

PERCEIVED ETHNIC DISCRIMINATION, RUMINATION, AND HOPE:
IMPLICATIONS FOR SLEEP QUALITY IN MINORITY AND NON-MINORITY COLLEGE
STUDENTS

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By

Tari Cox

Director: Dr. Kia Asberg

Associate Professor and Psychology
Clinical Psychology Program Director

Committee Members: Dr. Erin Myers, Psychology,
Dr. Windy Gordon, Psychology

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ABSTRACT

PERCEIVED ETHNIC DISCRIMINATION, RUMINATION, AND HOPE: IMPLICATIONS FOR SLEEP QUALITY

Tari Madane Cox, B.A

Western Carolina University (April 2018)

Director: Dr. Kia Asberg

There is a vast amount of literature supporting the notion that sleep is vital for the physical and mental health of human beings. Mentally, poor sleep can interfere with cognitive processes and is a risk factor in the development of health problems. Studies exploring racial and ethnic differences in sleep quality suggest that Blacks/African Americans tend to experience poorer sleep (i.e., more sleep disturbance, slow-wave sleep) than their White counterparts, but few studies have examined the mechanism by which minority status (as in the case of Blacks/African Americans) compromises sleep quality. Aside from race and ethnicity, literature states that rumination (i.e., excessive reflecting on life events and stressors) may also influence sleep negatively. Considering this, racially charged events that are increasingly displayed in today's media have heightened the awareness of unfair treatment based on race and ethnicity. Consequently, Blacks/African Americans (who are prone to discrimination in a variety of societal domains), may experience an additional layer of stress that increases the tendency to ruminate. In contrast, the instillation of hope may decrease rumination, in that a positive outlook and a sense that one's goals are attainable may overshadow the perception of barriers pertaining to ethnic discrimination. To examine this, data were collected from students attending a

Historically Black College/University (HBCU) and a Predominately White Institution (PWI) ($N = 295$). The aim of the present study was to examine differences in brooding and reflective rumination, perceived ethnic discrimination (PED), hope, stress, and sleep quality in Black/African American and White college students. This study also examined hope as a buffering variable against the negative impact of other study constructs. Independent t -test results indicated that Blacks/African Americans reported worse sleep quality, more disturbed sleep, more brooding rumination, and more overall PED than Whites, which is consistent with the existing literature. In contrast, there were no differences in hope scores between Blacks/African Americans and their White counterparts, and hope was not significant predictor of sleep quality when entered into a regression equation with other study constructs (brooding, reflection, perceived stress, PED, ethnicity, and gender). However, the regression model containing the study constructs found brooding and perceived stress to be predictive of sleep quality, thus suggesting that these constructs are especially pertinent to sleep quality above and beyond other variables. Limitations, implications, and suggestions for future research will be discussed.

CHAPTER 1: INTRODUCTION

Sleep serves as a significant physiological process to maintain adequate cognition and functioning throughout one's daily life. In turn, poor sleep can have negative consequences such as emotion dysregulation and decline in cognitive performance; it is also associated with depressive symptoms (Guadini, Burles, Ferrara, & Iara, 2014; Miyata et al., 2013; Norra, Kummer et al., 2012). According to Gaultney and Collins- McNeil (2009), compromised sleep can also interfere with problem solving abilities, impair decision making, increase the risk of automobile accidents, and negatively affect performance in the work place. Moreover, there are various aspects of sleep that may be negatively affected, including the onset, duration, latency, and overall quality of a person's sleep (Segura-Jimenez et al., 2015; Vgontzas et al., 2014). Other sleep disturbances fall under broader diagnostic categories, such as insomnia, narcolepsy, and sleep apnea (American Psychiatric Association, 2013). Although some problems with sleep are caused by neurobiological and genetic factors (e.g., hypocretin deficiency in narcolepsy; APA, 2013), individual differences in cognitive styles and strategies may negatively impact sleep. In fact, as human beings, we are innately driven to rethink events that elicit negative emotions. Thus, a common factor that can influence overall sleep quality is rumination, an emotion regulation strategy involving thinking of one's symptoms that stem from stress related circumstances (Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

Previous research has identified a variety of life events that may provoke rumination, including work-related stress, interpersonal conflict, and financial strain (Bevan, Hefner & Love, 2014; Johar, Meng, & Wilcox, 2015; Querstret & Cropley, 2012). An additional source of stress comes from discrimination and other negative life events pertaining to one's ethnicity (Williams,

Yu, & Anderson, 1997). While considering rumination derived from everyday stressors and additional stress from discrimination, it is plausible that overall sleep health may be affected. Less is known, however, about the role of hope in predicting sleep quality when accounting for perceived discrimination as well as rumination. Thus, this study identified the associations among perceived ethnic discrimination (PED; a form of stress), rumination, hope, and sleep quality, and examined the relative contribution of minority status, perceived discrimination, rumination, and hope to the prediction of sleep quality in a sample of college students¹. Group differences between Black/African Americans and White were also explored.

¹ Given that previous studies have found gender differences on rumination, the present study assessed for if such group differences existed and controlled for gender in subsequent analyses.

CHAPTER 2: LITERATURE REVIEW

Sleep and Health

The concept of sleep contains several dimensions with implications for sleep health, including sleep duration, sleep efficiency, and timing (Bussey, 2013). Sleep duration is characterized by the amount of time that one sleeps in 24 hours, while sleep efficiency is characterized by the time spent asleep while in bed versus the time spent awake. Lastly, timing is defined as the amount of time that it takes an individual to fall asleep and awaken in a 24-hour cycle (Bussey, 2013). A person may experience a disturbance in any of these dimensions, which can result in a variety of negative outcomes. For example, one study found that obesity was higher in individuals who reported short sleep duration and other sleep disturbances (Vgontzas et al., 2014). Moreover, poor sleep is associated with emotion regulation difficulties, poor academic performance, cardiovascular disease, and diabetes (Baum et al., 2013; Curcio, Ferrara, & Gennaro, 2006; Luyster, Strollo, Zee, & Walsh, 2012).

Additionally, overall poor sleep quality has been linked to impaired problem-solving abilities, maladaptive coping, and risky behaviors (National Institute of Health, 2012). Some research posits that a pattern of poor sleep can manifest in compromised mental health in adulthood. For example, in a longitudinal study, Gregory, Fone, and White (2015) examined the association between poor sleep in childhood and risk for depression. Results indicated that parents' reports of their child's sleep difficulties were associated with an increased risk of the child developing depression in adulthood. Therefore, not only does poor sleep impact physical health negatively, but it poses a threat to one's psychological health as well.

Although poor sleep is associated with negative health consequences in both women and men, studies find that women may be particularly at risk for experiencing sleep problems, such

as insomnia (Jackson, Sztendur, Diamond, Byles & Bruck, 2014). A longitudinal study also found moderate to strong links between frequent reports of disturbed sleep and self-reported anxiety and depression in women (Jackson et al., 2014). Research posits that these gender differences in sleep are associated with differences in social, cultural, environmental and biological factors (Mallampali & Carter, 2014). However, gender differences in cognitive processes associated with poor sleep, such as rumination, must be accounted for when examining predictors of sleep health.

Rumination

Rumination is broadly defined as a self-coping mechanism characterized by focusing attention on a negative mood (Lyubomirsky & Nolen-Hoeksema, 1993). Specifically, ruminative responses are behaviors or cognitions that involve an individual's focus on their symptoms while in a depressed mood, as well as potential causes of these symptoms (apathy, fatigue, sadness, etc.) (Morrow & Nolen-Hoeksema, 1990). Despite this broad definition, there are distinct types of ruminative behaviors that an individual may engage in following an unfortunate event. Dependent upon the situation and other predisposing factors, the type of ruminative response that one chooses may vary. An example of a process may include redundantly expressing negative emotions that one feels from self-isolation (Morrow & Nolen-Hoeksema, 1990).

Rumination can also derive from a variety of stressors or traumatic experiences. While it is common to engage in mild forms of rumination, there are stressors that may increase one's susceptibility to engaging in rumination. As previously noted, rumination is characterized by redundant cognitions that are often brought on by distressing life events. A person may ruminate and experience various emotions. However, generally, research on rumination acknowledges two

distinct forms or types (i.e., characterized by specific content), commonly referred to as *brooding* and *reflection*.

Brooding

To develop a multi-component approach to rumination, Treynor, Gonzalez and Noel-Hoeksema (2003) completed a factor analysis that resulted in two main subtypes of rumination: brooding and reflection. Prior to this, Trapnell and Campbell (1999) conceptualized these two constructs as brooding and pondering (as cited in Nolen-Hoeksema, et al., 2008). Brooding is characterized by the comparison of one's current situation to obtaining a specific standard (Treynor, Gonzalez & Noel-Hoeksema, 2003). A brooding individual would be highly susceptible to fixation on the negative consequences of depressive symptoms (Miranda & Noel-Hoeksema, 2007). For example, someone engaging in brooding-rumination may ask themselves, "*Why can I not do better on this?*" This subtype of rumination can be debilitating towards one's emotional and mental well-being due to the over analysis and self-criticism.

Furthermore, Treynor et al. (2003) found that brooding is related to higher levels of current and predicted depressive symptoms. It may be that negative, self-perpetuating thoughts that stem from brooding can elicit feelings of hopelessness and the pressure to engage in perfectionistic behavior (Treynor et al., 2003). This supports partial findings of a study by Olson and Kwon (2008), which stated that individuals with elevated levels of perfectionism, as well as brooding experience greater symptoms of depression over time. In contrast, there is a subtype of rumination that involves purposeful efforts to contemplate the negative emotions associated with a distressing event.

Reflection

The second type of rumination that emerged from Treynor and colleagues' (2003) factor analysis is known as *reflection* or *reflective rumination*. Reflection is characterized by problem-solving mechanisms aimed to ameliorate one's depressive symptoms (Treynor et al., 2003). In contrast to brooding, reflection involves channeling one's feelings of dysphoria into potential ways of changing or managing an event. Reflection also involves directed efforts to understand the elicited emotions that develop as a result of distress (Jones, Roy, & Verkuilen, 2014). For example, an individual may ask themselves, "*How could I have reacted in a different way to this?*" Although reflective rumination appears less harmful than brooding, literature denotes both adaptive and maladaptive outcomes of participating in reflective rumination.

Rusting and Nolen-Hoeksema (1998) found that not only can negative mood states cause rumination, but also that rumination can exacerbate them. Specifically, individuals that engaged in self-focused rumination after recalling an angry life-event reported higher levels of overall anger. Another consequence of reflection is potential suicide ideation in relation to depression (Miranda & Nolen-Hoeksema, 2007) such that an individual experiencing suicidal ideation may lack problem solving abilities coupled with emotion regulation difficulties from depression (Miranda & Nolen-Hoeksema, 2007). On the contrary, reflective rumination can aid in facilitating performance. For example, recent research suggest that increased levels of reflective rumination are associated with better musical performance (Jones & Roy, 2014). Although there is a dearth in literature exploring the benefits of engaging in reflective rumination, this subtype of rumination appears to be less harmful than other types, such as brooding (Jones & Roy, 2014). Therefore, it is important to assess both types of rumination in relation to perceived discrimination, hope, and sleep, as they may show different associations with these constructs.

Other subtypes of rumination

As noted, two broad types of rumination have been identified and conceptualized based on the understanding of thoughts and behaviors associated with rumination. However, researchers have identified other factors associated with different emotional states and engaging in rumination. One type is known as *angry rumination*, which is characterized by repetitively thinking about angry experiences that may be vindictive and defensive in nature (Ciesla, Dickson, Anderson, & Neal, 2011). Another type of rumination defined by Nolen-Hoeksema, et al. (2008) is *depressive rumination*, a subtype characterized by “the process of thinking perseveratively about one’s feelings and problems rather than in terms of the specific content of thoughts” (p. 400). These two forms of rumination specifically target negative emotions. The negative emotions stemming from the cognitions of both types of rumination can be dangerous to the human psyche and may elicit unhealthy behaviors. For example, both angry and depressive rumination may exacerbate suicidal ideation, as previously mentioned, but may also interact with risky behavior engagement and perceived ethnic discrimination (PED) (Borders & Hennebry, 2015; Miranada & Nolen-Hoeksema).

Rumination and adverse outcomes. Irrespective of the type or definition of rumination that is being examined, outcomes associated with rumination are generally negative. The Response Styles Theory (RST) posits that rumination is a responsive distress mechanism that integrates the repetitiveness and passive thinking about symptoms and repercussions elicited by distressing events (Nolen-Hoeksema et al., 2008). Excessive rumination can adversely impact the mental health of individuals and lead to psychological disorders. For example, depending on the duration of time spent ruminating and the gravity of the content on which the rumination is based, rumination can lead to the onset of depression (Verstraeten, Vasey & Bijttebier, 2010),

with women being especially vulnerable. For example, Treynor et al. (2003) found that women are more likely to experience rumination, along with depression, compared to men. Also, women may be more likely to engage in self-focused rumination during a dysphoric state and less likely to ruminate in an emotional state of anger than men (Rusting & Nolen-Hoeksema, 1998).

Additionally, the link between rumination and its negative emotional states can be viewed as bi-directional. In fact, emotional states such as sadness or anxiety may foster the tendency to engage in ruminative behavior (Rusting & Nolen-Hoeksema, 1998). Other literature suggests that rumination is associated with symptoms of Post-Traumatic Stress Disorder (PTSD), such that individuals who have been subjected to trauma ruminate about the event (i.e., thinking excessively about preventative measures, what they could have done differently), and may also experience vindictive cognitions (Ehlers & Clark, 2000). Further, rumination is associated with a variety of cognitive problems, such as concentration and memory deficits, as well as information processing biases (Nolen-Hoeksema et al., 2008). In stating this, rumination plays a role in adverse emotional and cognitive outcomes.

It must be noted, that rumination leads to mental exhaustion and increased propensity of psychopathology. Further, rumination does not inspire problem solving to change a specific situation and provokes pondering on negative thoughts (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Other negative effects of rumination include decreased instrumental behavior (i.e., active coping or problem solving) due to excessive pondering on negative emotions. This focus, in turn, may inhibit behavior that would ameliorate the dysphoria of the specific event (Nolen-Hoeksema et al., 2008). Thus, pondering on negative thoughts can lead to decreased motivation to initiate behavior changes associated with the event. Not only does rumination affect an individual directly (i.e., emotions, coping behaviors), it also affects peers

and family members. According to Nolen-Hoeksema et al. (2008), this can be attributed to dependence and the tendency to be aggressive towards one's social support networks. It can be concluded, then, that rumination is associated with a variety of emotional, behavioral, and interpersonal problems, and that it is largely an ineffective way of dealing with stress. It would follow, then, that rumination in response to pervasive, chronic, or systemic stressors, such as discrimination based on one's ethnicity or race, would contribute to adverse health outcomes.

Ethnicity, Identity, and Perceived Ethnic Discrimination (PED)

Ethnicity plays a critical role in an individual's psychological and social development but can also be associated with stress. For example, an individual may struggle with developing an ethnic identity or may be subjected to ethnic stereotypes and discrimination based on his or her ethnicity (Wong, Eccles, & Sameroff, 2003). Specifically, ethnically based discrimination refers to the experience of unfair treatment or negative judgment based on affiliation with a specific group (i.e., religious differences, cultural background) (Kamaldeep et al., 2005; Williams, Spencer, & Jackson, 1999). Ethnic discrimination has also been defined as the lack of equal treatment due to an individual's ethnic origin (Triana & Garcia, 2009). Similarly, *racial discrimination* is characterized by one's physical attributes, such as skin color, which leads to discriminatory experiences (Kamaldeep et al., 2005), while Wong et al. (2003) defines *ethnic-racial discrimination* as unfair treatment based on one's race or ethnicity.

Moreover, an individual may experience discrimination directly or indirectly and it may produce a sense that one does not belong, loneliness, and anxiety in specific settings. For some ethnic groups, it is highly likely that although these emotions may not be debilitating, they significantly impact behavior. For example, according to Kong (2015), paranoia is a common emotion among ethnic minorities, specifically in response to work-place discrimination.

Additionally, racial or ethnic discrimination may be imposed directly or indirectly. Direct racial/ethnic discrimination consists of verbal or physical attacks or disadvantages of employment opportunities (Kamaldeep et al., 2005). The underlying difference between perceived ethnic discrimination and direct ethnic discrimination is the subjective perception of the individual experiencing discrimination. For example, a hiring manager vocally expressing that they will not hire an individual based on their ethnic minority status would be considered direct ethnic discrimination. In contrast, an individual not qualifying for a job among a pool of White candidates and speculating that it is based on race would be considered *perceived ethnic discrimination*.

Whether direct or indirect, the effects of ethnic discrimination are detrimental to the mental and physical health of individuals who are subjected to it (Pascoe & Richman, 2009). For example, one longitudinal study noted that conduct problems and depressive symptoms are associated with perceived ethnic discrimination (Brody, et al., 2006). Utsey, Reynolds, and Ponteretto (2000) also found that African Americans who reported frequent racially motivated discriminatory experiences had lower self-esteem and overall satisfaction with life than those with fewer experiences of discrimination. These adverse outcomes may stem from feelings of inadequacy, lack of belongingness, and damaged perceptions of success in one's environment.

Similarly, one study found that exposure to discrimination significantly predicted psychological distress among African Americans. Specifically, stigma related stress mediated the relationship of psychological stress, in that African Americans that were exposed to discriminatory experiences (e.g., less courteous and respectful treatment, name calling, insulted being harassed, and being avoided) were more likely to experience psychological distress (i.e., being upset, shame, afraid, nervous) (Hatzenbuehler, Nolen- Hoeksema, & Dovidio, 2009).

Likewise, PED may also impact the physical health of individuals. For example, overall lifetime exposure to ethnic discrimination was associated with heightened levels of ambulatory blood pressure (ABP) in a sample of African American and Latino-American older adults (Beatty-Moody et al., 2016). Psychologically, elevated blood pressure levels may produce stress bidirectionally that could negatively impact day-to-day functioning. In addition, PED is associated with having more risk factors for cancer, lower resting heart rate variability (RHV), smoking, and cardiovascular disease (Cuevas et al., 2014; Hill et al., 2017; Harris et al., 2006). This may be explained by over-engaging in coping behaviors such as overeating and smoking.

Of interest to the present study, it is notable that although many of the physical and psychological effects derived from PED manifest during waking-life experiences, physiological processes such as sleep are also affected. For example, perceived discrimination in a healthcare setting was associated with an increased risk of sleep disturbance, as well as daytime fatigue, in non-Hispanic White and Black/African Americans. Additionally, sleep disturbance was partially associated with depressed mood and perceived ethnic-discrimination, which is indicative that PED significantly impacts sleep (Grandner et al., 2012).

PED, minority status, and sleep. Overall, particular groups, such as African Americans, are recognized widely as being prone to experiencing PED, and may also be more vulnerable to sleep problems. Consistent with this notion, studies find that African Americans are highly susceptible to experiencing poor sleep. For example, a longitudinal study found racial discrimination, specifically PED, to be linked to sleep difficulties over time in African Americans college students (Fuller-Rowell et al., 2017). Thomas, Bardwell, Ancoli-Israel, & Dimsdale (2016) also found that perceived ethnic discrimination was a mediator between the fourth stage of sleep and overall physical fatigue. Further, one study seeking to analyze potential

differences in sleep architecture between African American and White men and women found PED to partially mediate sleep quality such that those reporting higher levels of PED engaged in more Stage 2 sleep and less Slow Wave Sleep (SWS) (Tomfohr, Pung, Edwards & Dimsdale, 2012). Other studies have found that African Americans have a greater likelihood of experiencing sleep apnea, shorter and longer sleep duration, insomnia symptoms, and excessive daytime sleepiness (EDS) (Baldwin, et al., 2010; Redline et al., 2008; Tishler, Hans, Tosteson, Strohl & Spry, 1997).

As clear evidence highlights the negative effects of minority status and PED on sleep, other research posits explanations of the poor sleep health of Black/African Americans. For example, a recent study found that socioeconomic status (SES) was a risk factor associated with poor sleep in African Americans, but this association was not found among their White counterparts (Van Dyke, Vacarrino, Quyyumi & Lewis, 2016). Van Dyke and colleagues (2016) also proposed a hypothesis suggesting that Whites are less prone to experiencing SES discrimination in specific situations. Perhaps, this is because African Americans are typically labeled as being of lower SES, thus, leading to financial stigmatization. This suggests that African Americans are not only predisposed to race-related stressors, but also financial related stressors.

In addition, as racial discriminatory experiences are on full display in today's media (e.g., cases of racial profiling and police brutality against ethnic minorities that "go viral"; see Bonilla & Rosa, 2015, for a review), the exposure to distressing events may be frequent. Furthermore, today's media may heighten the awareness of discrimination and, as a result, African Americans may be hypervigilant for potential discrimination and/or violence in their daily lives, while also pondering the future of their racial group (Bonilla & Rosa, 2015). This physiological and

psychological manifestation of minority stress may, in turn, negatively impact sleep. Despite this, human beings have a way of adaptive thinking during unfortunate events, which has the potential for reducing negative consequences. For this proposed study, the construct of hope is seen as a variable that may alleviate harmful effects of stress and rumination.

Hope

A general definition of hope listed in the dictionary highlights the idea of desiring for something to happen (Snyder et al., 1991). In efforts to expand on this definition, Snyder and colleagues (1991) proposed that hope has two components: 1) hope is generated by the idea of successful “agency” related goals, and 2) the ability to perceive “pathways” to attain goals impacts hope (Snyder et al., 1991). An agency is characterized by determination that is associated with attaining goals from the past, present and future whereas pathways are plans that are developed to reach goals (Snyder et al., 1991).

Research posits psychological and physical factors that are positively impacted by hope. For example, Barnett (2014) found hope to be a predictor of both physical and mental health in a sample of older adults, after controlling for sociodemographic (i.e., age, ethnicity, and education) and psychosocial factors. This suggests that older adults possessing concepts of goals and plans to achieve goals experienced higher quality physical and mental health. A longitudinal study found that elevated levels of hope are associated with higher grade point averages (GPA), higher chances of graduating from college and lower levels of dismissal due to poor grades (Snyder, et al., 2002).

Therefore, hope is essential for emotional health when coping with negative life stressors and can also bring about positive consequences. For example, one study found high levels of hope to be associated with post-traumatic growth (PTG) and decreased mood symptoms in a

sample of childhood cancer survivors (Yuen, Ho, & Chan, 2014). Further, a recent study found that reasons for living in addition to hope served protective factors against suicidal ideation in a sample of patients with depression (Luo, Wang, & Cai, 2016). Other studies found an association between hope and stress and exhaustion, addiction recovery, psychiatric symptoms, and adjustment to illness (i.e., multiple sclerosis, lung cancer) (Berendes, et al., 2010; Bradshaw, Shumway, Wang, & Harris, 2014; Madan & Pakenham, 2014; Waynor, Gao, Dolce, Haytas, & Reilley, 2012; Yavas, Karatepe, & Babakus, 2013).

Hope and Rumination. Throughout the literature, studies show that hope is an essential psychological trait that acts as a protective factor against the deleterious effects of rumination. This was discovered in a sample of undergraduate students experiencing suicidal ideation in which hope weakened the relationship between rumination and suicidal ideation (Tucker et al., 2013). By the same token, Geiger and Kwon (2010) found that high levels of hope are associated with low levels of depressive symptoms when accounting for rumination. Specifically, findings suggest that when individuals possess substantial levels of hope, they are less likely to experience the deleterious effects of dysphoria as a result of rumination. This relationship was also demonstrated in a study conducted by Sun, Tan, Fan, and Tsui (2014), in which hope moderated the relationship between rumination and depression.

As previously noted, it is not uncommon for traumatic and negative experiences to yield negative thoughts and emotions. However, with hope, the consequences of these events are less likely to be psychologically harmful. Michael and Snyder (2005) found hope to be related to better psychological well-being in individuals who experienced the loss of a loved one. Chang, Yu, Chang, and Hirsch (2016) also found that high levels of hope were associated with decreased depressive and anxiety symptoms, which stemmed from trauma. This is especially pertinent for

populations that experience race-based stress or trauma, Hope may aid in decreasing symptoms associated with direct or secondary sources of race/ethnicity-based trauma. In turn, this may also lessen an individual's tendency to ruminate on the negative thoughts and emotions associated with the stressful events.

Present Study and Hypotheses

Given the prevalence of poor sleep quality among emerging adults, especially Black/African Americans, this study examined several correlates of sleep, including rumination (brooding and reflection), PED, and stress. In addition, college is a stressful time for most students, but some studies note that certain stressors (PED) and cognitive risk factors (e.g., rumination) may be more common among ethnic and racial minorities. Thus, this study examined group differences between Blacks/African Americans and Whites, on study variables. Finally, this study also examined hope (agency and pathways) as a buffering variable against perceived ethnic discrimination and other constructs that are typically associated with poor sleep (i.e., rumination), while controlling for minority status. Specifically, the present study addressed the following hypotheses:

- 1) There will be bivariate associations among study constructs such that:
 - a) Rumination will be positively correlated with perceived ethnic discrimination (PED)
 - b) Rumination will be negatively correlated with hope
 - c) Rumination will be positively correlated with perceived stress
 - d) Perceived ethnic discrimination (PED), rumination, and overall perceived stress will be negatively correlated with sleep quality.
- 2) There will be group differences on several study constructs such that:

- a) Black/African American (AA) college students will be more likely to ruminate than White college students.
 - b) Black/African American (AA) college students will engage in brooding rumination more than White college students.
 - c) Black/African American (AA) college students will experience more perceived ethnic discrimination (PED) than White college students.
 - d) Black/African American (AA) college students will experience poorer sleep quality than White college students.
 - e) Black/African Americans college students (AA) will have lower hope scores than White college students.
 - f) Black/African Americans will experience higher levels of perceived stress than White college students
- 3) Hope (pathways and agency) will significantly predict sleep quality in the context of other predictors (i.e., PED, ethnicity, rumination (brooding and reflection), perceived stress).

CHAPTER 3: METHODS

Participants

Participants of this study were 295 students from two universities in the southeastern United States. The two institutions included a Historically Black College/University (HBCU; Winston Salem State University), and a Predominately White Institution (PWI; Western Carolina University). A majority of the participants were female (62%) and ranged in age from 18 to 50-years of age ($M_{age} = 19.84$, $SD = 3.87$). Of the total sample, 84 Black/African American students and 189 White students with complete data were identified for subsequent analyses involving group differences². See Table 1 for other socio-demographic variables, as well as the breakdown of participants from each institution.

Procedure

A majority of participants in this study were recruited from Introduction to Psychology courses at Western Carolina University and were compensated with research credit from the SONA research system. Students from on-campus organizations were also recruited (e.g., Non-Panhellenic Greek Organizations, National Association for the Advancement of Colored People (NAACP) to increase diversity among the sample of participants at WCU. Participants at Winston-Salem State University were recruited face-to-face from a pool of students enrolled in various psychology courses (e.g., Research Methods and Statistics, Black Psychology). While each participant completed the study online, students recruited from the SONA pool at WCU completed the study in-person, whereas participants recruited from student organizations at WCU and WSSU students were emailed the survey link to complete at their leisure.

² While other ethnic minorities were permitted to participate in this study, as research shows that ethnic minorities experience poorer sleep compared to their White counterparts (Ancoli-Israel, 2010; Grandner et al., 2012; Ong, Cerrada, Lee, & Williams, 2017), data from these participants were omitted due to few participants in other ethnic groups.

Participants at each institution completed the surveys using the Qualtrics online system. Each participant reviewed and completed an informed consent electronically. Next, students completed measures to assess the study constructs such as PED, rumination, hope, sleep quality, and stress. A series of validity questions were also included throughout the questionnaire to ensure accuracy of data collected. Lastly, students completed a brief demographic questionnaire.

Measures

Demographics

Demographic information was collected using a brief questionnaire. The questionnaire assessed for variables such as gender, ethnicity, age, type of college (predominantly white/regional comprehensive university or HBCU).

Sleep quality

Sleep quality was measured using a modified version of the Pittsburgh Sleep Quality Index (PSQI) that omitted the sleep duration subscale (PSQI; Buysse et al., 1989). The PSQI ($\alpha = .75$) is a 19-item measure containing questions pertinent to sleep difficulties over the course of one month, sleep efficacy and sleep quality. Examples of these questions included, “*During the past month, how often have you had trouble sleeping because you have bad dreams?*” and “*During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activities?*” Participants were also asked to indicate the reasons that they experience sleep difficulties. In scoring the PSQI, seven component scores are computed, each scored 0 (no difficulty) to 3 (severe difficulty). However, only five component scores and an overall sleep quality item were used for this study. Higher scores indicate worse sleep quality and more disturbed sleep.

Rumination

Rumination was measured using the Ruminative Response Scale (RRS; Nolen-Hoeksema, et al. 1999). The RRS ($\alpha = .95$) is a 22-item self-report measure containing items that address both subtypes of rumination: brooding and reflection. An example of a brooding item would be, “*What am I doing to deserve this?*” whereas a reflection item would be, “*Analyze recent events and try to understand why you are depressed.*” An example of another type of item on the RRS would be a Depression-Related item such as, “*Think about all your failings, shortcomings, faults and mistakes.*” Participants will be asked to rate each item on a 4-point Likert scale ($1 = \textit{almost never}$, $4 = \textit{almost always}$). Higher scores on the RRS indicate more rumination.

Perceived ethnic discrimination (PED)

Perceived ethnic discrimination was measured using the Perceived Ethnic Discrimination Questionnaire – Community Version (PEDQ-CV; Brondolo et al., 2005). The PEDQ-CV ($\alpha = .95$) is a 34-item self-report measure of perceived ethnic discrimination over the course of their lifetime in various settings (i.e., workplace, school). However, participants responded to 33 items, as one item was omitted due to error. Participants were also asked to report responses on a 4-point Likert type-scale from 1 (never had happened) to 5 (happened very often). Examples of these items include “*Because of your ethnicity or race, how often have people not trusted you?*” or “*Because of your ethnicity or race, how often have people called you bad names related to your ethnicity?*” Higher scores indicate elevated levels of perceived ethnic discrimination.

Perceived stress

Perceived (global) stress was measured using the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS ($\alpha = .79$) is a 14-item self-report measure of perceived stress in the last month. Participants were asked to report on a 5-point Likert-type scale where 0=never, 1=almost never, 2=sometimes, 3=fairly often, 4=very often. However, participants responded with four Likert scale options, as the fifth option (4=very often) was omitted due to error. Examples of these items include, *“In the last month, how often have you felt nervous and “stressed”?* or *“In the last month, how often have you felt that things were going your way? (Reverse coded).* Higher scores indicate high levels of perceived stress.

Hope

Hope was measured using the Hope Scale (HS; Snyder et al., 1991). The Hope Scale ($\alpha = .67$) is a 12-item self-report measure of the constructs of hope. This included the pathway subscale ($\alpha = .72$) and the agency subscale ($\alpha = .80$), as well as filler items. Participants were asked to rate their responses on a 4-point scale; 1 (definitely false), 2 (mostly false), 3 (mostly true), 4 (definitely true). An example of an agency item is *“My past experiences have prepared me well for my future,”* whereas an example of a pathway item is *“There are lots of ways around any problem.”* Higher scores indicate high levels of hope.

Data Analysis Plan

First, descriptive statistics were utilized to explore demographic variables such as ethnicity, gender, and age. The demographic variables were explored in the overall sample as well as for each institution. Next, to test Hypothesis 1, a Pearson-Correlation matrix was examined for bivariate associations among the study constructs (i.e., brooding, reflection, perceived ethnic discrimination, pathways, agency, perceived stress, and sleep quality). Third,

group differences were explored using a series of Independent samples *t*-tests, specifically seeking to analyze group differences between AA and White college students' experiences of discrimination, tendency to ruminate, brooding, overall sleep quality, and levels of hope (Hypothesis 2). Lastly, a regression equation was examined to determine if ethnicity predicts sleep quality while considering other variables (Hypothesis 3). This includes each of the rumination subtypes as well as the components of hope (i.e., pathways and agents).

CHAPTER 4: RESULTS

For this study, Black/African American college students were compared to White college students on the several study constructs, and the relative contribution of hope in the prediction of sleep was examined in a regression equation. First, however, descriptive statistics (via a crosstab analysis) were calculated to examine the prevalence of ethnicities at both institutions. Next, groups were formed based on self-identification as Black/African American or White in this sample of college students. In this study, a total of 84 participants self-identified as Black/African American. Most of these participants ($n = 56$) were enrolled at the HBCU. Since Black/African Americans at WSSU ($n = 56$) and WCU ($n = 28$), respectively, did not differ in sleep quality scores (see results from t -tests below), the two samples of Black/African Americans were collapsed and subsequently compared to White students ($n = 189$) who were enrolled at the PWI.

Institution and Study Constructs

To ascertain whether African American students from the HBCU could be combined with the group of Black/African American students from the PWI, a series of Independent t -tests were conducted. African Americans enrolled at a PWI reported experiencing more perceived ethnic discrimination ($M = 10.89$, $SD = 4.91$) on the Stigmatization Subscale (PEDQ-CV) than Black/African Americans enrolled at a HBCU ($M = 8.53$, $SD = 3.47$), $t(78) = 2.49$, $p < .05$. There were no other group differences, thus the samples of Black/African American students from the two study sites were collapsed for the analyses used to test Hypothesis 2 and 3.

Correlations

To test the assumed bivariate associations among study constructs (Hypothesis 1), a correlation matrix was examined (Table 4). Results indicated that rumination (reflection and

brooding), perceived stress, and perceived ethnic discrimination (PED) scores were all associated with sleep quality (Pearson r 's ranging from .13 to .45, with $p < .01$ for all except PED). More specifically, each of these study variables were also correlated with sleep disturbances (Pearson r 's ranging from .25 to .45, with $p < .01$ for all). This is to say that the more disturbed sleep an individual indicated (higher scores denote more disturbed sleep and worse sleep quality), the more rumination, perceived stress, and PED also experienced. Sleep quality was also negatively correlated with the agency component of hope ($r = -.21$, $p < .01$) and pathways component ($r = -.13$, $p < .05$), thus indicating that the less hopeful a person feels, the poorer their sleep quality is. In contrast, disturbed sleep was only associated with the agency component of hope ($r = -.14$, $p < .01$). There were also several significant, positive associations between perceived ethnic discrimination (PED) and other study constructs. Somewhat surprisingly, participants who reported more experiences of PED also endorsed more overall hope ($r = .13$, $p < .05$), but higher levels of perceived stress ($r = .27$, $p < .01$). This suggests that the more PED an individual endorsed, the more stressed *and* hopeful they feel. Further, those that endorsed elevated levels of PED also endorsed more reflective ($r = .23$, $p < .01$) and brooding rumination ($r = .34$, $p < .01$).

Group Differences Between Black/African American and White Students

Results from t -tests conducted (Table 2) suggested Black/African American college students reported significantly more sleep disturbances ($M = 9.88$, $SD = 4.88$) on the PSQI Sleep Disturbances subscale than White college students ($M = 8.51$, $SD = 4.31$), $t(137.7) = 2.24$, $p < .05$. Further, Black/African American college students reported more brooding rumination ($M = 11.41$, $SD = 4.36$) than White college students ($M = 10.24$, $SD = 3.86$), $t(135.9) = 2.13$, $p < .05$. Black/African Americans also reported more overall perceived stress ($M = 35.74$, $SD = 6.02$) than Whites ($M = 33.36$, $SD = 6.24$), $t(157.8) = 3.02$, $p < .01$. Lastly, Black/African Americans

reported more perceived ethnic discrimination ($M = 56.29$, $SD = 21.85$) than Whites ($M = 46.30$, $SD = 16.52$). There were no significant differences between Black/African Americans ($M = 34.98$, $SD = 4.93$) and Whites on overall hope scores ($M = 34.77$, $SD = 4.04$), $t(109.5) = 3.61$, $p < .01$. Overall, the second hypothesis was partially supported, in that Black/African American students reported more sleep disturbances, brooding, perceived stress, and PED compared to White students.

Gender and Study Constructs

Although not part of our original hypotheses, gender differences were also explored to determine if gender needed to be controlled for in subsequent analyses. Specifically, t -tests suggest significant gender differences across several study constructs. Specifically, female college students reported more disturbed sleep ($M = 9.42$, $SD = 4.76$) than male college students ($M = 7.90$, $SD = 3.83$), $t(238) = -2.95$, $p < .01$. Female college students also reported more overall rumination ($M = 46.30$, $SD = 15.95$) than male college students ($M = 41.06$, $SD = 15.21$), $t(202) = -2.71$, $p < .01$. Lastly, female college students endorsed more hope ($M = 35.19$, $SD = 4.12$) in comparison to male college students ($M = 34.11$, $SD = 4.58$), $t(170.8) = -1.95$, $p < .05$. Overall, women reported higher scores on a majority of the study variables (Table 3).

Predicting Sleep Quality in College Students

When ethnicity (minority status), rumination (reflection and brooding), hope (pathways and agency), perceived stress, and gender were considered together in a regression equation, the overall model was significant, $F(8, 258) = 6.99$, $p < .00$, but only brooding rumination and perceived stress significantly predicted sleep quality in this sample (Table 5). Hope was not a significant predictor of sleep quality among other study variables, as originally hypothesized. The model accounted for 18 percent of the variance in sleep quality.

CHAPTER 5: DISCUSSION

Clear evidence suggests the significance of adequate sleep for mental health and cognitive functions, as well as the experiences of poor sleep in minority populations, particularly Black/African Americans that are especially vulnerable to sleep problems. The present study tried to examine risk and protective factors to address these consequences. First, findings of this study confirm significant associations between sleep quality, rumination, and stressors, as posited by our first hypothesis. Consistent with the literature, we found that the more instances of perceived ethnic discrimination (PED) reported by an individual, the more that same person experienced disturbed sleep. This partially supports findings by Grandner et al., (2012) in which PED was a predictor for sleep disturbance and dissociation.

Further, we found that perceived stress and rumination were significantly associated with disturbed sleep. Our findings are consistent with literature noting that stress negatively impacts sleep in multiple ways through nightmares, insomnia, and fatigue (Furtunato & Harsh, 2006; Van Reeth et al., 2000). Sleep disturbance (e.g., bad dreams) is not only a dimension of sleep, but affects one's overall perception of sleep quality. Given the abundance of life stressors that college students may ruminate on, this likely delays sleep onset, a dimension of sleep in which individuals find difficulty in falling asleep. This may be due to elevated levels of anxiety and potential loneliness experienced in college students in addition to rumination and its effects on poor sleep, as suggested by Zawadzki, Graham, and Gerin (2013).

Findings also point to significant, albeit surprising, associations between hope (agency and pathways) and sleep quality. Specifically, the less hope based on past, present, or future determination and routes identified to attain goals, the worse sleep quality they endorsed. Similarly, this was the case with sleep disturbances. However, only with the agencies component

of hope, specifically suggesting that the less an individual feels motivated to attain a goal, the more sleep disturbances that person experienced (e.g., have bad dreams, have pain, cannot breathe comfortably). It is may be that these relationships come from excessive worry or rumination on life stressors that may elicit feelings of overall hopelessness. For example, a student with financial related stress may experience rumination or excessive worry due to lack of financial means.

Interestingly, however, we found PED to be positively associated with hope. Essentially, the more PED a person reported, the more feelings of hope they endorsed. Perhaps, the increase of racial awareness and equality being publicized in society, overall, explains this relationship. Specifically, students that endorsed more instances of discrimination may be channeling their experiences into advocating for change. It should be noted, however, that this correlation (albeit statistically significant) was very weak (.13), and perhaps not practically significant.

Nevertheless, the positive correlation (opposite of what we predicted) does raise a few questions. For example, greater levels of PED were found in Blacks/African Americans, who primarily came from an HBCU. Since HBCUs are well-known for promoting success for Black/African American students (Allen, Jewell, Griffin, & Wolf, 2017), it may inspire Black/African Americans' sense of hope for the future, even in the face of ethnic discrimination. In either case, future studies may examine hope in relation to activism and engagement, as well as identify students at risk for feeling demoralized (rather than hopeful) in response to experiencing ethnic discrimination.

Several aspects of Hypothesis 2, which explored differences between Black/African American and White students, were supported by our findings. Specifically, findings are consistent with literature suggesting that African Americans experience poorer sleep compared

to their White counterparts (Petrov & Litchstein, 2016). As previously mentioned, our findings indicated that African Americans reported more instances of perceived ethnic discrimination (PED) than White college students. More specifically, Black/African American college students at the PWI reported experiencing more stigmatization on the PEDQ-CV compared to those at the HBCU. However, there were no significant differences in dimensions of sleep quality and total sleep quality between both groups (Blacks/African Americans at the HBCU and Blacks/African Americans at the PWI). In stating this, group differences in sleep may be more closely linked to overall minority experiences while the experiences of being stigmatized may account for a small portion of these differences. Also, we found no differences in hope scores between Blacks/African Americans and White college students, suggesting that despite having more experiences of PED, Blacks/African American students maintain similar levels of hope as their White counterparts.

Although not a primary aim of this study, we note that several gender differences were found in this pre-dominantly female sample, such that women scored higher than men on all study variables. Future studies may need to examine hope based on gender *and* race, respectively, i.e., compare hope scores for minority males, minority females, White males, and White females. Our uneven group sizes – due to a small number of African American males in this sample – prevented such group analyses, but previous studies of African American adolescents found that 50 percent of males and 25 of females were hopeless (Bolland, 2003). In the larger societal context, the mental health of emerging adults of color, in particular Black/African American males, warrant further study.

Further, we posited that ruminating on such experiences and other stressors may be associated with poorer sleep quality, and findings support this claim. In addition, our findings

indicate ethnic differences in brooding rumination. Specifically, Blacks/African Americans reported more brooding rumination than Whites. Brooding is generally described as fixating on negativity of a depressive symptom (Treyner et al., 2003). Further, literature denotes multiple co-occurring problems in relation to perceived racial discrimination that African American college students face (e.g., performance anxiety, adjustment to a new environment, perfectionism, interpersonal dating concerns, suicide risk, depression) (Chao, Mallinckrodt, & Wei, 2012). Considering this, perhaps Black/African American college students' higher levels of stress contribute to elevated levels of brooding rumination. For example, a Black/African American student at a PWI may not only experience instances of perceived ethnic discrimination, but also the added stress of navigating a predominantly White/European culture (Anglin & Wade, 2007), thus leading to more brooding. We also found higher levels of PED to be associated with higher levels of perceived stress. These findings may also be attributed to experiences of racial discrimination, and subsequent stress, as previously noted (e.g., Chao, Mallinckrodt, & Wei, 2012).

Overall, this study replicated findings from previous research that identified significant associations between dimensions of sleep quality and several variables: minority status (ethnicity), gender, perceived ethnic discrimination, rumination (brooding and reflection), perceived stress, and hope. In addition, the present study expanded on findings regarding ethnic and racial differences in sleep and associated constructs. Specifically, Black/African American college students are prone to an additional source of minority stress from discrimination, which may exacerbate rumination, poor sleep, and overall stress. This also study sought to explore if hope would act as a buffering variable against these effects. Although hope was not a significant predictor of sleep quality, brooding rumination was. Additionally, while perceived ethnic

discrimination did not contribute uniquely to the regression model, perceived stress did, which is consistent with literature suggesting that stress is associated with rumination and poor sleep quality (Garcia, Duque, & Cova, 2017; Zeiders, 2017). It is possible that overall perceived stress may have also included stress from the experiences of being an ethnic minority (Black/African American), or from discriminatory experiences. Therefore, it is imperative to consider its impacts on sleep and health, especially for Black/African American college students or other potentially marginalized groups (sexual minorities, low socioeconomic status) who are prone to stress from various sources (i.e., experiences of discrimination). In stating this, addressing brooding rumination and stress in education and intervention programs aimed at reducing college students' stress may also be important, while also identifying ways that emerging adults can channel their negative experiences (i.e., PED) into hope and action.

Future Research

Future research should aim to explore differences in the several study constructs according to classification, or control for other variables that may contribute to stress, rumination, and sleep problems. For example, while this study screened for age as a demographic variable, there are likely differences in perceived stress based on college classification, due to an increase in course load and course difficulty through college. Future research should also examine sexual orientation and gender diversity (e.g., transgender, non-binary) as an additional stressor and demographic variable. Recent research suggests that self-identified LGBTQ+ individuals experience more sleep difficulties than heterosexual individuals (Charlotte, Doyle, Jason, & Ruyoun, 2018). Further, assessing the impact of being a double or triple minority would be beneficial for this research. Previous research suggests that race and

gender plays a significant role in stress for minorities (Constantine, 2002; Woods-Giscombe & Lobel, 2008).

Future research should also employ longitudinal studies, as the effects of stressors may vary over time. In addition, while sleep disturbances are common across the diagnostic spectrum, this study did not examine psychopathology per se, future research could include measures of depression and anxiety. Specifically, “understanding how sleep disturbance relates to other transdiagnostic processes may offer important insights into multiple forms of psychopathology” (Cox, Cole, Kramer, & Olatunji, 2018, p. 21). Another protective factor that may be worth exploring in the context of these variables is racial identity. Literature notes some aspects of racial identity that buffer against the deleterious effects of perceived racial discrimination (Sellers & Shelton, 2003). Also, the importance of psychoeducation and outreach programs addressing stress and sleep cannot be understated. Such programs may benefit from addressing rumination in an attempt to improve sleep quality and stress management among the college population. Furthermore, since “Black students engaged in work to help diversify institutions are often vilified for their efforts, both in the interpersonal realm and public policy” (Jones & Reddick, 2017, p. 206), university administrators and the campus community should more actively encourage participation in the civic process, as that may be one way of increasing students’ sense of hope.

Limitations

Our sample lacked diversity in that a clear majority of students self-identified as White. Further, many Black/African American students were recruited from an HBCU, while few were recruited from a PWI. Further, research suggest that African American college students experience more minority stress at a Predominately White College/University (PWCU) than they

do at an HBCU (Greer & Brown, 2011). Therefore, this study did not have equal amounts of Black/African Americans students from a HBCU *and* PWI to determine differences in sleep quality, PED, rumination, and hope based on university experience. Lastly, this study relied on self-report data in which some participants completed the questionnaires in a laboratory or classroom setting (face-to-face) in the presence of an experimenter, while others completed the study at their leisure. It is unclear how and if the study procedure may have impacted students' responses to the questionnaire, but future studies could explore potential differences on study measures as a function of setting and experimenter race. For example, a White participant may respond differently to questions about ethnicity and discrimination if the researcher is a minority (Black/African American) and vice versa. Our limitations suggest that these results do not fully capture how the consequences of these variables are reflected in broader society (e.g., no differences in dimensions of sleep quality in Black/African Americans at a PWI versus Black/African Americans at a HBCU). Despite these limitations, however, the present study contributed to our understanding of PED as a stressor for Black/African American students, while also identifying brooding rumination and overall perceived stress as robust predictors of poorer sleep among college students.

Table 1.

Demographic variables for Total Sample (N= 295)

Variable	N (%)
Gender	
Male	100 (33.9)
Female	195 (66.1)
Age	
18-25-years	285 (96.6)
25+	10 (3.3)
Note: $M_{age} = 19.84$ years, $SD = 3.87$ years	
Ethnicity	
White	189 (64.1)
Black/African American	84 (28.5)
Biracial	4 (2.6)
Other*	14 (4.6)
(*American Indian/Alaskan Native, Asian)	
Major	
Psychology	67 (22.1)
Other	225 (79.9)
Current Institution	
WCU (PWI)	229 (77.6)
WSSU (HBCU)	66 (22.4)
Student/Org. Member status	
Psychology Course	267 (90.5)
Student Organization	4 (1.4)
Psych. Course + Member	18 (6.1)
Not applicable/WCU student	6 (2.0)

Note: WCU=Western Carolina University, WSSU=Winston Salem State University

Table 2.

Group Mean Comparisons Between African Americans and Whites on Study Variables (N = 273)

<i>Variable</i>	Blacks/African Americans	Whites	<i>t</i>	<i>p</i>
	(n=84) Mean (SD)	(n=189) Mean (SD)		
Sleep Quality (PSQI)	2.38(.82)	2.24(.63)	1.45	.15
Disturbed Sleep (PSQI)	9.88(4.88)	8.51(4.31)	2.24*	.03
Rumination Total (RRS)	46.38(16.77)	43.82 (15.49)	1.18	.24
Brooding (RRS)	11.41(4.36)	10.24(3.86)	2.13*	.03
Reflection (RRS)	9.79(4.02)	9.11(3.73)	1.32	.19
Depressive Rumination (RRS)	25.45(9.36)	24.41 (9.00)	.85	.40
Ethnic Discrimination (PEDQ-CV)	56.29(21.85)	46.30 (16.52)	3.61*	.00
Perceived Stress (PSS)	35.74(6.02)	33.36(6.24)	3.02*	.00
Hope Total (HS)	34.98(4.93)	34.77(4.04)	.33	.74
Pathways (HS)	12.18(21.35)	12.14(1.99)	.13	.89
<u>Agency (HS)</u>	<u>12.25(2.15)</u>	<u>12.22(2.26)</u>	<u>.12</u>	<u>.90</u>

Table 3.

Group Mean Comparisons Between Males and Females on Study Variables (N = 295)

Variables	Male (n=100)	Female (n=195)	T	p
	Mean (SD)	Mean (SD)		
Sleep Quality (PSQI)	2.24 (.65)	2.30 (.71)	-.69	.49
Disturbed Sleep (PSQI)	7.90(3.8)	9.42(4.76)	-2.95*	.00
Rumination Total (RRS)	41.06(15.20)	46.30(15.95)	-2.71*	.01
Brooding (RRS)	9.57(3.73)	11.09(4.10)	-3.19*	.00
Reflection (RRS)	8.58(3.63)	9.68(3.88)	-2.40*	.02
Depressive Rumination (RRS)	22.93(8.98)	25.61(9.05)	-2.39*	.02
Ethnic Discrimination (PEDQ-CV)	48.37(18.25)	49.43(18.90)	-.45	.65
Perceived Stress (PSS)	32.06(6.47)	35.06(5.92)	-3.87*	.00
Hope (HS)	34.11(4.58)	35.20(4.12)	-1.95*	.05
Pathways (HS)	12.49(2.01)	11.98(2.02)	2.03*	.04
Agency (HS)	12.23(2.36)	12.23(2.17)	-.01	.99

Table 4.

Bivariate Correlations between Study Constructs for Black/African American and White Students

Measure	1	2	3	4	5	6	7	8	9	10
1. PSQI-Quality	--									
2. PSQI-Disturbed	.43**	--								
3. RRS-Total	.40**	.45**	--							
4. Reflection-RRS	.32**	.36**	.88**	--						
5. Brooding-RRS	.39**	.40**	.90**	.72**	--					
6. PEDQ-CV	.13**	.25**	.31**	.25**	.34**	--				
7. PSS	.36**	.37**	.65**	.49**	.63**	.27**	--			
8. Hope-Total	.04	.11	.65**	.49**	.63**	.13*	-.05	--		
9. Pathways-HS	-.13*	-.11	-.22*	-.15**	-.19**	.03	-.36**	.73**	--	
10. Agency-HS	-.21**	-.14*	.65**	.49**	.63**	.00	-.42**	.73**	.63**	--

Table 5.

Summary of Linear Regression Analysis for Variables Predicting Sleep Quality (N = 273)

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>P</i>
Ethnicity (Minority Status)	-.01	.87	-.00	-.06	.95
Brooding (RRS)	.05	.02	.30**	3.15	.00
Ethnic Discrimination (PEDQ-CV)	-.00	.00	-.02	-.24	.81
Pathways (HS)	.03	.02	.08	1.05	.30
Agency (HS)	-.02	.02	-.07	-.88	.38
Perceived Stress (PSS)	.02	.01	.16*	1.99	.05
Reflection (RRS)	.00	.01	.01	.15	.88
Gender	-.03	.08	-.02	-.41	.68

*p<.05

**p<.01

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