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Associations Between Coping Strategies, Perceived Stress, and Health Indicators

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ABSTRACT. Stress is an inevitable aspect of life, and the ability to cope with stress can impact health indicators such as sleep quality and nocturnal blood pressure (BP). Coping strategies protect both mental and physical health from the negative effects of stress. We examined the relationship between perceived stress, coping strategies, and the health indicators of sleep and nocturnal BP dipping in a college sample. Participants included 131 students (60.3% women) who completed the Perceived Stress Scale, Brief COPE, Pittsburgh Sleep Quality Index, a sleep diary, and wore an ambulatory BP monitor for 24 hours. Linear regressions demonstrated that, controlling for economic status, perceived stress and maladaptive coping were significantly associated with poorer sleep quality, $\beta = .22$, $p < .05$, and $\beta = .20$, $p < .05$, respectively, with total model $R^2 = .18$. However, maladaptive and adaptive coping did not moderate the association between perceived stress and poor sleep quality. There were no significant associations between stress and coping and nocturnal BP dipping. These findings encourage further study of the relationship between perceived stress and coping strategies to better understand the psychological contributions to poor sleep quality in college students.

Stress is an inevitable aspect of everyday life that individuals of all ages experience. Some argue that college students in particular experience a substantial amount of stress. According to a survey of 90,666 college students across the United States conducted by the American College Health Association (2012), approximately 46% of female college students and 37% of male college students reported experiencing more than average stress in the last 12 months. Additionally, 29% of students surveyed reported that stress had a negative impact on their grades (American College Health Association, 2012).

The stress that college students experience is often related to a number of other factors such as financial insecurities and social strain (Skowron, Wester, & Azen, 2004). These stressors result in college students feeling as though they have to choose between schoolwork, social life, or sleep. Failure to find a balance often results in students feeling fatigued from lack of sleep, lonely from lack of socialization, or academically inferior from insufficient studying. Indeed, the American College Health Association (2012) found that approximately 46% of female students and 41% of male students reported feeling tired or sleepy during the day for three to five days in a given week, and 20% of students reported that sleeping difficulties had a negative impact on their grades (American College Health Association, 2012). College students need to address sources of stress from multiple aspects of their lives, and if a stressor in one area of life proves too much to handle, it may have a spillover effect resulting in detrimental health outcomes both physically and psychologically (Brannon, Fiest, & UpDegraff, 2014). The current study sought to investigate the relationship between stress and health outcomes, and the moderating role of coping strategies in a student college sample.

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Defining Stress

Stress has been defined in three different ways: as a stimulus, as a response, and as an interaction (Brannon et al., 2014). These views of stress have been combined into various theories, but the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) has dominated the field of stress research. This theory proposes that an individual's perception of a psychological situation determines whether or not the event is actually stressful. A person's perceptions of threat, vulnerability, and ability to cope determine if an event is perceived as a stressor rather than the actual event itself.

Stress and Coping Strategies

Because stress is an inevitable part of life, how a person is able to cope with stress is important for human function (Lazarus & Folkman, 1984). Coping strategies are thoughts and responses to stress as well as feelings about the stressor. Lazarus and Folkman (1984) defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). Their definition provides information about several important aspects of coping, specifically that coping is a dynamic process that is constantly changing as one's efforts are evaluated as more or less successful. Additionally, coping is not automatic; it is a learned pattern of responding to stressful situations and requires behavioral or cognitive effort, although people do not have to be conscious of this effort. Lastly, coping is an attempt to manage the situation; control and mastery are not necessary. A person's resources and strategies determine their capacity to cope.

Brannon et al. (2014) explained how coping serves two functions: to manage or change the stressor causing distress (problem-focused coping) and to regulate emotional responses to the stressor (emotion-focused coping). Problem-focused coping strategies are aimed at changing the source of the stress and are a form of action-oriented coping. Emotion-focused coping strategies, on the other hand, are directed toward managing the emotions that accompany the perception of stress. Such strategies are aimed at restructuring thoughts in order to reduce negative emotions and stress related to the stressor. Additionally, the level of distress experienced is dependent on the goodness of fit between the stressor and the coping strategy. Problem-focused strategies are more effective for handling controllable stressors, and emotion-focused strategies are more effective for handling uncontrollable stressors. Individuals often engage both problem-focused and emotion-focused coping strategies to address the same stressor. When used together, problem-focused and emotion-focused coping can either enhance or inhibit one another. For example, if individuals focus on a problem in order to find a solution, this would effectively change any emotional distress they might have been experiencing; thus making their emotion-focused coping easier. There are many different coping strategies, including, for example, avoidant/escape, in which a person denies that an event happened or fantasizes about alternative outcomes. Meaning-focused coping, in which a person believes that everything happens for a reason, results in seeking benefit or purpose in the stressor.

In a study involving community college students from the United States, Pierceall and Keim (2007) found that women perceived more stress than men and that the majority of students surveyed engaged in healthy coping activities (i.e., talking with friends and family, leisure activities, exercise) that could potentially provide college students with a sense of purpose and competence. Nevertheless, a substantial percentage of students reported using unhealthy coping activities as well (i.e., drinking, smoking, illegal drug use), which could be an explanation for 87% of the students sampled being in the moderate-/high-stress category on the Perceived Stress Scale (Pierceall & Kiem, 2007).

In France, Doron, Trouillet, Maneveau, Neveu, and Ninot (2014) found, using third-year University students, that students who used high avoidant coping strategies (i.e., use of avoidance and low use of problem solving and cognitive restructuring) reported the highest levels of perceived stress and engaged in unhealthy behavior such as decreased exercise and smoking. Additionally, their results revealed that students using adaptive coping strategies (i.e., high use of problem solving, moderate use of cognitive restructuring, and low use of distraction and avoidance) were less likely to abuse substances and more likely to engage in physical activity.

Further, coping strategies provide a critical defense, protecting both mental and physical health from the negative effects of stress (Penley, Tomaka, & Wiebe, 2002). Penley et al. (2002) conducted a meta-analysis on 34 studies investigating associations between coping strategies, as measured by the Ways of Coping (Folkman & Lazarus, 1985), and measures of physical and psychological health in adult community members (Penley et al., 2002).

Their results demonstrated that use of emotion-focused coping strategies, which included two avoidance scales, was associated with experiencing negative health outcomes. The only exception was positive reappraisal, which was associated with less negative health outcomes. In addition, seeking social support was only significantly correlated with health outcomes for controllable stressors and/or acute stressors, not uncontrollable and/or chronic stressors.

Based on the aforementioned studies, it is clear that both stress and coping influence psychological well-being and health behaviors. As we will review below, both stress and coping also influence indicators of physical health including cardiovascular health and sleep patterns (Germain, Buysse, Ombao, Kupfer, & Hall, 2003; Penley et al., 2002; Stewart, Janicki, & Kamarck, 2006).

Stress and Blood Pressure

Stress can lead to a biological response that, long term, may result in cardiovascular disease (Stewart et al., 2006; Warrenburg et al., 1989). One significant factor in cardiovascular health is blood pressure (BP; Fox, 2012). Evidence indicates that individuals whose BP drops only a small amount while they sleep, relative to their daytime BP, are at a higher risk for numerous cardiovascular illnesses relative to those individuals whose BP dips more substantially (Dimsdale et al., 2000; Hermida, Ayala, Mojòn, & Fernàndez, 2013). Specifically, nocturnal BP dipping is defined as at least 10% lower BP at night than during the day. Because stress has the ability to increase a person's BP and has been associated with less adaptive nocturnal BP dipping, it has become increasingly important to understand factors that can moderate its effects (Burford, Low, & Matthews, 2013; Dimsdale et al., 2000; Taylor et al., 2015).

Linden, Klassen, and Phillips (2008) investigated whether perceived stress, high trait hostility, and anger coping preferences as well as potential for rumination, might vary between dippers and nondippers in a sample with a mean age of 57 years. They found that 38% of the variance in systolic BP dipping and 44% of variance in diastolic BP dipping was because of the coping strategies employed by participants. These findings provide evidence to further suggest that psychological factors may contribute to the exhibition of nocturnal BP dipping. One of the mechanisms that coping strategies may lead to nondipping is through poor sleep efficiency (Taylor et al., 2015).

Stress, Coping, and Sleep Patterns

The literature suggests that sleep plays a crucial role in stress, coping, and cardiovascular health. Shortened and disturbed sleep has been associated with increased risk for cardiovascular disease (Dimsdale et al., 2000; Kashani, Eliasson, & Varnalis, 2012). Furthermore, increased levels of perceived stress are correlated with shortened total sleep time, suboptimal sleep scores on a variety of sleep quality questionnaires, increased fatigue, and an average of 20 minutes less sleep (Kashani et al., 2012). These findings are particularly influential in that they provide support for the observed association between stress, sleep, and cardiovascular disease. Sleep patterns have a significant impact on cardiovascular disease because of their connection to nocturnal dipping. Increased sleep disturbance limits the time spent asleep, resulting in higher nocturnal BPs and higher risk for cardiovascular disease later in life (Kashani et al., 2012).

Researchers have also found relationships between perceived stress, coping strategies, and sleep patterns (Taylor et al., 2015; Morin, Rodrigue, & Ivers, 2003). These studies suggest that coping strategies are a significant predictor in whether a person will have good sleep efficiency. Taylor and colleagues (2015), for example, evaluated the relationship between stress, avoidant coping, and sleep efficiency in dementia caregivers. Taylor and colleagues defined sleep efficiency as prolonged sleep latency and/or fragmented sleep. Using ambulatory polysomnography, they divided participants into two groups: fragmented sleep (poor sleep efficiency), defined as receiving 80% on the polysomnograph reading, and nonfragmented sleep (good sleep efficiency). Their findings indicated that coping style was a significant predictor of sleep efficiency, with avoidant coping being significantly positively correlated with low sleep efficiency in older caregivers. These findings by Taylor and colleagues are particularly impactful because they suggest that avoidant coping may be an ineffective strategy for reducing distress, which is consistent with additional literature (Dedert et al., 2012; Doron et al., 2014). By altering individuals' ability to get quality sleep, avoidant coping is shown to play a significant role in health outcomes.

Lund, Reider, Whiting, and Prichard (2010) evaluated the relationship between poor-quality sleep, as defined using the Pittsburgh Sleep Quality Index (Buysse, Reynolds III, Monk, Berman, & Kupfer, 1989), and emotional and academic stress in college students. The researchers reported

that students with poor sleep quality reported higher levels of stress, drank more alcohol per day, reported using alcohol to induce sleep, and drank significantly more alcoholic drinks during the week when compared to students with more quality sleep (Lund et al., 2010). Lund and colleagues (2010) suggested that perceived stress is a significant risk factor for poor sleep quality.

Leblanc and colleagues (2007) examined the relationship between insomnia and psychological- and health-related quality of life factors. After dividing participants into one of three groups (i.e., insomnia syndrome, insomnia symptoms, and good sleepers), the results revealed a significant association between coping strategies and perceived stress. Insomnia syndrome participants reported higher perceived stress and also had increased scores on the Coping Inventory for Stressful Situations (Endler & Parker, 1990) for emotion coping. Leblanc and colleagues (2007) added to previous literature by providing additional evidence for the belief that emotion-focused coping styles may result in negative health outcomes (Dedert et al., 2012; Doron et al., 2014; Taylor et al., 2015). The findings of Leblanc and colleagues (2007) aligns with the literature and highlighted that insufficient or disturbed sleep leads to increased stress, which depending on a person's coping strategies, can result in negative health outcomes.

Consideration of the Role of Socioeconomic Status

Socioeconomic status (i.e., perceived or objective ranking within the social and economic ranks of society) is a factor that may play a role in all the variables of interest in the current study (Nobles, Ritterman Weintraub & Adler, 2013). Previous research has demonstrated that those of lower socioeconomic status may experience more stress, more maladaptive coping practices, poorer sleep, and greater cardiovascular risks (Burford et al., 2013; Lupien, King, Meaney, & McEwan, 2001; Soltani et al., 2012) compared to individuals with higher socioeconomic status. Given this, it is important to assess the role of socioeconomic status in the current investigation.

The Current Study

Previous research has clearly demonstrated that the majority of college students report excessive levels of stress. Additionally, research suggests that a person's inability to properly manage stress, by using ineffective coping strategies, can result in disturbed sleep and decreased nocturnal BP dipping, which, long-term, will result in increased risk for cardiovascular disease.

A notable gap in the research on this topic is the limited amount of literature evaluating these four variables together: perceived stress, coping strategies, sleep, and nocturnal BP dipping. Most research has examined some combination of the relationships that exist. However, no studies have examined them simultaneously among college students. We sought to provide additional information about the moderating role of coping strategies on the relationship between perceived stress and nocturnal BP dipping as well as the relationship between perceived stress and sleep. This will provide additional information about the intricate relationship that exists between perceived stress and coping strategies, BP, and sleep, bringing the literature one step closer to fully understanding this connection. Another gap in the research literature to date is that most research has examined the impact of stress on BP dipping and sleep focused on those over the age of 40 years. Coping is dynamic and changes with time. Thus, it is important to understand how college students manage stress because this will provide insight into health outcomes experienced later in life. The coping strategies employed by older adult members of the population could vary from those of college students, resulting in different health effects between college students and older adults.

Based on previous research and in order to fill the important knowledge gaps outlined, we hypothesized that, controlling for socioeconomic status and other relevant covariates, (a) high levels of perceived stress in college students would be associated with disturbed sleep and less nocturnal BP dipping, and (b) coping strategies would moderate the relationship between perceived stress and sleep quality as well as perceived stress and nocturnal BP dipping.

Method

Participants

A convenience sample of 140 U.S. undergraduates enrolled in a foundational psychology course at a small, private, Christian, liberal arts university in Southern California participated in this study. Participants were recruited using an online research management system. Participants signed an informed consent form and received three research credits for participating in this study. The only exclusion criteria applicable to this study was hypertensive BP on multiple recordings at

initial meeting and formal insomnia diagnosis by a healthcare professional. To maintain confidentiality, participants were assigned a number once they had entered the room and were seated.

Nine participants were excluded from analysis; two participants had been formally diagnosed with a sleep disorder and the other seven participants were outliers, defined as being three or more standard deviations from the mean on the Perceived Stress Scale (Cohen, Kamarck, & Mermeistein, 1983), Pittsburgh Sleep Quality Index (Buysse et al., 1989), or the Brief COPE (Carver, 1997). Table 1 shows the demographic characteristics of the final 131 participants (79 women and 51 men). The sample was relatively diverse, i.e., 26% of the sample identified as Asian or Asian-American, 13% as Latino, 49% as European American, and the remaining 12% of the sample identified as African American (4.6%), Native American (3.1%), or "other" (3.8%). The mean age of participants was 19.1 years (*SD* = 1.11). Of the participants, 77 were first-year students (58.8%), 22 were sophomores (16.8%), 24 were juniors (18.3%) and 8 were seniors (6.1%). The mean number of units in which students were enrolled was 15.7 (*SD* = 2.3). The mean body mass index for men was 24 (*SD* = 4.62) and the mean body mass index for women was 21.5 (*SD* = 2.5).

Measures

Pittsburgh Sleep Quality Index (PSQI). The PSQI is a 19-item self-rated questionnaire that assesses sleep quality and disturbances over a 1-month time interval (Buysse et al., 1989). Participants responded on a 4-point Likert-type scale ranging from 0 (*not during the past month*) to 3 (*three or more times a week*). Items generate seven "component" scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. The sum of scores for these seven components yields one global score. A global score greater than 5 indicates a poor sleeper. Sleep quality levels can be categorized by scores: 0–5 (*good sleep score*); 6–10 (*mild sleep difficulty*); 11–15 (*moderate sleep difficulty*); and 16–21 (*severe sleep difficulty*). The PSQI has an overall reliability coefficient (Cronbach's α) of .83, indicating high internal consistency (Buysse et al., 1989). The internal consistency for the current sample was slightly lower than that reported in the literature (α = .74). However, it was still acceptable. This scale has shown good content and concurrent validity (Buysse et al., 1989; Gelaye et al., 2014).

Perceived Stress Scale (PSS). The PSS is a 14-item questionnaire that asks participants how often certain experiences of stress occurred in the last month and is designed to measure the degree to which situations in one's life are appraised as stressful (Cohen et al., 1983). Participants responded to each item using a 5-point Likert-type scale ranging from 0 (*never*) to 4 (*very often*). Total global scores range from 0–56 with high scores indicating high stress. The PSS is designed for use in community samples with at least a middle school education. The questions are general in nature and relatively free of content specific to any subpopulations. Cohen and colleagues (1983) found the coefficient alpha reliability for the PSS to be strong, and it also had

TABLE 1

Sample Characteristics

Characteristic	*N*	%
Women	79	60.3
Race		
Asian/Asian American	34	26.0
Black/African American	6	4.6
Latino/Latino American	17	13.0
Native American	4	3.1
White/European American	64	48.9
Other	5	3.8
I choose not to respond	1	0.8
Work Status		
Not working	84	64.1
Working part-time	45	34.4
Working full-time	2	1.5
Socioeconomic Status		
Lower class	4	3.1
Lower middle class	15	11.5
Middle class	45	34.4
Upper middle class	48	36.6
Upper class	18	13.7
Missing	1	0.8
Smoking Frequency		
0 times a week	109	83.2
1–3 times a week	10	7.6
4–6 times a week	6	4.6
More than 9 times a week	6	4.6
Alcohol Consumption		
0 times a week	88	67.2
1–3 times a week	42	32.1
4–6 times a week	1	0.8

adequate test-retest reliability. The internal consistency for the current sample is consistent with that reported in the literature ($\alpha = .80$). This scale has been shown to have good concurrent, predictive, and construct validity (Cohen et al., 1983; Orücü & Demir, 2009).

Brief COPE. The Brief COPE is a 28-item questionnaire that contains 14 two-item subscales from the full COPE (Carver, 1997). The subscales of the Brief COPE are: Active Coping, Planning, Positive Reframing, Acceptance, Humor, Religion, Using Emotional Support, Using Instrumental Support, Self-Distraction, Denial, Venting, Substance Use, Behavioral Disengagement, and Self-Blame. Participants were asked to rate the extent to which they typically used each of the strategies described in order to manage stressful situations encountered during the past month. Scores range from 1 (*not at all*) to 4 (*usually*). The Brief COPE has been shown to have adequate internal reliability (Carver, 1997). The overall internal consistency calculated for the current study was consistent with the literature ($\alpha = .81$) and acceptable. This scale has been shown to have good face and content validity (Carver, 1997).

For the current study, the Brief COPE was used to create scores indicating levels of adaptive and maladaptive coping strategies. The Adaptive Coping Subscale included the following subscales: Active Coping, Planning, Positive Reframing, Acceptance, Religion, use of Emotional Support, and use of Instrumental Support. The internal consistency reliability for the current study for this subscale was strong ($\alpha = .81$). Humor was included in the Maladaptive Coping Subscale rather than the Adaptive Coping Subscale for a number of empirical reasons, primarily because, although previous studies have shown that humor can be classified as adaptive or maladaptive (Ito & Matsushima, 2017; Rnick, Dozois, & Martin, 2016), it tended to be associated in the literature with adverse profiles on our dependent variables (Ito & Matsushima, 2017) and demonstrated better psychometric properties when included with the Maladaptive Coping Subscale in our sample. The Maladaptive Coping Subscale included the following subscales: Humor, Self-Distraction, Denial, Venting, Substance Use, Behavioral Disengagement, and Self-Blame. Internal consistency reliability for the current study for this subscale ($\alpha = .70$), although slightly lower than the conventionally acceptable value, captures the multifaceted nature of the items within the Maladaptive Coping Subscale and was designed to capture various ways of coping.

Demographic questionnaire. This was a 14-item questionnaire that asked participants about themselves. Questions included sex, height, weight, age, major, socioeconomic status, alcohol consumption, whether they have been formally diagnosed with a sleep disorder and whether, to their knowledge, members of their immediate family have been diagnosed with high BP. To measure socioeconomic status, participants reported their "perceived economic status" with response options ranging from 1 (*lower class*) to 5 (*upper class*).

Sleep diaries. Sleep diaries were used as a method to determine which BP recordings fell within participants' self-reported sleep window in order to calculate nocturnal BP dipping. Participants were asked to record what time they went to sleep and what time they woke up the next morning.

Ambulatory BP. Ambulatory BP was assessed using a 24-hour protocol. Participants wore the Oscar 2™, which is manufactured by Suntech, for 24 hours. The Oscar 2™ has been validated using several internationally recognized protocols (Jones, Bilous, Winship, Finn, & Goodwin, 2004). The cuff was worn on the upper arm and inflated hourly with the monitor recording BP. This provided information on whether participants experienced nocturnal BP dipping. The computer program used to extract the BP recordings from the ambulatory BP monitor reported each participant's nocturnal BP dipping based on self-reported sleep/wake times. Systolic and diastolic nocturnal BP dipping was calculated using Equation 1 (see Figure 1).

Procedure

Prior to conducting the study, approval was given by Pepperdine University's Institutional Review Board (16-03-203). Participants selected from a list of available times for a lab appointment. During the lab appointment, participants completed a demographic questionnaire, the PSS, the Brief COPE, and the PSQI. The order of the PSS and the Brief COPE were counterbalanced. A sequentially assigned identification number was assigned to all participant data. After completing the questionnaires, participants were instructed to sit quietly for 10 minutes. Researchers left the room and returned after 10 minutes to collect preliminary BP recordings as well as to provide instructions on proper use of ambulatory BP monitors. All participants were required to wear the BP monitor for 24 hours, which was set to collect BP hourly. Participants were told to complete a sleep diary for the next

24 hours. Participants returned to the lab after 24 hours to return the ambulatory BP monitors and the sleep diaries. A debriefing form was e-mailed to participants at the end of the study.

Results

Descriptive Statistics

Mean and standard deviations for all primary independent and dependent study variables were calculated and are reported in Table 2. Missing responses were replaced with the mean score for the missing item across all participants. To analyze BP, the winsorized mean, setting extreme values to be the value of the lowest (or highest) included value, was used when outliers were three or more standard deviations from the mean. The mean for systolic nocturnal BP dipping was 10.60 (SD = 10.50) and the mean for diastolic nocturnal BP dipping was 18.70 (SD = 12). Both the mean systolic and diastolic nocturnal BP dipping were within the normal range. Higher scores on the PSS indicate more perceived stress (Cohen & Janicki-Deverts, 2012). Cohen and Williamson (1988) established a norm from a United States probability sample to be 19.62 for the 14-item Perceived Stress Scale. The mean PSS score in this sample was 27 (SD = 7.10), indicating that the sample experienced high perceived stress. The mean score on the PSQI was 6 (SD = 2.40) indicating that, on average, the sample had poor reported sleep quality.

Preliminary Analysis

Preliminary analysis revealed that, of the demographic variables, only socioeconomic status was negatively correlated with PSQI (r_s = -0.28, p = .001) and work status was positively correlated with PSQI (r_s = 0.30, p < .001). Because socioeconomic status and work status are closely related variables, only socioeconomic status was controlled for in the linear regression analysis examining sleep quality as an outcome.

Bivariate Correlations

See Table 3 for the intercorrelations between our variables of interest. Because of the skewed nature of BP dipping, the correlations between BP dipping and other variables of interest were assessed using Spearman's rho and are not included in Table 3. A statistically significant positive correlation was found between PSS and PSQI (r = .35, p < .01) indicating that as PSS increases, sleep quality decreases. PSQI scores were also significantly negatively correlated with socioeconomic status (r = -.28, p < .001) indicating that, as socioeconomic status increases, sleep quality increases. There was no statistically significant correlation observed between PSS scores and either systolic or diastolic nocturnal BP dipping. PSS scores were significantly positively correlated with the maladaptive coping strategy subscale scores (r = .52, p < .001) indicating that, as PSS scores increased, the use of maladaptive coping also increased. The correlation between PSS scores and adaptive coping scores was not significant. Both adaptive and maladaptive coping scores were associated with sleep quality (r = .19,

FIGURE 1

$$100 - \left(\left(\frac{\text{Asleep}}{\text{Awake}}\right) * 100\right)$$

Equation for systolic and diastolic nocturnal BP.

TABLE 2

Means and Standard Deviations of Primary Independent, Moderator, and Outcome Variables

Variable	*M*	*SD*
SBPDIP	10.6	10.5
DBPDIP	18.7	12
PSS Score	27.3	7.1
PSQI Score	6.3	2.4
Adaptive Coping	39.6	6.9
Maladaptive Coping	27.9	5.5

Note. SBPDIP = Systolic nocturnal BP dipping. DBPDIP = Diastolic nocturnal BP dipping. PSS Score = Perceived Stress Score. PSQI Score = Pittsburgh Sleep Quality Index Score

TABLE 3

Intercorrelations Among Primary Study Variables (Pearson's *r*)

	PSS	PSQI	Adaptive Coping	Maladaptive Coping
PSS	1	.	.	.
PSQI	.35**	1	.	.
Adaptive CS	.09	.19*	1	.
Maladaptive CS	.52***	.28**	.34***	1
SES	-.171	-.280***	-.058	.083

Note. PSS = Perceived Stress Score. PSQI = Pittsburgh Sleep Quality Index Score. SES = Socioeconomic status. Adaptive CS = Adaptive Coping Strategy Subscale. Maladaptive CS = Maladaptive Coping Strategy Subscale.
* p < .05 (2-tailed). ** p < .01 (2-tailed). *** p < .001 (2-tailed).

$p < .05$ and $r = .28$, $p < .01$, respectively) but were not correlated with either systolic nocturnal BP dipping or diastolic nocturnal BP dipping.

Primary Multivariate Regressions

A linear regression analysis was conducted to determine whether perceived stress, adaptive and maladaptive coping, and the interactions between them predicted PSQI scores. Although socioeconomic status and work status were both determined to be covariates with PSQI scores, we only controlled for socioeconomic status during the PSQI linear regression analyses because socioeconomic status and work status had a negative correlation ($r_s = -.26$, $p = .003$). Socioeconomic status was entered into the first step of the analysis. The second block of the analysis included the PSS score. The third block of the analysis contained the maladaptive coping strategy subscale score or the adaptive coping strategy subscale score. The final block contained the interaction term between PSS score and the respective coping strategy subscale score. A linear regression model demonstrated that, controlling for socioeconomic status, the main effects of perceived stress and maladaptive coping were both significantly associated with poorer sleep quality, $F(1,126) = 9.42$, $p < .05$, $\beta = .22$, $\Delta R^2 = .10$ and $F(1,126) = 9.42$, $p < .05$, $\beta = .20$, $\Delta R^2 = .03$, respectively (see Table 4). The overall model also accounted for a significant amount of the variance in sleep quality, with total model $R^2 = .18$ and $R^2_{ADJ} = .16$, $F(3,127) = 9.42$, $p < .001$. The same linear regression model was repeated using adaptive coping strategies. This revealed that, controlling for socioeconomic status, only the main effect for perceived stress was significantly associated with poor sleep quality, $F(1,127) = 11.70$, $p < .001$, $\beta = .32$, with total model $R^2 = .16$, $R^2_{ADJ} = .14$, $\Delta R^2 = .10$. The interaction term was not significant in either of the subsequent regressions adding in the interaction term (see Table 5 for example), so we accepted the main effects only models. No main effects or interaction terms were significantly associated with nocturnal BP dipping.

These results indicated that neither stress, maladaptive coping strategies, nor the interaction of these two variables independently predicted sleep quality scores once all variables were entered into the model. The same applies for when PSS, adaptive coping, and the interaction of these two variables was entered into the model. The significance of both models came from the socioeconomic status control variable indicating that, for this sample, socioeconomic status is a powerful predictor of PSQI scores. No moderation effect of maladaptive coping score or the adaptive coping score on the relationship between PSS and PSQI was found.

TABLE 4

Main Effects for Predicting Sleep Quality Index Score From Perceived Stress and Maladaptive Coping Strategies

	Unstandardized Coefficients		Standardized Coefficients		
	β	Std. Error	β	*t*	Sig.
(Constant)	3.74	1.25		2.99	.003
SES	-0.57	0.21	-.22**	-2.69	.008
PSS	0.07	0.03	.22*	2.21	.029
Maladaptive CS	0.09	0.04	.20*	2.05	.043

Note. PSS = Perceived Stress Score. SES = Socioeconomic status. Maladaptive CS = Maladaptive Coping Strategy Subscale
* $p < .05$. ** $p < .01$.

TABLE 5

Interaction Between Perceived Stress and Maladaptive Coping Strategies in Predicting Sleep Quality

	Unstandardized Coefficients		Standardized Coefficients		
	β	Std. Error	β	*t*	Sig.
(Constant)	4.93	4.01		1.23	.222
SES	-0.57	0.21	-.22**	-2.69	.008
PSS	0.032	0.14	.093	0.23	.818
Maladaptive CS	0.047	0.142	.104	0.329	.743
PSS* Maladaptive CS	0.001	0.005	.190	0.311	.757

Note. PSS = Perceived Stress Score. SES = Socioeconomic status. Maladaptive CS = Maladaptive Coping Strategy Subscale
* $p < .05$. ** $p < .01$.

Discussion

The primary purpose of the present study was to examine the relationship between college students' perceived stress levels, sleep quality, and nocturnal BP dipping. Additionally, this research evaluated whether coping strategies, adaptive or maladaptive, moderated the relationships between perceived stress and sleep quality, and between perceived stress and nocturnal BP dipping. The results of the current study partially supported the hypotheses.

Several findings were consistent with prior research. The first hypothesis was partially supported by the finding that higher perceived stress was associated with poorer sleep quality. This finding is consistent with prior research (Germain et al., 2003; Kashani et al., 2012; Lund et al., 2010; Pierceall & Keim, 2007) and suggests that, as college students experience more perceived stress, they also experience poorer sleep quality. Given the cross-sectional nature of this study, the relationship

between perceived stress and sleep quality might be bidirectional. Perceived stress may result in poorer sleep quality as, in line with Lazarus and Folkman's Transactional Model of Stress, suggesting that those higher in perceived stress may have difficulty falling asleep and staying asleep because of arousal caused by thoughts of threats to their well-being and feeling ill-equipped to deal with such threats. Further, poor sleep can result in increased sensitivity to stimuli. Thus, students with poorer sleep may judge events as more stressful.

Interestingly, socioeconomic status demonstrated to be a powerful predictor of sleep quality and perceived stress. This seems reasonable given that students who grew up in lower socioeconomic status communities would have had consistent exposure to extraneous factors that could result in higher perceived stress levels as well as barriers to achieving good sleep quality. More than half of the sample identified as first-year students and thus, more than half of the sample was likely to still be strongly influenced by the socioeconomic environment of their family. Further, it could be that students from lower socioeconomic backgrounds have not yet developed the necessary effective coping strategies to handle the various stressors that accompany being a college student. This deficit in effective coping strategies could potentially result in them experiencing worse sleep quality and higher perceived stress and, ultimately, could be a cause for these students leaving college before receiving a degree.

It is also important to note that studies have found racial differences in BP dipping (Burford et al., 2013; Muntner et al., 2015; Profant, Ancoli-Israel, & Dimsdale, 2002), with African Americans consistently exhibiting less BP dipping. We were not able to fully explore this due to the limited number of African Americans in the sample, so future studies should recruit adequate amounts of participants from all ethnic/racial backgrounds.

The results of the current study also indicated that maladaptive coping strategies are positively associated with both perceived stress and poor sleep quality, which is also consistent with prior research (Dedert et al., 2000; Germain et al., 2003; Leblanc et al., 2007). Further, adaptive coping strategies were found to be positively associated with sleep quality, which was consistent with the findings of Taylor and colleagues (2015).

Interestingly, maladaptive and adaptive coping strategies did not moderate the influence of perceived stress on sleep quality or nocturnal BP dipping. It is possible that our coping measurement, although widely used and reliable, is limited in its ability to capture the dynamic processes that unfold as individuals cope with various stressors and switch between different strategies for different stressors.

Further, nocturnal BP dipping was not associated with perceived stress, either coping variable, or sleep quality in bivariate and multivariate analyses. Both systolic and diastolic BP depend on very intricate physiological mechanisms that fluctuate as participant behavior and emotion throughout the day fluctuates, so the fact that we did not capture relevant variables as they unfolded on the day of BP monitoring might have precluded our ability to find associations between our psychosocial variables and nocturnal BP dipping. For example, we assessed the overall smoking behaviors of the participants, but we did not assess their smoking patterns on the day of BP monitoring. Further research should be conducted in order to continue to understand the various factors that contribute to nocturnal BP dipping. Additionally, it could be possible that nocturnal BP dipping is not affected by these variables until later in life when the effects of poor sleep quality and use of maladaptive coping strategies to handle greater stress are finally taking a toll on the body. This could possibly explain why BP dipping was not associated with perceived stress, either of the coping variables, or sleep quality in this study.

There are several strengths to the current study. The PSS and the PSQI were used to measure stress and sleep quality, respectively, and only a limited number of other studies have used these measures simultaneously. In addition, measuring BP through an ambulatory BP monitor enabled the collection of recordings that more accurately described the BP of the participants as they underwent their typical daily routines. Thus, the study has strong ecological validity. Another strength of the current study was the use of a linear regression analysis to test for a moderating effect. This linear regression approach, rather than a bivariate approach, allowed the thorough investigation of the relationship between the predictor variables of perceived stress and maladaptive coping strategy or adaptive coping strategy and the dependent variables.

Although this study contributes insight into further understanding factors that contribute to poor sleep quality and less nocturnal BP dipping, it is not without limitations. The most obvious limitation is the lack of generalizability. The ethnic and socioeconomic status of the participants limits

the inferences that can be drawn from the findings of this study, especially the fact that we did not have substantial numbers of African Americans or Native Americans, and the fact that a majority of the sample perceived themselves to be middle class or higher. Another limitation of this study was that specific pathways contributing to overall poor sleep quality, such as sleep efficiency and latency, were not evaluated. Future research should examine these pathways to provide insight into the various factors that contribute to poor sleep quality.

Another limitation of the current study was the use of subjective self-reports of sleep and wake times. It is possible that, as a result of social desirability, participants either over or under reported these values. The sleep and wake times were used to calibrate the BP monitors in order to determine nocturnal BP and diurnal BP. Thus, if participants misreported these sleep values, it could have affected the reliability and accuracy of our BP variables. The final limitation of this study was the time constraints. Because of the limited time available for data collection, ambulatory BP was collected over a 24-hour time period instead of the recommended 48 hours. This was a significant limitation because collecting ambulatory BP measurements over multiple days has higher reliability in measuring nocturnal BP dipping.

Findings from the current study encourage further study of the relationship between perceived stress and coping strategies in an attempt to better understand the psychological contributions to poor sleep quality experienced by many college students. Additionally, future research should incorporate more intricate socioeconomic status measures in order to gain further understanding on the manner in which socioeconomic status is impacting sleep quality and perceived stress. It would also be beneficial for future studies to continue exploring possible ethnic differences among these variables. Further, given that this study found that both higher levels of perceived stress and the use of maladaptive coping strategies were associated with poor sleep quality, student counseling centers on college campuses should more frequently provide psychoeducation regarding these connections, offer stress interventions that emphasize coping as well as offer sleep interventions that are cognitive behavioral in nature rather than the simple behavioral focus on sleep hygiene and stimulus control.

Overall, results suggest that these relationships are very complex; further research should be conducted to continue expanding the literature on the effect of coping strategies on nocturnal BP dipping and sleep quality. Future studies should aim to include a more diverse sample that considers multiple factors such as relative ratio of adaptive to maladaptive coping, when examining the relationships between stress, coping strategies, and health.

References

American College Health Association. (2012). *American College Health Association-National College Health Assessment II: Reference Group Executive Summary Spring 2012.* Hanover, MD: American College Health Association.

Brannon, L., Feist, J., & UpDegraff, J. A. (2014). *Health psychology: An introduction to behavior and health.* Belmont, CA: Wadsworth, Cengage Learning.

Burford, T. I., Low, C. A., & Matthews, K. A. (2013). Night/day ratios of ambulatory blood pressure among healthy adolescents: Roles of race, socioeconomic status, and psychosocial factors. *The Society of Behavioral Medicine, 46*, 217–226. https://doi.org/10.1007/s12160-013-9487-5

Buysse, D. J., Reynolds III, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Journal of Psychiatric Research, 28,* 193–213. https://doi.org/10.1016/0165-1781(89)90047-4

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief COPE. *International Journal of Behavioral Medicine, 4*, 92–100. https://doi.org/10.1207/s15327558ijbm0401_6

Cohen, S., & Janicki-Deverts, D. (2012). Who's stressed? Distributions of psychological stress in the United States in probability samples from 1983, 2006, and 2009. *Journal of Applied Psychology, 42*, 1320–1334. https://doi.org/10.1111/j.1559-1816.2012.00900.x

Cohen, S., Kamarck, T., & Mermeistein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 386–396. https://doi.org/10.2307/2136404

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health* (pp. 31–67). Thousand Oaks, CA: SAGE Publications.

Dedert, E., Lush, E., Chagpar, A., Dhabhar, F. S., Segerstrom, S. C., Spiegel, D., . . . Sephton, S. E. (2012). Stress, coping, and circadian disruption among women awaiting breast cancer surgery. *Annals of Behavioral Medicine, 44*, 10–20. https://doi.org/10.1007/s12160-012-9352-y

Dimsdale, J. E., von Känel, R., Profant, J., Nelesen, R., Ancoli-Israel, S., & Ziegler, M. (2000). Reliability of nocturnal blood pressure dipping. *Blood Pressure Monitoring, 5*, 217–221.

Doron, J., Trouillet, R., Maneveau, A., Neveu, D., & Ninot, G. (2014). Coping profiles, perceived stress and health-related behaviors: A cluster analysis approach. *Health Promotion International, 30*, 88–100. https://doi.org/10.1093/heapro/dau090

Endler, N. S., & Parker, J. D. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology, 58,* 844–854. https://doi.org/10.1037/0022-3514.58.5.844

Folkman, S. (2011). *The Oxford handbook of stress, health, and coping.* New York, NY: Oxford University Press.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48,* 150–170.

Fox, S. I. (2012). *Human physiology (13th ed.).* Dubuque, IA: Wm. C. Brown.

Gelaye, B., Lohsoonthorn, V., Lertmeharit, S., Pensuksan, W. C., Sanchez, S. E., Lemma, S., . . . Williams, M. A. (2014). Construct validity and factor structure of the Pittsburgh Sleep Quality Index and Epworth Sleepiness Scale in a multi-national study of African, South East Asian and South American college students. *PLoS ONE 9(12): e116383.* https://doi.org/10.1371/journal.pone.0116383

Germain, A., Buysse, D. J., Ombao, H., Kupfer, D. J., & Hall, M. (2003). Psychophysiological reactivity and coping styles influence the effects of acute stress exposure on rapid eye movement sleep. *Psychosomatic Medicine, 65*, 857–864. https://doi.org/10.1097/01.PSY.0000079376.87711.B0

Hermida, R., Ayala, D., Mojòn, A., & Fernàndez, J. (2013). Blunted sleep-time relative blood pressure decline increases cardiovascular risk independent of blood pressure level—The 'normotensive non-dipper' paradox.

Chronobiology International, 30, 87–98. https://doi.org/10.3109/07420528.2012.701127

Ito, M., & Matsushima, E. (2017). Presentation of coping strategies associated with physical and mental health during check-ups. *Community Mental Health Journal, 53*, 297–305. https://doi.org/10.1007/s10597-016-0048-9

Jones, S. C., Bilous, M., Winship, S., Finn, P., & Goodwin, J. (2004). Validation of the OSCAR 2 oscillometric 24-hour ambulatory blood pressure monitor according to the International Protocol for the validation of blood pressure measuring devices. *Blood Pressure Monitoring*, *9*, 219–223.

Kashani, M., Eliasson, A., & Varnalis, M. (2012). Perceived stress correlates with disturbed sleep: A link connecting stress and cardiovascular disease. *Stress: The International Journal on the Biology of Stress, 15*, 45–51. https://doi.org/10.3109/10253890.2011.578266

Lazarus, R., & Folkman, S. (1984). *Stress, appraisal and coping.* New York, NY: Springer Publishing Company.

Leblanc, M., Beaulieu-Bonneau, S., Mérette, C., Savard, J., Ivers, H., & Morin, C. M. (2007). Psychological and health-related quality of life factors associated with insomnia in a population-based sample. *Journal of Psychosomatic Research, 63*, 157–166. https://doi.org/10.1016/j.jpsychores.2007.03.004

Linden, W., Klassen, K., & Phillips, M. (2008). Can psychological factors account for a lack of nocturnal blood pressure dipping? *Annals of Behavioral Medicine, 36*, 253–258. https://doi.org/10.1007/s12160-008-9069-0

Lund, H. G., Reider, B. D., Whiting, A. B., & Prichard, J. R. (2010). Sleep patterns and predictors of disturbed sleep in a large population of college students. *Journal of Adolescent Health, 46,* 124–132. https://doi.org/10.1016/j.jadohealth.2009.06.016

Lupien, S. J., King, S., Meaney, M. J., & McEwen, B. S. (2001). Can poverty get under your skin? Basal cortisol levels and cognitive function in children from low and high socioeconomic status. *Developmental Psychopathology, 13*, 653–676. https://doi.org/10.1017/s0954579401003133

Morin, C. M., Rodrigue, S., & Ivers, H. (2003). Role of stress, arousal and coping skills in primary insomnia. *Psychosomatic Medicine, 65,* 259–267. https://doi.org/10.1097/01.PSY.0000030391.09558.A3

Muntner, P., Lewis, C. E., Diaz, K. M., Carson, A. P., Kim, Y., Calhoun, D., . . . Shimbo, D. (2015). Racial differences in abnormal ambulatory blood pressure monitoring measures: Results from the coronary artery risk development in young adults (CARDIA) study. *American Journal of Hypertension, 28*, 640–648. https://doi.org/10.1093/ajh/hpu193

Nobles, J., Weintraub, M. R., & Adler, N. (2013). Subjective socioeconomic status and health: Relationships reconsidered. *Social Science & Medicine, 82,* 58–66. https://doi.org/10.1016/j.socscimed.2013.01.021

Orücü, M. Ç., & Demir, A. (2009). Psychometric evaluation of perceived stress scale for Turkish university students. *Stress and Health: Journal of The International Society for The Investigation of Stress, 25,* 103–109. https://doi.org/10.1002/smi.1218

Penley, J. A., Tomaka, J., & Wiebe, J. S. (2002). The association of coping to physical and psychological health outcomes: A meta-analytic review. *Journal of Behavioral Medicine, 25*, 551–603. https://doi.org/10.1023/A:1020641400589

Pierceall, E. A., & Keim, M. C. (2007). Stress and coping strategies among community college students. *Community College Journal of Research and Practice, 31,* 703–712. https://doi.org/10.1080/10668920600866579

Profant, J., Ancoli-Israel, S., & Dimsdale, J. E. (2002). Are there ethnic differences in sleep architecture? *American Journal of Human Biology, 14,* 321–326. https://doi.org/10.1002/ajhb.10032

Rnic, K., Dozois, D. A., & Martin, R. A. (2016). Cognitive distortions, humor styles, & depression. *Europe's Journal of Psychology, 12*, 348–367. https://doi.org/10.5964/ejop.v12i3.1118

Skowron, E. A., Wester, S. R., & Azen, R. (2004). Differentiation of self mediates college stress and adjustment. *Journal of Counseling and Development, 82*, 69–78. https://doi.org/10.1002/j.1556-6678.2004.tb00287.x

Soltani, M., Haytabakhsh, M. R., Najman, J. M., Williams, G. M., O'Callaghan, M. J., Bor, W., . . . Clavarino, A. (2012). Sleepless nights: The effect of socioeconomic status, physical activity, and lifestyle factors on sleep quality in a large cohort of Australian women. *Archives of Women's Mental Health, 15*, 237–247. https://doi.org/10.1007/s00737-012-0281-3

Stewart, J. C., Janicki, D. L., & Kamarck, T. W. (2006). Cardiovascular reactivity to and recovery from psychological challenge as predictors of 3-year change in blood pressure. *Health Psychology, 25*, 111–118. https://doi.org/10.1037/0278-6133.25.1.111

Taylor, B. J., Irish, L. A., Martire, L. M., Siegle, G. J., Krafty, R. T., Schulz, R., & Hall, M. H. (2015). Avoidant coping and poor sleep efficiency in dementia caregivers. *Psychosomatic Medicine, 77*, 1050–1057. https://doi.org/10.1097/PSY.0000000000000237

Warrenburg, S., Levine, J., Schwartz, G. E., Fontana, A. F., Kerns, R. D., Delaney, R., & Mattson, R. (1989). Defensive coping and blood pressure reactivity in medical patients. *Journal of Behavioral Medicine, 12*, 407–424. https://doi.org/10.1007/BF00844875

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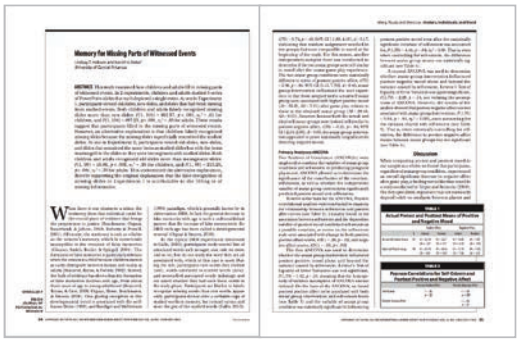

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