Assignment 7

Sleep, Stress, Media

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Abstract

Sleep deprivation negatively impacts quality of life and decision making. A paper by Nofsinger et al. (2019) concludes that sleep deprivation has a statistically significant impact on financial decisions. In this paper I test the impact of media consumption regarding frequency of time spent on the internet playing games, browsing emails, and for school. The hypothesis being tested is media consumption influences sleeping habits. After running a random effects regressional analysis on data retrieved from the PSID, I conclude that variables obtained for testing media's impact on sleep are not statistically significant. Thus, the hypothesis and alternate hypothesis are rejected meanwhile the null hypothesis is accepted. This conclusion was surprising but understandable considering the time constraints of this project and limited data available to pull from.

This project will study the effect of media consumption on sleeping habits. I will primarily seek to test the impact of frequent gaming on number of hours slept in a 24-hour period. My interest comes from personal experience of choosing media consumption over sleep along with seeing this same choice happening frequently among my peers, family members, and friends. I think exploring the choices we make that lead to sleep deprivation is important since sleep deprivation negatively impacts quality of life and decision making (Nofsinger et al. 2019). I decided to include variables that seemed like sources of stress to reduce omitted variable bias and test if stress is a bigger factor on hours of sleep than media consumption. I have also included variables that cover frequency of snacking, musclebuilding activities, and alcohol consumption to cover the impact of food health, exercise, and alcohol use on sleeping habits, respectively. The null hypothesis is: Media consumption will not have an effect on sleeping habits. The alternate hypothesis is: Media consumption will have some effect on sleeping habits. All of my data will be coming from the Panel Study of Income Dynamics (PSID).

In preparing for this paper and throughout my research I have referred to the following economic papers:

Relative concerns and sleep behavior studies how relative concerns of income impact sleep behaviors and sleep satisfaction. The theoretical model seeks to explain how relative concerns such as income affect utility in regard to sleep quality and quantity. Their data set is from the German Socia-Economic Panel. The sleep satisfaction data from this set is used as a proxy for sleep quality by the authors in their empirical analysis. The authors find that number of hours slept and quality of sleep on weekdays are negatively related to income. Number of hours slept and quality of sleep are not as impacted by income on weekends. Omitted variable bias was said by the authors to be somewhat alleviated by having

control over individual fixed effects thanks to the data set selected although I feel more measures could have been taken.

Broadband internet, digital temptations, and sleep studies the impact of internet usage on sleep, exploring how different usages before bedtime can impact sleep health. Data from the last wave of the German TUS (2012-2013) and German SOEP. The authors restricted the German TUS data to individuals between 18 and 59 years old. The German TUS provides detailed survey information of all individual activities during two weekdays and one weekend day while the German SOEP provides a wide range of data including self-reported qualitative and quantitative dimensions of sleep. The theoretical model of this paper is based upon time use allocation. A linear regression model was used to examine how internet affects sleeping behavior. The ordinary least squares (OLS) model estimation model was used to estimate unknown parameters of the linear regression model. An identification strategy was employed to address the concern of omitted variables in the OLS model. The authors concluded that usage of online technology including television, video games, and smart phone usage have a strong association with sleep deprivation. A short coming of this study is the lack of information on teen sleeping behavior.

Television viewing by school-age children: Associations with physical activity, snack food consumption and unhealthy weight studies the impact of television viewing, snack consumption, and physical activity on the weight of school-age children. Data was pulled from an Australian national sample of 6 to 7-year-old children. This dataset includes lifestyle choices and weight status of the children. Path analysis was used to study the which lifestyle choices are associated with weight in children. The authors found that time spent watching television was associated with more snacking and less physical activity but only time spent viewing television had a direct association with weight. The weak measure of diet and physical activity from this paper's chosen data set was a limitation on the quality of research. A dataset which includes a more detailed measure such as food diaries and recording of physical activity would have been ideal.

Determining the optimal allocation of time among work, sports, internet use, and sleep studies what the optimal allocation of time between work, sports, internet use, and sleep is. Data was pulled from the Israel Central Bureau of Statistics 2010 Social Survey. The dataset includes a wide variety of variables from a total of 928 Israeli residents who were interviewed. The theoretical model used is based upon time allocation which includes a simultaneous system of time allocation. This study utilizes a non-tradition approach to the analysis of time allocation. Simultaneous equations were constructed to examine the cross-sectional data. The authors' main findings determine that individuals aged 20 cut back on sleep the most, with sleep allocation increasing by 2.5 hours for individuals aged 40 and over.

Changes in self-reported health, alcohol consumption, and sleep quality during the COVID-19 pandemic in the United States studies how COVID-19 has impacted health including alcohol consumption and sleep quality. The data was collected as surveys administered via MTurk. The authors used bivariate descriptive and multivariate analyses as part of their empirical approach. The results indicate that people have had a significant worsening of sleep quality, drinking habits, physical health, and mental health.

DEEP sleep: The impact of sleep on financial risk taking studies how sleeping habits impact the probability of financial risk taking. The data set on sleep quality comes from the Pittsburgh Sleep Quality Index. Data collected via the use of surveys on 126 upper-level undergraduates was collected to ensure participants understood the consequences of risk taking. The theoretical model was based on prospect theory which states that investors perceive gains and losses differently. The Dynamic Experiments for Estimating Preferences empirical model was utilized. The authors conclude that individuals with good sleep quality tend to take less risks compared to those with poor sleep quality. A shortcoming is that the survey sample size of this paper is small and only includes students at a particular point in their education and from a single school.

Based on research from the Billari et al. (2018) paper I reviewed, the Theoretical model I will be using is time use allocation. This theory states that individuals in a household allocate their time to maximize their utility (Becker, 1965). Time allocated to playing video games, online shopping, e-learning, and how such variables impact sleep are what will be tested in this paper. These variables will essentially be treated as commodities in a utility function.

As part of my methodology I will be using the random effects model to perform a regressional analysis on my panel data across multiple years. The random effects model is used since it allows testing of the effect of time constant variables. The Hausman Test was used to check the robustness the panel data model I am using. The P-value of the Hausman test is 0.3663 hence the null hypothesis is accepted, and the Random Effects estimator is used to analyze the data.

Random Effects Regression Equation:

$$\#\text{ OF HOURS OF SLEEP IN 24-HR PERIOD}_{it} = \alpha_i + \beta_1 \text{infrequentemail}_{it} + \beta_2 \text{frequentemail}_{it} + \beta_3 \text{infreqschool}_{it} + \beta_4 \text{freqschool}_{it} + \beta_5 \text{infreqshop}_{it} + \beta_6 \text{freqshop}_{it} + \beta_7 \text{infreqgame}_{it} + \beta_8 \text{freqgame}_{it} + \beta_9 \text{infreqmoney}_{it} + \beta_{10} \text{freqmoney}_{it} + \beta_{11} \text{infreqjob2005}_{it} + \beta_{12} \text{freqjob}_{it} + \beta_{13} \text{infreqdisc}_{it} + \beta_{14} \text{freqdisc}_{it} + \beta_{15} \text{unlikediv}_{it} + \beta_{16} \text{likelydiv}_{it} + \beta_{17} \text{AVGHRSWKWORKED}_{it} + \beta_{18} \text{NMBROFHRSOFSLPIN24HR}_{it} + \beta_{19} \text{freqmuscle}_{it} + \beta_{20} \text{infreqmuscle}_{it} + \beta_{21} \text{infreqsnack}_{it} + \beta_{22} \text{freqsnack}_{it} + \beta_{23} \text{infreqdrink}_{it} + \beta_{24} \text{freqdrink}_{it} + e_{it}$$

These variables will be modified with code to in order to neatly run this regression on Stata as follows:

15 variables were dropped from all years of hours slept in a 24-hour period due to being do not know (DK) or not applicable (NA) responses.

2,686 variables were dropped from all years of hours worked more than one job due to being do not know (DK), not applicable (NA), or Inapplicable (Inap.) responses.

Created two dummy variables across all years for frequency of internet use for email. infrequentemail covers email usage of once a week or less. frequentemail covers email usage of several times a week or more.

Created two dummy variables across all years for frequency of internet use for school. infreqschool covers internet use for school of once a week or less. freqschool covers internet use for school of several times a week or more.

Created two dummy variables across all years for frequency of internet use for shopping. infreqshop covers internet use for shopping of once a month or less. freqsshop covers internet use for shopping of once a week or more.

Created two dummy variables across all years for frequency of internet use for gaming. infreqgame covers internet use for gaming of once a week or less. freqsgame covers internet use for gaming of several times a week or more.

Created two dummy variables across all years for frequency of worry about money. infreqmoney covers concern of at least once a month or less. freqsmoney covers concern of at least once a week or more.

Created two dummy variables across for frequency of worry about job future job. infreqjob covers concern of at least once a month or less. freqsjob covers concern of at least once a week or more.

Created two dummy variables across all years for how often the person felt discouraged. infreqdisc covers concern of at least once a month or less. freqsdisc covers concern of at least once a week or more.

Created two dummy variables across all years for likelihood of divorce. unlikediv covers concern of at least some chance of divorce. likelydiv covers concern of at least being 50/50 confident in divorce chance.

Created two dummy variables across all years for frequency of muscle building activity. freqmuscle covers muscle building several times a month or more. infreqmuscle covers muscle building once a month or less.

Created two dummy variables across all years for how often snacked instead of eating meal. infreqsnack covers snack instead of meal a couple times a month or less. freqssnack covers snack instead of meal more than once a week.

Created two dummy variables across all years for how often drank alcohol. infreqdrink covers drinking about once a week or less. freqsdrink covers drinking several times a week or more.

All N/A; refused; DK; Inap responses were omitted for each variable.

Replaced 5 = NO with 0 = NO across all years for whether ever used internet observations in so that stata can interpret this response correctly.

Using these data modifications, I ran several commands in stata to start visualizing the data starting with summary statistics for each year of observations followed by a summarization of the data for each table.

Table 1. Summary Statistics 2005

Variable	Obs	Mean	Std. Dev.	Min	Max
NMBROFHRSOFSLPIN24HR2005	527	7.40	1.66	1	16
AVGHRSWKWORKED2005	527	6.88	14.39	0	100
Infreq. Used Internet For Email2005	1,704	0.09	0.29	0	1
Freq. Used Internet For Email2005	1,704	0.20	0.40	0	1
Infreq. Used Internet For School2005	1,704	0.15	0.36	0	1
Freq. Used Internet For School2005	1,704	0.13	0.33	0	1
Infreq. Used Internet To Shop2005	1,704	0.21	0.41	0	1
Freq. Used Internet To Shop2005	1,704	0.03	0.18	0	1
Infreq. Used Internet For Games2005	1,704	0.20	0.40	0	1
Freq. Used Internet For Games2005	1,704	0.06	0.23	0	1
Infreq. Worried About Money2005	1,704	0.11	0.31	0	1
Freq. Worried About Money2005	1,704	0.16	0.36	0	1
Infreq. Worried About Future Job2005	1,704	0.11	0.31	0	1
Freq. Worried About Future Job2005	1,704	0.15	0.35	0	1
Infreq. Felt Discouraged05	1,704	0.12	0.32	0	1
Freq. Felt Discouraged2005	1,704	0.11	0.32	0	1
Feel Unlikely To Divorce2005	1,704	0.13	0.33	0	1
Feel Likely To Divorce2005	1,704	0.05	0.23	0	1
Freq. Muscle Build2005	1,704	0.15	0.36	0	1
Infreq. Muscle Build2005	1,704	0.04	0.19	0	1
Infreq. Snack Instead of Eat Meal2005	1,704	0.12	0.33	0	1
Freq. Snack Instead of Eat Meal2005	1,704	0.18	0.38	0	1
Infreq. Drink Alcohol2005	1,704	0.12	0.33	0	1
Freq. Drink Alcohol2005	1,704	0.02	0.16	0	1

The average hours slept in a 24-hours period was 7.40 hours in 2005.

The average hours worked in a 7-day period was 6.88 hours in 2005.

The average percentage of observations that infrequently checked their emails was 9 in 2005.

The average percentage of observations that frequently checked their emails was 20 in 2005.

The average percentage of observations that infrequently use the internet for school was 15 in 2005.

The average percentage of observations that frequently use the internet for school was 13 in 2005.

The average percentage of observations that infrequently use the internet for school was 21 in 2005.

The average percentage of observations that frequently uses the internet for shop was 3 in 2005.

The average percentage of observations that infrequently game was 20 in 2005.

The average percentage of observations that frequently game was 6 in 2005.

The average percentage of observations that infrequently worry about money was 11 in 2005.

The average percentage of observations that frequently worry about money was 16 in 2005.

The average percentage of observations that infrequently worry about future jobs was 11 in 2005.

The average percentage of observations that frequently worry about future jobs was 15 in 2005.

The average percentage of observations that infrequently feel discouraged was 12 in 2005.

The average percentage of observations that frequently feel discouraged was 11 in 2005.

The average percentage of observations that infrequently worry about divorce was 13 in 2005.

The average percentage of observations that frequently worries about divorce was 5 in 2005.

The average percentage of observations that frequently muscle builds was 15 in 2005.

The average percentage of observations that infrequently muscle build was 4 in 2005.

The average percentage of observations that infrequently snacks instead of eating meals was 12 in 2005.

The average percentage of observations that frequently snacks instead of having meals was 18 in 2005.

The average percentage of observations that infrequently drink alcohol was 12 in 2005.

The average percentage of observations that frequently drink alcohol was 2 in 2005.

Table 2. Summary Statistics 2007

Variable	Obs	Mean	Std. Dev.	Min	Max
NMBROFHRSOFSLPIN24HR2007	771	7.34	1.57	2	20
AVGHRSWKWORKED2007	771	19.10	19.05	0	98
Infreq. Used Internet For Email2007	1,704	0.10	0.30	0	1
Freq. Used Internet For Email2007	1,704	0.34	0.47	0	1
Infreq. Used Internet For School2007	1,704	0.22	0.41	0	1
Freq. Used Internet For School2007	1,704	0.18	0.39	0	1
Infreq. Used Internet To Shop2007	1,704	0.31	0.46	0	1
Freq. Used Internet To Shop2007	1,704	0.07	0.25	0	1
Infreq. Used Internet For Games2007	1,704	0.30	0.46	0	1
Freq. Used Internet For Games2007	1,704	0.08	0.28	0	1
Infreq. Worried About Money2007	1,704	0.15	0.36	0	1
Freq. Worried About Money2007	1,704	0.24	0.43	0	1
Infreq. Worried About Future Job2007	1,704	0.16	0.37	0	1
Freq. Worried About Future Job2007	1,704	0.21	0.41	0	1
Infreq. Felt Discouraged2007	1,704	0.18	0.38	0	1
Freq. Felt Discouraged2007	1,704	0.17	0.38	0	1
Feel Unlikely To Divorce2007	1,704	0.19	0.39	0	1
Feel Likely To Divorce2007	1,704	0.08	0.28	0	1
Freq. Muscle Build2007	1,704	0.19	0.39	0	1
Infreq. Muscle Build2007	1,704	0.04	0.19	0	1
Infreq. Snack Instead of Eat Meal2007	1,704	0.17	0.38	0	1
Freq. Snack Instead of Eat Meal2007	1,704	0.26	0.44	0	1
Infreq. Drink Alcohol2007	1,704	0.17	0.38	0	1
Freq. Drink Alcohol2007	1,704	0.05	0.21	0	1

The average hours slept in a 24-hours period was 7.34 hours in 2007.

The average hours worked in a 7-day period was 19.10 hours in 2007.

The average percentage of observations that infrequently checked their emails was 10 in 2007.

The average percentage of observations that frequently checked their emails was 34 in 2007.

The average percentage of observations that infrequently use the internet for school was 22 in 2007.

The average percentage of observations that frequently use the internet for school was 18 in 2007.

The average percentage of observations that infrequently use the internet for school was 31 in 2007.

The average percentage of observations that frequently uses the internet for shop was 7 in 2007.

The average percentage of observations that infrequently game was 30 in 2007.

The average percentage of observations that frequently game was 8 in 2007.

The average percentage of observations that infrequently worry about money was 15 in 2007.

The average percentage of observations that frequently worry about money was 24 in 2007.

The average percentage of observations that infrequently worry about future jobs was 16 in 2007.

The average percentage of observations that frequently worry about future jobs was 21 in 2007.

The average percentage of observations that infrequently feel discouraged was 18 in 2007.

The average percentage of observations that frequently feel discouraged was 17 in 2007.

The average percentage of observations that infrequently worry about divorce was 19 in 2007.

The average percentage of observations that frequently worries about divorce was 8 in 2007.

The average percentage of observations that frequently muscle builds was 19 in 2007.

The average percentage of observations that infrequently muscle build was 4 in 2007.

The average percentage of observations that infrequently snacks instead of eating meals was 17 in 2007.

The average percentage of observations that frequently snacks instead of having meals was 26 in 2007.

The average percentage of observations that infrequently drink alcohol was 17 in 2007.

The average percentage of observations that frequently drink alcohol was 5 in 2007.

Table 3. Summary Statistics 2009

Variable	Obs	Mean	Std. Dev.	Min	Max
NMBROFHRSOFSLPIN24HR2009	996	7.36	1.62	2	23
AVGHRSWKWORKED2009	996	5.64	13.96	0	100
Infreq. Used Internet For Email2009	1,704	0.12	0.32	0	1
Freq. Used Internet For Email2009	1,704	0.46	0.50	0	1
Infreq. Used Internet For School2009	1,704	0.32	0.46	0	1
Freq. Used Internet For School2009	1,704	0.22	0.41	0	1
Infreq. Used Internet To Shop2009	1,704	0.46	0.50	0	1
Freq. Used Internet To Shop2009	1,704	0.07	0.26	0	1
Infreq. Used Internet For Games2009	1,704	0.43	0.50	0	1
Freq. Used Internet For Games2009	1,704	0.11	0.32	0	1
Infreq. Worried About Money2009	1,704	0.18	0.38	0	1
Freq. Worried About Money2009	1,704	0.34	0.47	0	1
Infreq. Worried About Future Job2009	1,704	0.18	0.38	0	1
Freq. Worried About Future Job2009	1,704	0.32	0.46	0	1
Infreq. Felt Discouraged2009	1,704	0.24	0.43	0	1
Freq. Felt Discouraged2009	1,704	0.24	0.43	0	1
Feel Unlikely To Divorce2009	1,704	0.24	0.43	0	1
Feel Likely To Divorce2009	1,704	0.10	0.30	0	1
Freq. Muscle Build2009	1,704	0.21	0.41	0	1
Infreq. Muscle Build2009	1,704	0.04	0.19	0	1
Infreq. Snack Instead of Eat Meal2009	1,704	0.22	0.41	0	1
Freq. Snack Instead of Eat Meal2009	1,704	0.35	0.48	0	1
Infreq. Drink Alcohol2009	1,704	0.25	0.43	0	1
Freq. Drink Alcohol2009	1,704	0.06	0.23	0	1

The average hours slept in a 24-hours period was 7.36 hours in 2009.

The average hours worked in a 7-day period was 5.64 hours in 2009.

The average percentage of observations that infrequently checked their emails was 12 in 2009.

The average percentage of observations that frequently checked their emails was 46 in 2009.

The average percentage of observations that infrequently use the internet for school was 32 in 2009.

The average percentage of observations that frequently use the internet for school was 22 in 2009.

The average percentage of observations that infrequently use the internet for school was 46 in 2009.

The average percentage of observations that frequently uses the internet for shop was 7 in 2009.

The average percentage of observations that infrequently game was 43 in 2009.

The average percentage of observations that frequently game was 11 in 2009.

The average percentage of observations that infrequently worry about money was 18 in 2009.

The average percentage of observations that frequently worry about money was 34 in 2009.

The average percentage of observations that infrequently worry about future jobs was 18 in 2009.

The average percentage of observations that frequently worry about future jobs was 32 in 2009.

The average percentage of observations that infrequently feel discouraged was 24 in 2009.

The average percentage of observations that frequently feel discouraged was 24 in 2009.

The average percentage of observations that infrequently worry about divorce was 24 in 2009.

The average percentage of observations that frequently worries about divorce was 10 in 2009.

The average percentage of observations that frequently muscle builds was 21 in 2009.

The average percentage of observations that infrequently muscle build was 4 in 2009.

The average percentage of observations that infrequently snacks instead of eating meals was 22 in 2009.

The average percentage of observations that frequently snacks instead of having meals was 35 in 2009.

The average percentage of observations that infrequently drink alcohol was 25 in 2009.

The average percentage of observations that frequently drink alcohol was 6 in 2009.

Table 4. Summary Statistics 2011

Variable	Obs	Mean	Std. Dev.	Min	Max
NMBROFHRSOFSLPIN24HR2011	1,234	7.25	1.64	1	20
AVGHRSWKWORKED2011	1,234	3.24	10.53	0	80
Infreq. Used Internet For Email2011	1,704	0.13	0.34	0	1
frequent2011	1,704	0.58	0.49	0	1
Infreq. Used Internet For School2011	1,704	0.39	0.49	0	1
Freq. Used Internet For School2011	1,704	0.26	0.44	0	1
Infreq. Used Internet To Shop2011	1,704	0.52	0.50	0	1
Freq. Used Internet To Shop2011	1,704	0.14	0.35	0	1
Infreq. Used Internet For Games2011	1,704	0.51	0.50	0	1
Freq. Used Internet For Games2011	1,704	0.16	0.37	0	1
Infreq. Worried About Money2011	1,704	0.22	0.42	0	1
Freq. Worried About Money2011	1,704	0.40	0.49	0	1
Infreq. Worried About Future Job2011	1,704	0.23	0.42	0	1
Freq. Worried About Future Job2011	1,704	0.38	0.48	0	1
Infreq. Felt Discouraged2011	1,704	0.29	0.45	0	1
Freq. Felt Discouraged2011	1,704	0.27	0.44	0	1
Feel Unlikely To Divorce2011	1,704	0.27	0.45	0	1
Feel Likely To Divorce2011	1,704	0.12	0.33	0	1
Freq. Muscle Build2011	1,704	0.22	0.41	0	1
Infreq. Muscle Build2011	1,704	0.05	0.21	0	1
Infreq. Snack Instead of Eat Meal2011	1,704	0.28	0.45	0	1
Freq. Snack Instead of Eat Meal2011	1,704	0.42	0.49	0	1
infreqdrin2011	1,704	0.31	0.46	0	1
Freq. Drink Alcohol2011	1,704	0.07	0.26	0	1

The average hours slept in a 24-hours period was 7.25 hours in 2011.

The average hours worked in a 7-day period was 3.24 hours in 2011.

The average percentage of observations that infrequently checked their emails was 13 in 2011.

The average percentage of observations that frequently checked their emails was 58 in 2011.

The average percentage of observations that infrequently use the internet for school was 39 in 2011.

The average percentage of observations that frequently use the internet for school was 26 in 2011.

The average percentage of observations that infrequently use the internet for school was 52 in 2011.

The average percentage of observations that frequently uses the internet for shop was 14 in 2011.

The average percentage of observations that infrequently game was 51 in 2011.

The average percentage of observations that frequently game was 16 in 2011.

The average percentage of observations that infrequently worry about money was 22 in 2011.

The average percentage of observations that frequently worry about money was 40 in 2011.

The average percentage of observations that infrequently worry about future jobs was 23 in 2011.

The average percentage of observations that frequently worry about future jobs was 38 in 2011.

The average percentage of observations that infrequently feel discouraged was 29 in 2011.

The average percentage of observations that frequently feel discouraged was 27 in 2011.

The average percentage of observations that infrequently worry about divorce was 27 in 2011.

The average percentage of observations that frequently worries about divorce was 12 in 2011.

The average percentage of observations that frequently muscle builds was 22 in 2011.

The average percentage of observations that infrequently muscle build was 5 in 2011.

The average percentage of observations that infrequently snacks instead of eating meals was 28 in 2011.

The average percentage of observations that frequently snacks instead of having meals was 42 in 2011.

The average percentage of observations that infrequently drink alcohol was 31 in 2011.

The average percentage of observations that frequently drink alcohol was 7 in 2011.

Table 5. Summary Statistics 2013

Variable	Obs	Mean	Std. Dev.	Min	Max
NMBROFHRSOFSLPIN24HR2013	1,108	7.22	1.51	3	18
AVGHRSWKWORKED2013	1,108	3.83	11.74	0	82
Infreq. Used Internet For Email2013	1,704	0.10	0.30	0	1
Freq. Used Internet For Email2013	1,704	0.55	0.50	0	1
Infreq. Used Internet For School3	1,704	0.35	0.48	0	1
Freq. Used Internet For School2013	1,704	0.23	0.42	0	1
Infreq. Used Internet To Shopp2013	1,704	0.47	0.50	0	1
Freq. Used Internet To Shop2013	1,704	0.15	0.35	0	1
Infreq. Used Internet For Games2013	1,704	0.46	0.50	0	1
Freq. Used Internet For Games2013	1,704	0.15	0.36	0	1
Infreq. Worried About Money2013	1,704	0.21	0.41	0	1
Freq. Worried About Money2013	1,704	0.36	0.48	0	1
Infreq. Worried About Future Job2013	1,704	0.22	0.41	0	1
Freq. Worried About Future Job2013	1,704	0.32	0.47	0	1
Infreq. Felt Discouraged2013	1,704	0.26	0.44	0	1
Freq. Felt Discouraged2013	1,704	0.25	0.43	0	1
Feel Unlikely To Divorce2013	1,704	0.24	0.42	0	1
Feel Likely To Divorce2013	1,704	0.10	0.29	0	1
Freq. Muscle Build2013	1,704	0.20	0.40	0	1
Infreq. Muscle Build2013	1,704	0.04	0.20	0	1
Infreq. Snack Instead of Eat Meal2013	1,704	0.26	0.44	0	1
Freq. Snack Instead of Eat Meal2013	1,704	0.38	0.48	0	1
Infreq. Drink Alcohol2013	1,704	0.27	0.44	0	1
Freq. Drink Alcohol2013	1,704	0.07	0.25	0	1

The average hours slept in a 24-hours period was 7.22 in 2013.

The average hours worked in a 7-day period was 3.83 in 2013,

The average percentage of observations that infrequently checked their emails was 10 in 2015.

The average percentage of observations that frequently checked their emails was 55 in 2015.

The average percentage of observations that infrequently use the internet for school was 35 in 2015.

The average percentage of observations that frequently use the internet for school was 23 in 2015.

The average percentage of observations that infrequently use the internet for school was 47 in 2015.

The average percentage of observations that frequently uses the internet for shop was 15 in 2015.

The average percentage of observations that infrequently game was 46 in 2015.

The average percentage of observations that frequently game was 15 in 2015.

The average percentage of observations that infrequently worry about money was 21 in 2015.

The average percentage of observations that frequently worry about money was 36 in 2015.

The average percentage of observations that infrequently worry about future jobs was 22 in 2015.

The average percentage of observations that frequently worry about future jobs was 32 in 2015.

The average percentage of observations that infrequently feel discouraged was 26 in 2015.

The average percentage of observations that frequently feel discouraged was 25 in 2015.

The average percentage of observations that infrequently worry about divorce was 24 in 2015.

The average percentage of observations that frequently worries about divorce was 10 in 2015.

The average percentage of observations that frequently muscle builds was 20 in 2015.

The average percentage of observations that infrequently muscle build was 4 in 2015.

The average percentage of observations that infrequently snacks instead of eating meals was 26 in 2015.

The average percentage of observations that frequently snacks instead of having meals was 38 in 2015.

The average percentage of observations that infrequently drink alcohol was 27 in 2015.

The average percentage of observations that frequently drink alcohol was 7 in 2015.

Table 6. Summary Statistics 2015

Variable	Obs	Mean	Std. Dev.	Min	Max
NMBROFHRSOFSLPIN24HR2015	941	7.12	1.58	2	19
AVGHRSWKWORKED2015	941	13.53	20.19	0	110
Infreq. Used Internet For Email2015	1,704	0.08	0.27	0	1
Freq. Used Internet For Email2015	1,704	0.47	0.50	0	1
Infreq. Used Internet For School2015	1,704	0.28	0.45	0	1
Freq. Used Internet For School2015	1,704	0.21	0.41	0	1
Infreq. Used Internet To Shop15	1,704	0.38	0.48	0	1
Freq. Used Internet To Shop2015	1,704	0.15	0.36	0	1
Infreq. Used Internet For Games2015	1,704	0.37	0.48	0	1
Freq. Used Internet For Games2015	1,704	0.15	0.35	0	1
Infreq. Worried About Money2015	1,704	0.18	0.38	0	1
Freq. Worried About Money2015	1,704	0.28	0.45	0	1
Infreq. Worried About Future Job2015	1,704	0.18	0.39	0	1
Freq. Worried About Future Job2015	1,704	0.26	0.44	0	1
Infreq. Felt Discouraged2015	1,704	0.21	0.41	0	1
Freq. Felt Discouraged2015	1,704	0.21	0.41	0	1
Feel Unlikely To Divorce2015	1,704	0.22	0.41	0	1
Feel Likely To Divorce2015	1,704	0.08	0.26	0	1
Freq. Muscle Build2015	1,704	0.18	0.39	0	1
Infreq. Muscle Build2015	1,704	0.05	0.21	0	1
Infreq. Snack Instead of Eat Meal2015	1,704	0.22	0.41	0	1
Freq. Snack Instead of Eat Meal2015	1,704	0.32	0.47	0	1
Infreq. Drink Alcohol2015	1,704	0.24	0.43	0	1
Freq. Drink Alcohol2015	1,704	0.06	0.23	0	1

The average hours slept in a 24-hours period was 7.12 hours in 2015.

The average hours worked in a 7-day period was 13.53 hours in 2015.

The average percentage of observations that infrequently checked their emails was 8 in 2015.

The average percentage of observations that frequently checked their emails was 47 in 2015.

The average percentage of observations that infrequently use the internet for school was 28 in 2015.

The average percentage of observations that frequently use the internet for school was 21 in 2015.

The average percentage of observations that infrequently use the internet for school was 38 in 2015.

The average percentage of observations that frequently uses the internet for shop was 15 in 2015.

The average percentage of observations that infrequently game was 37 in 2015.

The average percentage of observations that frequently game was 15 in 2015.

The average percentage of observations that infrequently worry about money was 18 in 2015.

The average percentage of observations that frequently worry about money was 28 in 2015.

The average percentage of observations that infrequently worry about future jobs was 18 in 2015.

The average percentage of observations that frequently worry about future jobs was 26 in 2015.

The average percentage of observations that infrequently feel discouraged was 21 in 2015.

The average percentage of observations that frequently feel discouraged was 21 in 2015.

The average percentage of observations that infrequently worry about divorce was 22 in 2015.

The average percentage of observations that frequently worries about divorce was 8 in 2015.

The average percentage of observations that frequently muscle builds was 18 in 2015.

The average percentage of observations that infrequently muscle build was 5 in 2015.

The average percentage of observations that infrequently snacks instead of eating meals was 22 in 2015.

The average percentage of observations that frequently snacks instead of having meals was 32 in 2015.

The average percentage of observations that infrequently drink alcohol was 24 in 2015.

The average percentage of observations that frequently drink alcohol was 6 in 2015.

The following tables are tabulations of the dependent and key independent variables for each observation year accompanied by an interpretation and summary of the pertinent data presented in

each table. I decided to use Tabulations instead of scatterplots or histograms since my key independent variable is a dummy variable, the binary data dummy variables present is best represented with tabulation.

Table 7. Tabulation of Key Variables 2005

	Summary of	NMBR OF HRS SLP IN 24HR 2005	
Freq. Used Internet For Games2005	Mean	Std. Dev.	Freq.
0	7.35	1.67	429
1	7.62	1.60	98
Total	7.40	1.66	527

People who do not frequently play games slept an average of 7.35 hours in a 24-hour period in 2005.
People who frequently play games slept an average of 7.62 in a 24-hour period in 2005.
Frequency of playing games did not significantly impact hours of sleep within a 24-hour period in 2005.

Table 8. Tabulation of Key Variables 2007

	Summary of	NMBR OF HRS SLP IN 24HR 2007	
Freq. Used Internet For Games2007	Mean	Std. Dev.	Freq.
0	7.31	1.59	627
1	7.44	1.49	144
Total	7.34	1.57	771

People who do not frequently play games slept an average of 7.31 hours in a 24-hour period in 2007.
People who frequently play games slept an average of 7.44 in a 24-hour period in 2007.
Frequency of playing games did not significantly impact hours of sleep within a 24-hour period in 2007.

Table 8. Tabulation of Key Variables 2009

	Summary of	NMBR OF HRS SLP IN 24HR 2009	
Freq. Used Internet For Games2009	Mean	Std. Dev.	Freq.
0	7.36	1.63	803
1	7.37	1.58	193
Total	7.36	1.62	996

People who do not frequently play games slept an average of 7.36 hours in a 24-hour period in 2009.
People who frequently play games slept an average of 7.37 in a 24-hour period in 2009.
Frequency of playing games did not significantly impact hours of sleep within a 24-hour period in 2009.

Table 9. Tabulation of Key Variables 2011

	Summary of	NMBR OF HRS SLP IN 24HR 2011	
Freq. Used Internet For Games2011	Mean	Std. Dev.	Freq.
0	7.24	1.64	964
1	7.26	1.66	270
Total	7.25	1.64	1,234

People who do not frequently play games slept an average of 7.24 hours in a 24-hour period in 2011.
People who frequently play games slept an average of 7.26 in a 24-hour period in 2011.
Frequency of playing games did not significantly impact hours of sleep within a 24-hour period in 2011.

Table 10. Tabulation of Key Variables 2013

	Summary of	NMBR OF HRS SLP IN 24HR 2013	
Freq. Used Internet For Games2013	Mean	Std. Dev.	Freq.
0	7.18	1.44	852
1	7.36	1.70	256
Total	7.22	1.51	1,108

People who do not frequently play games slept an average of 7.18 hours in a 24-hour period in 2013.
People who frequently play games slept an average of 7.36 in a 24-hour period in 2013.
Frequency of playing games did not significantly impact hours of sleep within a 24-hour period in 2013.

Table 11. Tabulation of Key Variables 2015

	Summary of	NMBR OF HRS SLP IN 24HR 2015	
Freq. Used Internet For Games2015	Mean	Std. Dev.	Freq.
0	7.09	1.55	692
1	7.20	1.64	249
Total	7.12	1.58	941

People who do not frequently play games slept an average of 7.09 hours in a 24-hour period in 2015.
People who frequently play games slept an average of 7.20 in a 24-hour period in 2015.
Frequency of playing games did not significantly impact hours of sleep within a 24-hour period in 2015.

After tabulating the key variables of this data set, I ran both the Random and Fixed effects models in the process of conducting the Hausman robustness test which concluded that I should use the Random Effects Estimation for this paper due to a P-value of 0.3663. I have included both data estimations in the form of tables accompanied by an interpretation of the results.

Table 12. Random Effects Estimates

NMBROFHRSOFSLPIN24HR	Coefficients	Standard Error	P>z
AVGHRSWKWORKED	-0.002	0.001	0.127
Infreq. Used Internet For Email	-0.094	0.179	0.599
Freq. Used Internet For Email	-0.147	0.178	0.411
Infreq. Used Internet For School	-0.015	0.076	0.845
Freq. Used Internet For School	0.013	0.080	0.868
Infreq. Used Internet To Shop	-0.107	0.079	0.175
Freq. Used Internet To Shop	-0.140	0.090	0.118
Infreq. Used Internet For Games	-0.001	0.083	0.992
Freq. Used Internet For Games	0.057	0.092	0.534
Infreq. Worried About Money	-0.065	0.069	0.344
Freq. Worried About Money	-0.091	0.069	0.190
Infreq. Worried About Future Job	0.053	0.068	0.432
Freq. Worried About Future Job	0.076	0.074	0.304
Infreq. Felt Discouraged	-0.108*	0.063	0.086
Freq. Felt Discouraged	-0.084	0.071	0.242
Feel Unlikely To Divorce	0.054	0.048	0.266
Feel Likely To Divorce	0.066	0.062	0.289
Freq. Muscle Build	0.057	0.048	0.239
Infreq. Muscle Build	0.152*	0.079	0.052
Infreq. Snack Instead of Eat Meal	-0.092	0.125	0.460
Freq. Snack Instead of Eat Meal	-0.097	0.124	0.433
Infreq. Drink Alcohol	-0.157***	0.046	0.001
Freq. Drink Alcohol	-0.100	0.076	0.189
_cons	7.718	0.210	0.000
n = 1,704			
r-sq = 0.0084			

*, ** , *** = significant at 0.1, 0.05, 0.01 levels respectively

The Infreq. Felt Discouraged variable was significant at a level of 0.1 and demonstrates a -0.1 hour change in hours of sleep for observations that infrequently faced discrimination. The Infreq. Muscle Build variable was significant at a level of 0.1 and demonstrates a 0.15 hour change in hours of sleep for

observations that infrequently perform muscle building activities. The infrerqdrink variable was significant at a level of 0.001 and demonstrates a -0.15 hour change in number of hours slept for observations that infrequently drank. None of the other variables are statistically significant, most importantly including the frequency of internet use for games, emails, and school variables that this paper hypothesized had an impact on hours of sleep.

Table 13. Fixed Effects Estimates

NMBROFHRSOFSLPIN24HR	Coefficients	Robust S. E.	P>t
AVGHRSWKWORKED	-0.001	0.001	0.416
Infreq. Used Internet For Email	-0.005	0.266	0.984
Freq. Used Internet For Email	-0.009	0.275	0.973
Infreq. Used Internet For School	0.033	0.079	0.677
Freq. Used Internet For School	0.089	0.086	0.3
Infreq. Used Internet To Shop	-0.048	0.104	0.642
Freq. Used Internet To Shop	-0.066	0.116	0.571
Infreq. Used Internet For Games	-0.088	0.089	0.324
Freq. Used Internet For Games	-0.088	0.103	0.391
Infreq. Worried About Money	-0.051	0.074	0.492
Freq. Worried About Money	-0.045	0.079	0.573
Infreq. Worried About Future Job	0.089	0.078	0.257
Freq. Worried About Future Job	0.129	0.089	0.147
Infreq. Felt Discouraged	-0.102	0.072	0.161
Freq. Felt Discouraged	-0.126	0.098	0.199
Feel Unlikely To Divorce	0.058	0.059	0.329
Feel Likely To Divorce	0.077	0.085	0.363
Freq. Muscle Build	0.074	0.063	0.244
Infreq. Muscle Build	0.154*	0.086	0.074
Infreq. Snack Instead of Eat Meal	-0.101	0.158	0.525
Freq. Snack Instead of Eat Meal	-0.154	0.157	0.327
Infreq. Drink Alcohol	-0.141**	0.056	0.012
Freq. Drink Alcohol	-0.069	0.089	0.442
_cons	7.518	0.310	0
n = 1,704			
r-sq = 0.0084			

*, ** , *** = significant at 0.1, 0.05, 0.01 levels respectively

The Infreq. Muscle Build variable was significant at a level of 0.1 and demonstrates a 0.15 hour change in hours of sleep for observations that infrequently perform muscle building activities. The infrerqdrink variable was significant at a level of 0.05 and demonstrates a -0.14 hour change in number of hours slept for observations that infrequently drank. None of the other variables are statistically significant, most importantly including the frequency of internet use for games, emails, and school variables that this paper hypothesized had an impact on hours of sleep.

Considering both the fixed effects and random effects estimates demonstrated no statistical significance of the primary variables we were testing; the hypothesis and alternate hypothesis are both rejected. The null hypothesis of media consumption not having an impact on sleep is accepted. Variables that I thought would be indicative of stress and have and impact on hours slept were also statistically insignificant which I found surprising as well. The variables that were statistically significant only impacted hours of sleep by mere minutes. I initially thought I made a mistake in the coding of my data since my results do not coincide with the results of the papers I reviewed for this project. I have concluded that the data I used from the PSID is insufficient to explore this hypothesis. This is because this data is not specific enough and is missing important observations such as age of the person being observed, the perceived quality of sleep the person is having, usage of media for social media, usage of media before bed, and so on. I hypothesize that the choice to consume media instead of sleeping is most prevalent among the younger generation and is something I would have loved to see in my test.

If I had more time, I would seek to collect better data to test my hypothesis, including those that I had listed in the paragraph above and not limit myself to PSID data. I would also spend more time seeking the most appropriate theory to apply to my data, the Time Allocation Theory does not formally model sleep choice and sleep deprivation (Billari et al. 2018).

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