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Honors Thesis

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An Honors Thesis submitted in partial fulfillment of the requirements for Honors in
Kinesiology
By Anna Hassett
Under the Mentorship of Dr. Daniel Czech

ABSTRACT

Generation Z is getting less sleep than ever and in conjunction, the quality of Generation Z's
sleep is decreasing. Inadequate sleep can increase the risk of depression, cardiovascular
diseases, obesity, and cognitive decline. Optimism is a subjective measure of worldview. In
the field of positive psychology, optimism is believed to improve overall psychological and
physical health. The main purpose of the present study is to examine the relationship between
sleep duration and reported levels of optimism in Generation Z students, aged 17 to 24. The
hypothesis for this study is that optimism and duration of sleep will have a significantly
positive relationship. Participants in this study are Generation Z, college students, located in
the South Eastern United States. The sample consisted of students enrolled in a required
physical activity class. A Pearson's correlation determined that there was a positive
relationship between sleep and optimism. Research implications and future research trends
on sleep and optimism are discussed.

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Introduction

Optimism refers to a positive worldview or a positive outlook on life. It is a way to evaluate personal experiences and review them. Optimists generally foresee positive outcomes, even in situations that are beyond their control. Popan (2018) suggests that optimists feel this way because of a personal confidence in their own abilities as well as a trust in a greater power. Additionally, optimists view negative events or outcomes as rare and believe that a negative outcome is not a result of their own actions (Popan, 2018). Having a positive worldview allows for optimists to look beyond frustrating situations. Optimism also correlates to an increased ability to problem solve, maintain composure, and recover from setbacks (Popan, 2018). It is considered a universal, positive psychological strength that increases an individual's welfare.

Psychologically, optimism can influence overall happiness. Because of this, optimism has recently become a prominent topic in public health. By studying optimism, we can hope to further understand its ability to enhance a healthy and happy lifestyle. Some of the documented relationships with optimism include: lower levels of stress and depression, lower risk of mortality, increased psychological adjustment (Popan, 2018). One relationship less documented is the one between optimism and sleep.

According to Ezenwanne (2015), restorative theory is the idea that during sleep, the human brain replaces and replenishes what it has used throughout the day, specifically neurotransmitters. Also involved is a process of consolidation and removal. This theory is legitimized by the fact that certain restorative genes are activated during sleep. Oswald concurred in his original 1966 restoration theory that sleep restored both the body and the brain, and that neurotransmitters were essentially replaced to compensate for what the body

used (1980). Restoration is a possible cause for why we feel mentally sharper after achieving

more sleep and could explain an increase in optimism levels or a more positive worldview

(Ezenwanne, 2015).

Generation Z, or Gen Z, is the term given to denote those born in the late 1990s and

early 2000s (Cooper, 2018). Gen Z is noted to be competitive, focused, entrepreneurial,

independent, socially conscious, and impatient (Miller, 2018). Another trait attributed to this

generation is its poor sleep habits. Crouch (2017) claims that Generation Z is getting less

sleep than ever and has dubbed the situation a national health crisis. While eight to ten hours

of sleep are recommended for this age group, only 15% of Generation Z actually get that

much sleep (Crouch, 2017). Over time, this sleep debt can lead to a higher risk for

depression, obesity, and heart disease, decreased academic performance, and increased risk

for injury (Crouch, 2017).

Little research has been found on Generation Z and mental health, however, it is

known that Generation Z is most likely of all generations to report mental health issues

(American Psychological Association, 2018). According to the American Psychological

Association (2018), only 45% of Generation Zs believe their mental health is "excellent" or

"very good" whereas 70% of boomers and 56% of millennials report excellent or very good

mental health. The most common stressors for Generation Z are work, finances, health

concerns, and economic instability (American Psychological Association, 2018).

Recent research has examined the relationship between optimism, self-esteem and

sleep duration in an effort to see if sleep influences positive psychological traits, such as

optimism (Lemola, Räikkönen, Gomez, & Alleman, 2012). A self-reporting survey was

conducted among 1,805 adults between the ages of 30 and 84. Participants were recruited

after completing the Midlife in the U.S. survey (MacArthur Foundation Research Network, 2006) and a follow-up self-administered questionnaire; 1,805 people were respondents. The relationships between positive traits and age as well as gender were also explored. It was found that those with insomnia symptoms scored lower for both optimism and self-esteem, regardless of age or gender. Additionally, shorter durations of sleep, less than six hours, correlated to lower optimism and self-esteem scores when compared to durations of sleep averaging seven to eight hours (Lemola, et. al., 2012). Interestingly, sleep duration greater than nine hours also showed lower optimism and self-esteem scores, regardless of age and gender (Lemola, et. al., 2012).

Another study examined the relationship between quality of sleep, sleep duration and positive traits such as optimism, in children. Sleep duration and efficiency, such as the time it took the child to fall asleep, were measured for an average of seven consecutive nights in 291 children, aged eight. Participants were recruited from an original group of 1,049 infants, with those chosen having had responded to a follow-up examination. Optimism, self-esteem, and social competence were rated by the children's parents. Parents completed Life Orientation Tests (Scheier, Carver, & Bridges, 1994) and behavior evaluation scales for their children as well as a Life Orientation Test to report their own optimism levels. The study found that sleep duration was significantly associated with sleep efficiency and that children in the middle of the sleep duration distribution were more optimistic (Lemola, Räikkönen, Scheier, Matthews, Pesonen, Heinonen, & Kajantie, 2011). In other words, children with short sleep durations and those with long sleep durations did not statistically differ from each other when it came to optimism levels. However, the better the child's sleep efficiency, the higher the

levels of optimism and self-esteem were reported. This study concluded that there was a non-linear relationship between sleep duration and optimism.

Investigating this relationship one step further, a study aimed to examine if sleep quality was a cause or an effect of optimism. Additionally, the study investigated depressive mood as a predictor of the relationship between sleep and optimism. Participants included 987 working, Chinese adults. Data was collected through an online survey which included the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989), the Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995), and a Chinese attributional style questionnaire. Data were analyzed using a cross-sectional analysis. Moderate associations were found between sleep quality, depressive mood, and optimism. A cross-lagged analysis showed that sleep and optimism had a bidirectional causality, indicating that both variables affect each other (Lau, Hui, Lam, & Cheung, 2017).

Perhaps the most indicative of the relationship between sleep and optimism in Generation Z is a study conducted on university students. It aimed to find the causes of poor sleep quality while identifying the difference in causes among two countries (the United States and Bolivia). The study hypothesized that stress and worldview, or optimism, negatively correlated to poor sleep quality. Participants consisted of 140 undergraduate psychology students enrolled in either a South-Central U.S. university or a Bolivian university. Participants were recruited through conveniently selected psychology classes. A questionnaire addressing health behavior, comfort with being alone, perceived health, perceived stress, self-efficacy, sleep quality, sleep deprivation, sleep hygiene, and worldview was used to collect data. Descriptive analysis, bivariate analysis, and multiple regression analyses were conducted to analyze the data. Perceived stress was found to be positively

correlated with poor sleep quality in both countries. Additionally, worldview was found to negatively correlate to poor sleep quality. Interestingly, Bolivian students reported more perceived stress but had better sleep quality (Doolin, Vilches, Cooper, Gipson, & Sorenson, 2018).

The present study aims to examine the relationship between sleep duration and reported levels of optimism in Generation Z students. Few studies on the relationship between sleep and positive traits, such as optimism, have been conducted in this population. As mentioned, Generation Z college students are aged 17 to 24 and are recognized for their poor sleep habits. This study is important because it highlights a lesser known benefit of sleep i.e. increased optimism. The results could also be used in future research regarding mental health and its relationship with sleep, as well as the benefits of sleep to overall psychological health.

Methods

Participants and Procedures

This study included 986 male participants and 1285 female participants. All 2287 participants were college-aged students who attended a midsized southeastern University that were enrolled in required physical activity classes. Although the age of participants varied from 18 to 22 years old, the emphasis of the study was focused on the student school classification: freshman, sophomore, junior, or senior. 961 freshmen, 579 sophomores, 417 juniors, 324 seniors, and 6 graduate students participated in this study. 614 black students, 1445 white students, 57 Hispanic students, 39 Asian students, 70 bi-racial students, and 48 students who self-identified as other participated in this study. The study used required physical activity classes that the aforementioned students were participating in. These classes ranged from aerobics to weight training activities. During the last two weeks of the semester,

a voluntary survey was completed, but in order to increase participation, instructors verbally recruited students with an incentive of a bonus grade. It was required of all participants to read the informed consent and they, therefore, gave passive consent by completing the survey.

Measures

The study is designed to be a quantitative, quasi-experimental, cross-sectional descriptive study. A research questionnaire was given to students that contained demographic questions as well as the Life Orientation Test, both of which have been found to be psychometrically valid and reliable. The questionnaire included gender, age, race, school classification, physical activity class, self-reported sleep levels, and satisfaction with the course. In addition, the Optimism 9 Life Orientation Test measured levels of optimism and pessimism. The first portion of the study allowed students to respond with their levels of course satisfaction and rating of the instructor. The second portion measured optimism and pessimism levels with a variety of questions that had positive and negative connotations.

Data Analysis

Data were analyzed using SPSS statistical analysis. Once the data was collected, it was put into a T-test and ANOVAs to determine if there was any significance between optimism and sleep duration. A Pearson's correlation determined if there was a relationship between these variables as well as the strength. It was determined that optimism and sleep have a positive relationship. Statistical Analysis Correlations, T-tests and ANOVAs determined if significant differences and relationships existed between groups in the demographic independent variables and Pearson's correlation was used to examine the

determined relationships. Descriptive statistics included the means and standard deviations as

a function of race and gender.

Results

Table 1

Participant Characteristics (n = 1,562)		
Characteristic	*M*	*SD*
Age (years)	19.95	3.37
Characteristic	Category	%
Body Mass Index	Healthy	63.20
	Overweight	20.30
	Obese	11.60
Gender	Male	43.00
	Female	57.00
Race	White	63.10
	Black	26.60
	Other	10.30
School Classification	Freshman	41.80
	Sophomore	25.30
	Junior	17.80
	Senior	15.10

Correlational Analysis.

Pearson's *r* correlations were used to examine the relationship between outcome variables.

There was a significant, negative correlation between overall health and happiness ($r = -.17$),

and a significant, positive correlation between overall health and optimism ($r = .15$). There

was also a significant, strong, negative correlation between happiness and optimism ($r = -$

.52). Weekday sleep was significantly correlated with overall health ($r = -.11$), total

happiness ($r = .08$), and optimism ($r = -.06$). Weekend sleep was also significantly correlated

with happiness ($r = -.07$) and optimism ($r = .07$).

Group Differences in Outcome Variables.

Separate one-way ANOVAs were used to examine group differences in optimism, and

overall health. There was a statistically significant difference between males and females for

overall health, $F(1, 1,562) = 99.83$, $p = .001$. Females reported significantly greater overall

health ($M = 2.80$, $SD = .83$) than males ($M = 2.44$, $SD = .84$). There was not a statistically

significant difference between genders for optimism ($p = .36$) or sleep ($p = .12$). There was a

statistically significant difference in overall health between African-Americans ($M = 2.81$,

$SD = .87$) and Caucasians ($M = 2.57$, $SD = .82$), $F(5, 1,662) = 7.20$, $p = .001$. There was not a

statistically significant difference in optimism ($p = .36$) between races.

Regression Analysis.

Finally, a regression equation was conducted to predict happiness using overall health, sleep,

and optimism. The results of the regression indicated that the three predictors explained

28.7% of the variance in happiness ($R^2 = .29$, $F(4, 1558) = 157.14$, $p < .001$).

Discussion

Overall, our hypothesis was supported. Fewer hours of sleep correlated to less

happiness as well as less optimism. Positive traits increased as sleep duration increased,

proving the linear relationship that was hypothesized. Essentially, subjects that slept longer

were happier and more optimistic regardless of differing demographic factors, such as age,

gender, or race. Additionally, this correlation was present in both weekday and weekend

sleep, implying that this variable was insignificant in the relationship. Related studies found

similar relationships between sleep duration and optimism across varying age groups, from childhood to adulthood (Doolin et. al., 2018). However, a study of particular interest by Lemola et. al. (2012) found that optimism decreased when subjects slept for less than six hours or greater than nine hours, indicating that there may be a bell-curve to the sleep duration and optimism relationship that our results did not show. This could be due to the demographics, size, or location of our population sample. Additional research with varying sample populations would need to be conducted to confirm or deny the relationship found by Lemola et. al.

The relationship found in our study could potentially be explained by a physiological system. Physiology is the branch of science that applies to living things and examines the mechanisms behind proper functioning of the body (Rittenhouse & Miller, 2019). Future research should investigate if there is a definitive physiological system that accounts for the relationship between sleep and optimism. As Ezenwanne stated in 2015, the replacement and consolidation of neurotransmitters could be responsible for the restorative aspect of sleep. This process is thought to occur during non-REM sleep and its main function is to maintain neural networks. Neural networks are responsible for immune functions, memory consolidation, and of particular interest to this study, stabilization of emotions as well as regulation of mood (Mansfield, Antic, Rajaratnam, & Naughton, 2017). It is then possible that a current neural network, one for emotion stabilization or mood regulation, could explain the relationship between sleep duration and optimism. If such a system exists, it asserts that its efficiency can be manipulated, thereby purposefully increasing our sleep, optimism, or both. This would suggest that stress, depression, and mortality could also be purposefully decreased (Popan, 2018).

Generation Z, specifically, can benefit from the results of this study as it pertains to mental health. As previously mentioned, Generation Z has the lowest reported satisfaction with their mental health among current generations. They have also been found to experience significant sleep deficits, with only fifteen percent of those in Generation Z achieving the recommended eight to ten hours per night (Crouch, 2017). Previous research has shown that sleep deficits have a direct correlation with depression while this study has shown that there is a correlation between duration of sleep and reported levels of optimism (Crouch, 2017). This relationship should be studied further so as to analyze the variables of sleep duration and reported levels of depression. The results are significant in this way because it stresses the importance of sleep for mental well-being. The literature review, as well as the present study, clearly indicate that increased sleep duration among Generation Z can have a significant impact on mental health and improve the overall well-being of individuals.

Appendix

List of Delimitations, Limitations, and Assumptions

<u>Delimitations of the study</u>

1. Participants are Generation Z.
2. Participants are college students, aged 17-24 years, in the South Eastern United States.
3. Participants completed the Life Orientation Test and the Subjective Happiness Scale, two standardized measures.
4. A personal statement was used to ask about classification in school, gender, race, and age. It is assumed this personal statement is correct.

<u>Limitations of the study</u>

1. Participants were not randomly selected for the study.
2. The participants may not answer the questions honestly.
3. The motivations of the participants are unknown.
4. Subjective questions could be misunderstood by the participants.

<u>Assumptions</u>

1. Participants answered honestly and to the best of their ability.
2. Participants understood the questions posed to them.
3. Participants followed all directions correctly.
4. Participants will not have a bias towards a question.
5. The Life Orientation Test and the Subjective Happiness Scale are valid measurements of optimism and happiness.

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