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Perceived Stress, Coping, And Adequacy Of Social Support: Implications For Subjective Well-being In College Students

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PERCEIVED STRESS, COPING, AND ADEQUACY OF SOCIAL SUPPORT: IMPLICATIONS FOR SUBECTIVE WELL-BEING IN COLLEGE STUDENTS

by

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ABSTRACT

Stress is a widespread concept commonly associated with psychological and medical problems that may impair an individual's functioning and incur costs on society. Alarming rates of depression, anxiety, suicidal ideation, and other stress-related problems have been found among college students. This study argues that reducing emotional and financial stress-related costs may be possible through increasing public and professional awareness of moderating variables, such as social support and coping resources. 241 college students completed measures about perceived stress, life events, satisfaction with social support, coping strategies, and psychological functioning. Results from correlational, regression, and structural equation modeling procedures indicated that stress, inadequate social support, and escape-avoidance coping were related to higher levels of depression and lower life satisfaction in both males and females. Social support functioned as a moderator of stress in determining negative outcomes, primarily during high stress. Specifically, the interaction between stress and social support predicted depression in the combined sample, anxiety in males, and life satisfaction in females. In addition, the present study highlights the importance of accounting for gender in research concerning stress, social support, coping, and outcomes. Finally, limitations and suggestions for future research will be discussed.

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INTRODUCTION

In today's society, stress is a widespread concept that is commonly associated with a multitude of negative outcomes. Since it has been estimated that approximately 10% of the general population will experience at least one depressive episode in any given year (e.g., Kessler, McGonagle, Zhao, Nelson, Hughes, Eshleman, et al.,1994), many of which can be linked to stressful life events, it has become easy to argue for the important role of stress prevention and intervention research.

College students make up one group that is faced with stressors that may negatively affect their mental health (Beeber, 1999; Edwards, Herschberger, Russel, & Markert, 2001; Goldman & Wong, 1997;). The transition to college and the college experience in general, including time constraints (e.g., Nonis, Hudson, Logan, & Ford, 1998), financial issues, academic workload, and interpersonal difficulties, marks a stressful period in the life of young adults (e.g., Rocha-Singh, 1994). For example, Deckro, Ballinger, Hoyt, Wilcher, Dusek, Myers, et al. (2002) surveyed stress levels in a sample of college students prior to a stress reduction intervention and found that more than two thirds (69%) reported having "excessive levels of stress", while 62% indicated that they viewed themselves as being "more anxious than most people." Deckro et al. (2002) also found that insomnia, a sleep disturbance often associated with stress, was a problem in nearly one third (31%) of the students in their sample.

The literature notes that students in higher education who fail to adjust to the stressful demands that are placed upon them may experience a variety of problems (e.g., Beeber, 1999);

Deckro et al., 2002; Nonis et al., 1998; Rocha-Singh, 1994), and may be at risk for developing psychiatric illness. For example, according to a nationwide survey published by the American College Health Association in 2004, nearly 15% of students reported that they had received a diagnosis of depression in their life. In 2000, the reported prevalence rate of depression was 10% for this population, indicating that depression is increasing on our college campuses.

Similarly, Heiligenstein, Guenther, and Hsu (1996) found that 92% of college students who were identified as mildly to moderately depressed showed evidence of academic impairment. Furthermore, a recent investigation of mental health among college students indicated that 53% of the sample had experienced significant depressive symptoms since beginning college, while 9% of students reported that they had considered committing suicide (Furr, Westefeld, McConnell, & Jenkins, 2001). Of great concern is the finding that only a small portion (17%) of those students who reported symptoms of depression in college had sought counseling (Furr et al., 2001). Also, only 20% of students who reported a history of suicidal ideation utilized their institution's free counseling service (Furr et al., 2001).

In line with Selye's (1956) theory of general adaptation, we recognize that a certain amount of stress can be beneficial to the individual, but that a deviation from optimal levels of arousal is undesirable and may result in pathology. As noted, it is widely believed that stress, when unrestrained, can be associated with both psychological distress (e.g., depression, anxiety, substance abuse) and medical problems (e.g., cardiovascular disease, cancer, infections), which, in turn, may lead to impairment in occupational, academic, and social functioning (see Ensel & Lin, 1991, for a review; Heiligenstein et al., 1996) and incur costs on society (Greenberg, Sisitsky, Kessler, Finkelstein, Berndt, Davidson, et al., 1999). In terms of college students,

stress-related mental health problems may result additionally in self-defeating behavior, lower grades, dropping out, and interpersonal difficulties (Deckro et al., 1994).

Previous research suggests that utilizing informal sources of support, such as friends and family, may be one method of dealing with stress that is worth considering in terms of interventions with college students. For example, when surveying university students' preferred choices of support, Robbins and Tanck (1995) found that students were much more likely to use informal sources of help rather than formal sources, and a majority found this coping method to be helpful in reducing stress and tension (Robbins et al., 1995). Likewise, ways in which someone deals with stress may affect the likelihood of becoming depressed and anxious (e.g., Blalock & Joiner, 2000; Robbins & Tanck, 1992), but findings regarding resources such as social support and coping strategies are inconclusive.

Based on the current literature, then, one may conclude that negative effects of stress, including emotional distress and mental illness, inflict a substantial cost on society. Further, we argue that reducing costs and emotional suffering may be possible through increased awareness of stress-moderating variables, such as social support, and better utilization of existing resources. Moreover, in the age of managed care, where professional help may not be readily available to everyone in distress (Otto, 1999), striving to intervene at an early stage through informal means that can be easily deployed may not only be a noble goal but a necessary one. In addition, keeping aspirations of future prevention and intervention developments in mind, this study targeted variables that are most suited for such programs (e.g., social support and coping strategies), while not assessing factors that are more resistant to change (i.e., temperament and personality). Furthermore, although an inverse relationship between the global concept of social support and depressive symptoms and anxiety has been well established, the use of structural

equation modeling to explore pathways between social support, stress, coping, and psychological adjustment in young adults is limited in the literature. Hence, this study addressed the need for a comprehensive model of the stress-well-being relationship in a college student population, while advancing our understanding of how social support operates as a moderator of stress and a predictor of depressive and anxious symptomatology.

Life Stress and Theoretical Framework

The effects of negative life events (life stress) have received much attention in the literature over the past decades (e.g., Ferguson, Lawrence, & Matthews, 2000). For example, in a review of research investigating the link between stressful life experiences and depression, Kessler (1997) reported that negative life events predicted subsequent depression in most studies. Specifically, Kessler (1997) noted that studies focusing on one isolated event, such as job loss or a death in the family, have found that "stressful life events are associated with an increase in depressive episodes" (Kessler, 1997, p. 195). In addition, Joiner, Katz, and Lew (1999) found that negative life events predicted significant increases in anxiety, as well as decreases in self-esteem among college students ($N = 177$).

Similarly, Robbins et al. (1992) sampled 84 college students and found that those who indicated high levels of stress showed greater depressed affect than did students who reported less stress. Moreover, Mazure (1998) also identified several life stressors as risk factors in depression, suggesting that there is a link between life events and negative outcomes. Finally, Kessler (1997) emphasized that although a clear relationship between life stress and depression appears to exist, other factors over which individuals have little or no control, such as personality variables and genetics, may affect the magnitude of the impact of negative events, and caution in interpretation of these results is needed.

Appraisal and Perceptions of Stress

Over the past decades, research regarding people's ability to adjust and cope with stressful life events has focused on the importance of the meaning that people give to their experiences, including traumatic events (Tedeschi & Calhoun, 1996) and physical- and mental illness (e.g., Bookless, McFarlane, & Clayer, 2001). The recent life-events literature suggests that an individual's cognitions regarding his or her experiences may serve as a strong predictor of the person's likelihood of becoming depressed (Dohrenwend, 2000).

This current trend in mental health research, which recognizes the importance of cognitions, fits well with Lazarus and Folkman's (1984) theoretical approach to the study of emotional and behavioral responses to stress. Lazarus et al. (1984) use the term *personal appraisal* to describe the process involved in attaching meaning to events. According to their theory, personal appraisal can be divided into two central themes – primary and secondary appraisal. Primary appraisal deals with how a person evaluates the nature and meaning of a situation or event in relation to his or her well-being. Specifically, primary appraisal concerns the relevance of the event in terms of threat (potential for harm to the individual), loss (potential for harm which affects friendships, health or self-esteem), and challenge (potential for personal growth, mastery, and gain). Secondary appraisal is concerned with the allocation of available resources, i.e., the options the individual has in trying to manage and cope with the stressful event. Secondary appraisal can be viewed as drawing on an individual's experience and knowledge (Lazarus & Smith, 1988).

Thoits (1986) summarizes the Lazarus et al. (1984) view of appraisal by suggesting that both situations and reactions to stress (e.g., anxiety) can be sources of perceived threat. In other words, negative consequences may indirectly stem from both the situation itself as well as from

the individual's appraisal of his or her available coping resources. As previously noted, the potential benefits of helping a person modify their way of thinking (i.e., their secondary appraisal), and increasing their awareness of coping options and resources, may have implications for the development of intervention and prevention programs (Beeber, 1999).

Stress and Well-being

The general concept of stress has received several different definitions and may carry various, often negative, connotations. Psychological stress has been defined as an individual's perception that environmental and/or internal demands exceed his or her resources (Lazarus et al., 1984), and the present study adopted this commonly used "resource theory" of stress as a basic theoretical framework, but also included a measure of life event stress to capture more of the stress construct.

Although a direct relationship between stress and debilitating psychological and physiological outcomes cannot be established, certain types of stress have been linked more closely than others to negative consequences for the individual. For example, several scientific investigations over the past decades have yielded evidence of a relationship between stressful life experiences and various psychological and physical health problems, such as depression (for a review see Kessler, 1997), coronary heart disease (e.g., Tennant, 1996) and cancer (e.g., Butow, Hiller, Price, Thackway, Kricker, & Tennant, 2000), and overall lower well-being (e.g., Vinokur & Caplan, 1986), but correlations between stress and both physical and mental health problems are small to moderate at best (e.g., Cohen & Hoberman, 1983; Rabkin & Struenig, 1976). It has been argued that this relatively weak link between life stress and negative outcome variables may be in part due to the moderating effects of other factors, both internal and external to the individual (Cohen et al., 1983). In other words, the stress and coping literature as a whole

contains strong evidence that contextual and personal factors may influence an individual's emotional and affective response to stressful events to a significant degree (e.g., Gore & Aseltine, 1995; Mattlin, Wethington, & Kessler, 1990).

In conclusion, depression is not a certain consequence of exposure to demanding circumstances (excessive perceived stress and threats to well-being), and perceptions of stress may be modulated by a person's resources, both psychological and social. To explore the nature of the stress-well-being relationship, numerous researchers have embarked on a mission to identify and investigate variables that affect the outcomes and severity of symptoms stemming from stress. However, the present study addressed the need for a comprehensive model of stress, buffers, and outcomes.

Social Support

Most of the literature on stress and well-being has focused on social support as a key moderator of pathology (e.g., depression and anxiety) and illness induced by stress. The term "social support" refers to a number of different aspects of an individual's social relationships (Eurelings-Bontekoe, Diekstra, & Verschuur, 1995). First, social support may be defined in terms of the quantity of social relationships (integration versus isolation). Second, the reciprocal aspects of social support may be expressed in terms of the structure of a person's social relationships (social network). Finally, social support is most commonly defined as the qualitative content of relationships, such as the degree to which the social relationships provide emotional support (understanding, caring, acceptance, encouragement, praise etc.) and instrumental support (financial aid, practical and material assistance, etc.) (e.g., Eurelings-Bontekoe et al., 1995; Home, 1997). A more detailed formulation by House, Umberson, and Landis (1988) proposed that social support is an interpersonal transaction involving emotional

concern (e.g., liking, love, empathy), instrumental aid (e.g., goods or services), information (cues regarding the environment), and/or appraisal (information relevant to self-evaluation).

Dean and Ensel (1983) examined the role of social support and life stress as predictors of depression in a large sample of individuals age 17 to 24 and found that social support was the single most important factor in determining depression in both young males and females (the less support, the more depressive symptoms). However, life event stress was a significant predictor of depression in females only.

Furthermore, in an investigation of 481 women, Home (1997) suggested that the central issue in determining psychological effects of multiple role strain and stress may be an individual's perceived satisfaction (quality) rather than the number (quantity) of available support from friends and family. Likewise, a study by Swickert, Rosentreter, Hittner, and Mushrush (2002) compared extraverts and introverts and found support for this notion. They suggested that although extraverts had larger social networks and more frequent contact with individuals in their network, they did not report more satisfaction with network members. Moreover, Carney-Crompton and Tan (2002) investigated the role of social support on emotional well-being among traditional and non-traditional college students and found that nontraditional students, despite having fewer sources of emotional and instrumental support, were as satisfied as their traditional counterparts with regards to their support systems.

In addition, Vandervoort (1999) investigated the relationship between social support and mental and physical health and found that poor functional support (quality of support) was related to physical health problems while structural support (network size) was not. Moreover, although results indicated that both poor functional and structural support were related to depression and anxiety, functional support was related more strongly to these outcome variables.

Hence, Vandervoort (1999) concluded that the quality of social relationships may be more important than quantity for optimal mental and physical health.

Furthermore, Ross, Lutz, and Lakey (1999) note that recent research has also made a clear distinction between perceived support and received (enacted) support. Adopting this distinction, perceived social support is a concept that can be defined as an individual's cognitive appraisal of being connected to others and perceiving that they can rely on others. Enacted support on the other hand is conceptualized as actions that others perform when they provide assistance to a person. Support for these two concepts as separate has been indicated by a number of studies. For example, according to a review of the literature by Ross et al. (1999), the relation between perceived support and enacted support is typically less than $r = .30$. In addition, most authors have found perceived support to be a better predictor of psychological health than actual enacted support (e.g., Barrera, Sandler, & Ramsay, 1981; Schaefer, Coyone, & Lazarus, 1981; Wilcox, 1981).

Illustrating the relationship between social support and psychological and health outcomes, Carney-Crompton et al. (2002) found an association between quality of emotional support and psychological functioning, indicating that poorer quality of emotional support was linked to worsened psychological functioning, hence supporting the previous literature. A number of researchers have demonstrated similar findings, suggesting that the adequacy of social support may be directly and inversely related to the reported severity of psychological and physical symptoms (e.g., Barrera et al., 1981; Goplerud, 1980; Gore, 1978; Lin, Simeone, Ensel & Kuo, 1979; Ensel et al., 1991; Procidano & Heller, 1983; Procidano & Smith, 1997; Sarason, Levine, Basham, & Sarason, 1983; Sarason, Sarason, Potter & Antoni, 1985; Schaefer et al., 1981; Wilcox, 1981; Zimet, Dahlem, Zimet, & Farley, 1988).

The positive effect of social support has been viewed from a variety of perspectives in the literature, however, two main theoretical arguments have emerged. In the first of the two major positions, psychosocial variables such as social support are seen as intervening factors that eliminate or modify conditions leading to problems, thereby reducing the likelihood of physiological strain (e.g., anxiety, high blood pressure), as well as psychological distress (e.g., depression) to occur. In other words, social support acts as a buffer against the potentially negative effects of stress, especially under high levels of stress (e.g., Dahlem, Zimet, & Walker, 1991; Thoits, 1982). The second notion holds that social support has more of a direct effect on well-being in that adequate social support may prevent stressful life events from happening in the first place (Ensel et al., 1991).

Using a measure concerning the perceived availability of potential resources, Cohen, Clark, and Sherrod (1986) investigated whether the perceived availability of social support would protect an individual from depressive affect caused by stress. With this particular type of social support, the investigators found buffering effects for subscales pertaining to appraisal (someone to talk to), self-esteem (availability of a positive comparison), and belonging support (people to do things with), but not for tangible support (material aid).

In addition, Dahlem et al. (1991), who utilized the Multidimensional Scale of Perceived Social Support (MSPSS) to investigate the moderating effect of social support on stressful life events and depression, found that social support was related significantly to depression only for those who were experiencing high levels of stress. Dahlem et al. (1991) concluded that their findings lend support for the buffering hypothesis as it pertains to social support and psychological outcomes, but also notes the importance of considering the level of stress that participants are experiencing.

Although some evidence of the buffering effect of social support clearly exists (Cohen et al., 1986; Goplerud, 1980; Robbins et al., 1992), some researchers have not been able to replicate these results (Miller & Ingham, 1976), and some have found a negative effect of social support under certain circumstances (Glaser, Tatum, Nebeker, Sorenson, & Aiello, 1999; Hisch, 1980; Kaufman & Beehr, 1989). For example, Kaufmann et al. (1989) found what may be called a "reverse buffering effect" in the workplace, i.e., participants reported more stress (increase in negative affect) in conditions of high social support than under conditions of low support, while Glaser et al. (1999) found that, in the early stages of their experiment, high social support led to higher (rather than lower) perceived stress. Kaufmann and Beehr (1986) propose potential reasons that may account for this "reverse buffering" phenomenon. They suggest that increased interaction with the support figure may exacerbate the stress response if that support source is also the actual source of the stress. In addition, LaRocco, House, and French (1980) speculate that sources of social support in a work environment "may sometimes convince us that job conditions are not as bad as they seem, whereas at other time they may help us to see that they are as bad as, or even worse than, we thought" (p. 213-214). Similarly, Beehr (1976) argues that a cohesive group with extensive communication may either serve in easing or exacerbating the level of stress an individual perceives.

In an attempt to test the buffering hypothesis directly, Bowers and Gesten (1986) conducted an experimental investigation of the role that social support plays in attenuating anxiety in college students confronted with a mild stressor. Bowers et al. (1986) assigned randomly undergraduate females ($N = 75$) to one of three testing conditions: tested alone, tested with a stranger, and tested with a friend, and obtained pre- and post-test measures of self-rated anxiety as well as a palmar sweat test (hand perspiration). The authors found that social support

from friends did indeed decrease self-rated anxiety in students who were confronted with the stressor, however, the effect was not found for the palmar sweat measure (Bowers et al., 1986).

When investigating the stress - social support relationship, specifically the stress reducing potential of social support, Quittner (1992) and others note that it is important to pay attention to various contextual factors. In other words, the moderating effect of social support may depend on the type of stress examined, the level of perceived stress, the type of perceived social support, social support preference, and outcome variables measured. For example, Beehr, Jex, Stacy, and Murray (2000) found no evidence that social support moderated effects of job related stresses, and Ducharme and Martin (2000) found similar results, i.e., an absence of a buffering effect of instrumental support when investigating occupational stress and job satisfaction. On the contrary, several other researchers have identified support as one environmental factor that could help one deal with, or even inhibit, the perceived strain resulting from job stress (e.g., Cherniss & Dantzig, 1986; House et al., 1988; LaRocco et al., 1980).

In line with the contextual approach, Myers, Lindenthal and Pepper (1974) demonstrated additionally that social support was a determining factor in protecting peoples' emotional health following exposure to various degrees of life difficulties. Moreover, Goplerud (1980) found similar results when assessing students' psychological disturbances during their first year of graduate school and suggested consequently that social support appears to buffer successfully negative outcomes following unavoidable life changes such as those experienced by students in transition.

The contrasting results of the effects of social support may very well stem from the variations in constructs measured, the context in which variables are measured, and definitions of what constitutes stress outcomes (Barrera, 1986; Barrera, 2000; Barrera & Ainlay, 1983).

Despite the sometimes conflicting results of the effect of social support, it seems that enough evidence has been generated to suggest that support resources can be identified and harnessed for constructive helping purposes, and that the perceived availability and adequacy of the support system is more important than system size (e.g., Newland, & Furnham, 1999).

Among those investigators who believe that social support does work in buffering against stress, several attempts have been made to explore exactly how social support operates (e.g., Braboy-Jackson, 1992). For example, Furukawa, Sarason, and Sarason (1998) argued perceived social support may affect positively health outcomes by interacting with other variables, such as coping style. Similarly, Gottlieb (1985) suggested that a strong sense of perceived support is related to making less threat-focused appraisals of a stressful situation, thereby increasing the probability of using more effective coping strategies. Likewise, Sarason, Sarason, and Pierce (1994) reasoned that social resources not only provide emotional and informational support that increase the likelihood of more effective coping, perceiving one's social resources as adequate and readily available may also improve a person's self-esteem, which has the potential to result in better psychological outcomes. Similarly, Holahan, Moos, and Bonin (1997) suggest that social support enhance adaptive coping by bolstering an individual's courage to face the problem rather than avoiding it. Furthermore, Saltzman and Holahan's (2002) 5-week longitudinal investigation of college students (N=300) found that a perception of having more social resources at Time 1 was related to fewer depressive symptoms at Time 2 by ways of higher self-efficacy and more adaptive coping.

Although the literature suggests that availability and utilization of social support may very well be one of the more effective ways to battle stress, confusion regarding who is best suited for providing such support still exist (e.g., Robbins et al., 1995). As emphasized by

Cowen, Gesten, Boike, Norton and Wilson (1979), several studies have shown that people under stress will generally seek out anyone in their life who will listen. Cowen et al. (1979) argue that those empathic listeners may not necessarily need to belong to a mental health profession, and the situation is quite often the opposite, especially among individuals in lower SES communities. Likewise, Collins and Pancoast (1976) found that less than 15% of those identified as "poor" would take their problems to clergymen or physicians. The majority, then, would instead seek out what Caplan (1981) calls "informal caregivers". Considering these and other findings, it is understandable that Cowen et al. (1979) argue that "the work of informal, natural caregivers is among the most seriously overlooked areas of potential knowledge, and practical use, for mental health" (p. 636). Likewise, Robbins et al. (1995) suggest that people who are under stress may opt to seek help from formal sources (such as therapists, counselors, or ministers), or from informal sources (such as friends and family), but note that the latter is the more likely choice, especially among students. For example, when investigating preferred choices of social support in 84 undergraduates (44 men, 40 women), Robbins et al. (1995) found that students were much more likely to use informal sources of help rather than formal sources. Specifically, in coping with stress, 95% of the students (80 of 84 students) reported having talked to a good friend, and 70% also indicated that they had sought the support of a family member. In addition, only 15% of students had talked to a therapist to cope with tension, while 7% reported having talked to a clergyperson. No gender differences were found in terms of students' preferences in coping behaviors related to use of support. Moreover, students rated "talking with a friend" as being the most helpful coping strategy. Of the 80 students who reported talking to a friend when under stress, 60% found this coping method useful, versus 42% of those who sought the support of a family member. Of the students who elected to talk to formal sources, 38% indicated that a

psychologist had been helpful in decreasing their stress, compared to 17% for the clergyman (Robbins et al., 1995).

Based on the research on students' perceptions of social support providers, selection of an appropriate measure to tap into the specific dimensions of perceived support adequacy became paramount. By utilizing the Multi-dimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988), a scale that assesses perceived social support from family, friends, and significant other, the present study allowed for students to interpret support items in a way that is relevant to them. In other words, perceived support from a significant other refers to a "special person" in this scale, which leaves the assignment of the support source open to respondents (Canty-Mitchell & Zimet, 2000). Furthermore, Canty-Mitchell et al. (2000) highlights that the inclusion of perceived social support from a "non-specified" significant other makes the MSPSS especially relevant to adolescents and young adults because of the emergence of dating relationships. In addition, Chou (2000), who used the MSPSS with Chinese adolescents, suggested that the MSPSS "addresses the subjective assessment of social support adequacy" (p. 300). This is an advantage of the MSPSS since the perceived adequacy of social support or satisfaction with the quality of social support has been found to be strongly related to symptoms of depression (Dean, Kolody, & Wood, 1990).

Although the MSPSS has been used to investigate the relationship between perceptions of social support adequacy and psychological health in various populations, the measure, hence this particular way of looking at perceived social support, has not been used in more comprehensive models with college students. To fully understand how perceived social support operates, we argue that it is important to include not only support variables and measures of psychological

health, but other potential moderators, such as coping style, while accounting for perceived stress and life events.

Overall, research suggests that not only does social support have the potential of being an effective buffer against negative outcomes of stress, it also appears that, as a resource, social support is the preferred choice among college students. This is encouraging, as informal social support interventions may carry less of a stigma, be more easily accessible, and be more affordable compared to formal and/or traditional approaches, hence making social support-based programs easier to implement and promote on college campuses. Moreover, considering recent trends regarding social support, the present study focused on *perceptions* of social support quality (support satisfaction/adequacy) rather than social network size and enacted (received) support.

Coping

Coping is one variable that has received a lot of attention in the past decades due primarily to strong evidence that it is a moderating factor in the relationship between life stress and mental health outcomes (e.g., Beasley, Thomson, & Davidson, 2003; Blalock et al., 2000; Carver, Scheier, & Weintraub, 1989; Printz, Shermis, & Webb, 1999; Robbins et al., 1992). According to Lazarus et al.'s (1984) definition, psychological coping in the face of stress refers to a process which includes appraisal of the threat and subsequent utilization of available strategies (behavioral and cognitive) as to manage both the problem itself and the emotions associated with the situation.

In the literature, several different ways of conceptualizing coping beyond the general definition can be found. Some researchers have taken a trait approach to the investigation of coping based on the belief that coping is habitual problem solving thoughts and actions (see

Penley, Tomaka, & Wiebe, 2002 for a review). The trait approach suggests that individuals can be classified according to their stable coping styles. Other researchers have adopted a process or transactional approach to the investigation of coping, arguing that coping is not a stable trait but rather a transactional phenomenon involving the constant changing of coping efforts in response to the demands of the particular stressor or situation. For example, Folkman and Lazarus (1980) and Folkman, Lazarus, Gruen, and DeLongis (1986) followed Lazarus et al. (1984) and adopted the early definition of coping. According to the aforementioned researchers, coping can be viewed as "cognitive and behavioral efforts to maintain demands that are appraised as taxing or exceeding the resources of the person" (Lazarus et al., 1984, p. 141). Resources are defined by Wells, Hobfoll, and Lavin (1999) as "those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies" (p. 1173).

This study emphasizes the process approach to the understanding of the coping concept and its mechanisms. In other words, coping is believed to involve efforts to alter a stressful situation (i.e., problem-focused coping) as well as attempts to regulate any emotional distress stemming from the situation (i.e., emotion-focused coping), depending on the specific nature of situation. Problem-focused coping may include taking responsibility for the situation, seeking information from others, planning, and taking action, whereas emotion-focused coping often includes focusing on the positive aspects of the situation (cognitive restructuring), mental or behavioral disengagement (avoidance), and seeking emotional support from others. It should be noted that although problem-focused coping and emotion-focused coping are distinctly different from one another, aspects of both have the potential for reducing psychological distress (e.g.,

Penley et al., 2002). We note, however, that active, problem-focused coping has been found consistently to be helpful in reducing stress (Endler & Parker, 1990; Epstein & Meier, 1989).

In their review of the coping literature, Penley et al. (2002) noted that researchers who are taking the process approach argue that knowing a person's coping style (trait) may not be very useful in that it reveals very little about the individual's response to a specific stressful event. According to Penley et al. (2002), support for this argument can be found in the literature on coping processes, which, generally, suggest that individuals will use a certain coping strategy depending on situational factors (e.g., changeability, controllability) and individual factors (e.g., self-confidence, perceived resources). Specifically, with reference to controllability, the literature seems to suggest that problem-focused coping is more adaptive in situations that are appraised as controllable, while emotion-focused coping will be more effective in situations appraised as uncontrollable (Endler, Speer, Johnson, & Flett, 2000). In addition, Folkman et al. (1980) and Lazarus (1993) suggest that people actually may use elements of both problem-solving coping strategies and emotion-focused coping strategies when faced with a stressful situation.

As noted in the literature, stress is not a direct and simple function of exposure to sources of difficulty or stressful events, but may in fact be modulated by one's perception of resources, both psychological and social. Psychological coping, then, would refer to 1. the process of appraisal of threat, and 2. the mobilization of cognitive and behavioral resources to combat the stress and the emotions evoked by it (e.g., Penley et al., 2002). Furthermore, well-being may be affected by perceptions of one's available resources in dealing with the stressor or situation (e.g., Matheny, Curlette, Aysan, Herrington, Gfroerer, Thompson, et al., 2002), as well by actual coping responses (e.g., Steptoe, 1991). Similarly, studies have shown that the way in which people cope affects their appraisal of the situation or the meaning they assign to a challenge,

thereby altering their experience and perception of stress (Park & Folkman, 1997). For example, in an investigation of coping strategies and job stress in teachers, Griffith, Steptoe, and Cropley (1999) found that the use of adaptive coping strategies not only moderated the impact on stresses on well-being, but influenced the appraisal of environmental demands as stressful.

Research has suggested that people use various strategies to combat excessive stress and several theories about coping exist. For example, Thoits (1986) states that, to reduce the perceived threat of a particular situation or stressor, one may directly alter circumstances of the situation (behavioral problem-focused coping) or reinterpret the situation (cognitive problem-focused coping). In addition, Thoits (1986) describes such coping techniques as "stress-buffering or stress-management processes" (p. 419), because they alter situations and reactions (i.e., the source of the perceived stress). Moreover, Thoits (1986) indirectly highlights the link between coping and social support by suggesting that the social support construct can be viewed as a coping resource. This notion of social support as a coping resource becomes especially compelling if it entails the provision of alternative coping techniques (behavioral or cognitive), or direct attempts at reinforcing a particularly effective coping behavior.

Furthermore, when reviewing the literature in an attempt to determine what effective coping entails, Folkman and Tedlie-Moskowitz (2000) noted that positive reappraisal (focus on the good) and problem focused (active) coping are generally beneficial. Specifically, positive reappraisal can include discovering opportunities for personal growth, perceiving actual personal growth, and acknowledging how ones efforts may benefit others

The assumption that the use of effective coping strategies may reduce or prevent negative consequences when a person is faced with a stressful situation has received a lot of attention and support, however, the literature also includes findings regarding the effects of poor coping

behaviors. While coping strategies in certain situations may protect an individual from the negative health consequences of stress by regulating negative emotions or generating alternative solutions, other coping behaviors fail to serve this function. For example, instead of managing a problem through the use of an efficient coping strategy (e.g., actively seeking out support or alternatives), a person might make efforts to deny the stressor, avoid seeking out alternative solutions and resources, and attempt to regulate their emotions rather than problem solve, which could potentially have negative effects on psychological health (Seiffge-Krenke & Klessinger, 2000). In other words, there is a positive relationship between avoidant coping and distress (e.g., Carver & Sheier, 1994). For example, Peterson, Mullins, and Ridley-Johnson (1985) found that avoidant coping was the most prominent strategy adopted by young adolescents who suffered from depression. Likewise, Robbins et al. (1992) found that while avoidant coping was effective in the short-term for college students, escaping from one's problems inevitably led to increased depressive affect in the long-term. In addition, Blalock et al. (2000) predicted that the use of cognitive avoidance coping may be reflective of a person's negative appraisal concerning their ability to control a stressful situation. In their study of college students (N=179), Blalock et al. (2000) found that cognitive avoidance coping was predictive of depressive and anxious symptoms in women. However, the authors did not find a significant relationship between behavioral avoidance coping and the aforementioned negative symptoms in either women or men.

Concurrently, from the situational perspective of coping and coping efficacy, several researchers have suggested that many coping behaviors (such as alcohol use or aggressive behavior) in response to stress, although appearing "active", are in fact maladaptive insofar they do not lead to either successful resolution of the stressful situation, nor to the reduction of

distress (e.g., Aseltine, Gore, & Gordon, 2000; Holahan & Moos, 1991; Mattlin et al., 1990; Piko, 2001).

In conclusion, then, effective coping is measured in terms of a person's psychological and social functioning, or the ability to deal with events in a way that minimizes the risk of negative emotional outcomes for the individual. Active problem solving in response to stress, including the utilization of social supports, have shown to predict significantly better functioning. In contrast, coping through avoidance and escape appear to predict poorer emotional outcomes (e.g., Blalock et al, 2002; Peterson et al., 1985).

Well-being

As previously discussed, the effectiveness of social support and coping as moderators of the stress – well-being relationship may depend on various factors, such as the type of stress under investigation and the definition of social support and coping. Results and strength of relationships may also vary based on the conceptualization and measurement of the well-being construct. The well-being construct (also referred to as "mental health" or "emotional health" in the literature) and the key features of subjective well-being are not easily defined, hence a multitude of conceptual approaches exist (Kafka & Kozma, 2001). Despite variations, however, Kafka et al. (2001) note that previous investigators seem to agree that psychological well-being contains a cognitive and an affective component. Moreover, Kafka et al. (2001) suggest that the affective component of well-being is determined by the individual's level of positive and negative affect, and that it is best understood as the balance between these two emotional states. On the other hand, much similar to appraisal, the cognitive component of well-being is based on an individual's evaluation of various domains in their life and the experiences they encounter (Kafka et al., 2001).

Furthermore, some researchers have recently suggested that well-being may be assessed in terms of general satisfaction with life, self-perceived health, and satisfaction with services and resources offered (Beekman, Penninx, Deeg, de Beurs, Geerlings, & Tilburg, 2002). Well-being then, in the simplest sense, is composed of positive affect, negative affect, and life satisfaction.

Kafka et al. (2001) argue that the logic behind the current definition and way of measuring subjective well-being, the so called life satisfaction or contentment approach, stems from the notion that if one evaluates life favorably in many domains, this will lead to an overall positive outlook on life (higher well-being), which can also be viewed as an absence or non-intrusive level of negative symptoms. Similarilty, Greenspoon and Saklofske (2000) suggest that the degree to which the well-being construct and psychopathology are related, or may be used interchangeably, depends on the definitions provided by any given researcher.

Moreover, when looking at well-being as a global construct, the literature suggests that emotional well-being defined as life satisfaction is a relatively stable characteristic of the individual, i.e., day-to-day fluctuations in mood are assumed to not affect overall satisfaction with life (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Likewise, based on the notion that well-being is fairly stable within the person, Reis et al. (2000) conceptualizes well-being in terms of need satisfaction, arguing that although positive and negative affect in response to minor events have the potential to produce "good" and "bad" days, this natural variation may not affect global subjective well-being (life satisfaction) when controlling for certain personality dispositions.

Furthermore, Kahneman, Diener, and Schwartz (1999) suggested that emotional well-being may depend on whether a person perceives the "trend" of their satisfaction with life to be declining or improving rather than on one's current condition. From this perspective, it takes

more than just one minor set-back to produce severe emotional distress, supporting Selye's (1956) theory of general adaptation.

Gender Differences

Although numerous studies regarding relationships between stress, social support, coping, and outcomes exist, findings regarding differences between men and women on these variables are inconclusive. For example, studies have indicated that gender place a role in both the experience and perception of various types of stressors, with women reporting higher stress from academic demands (e.g., Misra, McKean, West, & Russo, 2000) and interpersonal issues (Narayanan, Menon, & Spector, 1999) compared to men, while men report more stress from issues related to finances (McDonald & Walters, 2001). Felsten (1998) found no difference between male and female college students in their experience of stress stemming from various daily events. In contrast, other investigations have found that, when faced with identical stressors, females perceive their stress as being higher compared to males (e.g., Day & Livingstone, 2003). Furthermore, although most research suggest that that women are twice as likely as men to be diagnosed with depression (Kessler et al., 1994), report higher levels of depressive symptoms (e.g., Hankin & Abramson, 2001) and anxiety (Hewitt & Norton, 1993), other studies that were using the same outcome measures have failed to replicate such findings (e.g., Felsten, 1998; Zamarripa, Wampold, & Gregory, 2003). Previous studies have indicated that females generally tend to seek out social supports more often than males (e.g., Felsten, 1998; Ptacek, Smith, & Zanas, 1992) and may perceive their supports as more adequate (e.g., Kessler Essex, 1982). Interestingly, some researchers have found no difference between males and females on support seeking behaviors when both groups are either exposed to similar stressors or are in comparable roles (e.g., Porter & Stone, 1995; Ptacek et al., 1992). Similarly, diary studies

comparing the use of social supports as a general coping resource found no difference between males and females (Porter, Marco, Schwartz, Neale, Schiffman, & Stone, 2000). In terms of avoidance coping in males and females, results are also inconclusive. Some studies suggest that women use more avoidant behaviors in response to stress (e.g., Ptacek et al., 1992), while others indicate that men are more likely to use avoidance (e.g., Sigmon, Stanton, & Snyder, 1995), and some have found no differences between genders in their use of avoidance coping (e.g., Felsten, 1998; Rosario, Shinn, Morch, & Huckabee, 1988). In reviewing the literature, it becomes apparent that the relationship among stress, social support, and coping variables need to be investigated further, and that their utility as predictors of psychological outcomes must be viewed in light of the make-up of the population (i.e., accounting for gender effects).

The Current Study

An individual's experience of stressful life events has been linked to negative psychological and physiological outcomes such as depression (e.g., Mazure, 1998), anxiety (e.g., Kessler & Frank, 1997), and medical issues (e.g., Ensel et al., 1991; Tennant, 1996). Various studies have found alarming rates of depression and other stress-related concerns in college students, and the problem seems to be increasing rapidly (American College Health Association, 2004). However, although a link clearly exists, several investigations have suggested that the direct relationship between life stress and negative outcomes is fairly weak (e.g., Cohen et al., 1983; Kessler, 1997, Rabkin et al., 1976), possibly due to external protective factors such as social support (e.g., Kessler, 1997), and/or internal moderating variables such as coping style (for review see Penley, et al., 2002). Specifically, studies have found that social support moderate, or buffer, against the effects of stressful life events, while others have suggested that adequate support may interact with coping in that it promotes more active approaches. The specific role of

perceived social support in relation to coping, and the manner in which these two concepts operate in relation to different types of stress and outcomes, is inconclusive and warrants further attention (e.g., Bovier, Chamot, & Perneger, 2004; Dean & Ensel, 1982; Lin & Ensel, 1984).

The present study addresses the need for exploration of relationships and interactions among variables that either independently account for some variance in the stress-well-being relationship, or moderate the relationship. On a theoretical level, using Lazarus & Folkman's (1984) resource theory of stress as a basis, the overall goal of this study was to refine the conceptualization of social support as a moderating variable in the stress – well-being relationship, and further our understanding of predictive and protective factors.

Based on the assumption that social support affects well-being in multiple ways, we suggest that the development of a comprehensive model is imperative in understanding the stress-well-being relationship. Consequently, the first purpose of the present study was to investigate relationships among life events, perceived global stress, coping, social support adequacy, depressive symptoms, anxiety, and life satisfaction in college students. A secondary aim of this study was to explore and compare the relative significance of variables that are hypothesized to predict the aforementioned outcome variables. The third purpose of the proposed study was to investigate if a moderation model explains the relationship between stress and emotional well-being. Specifically, this study explored whether the relationship between stress and negative outcomes is moderated by perceived social support adequacy and availability. Finally, we conducted exploratory and structural path analyses to demonstrate comprehensively the interplay among stress, coping, social support, and psychological adjustment.

In addition to our exploration of predictive factors through a series of regressions, we derived the following hypotheses based on the literature and theoretical assumptions:

Hypotheses

1. Perceived adequacy (satisfaction) of available social support from family, friends, and significant other (as indicated by scores on the MSPSS) is related to greater well-being as indicated by lower levels of depression and anxiety symptoms, and higher satisfaction with life.
2. Perceived global stress (PSS) is related positively to life event stress (LES) and related negatively to scores on the perceived social support measure (MSPSS).
3. Both measures of stress (PSS and LES) are related positively to depressive symptoms (BDI), anxiety symptoms (BAI), and related negatively to life satisfaction (SWLS).
4. More perceived social support (MSPSS) will be related to coping style (WOC) in that higher perceived satisfaction predicts less use of avoidant coping.
5. More use of escape-avoidance coping (WOC) is related to higher scores on the BDI and BAI, and lower satisfaction with life (SWLS).
6. Social support (MSPSS) moderates the relationship between perceived stress (PSS) and outcome variables (BDI, BAI, and SWLS).

METHODS

Participants

The participant pool for the present study consisted of 238 students (122 males and 116 females) from two Universities in the South-East. Participants (mean age 19.48 years) were from a variety of ethnic and cultural backgrounds. The majority of the sample identified themselves as Caucasian (71%), while the rest of the sample consisted of Hispanics (11%), African Americans (11%), Others (6%), and Asian Americans (1%).

Measures

Stress. Participants completed the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), which is a 14-item Likert-type scale that measures global appraised stress. Internal consistency reliabilities have ranged from .84 to .86 and the PSS has been significantly correlated with life events, depressive and physical symptoms, social anxiety, and lower life satisfaction (Cohen et al., 1983). Cronbach's alpha for the present study was .82.

The student-specific version of the Life Experiences Survey (LES; Sarason, et al., 1978) was used to measure stress from life events. This 39-item questionnaire covers events during the past year, and utilizes a 5-point Likert scale with designated endpoints of "extremely positive" (+2) to "extremely negative" (-2). Events experienced without any impact are indicated as a "0" by the student. Summing of effects from positive events yield a "positive life event score", while the same process for negative events create a "negative life events score." A total score is also

generated. Generally, the negative score is used as a measure of life event stress (e.g., Beasley et al., 2003).

Coping. A modified version (no filler items) of the Ways of Coping Questionnaire (WOC; Lazarus & Folkman, 1980) was used to assess coping behaviors. This measure consists of 50 items pertaining to various cognitive and behavioral coping strategies that one might use when faced with stress. Using a 4-point Likert type scale, respondents are asked to indicate how frequently they use each type of coping in response to an identified stressor (0 = Not used; 1= Used somewhat; 2 = Used quite a bit; 3 = Used a great deal). Eight subscales are generated, which are labeled Confrontive coping (risk taking), Distancing, Self-controlling (emotion-focused), Seeking social support, Accepting responsibility, Escape-avoidance, Planful problem solving, and Positive reappraisal.

Social Support. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item measure that was designed to assess perceptions of social support adequacy from three specific sources: family, friends, and significant other. The scale uses a 7-point Likert-type scale with response options ranging from "very strongly disagree" to "very strongly agree". The authors report an internal reliability of .88 for the total scale. For the present study, Cronbach's alpha was .92. The test-retest reliability for the whole scale is .85. High levels of perceived support as measured by the MSPSS has been associated with low levels of depression and anxiety symptomatology as measured by the Hopkins Symptom Checklist. Moreover, Dahlem et. al. (1991) found that the social desirability bias did not influence the results.

Well-being. The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report instrument used for measuring the severity of depression in adults. Each item

is rated on a 4-point scale from 0 to 3, with total scores ranging from 0 (minimal) to 63 (severe). Generally, a total score of 0-13 is considered minimal range, 14-19 is mild, 20-28 is moderate, and 29-63 is severe. Generally, 16 is considered the clinical cutoff score. Use of the BDI-II with college population suggests good psychometric properties (Steer & Clark, 1997). Internal consistency of the BDI has ranged from .92 to .93, and the test-retest reliability was .93 in a previous study. Internal consistency (Cronbach's alpha) for our sample was .90. The BDI-II has been found to correlate positively with widely used measures of depression, hopelessness, suicidal ideation, and anxiety. 47 students (20 %) in the present sample reported depressive symptoms above the clinical cutoff of the BDI-II (score > 16).

The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) was used to measure the severity of anxiety. The BAI is a 21-item self-report instrument and respondents are asked to rate the severity of each symptom on a 4-point scale ranging from 0 (not at all) to 3 (severe). A total score is calculated from the severity ratings of the 21 items. The BAI has displayed high concurrent validity with other self-report and clinical rating scales of anxiety (Beck et al., 1988). For the present study, Cronbach's alpha = .88.

The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was used to assess participants' current level of life satisfaction. The 5-item SWLS is one of the most widely used measures of the cognitive aspect of subjective well-being. Internal consistency (Cronbach's alpha) for the present study was .91.

Demographics. In addition, to obtain information regarding demographics, participants completed a brief questionnaire assessing variables such as age, gender, ethnicity, year in school, college GPA, and family SES.

Procedure

Following approval from the Institutional Review Board (Appendix), the investigator recruited student participants through means laid forth in the Psychology department guidelines. After reading and signing an informed consent form, participants completed the packet of questionnaires. Experimenters or research assistants were available to answer questions pertaining to the questionnaires throughout the session. Participants were provided also with a debriefing form that outlined the purpose of the study and contained experimenter contact information. There were no foreseeable costs or risks associated with participation in this study, however, contact information for the counseling center on campus, which provides mental health services to students free of charge, was given to the participants from the main data collection site.

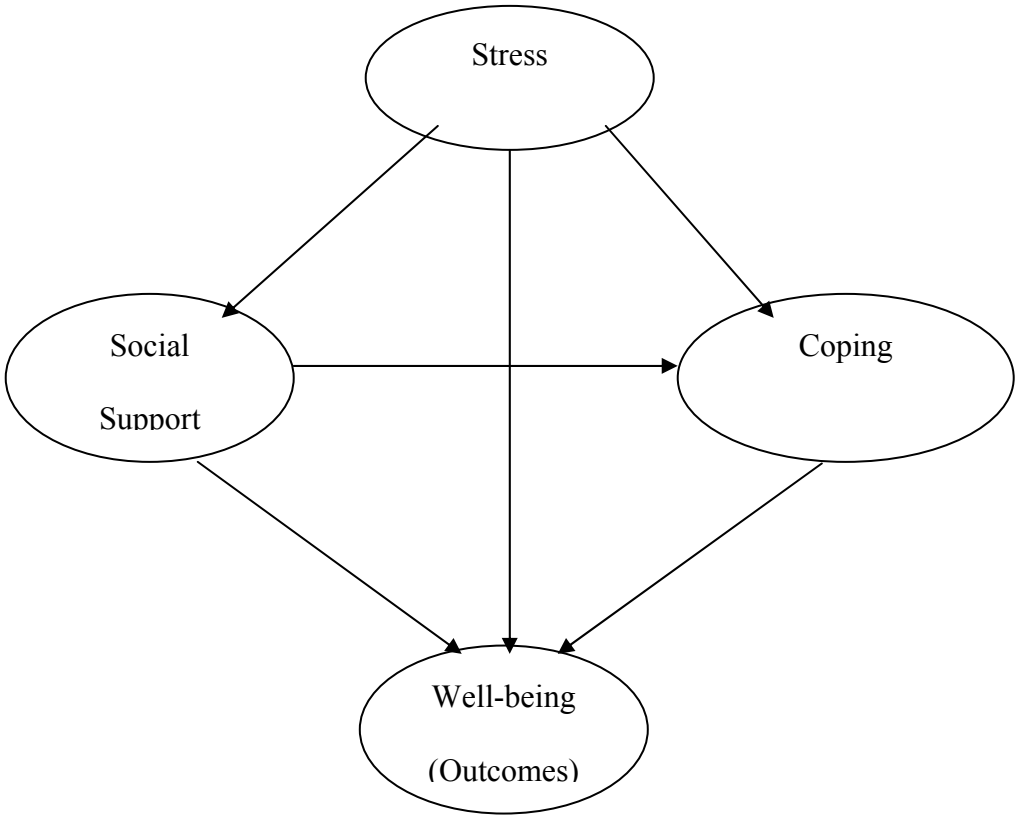


Figure 1: A Model of Hypothesized Relationships Among Variables

RESULTS

Overview of Analyses

Means, standard deviations, correlations, and regressions were calculated using SPSS for Windows 11.5 (SPSS, 2003), and structural equation modeling (SEM) analyses were performed using Statistica SEPATH for Windows 5.1 (Statistica, 1997). Unless otherwise stated, an alpha level of .05 was used to determine statistical significance.

T-test analyses revealed several significant mean differences between males and females. In terms of perceived global stress, male scores on the PSS (M =23.76, SD = 7.03) were significantly lower compared to females' scores (M =27.01, SD = 6.58) as indicated by t (237) = -3.731, $p < .000$). Furthermore, females' perception of total social support adequacy as measured by the MSPSS (M = 69.75, SD = 9.87) was significantly higher than the levels reported by males (M = 65.66, SD = 12.05) as indicated by t (237) = 2.881, $p < .05$. In addition, females reported significantly more depressive symptoms on the BDI-II (M = 9.91, SD = 8.32) compared to males (M = 7.80, SD = 7.37), with t (237) =-2.078, $p<.05$. Similarly, females' scores on the BAI suggested that they were significantly more anxious (M = 9.89, SD = 8.41) than their male counterparts (M = 6.61, SD = 6.53) as evidenced by t (219) = -3.352, $p < .001$. Finally, in terms of coping strategies, the only gender difference was found on the Seeking Social Support subscale of the WOC. Specifically, scores for the female group (M = 8.29, SD = 3.31) indicated that they used this type of coping significantly more compared to males (M = 7.40, SD = 3.30) with t (237) = -2.06, $p < .05$. In contrast, results indicated that males (M = 24.01, SD = 6.47) and

females (M = 23.58, SD = 5.41) did not differ significantly on the measure of overall life satisfaction (SWLS) as indicated by t (231) = .553, $p < .55$. In addition, when exploring specific events which were reported as having generated negative stress in students (LES-negative), scores for males (M = 5.89, SD = 6.04) and females (M = 6.52, SD = 4.07) did not differ significantly, t (237) = -.93, $p > .05$). Overall, scores for both males and females on measures of depression, anxiety, stress, and life satisfaction resembled closely those reported in previous studies with college students.

Because gender differences were found for almost all of the pertinent variables (e.g., depression, anxiety, perceived global stress, and perceived social support), male and female data were analyzed separately. In addition, gender was controlled in subsequent regression analyses examining predictors of well-being. Refer to the Table 1 for means and standard deviations of the most relevant scales.

Table 1. Means and Standard Deviations

	Males		Females		
Variables	*M*	*SD*	*M*	*SD*	*t*
PSS Global Stress	23.76	7.01	27.01	6.58	-3.65***
LES Total Life Event stress	10.92	7.20	12.65	6.35	-1.97*
LES Negative Life Event stress	5.89	6.04	6.52	4.07	-.93
LES Positive Life Event stress	5.50	2.96	6.63	3.62	-2.61*
MSPSS Total Social Support	65.66	12.05	69.76	9.87	-2.88*
MSPSS Friend Support	22.08	4.33	23.04	3.67	-1.84
MSPSS Family Support	22.92	4.21	22.85	4.47	.13
MSPSS Significant Other Support	21.06	5.88	23.90	4.32	-4.27***
BDI-II Depression	7.80	7.37	9.91	8.32	-2.08*
BAI Anxiety	6.61	6.53	9.89	8.41	-3.35***
SWLS Life Satisfaction	24.01	6.47	23.58	5.40	.58

WOC Confrontive Coping	7.27	3.37	7.00	3.39	.62
WOC Distancing	7.07	2.97	7.20	3.13	-.31
WOC Self-Controlling	9.34	3.80	9.10	3.66	.48
WOC Seeking Social Support	7.41	3.30	8.29	3.32	-2.06*
WOC Accepting Responsibility	5.38	2.49	5.37	2.51	.06
WOC Escape Avoidance	7.63	4.51	8.36	4.39	-1.26
WOC Problem Solving	8.50	3.18	8.64	3.33	-.315
WOC Positive Reappraisal	7.75	4.19	8.44	4.17	-1.26

Note. M = mean. SD = standard deviation.

Note2. * $p < .05$ ** $p < .01$ *** $p < .001$

Relationships among stress, social support, coping, and well-being

To investigate simple relationships between demographic variables, scales, and outcome measures, separate correlational analyzes were performed on males and females (Table 2).

As predicted, students' scores all dimensions of the MSPSS (i.e., total support, support from friend, family, and significant other) were related significantly to lower levels of depression and higher satisfaction with life across genders. For females, the MSPSS total support score correlated negatively with anxiety, but no significant correlation between the MSPSS and anxiety was found for males.

Furthermore, results indicated that perceived global stress (PSS), correlated positively and significantly with the LES negative life events scales for males and females alike. Likewise, the PSS and the LES negative life events scale were both related significantly to higher levels of depression and anxiety, and lower satisfaction with life for both genders. Moreover, higher scores on the PSS was related to lower perceived social support on all MSPSS subscales in

females, while only the MSSPSS significant other subscale correlated significantly with PSS scores for males (one-tailed).

Results also indicated that the WOC-Escape-avoidance subscale was related negatively to the family support subscale of the MSPSS in females, however, this type of coping did not correlate significantly with the MSPSS in the male sample. As expected, a significant positive correlation between escape-avoidance and levels of depression and anxiety was found for both males and females. In accordance with our hypothesis, this type of coping was also related negatively to life satisfaction among males and females. In contrast, scores on the WOC-Planful problem solving subscale, historically an adaptive way of coping, correlated positively with life satisfaction for females only. No other significant relationship between this type of coping and outcome variables was found.

Table 2. Correlations Among Males and Females Separately

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
PSS	1	.31*	-.31**	-.23*	-.22*	-.27**	.57**	.49**	-.52**	.05	.13	.22*	.02	.08	.41**	-.03	-.14	.01	-.05
LES-S	.33*	1	-.11	.02	-.15	-.10	.31**	.30**	-.35**	.25*	.11	.29**	.29*	.38**	.34	.06	.22*	-.07	-.18
MSPSS-Tot	-.14	-.10	1	.82**	.74**	.84**	-.41**	-.20*	.39**	.07	-.04	-.05	.29**	.04	-.08	.12	.09	.02	.19*
MSPSS-Fr	-.11	-.07	.83**	1	.37**	.67**	-.31**	-.15	.36**	.15	.14	.11	.36**	.15	.07	.17	.18	-.09	.11
MSPSS-Fa	-.04	-.12	.80**	.58**	1	.37**	-.40**	-.22*	.33**	-.01	-.17	-.15	.19*	-.10	-.24**	.05	.01	.03	.22*
MSPSS-Sig	-.16	-.02	.87**	.61**	.57**	1	-.28**	-.13	.24**	.04	-.05	-.08	.16	.04	.01	.06	.02	.10	.07
BDI-II	.63**	.43**	-.34**	-.24**	-.32**	-.32**	1	.63**	-.54	-.03	.11	.25**	-.04	.19*	.41**	-.03	-.03	-.02	.02
BAI	.48**	.26**	.11	-.05	-.05	-.07	.48**	1	-.34**	.16	.22*	.21*	.06	.24**	.46**	-.02	.02	-.12	.16
SWLS	-.55**	-.25**	.52**	.40**	.50**	.47**	-.60**	-.25**	1	.06	-.01	-.19*	.01	-.10	-.28**	.22*	.12	-.00	.17
Confront	.18	.12	.03	.09	-.05	.06	.25**	.31**	-.10	1	.24**	.35**	.52**	.34**	.44**	.41**	.41**	.01	-.03
Distancing	.07	.07	-.05	-.03	-.03	-.06	.16	.07	-.05	.27**	1	.54**	.09	.52**	.56**	.34**	.31**	-.03	-.08
Self-control	.13	.12	-.24**	-.15	-.18*	-.27**	.26**	.24**	-.18*	.35**	.42**	1	.29**	.52**	.60**	.48**	.48**	-.03	-.11
Support	-.02	.06	.20*	.13	.15	.29	.07	.19*	.11	.47**	.34**	.26**	1	.36**	.25**	.40**	.46**	.08	.01
Accept	.17	.14	.06	.07	.02	.09	.26**	.25**	-.13	.44**	.31**	.39**	.49**	1	.52**	.42**	.45**	-.00	-.08
Escape	.38**	.21	-.06	-.02	-.04	-.06	.43**	.30**	-.22*	.49**	.52**	.36**	.41**	.45**	1	.26**	.33**	-.10	.05
Prob. Solve	-.13	.10	.02	.01	.00	.05	-.04	.07	.15	.26**	.24**	.47**	.37**	.35**	.06	1	.50**	.05	-.06
Pos. Reapp.	-.16	-.03	.07	.16	.06	.08	-.02	.14	.18	.31**	.38**	.44**	. 48**	.49**	.33	.37**	1	.11	-.14
Age	-.04	-.01	-.13	-.25**	-.11	-.10	.01	-.06	-.26**	-.05	.10	.13	.04	.07	-.11	-.03	-.06	1	-.12
Income	-.08	-.16	.31	.25**	.35**	.26**	-.11	.08	.28**	-.00	-.18	-.30**	-.04	-.10	-.10	-.22*	.04	-.37**	1

Note: *Correlation is significant at the .05 level (two-tailed). **Correlation is significant at the .01 level.
Note: Correlations for females are on the top half of the matrix, while correlations for males are on the bottom half of the matrix

Predicting Well-being in College Students

Hierarchical multiple regression was used to predict well-being (depression, anxiety, and life satisfaction, respectively) from a number of variables including psychological symptoms (depression and/or anxiety), stress (LES negative life events and PSS global stress), social support (MSPSS total), and escape-avoidance coping (WOC subscale score). For the overall sample (males and females combined), variables were entered into the equation in three predetermined steps: (a) gender, (b) anxiety and/or depression, and stress (negative life events and global stress), and, lastly (c) escape-avoidance coping and social support. Naturally, when investigating predictive models for males and females separately, only the two latter blocks were entered into the equation.

Depression. With regard to depression, gender alone (Block 1) was significantly predictive for the combined sample, F (1, 222) = 4.05, $p < .05$. Furthermore, the addition of students' level of anxiety, perceived stress, and stress from negative life events (Block 2) contributed significantly to the prediction model, F (4, 219) = 69.68, $p < .001$. In this step, anxiety, perceived stress, and negative life events stress each accounted for a significant portion of the variance in depression ($p < .001$, $p < .001$, and $p < .01$, respectively), and gender was no longer a significant contributor in the overall model ($p < .36$). Finally, results revealed that social support and escape-avoidance coping (Block 3) added to the prediction model above and beyond the previous step, as indicated by F (6, 217) = 12.79, $p < .001$. Closer examination of coefficients entered in Block 3 suggested that both social support and avoidance coping contributed with a unique portion of the variance above the previous step ($p < .001$ and $p < .05$, respectively). The overall model for the combined sample, with life event stress, perceived stress, anxiety, social

support, and avoidance coping as significant predictors, explained 55% of the variance in depression.

The regression analysis examining depression in males and females separately demonstrated that current level of anxiety, perceived global stress, and stress from negative life events (Block 1) predicted significantly depression for both samples, F (3,110) = 34.23, $p < .001$ and F (3,106) = 35.07, $p < .001$, for males and females, respectively. For females, however, negative life event stress did not contribute a significant amount of the variance. Additionally, Block 2, which included students' level of perceived social support and their use of escape-avoidance coping, predicted significantly depression for both males and females, $F(5,108) = 9.27$, $p < .001$ and $F(5,104) = 5.09$, $p < .001$, respectively, however, escape-avoidance coping was a significant predictor for males only. Overall, both the male and female model accounted for over half of the variance in depression (55.9% and 54.3%, respectively).

Anxiety. Results indicated a significant predictive relationship between gender and anxiety (Block 1) for the overall sample, F (1,222) = 13.33, $p < .001$. Moreover, anxious symptomatology was predicted significantly by the combination of gender, depression, perceived stress, negative life event stress, and escape-avoidance coping (Block 2), as indicated by $F(4,219) = 35.98$, $p < .001$. A closer examination of variables suggested that gender, perceived stress, and depression each appeared to contribute significantly to the variance accounted for by Block 2 ($p < .05$, $p < .001$, and p .001, respectively). Furthermore, students' use of escape-avoidance coping and their perception of social support (Block 3) added significant predictive value to our understanding of anxiety, F (6,217) = 26.04, $p < .001$.

Separate regression analyses indicated that both males' and females' perceived stress, anxiety, and life event stress (Block 1) predicted significantly anxiety, F (3,110) = 16.12, $p <$

.001 and F (3,106) = 26.21, $p < .001$, respectively. The next step, which included perceptions of social support and use of escape-avoidance coping, was significant for females, F (5,104) = 3.08, $p < .05$, but not for males, F (5,108) = 1.60, $p < .21$. A closer look at the coefficients, however, indicated that only escape-avoidance contributed a significant amount of the variance in the female model ($p < .02$). In addition, although the female model remained significant overall, perceived stress was no longer a significant predictor of anxiety after escape-avoidance and social support was entered in step 2 ($p < .10$). In terms of anxiety in the combined sample, males, and females, models accounted for 41.9%, 32.5%, and 45.8% of the variance, respectively.

Life Satisfaction. Gender alone (Block 1) was not a significant predictor of life satisfaction for the combined sample, F (1,221) =.117, $p < .73$. Results indicated, however, that life satisfaction was predicted significantly by gender, depression, anxiety, perceived stress, and life event stress (Block 2) for the combined sample, F (5, 217) = 33.51, $p < .001$. Specifically, depression and perceived stress contributed significantly to the variance accounted for by Block 2 ($p < .001$ for both). Next, perceived social support and escape-avoidance coping (Block 3) accounted for a significant amount of the remaining variance, F (7,215) = 14.69, $p < .001$. The final model for the combined sample, with perceived stress, depression, and social support as significant contributors, accounted for 44.6% of the variance in life satisfaction.

For both males and females, the combination of depression, anxiety, perceived stress, and negative life event stress (Block 1) predicted significantly life satisfaction, F(4, 108) = 17.98, $p < .001$ and F (4, 105) = 16.54, $p < .001$. For males, depression and perceived stress appeared to contribute significantly to the variance accounted for by Block 1 (both $p < .001$). Likewise, depression and perceived stress predicted significantly life satisfaction for females, but stress from negative life events was also a significant predictor for this group. Next, findings indicated

that perceived social support and use of escape-avoidance coping (Block 2) added predictive value for males, F (6,106) = 13.62, $p < .001$, but although the overall model remained significant for females, F (6,103) = 2.40, $p = .001$, the change in F was not significant above and beyond the previous step ($p < .10$). Finally, predictive models accounted for 52.2% (males) and 41.4% (females) of the variance in life satisfaction. See tables 3, 4, and 5 for regression analyses.

Table 3. Regression Analyses for Prediction of Depression.

Predictor Variables	*ß*	*t*
Combined		
Step 1. $F(1, 222) = 4.05$, $p < .05$, $R^2 = .02$		
Gender	.13	2.01*
Step 2. $F(4, 219) = 54.21$, $p < .001$, $R^2 = .50$, $R^{2\Delta} = .48$, $p < .001$		
Gender	-.05	-.92
Anxiety	.35	6.04***
Perceived stress	.40	6.79***
Negative life events	.16	3.13**
Step 3. $F(6, 217) = 44.29$, $p < .001$, $R^2 = .55$, $R^{3\Delta} = .05$, $p < .001$		
Gender	.02	.43
Anxiety	.29	5.16***
Perceived stress	.34	5.96***
Negative life events	.13	2.70*
Social support	-.23	-4.79***
Escape-avoidance coping	.10	1.99*
Males		
Step 1. $F(3, 110) = 34.23$, $p < .001$, $R^2 = .48$		
Anxiety	.25	3.24**
Perceived stress	.42	5.11***
Negative life events	.23	3.20**
Step 2. $F(5, 108) = 27.34$, $p < .001$, $R^2 = .56$, $R^{2\Delta} = .08$, $p < .001$		
Anxiety	.17	2.25*
Perceived stress	.38	4.89***
Negative life events	.19	2.76**
Social support	-.24	-3.64***
Escape-avoidance coping	.17	2.46*
Females		
Step 1. $F(3, 106) = 35.07$, $p < .001$, $R^2 = .50$		
Anxiety	.41	4.94***
Perceived stress	.37	4.52***
Negative life events	.07	.97
Step 2. $F(5, 104) = 24.71$, $p < .001$, $R^2 = .54$, $R^{2\Delta} = .04$		
Anxiety	.38	4.67***
Perceived stress	.30	3.46**
Negative life events	.06	.88
Social support	-.23	-3.19**
Escape-Avoidance coping	.04	.52

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 4. Regression Analyses for Prediction of Anxiety

Predictor Variables	*ß*	*t*
Combined Sample		
Step 1. $F(1, 222) = 13.32$, $p < .001$, $R^2 = .06$		
Gender	.24	3.65***
Step 2. $F(4, 219) = 35.98$, $p < .001$, $R^2 = .40$, $R^{2\Delta} = .34$, $p < .001$		
Gender	.13	2.43*
Depression	.41	6.04***
Perceived stress	.24	3.56***
Negative life events	-.01	-.19
Step 3. $F(6, 217) = 26.04$, $p < .001$, $R^2 = .42$, $R^{3\Delta} = .02$, $p < .05$		
Gender	.13	2.44*
Depression	.37	5.16***
Perceived stress	.20	2.94**
Negative life events	-.03	-.51
Social support	-.00	-.07
Escape-avoidance coping	.17	2.85**
Males		
Step 1. $F(3, 110) = 16.12$, $p < .001$, $R^2 = .31$		
Depression	.34	3.22**
Perceived stress	.30	2.97**
Negative life events	-.07	-.80
Step 2. $F(5, 108) = 10.42$, $p < .001$, $R^2 = .33$, $R^{2\Delta} = .02$, $p < .21$		
Depression	.26	2.25*
Perceived stress	.29	2.81**
Negative life events	-.08	-.86
Social support	-.07	-.84
Escape-avoidance coping	.15	1.66
Females		
Step 1. $F(3, 106) = 26.21$, $p < .001$, $R^2 = .43$		
Depression	.46	4.94***
Perceived stress	.22	2.29*
Negative life events	.09	1.12
Step 2. $F(5, 104) = 17.58$, $p < .001$, $R^2 = .46$, $R^{2\Delta} = .03$, $p < .05$		
Depression	.45	4.67***
Perceived stress	.16	1.67
Negative life events	.05	.59
Social support	.05	.57
Escape-avoidance coping	.19	2.29*

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 5. Regression Analyses for Prediction of Life Satisfaction

Predictor Variables	β	t
Combined Sample		
Step 1. $F(1, 221) = .18$, $p < .73$, $R^2 = .00$		
Gender	-.02	-.34
Step 2. $F(5, 217) = 26.85$, $p < .001$, $R^2 = .38$, $R^{2\Delta} = .38$, $p < .001$		
Gender	.08	1.51
Depression	-.41	-5.38
Anxiety	.09	1.29
Perceived stress	-.31	-4.33***
Negative life events	-.07	-1.28
Step 3. $F(7, 215) = 25.79$, $p < .001$, $R^2 = .46$, $R^{3\Delta} = .08$, $p < .001$		
Gender	.00	.14
Depression	-.28	-3.79***
Anxiety	.08	1.20
Perceived stress	-.32	-4.67***
Negative life events	-.07	-1.33
Social support	.30	5.38***
Escape-avoidance coping	.00	.04
Males		
Step 1. $F(4, 108) = 17.98$, $p < .001$, $R^2 = .40$		
Depression	-.45	-4.34***
Anxiety	.06	.63
Perceived stress	-.28	-2.86**
Negative life events	.01	.07
Step 2. $F(6, 106) = 19.33$, $p < .001$, $R^2 = .52$, $R^{2\Delta} = .12$, $p < .001$		
Depression	-.30	-2.96**
Anxiety	.07	.87
Perceived stress	-.36	-3.94***
Negative life events	.01	.16
Social support	.37	5.10***
Escape-avoidance coping	.04	.51
Females		
Step 1. $F(4, 105) = 16.54$, $p < .001$, $R^2 = .39$		
Depression	-.37	-3.45***
Anxiety	.11	1.09
Perceived stress	-.30	-3.03**
Negative life events	-.18	-2.15*
Step 2. $F(6, 103) = 12.12$, $p < .001$, $R^2 = .41$, $R^{2\Delta} = .02$, $p < .10$		
Depression	-.30	-2.69*
Anxiety	.09	.92
Perceived stress	-.27	-2.65*
Negative life events	-.18	-2.16*
Social support	.18	2.19*
Escape-avoidance coping	-.02	-.17

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

Path Analysis: Indicators of Latent Constructs

The next step in our comprehensive investigation of social support and the construct's relationship with other latent variables included the application of structural modeling techniques. The latent constructs hypothesized about in the present study included stress, social support, coping, and well-being. Initially, stress was indicated by the negative life event subscale of the LES, as well as the overall score on the PSS (global perceived stress). Furthermore, the three subscales of the MSPSS (i.e., family, friend, and significant other), indicated perceived social support.

For the purpose of this model, we divided initially the coping construct into adaptive (active) and maladaptive (avoidant) coping (four subscales of the WOC, each). The adaptive coping construct was indicated by positive reappraisal, planful problem solving, accepting responsibility, and seeking social support, while maladaptive coping was indicated by the confrontive (risk-taking) coping, distancing (detaching/minimizing), self-controlling (emotion-focused), and escape-avoidance subscales of the WOC. This type of classification has been suggested previously (e.g., Moos, 1992), with the exception of accepting responsibility, which may fit into either category depending on the outcome of interest. For example, Dukes-Holland and Holahan (2003), who investigated adaptation to breast cancer, opted to use 'accepting responsibility' as an avoidance/maladaptive coping style due to the self-criticizing nature of some items (e.g., "I blamed myself").

Finally, well-being (outcomes) was indicated by the BDI-II (depression), BAI (anxiety), and SWLS (life satisfaction). Thus, stress has two indicators, social support has three indicators, coping has eight indicators (four each for adaptive and maladaptive coping), and well-being (outcome) has three indicators, for a total of 16 indicators.

Overview of Model Analyses

For the purposes of SEM, Kline (1998) suggests that a sample size of 122 for males and 117 for females may be considered fair. The generalized least squares to maximum likelihood (GLS-ML) method of covariance structure analysis was used. Although similar to multiple regression in yielding path coefficients, ML differs in that variable estimation is simultaneous (i.e., estimates of all model parameters are calculated all at once) (Kline, 1998). To examine overall model fit, we used the squared error of approximation (RMSEA), the comparative fit index (CFI), and the parsimonious fit index (PFI). Satisfactory model fit is indicated by RMSEA values less than or equal to .10 (Kline, 1998) and CFI values greater than or equal to .90 (Bentler, 1992). Moreover, PFI values greater than or equal to .60 signify that a model is adequately parsimonious (James, Mulaik, & Brett, 1982). Per James et al. (1982), the Chi-square tests as indicators of overall fit were omitted due to due to their sensitivity to sample size.

Similar to other research, we adopted a two-step modeling approach (Anderson & Gerbing, 1988). In the first step, we developed and evaluated a measurement model that allowed all latent constructs to correlate freely. In step two, a structural analysis designed to test relationships among latent variables was conducted. This process allowed structural relationships to be tested only after ensuring that latent variables were measured adequately. Exploratory procedures were conducted initially to create a suitable measurement model, and a confirmatory procedure was used subsequently to test relationships among latent variables. Barry and Stewart (1997) argue that the risk of misinterpreting relationships among latent variables (due to poor construct measurement alone) is reduced if one follows these procedures.

Measurement Model

The original measurement model using 16 indicators failed to adequately fit the data as indicated by all RMSEA > .10 and all CFI < .90, suggesting the need for re-specification. Re-specification is not an unusual procedure as it is quite rare for initially specified measurement models to provide acceptable fit (e.g., Anderson et al., 1988). Examination of the standardized residuals revealed several indicators that did not relate clearly to a latent construct and hence they were deleted from future analyses. Most importantly, the life event stress variable (stress from negative events) did not exceed .60 for either males or females, hence this indicator was removed. By eliminating life event stress, the construct of stress was indicated only by perceived global stress (PSS). In order to use this manifest variable as a latent variable in the model, we set the path at the reliability found for this measure (Cronbach's alpha = .8146).

At this stage, the idea of differentiating between adaptive versus maladaptive coping was abandoned as no clear pattern justifying such a distinction was established (i.e., manifest variables did not load adequately or consistently onto adaptive versus maladaptive coping). Furthermore, indicators (manifest variables) of the coping construct were different for males compared to females. Specifically, coping for males included confrontive (risk taking), seeking support, escape-avoidance, and accepting responsibility, while the coping construct for females consisted of, distancing (detachment), self-controlling (emotion focused), escape-avoidance, and accepting responsibility. The re-specified measurement models for males and females reproduced adequately the covariance matrix as indicated by the RMSEA (all < .10), CFI (all >.90), and PFI (all > .60 when rounded to two decimals). All factor loadings exceeded .60 (all *p*s < .001), indicating convergent validity. In the figures below, please note that measurement errors and factor correlations have been omitted for clarity.

Figure 2. Hypothesized Measurement Model

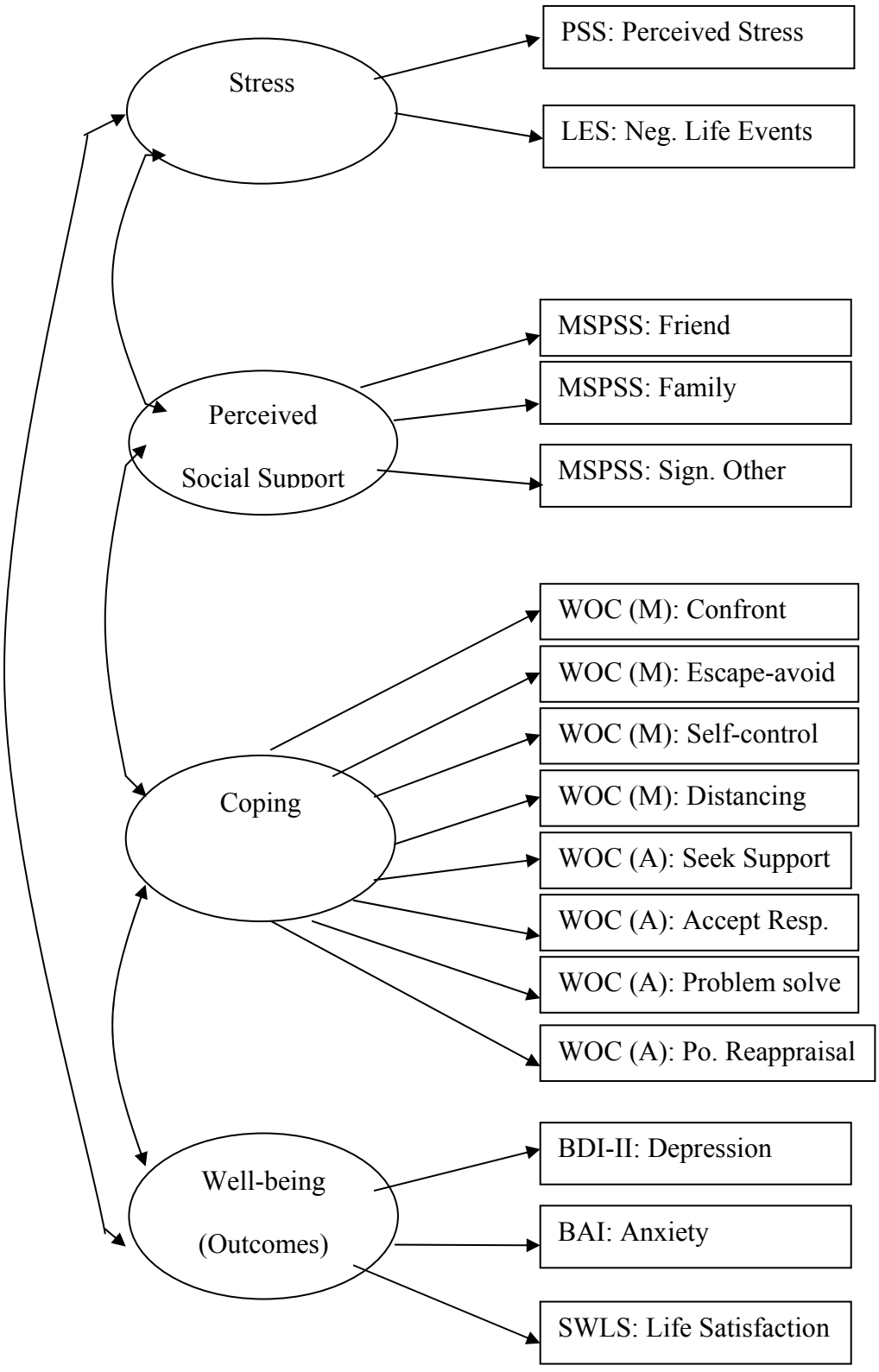


Figure 3. Male Measurement Model

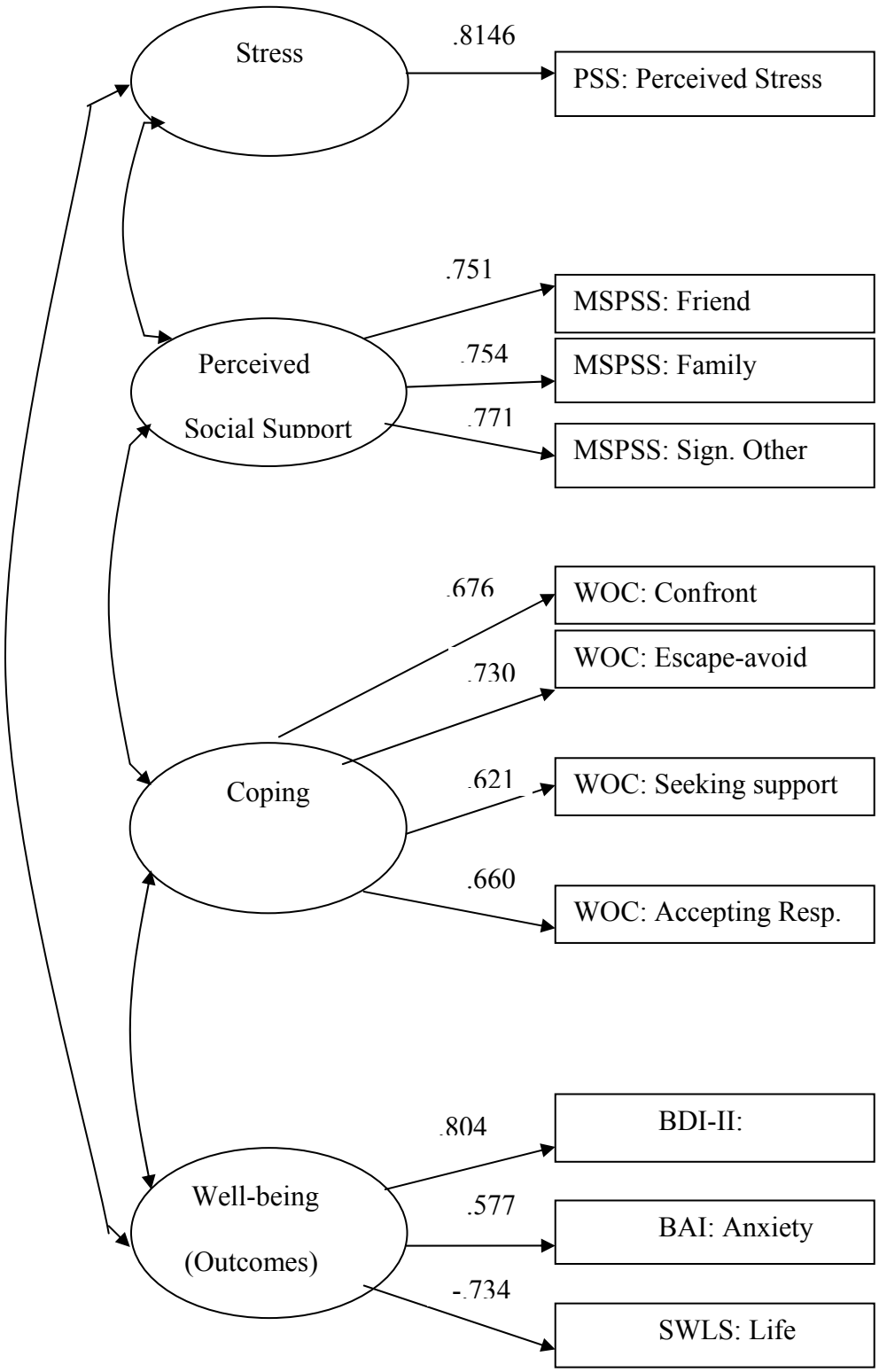
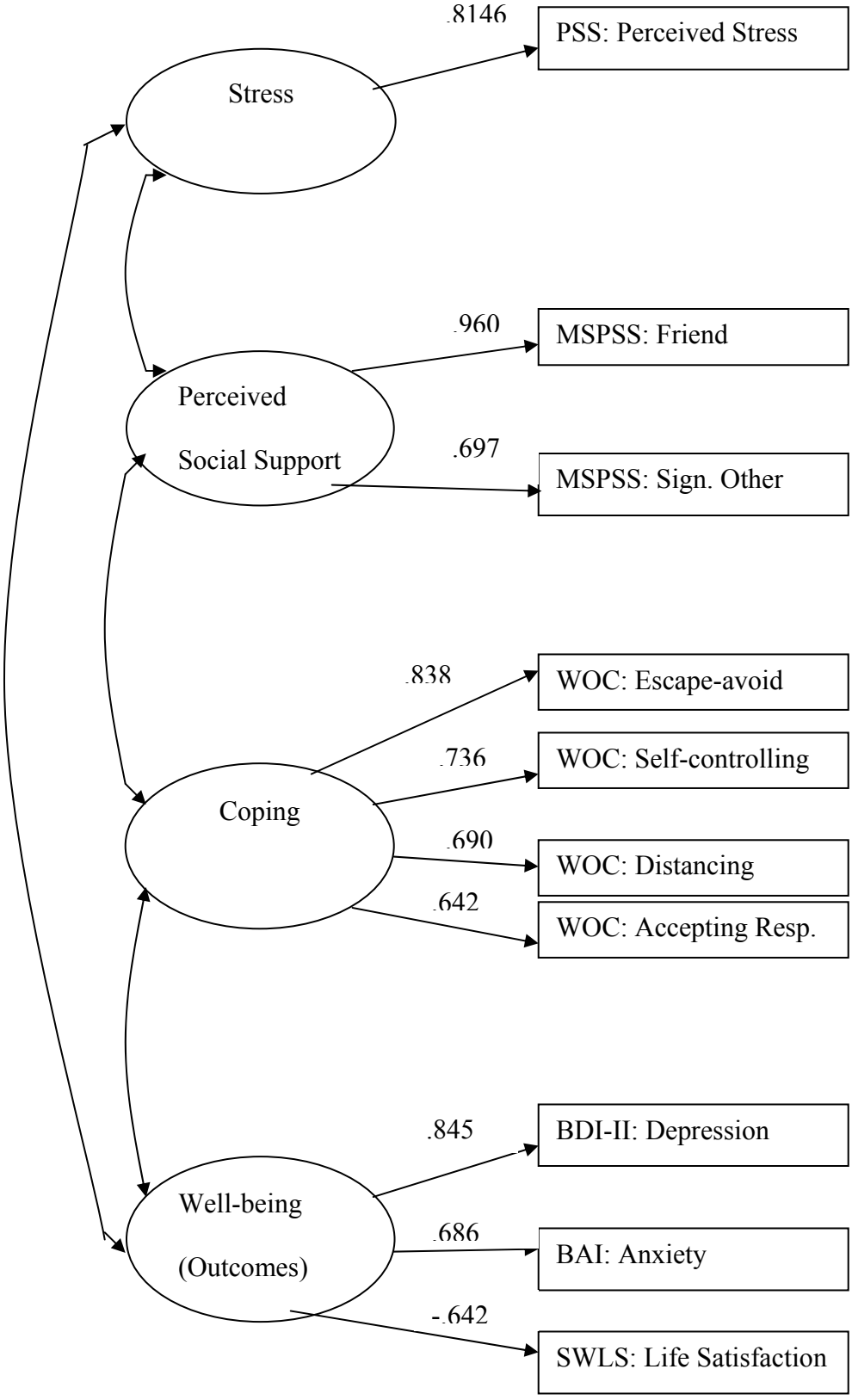


Figure 4. Female Measurement Model



For intercorrelations of the latent constructs for males and females, respectively, as well as model statistics for original and re-specified measurement models, see tables below.

Table 6. Correlations Among Latent Constructs for Males

	Stress	Support	Coping	Well-being
Stress	1			
Social Support	-.112	1		
Coping	.292*	.081	1	
Well-being	.773**	-.562**	.419**	1

Note. $N = 122$. *$p < .05$; **$p < .01$.

Table 7. Correlations Among Latent Constructs for Females

	Stress	Support	Coping	Well-being
Stress	1			
Social Support	-.249*	1		
Coping	.378**	.125	1	
Well-being	.744**	-.410**	.421**	1

Note. $N = 117$. *$p < .05$; **$p < .01$.

Table 8. Fit Indices for Measurement Models

Test	*Chi Squared*	*df*	RMSEA	CFI	PFI
1. Original model					
Males	206.194	98	.094	.841	.606
Females	226.571	85	.118	.793	.577
2. Respecified model					
Males	74.816	40	.085	.926	.624
Females	66.175	31	.095	.922	.597

Note. $N = 122$ for males; $N = 117$ for females

Upon re-specification of appropriate measurement models, the hypothesized structural model was tested. Both the male and female structural model reproduced adequately the covariance matrix as indicated by the RMSEA (all < .10), CFI (all > .90), and PFI (all > .60).

Table 9. Fit Indices for Structural Models

Test	*Chi Squared*	*df*	RMSEA	CFI	PFI
3. Hypothesized model					
Males	75.500	46	.074	.937	.716
Females	66.175	36	.081	.933	.693

Note. $N = 122$ for males; $N = 117$ for females

The figures display the structural models and their path coefficients. Standardized parameter estimates for which $p < .05$ and $p < .001$ were indicated with one asterisk and double asterisks, respectively. Please note that disturbances and measurement error effects were omitted for clarity.

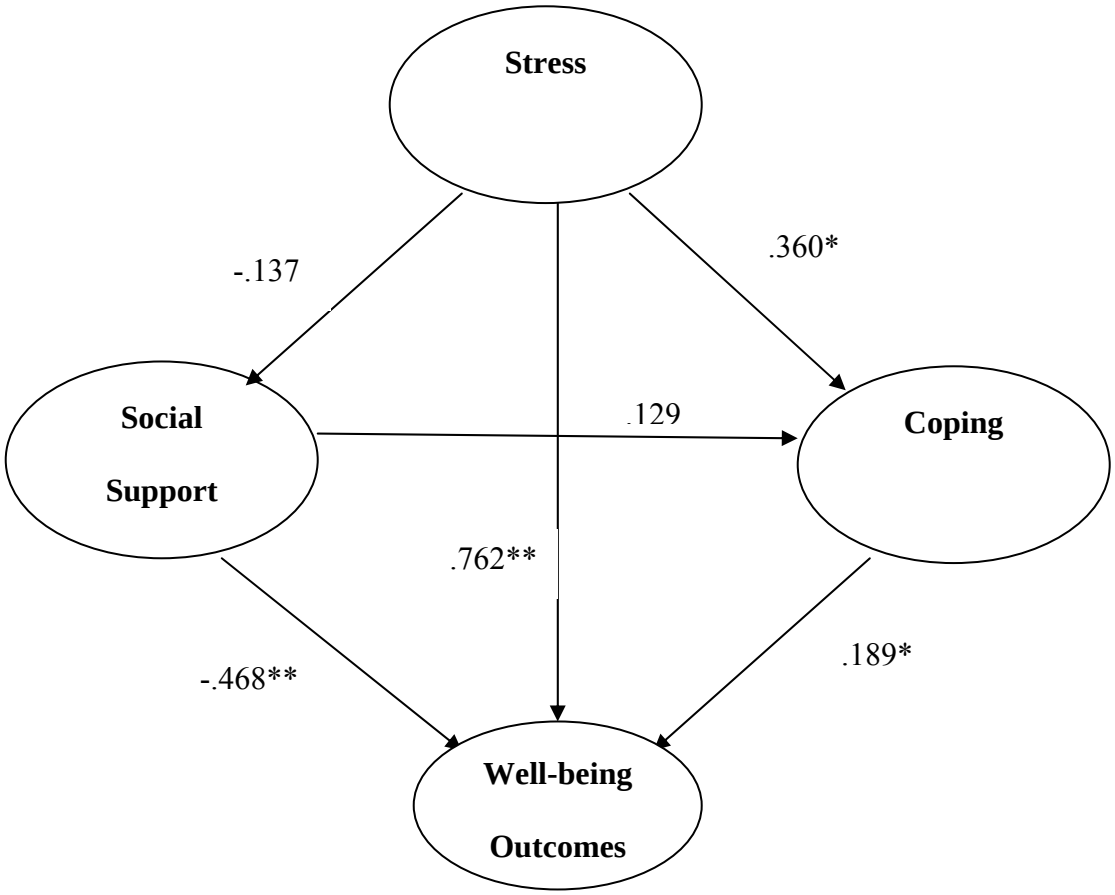


Figure 5. Male Covariate Structural Model

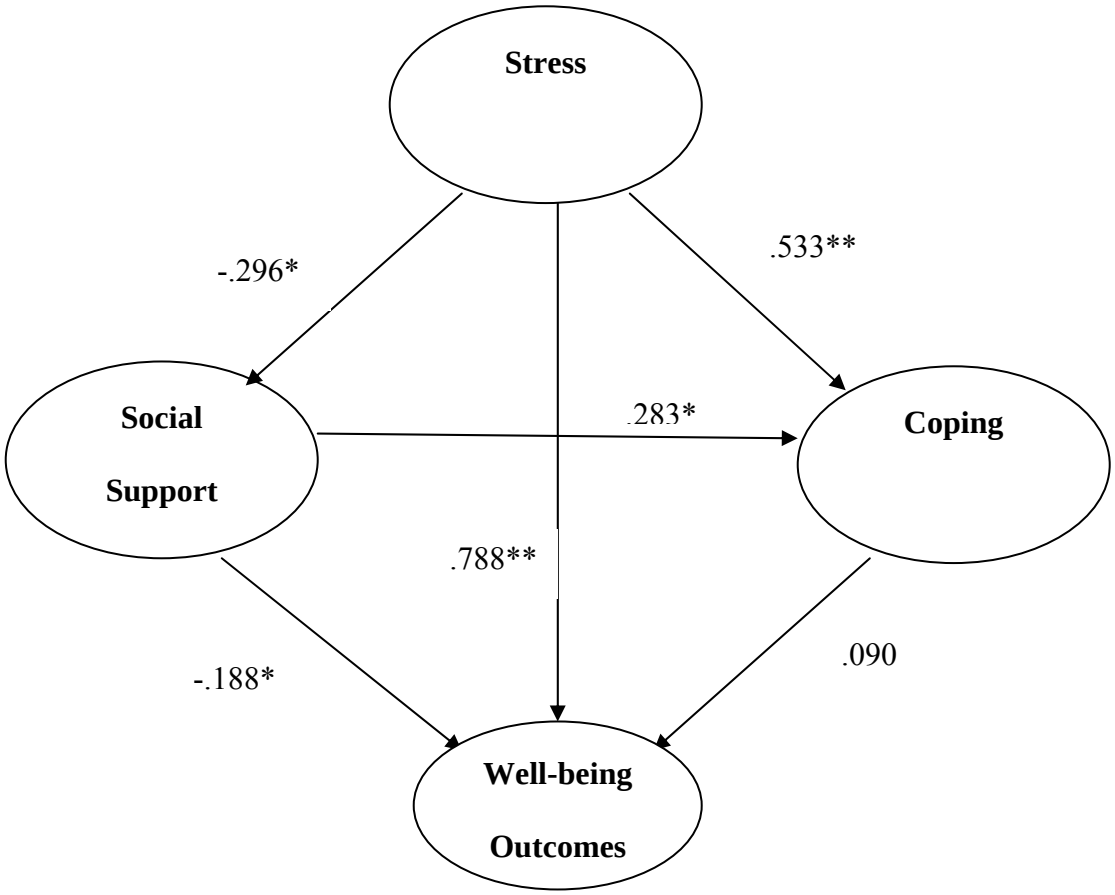


Figure 6. Female Covariate Structural Model

Correlations among latent factors in the measurement model were examined to test the hypotheses about the variables and their relationships. For both the male and female measurement model, stress correlated significantly with well-being (outcomes) (*r* of .773 and .744, respectively), with higher stress being related to higher levels of depression and anxiety and lower satisfaction with life. Moreover, stress was related to coping (*r* of .292 and .278, respectively), with higher levels of stress related to more use of escape-avoidance coping and coping by accepting responsibility (both males and females), more use of distancing coping and self-controlling/emotion focused coping (females), more use of confrontive/risk-taking coping behavior and coping by seeking social support (males). Stress was also related to social support, but only for females (*r* = -.249), with higher level of stress being related to lower levels of perceived support. Moreover, social support was related to well-being (outcomes) in both males and females (*r* of -.410 and -.562, respectively), with higher social support related to lower depression, lower anxiety, and higher life satisfaction. In addition, coping was related to well-being in females (*r* = .410), with more use of escape-avoidance, distancing, accepting responsibility, and self-controlling/emotion focused coping being related to higher levels of depression and anxiety, as well as less satisfaction with life. Social support did not correlate significantly with coping in either the male or female measurement model.

Upon examination of the structural models, some interesting findings appeared. With regard to stress, our hypothesis that social support or coping would moderate the effect of stress on outcomes was not supported as the effect of stress on outcomes was virtually unaffected by social support and coping in both models. Also, one previously significant correlation became non-significant in the female structural model. Specifically, the correlational effect of coping on well-being became non-significant. In contrast, the path between social support and coping

became significant for females when all variables correlated simultaneously in the structural model.

Further Testing of the Buffering Role of Social Support

Multiple regression analyses were conducted to test further the predicted buffering role of social support in the stress – well-being relationship. For the overall sample, gender was entered first, followed by the main effects of perceived stress and social support (step 2) and the interaction product term, i.e., stress × support (step 3), as shown in table 10, 11, and 12.

Depression. Results indicated that the stress × social support interaction (product) term was statistically significant for the overall sample only as indicated by $F(4, 230) = 46.61$, $p < .001$, ($\beta = -.69$; r-squared increment = .01, $p < .02$), consistent with the buffering hypothesis. However, the main effect of social support was no longer found after the interaction was entered. Thus, to explore further the significant interaction between stress and social support in predicting depression for the overall sample, a median split of each variable was conducted, creating the following four groups: Low Stress – Low Support (0), High Stress – High Support (1), High Stress – Low Support (2), and Low Stress – High Support (3). The subsequent ANOVA and post-hoc analyses indicated several significant differences in depression (BDI-II scores) between groups, $F(3, 233) = 28.09$, $p < .001$. Specifically, the mean BDI-II score among those who reported high perceived stress in combination with low social support ($M = 14.65$, $SD = 8.96$) was significantly higher than that of all other groups, i.e., higher than those reporting high stress with high support ($M = 9.17$, $SD = 7.18$), low stress with high support ($M = 3.71$, $SD = 3.76$), and low stress with low support ($M = 6.90$, SD = 6.15), all p's < .05.

Anxiety. When anxiety was used as the dependent variable in the regression, the interaction between stress and social support was significant for the male sample only, as

indicated by $F(3, 115) = 12.89$, $p < .001$ with $\beta = -.94$; r-squared increment = .03, $p < .04$. Subsequent ANOVA and post-hoc analyses, using groups created previously, indicated differences among groups depending on level of stress and support, $F(3, 115) = 9.09$, $p < .001$. Specifically, results revealed that males who reported high stress with low social support experienced significantly more anxiety (M =10.70, SD = 7.54) than any other group, including males with comparable levels of stress, but with high social support (M= 6.76, SD = 5.26), those with low stress and low support (M = 4.76, SD = 5.00), and low stress with high support (M = 4.13, SD = 3.24) as indicated by $p < .05$, .001, and .001, respectively.

Life Satisfaction. Results suggest that social support moderates the effect of stress on life satisfaction for females only, as indicated by a significant interaction, F (3, 112) = 20.26, $p <$ .001 with $\beta = -1.04$; r-squared increment = .03, $p < .05$. Although perceived stress and social support each added significantly to the regression model in the first step, and the overall model remained significant, results indicated that stress was no longer a significant predictor of life satisfaction in females after the interaction was entered ($p < .23$). Finally, the ANOVA exploring differences in life satisfaction depending on levels of stress and support was significant as indicated by F (3, 112) = 11.78, $p < .001$. As expected, post-hoc analyses indicated that the low stress – high support group (M = 27.86, SD = 4.10) was significantly more satisfied with life compared to all other groups, including low stress – low support (M = 22.83, SD = 4.49), high stress – high support (M = 23.13, SD = 5.70), and high stress – low support (M = 20.86, SD = 4.31), $p < .001$ for all. Post-hoc analyses also revealed that females in the high stress – low social support group were significantly less satisfied with life compared to those in the high stress – high support group, $p < .05$. The high stress – low support group, however, was not significantly different from those experiencing low stress with low support, $p < .22$. Finally, the low stress –

low support group was not significantly different from the high stress – high support group, $p <$ .85.

Table 10. Regression Analyses for Moderational Hypothesis for Depression

Predictor Variables	*β*	*t*
Combined Sample		
Step 1. F (1, 233) = 4.58, $p < .03$, $R^2 = .02$		
Gender	.14	2.14*
Step 2. F (3, 231) = 59.06, $p < .001$, $R^2 = .43$ $R^{2\Delta} = .41$		
Gender	.06	1.11
Perceived stress	.55	6.79***
Social support	-.26	-5.12***
Step 3. F (4, 230) = 46.61, $p < .001$, $R^2 = .45$, $R^{3\Delta} = .02$		
Gender	.05	.10
Perceived stress	1.18	4.38***
Social support	.12	.70
Interaction	-.69	-2.38*
Males		
Step 1. F (2, 116) = 52.74, $p < .001$, $R^2 = .48$		
Perceived stress	.60	8.78***
Social support	-.28	-4.05***
Step 2. F (3, 115) = 37.07, $p < .001$, $R^2 = .49$, $R^{2\Delta} = .01$		
Perceived stress	1.24	3.52**
Social support	.12	.55
Interaction	-.72	-1.86
Females		
Step 1. F (2, 113) = 34.94, $p < .001$, $R^2 = .38$		
Perceived stress	.49	6.30***
Social support	-.26	-3.30**
Step 2. F (3, 112) = 24.29, $p < .001$, $R^2 = .39$, $R^{2\Delta} = .01$, $p < .14$		
Perceived stress	1.19	2.51*
Social support	.17	.57
Interaction	-.70	-1.50

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 11. Regression Analyses for Moderational Hypothesis for Anxiety

Predictor Variables	*ß*	*t*
Combined Sample		
Step 1. $F(1, 233) = 12.68, p < .001, R^2 = .05$		
Gender	.26	3.56***
Step 2. $F(3, 231) = 28.97, p < .001, R^2 = .27\ R^{2\Delta} = .22, p < .001$		
Gender	.14	2.31*
Perceived stress	.46	7.76***
Social support	-.09	-1.51
Step 3. $F(4, 230) = 21.72, p < .001, R^2 = .27, R^{3\Delta} = .00, p < .62$		
Gender	.14	2.27*
Perceived stress	.61	1.97*
Social support	.00	.02
Interaction	-.17	-.50
Males		
Step 1. $F(2, 116) = 18.26, p < .001, R^2 = .24$		
Perceived stress	.46	5.63***
Social support	-.11	-1.38
Step 2. $F(3, 115) = 13.89, p < .001, R^2 = .27, R^{2\Delta} = .03, p < .04$		
Perceived stress	1.30	3.09**
Social support	.41	1.52
Interaction	-.94	-2.04*
Females		
Step 1. $F(2, 113) = 18.39, p < .001, R^2 = .25$		
Perceived stress	.47	5.52***
Social support	-.06	-.70
Step 2. $F(3, 112) = 12.30, p < .001, R^2 = .25, R^{2\Delta} = .00, p < .57$		
Perceived stress	.18	.33
Social support	-.24	-.74
Interaction	.30	.58

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

Table 12. Regression Analyses for Moderational Hypotheses for Life Satisfaction

Predictor Variables	*β*	*t*
Combined Sample		
Step 1. $F(1, 232) = .32, p < .57, R^2 = .00$		
Gender	-.04	-.57
Step 2. $F(3, 230) = 55.20, p < .001, R^2 = .42, R^{2\Delta} = .42, p < .001$		
Gender	.00	.02
Perceived stress	-.47	-8.84
Social support	.38	7.22
Step 3. $F(4, 229) = 41.75, p < .001, R^2 = .42, R^{3\Delta} = .00, p < .27$		
Gender	-.00	-.03
Perceived stress	-.16	-.59
Social support	.56	3.27**
Interaction	-.33	-1.12
Males		
Step 1. $F(2, 115) = 58.33, p <.001 , R^2 = .50$		
Perceived stress	-.48	-7.29***
Social support	.45	6.84***
Step 2. $F(3, 114) = 38.84, p < .001, R^2 = .51, R^{2\Delta} =.01, p<.51$		
Perceived stress	-.71	-2.04*
Social support	.32	1.44
Interaction	.25	.66
Females		
Step 1. $F(2, 113) = 27.28, p<.001, R^2 = .33$		
Perceived stress	-.44	-5.43
Social support	.25	3.10**
Step 2. $F(3, 112) = 20.26, p < .001, R^2 = .35, R^{2\Delta} =.02, p<.04$		
Perceived stress	.58	1.20
Social support	.87	2.89**
Interaction	-1.04	-2.13*

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

DISCUSSION

Today's society puts constant demands on our time and resources, and the stress that may result has become nearly impossible to avoid. Young adults in higher education are not exempted from this experience as indicated by the alarming number of college students who report excessive levels of stress (e.g., Deckro et al., 2002). Stress may develop into depression (e.g., Heiligenstein et al., 1996), anxiety (e.g., Deckro et al. 2002), and suicidal ideation (Furr et al., 2001), but substantial evidence exist to suggest that various factors may buffer such negative effects of stress. Although mental health issues among college students have been studied frequently, the ways in which resources such as social support and coping affect the relationship between stress and psychological outcomes needs further attention. Thus, the purpose of the present study was to explore protective variables that may lend themselves for inclusion in easily deployable and cost effective interventions. In addition, the present investigation addressed the need for a comprehensive examination of social support in relation to college students' coping resources and psychological health. Overall, findings indicate that perceived social support is an important component in the prediction of psychological adjustment in college students (depression, anxiety, and life satisfaction), and that adequate social support may ameliorate the effects of stress on outcomes.

First, however, we note several differences between males and females on variables of interest. Specifically, females' perceived global stress was higher compared to males', but they did not differ in their reports of stress from negative life events. Moreover, females also reported

higher levels of depressive symptomatology and anxiety compared to their male counterparts, which is consistent with Hankin et al. (2001) and Hewitt et al. (1993), but not with findings by Felsten (1998) or Zamarripa et al., (2003). When considering stress and psychological adjustment, Misra et al. (2000) argue that it may not be the number of negative events or stressors that matter in determining outcomes, but rather the perception of overall stress. Previous research has also suggested that admission of perceived stress, as well as report of negative emotions, is more acceptable among females compared to males (e.g., Thompson & Walker, 1989). Finally, results suggested that females perceive themselves as having more adequate social supports, which is consistent with previous research (e.g., Kessler et al., 1982; Pearlin & Johnson, 1977).

Considering that females in this sample experienced more stress and negative affect, it is somewhat curious that they did not differ significantly from males in their reported satisfaction with life. Our findings may be interpreted as lending support to Reis et al.'s (2000) argument that overall emotional well-being (life satisfaction) is a relatively stable characteristic of the individual and is not affected significantly by negative mood (depression and anxiety) on a day-to-day basis. Another plausible explanation could be that life satisfaction is a "gender-neutral variable", i.e., students' responses to the SWLS are less tainted by social expectancies compared to measures of depression and anxiety.

Furthermore, the structural modeling approach of the present study revealed that males and females differ in the ways by which they cope with stress. Although loadings on the coping construct suggest that both genders cope by accepting responsibility and by using escape-avoidance, we note that coping in males also tend to involve risk taking (confrontational coping) and seeking out social supports, while females cope by distancing themselves from the situation

and by focusing on self-control (emotion focused coping). Interestingly, comparisons of relative use of each type of coping suggested that females seek out social support as a way of coping more frequently compared to males. The remaining seven types of coping were used to an equal degree by males and females in this sample. It could be that, compared to themselves, males use support seeking more frequently than they use other strategies, hence the loading of this style on the coping construct. In contrast, females may use social support seeking approaches more frequently than males, but compared to themselves, females prefer other strategies over this type of coping.

The effect of gender was implicated additionally in analyses predicting psychological adjustment in college students. It appeared that the role of social support changes based on gender and outcome variable in focus. In other words, although often lumped together under the "well-being umbrella", predictive models of depression, anxiety, and life satisfaction suggested that social support is implicated differently for each variable. Specifically, findings indicated that depression (BDI-II score) in the male sample was predicted best by a model that included anxiety, perceived stress, stress from negative events, social support, and escape-avoidance coping (55.9% of the variance in depression explained). In contrast, depression in females was predicted best by perceived global stress, anxiety, and social support with the overall model accounting for 54.3% of the variance. Escape-avoidance and stress from negative life events did not aid in our understanding of depression for females. Moreover, we found that anxiety (BAI score) was predicted best by depression and perceived stress (32.5%) in males and by depression and escape-avoidance coping (45.8%) in females. Based on these findings, we conclude that social support adds to our understanding of depression, but is less important in predicting anxiety in male and female college students.

In addition, social support predicted significantly life satisfaction. Specifically, a model that included depression, perceived stress, and social support explained 52.2% of the variance in males' satisfaction with life, and a similar model (with the addition of life event stress) accounted for 41.4% of females' life satisfaction. It appears that students' reports of anxiety and their use of escape-avoidance strategies do not significantly affect their satisfaction with life. Results appear similar to Matheny et al.'s (2002) study of college students, which found that perceptions of available coping resources (including social support) and perception of stress predicted significantly life satisfaction (model accounted for 45% of the variance in life satisfaction).

Hypotheses revisited

In partial support of our first hypothesis, which investigated the relationship between social support and outcome variables (depression, anxiety, and life satisfaction), findings indicated that higher level of perceived social support on all dimensions (friend, family, significant other, and total support) was related to less depressive symptomatology and higher life satisfaction across samples. Moreover, higher perceived social support overall was related to lower anxiety scores in females, while the relationship between total perceived social support and anxiety was not significant in the male sample. Moreover, structural equation models indicated that the social support construct was related to well-being in both males and females.

Our second hypothesis, which predicted a significant, positive relationship between global stress and life event stress, as well as a negative relationship between both stress variables and perceived social support, was partially supported. As expected, higher perceived global stress was related to higher levels of stress from negative life events for both males and females. In addition, perceived global stress was related negatively to all aspects of perceived social

support in females, while this relationship was found only for support from a significant other in males. Stress from specific life events did not correlate significantly with social support for either gender. Likewise, this type of stress (life events stress) did not meet criteria for inclusion in the structural equation model, hence the stress construct consisted of global stress only in this procedure. As such, the stress construct was related negatively to perception of social support in females only.

Our third hypothesis was supported fully in that higher levels of perceived global stress and higher levels of stress from negative life events were related significantly to higher levels of depression and anxiety, and lower life satisfaction for all samples based on correlations. This result reiterates previous findings of a link between various types of stress (perceived global stress and stress from negative life events) and negative outcomes such as depression (e.g., Kessler, 1997) and less satisfaction with life (e.g., Vinokur et al., 1986). Also, based on our path analysis, we conclude that stress affects well-being in both males and females, strengthening the notion that the relationship between stress and negative outcomes carries no gender-bias.

Hypothesis 4, which predicted that the use of escape-avoidance coping would be related to lower levels of perceived social support, was supported partially. Specifically, findings indicated that escape-avoidance coping is related negatively to perceived social support from family for females, suggesting that those higher in family support use less escape-avoidance coping. This finding is consistent with the literature, which has suggested that higher levels of perceived social support may enhance a person's courage to deal with a stressful situation more actively, rather than by avoiding it (e.g., Gottlieb, 1985). Our findings indicate specifically that family support may be the most important type of support in predicting less use of escape-avoidance coping in females. Moreover, when examining coping as a broader construct that

included escape-avoidance as one of four indicators, we found that coping was related significantly to social support in females.

Although not explicitly stated in the hypotheses, but nonetheless pertinent to the present study, we explored other coping styles in relation to social support and found that female students' use of self-controlling coping, which involves efforts to regulate one's feelings and actions with the primary focus on emotions, was related to lower levels of perceived social support from all sources. It may be that females who do not have adequate support available to consult and mobilize are forced to turn their coping efforts inward.

Hypothesis 5, which predicted that the use of escape-avoidance coping would be related to less satisfaction with life and higher depression and anxiety, was supported fully for both males and females in the correlation matrix. This finding is consistent with previous literature, which holds that the tendency to avoid a problem is linked to poorer outcomes for the individual (e.g., Blalock et al., 2000; Carver et al., 1994), including more depressive symptomatology (e.g., Peterson et al., 1985; Robbins et al., 1992). However, when exploring coping as a construct in relation to well-being, the path was only significant for males. This may be due to the fact that the coping construct was comprised of several strategies, such as seeking social support, confronting (risk-taking), and accepting responsibility, in addition to escape-avoidance.

In terms of coping and outcomes, some additional findings deserve mentioning. Somewhat counterintuitive, we found that accepting responsibility (a type of coping where one acknowledges one's own role in the problem with a concomitant theme of trying to put things right) correlated significantly (and positively) with anxiety and depression for both males and females. This coping style, however, entails aspects of self-blame ("I criticized myself"), which may explain its relationship with negative affect. In addition, neither males nor females used

positive reappraisal or planful problem solving to a significant degree, i.e., these two coping styles, which are believed generally to be adaptive, did not load on the coping construct for either group.

In our sixth hypothesis, we set out to explore social support's potential as a moderator of the relationship between stress and social support. Although the structural equation modeling approach generated several important pieces of information (e.g., stress from negative life events did not load on the stress construct), and added to our understanding of relationships among constructs, it failed to reveal the expected buffering effect of social support. After ruling out sampling as a potential culprit (e.g., scores on measures of depression, stress, and anxiety were similar to those found in other studies of college students), we generated an alternative explanation as to why the stress – well-being relationship was unaffected by social support in the structural model. Specifically, it is possible that social support was not able to affect the path between stress and psychological adjustment because averages, rather than levels of the constructs, are considered in these analyses. Because students in general reported high stress and high support, we could potentially have missed valuable information about those with other levels and combinations of stress and support. In other words, stress might interact with support in determining psychological outcomes, which previous research has suggested. This plausible explanation of an interaction between stress and support argued for the use of regression and analyses of variance (ANOVA) to explore further the buffering hypothesis, especially as it pertains to psychological adjustment under high stress.

After controlling for gender effects, the interaction term of stress and social support was indeed significant in predicting depression for the combined sample, indicative of a moderator effect. Similarly, social support moderated the relationship between stress and anxiety in males,

as well as the relationship between stress and life satisfaction in females. We recognize that our interpretation of the interaction between stress and social support, which assumes that perceived social support moderates the relationship between stress and negative outcomes, is not the only possible explanation from a statistical point of view. When interpreting this significant interaction, it is equally plausible that the levels of stress modify social support effects upon psychological distress. However, this alternative interpretation appears less logical from a theoretical stance.

Furthermore, although regression analyses found significant interaction effects, a closer look at coefficients suggested that perceived stress was the driving force, particularly in the combined sample. Specifically, social support by itself no longer predicted a significant amount of the variance in depression for the combined sample after the interaction was added. Thus, to explain better the relationship among stress and social support in affecting outcomes, we conducted a median split of each predictor variable, thereby creating four groups. As suggested by previous research, the level of each predictor (high or low) guided inclusion in a group. Comparisons among groups revealed that perception of available social support is pertinent to our understanding of depression, anxiety, and life satisfaction, especially under high stress. In particular, those with high stress and low support group exhibited significantly more depression (combined sample) and anxiety (males) compared to those who reported high stress but perceived their social support as being more adequate (high). Among females, those with high stress and low support were equally satisfied with life as those with low stress and low support, but significantly less satisfied compared to females who were highly stressed but perceived their support as high. It appears that low support matters in determining outcomes regardless of stress level in females.

Of utmost importance, we note that scores on the BDI-II approached a clinical level (M = 14.65) in those who reported high stress coupled with lower social support. Similar to Dahlem et al. (1991), who concluded that social support moderates the relationship between stress and depression, we note therefore the importance of assessing stress levels and level of perceived support. For the development of an intervention for students who are highly stressed, then, it becomes important to identify those who perceive their supports as being inadequate, as they are likely to experience the most depressive symptoms.

Some limitations of the present study are noted, such as the use of self-report measures and retrospective reports. Also, the sample included college students of primarily Caucasian decent, which may limit our ability to generalize findings to more diverse populations. Moreover, because it is virtually impossible to meet all logical and statistical requirements when conducting a path analysis, we agree with Kline (1998) that "the interpretation that direct effects in a path model must correspond to causal relations in the real world is typically unwarranted" (p. 142). Accumulation of additional evidence, such as a) replication of the model across independent samples; 2) corroborating evidence from experimental studies (i.e., studies that manipulated variables in the model); and 3) the accurate prediction of the effects of interventions, may be needed (Kline, 1998). In other words, it is probably safe to view the type of path analysis employed here as "an initial step, one that in combination with other experimental or non-experimental methods may eventually clarify causal mechanisms" (Kline, 1998, p. 148).

In conclusion, social support appears to be a promising moderator of stress, particularly under high perceived stress. Specifically, the effect of stress on psychological adjustment varies depending on the level of perceived social support. Moreover, when arguing the effectiveness of

social support as a moderator in the stress – well-being relationship, one must take gender into account and specify carefully outcome variables of interest. Specifically, we conclude that females under high stress who perceive their support as being low are less satisfied with life compared to females with high stress and more support, while those with low stress and high support are significantly more satisfied with life compared to all other groups. Also, we note that as long as males perceive either their support as being high or their stress as being low, they exhibit better adjustment in terms of anxiety. Finally, for intervention purposes, targeting an individual's perception of his or her social support is vital, especially as it pertains to depression in a combined student sample, as well as to anxiety and life satisfaction for males and females, respectively.

APPENDIX

University of Central Florida

Office of Research

February 16, 2004

Kia Asberg
University of Central Florida
Psychology Department
PO Box 161390
Oviedo, Florida 32816

Dear Ms. Asberg:

With reference to your protocol entitled, "Perceived Stress, Coping, and Adequacy of Social Support: Implications of Subjective Well-being in College Students," I am enclosing for your records the approved, executed document of the UCFIRB Form you had submitted to our office.

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur. Further, should there be a need to extend this protocol, a renewal form must be submitted for approval at least one month prior to the anniversary date of the most recent approval and is the responsibility of the investigator (UCF).

Should you have any questions, please do not hesitate to call me at 823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

Chris Grayson
Institutional Review Board (IRB)

Copies: Dr. Clint Bowers
IRB File

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