Modern Psychological Studies

Volume 26 | Number 1 Article 1

December 2020

Student Perceptions of Stress and Relaxation at the Beginning and End of the Week

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Abstract

This study examined whether student perceptions of stress, their level of relaxation remorse, and their health symptoms varied at the beginning verses the end of the week. We also examined how stress and relaxation remorse correlate with health symptoms at the beginning verses the end of the week. The findings of this study, based on a daily survey study of college students (N = 119), indicate that students have more relaxation remorse, perceived stress, and health symptoms on Monday than on Friday. Additionally, students reported fewer coping activities on Monday than on Friday. Our results also indicate that students' level of perceived stress and relaxation remorse relate to their level of health symptoms. These findings could be used to inform future interventions to promote healthy stress management among college students.

Student Perceptions of Stress and Relaxation at the Beginning and End of the Week

While college is a time of great excitement and growth for students, it can also be a time of immense stress. Taking time for recovery and leisure activities is often recommended for coping with stress (Ragsdale, Beehr, Grebner, & Han, 2011), but such activities can be difficult for students balancing various academic, work, and personal responsibilities. Further, students may experience fear that taking a break would put them even further behind on their work. In the present study, we examined some of the complex relationships between perceived stress, coping behaviors, perceptions of relaxation (i.e., relaxation remorse), and the effects of these variables on physical health. Because students may experience stress differently based on the day of the week, we examined whether there are significant differences in the amount of perceived stress, relaxation remorse, and health symptoms students experience at the beginning of the week compared to the end of the week (e.g. Monday vs. Friday). Prior to addressing our specific hypotheses, we will review the literature on common stressors for college students, the effects of excess stress, and the potential benefits of recovery experiences.

Sources of Stress for College Students

In the research literature, college students' stressors have been broken down into four categories: intrapersonal, interpersonal, academic, and environmental (Dusselier, Dunn, Wang, Shelly II, & Whalen, 2005). In their framework, Dusselier et al. (2005) considered intrapersonal stress as that which comes from personal struggles that others may not be able to see or identify. An example of interpersonal stress would be stress that results from unpleasant interactions with others. Academic stress, which was rated as the most frequent source of stress, is that which results from school-related demands. Lastly, environmental stress is related to contextual factors in an individual's life, such as income or living conditions.

Effects of Stress on Health and Well-Being

The human body responds physiologically to both physical and psychological stressors in a generally adaptive way (e.g., mobilizing energy, increasing heart rate), but the repeated use of these systems too often or for too long can result in wear and tear on the body's systems (Ganster & Rosen, 2013; McEwen, 1998). For instance, stress affects the functioning of the immune system; therefore, people exposed to more stress are more prone to contracting illnesses (Yaribeygi Panahi, Sahraei, Johnston, & Sahebkar, 2017). Immune functioning can be particularly susceptible during times of high academic stressors, such as midterm exams (Murphy et al., 2010).

The experience of stress has also been related to cardiovascular issues, gastrointestinal issues, and mental health issues (Shankar & Park, 2016; Conley & Lehman 2011; American Psychological Association 2019; Acharya, Jin, & Collins, 2018). Researchers investigating the relationship between self-rated stress and blood pressure in university students over the course of four days discovered that college students experienced a temporary increase in blood pressure due to everyday academic stressors (Conley & Lehman, 2011). Stress-related symptoms of the gastrointestinal system including changes in appetite, stomach pain, nausea, bloating, diarrhea and constipation (American Psychological Association, 2019). High levels of stress can also be associated with changes in one's body weight and a decrease in physical activity (Chacón-Cuberos, Zurita-Ortega, Olmedo-Moreno, & Castro-Sánchez, 2019; Mouchacca, Abbott, & Ball, 2013).

Physical symptoms of stress are often noticed in the form of everyday health complaints, including headaches, fatigue, and muscle pain (Basdav, Haffejee, & Puckree, 2016; American Psychological Association, 2019; Acharya, Jin, & Collins, 2018). In a study of seven universities

in the United Kingdom, Wales, and England, students most commonly reported physical health complaints included: fatigue, headache, back pain, and shoulder pain (Ansari, Oskrochi, and Stock, 2013). The researchers also found that the higher a college student's perceived stress was, the more physical health complaints the students reported (Ansari et al., 2013). These results indicate that college students with a higher level of stress might be at a higher chance of experiencing various aches, pains, and illnesses.

The experience of these stress-related symptoms can affect student health and their ability to be successful in their academic work. As an example, a study found that reported headaches affected student's attention levels during lectures, their study patterns, and their sleep schedules (Basdav et al., 2016). Taking all the current research into consideration, we expect that perceived stress relates to more same-day health complaints in a college student sample. Examining relationships during a single day extends prior research that examined relationships among physical health and stress that were self-reported referencing the previous year or last month (e.g., Ansari et al., 2013)

Hypothesis 1: Students' perceived stress on Monday and Friday will be positively correlated with reported physical health symptoms on the same day.

Individual Differences in the Experience of Stress

It is important to note that all students will not experience stressors the same. For instance, it appears that there are some gender differences where males experience more intrapersonal stress, while females experience more academic stress (Panda, Mandal, & Barman, 2015). Several studies have also investigated possible moderators of the relationships between stressors and well-being. Social support is generally a protective mechanism against stress; however, positive and negative affect can be a moderator of this relationship (Çivitci, 2005).

Positive affect specifically refers to one's tendency to experience positive emotions (e.g., excited, interested, enthusiastic), while negative affect refers to one's tendency to experience negative emotions (e.g., distressed, nervous, hostile; Watson, Clark, & Tellegan, 1988). Specifically, social support has been found to reduce stress, but it is not as effective as a buffer for those with higher negative affect (Çivitci, 2005). As an individual's negative affect rises, the beneficial effect of their perceived social support on their stress levels decreases. Thus, this coping resource would not be as effective for someone who does not have a tendency to experience positive affect.

Students may also choose different coping mechanisms based on their personality characteristics. For example, one study investigated the differences between adaptive perfectionistic, maladaptive perfectionistic, and non-perfectionistic groups by recruiting participants from a large public university (Rice & Van Arsdale, 2010). This study found that maladaptive perfectionists had higher stress compared to adaptive and non-perfectionistic groups. Similarly, maladaptive perfectionists reported higher levels of drinking to cope than adaptive and non-perfectionistic groups (Rice & Van Arsdale, 2010). In sum, the literature on stress demonstrates that while many students may have similar sources of stress (e.g. academic stress), there are still a multitude of individual differences that may moderate the effects of stress (e.g. type of stressor, gender, social support, affect, and personality traits). In the present study, we are particularly interested in how individual differences in perceptions of relaxation may play a role in both stress and recovery.

Recovery Strategies as Resources

In addition to reviewing literature on the cost stressors have on college students, we have reviewed and provided an overview of theories on recovery. Ragsdale et al.'s (2011) Recovery

Theory states that stressors deplete resources like attention, energy, effort, and others. These resources are characteristics, objects, or energies used to meet demands and protect one's health. When resources are depleted or threatened, they must be restored, or the individual may experience strain. Meijman and Mulder's (1998) Effort Recovery Model illustrates that insufficient recovery from stressors experienced in day to day life may lead to health issues and fatigue over time.

Hobfoll's (1989; 2011) Conservation of Resources (COR) theory elaborates on this idea of resource replenishment. COR theory presumes that individuals will naturally attempt to preserve resources that are regularly involved in coping with stress. COR theory places an emphasis on the impact of repeated experiences of stressors. Even if the stressor may not be currently experienced, the individual is biologically primed to expect the stressor and can thus experience strain (Hobfoll, 2011). For instance, simply anticipating final exam week coming up can elicit feelings of stress for students and fear of resource loss before the experience has taken place. Students may feel a sense of dread, knowing that they will enter a season of a lot of work with little time for recovery.

According to Ragsdale et al. (2011), undergraduate students experience recovery ideally during the weekend, when an individual can distance themselves from their workplace or academic environment to devote time to replacing their depleted resources. During weekend recovery, leisure activities contribute to subjective well-being, as leisure usually promotes a detachment from work or other stressors, thus allowing an individual time to cope and recover from a stressful week (Newman, Tay, Diener, 2014). To an undergraduate student, this buffer zone between weeks may promote a variety of coping and recovery strategies for mitigating any unique forms of collegiate stress. These coping strategies may include talking to supportive

friends and family, engaging in leisure activities, such as art and exercise, and even less adaptive strategies, such as drinking, smoking, and drug use (Krkovic, Clamor, & Lincoln, 2018).

If college students tend to engage in school-related activities instead of resource replenishing activities during the weekend, the natural stress response may be drawn out or exacerbated. Ragsdale et al. (2011) hypothesized that quality recovery activities are achieved when such activities facilitate psychological detachment and perceptions of control over the time spent engaging in recovery activities. These attributes are challenging to achieve through completing schoolwork. During the recovery period, if one does choose to spend time for rest, individuals may encounter relaxation remorse. Relaxation remorse is defined as feeling guilty while taking a break from a work task (Jennings, 2017). Those who experience relaxation remorse may perceive their recovery period negatively as they may feel unproductive and worry, they are falling behind in work-related tasks (Jennings, 2017). In an employee sample, relaxation remorse has been related to poor psychological health outcomes (Jennings, 2017). For college students, relaxation remorse may impede the benefits of the recovery period, and subsequently may be linked to negative effects on health and well-being. To examine some of the complex relationships between stress, recovery, health, and relaxation remorse, we proposed the following hypotheses.

Hypothesis 2: Engaging in positive coping behaviors will be associated with less stress and fewer health symptoms on Mondays and Fridays.

Hypothesis 3: Relaxation remorse will be associated with fewer coping behaviors, more stress, and more health symptoms on Mondays and Fridays.

In addition to the formally stated hypotheses, we were interested in whether students feel more stress and stress-related symptoms at the beginning versus the end of the week, as well

whether they experience more recovery and less relaxation remorse at the start or end of the week. This question is largely exploratory, as there is both the possibility that students regain resources at the start of the week and thus experience less stress. On the other hand, students may feel more relaxed on Friday, anticipating the weekend time for potential recovery. In addition, we compared the magnitude of the relationships proposed in Hypotheses 2 and 3 based on the day of the week. This comparison allowed us to determine if the relationships between stress, coping behaviors, health, and relaxation remorse were stronger at the beginning versus end of the week.

Method

Participants

Undergraduate students from a Southeastern university (N = 119) participated in the current study. Students were recruited from an online departmental participant pool. Students were given an incentive of extra credit points for an eligible Psychology course as well as being put in a drawing for one of 50 - $20 gift cards. Ages of participants ranged from 18 to 39 years old with an average age of 20.01 (SD = 2.78). Eighty-eight percent of participants classified themselves as female, while only 11% of participants were male. Additionally, 43% of our sample were freshmen, 12% were sophomores, 19% were juniors, and 25% were seniors. Furthermore, White/Caucasian was the most commonly reported ethnicity (77%), with the remaining reporting their ethnicity as Black/African American (13%), Asian (2%), multiracial (6%), or other (3%).

Procedure

Participants had to complete the current study in two parts. Part 1 consisted of students attending an in-person session where the participants received general information about the

study and signed an informed consent form. After signing the informed consent form, students took an online background survey, which measured demographics, stress and coping, lifestyle habits, and health behaviors. During this session, participants were informed about their participation in a daily study during the next full week (Part 2). For Part 2 of the study, participants completed both a morning and evening survey for five consecutive days between the times of 8:00 am and 11:00 am, and 8:00 pm and 11:00 pm. The current study focuses primarily on the evening responses given on Monday and Friday.

Measures

Measures included within the daily survey asked about coping behaviors, perceived stress, perceptions of their stress and relaxation, general affect, and physical health symptoms. All items referenced how they felt or the experiences they had in that particular day. Those measures that were involved in the hypothesis tests are described further.

Relaxation remorse. Relaxation remorse was measured using a six-item scale (Jennings, 2017). Participants responded using a Likert scale of 1 (strongly disagree) to 7 (strongly agree). A sample item was "Relaxing made me feel guilty because there is always something else, I should be doing." The measure demonstrated high internal consistency, with Cronbach's alpha being .96 on Monday and .98 on Friday. Responses to the items were averaged for an overall relaxation remorse score.

Perceived stress. Perceived stress was measured with 10 items (Cohen, Kamarck, & Mermelstein, 1994) asking about their stress experiences, adapted to reference that day (rather than the past month). Response options were on a Likert scale from 1 (never) to 4 (very often). A sample item was "Today, how often have you been upset because of something that happened unexpectedly?" The scale demonstrated moderate to poor reliability, with Cronbach's alpha of

.79 on Monday and .58 on Friday. The low reliability value may be in part due to the use of the items as a daily report of perceived stress, as compared to its original framing for stress in the past month. Responses to the items were still averaged to create an overall scale score for perceived stress.

Physical health symptoms. Physical health symptoms were measured using eight items from the Physical Symptoms Inventory (Spector & Jex, 1998) which listed various physical health symptoms that the participants could have experienced that day. For simplicity, participants were asked to respond yes (1) or no (0) as to whether they experienced the symptom that day. We selected the items that would be most likely endorsed among a college student sample. A sample of the symptoms included would be stomach pain or a headache. Because the scale was administered with a yes or no format, the responses were summed, so that a higher value represented more symptoms.

Coping behaviors. Coping behaviors were measured with seven items reflecting behaviors that have been associated with reducing stress. These behaviors were selected from Welle and Graf's (2011) study of effective lifestyle habits among college students. Participants were asked to respond with the degree to which they agreed or disagreed with questions such as: "Have you engaged in a calming hobby today?" and "Do you feel you've had adequate opportunities for leisure time today?" The response options were no (1), somewhat (2), or yes (3). For our analysis, we created a sum score for this variable, where a higher score indicated more adaptive coping activities.

Results

All the following results were obtained using SPSS software by subjecting our data to correlational analyses and t-tests. First, we explored whether there were significant differences in

reports of stress, health, relaxation remorse, and coping behaviors on Monday compared to Friday. Students reported more physical health symptoms on Monday compared to Friday, t (71) = 2.81, $p < .01$ (see Figure 1). In terms of relaxation and coping, students experienced more relaxation remorse on Monday compared to Friday, t (73) = 3.82, $p < .001$ (Figure 2). Students engaged in fewer coping behaviors on Monday compared to Friday, t (68) = -2.39, $p < .05$ (Figure 3). Finally, we determined that students reported slightly higher stress on Monday compared to Friday, t (71) = 2.81, $p < .01$ (Figure 4).

Table 1 summarizes the results of our correlational analyses. Our first hypothesis stated that perceived stress relates to more physical health complaints. We found that there were significant correlations between perceived stress and symptoms reported on Monday, $r = .43$, $p < .01$, as well as on Friday, $r = .47$, $p < .05$. Interestingly, perceived stress on Monday was also significantly correlated with health symptoms on Friday, $r = .50$, $p < .05$. Therefore, the first hypothesis was supported. The trends suggest that stress may result in physical health symptoms during the same day and could accumulate throughout the week, given Monday stress' correlation with Friday symptoms.

Hypothesis 2 predicted that coping behaviors would be associated with less stress and fewer health outcomes. Coping behaviors were negatively associated with stress on Mondays, $r = -.43$, $p < .01$, but not Fridays. Similarly, coping behaviors were associated with fewer physical health symptoms on Mondays, $r = -.39$, $p < .05$, but not Fridays. These results provided mixed results for Hypothesis 2, in that coping behaviors did seem to help with reducing stress and health symptoms at the beginning of the week, but not at the end of the week.

Hypothesis 3 predicted that relaxation remorse relates to fewer coping behaviors, more perceived stress and more health complaints. Interestingly, we found that coping behaviors were

not significantly correlated to the levels of relaxation remorse reported on Monday or Friday. There was a positive correlation between relaxation remorse and perceived stress on Monday, $r = .39$, $p < .01$, but not on Friday. This result partially supports our hypothesis that as student's relaxation remorse increases, their perceived stress also increases. There was a positive correlation between relaxation remorse and health symptoms for Fridays, $r = .30$, $p < .01$, but not Mondays. Similar to the trends with perceived stress, there was a positive relationship between Monday relaxation remorse and Friday health symptoms, $r = .31$, $p < .01$. These results partially support our hypothesis that as a student's level of relaxation remorse increases, their health symptoms also increase. There may also be cumulative effects throughout the week, that relaxation remorse early in the week affects one's health later in the week.

Discussion

The goal of the present study was to examine how college students' stress and relaxation activities and mindset may affect their health, specifically looking at effects at the start and end of the week. Our sample reported slightly more stress, more relaxation remorse, and more physical health symptoms on Monday versus Friday. Students reported more coping behaviors on Friday compared to Monday. Further, we found several significant relationships between these variables at the start and end of each week. In general, experiencing more stress or relaxation remorse seems to result in more physical health symptoms, sometimes within the same day, sometimes relating to health at the end of the week. Coping behaviors, like engaging in a hobby, listening to calming music, or having social interactions seem to have benefits in reducing stress and health symptoms, but these effects showed up only at the beginning of the week. That may because leisure activities are more directly connected to coping with stress when stress is more apparent at the beginning of the week, as compared to a more relaxing context at

the end of the regular school week where activities may simply occur naturally, rather than being incorporated purposefully for stress reduction.

Our results indicated a slightly higher level of perceived stress on Monday compared to Friday, these results may be explained by Recovery Theory. The higher level of stress on Monday may be due to our sample not engaging in weekend activities to renew their resources of attention, effort, and energy depleted by stress during the past week (Ragsdale et al., 2011). Higher reports of relaxation remorse and health symptoms at the beginning of the week potentially support this lack of recovery over the weekend. However, this may reflect anticipation of upcoming stress that came to fruition at the end of the week, which can be partially supported by our finding that there was a significant relationship between perceived stress on Monday and physical health symptoms on Friday.

According to COR theory, students should conserve resources that help them cope with stress, but students are also primed to expect stressors (Hobfoll, 2011). This anticipation of stress can lead to strain during especially stressful times of the semester when students may fear a loss of their resources before it has happened (e.g. before finals; Hobfoll, 2011). Since the present study occurred during the final weeks of classes, a stressful period, the COR framework could be used to explain why there was a significant relationship between relaxation remorse and perceived stress on Mondays. This framework can also help explain why the students in our sample reported a higher level of perceived stress on Monday compared to Friday. During this time of heightened stress, at the start of the week, student's may have felt a threat to existing resources and a lack of resources needed to manage their demands, and this in turn could be the reason that they also felt they did not have the resources to properly relax, cope, and recover.

Practical Implications

The results of the present study, in addition to the literature reviewed, exemplifies the need to implement programs that help college students manage their stress and overall well-being. Like a number of other studies, we found that stress was associated with physical health concerns among students. Our study finds that this can even occur during a single day, with stress being related to same-day physical health complaints. Recovery is often encouraged as a means of reducing the effects of stress, but a major barrier to reducing stress could be an inability to relax because of feelings that productivity is lost. With this mindset, it is difficult to completely relax and recover because what students "should" be doing is always running in the back of their mind. As shown in our results, increased relaxation remorse was related to more perceived stress and more health symptoms at the start of the week. The relationship at the start of the week could be a sign of feeling overwhelmed at the start of the week or insufficient recovery during the previous weekend. That said, full recovery is necessary for better work quality and general well-being and should be promoted in campus intervention efforts.

In order to get to full recovery, stress management programs, that can be applied anywhere for any amount of time, are often used. Two popular and effective methods are mindfulness and breathing exercises (Ghannam, Afana, Ho, Al-Khal, & Bylund, 2020; Hintz, Frazier, & Meredith, 2015). For example, a study among medical students, who were highly susceptible to exhaustion, breathing exercises were the easiest and most effective way to reduce stress (Ghannam et al., 2020). These sorts of exercises may also help students relieve any tension or discomfort by taking time for relaxation and removing barriers that would prevent restorative recovery experiences.

A rising form of accessible stress management, especially for college students, is online interventions. Online interventions can be a form of therapy delivered through text, video, or

audio recording that focuses largely on mindfulness and enforcing users' control over stress (Hintz et al., 2015). It is beneficial because it protects the privacy of the user, it is convenient, and it is cheaper than in-person therapy (Hintz et al., 2015). Hintz et al. (2015) explain how through an online intervention program user are led through mindfulness activities that create a spirit of confidence by surrounding the user with examples of individuals who possess a strong present control. This strong present control can be thought of as an increased feeling of control over the situation and has been shown to decrease stress and increase well-being, mental state, and motivation (Ganster & Rosen, 2013). By reminding people that they have control over their situation, especially when paired with a mindfulness activity, online intervention could reduce stress and relaxation remorse significantly.

In sum, these interventions may be an effective starting point for supporting college student health and reducing the effects of stress. Our findings suggest that, in addition to learning stress-management techniques for "in the moment" control over stress, students may benefit from learning the value of recovery. We cannot firmly say our students were not taking substantial time for recovery during evenings or weekends; however, the heightened relaxation remorse and stress at the beginning of the week may mean that students need more help in prioritizing recovery during weekends. Students may also need to find other more optimal times for recovery if their weekends are a time primarily used to work on school coursework or if it is a time primarily used for students to report to their job(s). Our results also suggest that interventions designed to reduce stress may also need to confront and/or change student's perceptions of stress and relaxation. Relaxation remorse was associated with stress and physical health symptoms. Therefore, these perceptions may cause direct harm to student health but may also indirectly prevent students from engaging in sufficient, meaningful recovery time. If stress

management interventions focus only on techniques but do not help students see the need to relax (and to not feel guilty for doing so), there may be limits on the effectiveness of such programs.

Limitations and Future Directions

Our study has several limitations that provide direction for future research studies. One limitation our study faced was the ratio of female to male participants, with the majority of our sample being female (88%). Given this lack of gender diversity, these findings may not generalize to all college students. Similarly, our sample consisted largely of freshman and Caucasian students, whose levels of stress and coping habits may not mirror that of all college students. Future studies could replicate our methods in order to determine if a more diverse sample would yield similar results as the present study.

Another possible limitation of our study is the time it was conducted, which was in the final few weeks of the semester preceding final exams. This may be a time of heightened stress for students, which may not reflect the baseline level of stress they feel through other parts of the school year. For this reason, future studies could investigate whether a student's stress is significantly correlated to health symptoms and coping behaviors at other points in time throughout the school year. Understanding variations in stress throughout the semester could further inform current stress management initiatives in order to help college students manage their stress throughout the year, and not only when their stress may be at its highest.

Another possible limitation in the present study is that we only reviewed and included data from two days of week (Monday and Friday), because our interest was in the start and end of a week. Investigating the changes in perceived stress, health symptoms, coping behaviors, and relaxation remorse between Monday and Friday is another opportunity for investigating how

student's fluctuating stress affects them. There is a possibility that by adding other days as data points, different patterns of change in stress and well-being may reveal themselves. Future studies could examine whether there tend to be different profiles of stress and recovery across the week for different individuals. Knowing whether such individual differences exist could help researchers understand the different impacts these weekly cycles could have on a variety of student outcomes.

Conclusion

The purpose of this study was to determine if there were significant differences in the amount of perceived stress, relaxation remorse, and health symptoms students experience on Monday compared to Friday. Our major finding from this study is that students perceived stress is significantly related to their health, coping behaviors, and relaxation remorse at different points during the week. This finding supports the need for programs that allow students to understand their stress, to develop healthy coping, and to understand the need for relaxation in order to improve their overall well-being. The results of this study implicate a need not only for stress management programs in universities, but it also further research in order to make these programs the most beneficial to college students.

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Table 1

College Student Stress and Relaxation Remorse: Correlations between measures

	1	2	3	4	5	6	7
1. Relaxation Remorse (M)	--						
2. Relaxation Remorse (F)	.51**	--					
3. Perceived Stress (M)	.39**	.11	--				
4. Perceived Stress (F)	-.04	.16	.60**	--			
5. Coping Behaviors (M)	-.17	-.10	-.43**	-.17	--		
6. Coping Behaviors (F)	.04	.15	-.22	-.12	.26*	--	
7. Physical Health Symptoms (M)	.17	.05	.43**	.40**	-.39**	-.03	--
8.Physical Health Symptoms (F)	.31**	.30**	.50**	.47**	-0.23	.03	.57**

**$p < .01$. *$p < .05$. *N* range= 72-99.

Notes. M = Monday; F= Friday.

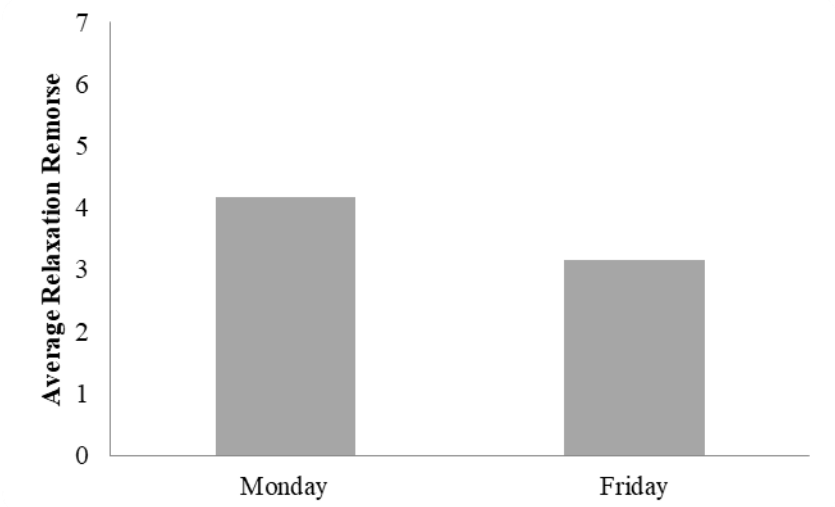

Figure 1. Feelings of relaxation remorse on Monday verses Friday.

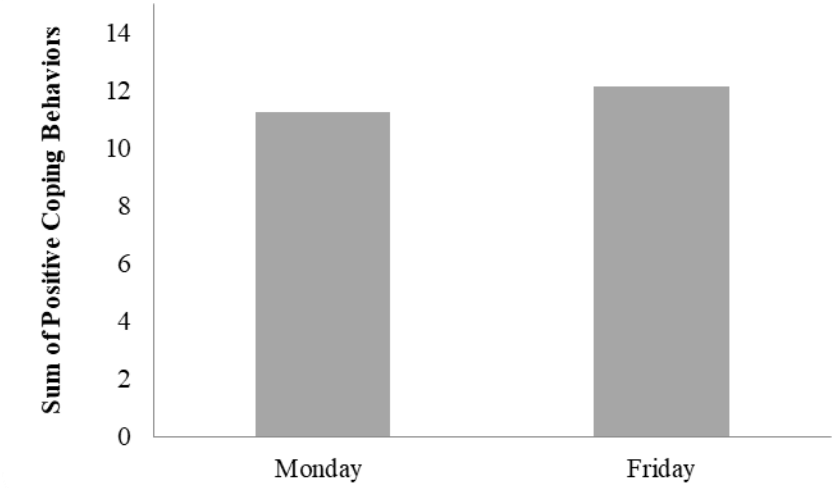

Figure 2. Coping behaviors on Monday versus Friday.

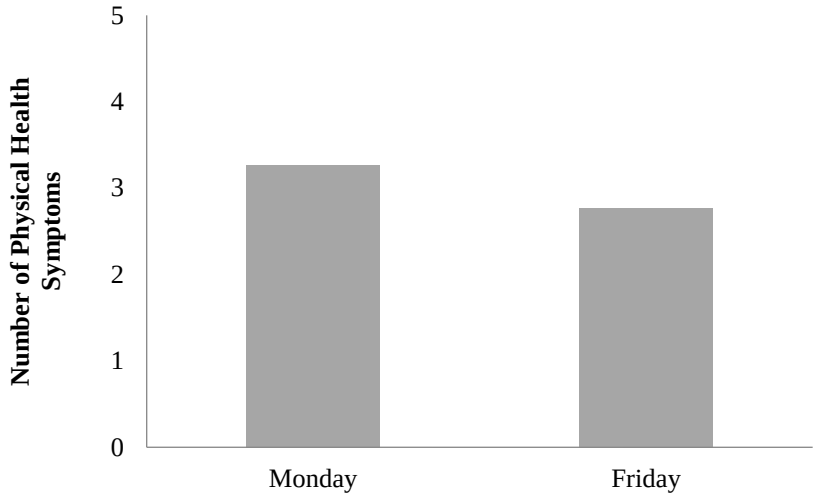

Figure 3. Physical health symptoms on Monday versus Friday.

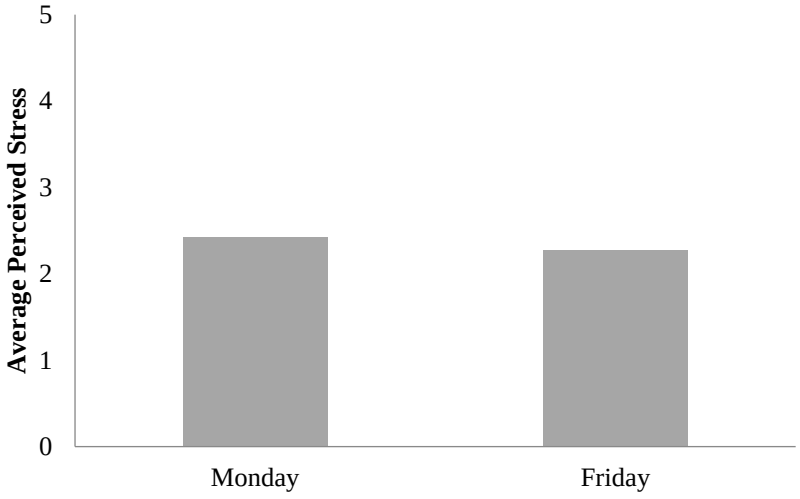

Figure 4. Perceived stress on Monday versus Friday.