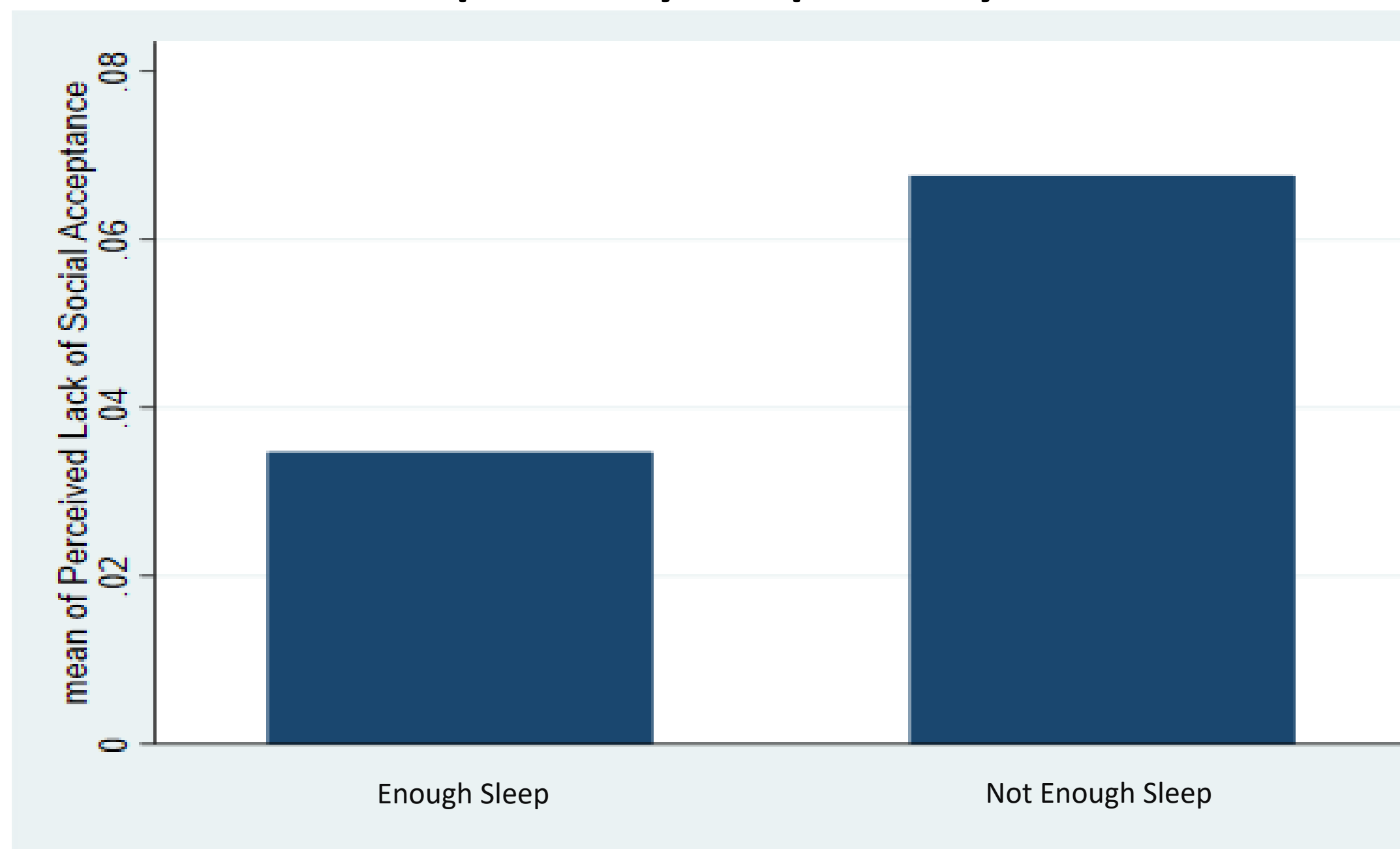
Measures

- **Sleep quality** was measured by a dichotomous categorical variable coding for whether a participant think they often get enough sleep (0=gets enough sleep, 1= does not get enough sleep)
- **Perceived social acceptance** was measured by asking participants to rate the statement "You feel socially accepted" on a 5-point scale from 1 (strongly agree) to 5 (strongly disagree) and collapsed dichotomously collapsed to code for either feeling socially accepted (0=categories 1,2,3) or not feeling socially accepted (1=categories 4,5)
- **Depressed Mood** was coded on a 4-point scale from 0=rarely felt depressed to 3=feel depressed most/all the time and collapsed dichotomously to code for depressed mood being either absent (0=category 0) or present (1=categories 1,2,3) for logistic regression analysis
- **Loneliness** was coded on a 4-point scale rom 0 was coded on a 4-point scale from 0=rarely felt lonely to 3=felt lonely most/all the time and collapsed dichotomously to code for loneliness being either absent (0=category 0) or present (1=categories 1,2,3) for logistic regression analysis.

Results

Univariate Analysis:

- **26.49%** of respondents indicated that they usually do not get enough sleep whereas **73.51%** of respondents indicated they do get enough sleep.
- **95.67%** of respondents indicated that they felt socially accepted (categories 1,2,3) whereas **4.34%** of respondents indicated not feeling socially accepted (categories 4,5).

Fig 1. Binary categorical bar chart representing Perceived Lack of Social Acceptance by Sleep Quality

Fig 2. Mean Value of Perceived Social Acceptance by Sleep Quality when Controlling for Feelings of Loneliness.
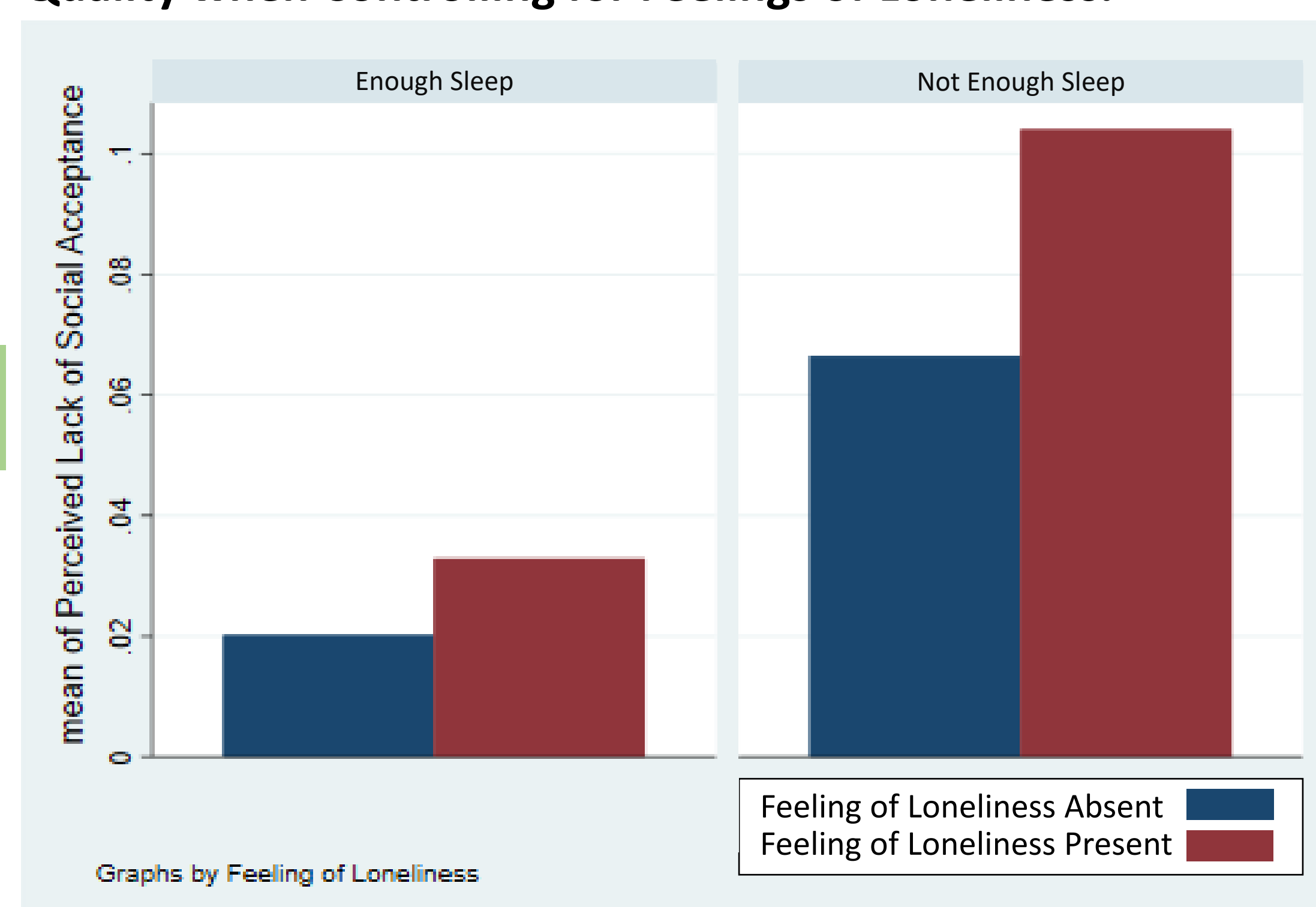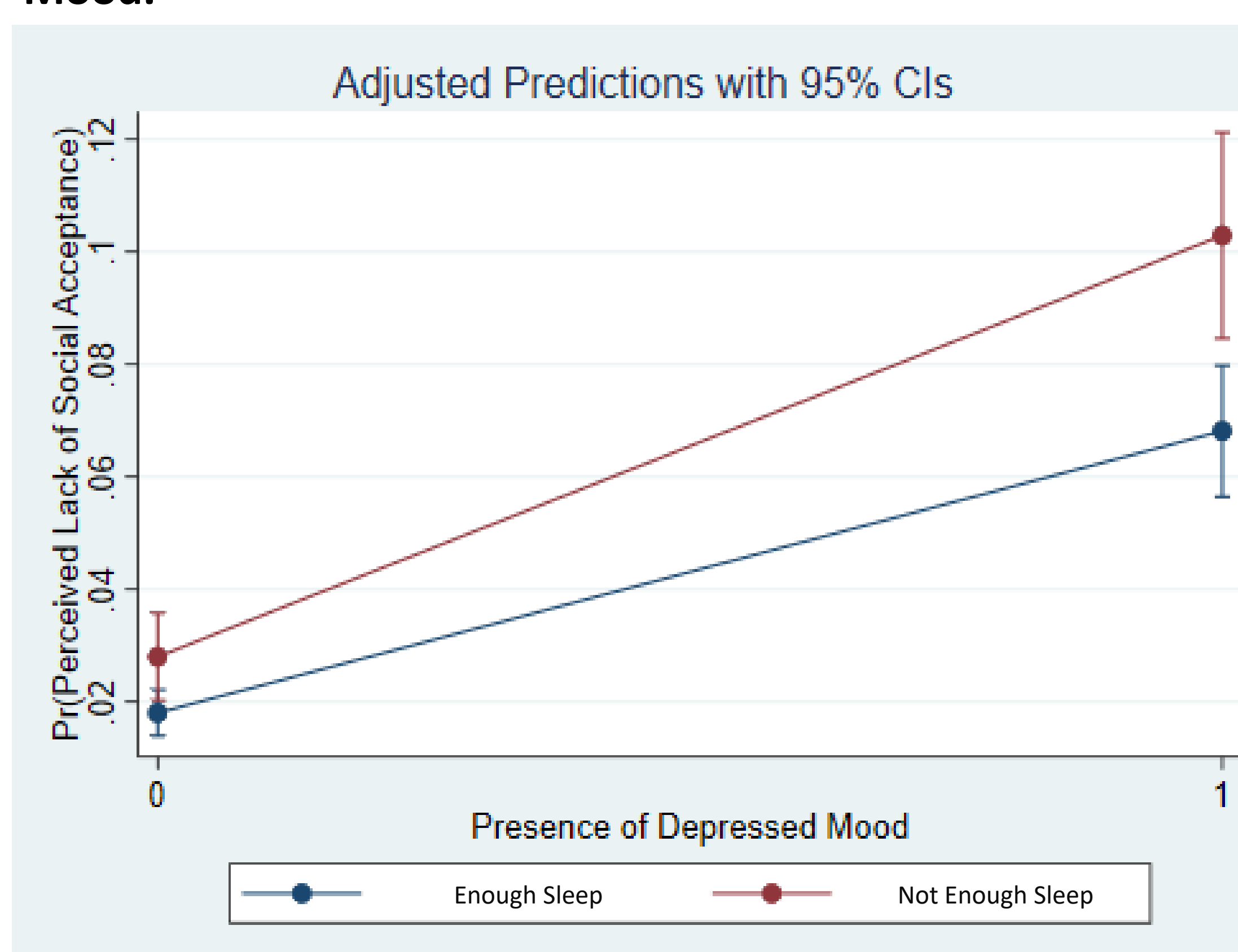

Fig 3. Probability of Perceiving to be Not Socially Accepted based on Sleep Quality when Controlling for Depressed Mood.

Bivariate Analysis:

- Chi-square analysis showed that adolescents suffering from poor sleep quality were more likely to have suffered with feelings of a lack of social acceptance **(6.76%)** compared to those without poor sleep quality **(3.47%), X^2=32.90, p<0.0001**.
- Since $p<0.05$, not getting enough sleep **was found to be significantly associated** with not feeling socially accepted among the adolescent sample.

Multivariate Analysis:

- When controlling for both depressed mood and loneliness, the logistic regression of perceived lack of social acceptance (categorical response variable) by quality of sleep (categorical explanatory variable) **are shown to be significantly associated (p=0.003<0.05).**
- **An Odds-Ratio value of 1.47** supports the findings that when controlling for both depressed mood and loneliness, respondents **who indicated that they do not receive enough sleep are 1.47 times more likely to indicate feeling socially unaccepted** compared to participants who believe they receive enough sleep.
- **Linear regression revealed significant association** between the ordinal categorical variable for perceived social acceptance by quality of sleep when controlling for both depressed mood and loneliness **(p=0.000<0.05).**

Discussion

- Experiencing frequent poor sleep quality is significantly associated with also perceiving themselves as not socially accepted among the sample adolescent population analyzed in this study.

- Analysis of the multivariate logistic regression further indicates that individuals who do receive adequate sleep are more likely to also perceive themselves as being socially accepted compared to those who often experience a lack of sleep when controlling for both depressed mood and perceived loneliness.

- In future studies, control of more variables relating to social behavior such as introversion and extroversion in addition to psychological variables accounting for social anxiety may impact the association between sleep quality and perceived social acceptance.

- Due to the observational nature of this study, controlled experimentation on relationships between sleep hygiene and psychosocial development among adolescents is needed to determine both neurodevelopmental and causal interactions between these quality of sleep and perceived sense of social acceptance.

Raniti, M. B., Allen, N. B., Schwartz, O., Waloszek, J. M., Byrne, M. L., Woods, M. J., . . . Trinder, J. (2017). Sleep Duration and Sleep Quality: Associations With Depressive Symptoms Across Adolescence. *Behavioral Sleep Medicine, 15*(3), 198-215. doi:10.1080/15402002.2015.1120198

Ben Simon, E., & Walker, M. P. (2018). Sleep loss causes social withdrawal and loneliness. *Nature Communications, 9*(1), 3146. doi:10.1038/s41467-018-05377-0

Kent, R. G., Uchino, B. N., Cribbet, M. R., Bowen, K., & Smith, T. W. (2015). Social Relationships and Sleep Quality. *Annals of Behavioral Medicine, 49*(6), 912-917. doi:10.1007/s12160-015-9711-6