# Final Project: The Relationship between Sleep, Depression, Quality of Life, and Socioeconomic Status

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## Author Note

We would like to acknowledge Daniel Anderson for introducing us to Papaja and thank our classmates in Introduction to Data Science with R.

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Abstract

One or two sentences providing a **basic introduction** to the field, comprehensible to a scientist in any discipline.

Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular study.

One sentence summarizing the main result (with the words "**here we show**" or their equivalent).

Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

One or two sentences to put the results into a more **general context**.

Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline.

*Keywords:* sleep, depression, quality of life, SES

Word count: X

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# Methods[1]

## Participants

Participants were recruited through the University of Oregon Human Subjects Pool consisting of undergraduate students enrolled in introductory psychology and linguistics courses. Students received academic credit in exchange for their participants. Participants were not aware of the subject of the study before scheduling their participation, so participants did not self-select into the study. Although they could leave the study after reading informed consent, no participants chose to do so.

In total, [#] participants were included in this study, all of who had complete data. [insert demographic characteristics]

## Materials

**Depressive Symptoms Scale.** A scale to measure depressive symptoms was created by the researchers for the purposes of this study. Participants were instructed to rate each item on Likert-type scale, where 1 corresponds to "strongly disagree," and 5 corresponds to "strongly agree." The scale consisted of three items, including: "Over the last 2 weeks, I have felt little interest or pleasure in doing things;" "Over the last 2 weeks, I have felt down, depressed, or hopeless;" and "Over the last 2 weeks, I have felt tired or had little

[1] This is a fictional Methods section, as we simulated our data. However, this is a realistic way that we could go about collecting this information in the future

energy." Scale items were summed to create a depression score, where higher scores represent higher depressive symptoms.

**Quality of Life Scale.** A scale to measure participants' quality of life was created by the researchers. Participants were instructed to rate each item on Likert-type scale, where 1 corresponds to "strongly disagree," and 5 corresponds to "strongly agree." The scale consisted of four items, including: "My life is ideal;" "I am satisfied with my life;" "So far I have been able get the important things I want from life;" and "I have accomplished many of the things in my life." Scale items were summed to create a total quality of life score, where higher scores represent better quality of life.

**Sleep Quality Scale.** A scale to measure participants' sleep quality was created by the researchers. Participants were instructed to rate each item on Likert-type scale, where 1 corresponds to "strongly disagree," and 5 corresponds to "strongly agree." The scale consisted of three items, including: "I am satisfied with the time I spend sleeping;" "I am satisfied with my quality of sleep"; and "When I wake up, I feel refreshed." Scale items were summed to create a total sleep quality score, where higher scores represent better sleep quality.

**Demographics Questionnaire.** Participants were also asked to complete a demongraphics quationnaire, which asked about their socioeconomic status, race/ethnicity, and educational background.

## Procedure

An online version of this study was created through Qualtrics survey software, and the survey link was distributed to participants on the via SONA software through the University of Oregon Human Subjects pool. After clicking the survey link, participants were informed of study procedures and content through an informed consent process. After completing the

study, participants received academic credit as compensation and were presented with debriefing materials. The University of Oregon's s Office of Research Compliance (Institutional Review Board) approved this study.

### Data analysis

We used R (Version 3.4.3; R Core Team, 2017) and the R-packages *bindrcpp* (Version 0.2.2; Müller, 2018), *dplyr* (Version 0.7.6; Wickham, François, Henry, & Müller, 2018), *forcats* (Version 0.3.0; Wickham, 2018a), *Formula* (Version 1.2.3; Zeileis & Croissant, 2010), *ggplot2* (Version 3.0.0; Wickham, 2016), *gridExtra* (Version 2.3; Auguie, 2017), *here* (Version 0.1; Müller, 2017), *Hmisc* (Version 4.1.1; Harrell Jr, Charles Dupont, & others., 2018), *janitor* (Version 1.1.1; Firke, 2018), *kableExtra* (Version 0.9.0; Zhu, 2018), *knitr* (Version 1.20; Xie, 2015), *lattice* (Version 0.20.35; Sarkar, 2008), *papaja* (Version 0.1.0.9842; Aust & Barth, 2018), *purrr* (Version 0.2.5; Henry & Wickham, 2018), *readr* (Version 1.1.1; Wickham, Hester, & Francois, 2017), *rio* (Version 0.5.10; C.-h. Chan, Chan, Leeper, & Becker, 2018), *stringr* (Version 1.3.1; Wickham, 2018b), *survival* (Version 2.42.6; Terry M. Therneau & Patricia M. Grambsch, 2000), *tibble* (Version 1.4.2; Müller & Wickham, 2018), *tidyr* (Version 0.8.1; Wickham & Henry, 2018), and *tidyverse* (Version 1.2.1; Wickham, 2017) for all our analyses. We calculated means and standard deviations for each of the total scale scores. We also calculated Pearson's r correlation coefficients between depressive symptoms, quality of life, and sleep quality total scores. The authors interpreted our correlational results as small (.10-.29), medium (.30-.49), and large correlations (.50-1.00).

## Results

## Discussion

## References

Auguie, B. (2017). *GridExtra: Miscellaneous functions for "grid" graphics*. Retrieved from https://CRAN.R-project.org/package=gridExtra

Aust, F., & Barth, M. (2018). *papaja: Create APA manuscripts with R Markdown*. Retrieved from https://github.com/crsh/papaja

Chan, C.-h., Chan, G. C., Leeper, T. J., & Becker, J. (2018). *Rio: A swiss-army knife for data file i/o*.

Firke, S. (2018). *Janitor: Simple tools for examining and cleaning dirty data*. Retrieved from https://CRAN.R-project.org/package=janitor

Harrell Jr, F. E., Charles Dupont, & others. (2018). *Hmisc: Harrell miscellaneous*. Retrieved from https://CRAN.R-project.org/package=Hmisc

Henry, L., & Wickham, H. (2018). *Purrr: Functional programming tools*. Retrieved from https://CRAN.R-project.org/package=purrr

Müller, K. (2017). *Here: A simpler way to find your files*. Retrieved from https://CRAN.R-project.org/package=here

Müller, K. (2018). *Bindrcpp: An 'rcpp' interface to active bindings*. Retrieved from https://CRAN.R-project.org/package=bindrcpp

Müller, K., & Wickham, H. (2018). *Tibble: Simple data frames*. Retrieved from https://CRAN.R-project.org/package=tibble

R Core Team. (2017). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from

https://www.R-project.org/

Sarkar, D. (2008). *Lattice: Multivariate data visualization with r*. New York: Springer. Retrieved from http://lmdvr.r-forge.r-project.org

Terry M. Therneau, & Patricia M. Grambsch. (2000). *Modeling survival data: Extending the Cox model*. New York: Springer.

Wickham, H. (2016). *Ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York. Retrieved from http://ggplot2.org

Wickham, H. (2017). *Tidyverse: Easily install and load the 'tidyverse'*. Retrieved from https://CRAN.R-project.org/package=tidyverse

Wickham, H. (2018a). *Forcats: Tools for working with categorical variables (factors)*. Retrieved from https://CRAN.R-project.org/package=forcats

Wickham, H. (2018b). *Stringr: Simple, consistent wrappers for common string operations*. Retrieved from https://CRAN.R-project.org/package=stringr

Wickham, H., & Henry, L. (2018). *Tidyr: Easily tidy data with 'spread()' and 'gather()' functions*. Retrieved from https://CRAN.R-project.org/package=tidyr

Wickham, H., François, R., Henry, L., & Müller, K. (2018). *Dplyr: A grammar of data manipulation*. Retrieved from https://CRAN.R-project.org/package=dplyr

Wickham, H., Hester, J., & Francois, R. (2017). *Readr: Read rectangular text data*. Retrieved from https://CRAN.R-project.org/package=readr

Xie, Y. (2015). *Dynamic documents with R and knitr* (2nd ed.). Boca Raton, Florida: Chapman; Hall/CRC. Retrieved from https://yihui.name/knitr/

Zeileis, A., & Croissant, Y. (2010). Extended model formulas in R: Multiple parts and

multiple responses. *Journal of Statistical Software*, *34*(1), 1–13. doi:10.18637/jss.v034.i01

Zhu, H. (2018). *KableExtra: Construct complex table with 'kable' and pipe syntax*. Retrieved from https://CRAN.R-project.org/package=kableExtra

Table 1

*Mean Depression, Sleep Quality, and Quality of Life Scores by SES Group.*

| SES | Mean Depression Score | Mean Sleep Quality Score | Mean Quality of Life Score |
|---|---|---|---|
| High | 7.30 | 12.52 | 9.89 |
| Low | 7.38 | 13.41 | 10.02 |
| Med | 7.25 | 13.86 | 9.94 |

*Note.* This table was created with apa_table()


Mean Depression Score by Socioeconomic Status
Depression Total Score
0
2
4
6
Low
Med
High
Socioeconomic Status

*Figure 1*


Mean Sleep Quality Score by Socioeconomic Status
Sleep Quality Total Score
10
5
0
Low
Med
High
Socioeconomic Status

*Figure 2*

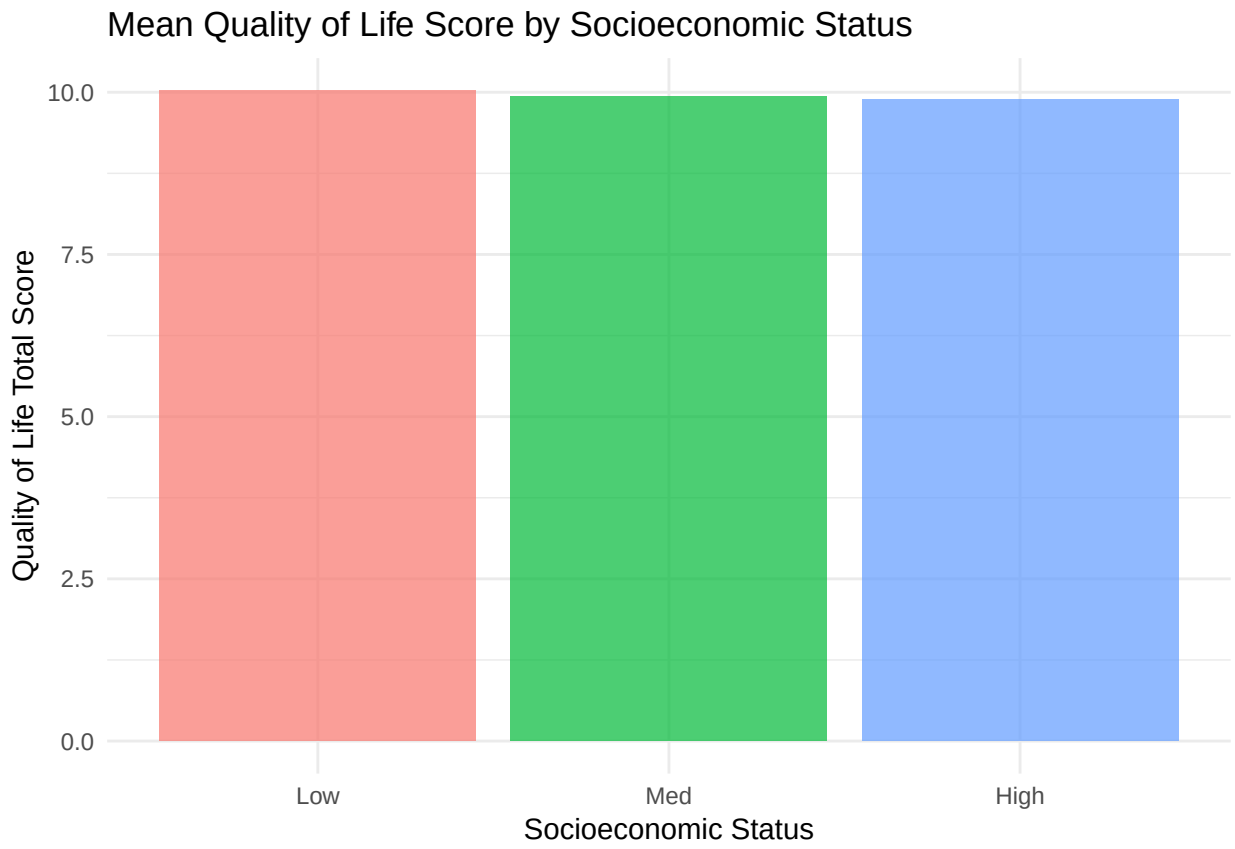
Mean Quality of Life Score by Socioeconomic Status
Quality of Life Total Score
10.0
7.5
5.0
2.5
0.0
Low
Med
High
Socioeconomic Status

*Figure 3*