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Coping Resources, Coping Styles, Mastery, Social Support, and Depression in Male and Female College Students

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This dissertation, COPING RESOURCES, COPING STYLES, MASTERY, SOCIAL SUPPORT, AND DEPRESSION IN MALE AND FEMALE COLLEGE STUDENTS, by KRISTEN JOY AYCOCK, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of requirements for the degree Doctor of Philosophy in the College of Education, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chair, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College of Education concurs.

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ABSTRACT

COPING RESOURCES, COPING STYLES, MASTERY, SOCIAL SUPPORT, AND DEPRESSION IN MALE AND FEMALE COLLEGE STUDENTS

by
Kristen J. Aycock

Depression is one of the most commonly-diagnosed disorders in college counseling centers (Adams, Wharton, Quilter, & Hirsch, 2008), so effective diagnosis and treatment are paramount to providing adequate care to college students. Treatment direction may depend on gender, however. Not only do males and females experience depression at different rates (Kessler et al., 2003), but there also is some evidence that factors predict depression differently by gender (Tamres, Janicki, & Helgeson, 2002). Specifically, the literature suggests that the choice of coping strategies may be gender-related; that perceived control is higher in males, yet more important to females; that social connectedness in particular may be valued more strongly and used more frequently as a coping style by females than males; and that coping resources seem to mitigate the harmful effects of stressful events.

Consequently, it seems important to examine the relationships of coping resources, coping styles, mastery, and social support to the experiences of depression. The purpose of this study was to gain a clearer understanding of the predictors of depression and methods for coping with depression in college students and to determine how these differ by gender. Results demonstrated gender differences in the experiences of many variables studied as well as the prediction of depression. High levels of perceived stress factored in as an important predictor of depression for both genders. Prediction models of best fit for females also included low mastery and low social support, while few coping resources along with high perceived stress appeared to be the most important factors in depression prediction for males. Mastery was

also found to moderate the relationship between social support and depression for males.

Results have implications for increasing college students' abilities to cope with depression, thus reducing the negative academic, psychological, and physiological effects of depression.

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SUPPORT, AND DEPRESSION IN MALE AND
FEMALE COLLEGE STUDENTS

by
Kristen J. Aycock

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TABLE OF CONTENTS

	Page
List of Tables	iv
List of Figures	v
Abbreviations	vi
Chapter	
1 GENDER DIFFERENCES IN DEPRESSION AND STRESS COPING.....	1
Coping Resources	2
Coping Styles	4
Control	8
Social Support.....	13
Control and Social Support.....	17
Summary of Literature Review.....	18
References.....	19
2 COPING RESOURCES, COPING STYLES, MASTERY, SOCIAL SUPPORT, AND DEPRESSION IN MALE AND FEMALE COLLEGE STUDENTS.....	33
Stress Coping	34
Stress Appraisal	36
Control	37
Support From Others.....	39
The Relationship between Control and Social Support	41
Research Questions	42
Hypotheses	42
Method	43
Results.....	52
Discussion	65
References.....	75

LIST OF TABLES

Table	Page
1 Ethnic and Racial Makeup of Sample.....	44
2 Psychometric Properties of all Scales for the Current Study.....	53
3 Means and Standard Deviations of Scale Scores by Gender.....	54
4 Correlations among Depression, Coping Resources, Coping Styles, Perceived Stress, Control, and Social Support.....	55
5 Descriptives and Gender Differences of All Variables.....	57
6 Gender Differences in Use of Coping Strategies when Perceived Stress is Controlled and is Not Controlled.....	59
7 Models of Good Fit for Prediction of Depression for Females and Males.....	61
8 Hierarchical Multiple Regression Analyses Predicting Depression from Satisfaction With Social Support and Mastery.....	62
9 Hierarchical Multiple Regression Analyses Predicting Depression from Number in Social Support Network and Mastery.....	63
10 Correlations among Coping Resources and Coping Styles.....	65

LIST OF FIGURES

Figure	Page
1 Moderating Effect of Number of Social Supports on Mastery and Depression in Males.....	64

ABBREVIATIONS

CES-D	Center for Epidemiologic Studies-Depression Scale
CISS	Coping Inventory for Stressful Situations
CRE-SF	Coping Resources Effectiveness Score on the CRIS-SF
CRIS-SF	Coping Resources Inventory for Stress – Short Form
PSS	Perceived Stress Scale
SMS	Self-Mastery Scale
SSQ	Social Support Questionnaire short form
SSQ-N	SSQ scale - Number of perceived supportive persons in one's life
SSQ-S	SSQ scale – Perceived satisfaction with support network

CHAPTER 1
GENDER DIFFERENCES IN DEPRESSION
AND STRESS COPING

Depression ranks among the top presenting concerns for students at college counseling centers (Drum & Baron, November 1998). This trend extends beyond students who present for therapy, however. A recent American College Health Association (2009) survey of 26,685 college students from 40 colleges in the United States (U.S.) found that 18.2% of students reported that they had been diagnosed with depression. In a separate sample of college students, 19% reported feeling depressed and approximately 10% reported having a diagnosis of depression (Adams et al., 2008). Rates were nearly 50% in another study that measured depressive symptoms (Furr, Westefeld, McConnell, & Jenkins, 2001). Depression affects a wide variety of outcomes in college students. It is associated with poor academic performance (Deroma, Leach, & Leverett, 2009), career indecision (Rottinghaus, Jenkins, & Jantzer, 2009), and suicidal ideation (Singh & Joshi, 2008). Adams and colleagues also found an association between depression and acute infectious illness (ear infection and sinus infection) in college students. The prevalence of depression and its deleterious effects on college campuses makes adequate diagnosis and treatment of depression imperative.

It is well documented that, across many cultures, prevalence for depression is higher for females than for males, with females nearly twice as likely to experience depressive symptoms (Kessler et al., 2003, 2005; Kuehner, 2003; Piccinelli & Wilkinson, 2000). Not only do females receive more diagnoses of depressive disorders, but they receive more prescribed medication for its treatment (Simoni-Wastila, 1998). Although depression is more

common in women, its diagnosis and treatment may be more difficult in men. Men are likely to differ from women in their manners of experiencing and expressing depression (Addis, 2008), making diagnosis difficult for health care providers. Moreover, although females attempt suicide at rates twice that of males, suicide attempts by men in nearly all countries are much more likely to be deadly (Oquendo et al., 2001; Schmidtke et al., 1999; World Health Organization, 2009). Even with such shocking statistics, males are less likely than females to pursue therapy (Addis & Mahalik, 2003).

Successful treatment of depression depends in part on predicting the likelihood of experiencing depression for both males and females. From genetic, neurological, and hormonal to artefactual and psychosocial, several theories exist to explain such gender disparities. While there is no etiological consensus, it appears that gender differences in depression are explained more robustly by psychosocial and psychological factors or interrelationships of these with biological factors (Kessler, 2003; Kuehner, 2003). This study was conducted to gain a clearer understanding of predictors of depression and how these vary by gender. Specifically, there are four constructs that seem promising as likely predictors of depression: coping resources, coping styles, mastery, and social support.

Coping Resources

Coping resources are highly predictive of psychological wellness (Hobfoll, 2002) and act as buffers for disorders such as anxiety and depression (Bisschop, Kriegsman, Beekman, & Deeg, 2004; McCarthy, Fouladi, Juncker, & Matheny, 2006). They also predict low levels of worker burnout (Brill, 1984; McCarthy, Lambert, O'Donnell, & Melendres, 2009). Coping resources refer to factors upon which individuals can draw in the face of stressful events and are present *before* stressors occur (Pearlin & Schooler, 1978). Coping styles, on the other

hand, refer to recognizable patterns of behavior used to combat stressors. Typical coping resources include social support, confidence, religion or spirituality, stress monitoring and tension reduction abilities, a sense of mastery, physical health, and an ability to engage in problem-solving and structuring. According to the Lazarus and Folkman's (1984, 1987) Transactional theory of stress coping, stress results from an imbalance between perceived demands and perceived resources. This twofold process begins with primary appraisal in which persons decide whether or not demands pose threats that need to be handled or are innocuous and require no energy to manage. When situations are appraised as threatening, individuals engage in secondary appraisal to determine what resources are required to manage the threats. A stress response is elicited when perceived demands outweigh perceived resources. When stressful situations arise, those who perceive themselves as more highly resourced are more likely to believe that they will be able to cope with demands, and generally experience less stress. Therefore, perceptions of high resourcefulness are an integral part of stress management.

Much like depression, gender differences also emerge in regard to coping resources. Research findings of *overall* coping resourcefulness by gender are mixed. Studies of university students in Turkey (Matheny et al., 2002), Mexico (Matheny, Roque-Tovar, & Curlette, 2008), and Russia (Makhnack, Postlyakova, Curlette, & Matheny, 1999) suggest that males perceive their psychological resources to be greater than females perceive theirs to be. For a combination of U.S. and Mexican college students, males demonstrated higher overall coping, confidence in one's ability to cope with life demands, acceptance of themselves and others, physical fitness, physical health, and problem solving while females were not higher on any scale of psychological resources (Matheny et al., 2008). In an earlier

study of U.S. business and education college students, however, females appeared to be more highly resourced than males (Matheny & Cupp, 1983), having significantly greater stress monitoring ability, better structuring of time and energy in coping with stressful situations, greater social support, and more flexibility in thought. Males were not significantly higher than females on any scale measuring coping resources. Regardless of general resourcefulness, it appears that males and females may be resourced differently in specific domains and that resources may buffer the effects of stressors differently by gender (Edwards & Holden, 2001). Many studies support differential gender resourcefulness in several areas, with a preponderance of research focusing on mastery and social support (Matud, 2004; Taylor et al., 2000). Specifically, women tend to utilize more verbal coping strategies, such as seeking social support, ruminating, and using positive self-talk (Tamres et al., 2002). This information is further documented in the following section regarding coping styles.

Coping Styles

Coping styles refer to ways in which individuals appropriate coping resources and strategies to protect themselves from the harmful effects of stressors. Typical coping styles include problem/task-focused, emotion-focused, and avoidant strategies (Endler & Parker, 1994). When utilizing task-focused coping, individuals attempt to reduce stressful effects by removing stressors or lessening their effects. In contrast, emotion-focused styles safeguard by changing the *emotional impact* of stressors without affecting the stressors themselves. Avoidance of stressor effects is the goal in avoidant coping strategies. Research suggests that problem-focused coping strategies (hereafter referred to as task-focused coping strategies) are generally more adaptive than emotion-focused or avoidance strategies (Cosway, Endler, Sadler, & Deary, 2000; Endler & Parker, 1990b; Pearlin & Schooler, 1978). Emotion-

focused strategies are often associated with increased distress (Alexander, Feeney, Hohaus, & Noller, 2001; Cosway et al., 2000; Endler & Parker, 1990b; Penley, Tomaka, & Wiebe, 2002). Many studies (Endler & Parker, 1990a; Tamres et al., 2002) measure the negative, rather than positive, aspects of emotion-focused coping which may explain their association with measures of distress. Avoidance coping has similar negative associations (Bolger & Zuckerman, 1995; Eaton & Bradley, 2008; Endler & Parker, 1990b; Menaghan, 1982; Penley et al., 2002) and even has been linked to suicidal ideation and behaviors (Edwards & Holden, 2001). Despite the historical bias toward viewing task-focused styles as adaptive, some stressful events may best be served by emotion-focused coping behaviors (Folkman & Lazarus, 1980; Lazarus, 1993). When facing stressors impervious to change, placing energy into task-focused strategies in a fruitless attempt to change them may cause more distress than utilizing emotion-focused strategies to manage the effects of the stressors. Thus, appropriate styles vary according to the nature of the stressor, and most individuals utilize a variety of coping styles (Folkman & Lazarus, 1980).

A wealth of literature provides evidence for gender differences in the use of coping styles (e.g., Brougham, Zail, Mendoza, & Miller, 2009; Eaton & Bradley, 2008; Matud, 2004; Tamres et al., 2002). Historically, there has been a bias toward viewing task-focused coping as a male-dominated coping strategy that is superior to women's emotion-focused coping strategies (Pearlin & Schooler, 1978). Recent research suggests that women use task-focused strategies quite often, however. Tamres and colleagues conducted a meta-analysis to review such gender differences. Their findings demonstrated that women report utilizing all coping strategies more often than men. Findings regarding task-focused coping for women are somewhat confusing. Although it appears that women tend to utilize task-focused coping

more often than either emotion-focused or avoidant strategies (Endler & Parker, 1990b), there is a preponderance of data suggesting that females employ emotion-focused and avoidant styles more frequently than males (Brougham et al., 2009; Eaton & Bradley, 2008; Endler & Parker, 1990b; Matud, 2004). As suggested, males may use a more limited variety of coping strategies than females, they, too, tend to make greater use of problem-focused coping strategies than emotion-focused and avoidant ones (Eaton & Bradley, 2008; Endler & Parker, 1990b; Tamres et al., 2002).

Gender differences in appraisal may explain women utilizing more coping strategies than men (Tamres et al., 2002). Women overwhelmingly appraise events as being more stressful and impactful than males (Eaton & Bradley, 2008; Tamres et al., 2002). Since women and men mobilize resources when they perceive stress, more frequent perceptions of stress from women likely lead to more frequent coping practices. In their meta-analysis of gender differences in coping behaviors, Tamres and colleagues found some support for the influence of perceived stress on the choice of coping strategies. Eaton and Bradley (2008) tested this concept, finding that women used emotion-focused coping strategies more than men. This difference persisted even after controlling for stress appraisal. Consequently, this study failed to support the notion that women make greater use of emotion-focused strategies than men simply because of their greater likelihood to appraise situations as being more stressful. Due to the dynamic nature of coping, it appears that simple gender comparisons of coping skills are insufficient to understand the complexities of ways in which women and men experience and cope with stress. It would be useful to examine the interplay of coping resources and coping styles with outcome variables to gain a clearer picture of the ways in which men and women cope with life demands. Recently, the trend of research has shifted

from treating factors related to coping outcomes separately to an effort toward understanding the dynamic processes of coping (Hobfoll, 2002), which includes the interaction of coping resources and coping styles.

Coping resources and styles do not work in tandem, but rather are linked to other resources and styles (Hobfoll, 2002). Perceptions of coping resources in the secondary appraisal process combine with primary appraisal to determine which coping styles individuals choose in stressful situations (Lazarus & Folkman, 1984). For example, individuals who perceive demands as stressful and changeable (primary appraisal) and consequently perceive themselves to be confident and good at problem-solving (secondary appraisal) may be likely to utilize task-focused coping strategies to combat the stressors. Thus, studying direct relationships between resources and outcomes only provides limited information. Actual relationships are much more complex. Depending on situations, the use of certain coping styles is more beneficial than the use of other styles (Folkman & Lazarus, 1980). It is important to understand which resources relate to specific coping styles in order to intervene when individuals tend toward unhelpful coping styles in specific situations. The strengthening of specific coping resources may change and improve the appraisal-coping style trajectory.

Despite the theoretical relationship between resources and coping styles, there is a paucity of research that measures the relationships between these two variables. In one such study, self-esteem for new fathers and social support for new mothers related positively to emotion-focused coping styles (Alexander et al., 2001). Sinclair and Wallston (2001) found that women with rheumatoid arthritis who had strong social support, good problem-solving skills, and positive reappraisal resources tended to utilize adaptive pain coping strategies. In a

workplace study (Heaney, House, Israel, & Mero, 1995), employees who were highly resourced in decision-making skills made greater use of task-oriented coping strategies and were less likely to be resigned to workplace stressors. The perception of having strong social support is related to a greater likelihood of using one's support network in coping with workplace stress. Several studies show relationships between high social support resourcefulness and task-focused or positive coping styles (Ingledeu, Hardy, & Cooper, 1997; Lewin & Sager, 2008; Snow, Swan, Raghavan, Connell, & Klein, 2003). Outside of social support resources, little is known about the relationship of specific resources to coping styles.

Control

For several decades, a variable that has appeared consistently in coping and mental health outcome models is control. Constructs similar to control appearing in the literature include mastery, self-efficacy, confidence, agency, and internal locus of control (Skinner, 1996). In particular, mastery and self-efficacy are commonly used as measures of control. Pearlin and Schooler (1978), the authors of the Self-Mastery Scale, define mastery as the perception that events are under one's control rather than under the control of external forces. It would seem to follow that persons perceiving themselves as having a high degree of mastery also should perceive themselves as being highly-resourced for coping with life demands. Bandura (1989) popularized the concept of self-efficacy, i.e., the perception that one is able to perform tasks well. Bandura's measures of self-efficacy largely were limited to specific situations. Tipton and Worthington (1984), on the other hand, developed a measure of general self-efficacy that they refer to as "people's expectations that they can perform competently across a broad range of situations which are challenging and which require

effort and perseverance” (pg. 545). Thus, like persons with high mastery, those who feel generally self-efficacious should also feel highly resourced. Both concepts suggest a sense of control over demands.

Several studies suggest the positive effects of perceived control. It has been associated with high levels of life satisfaction (Lachman & Weaver, 1998), happiness (Shin, Han, & Kim, 2007), positive mental and physical health (Bovier, Chamot, & Perneger, 2004; Lachman & Weaver, 1998), college grade point average (Stupnisky et al., 2007), lower levels of depression (Lachman & Weaver, 1998; Shin et al., 2007) and anxiety (Weinstein, Healy, & Ender, 2002), and lower levels of psychological distress (Gadalla, 2009a; Verger et al., 2009). Control also moderates or mediates the relationships between many variables (e.g., Bovier et al., 2004; Gaugler et al., 2009; Jang, Haley, Small, & Mortimer, 2002; Verger et al., 2009).

It appears that the importance of control in creating a sense of well-being extends across the entire lifespan. As persons age, factors such as physical limitations, loss of a partner, or involuntary retirement often lead to a lowered sense of control (Slagsvold & Sørensen, 2008). Control appears to be particularly important to the elderly as a buffer against the deleterious effects of stressful life events (Chou & Chi, 2001; Mausbach et al., 2007), poor physical health (Gadalla, 2009b; Jang et al., 2002), transition to nursing homes (Keister, 2006), and economic hardship (Krause, 1987; Pudrovska, Schieman, Pearlin, & Nguyen, 2005). In a study by Gadalla (2009b) of a large sample of Canadians aged 65 years and older, mastery fully mediated the relationship between physical health and stress. For those with poor physical health, if mastery was high, they perceived significantly less stress than their peers with low mastery. Mirowsky and Ross (2007) report that perceptions of

mastery generally rise throughout young adulthood, peak in late middle age, and then decline steadily from the 60s until the end of life. While factors such as failing faculties and physical limitations that often accompany old age easily explain some differences in the age gap, generational discrepancies may account for some of these differences (Ross & Mirowsky, 2002). For example, educational opportunities are much more prevalent for younger generations compared to those that were available to today's elderly. As higher education has been shown to relate strongly to mastery (e.g., Mirowsky, 1995; Ross & Mirowsky, 2006; Schieman, Van Gundy, & Taylor, 2001), it is no surprise that uneducated, elderly persons often perceive lowered senses of control, and this may be exacerbated by actual loss of independence for some in old age. As education becomes more common, individuals should enjoy more mastery throughout the lifespan, which may mean that the age-related mastery decline for future generations will be less steep. In fact, there is some evidence that mastery is increasing for younger cohorts (Mirowsky & Ross, 2007).

Much of the population-specific mastery research involves either older or impoverished populations or populations of all age groups. There are limited numbers of studies that examine mastery's relationship to outcome variables in college students. Results of the few studies that assess mastery in college students suggest its importance in producing lower depression (Herrington, Matheny, Curlette, McCarthy, & Penick, 2005; VanderZee, Buunk, & Sanderman, 1997), lower psychological distress (Bovier et al., 2004; Verger et al., 2009), lower rumination and worry (Zalta & Chambless, 2008), more growth during stressful situations (Park & Fenster, 2004), greater educational success (Sherer, 1982; Stupnisky et al., 2007), and greater facility in modifying one's behavior (Tipton & Worthington, 1984). Because a sense of mastery increases steadily through early adulthood (the age group of

traditional college students), it is important to understand its beneficial effects in combating depression. Interventions aimed at increasing a sense of mastery for college students may help improve the quality of their lives across the rest of their lifespans.

In addition to an age gap in sense of control, there is also a gender gap that appears to widen with age (Ross & Mirowsky, 2002; Slagsvold & Sørensen, 2008). Regardless, across age categories females usually report lower levels of perceived mastery/control than males (e.g., Barrett & Buckley, 2009; Matud, 2004; Nolen-Hoeksema & Jackson, 2001; Nolen-Hoeksema, Larson, & Grayson, 1999; Zalta & Chambless, 2008). This gender difference in mastery may also be evident to others. In a study of perceived confidence in medical students during their clinical examinations (Blanch, Hall, Roter, & Frankel, 2008), female medical students were rated by observers as significantly less confident than males. These findings support research demonstrating lowered perceived confidence of female medical students despite scores equal to their male counterparts (Bernstein & Carmel, 1991; Lind et al., 2002). Other research with college students demonstrates similar gender disparities in measures of perceived control with females on the lower end (Mohammadi & Honarmand, 2007; Verger et al., 2009; Zalta & Chambless, 2008). In studies using participants of all ages, males consistently demonstrate more control than females (Barrett & Buckley, 2009; Matud, 2004; Nolen-Hoeksema & Jackson, 2001). There are similar gender findings in the elderly (Ross & Mirowsky, 2002; Slagsvold & Sørensen, 2008).

Moreover, control is generally more predictive of mental health for females than for males (Gadalla, 2009a; Klein, Faraday, Quigley, & Grunberg, 2004; Nolen-Hoeksema & Jackson, 2001; Nolen-Hoeksema et al., 1999). In one study, mastery related to decreased depression for women above and beyond that of men (Ross & Mirowsky, 2006). Mastery has

also been found to facilitate college adjustment in females more than in males (Verger et al., 2009). In a study of Canadian adults, Gadalla (2009a) found that low mastery not only related more strongly to distress for women than for men, but that low mastery in women accounted for more effects on distress than any other variables studied (poor physical health, high daily stress, low socioeconomic status, and low social support). For men, poor physical health, high daily stress, and low socioeconomic status all affected distress more than mastery. Only social support had less of an effect than mastery on distress for men. A study of women identified mastery as a moderator between task-focused coping and anxiety (Weinstein et al., 2002). Thus, it may be that women with high mastery benefit from the positive effects that task-focused coping often affords.

Glass and Singer's (1973) classic study of frustration and task performance following exposure to stressful noise demonstrated that participants with control over the noise exhibited less frustration and better task performance than subjects without control over the noise. In a similar study, (Klein et al., 2004) men and women were subjected to a loud noise and were either afforded control or no control over it. Similar to Glass and Singer's findings, physiological stress responses were higher in the no control group than in the group with control. Women in the noise control group persisted significantly longer on cognitive tasks than those in the group with no control over the noise; interestingly, however, there were no significant differences in task performance for men in control and no control groups. Findings from a similar study in college students mirror Klein and colleague's findings (Endler, Macrodimitris, & Kocovski, 2000). Men demonstrated similar levels of problem-solving success on tasks following exposure to the stressor condition, whether or not they were in the group with control; women, however, who had control over the stressor

performed significantly better than women without control. Only membership in groups with or without control, not gender, accounted for differences in level of distress following the stressor. Results from these studies suggest that mastery may be more important to women, at least in respect to cognitive tasks.

Social Support

A second variable often associated in the literature with mental health outcomes is social support. Social support often refers to “the existence or availability of people on whom we can rely, people who let us know that they care about, value, and love us” (Sarason, Levine, Basham, & Sarason, 1983, p. 127). Because the measurement of this resource varies across studies, it is sometimes difficult to compare research results. Social support has been defined by the number of persons in the network as well as the perceived satisfaction with the network (Sarason et al., 1983). Still others measure more specific functions of social support, such as availability of persons with whom to talk or engage in activities and who provide comfort (emotional support), availability of persons to help solve problems in tangible ways (instrumental/tangible support), and presence of supportive persons who boost self-esteem (self-esteem support) (Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Tamres et al., 2002). Instrumental support-seeking behaviors are often associated with task-focused coping, whereas seeking emotional support is associated with emotion-focused coping (Tamres et al., 2002).

Because humans are social beings, affiliation appears to have powerful benefits. Social support is correlated with many positive indices of physical and mental health, such as wound healing (DeVries, Craft, Glasper, Neigh, & Alexander, 2007), optimism (Sarason et al., 1983), happiness (Shin et al., 2007), and life satisfaction (Matheny et al., 2002).

Moreover, social support has been shown to protect, both directly and indirectly, against depression (Bisschop et al., 2004; Chou & Chi, 2001; Gadalla, 2009a; Gaugler et al., 2009; Herrington et al., 2005; Jang et al., 2002; Sarason et al., 1983; Shin et al., 2007), anxiety (Sarason et al., 1983), hostility (Sarason et al., 1983), and suicide (Innamorati et al., 2008; McLaren & Challis, 2009). Social support may protect persons against stress in part by increasing the perception that one's resources are robust enough to cope effectively with perceived demands.

Social support-seeking differs by gender. Under stress, women generally seek support more frequently than men (Matheny, Ashby, & Cupp, 2005; Taylor et al., 2000), and this relationship is particularly robust with regard to emotional support-seeking (Tamres et al., 2002). As stated earlier, because women typically perceive more stress than men, it is possible that higher social support-seeking behaviors (or any coping behaviors) in women result from this differential stress perception. There is little research in this area and results vary. In a study of university students by Day and Livingstone (2003), women reported higher likelihoods of utilizing family and friend social support networks than males. When perceived stress was controlled, however, gender differences in utilization of *family* support disappeared, with males just as likely as females to go to family members for support. Females reached out more to friends regardless of level of perceived stress. Results of this study suggest that perceived control accounts for the greater use of *family* support in women, but does not explain why women utilize *friends* for support more than men. In the meta-analysis of coping studies, Tamres et al. (2002) did not find convincing evidence that increased *noninstrumental* support-seeking in females was due to higher perceived stress. These findings are limited, however, as they lacked data to gain clarity on other kinds of

support seeking. More information is needed to understand the role perceived stress plays in differential use of social support by gender.

More promising explanations for gender differences in social support-seeking may lie in biological/biobehavioral differences as well as in different socialization practices for the genders. Taylor (2002; Taylor et al., 2000) posits a “tend and befriend” stress response theory that adds to the traditional fight or flight theory (Cannon, 1932) and accounts for some gender differences in response to stress. Accordingly, when threatened, men are more likely to revert to the fight or flight response, whereas the hormone oxytocin predisposes women to seek to protect loved ones and to reach out to others as responses to stressful events.

Oxytocin is a bonding hormone and estrogen potentiates it whereas testosterone lessens its effects (Ježová, Juránková, Mosnárová, & Křiška, 1996). The tend and befriend response is especially common with relational stressors (Taylor, 2006). While men and women utilize both the fight or flight and tend and befriend responses to stress, females may be more apt than males to affiliate under stress. Supportive evidence from animal studies shows the anxiety-reducing effects of oxytocin in both genders, but tends to demonstrate stronger responses in females (DeVries et al., 2007; Taylor et al., 2000; Ter Horst, Wichmann, Gerrits, Westenbroek, & Lin, 2009).

Socialization practices also may underlie gender differences in social support. Early socialization practices by parents, peers, and instrumental adults affect interpersonal relationships in children (Barbee, Cunningham, Winstead, & Derlega, 1993). Even from birth, parents differ in their treatment and expectations of boys and girls (Thorne, 1993). They often dress boys and girls in different color clothing, play differently with them, and expect different emotional reactions from them. Girls are often taught to empathize, nurture,

and affiliate, whereas boys are encouraged to assert independence, compete for hierarchies, and control emotions (Block, 1973). Fagot and Hagan (1989) found that parents in their study provided positive reinforcement for communication in girls, but negatively reinforced communication in boys. With these results in mind, it would not be surprising that females learn to affiliate and communicate, whereas males tend toward independent activities.

In addition to support-seeking behaviors, females and males differ in the effects of social support. While support is a protective factor for both genders, it appears that its effect is stronger in females. The association between lack of social support and psychological discomfort is more pronounced for women (Sarason et al., 1983). A study of working men and women in Sweden found that the absence of social support at work was a strong predictor of stroke and myocardial infarction among women, but not for men (André-Petersson, Engström, Hedblad, Janzon, & Rosvall, 2007). Even in the elderly, social support appears to be more important to women (Antonucci & Akiyama, 1987). The lack of emotional social support in a sample of French university students was directly associated with distress for women, but did not relate at all to distress for men (Verger et al., 2009). Even in men, it is unusual for studies to demonstrate no relationship of support to mental health outcomes. Social support has been found to protect against suicidal ideation and behaviors in some men (Houle, Mishara, & Chagnon, 2008; McLaren & Challis, 2009). These findings are important in light of statistics citing that men are much more likely to commit suicide than are women (Oquendo et al., 2001; Schmidtke et al., 1999; World Health Organization, 2009). Increasing social support in depressed and suicidal men may decrease their chances of suicide. The lack of findings, in some studies, that social support in men is protective may be due to the type of support measured - emotional. More so than other types

of support, *emotional* support is utilized much less frequently by males (e.g., Day & Livingstone, 2003; Verger et al., 2009) and may account for the lack of association with distress.

Control and Social Support

The interaction of social support and mastery appear often in studies (e.g., Bovier et al., 2004; Gadalla, 2009a; VanderZee et al., 1997; Verger et al., 2009). Individuals with high mastery generally have larger available support networks than those with lower mastery (Hansson, Jones, & Carpenter, 1984). In studies using participants of both genders, mastery mediates the relationship between support and distress. For example, in university students, mastery mediated the relationship between support and mental health outcomes (Bovier et al., 2004), distress (Verger et al., 2009), and psychological wellbeing (VanderZee et al., 1997). In other words, students with high social support only felt the positive effects of support if they also perceived high control. Smith and colleagues (2000) found similar results in a sample of mixed-gender adults, whereby mastery mediated the relationship between emotional support and well-being. When variables are compared by gender, however, models often look different. Although VanderZee and colleagues' (1997) mixed gender model demonstrated mediation, dividing their sample by gender revealed separate models. Specifically, mastery acted as a moderator between social support and psychological and physical vitality for women. For men, however, there were no moderating or mediating effects of mastery on social support and vitality. Results from other studies demonstrate that mastery often mediates or moderates the relationship between social support and outcome variables for women (Gadalla, 2009a, 2009b). For men, however, social support usually relates directly to outcome variables rather than through mastery (Gadalla, 2009a; VanderZee

et al., 1997). One study that showed social support affecting stress through mastery for men used a sample of elderly men (Gadalla, 2009b). The increasing importance of mastery paired with the general decrease in mastery in the elderly may explain this finding that contradicts Gadalla et al (2009a) and VanderZee et al.'s findings in younger samples. It is important to understand the differential gender effects of mastery and social support on depression in college students to best target interventions tailored to this age group.

Summary of Literature Review

In summary, depression is one of the most commonly-diagnosed disorders in college counseling centers (Adams et al., 2008), so effective diagnosis and treatment are paramount to providing adequate care to university students. Not only do males and females experience depression at different rates (Kessler et al., 2003), but there is also some evidence that factors differentially predict depression by gender (Tamres et al., 2002). The literature suggests that the choice of coping strategies may be gender-related; that mastery is higher in males, yet more important to females; that social connectedness in particular may be valued more strongly and used more frequently as a coping style by females than males; and that coping resources seem to mitigate the harmful effects of stressful events. Consequently, it seems important to examine the relationships of coping resources, coping styles, mastery, and social support to the experiences of depression. The purpose of this study is to gain a clearer understanding of predictors of depression in college students and how these vary by gender.

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CHAPTER 2
COPING RESOURCES, COPING STYLES, MASTERY, SOCIAL
SUPPORT, AND DEPRESSION IN MALE
AND FEMALE COLLEGE STUDENTS

Depression is a significant concern on college campuses and is ranked as a top presenting problem for students at college counseling centers (Drum & Baron, November 1998). In a recent survey of 26,685 U.S. college students, 18.2% of students reported that they had been diagnosed with depression (American College Health Association, 2009b). Other studies suggest that depression and depressive symptoms are quite prevalent, affecting anywhere from 10% to nearly 50% of U.S. college students (Adams, Wharton, Quilter, & Hirsch, 2008; Furr, Westefeld, McConnell, & Jenkins, 2001). College students may be especially vulnerable to depression's effects as it is associated with poor academic performance (Deroma, Leach, & Leverett, 2009), career indecision (Rottinghaus, Jenkins, & Jantzer, 2009), and suicidal ideation (Singh & Joshi, 2008) in this population. With these incident rates, it is imperative to diagnose and treat depression in students.

Across cultures, females are nearly twice as likely as males to experience depressive symptoms (Kessler et al., 2003; Kessler et al., 2005; Kuehner, 2003; Piccinelli & Wilkinson, 2000) and are treated more often with medication (Simoni-Wastila, 1998). Despite these statistics, depression in men may be more deadly. Data from nearly all countries indicate that men's suicide attempts lead to deadly outcomes much more often than do women's (Oquendo et al., 2001; Schmidtke et al., 1999; World Health Organization, 2009). Men, however, are less likely than women to pursue therapy (Addis & Mahalik, 2003). Addis (2008) suggests that gender differences in experiences and expressions of depression lead to

under-diagnosis of depression in men. In order to treat depression successfully, an understanding of the differential predictors of depression by gender would seem necessary. Specifically, coping resources, coping styles, mastery, and social support are constructs that appear to show promise for understanding depression; consequently, these constructs were used to investigate the prediction of depression in college students, and separate prediction models were constructed for both genders. This study will attempt to gain a clearer understanding of predictors of depression in college students and how these differ by gender.

Stress Coping

One's ability to cope with stress greatly influences one's psychological functioning, including experiences of depression (Lazarus & Folkman, 1987). According to Lazarus and Folkman's (1987) transactional theory, stress coping is a multi-step process involving, in part, perceptions of demands, perceptions of resources to cope with demands, and use of coping styles to manage perceived demands. Coping resources refer to factors upon which individuals can draw in the face of stressors and are present *before* stressors occur (Pearlin & Schooler, 1978). Coping styles or skills, on the other hand, are patterns of behaviors employed to manage demands when persons perceive them as stressful. When individuals encounter demands, they first decide whether these demands are potentially threatening and require action or whether demands are innocuous and require no action (Lazarus & Folkman, 1984, 1987). When persons perceive demands as potential threats, they evaluate whether or not their perceived coping resources are adequate to cope with threats. Stress results from an imbalance favoring perceived demands over perceived resources (Lazarus & Folkman, 1984). Thus, individuals who perceive themselves as highly resourced generally believe they can cope with most demands and, consequently, experience lower levels of stress. Coping

resources are associated with measures of psychological wellness (Hobfoll, 2002) and serve as protective factors for anxiety and depression (Bisschop, Kriegsman, Beekman, & Deeg, 2004; McCarthy, Fouladi, Juncker, & Matheny, 2006) and worker burnout (Brill, 1984; McCarthy, Lambert, O'Donnell, & Melendres, 2009).

Like depression, gender differences exist in coping resources as well. It is unclear if the genders differ in regard to perceived resourcefulness. Studies of university students in Turkey (Matheny et al., 2002), Mexico (Matheny, Roque-Tovar, & Curlette, 2008), and Russia (Makhnack, Postlyakova, Curlette, & Matheny, 1999) found males to have higher perceptions of overall coping resources. On the other hand, female college students reported higher overall coping effectiveness than males (Matheny & Cupp, 1983). Examining gender differences in specific coping resources may prove more revealing than examining overall perceptions of resourcefulness. Some studies have found that the genders are resourced differently in specific domains and that these resources buffer the effects of stress differently by gender (Edwards & Holden, 2001; Matud, 2004; Taylor et al., 2000). Coping strategies have been grouped into three coping styles: problem-focused coping (also called task-focused coping), emotion-focused coping, and avoidant coping (Endler & Parker, 1994). Task-focused styles involve actions to change or lessen the impact of stressors while emotion-focused coping styles are employed to change the emotional impact of stressors without actually changing the stressors themselves. Avoidant coping styles safeguard through the avoidance of stressor effects. Some research studies suggest that task-focused strategies are more adaptive than emotion-focused or avoidant strategies (Cosway, Endler, Sadler, & Deary, 2000; Endler & Parker, 1990b; Pearlin & Schooler, 1978). Emotion-focused coping strategies often correlate positively with distress (Alexander, Feeney, Hohaus, & Noller,

2001; Cosway et al., 2000; Endler & Parker, 1990b; Penley, Tomaka, & Wiebe, 2002), while use of avoidance coping is also associated with distress (Bolger & Zuckerman, 1995; Eaton & Bradley, 2008; Endler & Parker, 1990b; Menaghan, 1982; Penley et al., 2002) and even suicidal ideation and behaviors (Edwards & Holden, 2001). These broad findings probably oversimplify the nature of coping. While task-focused coping may be helpful for many demands, different stressors often require different coping styles or combinations of coping styles. Situations that are unalterable, for example, are best served by emotion-focused coping as task-focused measures to change such situations would be fruitless. Moreover, individuals are not bound by a single coping style, but rather they use an array of coping styles (Folkman & Lazarus, 1980).

Research literature supports gender differences in coping styles (e.g., Brougham, Zail, Mendoza, & Miller, 2009; Eaton & Bradley, 2008; Matud, 2004; Tamres, Janicki, & Helgeson, 2002). Previously, task-focused coping was thought to be used more frequently by men and revered over emotion-focused strategies that were considered the domain of women (Pearlin & Schooler, 1978). When compared with males, studies show that women make significantly greater use of emotion-focused coping and avoidant coping strategies (e.g., Brougham et al., 2009; Eaton & Bradley, 2008; Endler & Parker, 1990b; Matud, 2004). In a recent gender coping meta-analysis, however, evidence suggests that women use all coping styles (including task-focused coping) more frequently than men (Tamres et al., 2002).

Stress Appraisal

Women's greater use of coping strategies may result from their tendencies to appraise situations as more stressful and impactful than do men (Eaton & Bradley, 2008; Tamres et al., 2002). Frequent perceptions of stress lead to more frequent mobilization of coping

strategies. In their meta-analysis, Tamres and colleagues found some support for the influence of perceived stress on coping, but did not have enough evidence to make more than tentative statements. As noted previously, Eaton and Bradley (2008) tested this idea by measuring coping strategies and then controlling for perceived stress. Their results demonstrated that females utilized emotion-focused coping strategies more often than males and this difference did not change after controlling for perceived stress. They concluded that, at least for emotion-focused strategies, gender differences in coping did not result from perceived stress. More research is needed to clarify the role of stress appraisal in the coping dynamics of men and women.

Control

The construct of control has garnered much attention in the coping and mental health literature over the last few decades. Control is often defined by such terms as mastery, self-efficacy, confidence, agency, and internal locus of control (Skinner, 1996). Mastery is a common measure of control and will be used interchangeably with control in this study. Pearlin and Schooler (1978), authors of the Self-Mastery Scale, define mastery as the perception that events are under one's control rather than under the control of external forces. Perceived control is associated with high levels of life satisfaction (Lachman & Weaver, 1998), happiness (Shin, Han, & Kim, 2007), positive mental and physical health (Bovier, Chamot, & Perneger, 2004; Lachman & Weaver, 1998), higher college grade point average (Stupnisky et al., 2007), lower levels of depression (Lachman & Weaver, 1998; Shin et al., 2007) and anxiety (Weinstein, Healy, & Ender, 2002), and lower levels of psychological distress (Gadalla, 2009a; Verger et al., 2009). Control is also a central factor affecting the

relationships among many mental and physical health variables (e.g., Bovier et al., 2004; Gaugler et al., 2009; Jang, Haley, Small, & Mortimer, 2002; Verger et al., 2009).

Although control is important throughout the lifespan, the experiences of control generally change as persons age. Specifically, Mirowsky and Ross (2007) note the general trend for perceived mastery to increase through young adulthood to its peak in late middle age, after which it starts a steady decline in the 60s that lasts throughout life. Because mastery is so important in the later phases of life when it starts to decline, much research focuses on mastery in the elderly (e.g., Chou & Chi, 2001; Gadalla, 2009a; Jang et al., 2002; Keister, 2006; Mausbach et al., 2007; Pudrovskaya, Schieman, Pearlin, & Nguyen, 2005). Fewer studies examine control in college students; however, those that do show that high perceived control in college students relates to lower depression (Herrington, Matheny, Curlette, McCarthy, & Penick, 2005; VanderZee, Buunk, & Sanderman, 1997), lower psychological distress (Bovier et al., 2004; Verger et al., 2009), lower rumination and worry (Zalta & Chambless, 2008), more growth during stressful situations (Park & Fenster, 2004), greater educational success (Sherer, 1982; Stupnisky et al., 2007), and greater facility in modifying one's behavior (Tipton & Worthington, 1984). For those with low senses of mastery, intervention at the early ages associated with college may improve the quality of their lives.

Across age categories, women generally perceive themselves to have lower mastery than men (e.g., Barrett & Buckley, 2009; Matud, 2004; Nolen-Hoeksema & Jackson, 2001; Nolen-Hoeksema, Larson, & Grayson, 1999; Zalta & Chambless, 2008). Despite reporting lower levels of control than men, women may find control more important to their psychological wellbeing as mastery is generally more predictive of mental health indices for

women than for men (Gadalla, 2009a; Klein, Faraday, Quigley, & Grunberg, 2004; Nolen-Hoeksema & Jackson, 2001; Nolen-Hoeksema et al., 1999). In rates of depression (Ross & Mirowsky, 2006), perceived distress (Gadalla, 2009a), difficulty adjusting to college (Verger et al., 2009), and poor cognitive task performance (Endler, Macrodimitris, & Kocovski, 2000), low perceived control has been shown to affect women negatively more than men.

Support from Others

Social support is another variable often associated with positive mental health outcomes in the literature. While there are different types of social support, the term generally refers to a network of persons who care about one and on whom one can rely for support during stressful times (Sarason, Levine, Basham, & Sarason, 1983). Sarason and colleagues' (Sarason et al., 1983) Social Support Questionnaire measures both the extensiveness of the support network and the perceived intensity of relationships with members of the network. Social support may also be measured by the functions it serves (Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Tamres et al., 2002). Strong social support is associated with many positive indices of physical and mental health, such as wound healing (DeVries, Craft, Glasper, Neigh, & Alexander, 2007), optimism (Sarason et al., 1983), happiness (Shin et al., 2007), and life satisfaction (Matheny et al., 2002). Moreover, social support has been shown to protect, both directly and indirectly, against depression (Bisschop et al., 2004; Chou & Chi, 2001; Gadalla, 2009a; Gaugler et al., 2009; Herrington et al., 2005; Jang et al., 2002; Sarason et al., 1983; Shin et al., 2007), anxiety (Sarason et al., 1983), hostility (Sarason et al., 1983), and suicide (Innamorati et al., 2008; McLaren & Challis, 2009).

Under stress, women tend to seek social support more than men (Matheny, Ashby, & Cupp, 2005; Ptacek, Smith, & Zanas, 1992; Tamres et al., 2002; Taylor et al., 2000). Gender differences in biology and socialization practices may explain some of the findings regarding social support-seeking in men and women. Shelley Taylor's (2002; Taylor et al., 2000) affiliative stress response, "tend and befriend," is a compliment to Cannon's (1932) well-established fight or flight stress response and may account for some gender differences in affiliation. While both genders may seek out social support during stressful encounters, Taylor maintains that women are more apt to do so, especially when coping with *relational* stress (Taylor, 2006). Women have higher levels of the hormone, oxytocin, than men, and oxytocin predisposes humans to bond (Ježová, Juránková, Mosnářová, & Kriška, 1996). Animal studies suggest that females benefit from a reduction in anxiety levels through increased oxytocin (DeVries et al., 2007; Taylor et al., 2000; Ter Horst, Wichmann, Gerrits, Westenbroek, & Lin, 2009), so women may receive more comfort than men from seeking social support.

Socialization practices may also help to explain gender differences in social support-seeking behaviors. Early experiences with, and messages received from, parents, peers, and adults who are influential in the lives of children affect how they develop interpersonal relationships (Barbee, Cunningham, Winstead, & Derlega, 1993). Girls are often taught affiliative behaviors, such as empathy and nurturance, whereas boys may be encouraged to strive for independence, top positions in a hierarchy, and emotional control rather than affiliation (Block, 1973). A study of children conducted by Fagot and Hagan (1989) found that parents positively reinforced communication in girls, but negatively reinforced the same

behavior in boys. Such overt and covert messages of gender-appropriate behavior may affect coping behaviors throughout life.

The Relationship between Control and Social Support

The interaction of control and social support often appears in the research literature (e.g., Bovier et al., 2004; Gadalla, 2009a; VanderZee et al., 1997; Verger et al., 2009). Individuals with high perceived control generally also report larger available support networks than persons with lower perceived control (Hansson, Jones, & Carpenter, 1984). Several studies show that mastery mediates or moderates the relationships between social support and mental health outcomes. In other words, only those with high perceived control *and* high perceived social support are likely to experience positive mental health outcomes. Strong social support networks alone will not necessarily lead to decreased distress unless individuals also possess high mastery. In studies of college students, mastery mediated the relationships between social support and mental health outcomes (Bovier et al., 2004), distress (Verger et al., 2009), and psychological wellbeing (VanderZee et al., 1997). These mixed-gender models may represent the experiences of women more than men, however. There is some evidence that the interaction of control and social support differs for women and men. For women, mastery often moderates or mediates social support's effects on outcome variables (Gadalla, 2009a, 2009b; VanderZee et al., 1997), showing that the relationship between social support and control is important in coping with stress for women. This interaction does not appear as prevalent in men, where social support generally relates directly to mental health outcomes with no interaction of mastery (Gadalla, 2009a; VanderZee et al., 1997). While suggestive, such results do not provide sufficient information

to understand fully the complex interactions of social support, mastery, and gender in the coping process.

Research Questions

The purpose of this study was to gain a clearer understanding of the predictors of depression and methods for coping with depression in college students and to determine how these differ by gender. Results from this study can contribute to college communities' efforts to treat the epidemic of depression by targeting specific gender- and age-appropriate interventions. This study sought to answer the following research questions:

1. Are there gender differences in depression, coping resources, coping styles, perceived stress, mastery, and social support?
2. Will gender differences or similarities in coping styles change after controlling for perceived stress?
3. Which models most accurately predict the relationship between depression and coping resources, perceived stress, mastery, and satisfaction with social support in college males and females?
4. Does mastery moderate the relationship between social support and depression?
Does this moderation hold for both genders?
5. Will strength in a specific coping resource relate to a greater tendency to use a specific coping style?

Hypotheses

1. Females will score higher on depression than males.
2. Females will score higher on social support than males.
3. Males will score higher on mastery than females.

4. Females will engage in a greater number of coping styles than males.
5. Mastery will moderate the relationship between satisfaction with social support and depression for females, but not for males.
6. Mastery will moderate the relationship between number of social supports and depression for females, but not for males.

Method

Sample

A convenience sample was used, which included undergraduate students enrolled in introductory psychology courses at a large, urban university in the southeastern part of the U.S. Participants were recruited through an online research pool of undergraduate students. Students were required to participate in studies as participants to fulfill research requirements for the courses; however, they were free to choose studies as long as they fit the criteria outlined in the study abstract. In order to obtain data for analyses of gender differences in coping outlined in these research questions, the study was opened to both genders.

A total of 654 participants completed the survey. Of this total participation pool, two participants were excluded because of missing gender data and 101 others were omitted due to answering the two validity questions (e.g., “Please select a 2 here”) incorrectly. Thus, the total sample analyzed was 551. Participants included 355 females (64%) and 196 males (36%) ranging in age from 16 to 62 years ($M = 22.55$, $SD = 6.50$). Breakdowns of age showed that 46.8% ranged in age from 16 to 20 years old, 35.6% ranged from 21 to 25 years old, 15% from 26 to 40-year-olds, and 2% from 40 to 62. The majority of participants identified as Black/African American (38.7%) followed by Caucasian (34.1%). The remainder identified as Asian/Asian American (12.7%), multiracial/multiethnic (6.9%),

Hispanic (5.4%), other (2%), and Native American (0.2%). Table 1 comprises the breakdown of race/ethnicity for the full sample as well as the female and male samples. A recent report of the American College Health Association (ACHA, 2009a) provided demographics of their random sample of college students in the U.S. Their sample included 75.5% Caucasian, 5.0% Black, 6.2% Hispanic or Latino, 11.6% Asian or Pacific Islander, 1.6% American Indian or Alaskan Native, and 3.8% other participants. A chi-square analysis was run to test for differences between the demographic makeup of participants in the current study and participants in the ACHA study. The other and multiracial/multiethnic categories in the current study were collapsed to coincide with the other demographic category in the ACHA study; all other categories mapped on to each other. Results demonstrated statistically significant differences between the demographic makeup of participants in the current study and participants in the ACHA study, $\chi^2(5, N = 12) = 1418.92, p < .001$.

Table 1

Ethnic and Racial Makeup of Sample

Race/Ethnicity	Full Sample (<i>N</i> = 551) <i>N</i> (%)	Female Sample (<i>N</i> = 355) <i>N</i> (%)	Male Sample (<i>N</i> = 196) <i>N</i> (%)
Black/African American	213(38.7%)	151(42.5%)	62(31.6%)
Caucasian	188(34.1%)	116(32.7%)	72(36.7%)
Asian/Asian American	70(12.7%)	41(11.5%)	29(14.8%)
Multiracial/Multiethnic	38(6.9%)	20(5.6%)	18(9.2%)
Hispanic	30(5.4%)	20(5.6%)	10(5.1%)
Other	11(2.0%)	6(1.7%)	5(2.6%)
Native American	1(0.2%)	1(0.3%)	0(0%)

Power analysis. In order to ensure acceptable statistical power for analyses, the program G*Power 3 (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) was utilized to determine the number of participants needed. For most comparisons, suggested participant numbers were easily reached. With medium effect sizes, power set to .80, and alpha levels of .05, a sample of 84 was required for both correlational analyses and the MANOVA analysis ($N = 126$ when $\alpha = .004$ for the Bonferroni correction). The most rigorous test of power was with the multiple regression analyses by gender. For these, 85 males and 85 females were required for gender-separate multiple regressions with 4 predictors (CRIS-SF CRE score, PSS score, SMS score, and SSQ-S scale score) for a medium effect size ($f^2 = .15$) with $\alpha = .05$ and power set to .80. The sample sizes for both genders exceeded the minimum required.

Procedures

A survey was posted online containing a demographics questionnaire and 172 items from the CES-D, CRIS-SF, CISS, PSS, SMS, and SSQ. To assess for random responders, one validity question (e.g., “Please select 2 here”) was placed in the front half of the survey and one validity question was placed in the back half of the survey. Starting in the fall semester of 2010, a link to the survey was posted with other studies for which the students could receive research credit, and students were able to choose studies of interest based on abstracts of each study. Students who followed the link were greeted with the consent form; they were not able to move forward to the survey questions without an electronic signature of consent. Signatures from the consent forms were used to assign course research credit. Credit was assigned to all students who attempted the survey and was not contingent upon

completion of the survey. Once credit was assigned, names were removed from data to ensure confidentiality.

Measures

Depression. The Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977) is a 20-item measure of depressive symptoms in the general population. Respondents rate mood in response to questions assessing recent depressive symptoms on a 4-point Likert scale from 1 (rarely or none of the time) to 4 (most or all of the time). The CES-D generally demonstrates good psychometric properties. Internal consistency reliability coefficients are generally reported as .85 and higher (Park & Fenster, 2004; Radloff, 1977) in studies consisting of primarily Caucasian participants. The internal reliability coefficient for this study was .90.

Coping resources. The Coping Resources Inventory for Stress – Short Form (CRIS-SF; Matheny & Curlette, 2010) measures coping resources, or resistance factors in place before stressful situations occur, that help persons cope with stress. The CRIS-SF includes 70 Likert-scale items that yield a total coping resource effectiveness score (CRE-SF) as well as six primary scales derived from factor analysis: Confidence, Social Support, Tension Control, Structuring, Self-Directedness, and Physical Health. Although each of these primary scales has two subscales, also derived from factor analysis, only the six primary scales were used in this study. For college students, reports of internal consistency reliability for the scales range from .81 to .93, with the alphas for the total score (CRE) ranging from .93 to .95 (Matheny & Curlette, In press). Alpha coefficients of CRIS scales used in this study ranged from .84 to .96 (see Table 2). Scales on the CRIS-SF correlate in the expected directions with measures of depression, anxiety, self-efficacy, and mastery.

Coping styles. The Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990a) is a 48 item inventory used to measure coping styles. The three scales include Task-Oriented coping (making alterations to solve the problem), Emotion-Oriented coping (managing emotions resulting from stress), and Avoidance-Oriented coping (attempting to avoid the stressor). The Avoidance-Oriented coping scale includes two subscales; however, only primary scales were unitized in this study. Respondents indicate the frequency of use of several coping behaviors while in stressful situations, from 1 (not at all) to 5 (very much). The CISS has been shown to have moderate to high test-retest reliability ($r = .51$ to $.73$) for undergraduates and high internal reliability (alphas generally ranging from $.76$ to $.92$) for college students and adults (Endler & Parker, 1990a, 1994). Coefficient alphas for the current study were as follows: $.91$ for Task-Oriented Coping, $.90$ for Emotion-Oriented Coping, and $.83$ for Avoidance-Oriented Coping.

Perceived stress. Perceived stress was measured by the 14-item Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS measures *experienced* levels of stress to account for personality and situational differences in stress appraisal rather than objective measures of stress. Participants answer questions regarding how often they have experienced different events or thoughts of varying stressfulness in the last month on a 5 point Likert scale from 0 (never) to 4 (very often). A single scale is derived from answers, with higher scores indicating higher perceived stress. The PSS correlates positively with measures of physical and mental symptoms. Test-retest reliabilities were $.85$ for a two day interval and $.55$ for a 6 week interval. Internal consistency reliability coefficients reported by Cohen et al. range from $.84$ to $.86$. Racial and ethnic demographics of the Cohen et al. study were not listed. Internal consistency reliability for the current study was $.87$.

Control. The Self Mastery Scale (SMS; Pearlin & Schooler, 1978) assesses individuals' perceived levels of control over life events, known as mastery. It has seven items constructed on a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree). Nolen-Hoeksema and colleagues (1999) reported the internal consistency reliability coefficient for the scale to be .78 and Park and Fenster (2004) found the coefficient to be .86 in studies of majority Caucasian participants. The alpha coefficient for the current study was .82.

Social support. Perceived social support was measured by the 6-item Social Support Questionnaire short form (SSQ; Sarason, Sarason, Shearin, & Pierce, 1987). Each item is divided into two parts measuring the number of perceived supportive persons in one's life, from zero to nine persons (SSQ Number scale; SSQ-N), as well as satisfaction with social support, from 1 (very dissatisfied) to 6 (very satisfied) (SSQ Satisfaction scale; SSQ-S). In a study of undergraduates, Sarason and colleagues (1987) reported high internal consistency reliability coefficients ($\alpha = .90$ to $.93$) for both scales as well as favorable test-retest reliabilities ($r = .84$ for SSQ-N and $r = .85$ for SSQ-S). Additionally, the SSQ correlated negatively with measures of anxiety, depression, and loneliness and correlated positively with other measures of social support and social competence. The SSQ short form is based upon the original 27-item Social Support Questionnaire (Sarason et al., 1983), which is reported to have high alpha coefficients, in the .90s for both scales, and excellent 4-week test-retest reliability coefficients for the Number and Satisfaction scales, $r = .90$ and $r = .83$, respectively. The two SSQ short form Number and Satisfaction scales correlate in the mid to high .90s with similar scales on the original Social Support Questionnaire (Sarason et al., 1987). Ethnic and racial make-ups of participants are not reported in either study. Internal

reliability coefficients for SSQ-N and SSQ-S in the current study were .95 and .91 respectively.

Analyses

Internal consistency reliability. Cronbach's alpha coefficients of each scale were determined for the current study and reported in table 2. In order to assess the internal consistency reliability of the scales in this study, their alpha coefficients for each scale were compared to alphas reported in the literature. Similarities in reported alphas in this study with alphas in previous studies provide evidence of good internal consistency reliability.

Correlation matrix. In order to determine confidence in the data, correlational analyses were conducted among the scales and subscales of the CES-D, CRIS-SF, CISS, PSS, SMS, and SSQ. To control for the effect of testing multiple variables at once, Holm's adjustment procedure was utilized (Holland & Copenhaver, 1988). All scales correlated in the expected directions, increasing confidence in the validity of the dataset.

Mean differences for the genders on all measures. The first research question inquires about mean differences between genders in depression, coping resources, coping styles, perceived stress, mastery, and social support. To determine the presence or absence of mean differences and to account for variance among these scales, a MANOVA was conducted with the 14 dependent variables: CES-D score, six primary scales on the CRIS-SF, three CISS scales, PSS score, SMS score, and two SSQ scales. The MANOVA suggested gender differences in one or more of the variables. Follow-up ANOVAs were run for each of the 14 variables. One assumption of an ANOVA is that the variances of both groups are equal. To test the null hypothesis that the variance between male and female data is equal for each variable, Levene's test of equal variances was run and results were reported. For follow-

up ANOVAs on variables in which variance was significantly different between genders based on Levene's test, Welch's test was interpreted to account for these differences. Descriptive statistics showing scale means for both males and females separately determined which gender mean is higher and which is lower. Significant MANOVA and ANOVAs suggest gender differences on the 14 variables and justify the plan to run depression prediction models separately for males and females. In conducting follow-up analyses for the 14 variables for testing significance at the .05 level, the effect of multiple testing was controlled by utilizing Holm's adjustment procedure (Holland & Copenhaver, 1988).

Gender differences in coping styles when perceived stress is controlled. To answer the second research question about the role of perceived stress in coping styles between men and women, a MANCOVA was run for the three CISS scales with gender as the independent variable and the PSS score as the covariate. Separate ANCOVAs were conducted at follow-up, using CISS scales as the dependent measures, to determine in which coping styles gender differences exist after controlling for stress.

Regression for prediction of depression. The all-possible regression procedure was used to find the best, most efficient gender models to predict depression (CES-D) using coping resources (CRIS-SF CRE), perceived stress (PSS), mastery (SMS), and satisfaction with social support (SSQ-S) as predictor variables (research question 3). In regression, the full models will always provide the highest R^2 ; however, the full model may not be the best model in terms of parsimony or lowest error. The all-possible regressions method highlights models with the fewest variables that provide the best prediction with the least error (Huberty, 1989). All-possible regression analyses were run for the genders separately, which totaled 15 analyses for each gender. Models of good fit were chosen with large R^2 , small

Mallow's C_p , low mean square error, and an R^2 greater than the adequate R^2 calculated for the models. Mallow's C_p is a statistic used for selecting models of best fit.

Moderation. To address hypothesis 4, which suggested that mastery (SMS) would moderate the relationship between social support (SSQ-S or SSQ-N) and depression (CISS), separate hierarchical regression analyses for the genders were conducted in which the main effects for the predictor (satisfaction with social support or number of social supports) and the hypothesized moderating variable (mastery) were entered in initial blocks. An interaction variable consisting of the product of scores on SSQ and SMS (SSQ-S X SMS or SSQ-N X SMS) was constructed and added to the regression analysis in the second block (Baron & Kenny, 1986). The next step served to control for the main effects of the predictor (social support) as well as the main effect of the hypothesized moderating variable (mastery) and to determine whether the interaction accounts for significant variation in level of depression. Moderation is indicated when the interaction variable is significant after controlling for the moderator and independent variable.

Coping resource and coping style correlations. In order to answer the final research question, to determine if strength in a coping resource relates to a greater tendency to use a specific coping style, correlation analyses, including data from both males and females, were used once again. The six primary scales on the CRIS-SF (Confidence, Social Support, Tension Control, Structuring, Self-Directedness, and Physical Health) were correlated with the three CISS scales (Task-Oriented coping, Emotion-Oriented coping, and Avoidance-Oriented coping) to test for significance at the .05 alpha level. As discussed previously, Holm's adjustment procedure was used to control for the effects of multiple testing.

Results

Psychometric properties of the scales in the study show internal consistency reliability variables similar to those reported in the literature (see Table 2). Means and standard deviations of scale scores for both females and males are presented in Table 3. Correlations run among the scales show that scales correlate in the expected directions, providing confidence in the dataset (see Table 4).

To address research question 1 assessing mean gender differences in depression, coping resources, coping styles, perceived stress, mastery, and social support, a MANOVA was conducted on subjects with complete data for all variables. In the female sample, 148 subjects were removed from the MANOVA due to incomplete data, leaving 207 total. For males, 81 subjects had incomplete data, leaving 115 total subjects utilized in the analysis. The MANOVA was statistically significant according to Wilk's λ (.82), $F(14, 307) = 4.99$, $p < .001$. Fourteen separate ANOVAs were run to determine which variables demonstrated gender differences. Holland and Copenhaver (1988) suggest using Holm's adjustment procedure to control for Type I error when conducting several tests of comparison at one time. Thus, Holm's adjustment procedure (for $\alpha = .05$) was used first to determine significance of Levene's test and then to determine follow-up Welch or ANOVA significance. Levene's test of equality of error variance was significant for Depression, $F(1, 520) = 13.955$, $p < .001$, and CRIS Tension Control, $F(1, 537) = 9.35$, $p < .01$, which suggests that variances differed significantly between female and male groups for depression and tension control. Standard deviations on these scales are higher for females than for males. See Table 5.

Table 2

Psychometric Properties of all Scales for the Current Study

Scale	<i>N</i>	<i>M</i>	<i>SD</i>	α
CES-D	522	34.91	10.25	.90
CRIS Confidence	528	2.76	.58	.90
CRIS Social Support	534	3.00	.60	.90
CRIS Tension Control	539	2.65	.45	.84
CRIS Structuring	535	2.81	.56	.89
CRIS Self-Directedness	526	2.77	.53	.85
CRIS Physical Health	527	3.04	.62	.90
CRIS CRE	458	2.82	.43	.96
CISS Task Coping	514	56.35	10.15	.91
CISS Emotion Coping	528	42.29	11.65	.90
CISS Avoidance Coping	536	49.66	10.10	.83
PSS	523	38.46	8.87	.87
SMS	542	27.84	5.19	.82
SSQ-N	551	3.56	3.24	.95
SSQ-S	473	5.19	.92	.91

Note. CES-D = The Center for Epidemiologic Studies-Depression Scale; CRIS = Coping Resources Inventory for Stress – Short Form; CRE = Coping Resources Effectiveness scale; CISS = Coping Inventory for Stressful Situations; PSS = Perceived Stress Scale; SMS = Self Mastery Scale; SSQ-N = Social Support Questionnaire – Number of supports; SSQ-S = Social Support Questionnaire – Satisfaction with support.

Table 3

Means and Standard Deviations of Scale Scores by Gender

Scale	Females			Males		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
CES-D	36.11	10.93	336	32.74	8.52	186
CRIS Confidence	2.66	.58	340	2.94	.55	188
CRIS Social Support	3.00	.63	344	3.02	.55	190
CRIS Tension Control	2.61	.48	348	2.71	.38	191
CRIS Structuring	2.79	.57	345	2.85	.54	190
CRIS Self-Directedness	2.77	.56	342	2.77	.48	184
CRIS Physical Health	2.97	.61	342	3.16	.63	185
CRIS CRE	2.78	.45	297	2.89	.39	161
CISS Task Coping	55.68	10.58	332	57.58	9.23	182
CISS Emotion Coping	43.82	11.68	345	39.39	11.04	183
CISS Avoidance Coping	50.60	10.11	346	47.95	9.89	190
PSS	40.12	8.86	339	35.39	8.05	184
SMS	27.10	5.40	350	29.20	4.49	192
SSQ-N	3.65	2.81	355	3.39	3.91	196
SSQ-S	5.20	.97	305	5.18	.83	168

Note. CES-D = The Center for Epidemiologic Studies-Depression Scale; CRIS = Coping Resources Inventory for Stress – Short Form; CRE = Coping Resources Effectiveness scale; CISS = Coping Inventory for Stressful Situations; PSS = Perceived Stress Scale; SMS = Self Mastery Scale; SSQ-N = Social Support Questionnaire – Number of supports; SSQ-S = Social Support Questionnaire – Satisfaction with support.

Table 4

Correlations among Depression, Coping Resources, Coping Styles, Perceived Stress, Control, and Social Support

Scale	CES-D	Con	SS	TCon	Str	PH	SD	CRE	TC	EC	AC	PSS	SMS	SSQ-N
Con	-.42*													
SS	-.33*	.55*												
TCon	-.27*	.62*	.45*											
Str	-.38*	.65*	.48*	.51*										
PH	-.33*	.64*	.58*	.40*	.57*									
SD	-.27*	.66*	.51*	.41*	.50*	.50*								
CRE	-.44*	.87*	.79*	.72*	.78*	.80*	.74*							
TC	-.36*	.39*	.26*	.40*	.44*	.21*	.26*	.42*						
EC	.69*	-.50*	-.28*	-.34*	-.40*	-.35*	-.32*	-.45*	-.32*					
AC	-.05	.13	.22*	.22*	.16*	.09	.09	.21*	.38*	.04				
PSS	.71*	-.59*	-.36*	-.40*	-.49*	-.42*	-.31*	-.54*	-.50*	.75*	-.11			
SMS	-.55*	.45*	.31*	.33*	.30*	.30*	.26*	.43*	.41*	-.58*	.13*	-.66*		
SSQ-N	-.07	.09	.16*	.08	.07	.11	.08	.16*	.09	-.03	.14*	-.07	.04	
SSQ-S	-.36*	.21*	.35*	.22*	.21*	.21*	.20*	.31*	.30*	-.27*	.28*	-.39*	.31*	.13

Note. CES-D = The Center for Epidemiologic Studies-Depression Scale; CRIS = Coping Resources Inventory for Stress – Short Form; Con = CRIS Confidence; SS = CRIS Social Support; TCon = CRIS Tension Control; Str = CRIS Structuring; PH = CRIS Physical Health; SD = CRIS Self-Directedness; CRE = CRIS Coping Resources Effectiveness scale; TC = CISS Task Coping; EC = CISS Emotion Coping; AC = CISS Avoidance Coping; CISS = Coping Inventory for Stressful Situations; PSS = Perceived Stress Scale; SMS = Self-Mastery Scale; SSQ-N = Social Support Questionnaire – Number of supports; SSQ-S = Social Support Questionnaire – Satisfaction with support.

**p* is significant at alpha = .05 after applying Holm's adjustment.

When follow-up one way ANOVAs were performed, Welch's test was interpreted for variables in which Levene's test showed significant gender differences in error variance (Depression and Tension Control). ANOVA *F*-values were interpreted for all other 12 variables. Significance was determined using Holm's adjustment procedure. Results demonstrated significantly higher scores for females than for males on Depression, Perceived Stress, Emotion Coping, and Avoidance Coping. Males scored significantly higher than females on Mastery, Confidence, and Physical Health. Statistically significant results demonstrated small to moderate effect sizes. No significant gender differences were found for Task Coping, CRIS Social Support, Tension Control, Structuring, Social Support Number, Social Support Satisfaction, and Self-Directedness. Table 5 shows complete ANOVA results.

Table 5

Descriptives and Gender Differences of All Variables

Variable	Females		Males		<i>F</i> for gender difference	Cohen's <i>d</i>
	<i>N</i>	<i>M</i> (<i>SD</i>)	<i>N</i>	<i>M</i> (<i>SD</i>)		
Depression	336	36.11(10.93)	186	32.74(8.52)	15.27*	.34
Confidence	340	2.66(.58)	188	2.94(.55)	27.93*	.50
CRIS Social Support	344	3.00(.63)	190	3.02(.55)	.14	.03
Tension Control	348	2.61(.48)	191	2.71(.38)	6.72	.23
Structuring	345	2.79(.57)	190	2.85(.54)	1.47	.11
Self- Directedness	342	2.77(.56)	184	2.77(.48)	.86	0.0
Physical Health	342	2.97(.61)	185	3.16(.63)	11.06*	.31
Task Coping	332	55.68(10.58)	182	57.58(9.23)	4.16	.19
Emotion Coping	345	43.82(11.68)	183	39.39(11.04)	17.90*	.39
Avoidance Coping	346	50.6(10.11)	190	47.95(9.89)	8.57*	.26
Perceived Stress	339	40.12(8.86)	184	35.39(8.05)	36.33*	.56
Mastery	350	27.10(5.40)	192	29.20(4.49)	21.20*	.42
Support Number	355	3.65(2.81)	196	3.39(3.91)	.81	.08
Support Satisfaction	305	5.20(.97)	168	5.18(.83)	.08	.02

Note. CRIS = Coping Resources Inventory for Stress – Short Form. Cohen's *d* = effect size.

**p* is significant at alpha = .05 after applying Holm's adjustment.

A MANCOVA was conducted to test for gender differences in coping styles when controlling for perceived stress – research question 2. Similar to the MANOVA conducted previously, only subjects with complete data for all variables were included. After removing 53 female subjects, a total of 302 were analyzed. For males, 33 were removed due to incomplete data and 163 subjects' data were analyzed. Results suggested significant differences by gender, Wilks' $\lambda = .965$, $F(3, 460) = 5.59$, $p = .001$. The MANCOVA also demonstrated a significant interaction between gender (the independent variable) and Perceived Stress (the covariate), Wilks' $\lambda = .341$, $F(6, 920) = 109.40$, $p < .001$, suggesting that the gender effect depends on the level of Perceived Stress. Gender and Perceived Stress interactions were tested with ANCOVAs for each dependent variable, and no significant interactions were detected this time: Task Coping, $F(1, 490) = 1.71$, $p = .192$, Emotion Coping, $F(1, 497) = .004$, $p = .953$, and Avoidance Coping, $F(1, 506) = 2.84$, $p = .092$, suggesting that ANCOVA results can be reported.

Three separate ANCOVAs were conducted, the results of which showed no significant gender differences in Task Coping, $F(1, 491) = 2.03$, $p = .155$, or Emotion Coping, $F(1, 498) = .184$, $p = .668$, when controlling for Perceived Stress. There were significant differences between females and males with regard to Avoidance Coping, however, when Perceived Stress was controlled, $F(1, 507) = 13.446$, $p < .001$, $\eta_p^2 = .026$. Specifically, given the same level of Perceived Stress, females use significantly more avoidance coping strategies than males (see Table 6.)

Table 6

Gender Differences in Use of Coping Strategies when Perceived Stress in Controlled and is Not Controlled

Dep. Variable	Females		Males		Correlation with PSS
	<i>M</i>	<i>Adj. M</i>	<i>M</i>	<i>Adj. M</i>	
Task Coping	55.86	55.68	57.51	57.58	-.50
Emotion Coping	43.68	43.82*	39.38	39.39*	.75
Avoidance Coping	50.59*	50.60*	47.88*	47.95*	-.11

Note. PSS = Perceived Stress Scale. Variable means represent ANCOVA means when Perceived Stress was controlled. Adjusted means demonstrate variable means without controlling for Perceived Stress.

**p* is significant for gender differences.

In order to determine best fit prediction models of depression for coping resources, perceived stress, mastery, and satisfaction with social support, an all-possible regressions procedure was used. Fifteen all possible regressions each were conducted for females and for males separately in an attempt to find the models with the most predictive power and the least error. Models with adequate R^2 , lowest mean square error (*MSE*), and C_p closest to $k + 1$ (where k = number of predictors) are listed in Table 7.

For females, both the full model and one other model proved good fits. The full model ($N = 231$; $F(4, 226) = 65.34$, $p < .001$) accounted for 53% of variance in depression scores. The model including satisfaction with social support, mastery, and perceived stress ($N = 272$; $F(3, 268) = 100.20$, $p < .01$) accounted for a similar amount of variance, 52%, without

the inclusion of coping resources. For males, four models emerged as good fits (see Table 6). Of the four, the model including satisfaction with social support, coping resources, and perceived stress ($N = 128$; $F(3, 124) = 59.69$, $p < .001$) represents the model with the fewest variables that accounts for the most variance, 58%, and has both the least error and a C_p statistic closest to $k + 1$. Perceived stress and coping resources appear to be important to the prediction of depression in males as they were included in all of the good fit models for males. Perceived stress also factored in to both of the good fit models of depression prediction for females as did mastery and satisfaction with support. While mastery appeared in both models of good fit for females, it appeared in only two of the four male models, suggesting that mastery may not be as important to the prediction of depression for males as for females. All models for males and females had large effect sizes (see Table 7).

Table 7

Models of Good Fit for Prediction of Depression for Females and Males

<i>k</i>	Regressors	Adj. R^2	MSE	C_p	f^2
Females					
3	SSQ-S, SMS, PSS	.52	56.98	44.73	.37
4	SSQ-S, CRE, SMS, PSS	.53	57.04	5.00	.39
Males					
2	PSS, CRE	.59	31.10	22.19	.53
3	PSS, CRE, SMS	.59	30.92	20.34	.53
3	SSQ-S, CRE, PSS	.58	31.45	4.78	.51
4	SSQ-S, CRE, SMS, PSS	.58	31.51	5.00	.51

Note. k = Number of predictors; C_p = Mallows C_p statistic (it should be close to $k + 1$); f^2 = effect size, SSQ-S = Satisfaction with social support; SMS = Mastery; PSS = Perceived stress; CRE = Coping resources effectiveness.

Hierarchical regressions were used to answer research question 4: does mastery moderate the relationship between social support and depression for males and females separately and for males and females together? *Satisfaction* with social support was used as the predictor in the first regression analyses followed by separate regression analyses using *number* of social supports as the predictor. Results of the analyses indicated that the interaction between satisfaction with social support and mastery in predicting depression were not significant for the full sample, $\Delta R^2 = .002$, $F(1, 442) = 1.17$, $p = .281$; for females,

$\Delta R^2 = .003$, $F(1, 284) = 1.27$, $p = .260$; or for males, $\Delta R^2 = .000$, $F(1, 154) = .03$, $p = .860$.

See table 8 for more results.

When satisfaction with support was exchanged for number of supports, results differed. For the full sample, the interaction between Social Support Number and Mastery in predicting Depression was significant, $\Delta R^2 = .009$, $F(1, 510) = 6.54$, $p = .01$, with a small effect size, $f^2 = .006$. Social Support Number also moderated the relationship between Mastery and Depression for males, $\Delta R^2 = .021$, $F(1, 179) = 5.64$, $p < .05$, with a small effect size, $f^2 = .01$ (see figure 4). Figure 1 shows that for males the positive effect of number of supports on depression was observed only for those with lower mastery levels. The female sample provided no evidence for a moderating effect, however, $\Delta R^2 = .005$, $F(1, 327) = 2.42$, $p = .120$. See table 9 for more results.

Table 8

Hierarchical Multiple Regression Analyses Predicting Depression From Satisfaction With Social Support and Mastery

Predictor	Females (<i>N</i> = 288)		Males (<i>N</i> = 158)	
	<i>R</i> ²	ΔR^2	<i>R</i> ²	ΔR^2
Step 1	.340		.348	
SSQ-S				
Mastery				
Step 2	.343	.003	.348	.000
SSQ-S				
Mastery				
Mastery * SSQ-S				

Note. SSQ-S = Satisfaction with social support. No moderation results are significant.

Table 9

Hierarchical Multiple Regression Analyses Predicting Depression From Number in Social Support Network and Mastery

Predictor	Females (N = 331)		Males (N = 183)	
	R^2	ΔR^2	R^2	ΔR^2
Step 1	.287		.299	
SSQ-N				
Mastery				
Step 2	.292	.005	.320	.021*
SSQ-N				
Mastery				
Mastery * SSQ-N				

Note. SSQ-N = Number in social support network.

* $p < .05$.

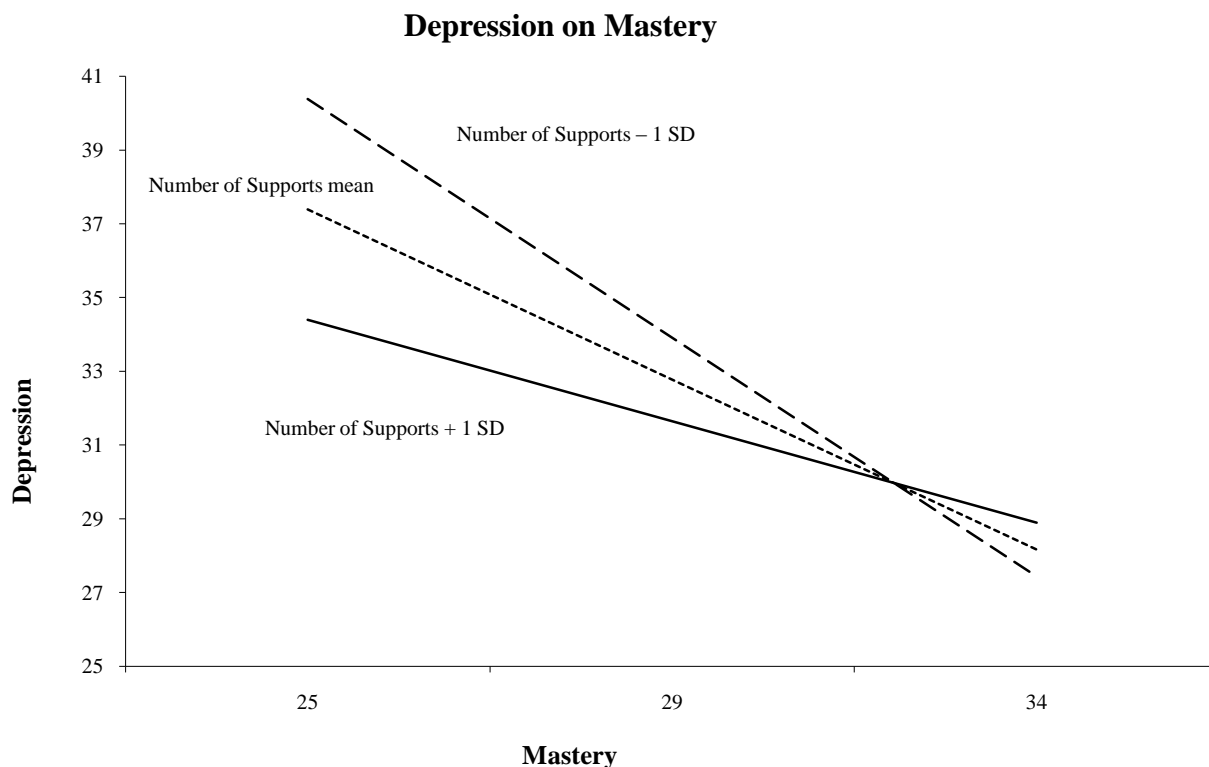


Figure 1. Moderating effect of number of social supports on mastery and depression in males.

The final research question asks whether strength in a specific coping resource relates to a greater tendency to use a specific coping style. Holm's adjustment procedure (for alpha = .05) was used to determine significance of correlations. As shown in table 10, all correlations between coping resources and styles are statistically significant except for Avoidance Coping style with Emotion Coping style ($r = .04, p > .05$), Physical Health ($r = .09, p > .05$), and Self-Directedness ($r = .09, p > .05$). All coping styles and resources correlate in the positive direction except for Emotion Coping which correlates negatively with all coping styles and resources. Results suggest that the possession of coping resources is positively correlated with the use of coping styles for all styles with the exception of Emotion Coping.

Table 10

Correlations Among Coping Resources and Coping Styles

Scale	1	2	3	4	5	6	7	8	9
1. Con	--								
2. SS	.55*	--							
3. TCon	.62*	.45*	--						
4. Str	.65*	.49*	.51*	--					
5. PH	.64*	.58*	.40*	.57*	--				
6. SD	.66*	.51*	.41*	.50*	.50*	--			
7. TC	.39*	.26*	.40*	.44*	.21*	.26*	--		
8. EC	-.50*	-.28*	-.34*	-.40*	-.35*	-.32*	-.32*	--	
9. AC	.13*	.22*	.22*	.16*	.09	.09	.38*	.04	--

Note. CRIS = Coping Resources Inventory for Stress; CISS = Coping Inventory for Stressful Situations; Con = CRIS Confidence; SS = CRIS Social Support; TCon = CRIS Tension Control; Str = CRIS Structuring; PH = CRIS Physical Health; SD = CRIS Self-Directedness; TC = CISS Task Coping; EC = CISS Emotion Coping; AC = CISS Avoidance Coping.

**p* is significant at alpha = .05 after applying Holm's adjustment.

Discussion

The present study investigated the complex relationship among predictors of depression in college students and ways in which they cope with depression. As expected and reported in previous studies (e.g., Kessler et al., 2005; Matud, 2004; Tamres et al., 2002), females in this study reported significantly higher levels of depression and perceived stress than males and lower perceived mastery and confidence than males. The moderate effect

sizes found for these analyses provide confidence in the psychological effects of these statistically-significant differences. Thus, college females likely perceive more distress in their lives and have less confidence in their abilities to manage stress than do their male peers.

As expected, females utilized coping styles more frequently than males. Specifically, they used emotion-focused and avoidance-focused coping more frequently. No gender differences were found in task-focused coping styles. Recently, researchers have begun to question whether females mobilize more coping styles because they experience more distress than males (Eaton & Bradley, 2008; Tamres et al., 2002). Results in the present study demonstrated that college females used more emotion coping strategies than males as a function of greater perceived stress, although the effect size was low. Taken with Eaton and Bradley's findings, this lends more support for the hypothesis that females and males employ coping styles at similar rates when experiencing similar levels of distress. Likewise, males may not suffer from lack of coping skill use, but rather mobilize these skills only when perceived stress is high.

While females may make more use of coping styles than males, males in this study reported possession of more coping resources (specifically confidence and physical health) than females. It may be that males have more coping resources ready to address stress that arises than do females. The finding that males tend to employ coping responses less often than females may merely be a function of their perceptions of exceptional coping resources since they do not rely on them as often. If males perceived stress at rates similar to females, they may actually feel less-resourced than they report in studies.

Despite evidence that female university students rely more on social support than do males (Day & Livingstone, 2003; Matheny et al., 2005), this study did not find gender differences in number of supports or in satisfaction with social support. When investigating more closely, few studies (e.g., Matheny et al., 2005; Ptacek et al., 1992; Tamres et al., 2002) detailed racial and ethnic demographics of their samples and none studied solely minority populations. The racial and ethnic makeup of this study was only 34% Caucasian, with the majority of respondents (approximately 38%) identified as African American. As the U.S. population is enjoying increasing diversity, older studies may have utilized fewer minorities as participants. It is possible that differences with published results reflect racial and ethnic differences in experiences of the researched variables. Perhaps African American males and females utilize similar amounts of social support.

A few studies suggest that mastery mediates or moderates the relationship between social support and distress for females (Gadalla, 2009a, 2009b; VanderZee et al., 1997), so it was surprising when this was not the case in the current study for either satisfaction with social support or number of social supports. Moreover, a moderating effect was observed for number of social supports for males but not for females. Thus, a large support network was not as important to college males in our study who also perceived greater control over their environments. For those who did not have high levels of mastery, however, a greater number of social supports related to significantly lower levels of depression than in males with similar levels of mastery and fewer supports. The effect sizes for these analyses were low, suggesting that the psychological significance for these findings may be limited despite statistically significant findings.

Depression prediction models of best fit helped identify the most parsimonious prediction models from coping resources, perceived stress, mastery, and satisfaction. Understanding the most effective and concise means for predicting depression in males and females can help target treatments quickly in short-term treatment models. Results detailed two models for females and four for males, all with large effect sizes. Perceived stress entered in to all six models, demonstrating the importance of high stress perceptions in predicting depression regardless of gender. Satisfaction with social support also appeared as a protective factor for both genders, not just for females as expected. These results may suggest that social support is more important for African American male college students than for their Caucasian male peers. Privilege may explain this difference, leading Caucasian males to feel more self-sufficient. As a racial minority, African American males may rely more on support from others to feel the same sense of mastery as Caucasian males. Jackson, Gregory, and Davis (2004) discuss the importance of interconnectedness in the African American community as it relates to mental health. Thus, the more collectivistic African American culture can instill the importance of community in shaping male accomplishments, whereas Caucasian males may be socialized to value self-reliance over community involvement. Additionally, results suggest that the apparent benefits of social support may be more dependent upon perceived control for African American males than for African American females.

For females, low satisfaction with social support, low mastery, and high perceived stress appeared to be the most important predictors of depression. Coping resources did not appear to be as predictive of diminished depression as other variables. If females feel as if they have little mastery over their environments, they may not see internally-focused coping

resources as being effective. Social support, high perceived stress, and low mastery are all externally focused. As some suggest that females represent the more oppressed gender (and African American females experience oppression based on both race and sex) (Kolb, 2007; McIntosh, 2008), it is possible that they actually have less control over their circumstances and may learn to perceive situations as uncontrollable even when they are in their control. If females encounter more stressful situations and have fewer ways to cope with them, palliative resources (such as social support) and coping skills may be more effective than task-focused coping skills in uncontrollable situations.

For males, coping resources and perceived stress factored in to all four models, demonstrating the likely importance of coping resources and low perceptions of stress in buffering the effects of depression for college males. The model of best fit for males also included satisfaction with social support. Low mastery was not an important factor in predicting depression for males as it was for females. Even though males report higher mastery over their environments, this characteristic may not have the same potency as a protective factor for depression as it has for females who report lower levels of mastery. Both coping resources and low perceived stress were clearly the most important predictors of low depression for males, whereas female models were not as clear. This may suggest that female predictors of depression are more complex than those for males. Perhaps depression treatment for males may be most effective when focusing on a few factors, whereas females may benefit from intervention in several areas.

Most studies in the coping literature examine either coping resources or coping styles, but not both at once (e.g., Cosway et al., 2000; Eaton & Bradley, 2008; Matheny et al., 2008). This study investigated whether strength in a specific coping resource related to a

greater tendency to use a specific coping style. Rather than find specific relationships, results demonstrate that college students of both genders who are highly resourced generally implement coping styles frequently with the exception of emotion-focused coping. The use of the emotion-focused coping style was negatively related to greater coping resources as well as the use of task-focused coping and avoidance coping. As the Emotion-Oriented Coping scale on the CISS (Endler & Parker, 1990a, 1990b) measures behaviors consistent with feeling emotionally overwhelmed, this may explain the negative correlation with more positive coping resources and styles. Perhaps an instrument measuring emotion-focused coping as positive attempts to soothe emotions would provide more detailed correlations between specific coping resources and the use of coping styles.

Clinical Implications

Psychotherapy treatment models for depression rarely differentiate best practices for different genders (Weinberger, McKee, & Mazure, 2010); however, male and female college students appear to experience depression differently. Results from this study have implications for efficient treatment of depression for college counseling centers. Since coping styles and resources, mastery, perceived stress, and social support relate to the experience of depression, in initial assessments, clinicians should gather information about these factors in order to inform treatment.

For females, therapy might focus upon therapeutic factors that increase confidence and mastery since these tend to be deficits, yet are important buffers to depression. Learning first to distinguish between factors under their control and those that are not and then teaching task-focused coping strategies for managing controllable stressors may help build mastery in college females. As the use of avoidance coping strategies was high for females in

this study, college females may benefit from training in replacing avoidance coping strategies with active coping strategies when stressed (e.g., assertion training for use in social situations).

The male perception of mastery appears to be high in general (Matud, 2004; Nolen-Hoeksema & Jackson, 2001; Zalta & Chambless, 2008) and was not a key factor for predicting depression in this study, thus treatment focused on other factors may be more fruitful. Conversely, college males reporting lower mastery coupled with few social supports may experience more depression. Increasing their social support networks can serve to buffer the effects of low mastery on depression. While coping resources are important for females as well, they appear to be essential to positive mental health in male college students. Males likely will benefit from building their coping resources, regardless of current levels of distress. The introduction of coping resources such as relaxation and breathing techniques, exercise, healthy eating habits, assertiveness skills, and organizational skills will increase one's ability to manage stress successfully.

High perceived stress consistently relates to distress in both genders (Bovier et al., 2004; Cohen et al., 1983). All college students might benefit from learning to reduce perceptions of stress. College is often a time when students are learning to manage life without the help of their parents. An adjustment period is expected as students learn from their mistakes and absorb the consequences. Students who perceive many stressors as being serious may benefit from learning to take different perspectives on their stressors. The manner in which they view stressors, however, will be influenced by their confidence in their coping resources and strategies (Lazarus & Folkman, 1984). Efforts to change perception may include more objectively understanding the actual consequences of stressors, rather than

abandoning themselves to exaggerated estimates, and learning life skills to cope with stressors.

Research Implications

Results of this study provide avenues for future research. The relationship of social support to other variables differs from previously-published research (e.g., Day & Livingstone, 2003; Gadalla, 2009a, 2009b; Matheny et al., 2005). Since the sample consisted primarily of African Americans, this may suggest that the role of social support differs based on race and ethnicity. As college counseling centers become more diverse, it will help to understand differences in experiences of depression among ethnic groups rather than merely between genders. Future studies should seek to understand the role of social support as a buffer for depression in the African American community as well as the Caucasian community in order to inform best practice.

Few studies have examined the differential use of coping styles for males and females when controlling for stress. This study suggests that greater use of emotion-focused coping by females is due largely to higher perceptions of stress than males. Further research may use paradigms that control for perceived stress when assessing the choice of differential coping styles between the genders.

Observed relationships between coping resources and coping styles is an emerging area of research. Studies that replicate these analyses will aid in understanding the interface of coping resources and coping styles. Studies should seek to replicate these correlation analyses in non-college student populations and to gain a greater understanding of specific relationships among the factors. Future research should use an instrument that measures the positive emotion-focused coping behaviors as finer details of the relationships between

coping resources and coping skills may be observed more readily this way. The results of this study have implications for building resilience in the population at large.

Limitations

This study has a few limitations. The results must be interpreted keeping the demographic variables of participants in mind. As participants were from a southeastern university, these results may not apply equally well to students in other parts of the United States or the world. Since the demographic picture of participants in this study did not match the national norms, broad inferences to other groups may be limited. On the other hand, this also represents a strength in this study as there is a paucity of investigations of coping in non-Caucasian communities. In addition, some of the measures used have not been updated in several years and likely reflect construction based on demographics of a norm group that differs from today's population. Another limitation may result from variables associated with recruitment of students. Participants were recruited through undergraduate psychology and counseling classes and received extra credit for their participation. Characteristics of students who elect to take these courses and those who are industrious enough to seek extra credit may differ from the general college population. They are more likely to be liberal arts majors and less likely to study hard sciences, such as engineering. Results should be applied with care to differing populations.

All measures used in this study were self-report. Although this is an acceptable method of collecting data, there may be discrepancies between what students report and how they actually perform. The findings could be strengthened by research designs that assessed behavioral responses to stimuli in addition to a self-report intervening variable.

Although this study was designed using constructs from the existing literature, it is possible that other variables also influenced the results of this investigation. Participant characteristics which were not controlled for such as intelligence, financial assets, occupational history, or marital status might be confounding variables. Since entrance to this investigation required internet access and computing skills, the population that has limited experience with computers might respond differently to these instruments.

Overall, this study advances psychology's knowledge base by providing evidence of gender differences and similarities in coping skills and resources, mastery, perceived stress, and social support as they relate to depression in college students. With continued research, the knowledge base will continue to expand and inform more tailored approaches to treatment of depression for males and females. These findings may be especially relevant for practitioners in college counseling centers.

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