

ADAPTIVE AND MALADAPTIVE COPING STRATEGIES FOR PERCEIVED
STRESS AND THEIR RELATIONSHIP WITH QUALITY OF LIFE

by

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LIST OF ABBREVIATIONS

Abbreviation	Description
MDD	Major Depressive Disorder
GAD	General Anxiety Disorder
HERI	Higher Education Research Institute
ACh	Acetylcholine
PSS	Perceived Stress Scale
BDI	Beck Depression Inventory
PTSD	Post Traumatic Stress Disorder
CBHSQ	Center for Behavioral Health Statistics and Quality
GPA	Grade Point Average
BDD	Body Dysmorphic Disorder
HPLP2	Health-Promoting Lifestyle Profile II
EAT26	Eating Attitudes Test
ADUM	Adolescent Drug Use Measure
DUD	Drug Use Disorder Questionnaire
ACM	Alcohol Consumption Measure
PHQ	Patient Health Questionnaire
SSPFS	Social Support from Parents and Friends Scales
ACSS	Academic Coping Strategies Scale
SLSS	Student Life Satisfaction Scale
QoL	Quality of Life

ABSTRACT

Perceived stress affects the lives of every person to some degree. This stress and its consequential factors often lead to negative outcomes including depression, anxiety, and other psychological disorders. To cope with this stress, individuals often utilize adaptive and/or maladaptive coping strategies. These chosen coping methods can either positively or negatively affect a person's quality of life. In this study, it was predicted that those espousing adaptive coping strategies more frequently would experience higher levels of quality of life and those utilizing maladaptive coping strategies more frequently would experience poorer quality of life. Additionally, stress, somatization, depression and anxiety were predicted to be associated with a lower quality of life. To explore these hypotheses, 440 college students completed a survey measuring demographic variables, health behaviors, interpersonal factors, intrapersonal factors, psychological factors, and the frequency with which coping strategies were used. These were all associated with the outcome variable of life satisfaction based on the Student Life Satisfaction Scale (SLSS). The collected data were first analyzed on the univariate level. Those predictors significantly associated with quality of life in the univariate comparisons were then analyzed using a multinomial logistic regression to determine which of the key variables significantly contributed to quality of life. Overall, the key factors associated with better quality of life include the following: more spirituality, better social support, and lower stress. The results from this study identify key adaptive coping behaviors associated with better quality of life. This information is invaluable for developing prevention and intervention strategies aimed at reducing maladaptive coping behaviors in order to improve quality of life.

I. INTRODUCTION

Stress impacts millions of individuals throughout the world. This especially holds true for college students (Baghurst & Kelley, 2014). According to the father of stress research Hans Selye (1984), “stress is the state manifested by a specific syndrome which consists of all the nonspecifically induced changes within a biologic system” (p.54). This means that stress is a condition where something causes a change in our state of being. More specifically, “perceived stress” is a condition when individuals label life situations “as taxing or exceeding personal resources” (Errisuriz, Pasch, & Perry, 2016, p. 211). Perceived stress essentially occurs when an individual discerns that their daily surroundings and struggles become overbearing and too much to handle (Errisuriz, et al., 2016).

Perceived stress originates from a stressor that is perceived as a threat and requires a response by the individual (Baghurst & Kelley, 2014). Previous researchers associated stress with an increased risk for depression, anxiety, and substance abuse (Raposa, Laws, & Ansell, 2015). The presence of these issues depends partially on the severity of exposure to stress and the ability of the person to manage it (Folayan, et al., 2016). The severity of the exposure is predictive of these health challenges as greater exposure to stress over a lifetime associates with poorer mental and physical health (Toussaint, Shields, Dorn, & Slavich, 2016). The above-mentioned information forms the basis of the theory utilized to explain the etiology of perceived stress in this study. In this proposed study, the effects of stress coping strategies on the quality of life of undergraduate college students will be examined. As college undergraduates experience

varying levels of stress because of academic demands, transitioning to a new stage of life, and for many, financial struggle, studying stress management in this population can determine the appropriate actions necessary to maintain a healthy and wholesome lifestyle whilst amid change and uncertainty (see Raposa, Laws, & Ansell, 2015).

II. LITERATURE REVIEW

Stress derives from a stressor, an event or occurrence affecting one's life that requires a response (Baghurst & Kelley, 2014). The response warranted by these stressors creates the varying levels of stress. The severity of this stress is predicted by the individual's capability to maintain a strong psychological well-being and an awareness of the social aspects of life and their ability to avoid harmful situations (Dinzeo, Thayasivam, & Sledjeski, 2013). This demonstrates that effective coping is partially dictated by a person's lifestyle and social competency making it crucial to examine the background of individuals to determine some of the pre-existing factors that may contribute to their current stress levels.

As mentioned previously, researchers have associated stress with increased risk for depression, anxiety, and other mental health challenges (Raposa, Laws, & Ansell, 2015). Whether these health challenges arise depends on the severity of exposure to the stress which is predictive of these mental health challenges as greater stress exposure associates with poorer physical and mental health (Folayan, et al., 2016; Toussaint, Shields, Dorn, & Slavich, 2016).

Another crucial factor impacting the development of these mental health challenges is the ability of the individual to manage the stress (Folayan, et al., 2016). This responding to stress known as "appraisal," is divided into two processes. The first category, primary appraisal, is when the person recognizes the sense of what an event is. These events are classified in three different ways: harm (when "damage...has already been done by an event"), threat (when "possible future damage...may be brought about by [an] event") and a challenge (when an event can be "overcome and [an individual can]

even profit from... [it]”) (Taylor, 2009, p. 149-150). The other process is secondary appraisal. This is where an individual sees if they have an adequate amount of resources and the ability to cope with an event. When the perceived harm or threat is high and a person’s ability to cope is low, then the amount of stress will be higher. The opposite is true of those with a high level of coping ability (Taylor, 2009). From this, it can be inferred that ineffective coping is an adverse consequence of the stress response.

Research shows how the levels of stress experienced by an individual is predictive of the degree to which potential mental health challenges, like depression and anxiety, may present themselves (Raposa, Laws, & Ansell, 2015). Additionally, the way with which a person interprets an event is also a crucial aspect of what level of stress is experienced (Taylor, 2009). Furthermore, research has shown that an individual needs to effectively cope with stress in order to reduce their risk for any negative repercussions (Taylor, 2009).

Depression and Anxiety

Stress is often associated with an increased risk of depression and anxiety (Raposa, Laws, & Ansell, 2015). The following sections will detail the symptoms and prevalence of these disorders to enhance understanding of these psychological issues.

Depression

The DSM-5 characterizes depression, specifically Major Depressive Disorder (MDD), as the presence of 1 or more major depressive episodes (American Psychiatric Association, 2013, in Barlow & Durand, 2015). Symptoms personifying these episodes consist of a constant depressed mood, a clear loss of interest in nearly every life activity, a major loss in weight not explained by dieting or exercise, insomnia, fatigue, feelings of

worthlessness and unnecessary guilt, psychomotor slowing or restlessness, a decrease in concentration and an ability to think, and recurring thoughts of death and suicidal actions (American Psychiatric Association, 2013). This establishes the symptomology by which depression can be classified and the possible behaviors that may be reported by students who would be diagnosed with varying ranges of severity of depression.

An Australian study on depression in university students found that 7.9% self-reported MDD, which is slightly higher than the 5.2% prevalence of US university students (Farrer, Gulliver, Bennett, Fassnacht, & Griffiths, 2016). Additionally, this study showed that first year undergraduate students were at a greater risk of depression than students were in their second year and beyond. Students lacking confidence and struggling with body image were also deemed to be at greater risk of depression (Farrer, et al., 2016). Additionally, this research demonstrates the possible life situations and self-perceptions that may contribute to the presence of symptoms of depression. This study also shows a need to watch for these characteristics among students as they may be predictive of the development of depression or indicate an already existing presence of depressive symptoms, which could lead to far worse consequences including greater risk for physical health complications such as stroke, cardiovascular diseases, obesity, and diabetes (Penninx, Milaneschi, Lamers, & Vogelzangs, 2013).

Anxiety

The DSM-V classifies anxiety (specifically general anxiety disorder (GAD)) as symptoms of extreme worry and anxiety that seems impossible to control. Anxiety also associates with being easily tired, struggling with concentration, being irritable, having trouble sleeping, muscle tension, restlessness, difficulty controlling worry, excessive

anxiety and worry, and not specifically associated with panic attacks (American Psychiatric Association, 2013).

In the Farrer et al. (2016) study on university students, 17.5% of the participants met the criteria for GAD, a higher proportion than the estimated prevalence in the US (2.9%) and even in Australia (12.6%). (Keep in mind that this prevalence only represents the prevalence of GAD. The prevalence of any anxiety disorder in the US according to the National Comorbidity Survey-Replication is 21.3% during the last 12 months among individuals ages 18-64 (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012).) Females, students who had to move to a new home to attend the university and students reporting financial stress were at a greater risk for GAD. Greater risk of developing anxiety is also significantly related with a difficulty coping with academic rigors (Farrer et al., 2016).

While these researchers report higher prevalence of anxiety in university students than estimated in the American and Australian general population, their findings show that it is a commonality among college students and that it should be monitored. This study further demonstrates student subgroups that may report the presence of GAD-like symptoms and the possible factors that might explain the presence of anxiety among some college students (Farrer, et al., 2016)

Quality of Life as Predicted by Stress, Anxiety, and Depression

Mitchison, Dawson, Hand, Mond, and Hay (2016) define quality of life as life satisfaction based on the values of one's surrounding social environment and their personal goals and desires. Previous research associated lower levels of quality of life with stress, anxiety, and depression (Alleyne, Alleyne, & Greenidge, 2010; Unalan,

Celikten, Soyuer, & Ozturk, 2008; Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015). This link demonstrates a possible correlation between these three factors and quality of life and a need to assess all of them simultaneously to determine the predictive role of these three psychological factors on quality of life.

The above-mentioned research about stress, depression and anxiety also demonstrates a hole in the research that needs to be filled. As the study of Farrer et al. (2016) was conducted in Australia, it leaves the question about how the prevalence of MDD-like symptoms and GAD-like symptoms may present itself in an American university setting.

Coping Strategies to Manage Stress and their Predictive Role of Quality of Life

As perceived stress plays a vital role in daily life, several coping strategies have shown to effectively manage stress and reduce its negative consequences. Coping involves strong attempt to deal with the stress despite the outcome, which requires effort. If it does not require effort, then it becomes “automatized” (Lazarus & Folkman, 1984, p. 140). These coping mechanisms can become automatic when they no longer require effort after it becomes learned (Lazarus & Folkman, 1984).

Coping mechanisms can be divided into two categories. The first of these is adaptive coping strategies, which traditionally benefit or positively affect the lives of those who use them (Folayan, et al., 2016). Examples of this approach include religious/spiritual coping such as prayer and reading scripture (Stolzfus & Farkas, 2012); exercise (Cairney, Kwan, Veldhuizen & Faulkner; 2014); meditation; listening to music; and socializing with friends and family (Feld & Shusterman, 2015). Overall, researchers concluded prosocial behaviors like these effectively can help to combat the negative

consequences of stress, including the mental health challenges mentioned above (Raposa, et al., 2015).

The other form of coping, maladaptive coping, refers to methods often leading to adverse consequences including some of the mental health challenges described earlier. Prior research divided maladaptive coping into two different categories, emotional, in which individuals respond to a situation confrontationally or with an excessive emotional response, and avoidance-based, where individuals actively delay response to a situation or completely evade a stressful situation through isolation or other maladaptive behaviors (Folkman & Lazarus, 1988; McHugh, Reynolds, Leyro, & Otto, 2013; Folayan, et al., 2016). Maladaptive coping behaviors can include drinking (Woolman, Becker, & Klanecky, 2015), smoking (Mackey, McKinney, & Tavakoli, 2008), drug use, overeating (Feld & Shusterman, 2015), and other unbeneficial behaviors. Historically, these coping strategies can lead to negative effects on one's life including but not limited to addiction (Furnari et al., 2015).

Adaptive Coping Strategies

Exercise

Several studies have evaluated the effects of exercise on stress. A survey of individuals living in Canada indicated that 40% of its participants reported that they use exercise as a coping mechanism to reduce stress and that females were more likely to report stress-reduction as a reason for exercise as well as those who were single or previously married (Cairney, Faulkner, Kwan, & Veldhuizen, 2014). Cairney and his colleagues (2014) stated that exercise acts as a coping strategy that focuses on the emotional aspects of stress and works effectively to prevent its negative effects. Exercise

additionally functions as a tool of distraction or of refocus. These findings and ideas support exercise as an adaptive coping method for its effectiveness in managing stress. It also affirms the need to measure exercise as a predictor of stress reduction and better quality of life. Furthermore, this research provides some possible explanations for why exercise successfully mediates stress's negative outcomes (Cairney, Faulkner, Kwan & Veldhuizen, 2014).

Another study analyzing exercise as an adaptive coping method compared the levels of depression in college athletes to other students at an Iranian university (Ghaedi & Kosnin, 2014). The researchers found that female students more often reported higher levels of depression than men (Ghaedi & Kosnin, 2014). Male athletes also reported significantly lower levels of depression than other male students (Ghaedi & Kosnin, 2014). This study shows that there may be a gender difference in the relationship between exercise and depressive symptoms that should be considered in future research as it may be a crucial part of why these differences occur. Additionally, as depression often positively correlates with higher levels of stress, these findings support a potential influence of gender on the levels of depression and transitively, quality of life (see Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015). Finally, seeing that male athletes reported significantly lower levels of depression than the other male students, it is important to investigate if this difference is found in both genders in comparing those students who exercise and those who do not (Ghaedi & Kosnin, 2014). Furthermore, by comparing the levels of stress and anxiety between students who exercise and those who do not could provide a clearer understanding if this difference found by Ghaedi and Kosnin (2014) holds true with other psychological issues.

Religious/Spiritual Coping

Individuals have reported using spirituality and religious activity to adaptively cope with their stress. A study conducted by the Higher Education Research Institute (HERI) (2006) reported that spirituality does not produce an immunity to perceived stress. Many of the students who completed the HERI's (2006) survey reported lower levels of psychological health. (Psychological health was classified as positive if students rated their emotional health higher on average compared to their peers; if they reported feelings of depression or being overwhelmed occasionally or never; and if they stated that life was not "filled with stress and anxiety") (Higher Education Research Institute, 2006, 13). However, when compared with their peers, those scoring higher in spirituality more frequently found meaning in their life (55%) and peace even in times of difficulty (58%) than their counterparts (11% and 18% respectively; Higher Education Research Institute, 2006). These findings show that even though higher levels of spirituality positively correlate with higher levels of psychological stress, spirituality positively correlates with a greater ability to cope during hard times as well (Higher Education Research Institute, 2006). Because stressors often negatively affect quality of life, this could explain a possible positive predictive relationship found between spirituality and quality of life (Higher Education Research Institute, 2006; Alleyne, Alleyne, & Greenidge, 2010).

Religious coping has also been shown to be effective in reducing stress-related behaviors. For example, college students will often turn to alcohol to deal with their stress, and researchers have found that combating stress-driven drinking with religious coping to be effective (Stoltzfus & Farkas, 2012). In a study conducted among students in

a religiously-affiliated college, those with higher levels of religious coping predicted lower levels of stress-driven drinking not only in general, but also when students experienced academic alienation (Stoltzfus & Farkas, 2012). These findings further support that of the HERI (2006) showing spirituality not eliminating stress or stressors, but providing for more adaptive coping with stress and difficult situations. These findings are also consistent with Cole (2005) who found that religious coping correlated with lower levels of depressive symptoms because stress-driven alcohol consumption has often been correlated with stress-related disorders (like depression) (Holgate & Bartlett, 2015). Religious coping can therefore be seen as an effective adaptive coping method for stress and depression and transitively, religious coping could be predictive of a better quality of life (see Alleyne, Alleyne, & Greenidge, 2010; Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015).

Finally, researchers in China found some side effects of depression that can be mediated by a certain religious principle (Sun, Tan, Fan & Tsui, 2014). One of these side effects, rumination, occurs when one experiences an emotion and fixates on its negative components (Treyner, Gonzalez, & Nolen-Hoeksema, 2003; Sun, Tan, Fan & Tsui, 2014). When this happens, the emotions connected with it and the origins of it are focused on, instead of looking to resolve the problem. In searching for methods to combat this problem, these researchers found that high levels of hope, a spiritually-based principle, even during rumination, does not lead to increasing levels of depression (Sun, Tan, Fan & Tsui, 2014). These findings support the notion that spirituality, an adaptive coping mechanism, may successfully reduce depression and stress and improve quality of life. Higher levels of hope often correlate with higher levels of self-respect, self-efficacy,

and more positive behaviors (Sun, Tan, Fan & Tsui, 2014). Hope additionally coincides with the importance of maintaining a sense of purpose and meaning even when experiencing pain (Higher Education Research Institute, 2006; Sun, Tan, Fan & Tsui, 2014).

Considering all the above-mentioned findings on religious coping, there are still some gaps in research that need to be filled. First, research needs to be conducted regarding looking at the overall effect of religious coping on stress, depression, and anxiety, as they are often comorbid psychological factors. Second, as spirituality involves multiple facets (i.e., reading religious texts, prayer, etc.), it would be important to see which of these spiritual practices or combination of practices most effectively reduces stress, anxiety and depression. Answering these questions would provide a clearer picture into how religiosity can play an important role in combating these psychological issues and what specifically will most effectively improve one's quality of life.

Social Support

The last adaptive coping strategy that will be looked at is social support. Previous research demonstrated the prevalence of students relying on peer and familial support to cope with their stress. In a study surveying high school students, 62.4% of the students reported that they talk with their friends when experiencing stress while 45.5% of the students reported that they talk with their parents (Feld & Shusterman, 2015).

Previous research has also demonstrated the adverse effects of low social support. In a cross-sectional survey of female college students, Wilson, et al. (2014) found that participants lacking high levels of social support often reported higher levels of depression. This finding was consistent with other research stating that a strong

characteristic of depression is a lack of perceived emotional support from friends and family (Hefner & Eisenberg, 2009). These findings show the necessity of social support for college students not only from peers and friends, but also from parents and siblings. Emotional support also appears to be a crucial aspect of social support. As many of the symptoms of depression greatly affect the emotional stability of an individual, social support is needed to counteract the effects of stress and depression (see American Psychiatric Association, 2013, in Barlow & Durand, 2015).

Lastly, social support has been found to be an effective intermediary in the relationship between stress and depression. In a survey of Chinese college students measuring levels of depression, stress and depression were found to be closely related (Wang, Cai, Qian, & Peng, 2014). This relationship was found to be significantly regulated by social support. Additionally, Wang, Cai, Qian, and Peng (2014) found that a high level of social support makes it easier for one to establish better self-esteem (see Hefner & Eisenberg, 2009). Finally, these researchers concluded that social support also increases an individual's perceived ability to cope with the stress and a capability to solve problems and minimize the severity of the problem (Wang, Cai, Qian, & Peng, 2014). This research shows that social support works effectively to help a student adaptively cope with their stress and thereby reduce their levels of depression. It also demonstrates that social support helps a person actively reduce the magnitude of the problems they are facing and allows for lower levels of stress. This is important as it exhibits how social support provides methods to assist in not over exacerbating life situations to the point of experiencing extreme levels of stress and depression resulting in lower quality of life.

Based on the previously-conducted research, it is still not clear about the effectiveness of a combination of both familial and peer support. In addition, further research should be done on how the frequency with which an individual seeking peer and familial support increases during stressful situations. Finally, future research should consider the prevalence of this adaptive coping method in comparison with other adaptive coping methods to determine if there is a proportional ratio that, when coupled with other adaptive methods, leads to an effective plan in reducing the negative consequences of stress.

Maladaptive Coping Strategies

Smoking

Individuals choose to smoke often because of having friends who smoke, seeing a family member smoke and seeing it portrayed in the media. They then continue to smoke because of its ability to relieve anxiety, to reduce boredom, to provide pleasure, or to increase concentration (Baig, et al., 2016). These motivations may come because of the effects that smoking has on the brain. Cigarettes contain nicotine, which binds to the acetylcholine (ACh) receptors in the brain. These receptors are excitatory or inhibitory sites in the brain related to the parasympathetic nervous system, which often deals with rest. When nicotine binds to ACh receptors, it mimics the excitatory property of these receptors leading to an increase in heart rate and attentiveness (Watson & Breedlove, 2016).

Despite these perceived positive consequences from smoking, it ultimately has negative effects. Smoking often correlates with stress. In a study of college women, smokers scored significantly higher in mean perceived stress score (Perceived Stress

Scale (PSS) M=20.6) than those who did not smoke (PSS M= 17.8) (Mackey, McKinney, & Tavakoli, 2008). However, in multivariate logistic regression analysis, stress did not show a significant association with smoking (Mackey, McKinney, & Tavakoli, 2008). Despite this, the researchers stated that because of the significant mean PSS score difference, non-smoking college women may be at risk for beginning to smoke if they are experiencing high volumes of stress (Mackey, McKinney, & Tavakoli, 2008). This may be because high stress has been associated with a lower ability to avoid stress-induced smoking (Ng & Jeffery, 2003). Additionally, lower physical activity was found to be predictive of smoking (Mackey, McKinney, & Tavakoli, 2008). As mentioned earlier, physical activity or exercise acts as an effective method of coping with stress (Cairney, Faulkner, Kwan, & Veldhuizen, 2014). Higher levels of stress associate with being a smoker, increased rates of smoking, and a decrease in one's self-efficacy regarding refraining from smoking and quitting smoking permanently. As stress relates to cancer and heart disease, smoking could be a possible mediator between stress and these two illnesses (Ng & Jeffery, 2003). These findings show that smoking acts as a maladaptive coping strategy as it does not effectively help students deal with their stress and may increase their risk for life threatening diseases. Also, because of the association between lower levels of physical activity and smoking, this may demonstrate a possible correlation between exercise and smoking which could be an important factor affecting quality of life.

Smoking has also been positively correlated with depression and anxiety (Kulsoom & Afsar, 2015). In a survey of students at a Saudi Arabian university, those who smoked exhibited higher baseline levels of stress, depression, and anxiety (Kulsoom

& Afsar, 2015). This finding is crucial as it demonstrates the negative psychological effects that correlate with smoking which per Kulsoom and Afsar (2015); include not only stress, but also common occurring psychological disorders often correlated with stress. The findings of Kulsoom and Afsar (2015) also provide a clue into a certain confounding variable, the period in the semester in which the data were collected, that should be considered when studying coping strategies among college students. This study looked at the stress levels of students prior to and after a major exam. During midterm and final exam periods, the data were affected by the heightened stress and anxiety that naturally comes from impending examinations (Kulsoom & Afsar, 2015). This shows that future research needs to be done on this coping method particularly among students to see if these levels of stress among smokers holds true at less stressful times in a semester.

Based on the research described above, future investigations regarding this maladaptive coping mechanism should look at smoking behaviors and whether they are mediated by gender, exercise, and situational stress. Additionally, with this research, there is a debate in the literature whether smoking truly acts as a stress reliever. As quitting smoking was associated with a reduction in stress, anxiety and depression and a better quality of life in comparison with a continuation of smoking, it should be further researched to see if smoking truly acts as a stress reliever or as a behavior that ultimately increases what the user is trying to reduce, stress (Taylor et al., 2014).

Alcohol

Alcohol is often a depressant substance utilized when coping with stress. However, this commonly used coping method does not effectively reduce stress and

boost quality of life. In a study of adolescents from various countries, Stevanovic, et al. (2015) found a negative correlation between alcohol use and quality of life. As previously mentioned, quality of life negatively correlates with high levels of stress (Alleyne, Alleyne, & Greenidge, 2010). As such, alcohol use found among adolescents demonstrates the maladaptive qualities of this coping strategy as it results in detrimental consequences to the functioning of students academically, emotionally and physically. Additionally, social functioning was found to be lower particularly among adolescent males who use alcohol coupled with drugs (Stevanovic, et al., 2015). It is possible that this result may hold true among college students and older individuals. This also suggests that there may be a negative correlation between stress-modulated drinking and lower quality of life.

Previous research also looked at the gender differences of alcohol use and other maladaptive coping strategies in conjunction with the depressive symptoms. Pedrelli, et al. (2013) examined the irritability item from the Beck Depression Inventory (BDI) and found that among depressed women, irritability correlated with greater levels of anxiety. However, for depressed men, it correlated with the increased chances of taking part in “compulsive use of alcohol, illicit drug use and prescription drug use” (Pedrelli, et al., 2013, 953). These findings reveal a crucial aspect of this maladaptive coping strategy, such that men who experience this specific symptom of depression have a greater potential to resort to alcohol use as a coping mechanism. This association between irritability and compulsive drinking also demonstrates a possible predictive quality between alcohol consumption and lower quality of life (Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015).

However, when considering the above-mentioned research, the findings of Woolman, Becker, and Klanecky, (2015) should be acknowledged. In their study on college students, particularly those experiencing PTSD, academic stress did not relate with drinking alcohol as a coping mechanism without the presence of PTSD, especially avoidance symptoms. This research is important as it demonstrates that there may be some factors mediating the relationship between alcoholic consumption and stress. These findings are also significant, as it does not exhibit a direct relationship between drinking and academic stress.

Biological and genetic factors need to also be considered as factors establishing alcohol use as a coping method. Researchers found that elevated cortisol levels correlated with the risk of drinking to deal with life problems (Ceballos, Sharma, Patterson, Graham, & Howard, 2015). It was also found that a history of familial alcohol abuse disorder and the age of first drinking alcohol were responsible for 15% of the variance in brain-derived neurotrophic factors impacting stress-related drinking (Sharma, Graham, Rohde, & Ceballos, 2016). This research is important as it presents some reasoning for biological and genetic factors to be considered when explaining why some students may resort to alcohol consumption to cope with stress.

Similar to smoking, the directionality between coping with stress and alcohol use should be considered, as there is a debate between which comes first. Some researchers have found alcohol consumption is affected by stress levels, while others have found that alcohol consumption leads to stress (see Meyer, Long, Fanselow, & Spigelman, 2013; see Angkaw, 2015). This research is important as it shows that the cause and effect

relationship is still unclear between alcohol consumption and stress and needs to be further explored.

Illicit Substance Use

Illicit drug use has also been reported as a method of coping with stress. In 2015, an estimated 27.1 million individuals ages 12 and older (10.1% of the American population) reported using illicit drugs in the past 30 days. Of these individuals, 22.1 million reported cannabis or marijuana use and 3.8 million reported misuse of prescription pain relieving medications. Additionally, 0.5% of Americans age 12 and older used hallucinogens, 0.2% used inhalants, and 0.3% used methamphetamines (Center for Behavioral Health Statistics and Quality (CBHSQ), 2016). Despite the low prevalence of use of these substances, it still needs to be considered in this discussion. Substance use among adolescents has predicted lower quality of life especially among older adolescent males, those with lower socioeconomic status, and those with overt or explicit psychopathology (Stevanovic, et al., 2015).

As reported above, cannabis is the most prevalently used illicit drug (CBHSQ, 2016). Previous research demonstrates its negative effects on its users. Lower grade point average (GPA) levels correlated with higher levels of cannabis use presenting a potentially detrimental effect of marijuana use on academic performance (Martinez, Roth, Johnson & Jones, 2015). Cannabis also negatively impacts psychological well-being, as there is an association between use of the substance and symptoms of anxiety and depression in young adults (Hayatbakhsh, Najman, Jamrozik, Mamun, Alati, & Bor, 2007). Frequent marijuana use reportedly predicts the onset of bipolar disorder and the decline in mental health (Cogle, Hakes, Macatee, Chavarria, & Zvolensky, 2015). This

is particularly true with the manic symptoms of bipolar disorder (Henquet et al., 2006). Cannabis use additionally predicts the start of panic disorder comorbid with agoraphobia and social phobia (Cougler, Hakes, Macatee, Chavarria, & Zvolensky, 2015). From these findings, it is seen that because of cannabis, it has a negative effect on academic performance and is predictive of mental health challenges. As other researchers have found that psychological disorders are correlated with lower quality of life, there is a potential for a significant association between cannabis use with lower quality of life (Alleyne, Alleyne, & Greenidge, 2010; Unalan, Celikten, Soyuer, & Ozturk, 2008; Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015).

Researchers have also examined the misuse of prescription drugs and its relationship with quality of life. Misuse of prescription drugs is associated with risk for use of illicit substances and lower levels of academic performance (Schepis & Krishnan-Sarin, 2008; McCabe, Knight, Teter, & Wechsler, 2005). Additionally, prescription-drug misuse is associated with risks for symptoms of psychological disorders (Martins, Fenton, Keyes, Blanco, Zhu & Storr, 2012). As psychological disorders are associated with lower quality of life, non-medicinal use of prescription drugs is also predictive of lower quality of life (Alleyne, Alleyne, & Greenidge, 2010; Unalan, Celikten, Soyuer, & Ozturk, 2008; Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015; Schepis & Hakes, 2014). These findings display the detrimental consequences from illicit drug use. It also demonstrates that illicit drug use as a coping method may negatively affect a student not only academically, but also health-wise as non-medicinal use of prescription medication may lead to the use of other illicit drugs leading to greater risk for addiction and dependence.

Finally, methamphetamine use significantly affects one's quality of life as it leads to serious health risks to the user (Peterson, Geiger, Zittle, Billings, & Pullen, 2013). Additionally, researchers found that the use of methamphetamine negatively affects not only the user, but also those around them as well (Peterson, Geiger, Zittle, Billings, & Pullen, 2013). Furthermore, considering the findings of Peterson and his colleagues (2013), social support and substance use may have a significant negative correlation. These findings demonstrate the role of maladaptive coping that use of methamphetamines might play as it acts as a negative factor in quality of life. This possible correlation might also show an area to further research on the relationship between stress management and coping as drug use might possibly lead to more stress due to the correlation with increased risk for developing psychological disorders (Alleyne, Alleyne, & Greenidge, 2010; Unalan, Celikten, Soyuer, & Ozturk, 2008; Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015).

Eating Disorder Behaviors

Another maladaptive coping mechanism is engaging in eating disorder behaviors. These disorders are characterized by anorexic and bulimic phenotypes which display symptoms of restricting food intake and a fear of gaining weight or excessive overeating coupled with a loss of control (Collier & Treasure, 2004; Palavras, Morgan, Borges, Claudino, & Hay, 2013). To better understand the ideas behind the eating disorders developing, research by Sanftner (2011) found that students, particularly women, experienced lower levels of quality of life because of factors like body dissatisfaction, body objectification, and restraint on eating (Sanftner, 2011). Her research also found gender differences regarding eating disorder behaviors as women had higher levels of

psychosocial issues and higher levels of risk for developing eating disorders. (In understanding this study, it is important to note that body dissatisfaction and negative views of one's body is different from clinically diagnosed eating disorders). Also, it was postulated that body dissatisfaction does not lower quality of life unless it is coupled with eating disorders (Sanftner, 2011). These findings are important as they demonstrate that there is a gender difference in the presence of this maladaptive coping strategy. Additionally, Sanftner (2011) defined dissatisfaction of one's body as a characterizing factor of eating disorders. As this may be comorbid with the distress associated with Body Dysmorphic Disorder (BDD), it is possible that these eating disorder behaviors are predictive of depressive-like symptoms (American Psychiatric Association, 2013, in Barlow & Durand, 2015).

Despite the gender differences found by Sanftner (2011), there is additional research on eating disorder behaviors that may be important to consider. Reyes-Rodríguez, et al. (2011), in a study among students at a university in Puerto Rico, found that Latino males are often affected by eating disorders. They also concluded that this occurrence was more frequent in Latino men than white men (Reyes-Rodríguez, et al., 2011). This research holds significance as it shows a possible ethnic difference in these coping mechanisms among men. Additionally, eating disorders have been associated with depression and suicidal tendencies (Franko & Keel, 2006). This holds importance as it shows the potential damage that may come from coping with stress in a maladaptive manner.

Unhealthy Eating

Another maladaptive coping strategy includes unhealthy eating, which refers specifically to eating sweets and salty snacks and drinking highly caffeinated and sugary beverages. This may be one of the more common practices. Previous research found that greater perceived stress correlates with greater consumption of unhealthy foods (Errisuriz, Pasch, & Perry, 2016). Additionally, many of the unhealthy foods consumed contain caffeine and are energy dense to supply quick sources of energy (Errisuriz, Pasch, & Perry, 2016). Hudd et al, (2000) identified that students experiencing stress are more prone to these unhealthy eating behaviors, specifically females and non-athletes. Furthermore, other research correlated unhealthy eating with stress as a maladaptive coping mechanism among Hispanic and African-American school children (Jenkins, Rew, & Sternglanz, 2005). Hudd et al., (2000) also demonstrated that more research needs be conducted to determine possible reasons for the gender differences in the use of unhealthy eating as a maladaptive coping method.

Conclusion

In summary, adaptive coping strategies have been correlated with lower instances of depression, anxiety, and stress, all of which relate to a better quality of life. Likewise, maladaptive coping strategies have correlated with higher depression, anxiety, and stress, associating with poorer quality of life. From this literature review, there is a gap in the research particularly identifying the most effective adaptive coping strategies associated with better quality of life and the maladaptive coping strategies that negatively affect individuals the most.

The current study examines how specific styles of coping, mental health status, and perceived stress correlate with a person's quality of life. Quality of life refers to one's life satisfaction based on societal beliefs and expectations and individual objectives and desires (Mitchison, Dawson, Hand, Mond, & Hay, 2016). The above-mentioned review of the literature examined research regarding the effects of coping strategies on stress, anxiety and depression, which all have been linked to lower quality of life (Alleyne, Alleyne, & Greenidge, 2010; Unalan, Celikten, Soyuer, & Ozturk, 2008; Brandy, Penckofer, Solari-Twadell, & Velsor-Friedrich, 2015). In this study, it was hypothesized that those who more frequently utilize maladaptive coping strategies will report a lower quality of life than those who more frequently employ adaptive coping methods. Therefore, it was further postulated that those who more frequently use adaptive coping methods would report a higher level of life satisfaction.

The specific hypotheses were as follows:

Hypothesis 1: Those who are more frequently engaged in social support and spirituality will report the highest levels of life satisfaction, and transitively, higher quality of life. Additionally, exercise and healthy eating will correlate with better quality of life. In contrast, a more frequent use of maladaptive coping strategies will correlate with lower quality of life.

Hypothesis 2: Higher levels of depression, anxiety and somatization will be predictive of lower quality of life.

Hypothesis 3: Higher levels of stress will be predictive of lower quality of life.

III. METHOD

Participants

There were 500 participants in this study. The participants included undergraduate students in psychology classes at Texas State University. Students in PSY1300 participated as part of a course requirement and students in other courses earned extra credit for participation. All participants were asked to provide consent prior to taking the IRB approved survey.

Design

To study this relationship between coping strategies for academic stress and psychological factors affecting life satisfaction and a student's quality of life, a survey using several validated questionnaires and original questions was created by the researcher. The survey aimed to examine the relationship between the predictors which came from five different categories (demographics, health behaviors, interpersonal factors, intrapersonal factors and psychological factors), and the outcome variable (a student's quality of life). To measure the predictors, questions were posed regarding demographics, health behaviors (exercise, nutrition, drug and alcohol use, and eating disorder related actions), interpersonal factors affecting quality of life (academic maladaptive and adaptive coping strategies, and social support), intrapersonal factors affecting quality of life (spiritual growth) and psychological factors influencing quality of life (perceived stress, depression, anxiety and somatization).

Materials

Demographics

Demographic information included gender, age, race/ethnicity (White, Black or African-American, Hispanic/Latino, Other (Asian-American, Polynesian/Islander, Native American, Multi-racial, etc.)), year in school, grade point average, employment status (full time, part time, unemployed), relationship status (single, in a relationship but not married, married), etc.

Health Behaviors

Health behaviors were measured with the Health-Promoting Lifestyle Profile II (HPLP2) (Walker, Sechrist, & Pender, 1987). From this questionnaire, the subscales Physical Activity (8-item measurement) and Nutrition (9-item measurement) assessed the activity and eating habits of the participants, each measured on a 4-point scale from Never to Routinely. Example statements included: *Follow a planned exercise program;* and *Choose a diet low in fat, saturated fat, and cholesterol.* With these measures, higher mean scores meant that participants had higher levels of involvement in physical activity and nutritional habits.

Use of the Eating Attitudes Test (a 30-item questionnaire; EAT26; adapted from Garner, Olmsted, Bohr, & Garfinkel, 1982) assessed the potential eating disorder behaviors present during stress coping. Each item was measured on a 6-point Likert scale from Never to Always. An example statement is: *Feel extremely guilty after eating.* The EAT26 also had four questions measured on a binary scale (yes or no). An example of these questions was: *Ever used laxatives, diet pills or diuretics (water pills) to control*

your weight or shape? Higher scores on the first twenty-six corresponds with higher prevalence of eating-disorder behaviors.

Substance use was assessed through the administration of the Adolescent Drug Use Measure (ADUM) (a 7-item measurement; Greene, Krcmar, Walters, Rubin & Hale, 2000) to measure how frequently the participants use illicit drugs (marijuana, uppers, downers, LSD, tranquilizers, opiates and cocaine/crack). The items in this assessment measured on a 6-point Likert scale asked participants to report substance use in the previous 90 days on a scale from Never to more than 10 times. Higher scores for each item in this measurement represented a higher frequency of use of that substance. An example question was: *In the last 90 days, how many times have you used the following?: marijuana.* The Drug Use Disorder Questionnaire (DUD) (a 12-item measurement; Scherer, Furr-Holden, & Voas, 2013) measured the abuse and dependence of the above-mentioned substances in the ADUM. This measurement assessed these factors using a binary scale of yes or no. An example question from this questionnaire was: *In the past year, did your use interfere with taking care of your home or family or cause you problems at work or school?* The more items an individual responded yes to, the more likely they were to have a dependency and/or abuse of the substances examined above. With these measurements, if the participants selected never for all the substances mentioned in the ADUM, then they were sent to the next section of the survey.

Alcohol use was measured by the Alcohol Consumption Measure (ACM) (a 3-item measurement; Lac, Crano, Berger, & Alvaro, 2013). These questions evaluated consumption using an open-answer format. An example question is: *On how many days in the past 30 days did you drink?* Use of this assessment determined the frequency with

which the participants consume alcoholic beverages. Higher scores on these items correlated with higher alcohol consumption. Further assessment regarding alcohol use was done through the alcohol abuse subscale of the Patient Health Questionnaire (PHQ) (a 6-item measurement; Spitzer, Williams, Kroenke, 1999). These questions used a binary scale of yes or no. An example question is: *Have any of the following happened to you more than once in the last 6 months?: You had a problem getting along with other people while you were drinking.* More responses of yes on these items increased the likelihood of a participant meeting criteria for alcohol abuse. In using these measurements, if a participant answered no to the question, “Do you ever drink alcohol (including beer or wine)?,” then were sent to the next section of the survey.

Interpersonal Factors

The Social Support from Parents and Friends Scales (SSPFS), an 11-item questionnaire, evaluated a participant’s levels of received parental and peer support (Richards & Branch, 2012). These items, scored on a 4-point Likert scale from Strongly Disagree to Strongly Agree, explored concepts such as: *My parents often ask me what I am doing in school.* Higher overall scores on this scale corresponded with higher levels of received social support.

Finally, the Academic Coping Strategies Scale (ACSS), a 34-item questionnaire, examined how frequently participants chose adaptive and maladaptive coping strategies when responding to academic setbacks chosen when responding to (Sullivan, 2010). This measurement assessed each item on a 5-point Likert scale from Never to Always. The following was an example of one of the items: *Think about a time when you received a low grade on an important exam, significantly lower than what you usually get. On the*

items below, please rate how often you have used the following strategies when face with the situation described above, by selecting one of the answers to the right of each item.;

Creating a specific plan of action for solving the problem.

Intrapersonal Factors

Intrapersonal factors were assessed using the Spiritual Growth subscale (a 9-item measurement) of the HPLP2 to measured spiritual coping strategies (Walker, Sechrist, & Pender, 1987). These statements, measured on a 4-point scale from Never to Routinely, included items like: *Feel I am growing and changing in positive ways*. Higher mean scores meant that the participant partook of more spiritual coping behaviors.

Psychological Factors

The Perceived Stress Scale (PSS) (a 9-item measurement) assessed the participants' levels of perceived stress by evaluating participants' experiences during the previous month (Cohen, Kamarck, & Mermelstein, 1983). Items on the PSS were measured on a 4-point Likert scale ranging from Never to Very Often. An example item was: *In the last month, how often have you been upset because of something that happened unexpectedly?* Higher scores on this measurement corresponded with higher levels of perceived stress.

Psychological factors were additionally measured by 4 subscales from the PHQ (Spitzer, Williams, Kroenke, 1999). These PHQ subscales assessed the participants' frequency of panic, anxious, depressive, and somatic symptoms (Spitzer, et al., 1999). This assessment was measured on a 3-4-point Likert scale. An example 3-point scale question measured from Not bothered to Bothered a lot was: *During the last 4 weeks, how much have you been bothered by any of the following problems?: Stomach pain.*

Higher scores on these scales meant the participant had a higher likelihood of meeting criteria for these disorders. The only exception to this were questions in the PHQ panic section in a binary format (yes or no) similar to the alcohol subscale PHQ questions asking questions such as: *Think about your last bad anxiety attack: Did you sweat?* In this measurement, the more positive responses a participant gave, the more likely they would be to meet criteria for panic disorder.

Additionally, for the panic and anxiety sections, the participants reported (yes or no) whether an anxiety attack occurred in the last 4 weeks or if an individual experienced feeling of nervousness, anxiety or worry in excessive amounts in the last 4 weeks. If the participant answered yes to these questions, they then answered the rest of the questions. If not, they were sent to the next section.

Frequency of Use of Coping Strategies

After asking about each of the coping strategies (except academic coping), adaptive or maladaptive, the participants reported about how the frequency of these behaviors change when they experience stress. These questions, created by the author of the study, measured this change on a 7-point Likert scale from Decreases Greatly to Increases Greatly. An example of these questions was: *Please answer the following: How do these behaviors (Physical activity behaviors in this case) change as I am experiencing stress?* The higher the score on each item, the more likely it was that the frequency of the participant's engagement in this behavior during stress situations was to change.

Participants also ranked certain coping mechanisms (listening to music, drug use, talking to family or friends, drinking alcohol, physical activity, smoking, overeating, meditation, eating junk food, and religious/spiritual activities, social media, and

electronic entertainment) on the extent to which they engaged in these activities when they experienced stress. The participants ranked their involvement in these activities on a scale of 0(not at all) to 10 (all the time). An example question was: *To what extent do you participate in the following activities when you are experiencing stress?: listen to music.* Higher scores on each item represented higher involvement in that specific behavior during stressful situations.

Outcome Variable

Lastly, the outcome variable, a student's quality of life, was quantified by the Student Life Satisfaction Scale (SLSS), a 9-item questionnaire asking about a student's impressions regarding their life (Huebner, 1991). The SLSS utilized a 4-point Likert scale from Never to Almost Always to measure life satisfaction. An example question is: *How often does this describe my feelings? My life is just right.* Higher scores on this measurement corresponded with higher levels of perceived life satisfaction.

Procedure

This survey took approximately 45 minutes. The procedure began with the participants reading the consent form and accepting or rejecting the terms explained in the form. Then, the participants answered the demographics questions. The participants were then presented the following measures (not in this specific order): the exercise subscale of the HPLP2; the PSS; the Nutrition subscale of HPLP2; the Spiritual Growth subscale of the HPLP2; the somatization subscale of the PHQ; the depression subscale of the PHQ; the EAT26; the panic subscale of the PHQ; the ADUM; the anxiety subscale of the PHQ; the SSPFS; the alcohol abuse subscale of the PHQ; the Alcohol Consumption Measure; the ranking of participation; the ACSS; and the SLSS.

Statistical Analysis

The data were examined for missing data and outliers. For the univariate analyses, the scores of the quality of life outcome variable were divided into three groups based on the participants' SLSS scores: Low quality of life (score of 9-18), Moderate quality of life (score of 19-27) and High quality of life (score of 28-36). Demographic variables, the axis I variables, perceived stress, and the various coping strategies were compared between the three QoL groups. The analyses to test these relationships included one-way ANOVAs for continuous variables and chi-square tests of independence for categorical variables. Appropriate post-hoc comparisons were conducted for significant findings. These post-hoc comparisons were either a Tukey or Dunnett T3 post-hoc test. Following these univariate measurements, two separate multinomial logistic regression models were developed including all significant variables in the univariate level. In the first model, the Moderate QoL group was compared to the Low QoL group, and in the second model, the High QoL group was compared to the Low QoL group. By using two separate models, this allowed for an analysis of specific behaviors and their frequency of engagement among individuals at the low end of the spectrum compared to both those with slightly higher levels of QoL (Moderate group) and with those with high levels of QoL (High group). Doing so provided a clearer picture of the factors contributing to slight and large improvements in QoL. For all analyses, the alpha level was set at $p = .05$.

IV. RESULTS

Five hundred (500) participants completed the survey created for the study. The data were initially analyzed and those who had excessive amounts of missing data were excluded from the univariate and multivariate analyses. Through this initial analysis, 60 participants were excluded due to missing data, meaning that the data of 440 participants were examined in the final analysis. Of these participants, there were 322 females (73.3%) and 117 males (26.7%). The participants' mean age was 20.67 (SD=2.94). Of the participants who reported their ethnicity, 176 were White (40.1%), 54 were Black or African American (12.3%), 172 were Hispanic/Latino (39.2%) and 37 individuals classified themselves as Other (8.4%). Regarding their year in school, 125 were Freshman (28.5%), 116 were Sophomores (26.5%), 109 were Juniors (24.9%), and 88 were Seniors (20.1%). Their average GPA was 2.97. Two hundred forty-seven of the participants were single (56.1%), 178 were in a relationship but were not married (40.5%) and 15 were married (3.4%). Finally, regarding the participants' employment status, 38 participants were working full-time (8.6%), 197 were working part-time (44.8%) and 205 were not working (46.6%).

Following initial data cleaning, the data were then analyzed. First, the univariate analyses were performed to compare the measured factors based on the Quality of Life (QoL) groups (Low, Moderate, and High). The categories included: demographic variables, adaptive and maladaptive coping behaviors, psychological factors, the extent to which specific coping mechanism use changed during an experience of stress, and the extent to which specific coping mechanisms were utilized during an experience of stress.

Univariate Analyses

Demographic Variables

There was a marginally significant difference regarding age between the three QoL groups such that those in the Low QoL group were younger and those in the Moderate and High groups were older ($F(2,424) = 2.81, p = .061$). Gender also resulted with a marginally significant association as there was a higher percentage of females in the Low QoL group ($\chi^2(2) = 5.76, p = .056$). Additionally, a decreasing trend of the percentage of females was seen between the Low QoL group compared to the Moderate and the High QoL group. Significant differences were however found regarding ethnicity and the QoL groups such that there was a higher percentage of individuals from the Other Ethnicity group in the Low QoL group as compared with the Moderate and High QoL groups ($\chi^2(6) = 16.39, p = .011$). However, when the Other Ethnicity group was removed from the analysis, ethnicity was not significant. All the other demographic variables (year in school, employment status, marital status, GPA) were not significantly different between the quality of life groups (see Table 1).

Adaptive and Maladaptive Coping Behaviors

Looking at the adaptive and maladaptive coping behaviors, the scores on the EAT26 significantly correlated with the QoL classification such that there was a higher percentage of those meeting criteria for an eating disorder in the Low QoL group as compared to the Moderate and High QoL groups ($\chi^2(2) = 15.87, p < .001$). In measuring substance use, only opiate use based on the ADUM significantly associated with which QoL group a participant fell into as a higher percentage of opiate users were in the Low

QoL group as compared to the High QoL group ($\chi^2 (2) = 6.66, p=.027$; See other results in Table 2).

For the DUD scale, both the Substance Abuse and Substance Dependence measurements were significantly different between the QoL groups, where there was a downward trend in percentage of group members meeting dependence and abuse criteria going from the Low QoL to High QoL groups (Abuse: $\chi^2 (2) = 6.50, p=.039$; Dependence: $\chi^2 (2) = 9.31, p=.010$).

For the HPLP2 Physical Activity Score, a significant association was found between these scores and the QoL group classification as the Low QoL group had lower mean levels of physical activity than those in the Moderate and High QoL groups ($F (2, 394) = 15.62, p < .001$). The Nutrition and Spiritual Growth scores were also significantly different, such that lower levels of nutrition and spiritual growth were reported on average by those in the Low QoL group as compared with those in the other two groups (Nutrition= $F (2,411) = 5.33, p=.005$; Spiritual Growth= $F (2,417) = 109.13, p < .001$). For Nutrition and QoL, the comparisons between Low and Moderate groups ($p=.013$) and the Low and High groups ($p=.004$) resulted in significant relationships but a non-significant relationship when comparing the Moderate group to the High group ($p=.692$). For the Spiritual Growth and QoL group relationship, the association between the Low and Moderate, Low and High, and Moderate and High groups were all significant ($p < .001$ for all three).

In looking at the SSPFS scores, the parental and peer subscales, along with a total composite score, were assessed. It was found that all three of these scales were significantly associated with QoL such that those in the High QoL group had higher

scores for all three SSPFS scales as compared to those in the Low and Moderate QoL groups (Total= $F(2,418) = 39.17, p < .001$; Parent= $F(2,421) = 32.18, p < .001$; Peers= $F(2,424) = 27.40, p < .001$). In the post-hoc examinations comparing these three scales and the QoL groups, significant differences resulted between the Low and High, Low and Moderate, and Moderate and High groups for all of the scores (Total and Parents= all comparisons= $p < .001$; Peers= Low, Moderate= $p = .001$, Low, High and Moderate, High= $p < .001$).

For the ACSS, the items were divided into three scores: the approach behaviors score, the avoidance behaviors score, and the social support-related behaviors score. Higher scores for each of these different scores represented a higher prevalence of the corresponding type of behavior. The approach-related behavior factor ($F(2,410) = 13.34, p < .001$) displayed a positive significant association with QoL group classification as the mean approach scores were higher among those in the Moderate and High QoL groups compared to those in the Low group. A negative relationship resulted between avoidance scores and QoL as those in the Low QoL group had higher scores than those in the Moderate and High groups ($F(2,418) = 13.78, p < .001$). In a post-hoc comparison of these significant relationships, the Low-Moderate comparison was not significant for the approach score but the other two were (both $p < .001$). All three of the comparisons were significant for the avoidance score (Low-Moderate = $p = .015$; Low-High = $p < .001$; Moderate-High = $p = .001$). The comparisons of the social support scores between the QoL groups resulted in a marginally significant association but trended toward comparatively higher scores among the Moderate and High QoL group members ($F(2,426) = 2.89, p = .057$).

Finally, the alcohol-related measures used for this study, the PHQ Alcohol Consumption Subscale and the PHQ Alcohol Abuse Subscale, did not show significant differences between the QoL groups (Consumption= $\chi^2 (2) = .665, p = .717$; Abuse= $\chi^2 (2) = 1.594, p = .451$).

Psychological Factors

All the psychological factor measures resulted in significant associations with the group classification of the participant based on their SLSS score. Perceived stress, as measured by the PSS, was significantly different between the QoL groups, such that higher mean stress levels were associated with the Low QoL group, and the lowest PSS scores were associated with the High QoL group ($p < .001$). These results numerically display a downward trend of mean perceived stress and the percentage of those meeting criteria for these disorders as QoL increases. To determine the specific significant relationships between the groups for the PSS scores, a post-hoc test was run and presented significant relationships for all three of the comparisons (all $p < .001$).

The PHQ Somatization, Major Depressive Disorder, Anxiety Disorder, and Panic Disorder subscales were all significant (all $ps \leq .001$) such that there is a higher proportion of individuals meeting the criteria for these diagnoses in the Low QoL group, with a lower proportion in the Moderate and High QoL groups (See Table 3).

Change in Behavior Frequency During Stress

In analyzing the change in frequency of certain coping mechanisms, the responses for questions asking about a decrease or increase in a behavior were recoded into three groups: Decrease, Stay the Same, and Increase. The questions asking if a participant agreed or disagreed with a statement were recoded into three groups as well: Disagree,

Neither Agree or Disagree, and Agree. After analysis of the responses of the participants using these new recoded categories, the change in one's physical activity significantly associated with QoL group membership such that the percentage of group members increasing their physical activity during stressful times trended upward as QoL increased ($\chi^2 (4) = 12.11, p = .017$). Then to measure the eating behaviors of individuals during times of stress, it was asked if their eating behaviors changed for better or worse. It was found that when these behaviors change for the worst, there was a significant association between these responses and the QoL classification of the participant as the percentage of those who agreed with this statement decreased as QoL went up. ($\chi^2 (4) = 13.14, p = .011$). Finally, social support reliance on parents was significantly associated with the QoL group classifications such that the percentage of those seeing an increase in dependence on parental social support positively related with QoL ($\chi^2 (4) = 10.19, p = .037$).

Extent to Which Behaviors Were Relied on During Stress

To analyze the difference in the groups regarding their extent to which they participate in certain coping mechanisms during stress, a comparison of the mean group scores for different coping strategies was made. The extent to which participants Talk[ed] with Family or Friends had a positive significant association with QoL classification group such that those in the Moderate and High QoL groups had higher mean scores than those in the Low QoL group ($F (2,424) = 5.42, p = .005$). After conducting a post-hoc test, it was determined that the Low and High ($p = .012$) and Moderate and High relationships ($p = .020$) were significant. Additionally, Physical Activity ($F (2,424) = 10.56, p < .001$) also resulted in a positive association with QoL as those in the Low QoL group had lower mean scores than those in the other two groups.

Overeating ($F(2,424) = 10.70, p < .001$), Eating Junk Food ($F(2,424) = 6.63, p = .001$), Use of Social Media ($F(2,424) = 3.67, p = .026$), and Electronic Entertainment ($F(4,426) = 5.57, p = .004$) however were all negatively associated with the QoL groups as those in the Low QoL group reported a higher mean propensity to use these coping mechanisms while experiencing stress than those in the Moderate and High QoL groups (See Table 5). Based on the post-hoc examinations conducted, Physical Activity was significant in the relationships between the Low and Moderate groups and the Low and High groups (both $p < .001$). For overeating, all three of the relationships were significantly different based on the post-hoc test that was conducted (Low-Moderate = $p = .027$, Low-High = $p < .001$, Moderate-High = $p = .018$). Another post-hoc comparison revealed that Low and Moderate groups ($p = .007$) and the Low and High groups ($p = .001$) were significantly different for eating junk food. For using social media, only the Low and High group relationship was significant ($p = .029$). For electronic entertainment, the Low and High groups ($p = .032$) and the Moderate and High groups ($p = .006$) were significant. Finally, Alcohol Use ($F(2,424) = 2.75, p = .065$) had a marginally significant relationship with the QoL group classification as participants' alcohol use scores decreased as their QoL increased (See Table 5).

Multivariate Analyses

Following the univariate analysis, the variables showing a significant difference in means or proportions in the comparison of the three QoL groups were included in the multivariate analysis. This multivariate analysis was conducted to determine which variables most associated with the quality of life groups. The analysis used two models, one comparing the Low and Moderate groups and the other comparing the Low and High

groups, each with Low QoL as the reference group. The following factors were included in these comparisons: Gender, Ethnicity, the ACSS approach and avoidance scores, the HPLP2 Physical Activity, Nutrition, and Spiritual Growth scores, the SSPFS parent and peer scores, the EAT criteria, the DUD substance dependence criteria, the PSS total score, and the PHQ anxiety criteria. In the selection of the factors included in these multivariate analyses, the DUD substance abuse criteria was not included due its common comorbidity with substance dependence. Due to comorbidity, the somatization, panic, and major depressive disorder classifications from the PHQ were not included.

In the comparison of the Low and Moderate QoL groups, the HPLP2 Physical Activity ($B=1.20$, $X^2= 4.68$, $p=.031$) was found to be significant such that those with higher levels of physical activity were more associated with Moderate QoL. The Spiritual Growth ($B=.25$, $X^2= 12.92$, $p<.001$) also resulted in a significant association where higher levels of spiritual growth were associated with Moderate QoL. The SSPFS parent score ($B=.29$, $X^2= 11.46$, $p=.001$) had a significantly positive association with the Moderate QoL group. Finally, the PSS total score ($B=-.23$, $X^2= 12.97$, $p<.001$) had a negative significant association with QoL such that higher levels of perceived stress associated with the Low QoL group (See Table 6).

In the comparison of the Low and High QoL groups, the HPLP2 Spiritual Growth score had a positive significant relationship with QoL such that higher levels of spiritual growth associated with the High QoL group ($B=.51$, $X^2= 39.33$, $p<.001$). The SSPFS parent score also resulted in a positive significant association with QoL in that higher levels of parental social support associated with the High QoL group ($B=.36$, $X^2= 12.41$, $p=.001$). The PSS total score however ($B=-.35$, $X^2= 23.46$, $p<.001$) had negative

significant association with QoL where higher levels of perceived stress related to the Low QoL group. While its relationship with QoL did not reach the $p=.05$ significance level, the HPLP2 Physical Activity score ($B=1.19$, $X^2= 3.67$, $p=.055$), resulted as marginally associated with the outcome variable such that those who report higher levels of physical activity trended towards higher QoL (See Table 7).

V. DISCUSSION

In this study, the overall objective was to determine which factors were most associated with overall quality of life. Through the univariate tests, comparisons were conducted to see if any significant differences existed regarding demographic and psychosocial variables between the three QoL groups. The multivariate tests identified the key variables significant on the univariate level that significantly associated with QoL. Upon examining the results obtained through the analysis of the collected data, the following conclusions can be made.

Demographics

First, regarding demographic factors, ethnicity was the only factor with a significant association with QoL group classification. The largest disparity of percentages between the three groups was found in the Other group between the Low QoL group and the Moderate QoL and the High QoL group such that there was a higher percentage of individuals in the Other group in the Low QoL compared to the Moderate and High QoL groups. These findings contradict previous research as a study of students of different racial backgrounds found that African-American, Latino and Caucasian students were more likely to experience lower QoL due to depression (Luna & MacMillan, 2015). In this current study, this contradiction may have occurred due to the small number of individuals reporting this demographic characteristic. Additionally, when the Other group was removed, Ethnicity then had a non-significant association with individual and overall QoL. Because of these caveats, the findings regarding ethnicity are inconclusive and need to be further researched to determine if any specific ethnicities are more prone to specific

levels of QoL and what coping mechanisms and other factors might contribute to these possible differences (Luna & MacMillan, 2015).

Gender was marginally associated with the outcome variable on the univariate level. From the findings of this study, a higher percentage of female participants fell in the Low QoL group. This demonstrates that females may report lower QoL, a consistent finding with the research of Meade and Dowswell (2015) who found this to be true among Australian adolescents. This association between gender and QoL could potentially be due to social expectations and other physical health issues that females more commonly experience than males (Meade & Dowswell, 2015). However, because of the higher percentage of females in the current sample, replication of this study with a more gender equal sample needs to be conducted to confirm this possible association. Additionally, as the association was only marginally significant, possible replication with more participants could exhibit significant results consistent with previous research (See Meade & Dowswell, 2015).

While the univariate analysis demonstrated a trend that those who were in the low QoL group had a lower mean age than those in the moderate or high QoL group, these results showed only marginal significance. Previous literature examining the effects of age on quality of life demonstrated that longitudinally, older individuals who presented lower scores at baseline had lower scores than younger or middle-aged individuals (Kanesarajah, Waller, Whitty, & Mishra, 2017). However, these results were mediated by other factors including levels of education, quality of physical health, severity of substance and alcohol consumption and stress levels. In this Australian longitudinal study, because those who were in the older age group had experienced a decline in their

physical health as they aged, it is possible that this might explain their lower QoL. Considering these previous findings and the findings of this current study, the results of the current study demonstrate contradictory results from previous research. However, it should be noted that the population in question was college students, an age group with a limited amount of variability in age. Additionally, these marginally significant results could be explained by the fact that younger college age students may experience more depression and anxiety due to the stress of transitioning from home life to college life than those older students who are more established (Farrer, Gulliver, Bennett, Fassnacht, & Griffiths, 2016). However, this limits the generalizability of this correlation to the general population. As such, future research needs to further look at the association between age and QoL to confirm some of the previously found mediators in relationship to see if the previous findings are replicable (Kanesarajah, Waller, Whitty, & Mishra, 2017).

Hypothesis 1

Hypothesis 1 (H1) postulated that higher levels of social support would correlate with higher quality of life. In the univariate measurements, this held true in all three sub-measurements. Those in the high QoL group on average scored significantly higher on the SSPFS in all three sub-measurements than the low QoL group. It can be inferred from these results that individuals who have higher levels of social support tend to experience higher QoL. These findings support the findings of Zhang, Zhao, Lester, and Zhou (2014) who found that among students at a Chinese university, life satisfaction was positively associated with social support. In the multivariate analysis, only the SSPFS parent score significantly associated with overall QoL when comparing the Low QoL

group to the Moderate QoL group and when comparing the Low QoL group to the High QoL group. The possible explanation for this may be that as a large proportion of the participants were freshman, individuals who recently left home and are now living on their own for the first time, they could be more heavily relying on their parents for social support compared to their peers. Additionally, Xu, Xing, Yu, Chen, and Li (2015) concluded that individuals whose parents punish too frequently and whose mothers interfere in the lives of their children too often were associated with lower QoL. More research regarding the possible reasons why parent social support was found to significantly contribute to higher QoL is needed.

Second, H1 proposed that participants reporting higher levels of spirituality would report higher levels of life satisfaction. In the univariate analyses, it was found that based on the responses to the HPLP2 Spiritual Growth Subscale, once again the High QoL group showed higher levels of spiritual growth than those with Low QoL. These results demonstrate that higher levels of spirituality are associated with higher levels of QoL. This is consistent with previous research on college students examining the relationship between spirituality and depression. Those who had lower levels of spirituality experienced higher levels of depression, and thereby experienced lower QoL (Luna & MacMillan, 2015). Considering these findings, it is possible that the results found in this current study may be linked to depression in some way in that those who reported higher levels of spirituality may have been experiencing lower levels of depression than those reporting lower levels of spirituality. A potential reason may be that spirituality is associated with a sense of life meaning (Molcar & Stuempfig, 1988). This sense of meaning can conceivably act as a protector against depressive symptoms (Luna &

MacMillan, 2015). Additionally, because depressive levels act as a mediator between spirituality and QoL, it is possible that spirituality may be correlated with higher QoL as one or more adaptive factors may be act as possible mediator between spirituality and higher QoL. Further research needs to be conducted to confirm these postulations.

Other research looked at pleasure associated with a sense of curiosity, which links to individuals who hold a strong sense of life purpose (Kashdan & Steger, 2007). As a sense of meaning and purpose acts as a strong component, it is possible that the relationship between a sense of curiosity and QoL could be mediated by spiritual growth (Biccheri, Roussiau, & Mambet-Doué, 2016). Future research will be needed to examine this potential association.

Another postulation in H1 stated that more frequent exercise would be associated with higher QoL. Through the univariate comparisons, it was found that those in the High QoL group scored significantly higher than those in the Moderate and Low QoL groups on the HPLP2 Physical Activity subscale. In the multivariate analysis, this factor was shown to be significant in the comparison of the Low and Moderate QoL groups and marginally significant in the comparison of the Low and High QoL. These results are consistent with the findings of a review of the literature on this topic which concluded that in the general adult population, higher levels of physical activity associate with higher quality of life as higher QoL is associated with more physical functionality and vitality (Bize, Johnson, & Plotnikoff, 2007). This association could occur as physical activity and exercise frequently acts as a distraction from stress, which can assist with decreasing stress and increasing QoL (Cairney, Faulkner, Kwan & Veldhuizen, 2014). However, more research is needed to determine if specific exercise or forms of physical

activity lead to better quality of life than others (Heesch, van Gellecum, Burton, van Uffelen, & Brown, 2015).

H1 further postulated that healthy eating would also correlate with higher quality of life. In the univariate measures, those in the High QoL and Moderate QoL group scored significantly higher on the Nutrition subscale of the HPLP2 than those in the Low QoL group. From these findings, it can be inferred that those who have healthier eating habits will experience higher QoL. This holds consistent with previous research findings that those who eat healthier (in this case, more fruits and vegetables), are more likely to be happier, and experience higher life satisfaction (Rooney, McKinley, & Woodside, 2013). The reasoning may be three fold. First, when one eats fruits and vegetables, they consume essential vitamins such as Vitamin C, antioxidants, and B vitamins. These nutrients play an important role in increased production of dopamine and oxytocin which are essential in mood improvement and pleasure (Rao, Asha, Ramesh, & Rao, 2008; Conner, Brookie, Richardson, & Polak, 2015). Additionally, other healthy foods like meats and dairy products contain proteins created by amino acids crucial in the creation of the dopamine neurotransmitter (Rao, et al., 2008). As these nutrients from foods assist in improved production of these neurotransmitters, this may be partially why those with higher levels of nutrition experience higher levels of life satisfaction (Conner, Brookie, Richardson, & Polak, 2015). The last reason stems from a developmental perspective in that enjoyable and comfortable mealtime experiences at home in childhood is associated with eating a healthy and balanced diet in adulthood (Ainuki, Akamatsu, Hayashi, & Takemi, 2013). This is important as it shows the possible impact of childhood eating experiences on adult QoL. If one experiences enjoyable eating as a child, they are more

likely to maintain a healthy diet as an adult, thereby experiencing a higher quality of life. Additionally, as family mealtimes can be a great source of social support for children, it is also possible that social support may mediate the development of healthy eating and adult QoL.

Another adaptive coping mechanism, approach-related academic coping, was also associated significantly with QoL. Those in the high QoL reported higher levels of approach-related behavior than those in the lower QoL. These results mirror the findings of Impett, et al. (2010) who found that approach-related goals were associated with an increase in short and long term satisfaction with a relationship. Pairing these results with that of this current study demonstrate that those espousing to more approach-related goals and coping behaviors may experience higher QoL possibly because of a higher likelihood of experiencing more positive emotions on a regular basis (Impett, et al., 2010). However, as Impett, et al. (2010) examined approach-related behaviors and goals in relationships and this study examined this predictor regarding academic coping, future research should be conducted to see if the results of this study are replicable and if approach-related behaviors correlate with higher QoL in other settings besides academics and relationships.

Finally, in H1, more frequent use of maladaptive coping strategies was predicted to correlate with lower QoL. Of the mechanisms examined, higher involvement in avoidance behaviors, overeating, substance use, eating disorder-like behaviors, electronic entertainment, and social media use significantly associated with lower QoL. Avoidance behaviors were negatively associated with QoL. Those in the lower QoL group reported higher levels of avoidance coping strategies than those in the high QoL group. This

supports the findings of the Impett, et al. study (2010), who found that avoidance-related goals were associated with decreased satisfaction over time. However, again as mentioned earlier, these results were concerning relationships and the current study's focus was on academic coping. As such, further research needs to be conducted to determine if these results in this current study can be replicated among other student populations and in other settings besides academia.

Overeating correlating with lower life satisfaction is supported by Neseliler, et al. (2017) who found that students who experience more stress during their final exam period were hungrier. Stress also has been linked to ghrelin, a hormone "that increases the incentive value of food cues" (Malik, McGlone, Bedrossian, & Dagher, 2008; Neseliler, et al., 2017, p. 313). Additionally, Oliver, Huon, Zadro, and Williams (2001) found that personal distress resulting because of ostracizing was correlated with overeating. Because of these findings, stress could be a potential moderator between influencing overeating and QoL (Neseliler, et al., 2017). Furthermore, social exclusion by others may also negatively impact overeating and lower QoL, exhibiting a potential role of social support in reducing overeating during times of stress (Oliver, Huon, Zadro, & Williams, 2001). However, more research on this topic needs to be conducted to determine the validity of these proposed relationships.

The finding that substance use is a significant contributor to lower QoL is consistent with Griffin, et al (2015) who concluded that within the general population, those who became dependent on opioids reported lower physical and mental QoL. Additionally, they found that those who were experiencing chronic pain were more likely to report lower physical QoL. This is important as chronic pain often acts as a common

reason for opioid use to begin to relieve the pain (Griffin, et al., 2015). Therefore, based on these findings, some of the participants reporting opioid use and substance abuse and dependence in this current study may have begun using the substances to reduce their chronic pain (a quality of life impairing experience) and increase their life satisfaction. Unfortunately, this may have led to dependence on the substance, which based on the findings of this study and previous literature, led to even lower QoL.

Third, the association between eating disorder behaviors and the QoL group classification supports previous findings that certain behaviors such as binge eating and purging, are negatively correlated with physical health-related QoL. Also, a previous study concluded that eating disorder-related thoughts negatively affect mental health-related QoL (Wagner, Stefano, Cicero, Latner, & Mond, 2016). Possible explanations for this association may be because of a sense of a loss of control during eating that occurs among some individuals. Those experiencing this loss of control report more emotional distress and more eating disorder behaviors than those who do not lose control. This loss of control among those who binge eat, a common symptom of those with eating disorder pathologies, has been associated with lower QoL (Jenkins, Conley, Rienecke Hoste, Meyer, & Blissett, 2012). This association demonstrates that some reporting this maladaptive coping strategy may be experiencing a loss of control and it shows that this needs to be monitored among those that are being treated for these problems and those who report these behaviors. This in turn can help with reducing these behaviors and improving the QoL of those who are known to participate in these behaviors.

Social media and electronic entertainment were also significantly associated with lower QoL such that those in the Low QoL group reported higher levels of social media

and electronic entertainment use than those in the Moderate and High QoL groups. Research has shown that social media use associated with dating purposes or other negative purposes is associated with lower QoL. However, if social media is used for staying connected with friends, it has been associated with higher QoL (Campisi, Folan, Diehl, Kable, & Rademeyer, 2015). The findings of this current study related to social media use support only some of the findings of the previous literature and more research needs to be conducted to see what specific uses of social media promote and lower QoL.

The current study's findings regarding electronic entertainment is supported by the research of King and Delfabbro (2009) who found that those engaged in heavy video game use scored significantly lower in physical functioning, mental health, and social functioning than other participants in their study. This demonstrates the importance of the frequency and intensity with which electronic entertainment is used in evaluating its effects on QoL. Additionally, this study looked only at video game play. Because of this, future research needs to be conducted to see if specific forms of electronic entertainment lead to lower levels of QoL than others as only general use was measured in this current study. Also, future research needs to be conducted to see if the frequency and intensity of these other forms of entertainment can detrimentally affect one's QoL similar to that of video games (King & Delfabbro, 2009).

Hypothesis 2

The second hypothesis projected that higher levels of depression, anxiety, and somatization would be associated with lower QoL. In the univariate analyses of these psychological variables, all of these factors measured by the PHQ significantly associated with the Low QoL group classifications. As the highest percentage of participants

meeting criteria for somatization fell into the low QoL group, the results of this study are consistent with Howard et al. (2017) who found that those meeting criteria for somatization disorder reported lower levels of physical and mental QoL. This shows that somatization negatively affects not only the physical well-being of the individual inflicted with the corresponding pain, but also the mental well-being.

The findings regarding depression and anxiety significantly correlating with lower QoL is supported by the extensive literature reporting this association (See Stefanaki, et al., 2014). Depression has been consistently found in previous literature to negatively affect QoL. Berlim and Fleck (2007) found that experiencing social and physical deficits may lead to an increase in depressive symptoms and thereby lead to a decrease in QoL. Additionally, as some of the etiology for depression comes from lower levels of serotonin, and higher levels of this neurotransmitter correlates with higher QoL, it is possible that increasing levels of amino acids from proteins in one's diet may lead to better levels of QoL and improve depression levels (Stockmeier, 2003; Conner, Brookie, Richardson, & Polak, 2015; Rao, Asha, Ramesh, & Rao, 2008). This also suggests a possible connection between serotonin levels and QoL which should be researched further (Conner, Brookie, Richardson, & Polak, 2015; Rao, Asha, Ramesh, & Rao, 2008).

Finding anxiety to be positively associated with lower QoL is supported by the research of Lepp, Barkley, & Karpinski (2014). These researchers found through surveying students regarding their cell phone use that anxiety negatively influenced a participant's life satisfaction (Lepp, Barkley, & Karpinski, 2014). These findings demonstrate the negative effect of anxiety on quality of life consistent with the results of this study. It also explains why the electronic entertainment variable described earlier

may have positively correlated with lower QoL. It is possible that anxiety may be a mediator as it was in the study of Lepp and his colleagues (2014) leading to the negative correlation. The potential for this exhibits a potential cause for some of the negative associations found between the maladaptive coping strategies and life satisfaction. This shows how further research should investigate the relationship between the coping mechanisms examined in this current study and see if anxiety may act as a significant mediator between it and overall quality of life.

Hypothesis 3

The final hypothesis stated that those who experienced higher levels of perceived stress would additionally experience lower QoL. In the current study, those in the low QoL group reported a higher mean PSS score than those in the moderate and high groups, which supports H3. The findings of this current study are supported by the extensive literature displaying this negative correlation between stress and QoL (See Cushway, 1992; Meyers, et al., 2012; Ayala, Ellis, & Grudev, 2017). In particular, a study examining health service psychology students found that stress negatively affected the quality of life of the students (Ayala, Ellis & Grudev, 2017). Stress and its relationship with quality of life are essential in understanding the methods by which individuals can maintain a productive and happy lifestyle. However, at least in the above-mentioned study, self-care, a coping mechanism, did not buffer this relationship. This means that perhaps not all coping strategies will effectively lower the effects of stress on QoL. This is why more research needs to be conducted to determine which coping mechanisms in practice work most effectively to reduce stress and improve QoL. With the results of this current study and future research, answers to these questions may be obtained.

Limitations

There were some limitations with this present study. The gender ratio of the participants heavily leaned towards the female gender. Because the majority of the participants were females, the generalizability of this study is limited. Additionally, as the participants were undergraduate college students at a specific Texas university, the generalizability to other cultures and populations is limited. In order to better generalize the results of this study, replications of this study need to be conducted in other cultures and among other populations to determine if the findings of this study apply in other cultural and economic settings.

The data collected were completely self-report. As such, the accuracy of some of the data gathered may not be fully complete. However, as some of the variables examined in this study could not be ethically studied through other experimental methods, this method was the best option to obtain the data necessary to conduct this study.

The correlational nature of this study also limits the generalizability of these results. Future research implementing these current findings into practice will further the understanding of their applicability in real world settings. Additional replications of this study are also warranted to further explore these founded correlations.

Finally, the PHQ scale, while a validated measure, is a sensitive measurement in diagnosing anxiety, panic, depression, and somatization. It is possible that percentage of the population measured that met criteria for these diseases may not have met criteria for these disorders if they were fully clinically diagnosed. Further research using other measures should be conducted to confirm the results found in this study.

Conclusions

This study demonstrated that those who reported higher levels of adaptive coping mechanisms reported higher levels of QoL and those who used higher levels of maladaptive coping mechanisms reported lower QoL. Spiritual growth and social support more specifically, were found to be essential adaptive factors connected to better QoL. The findings of this study provide a direction with which to develop better interventions focused on combatting stress and reducing depressive and anxious symptoms among college students. Future research needs to be conducted implementing the findings of this study into practice to determine to what extent these coping mechanisms will provide improved QoL in practice among varying populations. Longitudinal approaches may also provide a better understanding regarding the relationships that exist between these different coping strategies. Additionally, previous research on first-generation college students found lower familial and peer social support correlated with lower QoL (Jenkins, Belanger, Connally, Boals, & Dúron, 2013). As this demographic factor was not considered in this study, future research should examine the predictors measured in this study to determine which factors were most strongly associated with overall QoL in first-generation college students in comparison to their peers. This could provide for an understanding that would assist with creating more effective interventions to reduce the stress and anxiety that leads to the detected lower QoL in these individuals (Jenkins, Belanger, Connally, Boals, & Dúron, 2013)

APPENDIX SECTION

Table 1. Demographic Variables Associated with Quality of Life

	Low Quality of Life N = 57	Moderate Quality of Life N = 240	High Quality of Life N= 133	Statistical Comparison p value
Age				
Mean (St. Dev.)	20.00 (11.97)	20.94 (3.32)	20.45 (2.54)	p=.061
Gender (%)				
Male	15.8%	30.5%	24.1%	p=.056
Ethnicity (%)				
White	36.8%	39.7%	42.9%	p=.011
Black or African American	3.5%	14.6%	12.0%	
Hispanic/Latino	38.6%	39.7%	39.1%	
Other	21.1%	5.9%	6.0%	
Year in School (%)				
Freshman	38.6%	28.9%	24.2%	p= .255
Sophomore	26.3%	24.7%	29.5%	
Junior	26.3%	25.1%	24.2%	
Senior	8.8%	21.3%	22.0%	
Employment Status (%)				
Full-time Employment	10.5%	7.9%	9.8%	p=.705
Part-time Employment	36.8%	44.2%	46.6%	
Unemployed	52.6%	47.9%	43.6%	
Marital Status (%)				
Single	52.6%	59.6%	50.4%	p= .269
Relationship but Not Married	43.9%	36.3%	47.4%	
Married	3.5%	4.2%	2.3%	
GPA				
Mean (St. Dev.)	2.94 (.65)	2.95 (.54)	2.88(.54)	p= .621

Bolded Means significance at the .05 level; Fisher's Exact Test used for ethnicity and relationship status

Table 2. Adaptive and Maladaptive Coping Behaviors Associated with Quality of Life

	Low Quality of Life N = 57	Moderate Quality of Life N = 240	High Quality of Life N= 133	Statistical Comparison <i>p</i> value
EAT26 Eating Disorder Behaviors				
% Yes	43.6%	35.3%	17.9%	p <.001
ADUM Drug Use				
% Yes				
Marijuana	47.4%	45.0%	41.4%	p=.694
Uppers	17.5%	13.9%	10.5%	p=.396
Downers	10.5%	10.5%	9.8%	p=.976
LSD	5.3%	3.8%	3.8%	p=.831
Tranquilizers	5.3%	2.1%	0.8%	p=.124
Opiates	3.5%	4.2%	0.0%	p=.027
Cocaine	10.5%	7.1%	6.8%	p=.632
DUD Substance Abuse/Dependence				
Substance Abuse	17.5%	12.9%	6.0%	p=.039
Substance Dependence	19.3%	9.2%	5.3%	p=.010

HPLP2 Physical Activity Score				
Mean (St. Dev.)	1.87 (.57)	2.34 (.68)	2.51(.75)	p <.001
HPLP2 Nutrition Score				
Mean (St. Dev.)	2.02 (.49)	2.27 (.58)	2.32(.62)	p =.005
HPLP2 Spiritual Growth Score				
Mean (St. Dev.)	21.00 (4.74)	25.70 (4.70)	31.15 (4.41)	p <.001
SSPFS Social Support Score				
Mean (St. Dev.)				
SSPFS Total	30.83(5.83)	34.66(5.39)	38.35 (5.62)	p <.001
SSPFS Parent	13.17(3.08)	15.25(3.03)	16.97(3.05)	p <.001
SSPFS Peer	17.52(4.48)	19.40(3.34)	21.38(3.21)	p <.001
ACSS Academic Coping Strategies				
Mean (St. Dev.)				
Approach	48.87 (10.90)	51.77 (9.42)	56.32(10.56)	p <.001
Avoidance	28.67(8.14)	25.68 (6.55)	22.86(7.97)	p <.001
Social Support	20.47(6.01)	21.48(5.13)	22.49(6.13)	p =.057
PHQ Alcohol Consumption				
% Yes	70.2%	75.4%	74.4%	p =.717
PHQ Alcohol Abuse				
% Yes	28.1%	26.3%	21.1%	p =.451

Bolded Means significance at the .05 level; Fisher's Exact Test used for LSD, tranquilizers, opiates, and cocaine

Table 3. Psychological Factors Associated with Quality of Life

	Low Quality of Life N = 57	Moderate Quality of Life N = 240	High Quality of Life N= 133	Statistical Comparison p value
PSS Total Score				
Mean (St. Dev.)	21.11 (5.37)	21.05 (5.20)	16.48(5.87)	p<.001
PHQ Somatization				
% Yes	40.4%	27.1%	12.0%	p<.001
PHQ Major Depressive Disorder				
% Yes	38.6%	14.6%	2.3%	p<.001
PHQ Panic Disorder				
% Yes	28.1%	14.2%	7.5%	p=.001
PHQ Anxiety Disorder				
% Yes	43.9%	15.0%	6.8%	p<.001

Bolded Means significance at the .05 level

Table 4. Extent to Which Specific Coping Mechanism Use Changed During the Experience of Stress Associated with Quality of Life

	Low Quality of Life N = 57	Moderate Quality of Life N = 240	High Quality of Life N= 133	Statistical Comparison p value
Physical Activity (%)				
Decrease	49.1%	53.3%	41.4%	p =.017
Stays the Same	35.1%	19.2%	26.3%	
Increase	15.8%	27.5%	32.3%	
Nutrition (%)				
Decrease	38.6%	43.3%	43.9%	p=.934
Stays the Same	31.6%	30.4%	31.8%	
Increase	29.8%	26.3%	24.2%	
Spiritual Growth (%)				
Decrease	59.6%	51.3%	45.1%	p=.146
Stays the Same	17.5%	31.7%	32.3%	
Increase	22.8%	17.1%	22.6%	
Eating Changes for the Worst (%)				
Disagree	8.8%	25.4%	28.6%	p=.011
Neither Agree or Disagree	8.8%	14.6%	15.8%	
Agree	82.5%	60.0%	55.6%	
Eating Changes for the Best (%)				
Disagree	69.6%	67.1%	68.4%	p =.523
Neither Agree or Disagree	14.3%	22.9%	21.1%	
Agree	16.1%	10.0%	10.5%	
Substance Use (%)				
Decrease	17.2%	12.1%	11.9%	p=.308
Stays the Same	34.5%	54.3%	57.6%	
Increase	48.3%	33.6%	30.5%	

Social Support Reliance (%)				
Parents				p=.037
Decrease	33.9%	17.5%	15.0%	
Stays the Same	28.6%	33.3%	32.3%	
Increase	37.5%	49.2%	52.6%	
Peers				p= .304
Decrease	29.8%	17.5%	18.0%	
Stays the Same	22.8%	29.6%	29.3%	
Increase	47.4%	52.9%	52.6%	
Alcohol Use (%)				
Disagree	6.3%	8.1%	17.9%	p=.184
Neither Agree or Disagree	18.8%	37.1%	42.9%	
Agree	75.0%	54.8%	39.3%	

Bolded Means significance at the .05 level; Fisher's Exact Test used for substance use and alcohol use

Table 5. Extent to Which Specific Coping Mechanisms are Utilized During the Experience of Stress Associated with Quality of Life

	Low Quality of Life N = 57	Moderate Quality of Life N = 240	High Quality of Life N= 133	Statistical Comparison p value
Listening to Music				
Mean (St. Dev.)	7.95(2.41)	7.98 (2.47)	8.10(2.36)	p=.886
Substance Use				
Mean (St. Dev.)	1.91(3.35)	1.41 (2.48)	1.17(2.10)	p=.183
Talking Family/Friends				
Mean (St. Dev.)	6.08(2.85)	6.54(2.75)	7.33(2.51)	p=.005
Alcohol Use				
Mean (St. Dev.)	2.98(3.51)	2.72(3.04)	2.07(2.46)	p=.065
Physical Activity				
Mean (St. Dev.)	3.20(2.42)	4.99(3.15)	5.42(3.18)	p<.001
Smoking				
Mean (St. Dev.)	1.41(3.13)	1.17(2.52)	.94(2.36)	p=.480
Overeating				
Mean (St. Dev.)	3.95(3.38)	2.63(2.99)	1.78(2.75)	p<.001
Meditation				
Mean (St. Dev.)	.79(1.37)	1.41(2.46)	1.64(2.80)	p=.096
Eating Junk Food				
Mean (St. Dev.)	4.98(3.02)	3.62(2.98)	3.27(3.00)	p=.001
Spiritual Activities				
Mean (St. Dev.)	2.27 (2.85)	3.08(3.65)	3.12(3.64)	p=.266
Use Social Media				
Mean (St. Dev.)	5.50(3.17)	4.84(3.24)	4.16(3.39)	p=.026
Electronic Entertainment				
Mean (St. Dev.)	5.83(3.25)	5.59(3.38)	4.46(3.55)	p=.004

Bolded Means significance at the .05 level

Table 6. Multinomial Regression Analysis Evaluating Factors Most Associated with Quality of Life: The Low Quality of Life Group Compared with the Moderate Quality of Life Group

	B	Wald <i>X</i>²	p-value	Odds Ratio/ 95% CI
Demographic Variables				
Male Gender	-.59	.843	.358	.56 [.16, 1.94]
<u>Race/Ethnicity (Ref: White)</u>				
African American	.69	.50	.480	1.98 [.30, 13.27]
Hispanic	.72	1.52	.217	2.06 [.65, 6.50]
Other	-1.17	2.45	.118	.31 [.07, 1.35]
Coping Behaviors				
ACSS Approach Score	-.04	1.53	.216	.97 [.91, 1.02]
ACSS Avoidance Score	-.05	2.20	.138	.95 [.89, 1.02]
HPLP2 Physical Activity Score	1.20	4.68	.031	3.32 [1.12, 1.47]
HPLP2 Nutrition Score	.14	.06	.810	1.30 [.429, 3.92]
HPLP2 Spiritual Growth Score	.25	12.92	<.001	1.28 [1.12, 31.46]
SSPFS Parent Score	.29	11.46	.001	1.34 [1.13, 1.58]
SSPFS Peer Score	-.02	.07	.752	.98 [.86, 1.12]
EAT Eating Disorders Behaviors	-.77	1.94	.164	.46 [.16, 1.37]
DUD Substance Dependence	1.06	1.72	.190	2.86 [.59, 13.79]
Psychological Factors				
PSS Total Score	-.23	12.97	<.001	.79 [.70, .90]
PHQ Anxiety	.923	2.03	.155	2.52 [.71, 8.96]

EAT, DUD, PHQ reference groups= group meeting criteria for eating disorder, substance dependence, anxiety respectively

Table 7. Multinomial Regression Analysis Evaluating Factors Most Associated with Quality of Life: The Low Quality of Life Group Compared with the High Quality of Life Group

	B	Wald <i>X</i>²	p-value	Odds Ratio/ 95% CI
Demographic Variables				
Male Gender	-1.21	2.63	.105	.30 [.07, 1.29]
<u>Race/Ethnicity (Ref: White)</u>				
African American	.04	.002	.968	1.05 [.12, 8.84]
Hispanic	.90	1.75	.185	2.45 [.65, 9.19]
Other	-1.81	2.93	.087	.16 [.02, 1.30]
Coping Behaviors				
ACSS Approach Score	-.02	.52	.471	.98 [.91, 1.04]
ACSS Avoidance Score	-.04	.04	.349	.96 [.89, 1.04]
HPLP2 Physical Activity Score	1.19	3.67	.055	3.27 [.97, 11.02]
HPLP2 Nutrition Score	-.12	.03	.855	.89 [.25, 3.13]
HPLP2 Spiritual Growth Score	.51	39.33	<.001	1.66 [1.42, 1.94]
SSPFS Parent Score	.36	12.41	.001	1.43 [1.17, 1.74]
SSPFS Peer Score	.01	.01	.935	1.01 [.85, 1.19]
EAT Eating Disorders Behaviors	-.40	.003	.954	.96 [.26, 3.58]
DUD Substance Dependence	1.41	2.04	.153	4.09[.60, 28.22]
Psychological Factors				
PSS Total Score	-.35	23.46	<.001	.70 [.61, .81]
PHQ Anxiety	1.32	2.27	.132	3.73 [.67, 20.65]

EAT, DUD, PHQ reference groups= group meeting criteria for eating disorder, substance dependence, anxiety respectively

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