Evaluation of a Stress Management Program for Newly Matriculated First-Generation College Students: A Randomized Controlled Trial

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ABSTRACT

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Evaluation of a Stress Management Program for Newly Matriculated First-Generation College Students: A Randomized Controlled Trial

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National surveys indicate that approximately 15.9 percent of full-time students attending 4-year universities in the U.S. for the first time come from families where neither of their parents attended college (Pryor et al. 2006). These "first-generation college students" have been deemed an at-risk group based on evidence that they experience extensive stressors, both those related to adjusting to being a college student generally as well as unique disadvantages and heightened stressors related to factors associated with their first-generation status (Choy, 2001; Pryor et al., 2006; Thayer, 2000).

Although previous studies have examined the outcomes of stress management programs for college students, these studies have methodological limitations and no known study has examined the areas of impact of such an intervention for first-generation college students specifically. Accordingly, the present project examined important adjustment outcomes of a stress management program designed to help first-generation freshman effectively cope with the demands of college life. Using a RCT design, 56 incoming first-generation college students were randomly assigned to either a control or an intervention group. Participants in the intervention group participated in a weekly 7-session mind/body stress management and support group. All participants completed a

pre- and post-intervention assessment that included measures of distress/impaired functioning, social support, health promoting behaviors, adaptive coping, and academic performance.

Using MANCOVA, controlling for pre-intervention differences between groups, there was a significant difference at post-intervention between the intervention and control group on the combined dependent variables. Specifically, the intervention group reported significantly lower distress and impaired functioning, significantly greater social support, marginally greater health promoting behaviors, and no significant difference in perceived stress and adaptive coping. Independent samples t-tests revealed no difference between intervention participants and controls in GPA at either post-intervention or 16 week follow-up. Participant satisfaction with the intervention was high.

These results indicate that university personnel may improve important areas of short-term adjustment to college in first-generation freshman by providing them with stress management programs to complement extant support services offered them.

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INTRODUCTION

First-Generation College Students

National surveys indicate that approximately 15.9 percent of full-time students attending 4-year universities in the U.S. for the first time come from families where neither of their parents attended college (Pryor et al. 2006). These "first-generation college students" have been deemed an at-risk group based on evidence that they experience extensive stressors, both those related to adjusting to being a college student generally as well as unique disadvantages and heightened stressors related to factors associated with their first-generation status (Choy, 2001; Pryor et al., 2006; Thayer, 2000).

Stressors Linked to Adjustment to College

Some consider the college experience to be the most stressful period of an individual's life (Ramsey, Greenberg, & Hale, 1989), with first-year college students reporting higher levels of chronic stress than students in later years (Sher, Wood, & Gotham, 1996; Towbes & Cohen, 1996). Risk factors for first-year freshman are often related to their experiencing a new physical environment (Kadison & DeGeronimo, 2004; Lewin, 2009; Ross, Niebling, & Heckert, 1999); a change in provisions of support from family and peers and a new social scene (Ross, Niebling, Heckert, 1999; Sills, 2010); challenges to morals and identity (American Psychiatric Association, 2000; FOL, 2007; Hoyt & Kogan, 2002; Jacobs, 1957; Loeb & Magee, 1992); physiological stressors such as changed patterns of substance use, sleep, eating, and exercise (Ross, Niebling, & Hecke rt, 1999; Sax et al., 2000); and heightened academic pressures (Davis, Eshelman,

& McKay, 2000; Ross, Niebeling, & Heckert, 1999). Additionally, students may enter college with preexisting challenges including familial conflict, a history of abuse or neglect, limited self-regulation abilities, substance abuse or dependence, participation in risky behavior, poor interpersonal attachments, and mental health disorders (Gallagher, Gill, & Sysko, 2000; Kitzrow, 2003). The host of stressors associated with the transition to college life place freshman at especially high risk for psychosocial distress (D'Zurilla & Sheedy, 1991).

Disadvantages/Stressors Faced by First-Generation Students

In addition to the stressors that freshman college students endure generally, first-generation freshman students tend to face many unique disadvantages and heightened stressors. They are more likely than non-first-generation students to experience less academic preparation for college (Chen & Carroll, 2005; Nunez & Cuccaro-Alamin, 1998; Thayer, 2000) and less college knowledge about applying, funding sources, campus environment and organization, academic trajectories, organization, time management, and academic expectations (Padron, 1992; in Hsaio, 1992; Schmidt, 2003; Thayer, 2000; Vargas, 2004). As a group they have less "generational" or "cultural capital" passed on to them, particularly less college specific informational and emotional support from family and friends (A Shared Agenda, 2004; Barry, Hudley, Kelly, & Cho, 2009; Hsiao, 1992; Karabel & Halsey, 1997; Podsada, 2010; Thayer, 2000). In addition, they are more likely to be discouraged from attending college from family or friends who may see leaving home for higher education to be disruptive, dividing, or selfish (Hsiao, 1992; Podsada, 2010; Striplin, 1999).

Furthermore, first-generation students tend to experience a greater cultural transition involved with educational mobility and moving up social classes (London, 1989; Thayer, 2000; Weis, 1985). They often report heightened pressure to perform as the first, the "trailblazer", in the family to attend college (Orbe, 2004, 2008). Their financial constraints tend to be greater largely due to having parents with a smaller annual income (Choy, 2001; Pryor et al., 2006). Often related to financial constraints are the conflicting responsibilities (complex "multiple-identity negotiation"; Orbe, 2004, p. 133) that first-generation students experience between home and school, such as needing to work while in school to help provide for family, only being able to attend school part-time, and continuing to live at home while in school (Nunez & Cucarro-Alamin, 1998; Pryor et al., 2006).

Disparate Outcomes

The unique disadvantages and heightened stress of being a first-generation college student compound stress already linked to being a freshman college student adjusting to college life more generally, both of which contribute to first-generation students experiencing extensive disparate outcomes. At the social level, compared to their counterparts first-generation college students are more likely to experience less social and academic integration within the university (Billson & Terry, 1982; Nunez & Cuccaro-Alamin, 1998) and the establishment of smaller social support networks on campus (Nunez & Cuccaro-Alamin, 1998). They are also more inclined to feel shame and loss related to perceived leaving behind/distancing oneself from people back at home (Hsiao, 1992; London, 1989). This may lead to "periods of confusion, conflict, isolation, and

even anguish" related to educational mobility and moving up social classes (London, 1989, p. 168). Additionally, there may be greater strain in social ties at home (Podsada, 2010), more feelings of "marginality" or estrangement both at home and at school (Orbe, 2004, p. 133; Brooks-Terry, 1998), and vulnerability to experiencing "intruder syndrome" upon entering what may seem like an "alien culture" (Chaffe, 1992; Rose, 1989).

Differing psychological outcomes for first-generation college students include greater questioning of their academic ability, fit, and motivation for pursuing a degree (Chen & Carroll, 2005; Striplin, 1999). Similarly, they tend to struggle more with self-efficacy pertaining to college related tasks (Orbe, 2004; Podsada, 2010) and be more susceptible to find the university setting intimidating (Padron, 1992, in Hsiao, 1992). Given these students' greater incongruent expectations of what the college experience is like coupled by associated frustrations (Hsiao, 1992) and their greater difficulty identifying the relevance of classroom learning in college (A Shared Agenda, 2004) it is not uncommon that they also feel "less commitment to the role of student" (Orozco, 1999, p. 70) and are more vulnerable to drop out (51 percent less likely to earn a degree over 4 years than their peers; Ishitani, 2006) when things go wrong with less encouragement to return (Podsada, 2010). National surveys also indicate that, compared to other students with college-educated parents, on average first-generation students' academic outcomes in college include lower grades, fewer credits completed in the first year and for their entire enrollment, more remedial courses taken, more courses withdrawn from or repeated, reduced likelihood of entering college having selected a

major, higher academic probations rates, lower persistence, higher drop-out, and reduced likelihood of earning a bachelor's degree (Chen & Carroll, 2005; Ishitani, 2006; Nunez & Cuccaro-Alamin, 1998; Wadley, 2011).

Costs

These disparate social, psychological, and academic outcomes among first-generation students are concerning at multiple levels. At the individual level, high chronic stress can contribute to or worsen a wide range of debilitating medical problems such as the common cold, sleep difficulties, headaches, cardiovascular disease, autoimmune diseases, physiological aging of cells, and injury from athletic involvement (Brewer & Petrie, 1996; Epel, Blackburn, Lin, et al., 2004; McEwen, 1998; Schneiderman, Ironson, & Siegel, 2005; Stone, Bovbjerg, Neale, et al., 1992; Verlander, Benedict, & Hanson, 1999). Distress has also been linked to many mental health problems among college students including depression, anxiety, hopelessness, suicidality, and substance abuse (Dixon, Rumford, Heppner, & Lips, 1992; Naquin & Gilbert, 1996; Sadava & Pak, 1993; Segrin, 1999). Additionally, failing to earn a degree can limit earning power and the ability to pay off loans. At the university level, schools that experience high attrition of first-generation students lose valuable and diverse campus community members, face financial consequences from decreased tuition revenue, and may have greater difficulty attracting diverse applicants when attrition rates are publicized (Thayer, 2000; Ohio University Office of Institutional Research, 2010). At the national level, countries that graduate low numbers of first-generation students from college may face the ramifications of a less formally educated citizenry who may have

greater difficulty securing adequate employment to meet their needs and therefore require more external assistance.

Stress Management Programs

In recognition of the numerous stressors college students face that contribute to high distress which can compromise a multitude of important outcomes at high costs, stress management programs have been offered to various groups of college students. Outcomes from these interventions have been studied with varying levels of rigor. Shapiro and colleagues (2000) warned that much of the college student stress management research needs to be interpreted with caution given limitations in methodology and design. Several randomized controlled trial (RCT) design studies have been conducted, however, to provide a more rigorous evaluation of the impacts of three general categories of stress management programs for college students: mind/body interventions, mindfulness interventions, stress inoculation/resiliency interventions (see Tables 1-3 for additional details on each study).

Mind/Body Programs

Mind/body stress management programs tend to emphasize both relaxation training and cognitive restructuring. Six mind/body stress management interventions for college students have been analyzed using a RCT design (see Table 1 for details). Outcomes attributed to the intervention in these studies include higher GPAs and less stress related symptoms among junior college students on academic probation (Williams, Decker, Thomas, & Libassi,1983); increased use of regular and situational relaxation, aerobic exercise, and positive self-statements among undergraduates students (Archer, 1986); no

significant differences in general well-being and anxiety among baccalaureate students (Nicholson et al., 1989); significantly lower anxiety and depression scores among sophomore and senior undergraduate nursing students (Johansson, 1991); significantly reduced state anxiety and no significant change in trait anxiety among undergraduate nursing students (Heaman, 1995); and significantly greater reductions in psychological distress, state anxiety, and perceived stress and no statistically different change in health promoting behavior or trait anxiety among undergraduate and graduate students (Deckro et al., 2002).

These findings suggest that for multiple different groups of students (e.g., general students, students on academic probation, nursing students) relaxation training and cognitive restructuring are mostly (one study found no significant differences and several studies found differences on only a subset of dependent variables) effective ways to positively impact a range of psychological adjustment variables. Unfortunately, as observed in Table 1, many of these studies have small samples sizes (e.g., 22 and 40 participants), attrition rates were occasionally high (e.g., 30% drop out), few report effect sizes calling into question the strength or meaningfulness of statistically significant changes, and almost all outcome measures used are exclusively self-report (except for one measure using GPA transcripts).

Table 1

Randomized Controlled Trial Studies of Mind/Body Stress Management Programs for College Students

Authors & Year	**Type and Dose of Intervention**	**Population**	**N -Drop Out%**	**Outcome Measures**	**Results**	**Effect Size**
Williams et al., 1983	Success Training & Stress Management Group (Relax. Training & Adaptive Coping) vs. Success Training vs. control	Junior College Students on Academic Probation	22	-GPA -Stress Related Symptoms	-Sig. Higher -Sig. Lower	
Archer, 1986	Preventive Multidimensional Stress Management Model (Physical, Cognitive, and Lifestyle) vs. Career Course	Undergraduate Students	86	-Use of Regular & Situational Relaxation -Use of Aerobic Exercise -Use of Positive Self-Statements	-Sig Increase -Sig Increase -Sig Increase	
Nicholson et al., 1989	General Well-Being and Anxiety Focused Stress Management Program vs. Control (3 Session)	Baccalaureate Students	56	-General Well-being & Anxiety	-*No Sig. Dif.*	
Johansson, 1991	Arousal-Attribution Stress Theoretical Model (i.e., Relaxation Response & Cognitive Intervention) vs. Control	Sophomore & Senior Undergraduate Nursing Students	76 -0% =76	-State-Trait Anxiety -Institute for Personality and Ability Testing Depression Scale	-Sig. Lower -Sig. Lower	
Heaman, 1995	Cognitive Restructuring, Stroebel's Quieting Response, & Biofeedback vs. Control	Undergraduate Nursing Students	40 -12% =35	-State Anxiety -Trait Anxiety	-Sig. Reduction -*No Sig. Dif.*	
Deckro et al., 2002	Mind/Body Intervention (i.e., Training in the Relaxation Response and Cog. Beh. Skills) vs. Wait-List Control (6 Session) 43% Attended all training sessions	Undergraduate & Graduate Students	128 -30% =90	-Psychological Distress -State Anxiety -Trait Anxiety -Perceived Stress -Health Promoting Behavior	-Sig. Reduction -Sig. Reduction -N*o Sig. Dif.* -Sig. Reduction -*No Sig. Dif.*	d=.42 d=.70 d=.52 d=.57 d=.49

Mindfulness Programs

In addition to mind/body programs, mindfulness based stress management programs for post-secondary students have also been analyzed using RCT designs. Five of such studies were identified in the literature (see Table 2 for details) with multiple positive outcomes attributed to the intervention including significant reductions in overall psychological symptoms, increases in overall domain-specific sense of control and use of accepting or yielding mode of control, and increases in reported spiritual experiences among upper-level undergraduate students (Astin, 1997); significant reductions in anxiety and depression scores and significant reductions in interpersonal problems among undergraduates students (Toloczynski and Tantiella,1998); significantly reduced self-reported psychological distress, depression, state anxiety, and trait anxiety, and significantly increased self-reported overall empathy, and spiritual experiences among pre-medical and medical students (Shapiro, Shwartz, & Bonner,1998); significant decreases in stress symptoms including emotional manifestations, gastronomic distress, and behavioral manifestations among graduate education students (Winzelberg & Luskin, 1999); significant decreases in distress and increases in positive mood states (Jain et al., 2007); significantly reduced stress, increased forgiveness, marginally reduced rumination, and no significant change in hope among college students (Oman et al., 2008); and significant reductions in perceived stress and anxiety with borderline significant reductions in stress among senior medical students (Warnecke, Quinn, Ogden, Towle, & Nelson, 2011).

The research outlined above provides support for the ability of mindfulness exercises to influence diverse positive change processes (e.g., mood states as well as spiritual experiences, empathy, and forgiveness, and hope) for college students across educational levels and groups (e.g., undergraduate and graduate students; medical students and education students). Similar to mind/body stress management program research, as indicated in Table 2, the conclusions of this group of studies is also limited in that several studies had small sample sizes (e.g., 21 , 28, and 44 participants), effect sizes are rarely reported, and high attrition rates are also evidenced in some circumstances (e.g., 39%, 17%, and 15% drop out).

Table 2

Randomized Controlled Trial Studies of Mindfulness Stress Management Programs for College Students

Authors & Year	**Type and Dose of Intervention**	**Population**	**Sample Size/ -Drop Out%**	**Outcome Measures**	**Results**	**Effect Size**
Astin, 1997	Mindfulness Meditation vs. Control (8 Session)	Upper-Level Undergraduate Students	28 -39% =17	-Overall Psychological Symptoms -Domain-Specific Sense of Control -Use of Accepting or Yielding Control Mode -Report of Spiritual Experiences	-Sig. Reduction -Sig. Increase -Sig. Increase -Sig. Increase	
Tloczynski & Tantiella, 1998	Instructional Zen Breath Meditation or Instructional Relaxation Session vs. Control (1 Session)	Undergraduate Students	75 -17% =62	-6 Wk. Follow-Up Anxiety (Both Groups) -6 Wk. Follow-Up Depression (Both Groups) -6 Wk. Follow-Up Interpersonal Problems (Med. Group Only)	-Sig Reduction -Sig. Reduction -Sig Reduction	
Shapiro, Shwartz, & Bonner, 1998	Mindfulness-Based Stress Reduction (7-8 Sessions)	Pre-Medical & Medical Students	73	-Psychological Distress -Depression -State & Trait Anxiety -Empathy and Spiritual Experiences	-Sig. Reduction -Sig. Reduction -Sig. Reduction -Sig. Increase	
Winzelberg & Luskin, 1999	Meditation Training Group/RISE Response vs. Control (4 Session)	Students in Teacher Credential Program	21 -0% =21	-Emotional Manifestations of Stress -Gastronomic Distress -Behavioral Manifestations	-Sig. Reduction -Sig. Reduction -Sig. Reduction	
Jain et al., 2007	Mindfulness Meditation vs. Somatic Relaxation Training vs. Control (1 month)	College Students Reporting Distress	83	-Distress -Positive Mood States -Rumination (Mind. Only) -Distraction (Mind. Only) -Spiritual Experiences	-Sig. Reduction -Sig. Increase -Sig. Reduction -Sig. Reduction -*No Sig Dif.*	d=1.36, .91 d=.71, .25 d=.57 d=.25

Table 2: continued

Oman et al., 2008	Mindfulness-Based Stress Management or Easwaran's Eight-Point Program vs. Wait-List Control	College Students	44 -6% =41	-Stress -Forgiveness -Rumination -Hope	-Sig. Reduction -Sig. Increase -*Marg. Reduc.* -*No Sig. Dif.*	d=-.45 d=.34 d=-.34
Warnecke, Quinn, Ogden, Towle, & Nelson, 2011	Audio CD Guided Mindfulness Practice (Daily over 8 Weeks)	Medical Students	66 -15% =56	-Perceived Stress -Depression -Anxiety -Stress	-Sig. Reduction -*No sig. Dif.* -Sig. Reduction -*Marg. Reduc.*	-3.44 CS -3.69 CS -2.82 CS -3.69 CS

Stress Inoculation/Resiliency Programs

In addition to mind/body and mindfulness based stress management group outcome studies, RCT research has examined the effectiveness of stress inoculation and resiliency programs (see Table 3 for details) with outcomes revealing that the intervention contributed to significantly lower heart rate and state anxiety and no difference in blood pressure or perceived severity of physical symptoms at either time point among college students (Fontana, Hyra, Godfrey, & Cermak, 1999); and significantly larger increases in resilience variables scores, coping variables scores, and protective factor variables scores, and significantly larger decreases in symptomatology variables scores among undergraduate and graduate students (Steinhardt & Dolbier, 2008).

Accordingly, there appears to be preliminary evidence for the effectiveness of stress inoculation/resiliency programs in impacting psychological, behavioral, and even physiological outcomes (e.g., lowered heart rate), although once more effect sizes were not reported to determine the strength of significant relationships between variables. Uniquely, the inoculation program reviewed above was peer led, which may increase its feasibility of broader implementation with less expense (see Table 3; Fontana, Hyra, Godfrey, & Cermak, 1999).

Table 3

Randomized Controlled Trial Studies of Stress Inoculation/Resiliency Stress Management Programs for College Students

Authors & Year	**Type and Dose of Intervention**	**Population**	**Sample Size/ -Drop Out%**	**Outcome Measures**	**Results**	**Effect Size**
Fontana, Hyra, Godfry, & Cermak, 1999	Preventive Peer-Led Stress Inoculation Training vs. Wait-list Control (6 Session)	Undergraduate Students Taking Intro. Psych.	36 -0% =36	-Heart Rate -State Anxiety -Blood Pressure -Perceived Severity of Physical Symptoms	-Sig. Lower -Sig. Lower *-No Sig. Dif.* *-No Sig. Dif.*	
Steinhardt & Dolbier, 2008	Resilience Intervention During Final Four Weeks of Term vs. Control (4 Session)	Undergraduate & Graduate Students	57	-Resilience -Coping -Protective Factors -Psychological Symptoms	-Sig. Increase -Sig. Increase -Sig. Increase -Sig. Decrease	

Specific Stress Management Components

In addition to substantial evidence for diverse benefits from more comprehensive stress management programs for a wide range of different groups of students, studies have also compared outcomes when specific components are examined in isolation or compared to each other. For example, Winterdyk and colleagues (2008) compared outcomes between four different components of more comprehensive stress management programs: nutritional education, exercise education, relaxation training, or cognitive behavioral therapy. Results indicated that over time the nutrition group experienced a statistically significant change in healthy habits and perceived stress; the exercise group demonstrated statistically significant change on the global severity index; the relaxation training group experienced statistically significant change in healthy habits and the global

severity index; and the cognitive behavioral therapy group showed significant positive change in anxiety. These findings suggest that different outcomes are affected by the reception of different stress management components. These conclusions may partially explain the many differing significant outcomes found between the multiple RCT studies previously reviewed, as each multi-component intervention may still place more emphasis on certain stress management strategies. These conclusions also support the value of offering students a more comprehensive multi-component stress management program, instead of a single component stress management program, since each component may contribute to affecting change in a unique area of adjustment and therefore result in a greater combined impact than would be obtained from any component being offered in isolation. Importantly, however, such comprehensive multi-component stress management programs must also be sensitive to the unique characteristics of the target population; provide flexible strategies to address the diverse stressors faced by students (not "one-size-fits all" approaches; Ponterotto & Casas, 1991; Ponterotto, Fuertes, Chen, & Brown, 2000); and be designed with feasibility of implementation and ease of access in mind given limited resources on campuses and restricted time in college students' schedules which could preclude attendance (Coyne & Racioppo, 2000; Gallagher, Gill, & Sysko, 2000; Kitzrow, 2003; Terneus, 2006).

Based on the above review of stress management programs for higher education students, previously used stress reduction modalities/components include cognitive behavioral strategies; relaxation response training; biofeedback; systematic desensitization; guided imagery; rational-emotive behavioral strategies; psychoeducation

on stress, anxiety, coping, self-care, time management training, expressive written emotional disclosure, and mindfulness meditation (Bost, 1984; Dziegielewski, Turnage, & Roest-Marti, 2004; Heaman, 1995; Kushnir et al., 1998). Of these, the most commonly incorporated stress management intervention components with the strongest evidence base include cognitive behavioral strategies, relaxation training, mindfulness, and psychoeducation (Deckro et al., 2002; Oman et al., 2008). None of these stress management programs for students; however, included an explicit social support emphasis.

Social Support

There is a large body of research linking social support with positive outcomes, particularly reductions in distress. For example, there is evidence that feeling socially supported may specifically enhance self-esteem, self-efficacy, and sense of control which in turn influences the way individuals experience life events and future relationships and their ability to cope with them adaptively (Moran & Dubois, 2002; Lazarus & Folkman, 1984; Vieno, Santinello, & Pastore, 2007). Such "favorable views of oneself and one's abilities, as an internal asset" may then serve to bolster people's ability to either avoid or better deal with life difficulties (Vieno, Santinello, & Pastore, 2007, p. 177). Social support may therefore serve as a powerful resource for establishing adaptive coping strategies (Zimet, Dahlem, Zimet, & Farley, 1988).

In group settings social support has been shown to provide multiple therapeutic factors such as opportunities for disclosure, universality, instillation of hope, imparting information, altruism, interpersonal learning, cohesiveness, catharsis, imitative behavior,

existential factors (Gordon, 2005; Yalom, 2005). Similarly, participants in support groups may benefit from social provisions such as increased perception of attachment, social integration, reassurance of worth, reliable alliance, guidance, opportunities for nurturance (Cutrona & Russell, 1987). Given these findings, including social support as a component of comprehensive stress management programs is merited.

Limitations of Previous Research

Despite a growing literature on stress and coping among first-generation students and stress management programs for college students in general, this body of research is limited in several important ways. First, there remains a need for studies examining outcomes of stress management programs among incoming first-generation college students specifically. Given that first-generation college students are a large and important at-risk group in post-secondary education (Chen & Carroll, 2005; Choy, 2001) this population is a prime candidate for a comprehensive stress-management program that has been tailored to address the unique challenges they face in adjusting to college life. There are multiple extant interventions that focus on specific challenges that freshman, first-generation students, and at-risk students face, such as palliating financial constraints or improving academic skills, but there remains a dearth of studies that have examined the outcomes of such targeted support services (McWhirter, Okey, Roth, & Herlache, 1995) and there exists no known study that has evaluated areas of impact of a comprehensive stress management intervention specifically designed for first-generation freshman college students (Reavley & Jorm, 2010).

Second, there is a need for stress management programs that include an explicit social support component. In a review of the literature there was a dearth of comprehensive stress management programs for college students that by design included a designated social support component. Several programs provided their intervention in a group format, but the group tended to be large (14 or more participants) and not designed to offer specific provisions of social support. The stress-buffering and direct benefits of social support and social connectedness, particularly among college students, are evident in the literature (Cohen & Wills, 1985; Moran & Dubois, 2002; Beutler et al., 2002; Lazarus & Folkman, 1984; Vieno, Santinello, & Pastore, 2007; Young, 2006) and may be especially helpful to first-generation students who tend to lack experiential social support from parents and friends from home (A Shared Agenda, 2004; Barry, Hudley, Cho, & Kelly, in press; Barry, Hudley, Kelly, & Cho, 2009; Hsiao, 1992; Thayer, 2000; A Shared Agenda, 2004). Accordingly, there appears to be potential benefits to offering a safe place and time for any student, but particularly for first-generation freshman students, to disclose stress to others with similar experiences and to then receive validation and supportive feedback.

Third, there is a need for analyses of more comprehensive stress management programs that incorporate multiple evidenced based components in order to determine the extent of impact possible. Given the literature reviewed on the wide variety of different stressors college students face, interventions that solely address one or two stressors may not be comprehensive nor flexible enough to significantly mitigate the multiplicative effect of experiencing diverse stressors simultaneously (Aldwin, 1994; Pellegrini, 1990)

and thereby fail to effect more broad based change. Fourth, there is a need to measure a broader area of relevant outcomes. It is important to adequately assess the extent to which a comprehensive stress management intervention may impact the multiple critical areas of first-generation freshman students' adjustment to college including distress and impaired functioning, perceived stress, perceived social support, adaptive coping, health promoting behaviors, and academic performance (Baker & Siryk, 1984, 1989). Fifth, there is a need for stress management outcome studies with more rigorous methodology, such as employing RCT designs, using reliable and valid measures, examining both subjective and objective outcome measures, capturing follow-up data, and conducting multivariate analyses that control for baseline differences when evaluating post-intervention differences between intervention and control groups.

Purpose of the Present Project

In response to these gaps in the literature, the present research specifically examined the benefits of a stress management program designed for first-generation freshman students, included social support as a key component of the program, evaluated impact on a broader scope of critical college adjustment variables (e.g., distress/impaired functioning, perceived stress, perceived social support, adaptive coping, health promoting behaviors, and academic performance), used psychometrically sound outcome measures, used both subjective (e.g., self-report rating scales) and objective (e.g., GPA retrieved from Registrars' office) outcome measures, measured variables at multiple time points (i.e., pre-intervention, post-intervention, and 16 week follow-up), and used rigorous methodology and statistical analyses (i.e., a RCT design and MANCOVA).

The multi-component stress management and support group intervention implemented in this study adhered to an integrated biopsychosocial model of stress and coping, drawing from relaxation response theory (Benson, Greenwood, & Klemchuk, 1975), the transactional model of stress and coping (Lazarus and Folkman, 1984), and the literature on the stress-buffering and direct benefits of social support and social connectedness (Cohen & Wills, 1985; Moran & Dubois, 2002; Beutler et al., 2002; Vieno, Santinello, & Pastore, 2007; Young, 2006). Based on this integrated model, the intervention incorporated a range of strategies designed to reduce the physiological stress response and induce the relaxation response, restructure maladaptive appraisals of stress and shift maladaptive coping behaviors, and increase stress buffering provisions of social support. This study was designed to help inform higher education administration and personnel on a feasible and evidenced-based method to further improve the ability of first-generation students to transition into college life and thereby reduce associated rates of heightened distress, academic problems, and costly attrition.

Hypotheses

Based on the literature reviewed, multiple hypotheses are made pertaining to the proposed stress management program for first-generation college students. Compared to participants in the control group, after controlling for pre-intervention variables, it is hypothesized that participants in the intervention group will report significantly less distress/impaired functioning and perceived stress at immediate post-intervention; significantly greater perceived social support, health promoting behaviors, and adaptive

coping at immediate post-intervention; and significantly greater academic performance at 16-week follow-up.

METHODS

Participants

All participants satisfied five inclusion criteria: (1) 18 years of age or older; (2) entering their first term of college as a freshman at Ohio University; (3) neither parent had earned a college degree; (4) fluency in English; and (5) domestic/non-international student status. Sixty two participants were initially screened for study eligibility. An a priori power analysis was conducted to guide sample size for this study. Ten participants were excluded from the study; six did not satisfy all inclusion criteria and four were assigned to the intervention group but attended no intervention sessions (see Figure 1 for CONSORT participant flow diagram; Moher et. al., 2010; Schulz, Altman, & Moher, 2010).

Participants who did not satisfy inclusion criteria had parents with college degrees (e.g., primarily associates degrees). The sample in the current study was required to meet the more flexible operational definition of first-generation college student used by federal TRIO programs, and have no parent with a post-secondary degree (e.g., associates or bachelors). Of the sample in this study, the majority (54%, or 28 out of 52) also met the more stringent criteria used by many large national surveys, in that neither of the student's parents had attended any post-secondary education. Of the 24 participants whose parents did attend some post-secondary education without earning a degree, 22 had a parent who attended a vocational school or community college, and only 2 had a parent who attended a university.

CONSORT 2010 Flow Diagram

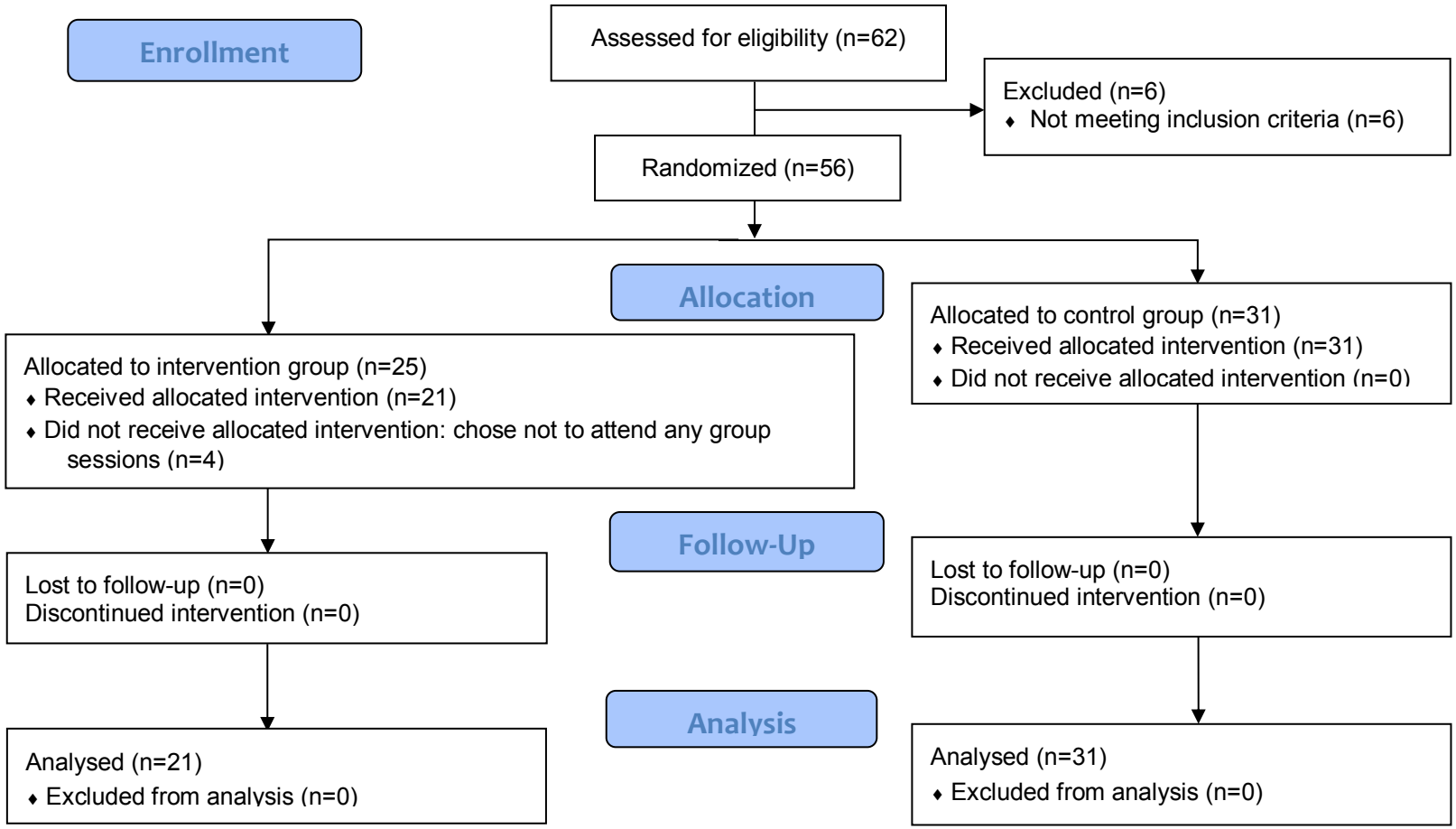

Figure 1. CONSORT Participant Flow Diagram.

The sample in this study was different from first-generation college student samples in many national studies in that this study only included students who had been accepted to a moderately selective and moderately expensive public four-year university. Being accepted to such a university infers that the sample met a certain threshold for GPA, ACT scores, high school preparation, and access to funding. The threshold met in this study may therefore be higher than that of the average first-generation college student nationally, given that many first-generation college students do not attend post-secondary education, or attend a vocational school or community college instead of a university (Chen & Carroll, 2005). Most national studies, as will be used in the below comparisons, have samples that include first-generation students across post-secondary settings (i.e., vocational schools and community colleges as well as universities; Chen & Carroll, 2005) making accurate comparisons difficult.

Comparing samples where possible, the family incomes below $25,000 in the current study were 36.2% compared to national samples with 7.4% for student with parents with a college degree (Chen & Carroll, 2005). When comparing GPA between samples, in the current study participants earned an average GPA of 3.00 when combining their first two quarters in college, whereas a national study found an average combined first-year GPA of 2.8 for parents with a college degree (Chen & Carroll, 2005). Difference here may be partially due to differences in comparing students at a 4-year university versus those at any post-secondary educational setting.

Comparing credits earned between samples, in the current study participants earned an average of 29.1 credits when combining their first two quarters in college,

whereas a national study found an average of first-year credits earned of 25 for students with parents with a college degree (Chen & Carroll, 2005). Differences here may be partially due to differences between students on a quarter system in this study versus students on semester systems elsewhere. Additionally, comparing undeclared academic major rates upon entering post-secondary education, in the current study 21.2% had an undeclared academic major, whereas a national study found that 13.1% of students with parents who had earned a college degree had an undeclared academic major (Chen & Carroll, 2005). Accordingly, compared to national study samples of students with parents who have earned a college degree, the sample in this study shows a greater percentage of low income status, similar GPA, more credits earned, and higher rates of having an undeclared academic major. Furthermore, participants in this study do not have the same cultural capital of student's with parents who have the experience of completing a college degree that they can share with their child. Accordingly, there is reason to believe that the participants in this study may be considered at-risk, similar to findings for other samples of first-generation college students.

The 52 participants who comprised the final sample were mostly female (73.1%) and Caucasian (84.6%; Black = 3.8%, Multiracial = 5.8%, Middle Eastern = 3.8%, Native American = 1.9%) and had a mean age of 18.77 years (range = 18 to 51). Most participants graduated from high school in 2011 (96.1%), were employed while they were in high school (73.1%), were from a family with a mean annual household income of $42,478, were planning to work part-time for an average of 13.11 hours while attending college, were single (98.1%), were without dependent children (98.1%), had declared an

academic major (78.8%), lived on campus (90.4%), were not living with parents (94.2%), had no previous psychiatric hospitalization (96.2%), were not currently in counseling (98%), were not taking psychiatric medication (84.6%), and had never been diagnosed with a psychiatric disorder (86.6%). Academically, participants' mean 4-year high school GPA was 3.56 and their senior year high school GPA was 3.61 (see Table 1 for additional academic information). Descriptive baseline data presented separately for intervention and control group can be found in Table 4.

Table 4

Baseline Characteristics between Intervention and Control Group

	Intervention Group			**Control Group**		
Baseline Measures:	**Mean / %**	**SD**	**N**	**Mean / %**	**SD**	**N**
OQ-45.2	51.29	20.50	21	52.81	19.70	31
SPS (Social Support)	83.55	7.76	21	81.10	9.09	31
HPLP-II (Health Promoting Behavior)	130.00	24.31	21	128.90	21.69	31
PSS (Perceived Stress)	26.71	7.79	21	28.55	5.60	31
COPE (Adaptive Coping)	39.90	7.76	21	40.92	7.23	31
MSPSS-F (Family Support)	22.45	5.26	20	21.19	6.24	31
High School GPA Overall	3.57	.42	20	3.55	.37	30
High School Senior Year GPA	3.65	.40	20	3.58	.43	31
Percentage of Classes Attended in H.S.	95.67	4.98	21	95.13	7.93	31
Age	19.71	7.18	21	18.13	.43	31
Caucasian	95.2%		21	77.4%		31
Female	76.2%		21	71.0%		31
High School Graduation Year	2009.33	7.41	21	2011.00	.00	30
Mother's Highest Education	12.10	.46	21	12.12	.84	31
Father's Highest Education	11.71	.99	21	11.97	.97	30
Other Care Taker's Highest Education	10.50	2.12	2	12.19	.38	4
Siblings Highest Education	12.79	3.90	18	11.17	3.81	25
Extended Relatives Highest Education	16.43	3.20	19	15.93	2.71	30
Friend's Highest Education	15.68	2.76	20	15.21	2.64	30
Annual Income	42,823.53	33,965.49	17	42,283.33	28,317.68	30
Employed in H.S.	76.2%		21	71.0%		31

Table 4: continued

Hours to Work at College	14.42	9.14	20	12.18	7.59	28
Living On Campus	81.0%		21	96.8%		31
Living With Parents	9.5%		21	3.2%		31
Married	4.8%		21	0.0%		31
Number of Dependent Children	.19	.87	21	0	0	31
Number of Prior Counseling Sessions	3.31	9.26	21	2.98	6.63	31
Psychiatric Hospitalization	0.0%		21	6.5%		31
Number of Psychiatric Hospitalizations	0	0	21	.06	.25	31
Currently In Counseling	5.0%		20	0.0%		31
Currently Taking Psychiatric Meds	14.3%		21	16.1%		31
Psychological Disorder	19%		21	9.7%		31
Days Missed HS Senior Year	5.93	4.83	21	7.74	5.32	31
ACT Score	23.30	3.96	20	23.20	4.50	30
SAT Score	1656.67	263.26	6	1392.22	311.64	9
Number of AP Classes Taken	1.26	1.91	19	1.30	1.37	30
Number of Honors Classes Taken	3.74	4.37	19	3.87	5.64	31
Number of College Prep Courses Taken	5.20	5.53	20	3.57	4.33	30
Declared Major	95%		21	67.7%		31
Number Fall Quarter Credits Taken	16.52	1.37	21	16.65	1.54	31
Number of Friends Attending College	11.29	12.78	14	17.74	19.07	27
Percentage of Friends Attending College	70.00	34.80	21	80.71	21.90	31

The four participants who were dropped from the intervention group due to attending zero intervention sessions were compared to the 21 participants who attended one or more intervention sessions on pre-intervention characteristics. Chi-squared tests for association (with Yates Continuity Correction for 2 by 2 tables) assessed relationships among retention status (retained, dropped) and the twelve categorical demographic variables assessed at pre-intervention. No significant associations were found. Independent samples t-tests compared retained and dropped intervention participants on

the 22 continuous demographic variables assessed at pre-intervention. Dropped and retained intervention participants differed on three pre-intervention variables. "Friends Highest Level of Education" for retained intervention participants (M = 15.68, SD = 2.76) was lower than that of dropped intervention participants (M = 19.50, SD = 1.29), t (9.73) = -4.28, p = .002 (given that the Levene's test was significant the equal variances not assumed results are reported). The mean Four-Year High School GPA for retained intervention participants (M = 3.57, SD = .42) was higher than that of dropped intervention participants (M = 2.96, SD = .91), t (22) = 2.16, p = .041). Finally, retained intervention participants had higher OQ 45.2 values (M = 51.29, SD = 20.50) compared to dropped intervention participants (M = 32.25, SD = 5.12), t (20.54) = 3.69, p = .001 (given that the Levene's test was significant the equal variances not assumed results are reported).

Procedures

Participants were recruited during the week prior to and the first two weeks of Fall Quarter 2011 through informational e-mails, informational flyers, pamphlets distributed by the Office of Academic Adjustment, announcements made in freshman learning communities and orientation to college classes, and announcements made in large general education courses that primarily served freshman students. All incoming freshman students (app. 4,000) were contacted via one or more of the above recruitment methods. The estimated pool of students drawn from with first-generation status, based on statistics from the Fall 2010 cohort of first-year freshman at Ohio University, was 781, or 20.8 percent of incoming first-year students (Wadley, 2011). These forms of

recruitment invited first-generation college students to participate in the study via contacting the primary investigator. Participants were therefore self-selected in that there was no obligation to enroll in the study and it was left up to them to decide to pursue further information.

When students contemplating study enrollment contacted the primary investigator they were scheduled to attend one of several pre-intervention group orientation meetings conducted by the primary investigator. During these meetings, students were informed of (i) the purpose of the study, (ii) risks and benefits associated with participation, (iii) the voluntary nature of the study, and (iv) study confidentiality and informed consent procedures. More specifically, students were informed that:

> "The primary aims [of the study] being to better understand the characteristics of first-generation college students, to explore their experiences of stress and coping as they adjust to college life during their first term, and to evaluate in what ways a stress management program may benefit them. This study will help inform efforts to better support freshman first-generation students as they transition into college. The study involves completion of a series of questionnaires at the beginning and end of fall quarter 2011, collection of academic and health information from Ohio University, and potential participation (a 50/50 chance) in a hour a week, quarter long stress management workshop. As compensation for participating in the study pizza and beverages will be served at both time points when questionnaires are completed, you will be entered into a drawing to win (approximately 1 in 80

chance) an 8 GB iPod Touch (a $210 value), and you will receive $30 at the end of the quarter assessment..”

They were also informed that if they were randomly assigned to the control group and they would like to receive stress management services, that such could be accessed through Counseling and Psychological Services on campus or services in the community. Students who chose to enroll then signed informed consent forms and completed the pre-intervention assessment instrument.

Assessment Instrument

Both pre and post-assessments were self-administered using paper-and-pencil format. They were conducted using a group format (5 groups at each time point) in a reserved conference room in the university student center and took less than one hour to complete. The pre-assessment took place during the third week of Fall Quarter, and the post-assessment took place during the final day of class and first reading day of Fall Quarter, or approximately 7 weeks after the pre-assessment. Study assessments included the following measures:

Demographics Form

The demographics form assessed participants’ age, gender, ethnicity, year of graduation from high school, home state and county, parent’s/caregiver’s annual income, employment status while in high school, planned employment status in college (e.g., including hours to be worked a week), living arrangement while in college (on campus, off campus with family, or off campus other), marital status, and number of dependent children.

Outcomes Questionnaire-45.2 (OQ-45.2: Lambert et al., 1996)

The OQ-45.2 is a 45-item self-report measure of significant domains of functioning pertinent to mental health (e.g., distress symptoms, interpersonal difficulties/social role functioning, and quality of life). It is designed for repeated use enabling change to be tracked over time. Items are rated using a 5-point Likert-type scale ranging from 0 ("never") to 4 ("always"), with a possible Total Score falling between 0 and 180 (higher scores indicating higher impairment in functioning). The OQ-45.2 has evidenced strong psychometric properties in past research (Lambert et al., 1996) and in the current study (internal consistency: α=.913 at pre-intervention and α=.946 at post-intervention).

Perceived Stress Scale—10 (PSS-10: Cohen & Williamson, 1988)

The PSS-10 is a 10-item self-report index of general stress appraisal, including how unpredictable, uncontrollable, and overloaded one perceives their life to be. It measures an individual's subjective degree of stress based on appraisal of experiences over the previous month. Items are rated using a 5-point Likert-type scale ranging from 0 ("never") to 4 ("very often"), with a possible Total Score falling between 0 and 40 (higher scores indicating higher ratings of stress). The PSS has demonstrated sound psychometric properties in past research (Cohen, Kamarack, & Mermelstein, 1983; Cohen, 1986; Cohen & Janicki-Deverts, 2010; Cohen & Williamson, 1988) and in the current sample (internal consistency: α=.886 at pre-intervention and α=.911 at post-intervention).

Social Provisions Scale (SPS: Russell & Cutrona, 1984; Cutrona, 1986 [updated])

The SPS is a 24-item self-report measure that assesses perception of current and accessible forms of social support including attachment, social integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturance. It uses a 4-point Likert-type scale ranging from 1 ("strongly disagree") to 4 ("strongly agree"). A Total Score can range from 24 to 96 (higher scores indicating higher ratings of support). The SPS has demonstrated excellent reliability and validity in past research (Cutrona, 1982, 1984; Cutrona, Russell, & Rose, 1984; House, 1981; Russell, Altawater, & Van Velzen, 1984; Russell, Peplau, & Cutrona, 1980) and in the current sample (internal consistency: α=.876 at pre-intervention and α=.911 at post-intervention).

Brief Coping Orientations to Problems Experienced Scale (Brief COPE: Carver, Scheier, & Weintraub, 1989; Carver, 1997 [Shortened Item Set])

The Brief COPE is a widely used 28-item self-report measure of conceptually different dispositional coping responses to stressors. It uses a 4-piont Likert-type scale ranging from 1 ("I haven't been doing this at all") to 4 ("I've been doing this a lot"). It contains 14 subscales with 2-items each which have been divided into Adaptive and Maladaptive Composite Score scales (Carver et al., 1993; Meyer, 2001; Vosvick et al., 2002, 2003). The 8 subscales included in the Adaptive Composite Score are Acceptance, Planning, Use of Emotional Support, Use of Instrumental Support, Active Coping, Positive Reframing, Humor, and Religion. The Adaptive Coping Composite Score has a possible range between 8 and 32 (higher scores indicating higher ratings of adaptive coping; Meyer, 2001; Vosvick et al., 2002, 2003). For the purpose of this study only the

Adaptive Coping Composite Score scale was used. The Brief COPE has evidence of sound psychometric properties in previous research (Carver,Scheier, &Weintraub, 1989; Clark et al., 1995) and in the current sample (internal consistency: α=.770 at pre-intervention and α=.711 at post-intervention).

Health-Promoting Lifestyles Profile – II (HPLP-II: Walker, Sechrist, & Pender, 1987; Walker & Hill-Polrecky, 1996 [Updated Scale])

The HPLP-II is a 52-item self-report measure of current health-promoting lifestyles. It uses a 4-point Likert-type scale ranging from 1 ("Never") to 4 ("Routinely"). It contains 6 subscales with 8 to 9 items each including Health Responsibility, Physical Activity, Nutrition, Spiritual Growth, Interpersonal Relations, & Stress Management. An overall Total Score can be obtained ranging from 52 to 208. For the purpose of this study only the Total Score scale of the HPLP-II will be used. This measure has evidenced good psychometric properties in previous research (Walker, Sechrist, & Pender, 1987; Butcher & Gaffney, 1995; Deckro et al., 2002; Stuifbergen, Seraphine, & Roberts, 2000; Winterdyk et al., 2008) and in the current sample (internal consistency: α=.935 at pre-intervention and α=.929 at post-intervention).

Academic Performance

Pre-intervention academic performance variables included overall high school grade point average (GPA), senior year GPA, estimated number of school days missed in senior year of high school, score on ACT or SAT exams if taken, number of AP classes taken in high school, number of honors classes taken in high school, number of college prep courses taken in high school, whether academic major is declared, and if so what

major is declared, number of credits to be taken during first quarter in college, number of friends attending college, and percentage of friends attending college. Pre-intervention academic performance variables were used as solely as descriptive variables. The post-intervention academic performance variable was first-term accumulative grade point average (GPA), and the 16 week follow-up academic performance variable was second-term accumulative GPA. Accumulative GPA was used as a measure of overall academic functioning because in addition to reflecting a student's ability to successfully attend to, encode, retrieve, and apply academic information within a post-secondary education environment it may also capture performance on a broad range of academic activities including class attendance, class participation, projects, term papers, quizzes, midterms, and final exams.

Client Satisfaction Questionnaire – 8 (CSQ-8: Attkisson & Zwic, 1982; Attkisson & Greenfield, 2004)

The CSQ-8 is an 8-item self-report measure of program satisfaction. It uses a 4-point likert-type scale ranging from 1 (e.g., "quiet dissatisfied," "poor") to 4 (e.g., "very satisfied," "excellent"). An overall Total Score can be obtained ranging from to 8 to 36. This measure has evidenced good psychometric properties in previous research (Attkisson & Zwic, 1982; Attkisson & Greenfield, 2004) and in the current sample (internal consistency: α=.84 at post-intervention).

Intervention Conditions

Participants who completed the pre-intervention assessment were randomly assigned, using true randomization (i.e., coin toss), by the primary investigator to either

the control group (31 participants) or intervention group (25 participants; 4 of whom were eventually dropped because they chose to attend no intervention sessions; see Figure 1 for CONSORT participant flow diagram; Moher et. al., 2010; Schulz, Altman, & Moher, 2010). Intervention participants participated in an hour long stress management workshop for 7 weeks, starting the third week of the fall quarter.

The BALANCE Stress Management Program

The BALANCE program manual was created by the primary investigator. After extensive review of other stress management programs and resources, information for this comprehensive program was integrated from a variety of evidenced based sources (Antoni, Ironson, & Schneiderman, 2007; Beck, 1995; Center for Disease Control and Prevention, 2011; CognitiveTherapyGuide.org, 2011; Counseling & Psychological Services at Ohio University, 2011; Davis, Eshelman, & McKay, 2000; Ellis, 2001; Georgia Southern University Counseling and Career Development Center, 2011; Lazarus & Folkman, 1984; Mayo Clinic, 2011; McNamara, 2000; Miller & Smith, 1985, 1993; University of Wisconsin-Stevens Point Health Service, 2011; USDA, 2011). The intervention in the study was based primarily on a cognitive-behavioral orientation (Antoni, Ironson, & Schneiderman, 2007; Beck, 1995), drawing heavily from Lazarus and Folkman's model of stress and coping (Lazarus & Folkman, 1984). The BALANCE Stress Management Program consisted of five main components: (1) Psychoeducation on stress and coping, (2) cognitive behavioral techniques, (3) homework, (4) relaxation training, and (5) social support. Group sessions were weekly for 1 hour over 7 weeks. All sessions were held in reserved conference rooms in the university student center. Four

different groups were formed, ranging from 3 to 7 members based on participant availability.

Groups were conducted by one of three therapists (male = 1, female = 2). Therapists were clinical psychology students with master's degrees pursuing doctoral degrees in their 5th or 6th year of graduate training. They were trained by the primary investigator on how to implement the BALANCE program with their assigned groups. Over two training meetings each module of the BALANCE program was reviewed in detail with the group therapists and related questions answered. Group therapists received a BALANCE program binder with outlines to follow for each of the 7 modules. They were also provided with handouts to give group members for each module. They received ongoing supervision/consultation provided by the primary investigator (under supervision by a licensed clinical psychologist, Bernadette Heckman, Ph.D.) on a weekly/as-needed basis. The BALANCE Stress management Program consisted of the following sessions:

Session 1 (***B***asic Information on Stress): Orientation to the program, definition of stress, differentiation between eustress and distress, normalization of stress as being part of human experience, human function curve, relationship between stressors and stress, stress equation, how appraisals affects stress levels, effects of acute stress and prolonged stress, vulnerability to stress, warning signs of high stress, stressors common among first-generation freshman college students, specific stressors among participants; daily stress journal homework; diaphragmatic breathing exercise; and support group time (i.e., opportunity to disclose personal stress, discuss coping efforts, and receive feedback).

Session 2 (***A***voidance of unnecessary stressors): Assertiveness training, reducing involvement in "toxic" relationships, limiting exposure to distressing environments, avoiding distressing conversation topics, simplify to-do lists, time management and organization training, establishing realistic goals and expectations for self and others, use of compromise and change of communication to reduce future stress; roommate agreement form and to-do list simplification form homework; progressive muscle relaxation; and support group time.

Session 3 (***L***ife balance): Self-care information on proper sleep, proper nutrition, proper exercise, and proper recreation/relaxation; wellness log homework; guided imagery exercise; and support group time.

Session 4 (***A***daptive coping strategies): Identification of maladaptive coping strategies, identification of adaptive coping strategies, behavioral planning to reduce patterns of maladaptive coping and increase use of adaptive coping; homework to practice two new adaptive coping strategies; guided imagery exercise; and support group time.

Session 5 (***N***etworking/social support building): Understanding the value of increasing one's social support network with accompanying provisions of support at home and at school, information on social resources on campus, and social skills training; homework to participate in new social organization and increase supportive social connections; mindfulness meditation exercise; and support group time.

Session 6 (***C***ognitive restructuring); Information on the link between cognitions, emotions, and behavior; identification of thinking traps; disputing/challenging rigid

thinking patterns, formation of rational responses, increasing big picture perspective, and shifting expectations and attitudes; dysfunctional thought record homework; mindfulness mediation exercise; and support group time.

Session 7 (***E***mbracing challenges): Differentiating stressors that can be controlled and stressors that cannot, accepting stressors that cannot be changed, recognizing personal strengths/competencies, meaning based coping, identifying the upside of challenges, emotional expression, letting go of anger and resentment; homework to continue implementing stress management knowledge and skills; mindfulness meditation exercise; and support group time.

During the first session each participant was given a BALANCE program binder, with dividers for each of the 7 modules. Handouts with outlines of the information covered in each module were provided to participants each session that could be stored under a designated divider in their binder. Participants were encouraged to bring their binder to each session for review. If a participant missed a session they were provided with the respective module handouts and provided a brief review of what was covered. In addition to the specified homework given each session, participants were invited to continue implementing homework from previous sessions and to practice relaxation/mindfulness exercises at home to the extent they found feasible and useful. Participants were also provided with certificates of congratulation upon completion of the program.

Control Condition

After attending a study orientation meeting, participants randomized to the control condition completed the pre-intervention assessment instrument, were provided with a list of local resources should they desire services to facilitate their adjustment efforts (e.g., university counseling center), and completed the post-intervention assessment. The intervention participants and controls were time-matched in that both completed pre-intervention and post-intervention measures at the same time points. Participants in the control condition received no placebo condition.

Post-Assessment

During the final week of the fall quarter classes, all participants—from both the intervention and control groups—concluded study participation by completing a self-administered post-intervention assessment instrument (see Assessment Instrument section for details) during one of multiple post-intervention meetings held in a conference room in the university's student center. After the course grades for participants were submitted to the University Registrar, fall and winter quarter GPA were obtained directly from the registrar with participants' consent.

Participants were provided food and beverages during the administration of both the pre-intervention and post-intervention assessments. Additionally, $30 was provided to participants when they completed their post-intervention assessment. All participants were also entered into a drawing to win an 8GB iPod Touch. Funding to cover compensation and material costs for the intervention came from the university Dean of Student's Office, the Dean of University College Office, the Department of Psychology

Competitive Research Fund, and the research account of the advisor of the primary investigator.

Data Analytic Plan

Comparisons, using independent samples t-tests where possible, were made between the mean scores of the current sample on dependent variables at pre-intervention and available norm groups. Independent samples t-tests and chi-squared tests for independence compared demographic variables between intervention group and control participants at pre-intervention . Preliminary assumption analyses were performed to check sample size, univariate and multivariate normality, univariate and multivariate outliers, linearity, multicollinearity, singularity, and homogeneity of variance-covariance matrices (see Table 5 for bivariate correlations between dependent variables at pre-intervention and post-intervention).

A one-way between groups (i.e., intervention group vs. control group) multivariate analysis of covariance (MANCOVA) served as the primary intervention outcome analysis. Five dependent variables were entered into the MANCOVA: the primary outcome variable was Distress/Impaired Functioning (Outcomes Questionnaire 45.2); secondary outcome variables were Perceived Stress (Perceived Stress Scale), Social Support (Social Provisions Scale), Adaptive Coping (Brief COPE Adaptive Coping Composite Score), and Health Promoting Behaviors (Health Promoting Lifestyles Profile II). Post-intervention dependent variables were entered into the MANCOVA as factors, and pre-intervention dependent variables were entered into the MANCOVA as covariates to control for baseline variance between intervention and control groups.

Independent samples t-tests were used to analyze difference in Fall Quarter GPA between intervention and control groups. Descriptive data was also analyzed pertaining to intervention participants' satisfaction with the stress management program (Client Satisfaction Questionnaire – 8).

Table 5

Bivariate Correlations between Dependent Variables at Pre-Intervention and Post-Intervention

		PSS 1	PSS 2	OQ 1	OQ 2	SPS 1	SPS 2	COPE 1	COPE 2	HPLP 1	HPLP 2
PSS 1	Pearson Correlation	1.000	.537**	.674**	.514**	-.361**	-.311*	-.113	-.101	-.629**	-.440**
	Sig. (2-tailed)		.000	.000	.000	.009	.026	.426	.475	.000	.001
PSS 2	Pearson Correlation	.537**	1.000	.468**	.753**	-.120	-.194	-.126	-.222	-.324*	-.358**
	Sig. (2-tailed)	.000	.000	.000	.000	.395	.173	.373	.114	.019	.009
OQ 1	Pearson Correlation	.674**	.468**	1.000	.742**	-.593**	-.493**	-.214	-.190	-.699**	-.530**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.128	.177	.000	.000
OQ 2	Pearson Correlation	.514**	.753**	.742**	1.000	-.374**	-.390**	-.306*	-.296*	-.562**	-.583**
	Sig. (2-tailed)	.000	.000	.000	.000	.006	.005	.027	.033	.000	.000
SPS 1	Pearson Correlation	-.361**	-.120	-.593**	-.374**	1.000	.710**	.184	.086	.562**	.344*
	Sig. (2-tailed)	.009	.395	.000	.006	.000	.000	.192	.547	.000	.013
SPS 2	Pearson Correlation	-.311*	-.194	-.493**	-.390**	.710**	1.000	.085	.358**	.501**	.468**
	Sig. (2-tailed)	.026	.173	.000	.005	.000	.000	.551	.010	.000	.001
COPE 1	Pearson Correlation	-.113	-.126	-.214	-.306*	.184	.085	1.000	.338*	.277*	.351*
	Sig. (2-tailed)	.426	.373	.128	.027	.192	.551	.000	.014	.047	.011
COPE 2	Pearson Correlation	-.101	-.222	-.190	-.296*	.086	.358**	.338*	1.000	.286*	.363**
	Sig. (2-tailed)	.475	.114	.177	.033	.547	.010	.014	.000	.040	.008
HPLP 1	Pearson Correlation	-.629**	-.324*	-.699**	-.562**	.562**	.501**	.277*	.286*	1.000	.815**
	Sig. (2-tailed)	.000	.019	.000	.000	.000	.000	.047	.040	.000	.000
HPLP 2	Pearson Correlation	-.440**	-.358**	-.530**	-.583**	.344*	.468**	.351*	.363**	.815**	1.000
	Sig. (2-tailed)	.001	.009	.000	.000	.013	.001	.011	.008	.000	

Note: OQ = Outcomes Questionnaire, a measure distress and impaired functioning; SPS = Social Provisions Scale, a measure of social support; COPE = Brief COPE Adaptive Coping Composite Score, a measure of adaptive coping styles, and HPLP = Health Promoting Lifestyles Profile II, a measure of health promoting behavior. The "1" after each a measure indicates pre-intervention. The "2" after a measure indicates post-intervention. **p = .01 (2-tailed), *p = .05 (2-tailed)

RESULTS

Study Sample Compared to Norm Groups at Pre-Intervention

Compared to a norm group, at baseline participants in this study (M = 52.2, SD = 19.8, N = 52) did not meet the clinical range cut-off total score of above 63 on the Outcomes Questionnaire-45.2 (Lambert et al., 1996), although they did approach this cut-off (e.g., the sample mean fell less than 14 points, the reliable change score used in the OQ-45.2 scoring protocol, from the clinical range cut-off total score). Furthermore, 28.8% of the sample in this study did fall in the clinical range (i.e., 63 or above). Using an independent samples t-test, compared to a norm group of 18 to 29-year-olds (M = 14.2, SD = 6.2, N = 645; Cohen & Williamson, 1988), at baseline participants in this study had significantly higher Perceived Stress Scale scores (M = 27.8, SD = 6.6, N = 52), t (2, 695) = 15.14, p <.01. Comparing the sample in this study at baseline to norm groups provides some evidence that this sample is at-risk.

Differences between Intervention and Control Participants at Pre-Intervention

Descriptive baseline data presented separately for intervention and control group can be found in Table 4. Independent samples t-tests revealed no significant difference on any continuous variable between intervention and control participants. Chi-squared tests for independence (with Yates Continuity Correction for 2 by 2 tables) revealed one significant association between group and a categorical variable, Declared Academic Major, X^2 (1, n = 52) = 4.14, p = .042, phi = .330, with a lower proportion of intervention participants having declared an academic major (40.4%) compared to controls (59.6%).

Declared Academic Major was not entered as a covariate into the intervention-outcome analyses due to limited sample size.

Assumptions of MANCOVA Preliminary Analyses

One violation of assumptions was detected and remedied. An outlier was found for a case on the post-intervention Social Provisions Scale among the intervention group, and this score was transformed to the next most extreme value (in this case one unit lower than the next lowest score) for the group (Tabachnick & Fidell, 2007).

Intervention Outcome Analyses

While controlling for the pre-intervention dependent variables, there was a statistically significant difference between intervention and control group on the combined post-intervention dependent variables, F (5, 41) = 2.77, p = .030; Wilks' Lambda = .75; partial eta squared = .25 (large effect size; represents that 25 percent of the variance in combined post-intervention dependent variable scores is explained by group status; Cohen 1988, p. 22). When the results for the dependent variables were considered separately, differences between groups that reached statistical significance included Distress/Functional Impairment, F (1, 45) = 6.49, p = .014, partial eta squared = .13 (medium to large effect size; represents that 13 percent of the variance in post-intervention Distress/Functional Impairment scores is explained by group status); and Social Support, F (1, 45) = 7.93, p = .007, partial eta squared = .15 (large effect size; represents that 15 percent of the variance in post-intervention Social Support scores is explained by group status).

Difference between groups in Health Promoting Behaviors approached significance, F (1, 45) = 2.95, p = .093, partial eta squared = .06 (medium effect size; represents that 6 percent of the variance in post-intervention Health Promoting Behaviors scores is explained by group status); and there was no significant difference between groups for Perceived Stress, F (1, 45) = 2.23, p = .142, partial eta squared = .05 (small to medium effect size; represents that 5 percent of the variance in post-intervention Perceived Stress scores is explained by group status); and Adaptive Coping, F (1, 45) = .41, p = .527, partial eta squared = .009. An inspection of the mean scores indicated that the intervention group reported lower levels of Distress/Functional Impairment (M =39.48, SD = 22.19) than the control group (M = 49.65, SD = 22.53), and higher levels of Social Support (M = 87.95, SD = 6.22) than the control group (M = 82.03, SD = 8.92), higher levels of Health Promoting Behaviors (M = 140.00, SD = 21.42) than the control group (M = 135.68, SD = 21.03), lower levels of Perceived Stress (M = 23.57, SD = 7.05) than the control group (M = 26.32, SD = 6.13), and higher levels of Adaptive Coping (M = 44.95, SD = 5.95) than the control group (M = 44.50, SD = 6.41; see Table 6).

Independent samples t-tests revealed no difference in Fall Quarter GPA between intervention participants (M = 2.88, SD = 1.03) and controls (M = 3.19, SD = .56), t (27.99) = -1.23, p = .228 (given that the Levene's test was significant the equal variances not assumed results are reported). There was also no difference in Winter Quarter GPA between intervention participants (M = 2.54, SD = 1.14) and controls (M = 2.85, SD= .90), t (47) = -1.08, p = .287.

Table 6

MANCOVA(Controlling for Pre-intervention Differences) Univariate Results for Distress and Impaired Functioning, Social Support, Health Promoting Behavior, Perceived Stress, and Adaptive Coping

	Intervention Group			Control Group		
Variable:	**Mean / %**	**SD**	**N**	**Mean / %**	**SD**	**N**
**OQ-45.2	39.48	22.19	21	49.65	22.53	31
**SPS	87.95	6.22	21	82.03	8.92	31
*HPLP-II	140.00	21.42	21	135.68	21.03	31
PSS	23.57	7.05	21	26.32	6.13	31
COPE	44.95	5.95	21	44.50	6.41	31

Note: MANCOVA = multivariate analysis of covariance; OQ-45.2 = Outcomes Questionnaire 45.2, a measure distress and impaired functioning; SPS = Social Provisions Scale, a measure of social support; HPLP-II = Health Promoting Lifestyles Profile II, a measure of health promoting behavior; PSS = Perceived Stress Scale, a measure of perceived stress; and COPE = Brief COPE Adaptive Coping Composite Score. $^{**}p < .05$, $^{*}p < .10$

The Client Satisfaction Questionnaire (CSQ-8; Attkisson, 1989, 1990) was completed by 17 of the 21 participants in the intervention group (4 participants missed the last session). Results indicated a total score mean of 28.41 (SD = 3.16) out of 32. On the question "How would you rate the quality of the service you received?" the mean was 3.65 (SD = .49; median and mode = 4) out of 4; on "Did you get the kind of service you wanted?" the mean was 3.59 (SD = , median and mode = 4), on "To what extent has our program met your needs?" the mean was 3.35 (SD = .61; median and mode = 3), on "If a friend were in need of similar help, would you recommend our program to him or her?" the mean was 3.71 (SD = .47; median and mode = 4), on "How satisfied are you with the amount of help you have received?" the mean was 3.47 (SD = .62; median and mode = 4), on "Have the services you received helped you deal more effectively with your

problems?" the mean was 3.65 (SD = .49; median and mode = 4), on "In an overall, general sense, how satisfied are you with the service you have received?" the mean was 3.59 (SD = .62; median and mode of 4), and on "If you were to seek help again, would you come back to our program?" the mean was 3.41 (SD = .71; median and mode = 4). Converting the total score mean to a percentage equals 89% satisfaction with the intervention overall.

DISCUSSION

Given the heightened and unique stressors that first-generation freshman face and the worse adjustment outcomes they experience overall, evaluating the impacts on adjustment of a stress management program for this at-risk group is warranted. Accordingly, the current research employed a RCT design to evaluate the extent to which a 7-week multi-component stress management and support group could benefit first-generation college students, operationalized in this study as students with parents who have not earned a college degree. Potential explanations for the results and implications of this study are discussed below.

Review of Findings

At pre-intervention, compared to a national study sample (Chen & Carroll, 2005), participants in this study had a greater percentage of low income status, similar GPA, more credits earned, and higher rates of having an undeclared academic major. Furthermore, at pre-intervention the sample in this study had distress and impaired functioning scores near the clinical range (Lambert et al., 1996) and perceived stress scores significantly below the average of a norm group (Cohen & Williamson, 1988). Although not directly measured, the current sample would also fall into the category of having parents who may provide them less cultural capital related to knowledge of graduating with a college degree. These findings and characteristics provide evidence to suggest that the sample in this study was at-risk at baseline.

At pre-intervention no significant differences in the dependent variables were detected between intervention participants and controls. Consistent with hypotheses,

when controlling for pre-intervention variables between groups, overall, first-generation freshman who participated in the intervention reported greater psychosocial adjustment as measured by the combined dependent variables: Distress/Impaired Functioning, Perceived Stress, Social Support, Adaptive Coping, and Health Promoting Behaviors. This finding contributes to the growing body of literature that suggests that, in general, multi-component stress management programs tend to effect positive adjustment in college students (Deckro et al., 2002; Oman et al., 2008; Steinhardt & Dolbier, 2008). Furthermore, the present study adds to previous research that has evaluated other groups of students, by being the first to show evidence that first-generation freshman college students are an additional population that can particularly benefit from participation in multifaceted stress management programs.

As was predicted, after controlling for pre-intervention variables, students beginning college with first-generation status who participated in the intervention specifically reported lower distress and impaired functioning compared to a control group. The instrument used to measure distress and impaired functioning in this study was the total score of the Outcomes Questionnaire 45.2. More specifically, the OQ-45.2 total score includes items capturing distress symptoms, interpersonal difficulties, social role functioning, and quality of life (Lambert et al., 1996). Accordingly, lower scores on this measure not only reflect less negative symptomatology but also greater life quality. Effecting improvement on such variables is important given that they can eventually impact other important domains of college adjustment such as physical health, substance abuse, and academic performance (Dixon, Rumford, Heppner, & Lips, 1992; Naquin &

Gilbert, 1996; Sadava & Pak, 1993; Segrin, 1999). Although only short-term effects were measured in this study, a program that can lower distress and improve functioning early in a first-generation students' college experience may therefore result in expanded long-term benefits if gains are maintained.

Again, consistent with expectations, after controlling for pre-intervention variables, first-generation students who participated in the intervention also reported greater social support compared to control participants. This finding is particularly meaningful given evidence that first-generation students have been found to struggle significantly more than other students with establishing social connections on campus (Billson & Terry, 1982; Nunez & Cuccaro-Alamin, 1998). Furthermore, a greater increase in social support is important in light of the research on how social support positively impacts management of stress and resiliency and reduces burn out (Dennis, Phinney, & Chauteco, 2005; Jacobs, 2003; Moran & Dubois, 2002; Vieno, Santinello, & Pastore, 2007; Young, 2006). As was part of the intervention of the current study, making available to newly matriculated first-generation college students a social support group that they can turn to in order to disclose distress and receive validation, encouragement, and direction in managing stress may contribute to their overall perceptions of being socially supported. Access to this opportunity to connect with students with more similar backgrounds going through similar experiences may be particularly valuable to first-generation students, particularly if their family and peers at home have a harder time providing informational support related to college or have discouraged leaving home for school (A Shared Agenda, 2004; Barry, Hudley, Kelly, & Cho, 2009; Hsiao, 1992;

Karabel & Halsey, 1997; Podsada, 2010; Thayer, 2000; Striplin, 1999). Qualitatively, therapists leading groups as part of this project observed that many group members appeared to establish meaningful relationships with others in their group and appreciate the regular time available to share their challenges and successes with others who could relate. Of note, for feasibility purposes, the stress management and support group that participants were assigned to in this project was based on their availability to attend one of the four different times offered, so most participants did not know others in their group previous to the study. The greater increase in reported social support among the intervention participants was evidenced in the context of this lack of initial acquaintance with other members in their group. The present study therefore expands beyond previous research on RCT stress management programs for college students by incorporating an explicit social support group component in its intervention, as well as by including a measure to specifically evaluate change in perception of social support. No previous study in his area was found which measured social support as an outcome (see Tables 1 to 3).

After controlling for pre-intervention variables, heath promoting behaviors were marginally greater for intervention participants than controls at post-intervention. No significant different degree of change in health promoting behaviors was found in a similar RCT study evaluating a mind/body stress management program (Deckro et al., 2002). One explanation for a lack of a more significant difference is that the stress management program used in this study may not have provided a strong enough intervention dose in this specific area, such as insufficient information presented,

exercises practiced, and homework given. Alternatively, making significant lifestyle changes, or establishing stability of most new habits for that matter, often takes time and so even if the dose was sufficient, perhaps the post-intervention measurement, which occurred directly after the 7 week intervention, did not allow ample time for more meaningful change processes to consistently occur in this area (Wood & Neal, 2007).

Divergent from expectations, after controlling for pre-intervention variables, there was no significant difference in perceived stress ratings between intervention participants and controls at post-intervention. Although not statistically significant, examination of mean scores between groups reflected lower perceived stress scores for intervention participants. In this study, the discrepancy between statistically significantly lower distress and impaired functioning scores, but not statistically significantly lower perceived stress scores for the intervention group compared to the control group, may be explained by Lazarus and Folkmans stress and coping model (Lazarus & Folkman, 1984). This model posits that whereas two individuals may face the same stressor, their experience of distress may be significantly different based on their evaluation of the severity of the threat and the internal and external resources they have to cope with it. Accordingly, participants in the intervention group may have experienced and been aware/perceived just as many stressors in their life as the control group (i.e., endorsed similar perceived stress scores), but perhaps due to connection with added resources and increased capacity these similar levels of stressors caused them less distress and impaired functioning (i.e., endorsed lower distress and impaired functioning scores). This is consistent with the concept that not all demands or stressors necessarily cause distress for

all people, but some may positively impact focus, motivation, and performance (i.e., eustress; Nixon, 1979; Selye, 1974).

Contrary to our expectations, after controlling for pre-intervention variables, there was not a statistically significant difference in adaptive coping between the intervention group and control group at post-intervention. This lack of difference may be attributed in part to the way in which the measure used was designed. The Brief COPE captures the extent to which different coping styles are used (Carver, Scheier, & Weintraub, 1989; Carver, 1997). Accordingly, a higher score indicates that more types of coping styles are used more often. Although a greater breadth of use of different coping styles has been associated with improved coping with stress (Meyer, 2001), it is possible that effective coping may also happen when fewer coping styles are used but used in more skilled and meaningful ways (Carver, Scheier, & Weintraub, 1989; Carver, 1997; Lazarus, 1998). Given this, a measure that captured the actual effectiveness of coping styles employed may have been more meaningful than using a measure that captures how many different coping styles were employed. In the current study, participants may have learned new coping styles, and thus have a greater repertoire of skills to use in times of stress, yet only needed to use a limited number of these learned coping styles by the time that the post-intervention data was collected. Thus, a measure of knowledge of effective coping styles may also have had advantage over a measure that solely indicates the extent to which a large number of coping styles were used.

There was also no significant difference in GPA between intervention participants and controls at post-intervention or 16 week follow-up. Effects on GPA have been found

in some previous studies of stress management programs (Cameron & Nicholls, 1998; Lumley & Provenzano, 2003; Williams et al., 1983). One of these studies, however, was designed for junior college students on academic probation and included a specific success training component in addition to more traditional stress management strategies (Williams et al., 1983). Often movement in scores, or regression to the mean, is captured more readily in such a study when a sample's scores are initially on the extreme end of a scale (e.g., below a 2.0 GPA thus qualifying students for academic probation). Low pre-intervention GPA was not the case in the current study where participant's 4-year accumulative high school GPA was a 3.57. Two additional studies also found significant improvements in GPA, both of which involved evaluation of a targeted stress management exercise: writing about stressful experiences (Cameron & Nicholls, 1998; Lumley & Provenzano, 2003). Among research evaluating written emotional disclosure interventions, however, results are highly inconsistent. At least four of such studies found no significant increase in GPA, or only marginally significant increases in GPA related to writing about different sources of stress (Klein & Boals, 2001; Pennebaker & Beall, 1986; Pennebaker et al., 1990; Pennebaker & Francis, 1996).

Potential explanations for the current study not matching the results of previous studies that have found GPA increases may be that these previous studies examined different populations (e.g., junior college students on academic probation) and that the other interventions evaluated had a different nature and/or specific emphasis. A lack of significance in this realm in the current study could also possibly be attributed to insufficient emphases on effective means of coping with specific academic related

stressors. Alternatively, considering life balance and proper prioritization of activities to effectively meet needs may at times involve some reductions in attention to academics in order to redirect cognitive and emotional resources to other important and potentially more urgent areas of need (Greenburg, 2009). Although doing so may affect grades in the short-term, improved life balance and coping could be hypothesized to improve academic performance long-term.

Excluding studies assessing single component stress management programs for college students and non-randomized studies (Cameron & Nicholls, 1998; Klein & Boals, 2001; Lumley & Provenzano, 2003; Pennebaker & Beall, 1986; Pennebaker et al., 1990; Pennebaker & Francis, 1996), the current study is only the second known RCT evaluating a multi-component stress management program for college students to measure GPA as a dependent variable (Williams et al., 1983). Given the strong implications of GPA on academic persistence and graduation from college (Kern, Fagley, & Miller, 1998), the use of GPA as an objective behavioral outcome measure of adjustment among college students is informative.

Finally, on a measure of client satisfaction, in the current study participants in the intervention group reported high levels of satisfaction (89% satisfaction overall) with the stress management program. These positive ratings suggest that the intervention used was meaningful and useful to participants. These results also suggest that the intervention used was sufficiently catered to have filled a need, or at least addressed an area or areas meriting attention. These findings also support the proposal that first-generation college

students are an at-risk group that may benefit significantly from stress management and social support interventions early in their college career.

Limitations and Directions for Future Research

This study was limited in several ways. Although all potential first-generation freshman students at the target university were recruited to the study, participants who enrolled were all self-selected, in that it was left up to them to contact the primary investigator if interested in the study. This is typical for studies of this type but limits the generalizability of the results. The rigor of future studies would increase by using random selection although this may be impossible unless stress management programs became part of orientation for students or students are mandated to attend (Deckro et al., 2002). Generalizability was also limited given that the sample consisted mostly of Caucasian females enrolled in a specific four-year public university. Studies with more diverse samples may therefore improve generalizability.

Participants in this study were also not blind to the group that they were randomized to. Given the nature of the intervention used in this study it would have been impossible to keep participants blind to the group they were assigned to. However, in order to reduce the chance of participants being influenced by demand characteristics (e.g., social desirability) and the investigators being influenced by experimenter effects, confidentiality was emphasized, personal identification numbers were assigned to all participants and used on measures collected instead of names, participants were reminded that their scores would be entered into an aggregate data base, and three different therapists led one or two of the 4 different stress management groups. Given that

participants in both the intervention and control condition were aware that they were participating in a study and thus may have been impacted by demand characteristics, there is the potential that the contribution of demand characteristics to outcomes may have been shared to some extent between groups, therefore cancelling out some of this effect when group outcomes were compared.

Along similar lines, the control group in this study did not receive an active alternative, although they were referred to university and community resources should they desire to receive stress management services. Without comparing the intervention group to an active or placebo control it is difficult to determine how much of the differences detected may be explained by a placebo effect, although some consider placebo effects to be integral to the therapeutic process and not to be discarded (White, Tursky, and Schwartz, 1985). Future research could benefit from using active controls in order to determine impacts of intervention above and beyond placebo effects.

Another limitation of the current study is that it evaluated a multifaceted intervention; although this may also be a strength inasmuch as a more comprehensive program is able to influence greater positive change. The stress management program implemented in this project included such components as psychoeducation, cognitive restructuring, relaxation training and mindfulness exercises, and social support. Due to the number of components, it is not possible to know which one, or what combination, is actually responsible for effecting positive change. Without this knowledge, forming a more streamlined intervention becomes a guessing game. For the college student population, there is an evident dearth of studies that have compared stress management

programs to each other (Jain et al., 2007; Toloczynski & Tantiella, 1998), or that have compared specific components to each other (Winterdyk et al., 2008). Accordingly, future studies could benefit from directly comparing effects from different types of stress management programs for college students, such as mind/body interventions versus resiliency programs, and from dismantling multifaceted stress management programs to examine the effect of components in isolation. Such a process may lead to detection of mechanisms of change, or active ingredients, and enable design of briefer and more potent interventions which could improve feasibility, adherence, and costs.

Additionally, the study was limited in that there was a lack of a time difference between the end of the intervention and the post-intervention assessment of the primary dependent variable and most secondary dependent variables. Given the shortage of follow-up data collected, it is unknown whether significant differences in outcomes related to the intervention used in this study persisted. Follow-up measures in the current study only pertained to academic performance at 16 weeks post-intervention and did not include psychosocial measures. Although participants in the intervention group reported a significant change in combined psychosocial dependent variables and several specific psychosocial dependent variables, participants may have experienced significant change in other specific psychosocial variables over time. For example, it may take longer for participants to begin to implement health promoting lifestyle changes and therefore although not significant at immediate post-intervention, over time at a follow-up period this change may have become significant (Wood & Neal, 2007). Overall, capturing longer term follow-up (e.g., 1 year) of both psychosocial and academic variables would

help inform whether the knowledge and coping skills acquired during stress management programs are maintained.

Another limitation, pertaining to measures used in the current study, was that the measure of adaptive coping used captured the extent to which multiple coping styles were used and not increased knowledge of adaptive coping styles or the actual effectiveness of the coping styles used. Future research may benefit from using an instrument of adaptive coping that measures knowledge of effective coping styles or the effectiveness of coping styles currently used. Also, no physiological measures of stress were used in the current study. Future research on stress management programs for students could benefit from measuring biological markers of stress such as detecting stress hormone levels in saliva samples. As alluded to previously, more regular measurement of GPA is also merited in additional studies of this type.

Finally, in the present study differences were not assessed for males compared to females given that a limited sample size (52 participants) precluded this. Such an analysis could be informative given that both perception of social support and stress, and stress management styles have been found to differ by gender under certain conditions (Cheng & Chan, 2004; Matud, 2003). The samples size of the current study could also be viewed as a limitation although there was sufficient statistical power to capture meaningful differences between participants in the intervention and control group after controlling for baseline differences. Some attrition from the study reduced the sample size. Four participants assigned to the control group attended zero sessions and were exclude from analyses. Attendance was also variable, with one participant attending one session, and

the remaining participants attending 4 or more sessions. Also, just under half (48%) of intervention participants attended 6 or 7 sessions.

Future studies may therefore benefit from larger samples sizes that provide more statistical power to avoid potential Type II errors and increase the chance that truly significant differences are identified. A larger sample size may have also reduced the relative impact of attrition, particularly related to participants who never attended the intervention group. As a result, the group sizes in this study may have been more similar for analysis which would have further increased statistical power. Although group sizes were unequal in the current study (21 versus 31 members), they fell within the recommended range of no more than a 1.5 ratio difference between largest to smallest group size (Stevens, 1996, p. 249). Furthermore, there was no evidence that unequal group sizes in the current study negated the homogeneity of variance assumption, and SPSS software automatically adjusted for sample size differences in analysis of variance which increased robustness (Pallant, 2007).

Strengths of the Current Study

Although not without limitations, the current study has a multitude of strengths. It included a rigorous RCT design and MANCOVA analysis, psychometrically sound outcome measures, a range of outcome measures covering important domains of adjustment to college, an objective outcome measure (i.e., GPA), some follow-up data, an intervention with an explicit social support component, specific measurement of change in perceptions of social support, and a stress management program for college students with a more feasible one-hour long session versus 90 minute or two hour long sessions

typical of related interventions. Additionally, given that the BALANCE stress management program used in the current study is a manualized intervention and groups were led by clinical psychology graduate students, this program provides a model that may be readily reproduced and applied in other university settings with low cost.

Summary

Despite having limitations, the current study adds to the literature, informs university personnel, and highlights meaningful directions for future research. This study contributes to science by reporting that first-generation freshman are a specific at-risk group that appears to benefit in meaningful ways from participation in a feasible, low cost, multi-component stress management and support group, such as experiencing significantly lower distress and impaired functioning, significantly greater social support, marginally greater health promoting behavior, and high levels of satisfaction with the program. These results provide evidence that university personnel may improve short-term adjustment among first-generation freshman college students by providing them with stress management programs to complement other support services offered. Future research may build upon these findings by examining longer-term outcomes of multi-component stress management programs for this population, using physiological measures, comparing the impacts of different components of such interventions, examining mechanisms of change, and further exploring feasibility and generalizability.

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APPENDIX A: ADDITIONAL ANALYSES

Appendix A1: Combined GPA

An independent samples t-test was performed to compare Combined Fall and Winter Quarter GPA (16 week follow-up) for interventions participants and controls who persisted through Winter Quarter. There was no significant difference in Combined Fall and Winter Quarter GPA, t (30.52) = -1.28, p = .212 (given that the Levene's test was significant the equal variances not assumed results are reported), between the intervention participants (M = 2.87, SD = .79) and controls (M = 3.13, SD = .53).

An independent samples t-test was performed to compare Combined Fall and Winter Quarter GPA (16 week follow-up) for interventions participants and controls, using an intent-to-treat design (i.e., carrying over Fall Quarter GPA for students who left school Winter Quarter and therefore had no Combined Fall and Winter Quarter GPA). There was no significant difference in Combined Fall and Winter Quarter GPA, t (33.64) = -.972, p = .338 (given that the Levene's test was significant the equal variances not assumed results are reported), between the intervention participants (M = 2.89, SD = .77) and controls (M = 3.08, SD = .55).

An independent samples t-test was performed to compare Combined Fall and Winter Quarter Credits Earned (16 week follow-up) for interventions participants and controls. There was no significant difference in Combined Fall and Winter Quarter Credits Earned, t (47) = -.865, p = .391, between the intervention participants (M = 29.25, SD = 6.49) and controls (M = 30.55, SD = 4.05).

Appendix A2: Fall or Winter Quarter GPA

An independent samples t-test was performed to compare Fall Quarter GPA for interventions participants and controls. There was no significant difference in Fall Quarter GPA, t (27.99) = -1.23, p = .228 (given that the Levene's test was significant the equal variances not assumed results are reported), between the intervention participants (M = 2.88, SD = 1.03) and controls (M = 3.18, SD = .56).

An independent samples t-test was performed to compare Winter Quarter GPA for interventions participants and controls. There was no significant difference in Winter Quarter GPA, t (47) = -1.08, p = .287, between the intervention participants (M = 2.54, SD = 1.14) and controls (M = 2.85, SD = .90).

Appendix A3: Academic Probation

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Academic Probation Fall Quarter, X^2 (1, n = 52) = 1.92., p = .166., phi = -.25 (5 participants, or 23.8% of intervention participants were on academic probation versus 2 participants, or 6.5% of controls).

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Academic Probation Winter Quarter, X^2 (1, n = 49) = .94., p = .332., phi = -.20 (5 participants, or 25.0% of intervention participants were on academic probation versus 3 participants, or 10.3% of controls).

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Academic Probation During Either Fall or Winter Quarter, X^2 (1, n = 52) = 2.03., p = .154., phi = -.25 (7 participants, or 33.3% of intervention participants were on academic probation versus 4 participants, or 12.9% of controls).

Descriptives. Seven out of 52, or 13.5% of participants in this study were on academic probation during Fall Quarter of their first year. Eight out of 49, or 16.3% of participants in this study were on academic probation during Winter Quarter of their first year. Eleven out of 52, or 21.2% of participants in this study were on academic probation during either Fall or Winter Quarter of their first year.

Appendix A4: Attrition

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Dropping Out Winter Quarter, X^2 (1, n = 52) = .00., p = 1.00., phi = .04 (1 participant, or 4.8% of intervention participants dropped out versus 2 participants, or 6.5% of controls).

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Academic Dismissal Winter Quarter, X^2 (1, n = 52) = .00., p = 1.00., phi = .12 (0 participant, or 0% of intervention participants were dismissed versus 1 participants, or 3.2% of controls).

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Dropping Out or Academic Dismissal Winter Quarter, X^2 (1, n = 52) = .02., p = .903., phi = .09 (1

participant, or 4.8% of intervention participants were dismissed versus 3 participants, or 9.7% of controls).

Appendix A5: Therapist Effects

Multiple ANOVAs revealed no significant differences among interventions participants (who attended one or more intervention sessions) by Therapist (therapist 1, 2, or 3) for any pre-intervention continuous demographic variables. Chi-squares tests for independence (with Yates Continuity Correction for 2 by 2 tables) revealed one significant association between Therapist and a dichotomous demographic variable, Living On Campus, X^2 (2, n = 21) = 15.10, p = .001, phi = .848. Accordingly, Living On Campus was entered into the analysis as a covariate.

Preliminary Assumptions Analyses. Two violations of assumptions were detected and remedied. One extreme outlier was found for a case on the post-intervention Social Provisions Scale among the intervention group, and this score was removed. Multicollinearity, a correlation above .7 (Tabachnick & Fidell, 2007. pp. 90), was found between the post-intervention Outcomes Questionnaire 45.2 and the Perceived Stress Scale (r = .753, p <.001). Because the Outcomes Questionnaire 45.2 is the primary dependent variable, the Perceived Stress Scale was removed from the analysis in order to reduce variable redundancy and prevent inflation of the size of the error terms which would weaken the analysis.

Hypothesis Testing. The repeated measures multivariate analysis of covariance revealed no statistically significant main effect for Therapist X Time, F (8, 26) = 1.67, p = .153; Wilk's Lamba = .436; partial eta squared = .340. Accordingly, no univariate

Therapist X Time anlayses were performed. The main effect for Time was significant, F (4, 13) = 4.10, p = .023; Wilk's Lamba = .44; partial eta squared = .558. The main effect for Therapist was marginally significant, F (8, 26) = 2.24, p = .058; Wilk's Lamba = .35; partial eta squared = .408.

ANOVA Analyses. In addition to the above analysis, given the small sample size and in an effort to preserve as much statistical power as possible, ANOVA analyses were also conducted to compare dependent variables pre-intervention and then at post-intervention for intervention participants by Therapist. No significant differences were found at either time point.

Appendix A6: Attendance Effects

Independent samples t-test revealed one significant difference among interventions participants by Attendance (Group 1: 1-5 session attended; Group 2: 6-7 sessions attended) for a continuous demographic variable, Days Missed Senior Year of High School, t (18) = 2.47, p = .027, with participants in Attendance Group 1 missing more days of school in high school (M = 8.25, SD = 5.13) than participants in Attendance Group 2 (M = 3.60, SD = 3.31). Chi-squares tests for independence (with Yates Continuity Correction for 2 by 2 tables) revealed only one significant association between Attendance and a dichotomous demographic variable, Gender, X^2 (1, n = 21) = 4.73, p = .030, phi = -.586, with more males attending 6-7 sessions (100%) than females (31.2%). Accordingly, Gender was entered into the analysis as a covariate.

Preliminary Assumptions Analyses. Two violations of assumptions were detected and remedied. One extreme outlier was found for a case on the post-intervention Social

Provisions Scale among the intervention group, and this score was removed. Multicollinearity, a correlation above .7 (Tabachnick & Fidell, 2007. pp. 90), was found between the post-intervention Outcomes Questionnaire 45.2 and the Perceived Stress Scale ($r = .753$, $p < .001$). Because the Outcomes Questionnaire 45.2 is the primary dependent variable, the Perceived Stress Scale was removed from the analysis in order to reduce variable redundancy and prevent inflation of the size of the error terms which would weaken the analysis.

Hypothesis Testing. The repeated measures multivariate analysis of covariance revealed no statistically significant main effect for Attendance X Time, F (4, 12) = .85, p = .521; Wilk's Lamba = .22; partial eta squared = .221. Accordingly, no univariate Therapist X Time analyses were performed. The main effect for Time was not significant, F (4, 12) = .65, p = .638; Wilk's Lamba = .82; partial eta squared = .178. The main effect for Attendance was also not significant, F (4, 12) = .48, p = .747; Wilk's Lamba = .86; partial eta squared = .139.

T-test analyses. In addition to the above analysis, given the small sample size and in an effort to preserve as much power as possible, independent-samples t-test were also conducted to compare dependent variables post-intervention for subjects based on Attendance. There was a significant difference in scores on the Perceived Stress Scale between Group 1 (M = 26.82, SD = 5.02) and Group 2 (M = 20.00, SD = 7.44), t (19) = 2.48, p = .022. There was a marginally significant difference in scores on the Outcomes Questionnaire 45.2 between Group 1 (M = 47.18, SD = 18.41) and Group 2 (M = 31.00,

SD = 23.76), *t* (19) = 1.75, *p* = .096. There was no statistically significant difference between the two groups for any other dependent variable.

Correlation. Bivariate correlations also revealed no significant relationships between Attendance and any dependent variable.

Descriptives. Of the twenty five subjects randomly assigned to the intervention group, four attended zero sessions, one attended one session, six attended four sessions, four attended five sessions, six attended six sessions, and four attended seven sessions. Subjects who missed a session were given the handouts and a brief overview of the session thy missed during the subsequent session they attended.

Appendix A7: University Counseling Center Visits

An independent samples t-test was performed to compare Fall Quarter University Counseling Center Visits for interventions participants and controls. There was no significant difference in Fall Quarter University Counseling Center Visits, *t* (20.00) = 1.25, *p* = .225 (given that the Levene's test was significant the equal variances not assumed results are reported), between the intervention participants (*M* = .43, *SD* = 1.56) and controls (*M* = 0.00, *SD* = 0.00).

An independent samples t-test was performed to compare Winter Quarter University Counseling Center Visits for interventions participants and controls. There was no significant difference in Winter Quarter GPA, *t* (50) = -.71, *p* = .481, between the intervention participants (*M* = .14, *SD* = .48) and controls (*M* = .39, *SD* = 1.52).

An independent samples t-test was performed to compare Combined Fall & Winter Quarter University Counseling Center Visits for interventions participants and

controls. There was no significant difference in Combined Fall & Winter Quarter University Counseling Center Visits, t (50) = .38, p = .707, between the intervention participants (M = .57, SD = 1.99) and controls (M = .39, SD = 1.52).

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Any University Counseling Center Visits, X^2 (1, n = 52) = .01., p = .946., phi = -.07 (14.3% of intervention participants attended any counseling versus 9.7% of controls).

Descriptives. Among participants, ranges of counseling sessions attended were 0 to 7 for Fall Quarter, 0 to 8 for Winter Quarter, and 0 to 9 combining both Fall and Winter Quarters.

The results showing a lack of differences in visits to Counseling and Psychological Services (CPS) on campus between intervention and control group may be largely a function of limited range for both groups (i.e., minimal visits to CPS among either group), perhaps partially due to barriers to attending CPS among this sample and that these visits were tracked over a limited amount of time (i.e. two quarters).

Appendix A8: Campus Care Visits

An independent samples t-test was performed to compare Fall Quarter University Campus Care Visits for interventions participants and controls who were patients of Campus Care. There was no significant difference in Fall Quarter University Campus Care Visits, t (29) = -.43, p = .670, between the intervention participants (M = .64, SD = .50) and controls (M = .75, SD = .79).

An independent samples t-test was performed to compare Winter Quarter Campus Care Visits for interventions participants and controls who were patients of Campus Care. There was no significant difference in Winter Quarter Campus Care Visits, t (29) = -.29, p = .771, between the intervention participants (M = .45, SD = .69) and controls (M = .55, SD = .94).

An independent samples t-test was performed to compare Combined Fall & Winter Quarter Campus Care Visits for interventions participants and controls who were patients of Campus Care. There was no significant difference in Combined Fall & Winter Quarter Campus Care Visits, t (29) = -.52, p = .606, between the intervention participants (M = 1.09, SD = .83) and controls (M = 1.30, SD = 1.17).

A Chi-square test for independence (with Yates Continuity Correction) revealed no significant relationship between Intervention Condition and Any Campus Care Visits, X^2 (1, n = 29) = .00., p = 1.000., phi = -.02 (81.8% of intervention participants visited Campus Care versus 80.0% of controls).

Descriptives. Among study participants who were patients of Campus Care, the range of visits were 0 to 2 for Fall Quarter, 0 to 5 for Winter Quarter, and 0 to 5 combining both Fall and Winter Quarters. The results showing a lack of differences in visits to Campus Care between intervention and control group may be largely a function of limited range for both groups (i.e., minimal visits to Campus Care among either group), perhaps partially due to these visits being tracked over a limited amount of time (i.e. two quarters).

Appendix A9: Multidimensional Scale of Perceived Social Support Family Subscale Mixed Between-Within Subjects Analysis of Variance

A mixed between-within subjects analysis of variance was conducted to assess differences between groups (intervention group, control group) in change of scores on the Multidimensional Scale of Perceived Social Support, Family Subscale across time (pre-intervention, post-intervention). There was no significant interaction between group and time, Wilks Lamba = .993, F (1, 48) = .362, p = .550, partial eta squared = .007, suggesting no significant difference in the degree of change of scores on the measure between the groups over time (see figure). There was no significant main effect for time, Wilks Lamba = .997, F (1 , 48) = .142, p = .708, partial eta squared = .003. The main effect comparing the two types of interventions was not significant, Wilks Lamba = .994, F (1 , 48) = .313, p = .578, partial eta squared = .006.

Appendix A10: University Credits Earned Fall & Winter Quarters

An independent samples t-test was performed to compare university Credits Earned Fall and Winter Quarters for intervention participants and controls. There was no significant difference in Credits Earned, t (50) = -.58, p = .563, between the intervention participants (M = 28.48, SD = 7.25) and controls (M = 29.52, SD = 5.60).

Appendix A11: Group Sessions Attended by Therapist

A one-way between-groups analysis of variance was conducted to explore the impact of Therapist on the Number of Sessions Attended by participants in the intervention group. Intervention group participants were divided into three groups according to which of the three therapists facilitated their group. There was no significant difference at the $p < .05$ level in

Number of Sessions Attended for participants in the three Therapist groups: F (2, 18) = .401, p = .676. Due to a lack of significant difference between group 1 (M = 5.45, SD = 1.21), group 2 (M = 5.00, SD = 2.00), and group 3 (M = 4.67, SD = 1.15), post-hoc comparisons were not performed.

Appendix A12: Maladaptive Coping between Groups

A one-way between-groups analysis of covariance, controlling for pre-intervention differences between groups, was conducted to explore the impact of group on level of maladaptive coping used. Participants fell into either the intervention group or the control group. There was no statistically significant different at the $p < .05$ level in maladaptive coping scores for the two groups: F (1, 49) = .36, p = .550, partial eta squared = .007 (represents that .7% of the variance in post-intervention maladaptive coping scores is explained by group).

APPENDIX B: STUDY MEASURES

Appendix B1: Demographics Form

Demographics Form

1. Age: _____
2. Gender (circle one): Male / Female
3. Ethnicity: _____
4. Home state: _____
5. Home county: _____
6. Date of your graduation from high school: _____
7. Mother's highest level of education (circle last level completed):
   1st / 2nd / 3rd / 4th / 5th / 6th / 7th / 8th / 9th / 10th / 11th / 12th (senior in high school)
   Trade or vocational school 1 year / trade or vocational school 2 years
   Community college 1 year / community college 2 years / earned associates degree
   University freshman / sophomore / junior / senior / earned bachelor's degree
   Masters level graduate student / earned master's degree
   Doctoral level graduate student / earned doctorate degree
8. Father's highest level of education (circle last level completed):
   1st / 2nd / 3rd / 4th / 5th / 6th / 7th / 8th / 9th / 10th / 11th / 12th (senior in high school)
   Trade or vocational school 1 year / trade or vocational school 2 years
   Community college 1 year / community college 2 years / earned associates degree
   University freshman / sophomore / junior / senior / earned bachelor's degree
   Masters level graduate student / earned master's degree
   Doctoral level graduate student / earned doctorate degree
9. Other caregiver's highest level of education if you were fully or partially raised by someone other than your mother or father (circle last level completed):

1st / 2nd / 3rd / 4th / 5th / 6th / 7th / 8th / 9th / 10th / 11th / 12th (senior in high school)
Trade or vocational school 1 year / trade or vocational school 2 years
Community college 1 year / community college 2 years / earned associates degree
University freshman / sophomore / junior / senior / earned bachelor's degree
Masters level graduate student / earned master's degree
Doctoral level graduate student / earned doctorate degree

10. Highest level of education of sibling with the most formal schooling (circle last level completed):
    1st / 2nd / 3rd / 4th / 5th / 6th / 7th / 8th / 9th / 10th / 11th / 12th (senior in high school)
    Trade or vocational school 1 year / trade or vocational school 2 years
    Community college 1 year / community college 2 years / earned associates degree
    University freshman / sophomore / junior / senior / earned bachelor's degree
    Masters level graduate student / earned master's degree
    Doctoral level graduate student / earned doctorate degree

11. Highest level of education of extended relative with most formal schooling (circle last level completed):
    1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th (senior in high school)
    Trade or vocational school 1 year / trade or vocational school 2 years
    Community college 1 year / community college 2 years / earned associates degree
    University freshman / sophomore / junior / senior / earned bachelor's degree
    Masters level graduate student / earned master's degree
    Doctoral level graduate student / earned doctorate degree

12. Highest level of education of friend with most formal schooling (circle last level completed):
    1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th (senior in high school)
    Trade or vocational school 1 year / trade or vocational school 2 years
    Community college 1 year / community college 2 years / earned associates degree
    University freshman / sophomore / junior / senior / earned bachelor's degree
    Masters level graduate student / earned master's degree
    Doctoral level graduate student / earned doctorate degree

13. Annual income of the parent/caregiver(s) that raised you (round to the nearest thousand): _____

14. Were you employed in high school? Yes / No

15. Number of hours you plan to work per week during college: _____

16. Your living situation while in college (circle one): On Campus / Off Campus

17. If living off campus will you be living with your parents? Yes / No

18. Are you married? Yes / No

19. Number of dependent children you have: _____

20. How many counseling/therapy sessions have you attended previously? _____

21. Have you even been admitted to a psychiatric hospital? Yes / No

22. If yes, how many times? _____

23. Are you currently in counseling/therapy? Yes / No

24. Are you currently taking psychiatric medication(s) (e.g., medication for treatment of depression, anxiety, bipolar, ADHD, etc.)? Yes / No

25. Have you been diagnosed with a mental disorder? Yes / No

26. If yes, what is the diagnosis? _____

Appendix B2: Confidential Baseline Academic Form

Confidential Baseline Academic Form

1. Overall (four year) high school GPA: _____

2. Senior year of high school GPA: _____

3. Estimated days of school missed senior year of high school: _____

4. Score on ACT: _____
5. Score on SAT: _____
6. Number of AP classes taken: _____
7. Number of honors classes taken: _____
8. Number of college prep courses taken: _____
9. Have you declared an academic major? Yes / No
10. If yes, your academic major declared is: _____
11. Number of credits you plan to take fall quarter of 2011: _____
12. Number of your friends attending college: _____
13. Percentage of your friends attending college: _____

Appendix B3: Outcome Form

Outcome Form

1. Percentage of your classes you attended fall quarter of 2011: _____
2. Not including BALANCE Stress Management Workshop sessions, how many counseling/therapy sessions (including both individual or group sessions either at Counseling and Psychological Services or from an off-campus provider) did you participate in during fall quarter 2011? _____
3. How many psychiatry appointments did you attend either from an on-campus or off-campus provider during fall quarter 2011? _____

APPENDIX C: CONSENT FORMS

Appendix C1: Ohio University Consent Form

Ohio University Consent Form

Title of Research: *First-Generation College Students' First Term Stress and Coping*

Researchers: *Trevor J Petersen, M.S., Bernadette Davantes Heckman, Ph.D.*

You are being asked to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to sign it. This will allow your participation in this study. You should receive a copy of this document to take with you.

Explanation of Study

This study is being done because there is a need to better understand first-generation college students' experience of stress and coping as they adjust to college life during their first term. There is also a need to evaluate in what ways a stress management program may benefit them.

If you qualify and agree to participate, you will be asked to complete a series of questionnaires at the beginning and then again at the end of fall quarter 2011 that ask about your demographic information (e.g., age, gender, ethnicity, SES, etc.), perceived stress, functioning, perceived social support, coping styles, health promoting behavior, and academic performance. Completion of the series of questionnaires will take no more than an hour of your time on each occasion. Your participation in this study will also include being randomly assigned (a 50/50 chance like a coin flip) to either an intervention group that participates in a quarter long stress management program consisting of weekly hour long group sessions during fall quarter 2011, or a control group that receives no stress management program. If you are assigned to the control group you may still obtain stress management training or psychological services through Ohio University's Counseling and Psychological Services by calling 740-593-1616.

You should not participate in this study if you are not a first-generation student (i.e., neither of your parents attended college), not entering into your first term of college, not

fluent in English, not 18 years of age or older, or not a domestic (non-international) student.

Your direct participation in the study will last for one quarter (fall quarter of 2011-2012 academic year), and afterward information pertaining to your academic performance (i.e., GPA, academic probation status, drop-out status) will be collected directly from the registrar's office at the end of each quarter until the end of the 2011-2012 academic year.

Risks and Discomforts

Discomforts that you might experience as a part of this study include the effort required to complete the series of questionnaires and potentially participate in the weekly stress management program. Items on the questionnaires that may potentially cause you discomfort include questions about perceived distress, problems with functioning, poor coping, and thoughts about harming self or others. Potential discomforts if you participate in the stress management program include increased awareness of sources of stress in your life and concern about talking in a group context although such participation will be voluntary and not required.

Benefits

This study is important to science and society because it will provide valuable information on the experience of first-generation students as they enter college that will help inform programs designed to aid in enhancing the effectiveness of stress management/adaptive coping during this transition.

Individually, you may benefit from insights gained while completing the series of questionnaires, or if you are randomly assigned to the stress management program you may benefit from strategies learned and support received.

Confidentiality and Records

Your personal information will be kept confidential through the use of a personal identification number in place of your name on all questionnaires completed. Only a master list will also be maintained that connects your name with your personal identification number. The master list will be retained until 6/30/12 and then destroyed. Consent forms, the master list, and all questionnaires completed will be kept in separate files and locked in a filing cabinet within a locked research lab on campus. No names or other identifying information will be used when reporting on the results from this study.

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:

* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;

* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU;

* The licensed clinical psychologist who supervises this project, Dr. Bernadette Heckman, and the appropriate government agency as mandated by law if you disclose on a questionnaire or verbally intent to harm yourself or someone else; abuse or neglect of an elderly person, child, or disabled person under you care; or that you are a threat to homeland security. In such cases the licensed clinical psychologist supervising this project will intervene to take the necessary safety precautions (e.g., making a referral to Ohio University Counseling and Psychological Services).

* A court if information is subpoenaed.

Compensation

As compensation for your time and effort pizza and beverages will be provided for all participants at both time points when the series of questionnaires are administered. Additionally, $30 will be awarded as compensation to all participants when the second questionnaire packet is administered during the last week of fall quarter classes. Signing this consent form and thereby enrolling in this study will also automatically enter you into a drawing to win (approximately a 1 in 80 chance) an 8GB iPod touch (a $210 value). The drawing will take place the final day of classes of fall quarter 2011, on 11/14/11.

Contact Information

If you have any questions regarding this study, please contact the primary investigator, Trevor Petersen at tp221006@ohio.edu (#509-760-1383), or Bernadette Heckman at heckmanb@ohio.edu (#740-597-1449).

If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740) 593-0664.

By signing below, you are agreeing that:

- you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered

- you have been informed of potential risks and they have been explained to your satisfaction.
- you understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study
- you are 18 years of age or older
- your participation in this research is completely voluntary
- you may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

Signature_____ Date_____

Printed Name_____

Version Date: ***08/05/2011***

Appendix C2: Consent to Release Educational Records – General

OHIO
UNIVERSITY

CONSENT TO RELEASE
EDUCATION RECORDS - GENERAL

Office of the
University Registrar

Chubb Hall
Athens OH 45701-2979

Name of Student: _____ PID: _____

I, the undersigned, hereby authorize Ohio University to release the following educational records and information (identify records or types of records):

To: _____
(Name and Address of Person/ Agency to Receive Information)

_____

For the purpose of:

(NOTE: This release is not a transcript order form. For information about ordering an Ohio University transcript, please visit the following link: http://www.ohio.edu/registrar/transcri.cfm.)

I understand further that (1) I have the right not to consent to the release of my education records; (2) I have the right to review such records upon request; (3) and that this consent shall remain in effect until revoked by me, in writing, and delivered to Ohio University, but that any such revocation shall not affect disclosures previously made by Ohio University prior to the receipt of any such written revocation.

_____ _____
Student's Signature Date

THIS INFORMATION IS RELEASED SUBJECT TO THE CONFIDENTIALITY PROVISIONS OF APPROPRIATE STATE AND FEDERAL LAWS AND REGULATIONS WHICH PROHIBIT ANY FURTHER DISCLOSURE OF THIS INFORMATION WITHOUT THE SPECIFIC WRITTEN CONSENT OF THE PERSON TO WHOM IT PERTAINS, OR AS OTHERWISE PERMITTED BY SUCH REGULATIONS.

Appendix C3: Campus Care Authorization for Disclosure of Health Information

OHIO UNIVERSITY

Campus Care
2 Health Center Drive
Athens, OH 45701
TEL: (740) 593-1660 FAX: (740) 593-0179

Authorization for Disclosure of Health Information

Patient Name: _____
Last First Middle Maiden/Other

Date of Birth: _____ PID#: _____ Telephone: _____

Address: _____

City: _____ State: _____ Zip: _____

Records to be released from:

Ohio University Campus Care
2 Health Center Drive
Athens, OH 45701
(740) 593-1660 or Fax (740) 593-0179

1. The type and amount of information to be used or disclosed is as follows (include dates where appropriate):

__X__ Other (please specify): VERIFICATION OF WHETHER THE STUDENT IS A PATIENT AND THE NUMBER OF VISITS DURING EACH QUARTER OF THE 2011-2012 ACADEMIC YEAR

2. I understand that the information in my health record may include information relating to sexually transmitted disease, acquired immunodeficiency syndrome (AIDS) or human immunodeficiency virus (HIV). It may also include information about behavioral or mental health services and treatment for alcohol and drug abuse.

Records to be released to:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____

For the purpose of: _____

5. I understand that I have a right to revoke this authorization at any time. I understand that if I revoke this authorization I must do so in writing and present my written revocation to the health information management department. I understand that the revocation will not apply to my insurance company when the law provides my insurer with the right to contest a claim under my policy. Unless otherwise revoked, this authorization will expire on the following date, event, or condition:_____

6. If I fail to specify an expiration date, event or condition, this authorization will expire in sixty days. I understand that authorizing the disclosure of this health information is voluntary. I can refuse to sign this authorization. I need not sign this form in order to assure treatment. I understand that I may inspect or copy the information to be used or disclosed, as provided in CFR 164.524. I understand that any disclosure of information carries with it the potential for an unauthorized re-disclosure and the information may not be protected by federal confidentiality rules. If I have questions about disclosure of my health information, I can contact:

_____ _____
Signature of patient or legal representative Signature of witness

Date: _____ Date: _____

PLEASE NOTE: This information has been disclosed to you from confidential records protected from disclosure by state and federal law. No further disclosure of this information should be done without specific, written and informed release of the individual to whom it pertains or as permitted by state law (ORC – 3701.243) and federal law 42 CFR, part II.

Authorization Release #1 12/29/2010

Appendix C4: Ohio University Counseling and Psychological Services Authorization for Release of Confidential Information

Ohio University
Counseling and Psychological Services
Hudson Health Center, 3rd Floor
Athens, OH 45701
Ph: 740-593-1616 / Fax: 740-593-0091

Authorization for Release of Confidential Information

Student Name: _____ Date of Birth: _____

OU PID #: _____ Reach me by Phone at: _____

I hereby authorize: Staff members of Counseling & Psychological Services (refer to contact info above)

To release to:

Person:	Trevor Petersen, M.S
Agency:	First-Term Stress and Coping Study
Address:	200 Porter Hall, Ohio University
Phone:	740-677-4044

The following information:

The only information to be released is whether or not the student is a client at Counseling & Psychological Services and the number of visits (individual counseling sessions, walk-in sessions, and group therapy sessions) during each quarter of the 2011-2012 Academic Year.

The purpose of disclosure is: Obtain outcome measure for the First-Term Stress and Coping Study

This authorization shall remain in effect from: September 6, 2011 through June 29, 2012

- I understand that information used or disclosed as a result of this authorization may be re-disclosed by the recipient of your information and no longer protected by HIPAA Privacy Rules.
- You have the right to revoke this authorization, in writing, at any time by sending such written notification to: Director, Counseling and Psychological Services. However, your revocation will not be effective to the extent that we have taken action in reliance on the authorization.

_____ _____

Printed Name of Client Witness Signature

_____

Signature of Client and Today's Date

Authorization form for release of info
Rev.08/11 (jw)

APPENDIX D: RECRUITMENT TOOLS

Appendix D1: Study Informational Flyer

For more information please contact:

Trevor Petersen

(740) 274-0253

tp221006@ohio.edu

Ohio University

Department of Psychology
200 Porter Hall
Athens, OH 45701

First-Generation College Students

First Term Stress & Coping

Primary Aims of the Study:

- To better understand the characteristics of first -generation college students.
- To explore their experience of stress and coping as they adjust to college life during their first term.
- To evaluate in what ways a stress management program may benefit them.

Inclusion Criteria:

- A first-generation student (i.e., neither parent has attended college)
- Entering into your first term of college at OU.
- 18 years of age or older
- Fluent in English
- A domestic (non-international) student

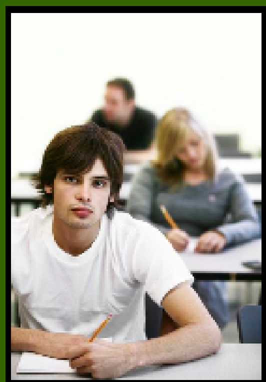
The study involves:

- Completion of a series of questionnaires at the beginning and end of fall quarter 2011.
- Potential participation in an hour a week, quarter long stress management workshop.

Participant Compensation:

- Pizza and beverages will be served when questionnaires are completed.
- You will be entered into a drawing to win (approximately a 1 in 80 chance) an 8 GB iPod Touch (a $210 value).
- You may be able to participate in a free stress management workshop.

Appendix D2: Study Informational Flier with Pull-Off Tabs



For more information please contact:

Trevor Petersen

(740) 274-0253

tp221006@ohio.edu

Ohio University

Department of Psychology
200 Porter Hall
Athens, OH 45701

First-Generation College Students

First Term Stress & Coping

Primary Aims of the Study:

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- To evaluate in what ways a stress management program may benefit them.

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- A first-generation student (i.e., neither parent has attended college)
- Entering into your first term of college at OU.
- 18 years of age or older
- Fluent in English
- A domestic (non-international) student

The study involves:

- Completion of a series of questionnaires at the beginning and end of fall quarter 2011.
- Potential participation in an hour a week, quarter long stress management workshop.

Participant Compensation:

- Pizza and beverages will be served when questionnaires are completed.
- You will be entered into a drawing to win (approximately a 1 in 80 chance) an 8 GB iPod Touch (a $210 value).
- You may be able to participate in a free stress management workshop.

First-Generation Study
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Appendix D3: Study Informational Email

Ohio University Student,

Hello. Are you a first-generation college student (meaning that neither of your parents attended college), 18 years of age or older, a non-international student, and entering your first quarter at Ohio University? If so you are eligible to participate in a study that will examine the stress and coping of first-generation students as they adjust to college life.

Participation in this important study involves completing a series of questionnaires at two time points (once during the second week of this fall quarter and once during the last week of classes of this fall quarter) regarding your demographic information (age, gender, ethnicity, SES, etc), perceived stress, functioning, perceived social support, coping, and academic performance.

Half of participants will also be randomly assigned to participate in a group stress management program (6 to 9 members per group) designed to help with successful adjustment to college. This program would include weekly hour long informational and support sessions during week 3 through 10 of fall quarter.

Pizza and beverages will be provided on the two occasions when questionnaires are completed, you will be awarded $30 for completing the second packet of questionnaires, and your participation in the study will enter you into a raffle for an 8GB iPod touch.

If you are interested and eligible to participate in this study please respond to this email in order to establish which initial study introduction meeting/questionnaire completion session you can attend during the second week of fall quarter.

Thanks for considering participating in this important study.

Trevor

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