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The Stress Problem: Exploring the intersections of student stress, involvement, and problem-solving self-efficacy

A Dissertation Presented

By

DAWN L. RENDELL

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

May 2014

College of Education

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The Stress Problem: Exploring the intersections of student stress, involvement, and problem-solving self-efficacy

A Dissertation Presented

By

DAWN L. RENDELL

Approved as to style and content by:

_____
Elizabeth A. Williams, Chair

_____
Ryan S. Wells, Member

_____
Matthew C. Davidson, Member

_____
Christine B. McCormick, Dean
College of Education

DEDICATION

To my parents, who taught me that being inquisitive is a gift.

ACKNOWLEDGMENTS

The dissertation process has often been called a lonely one. I count myself among the fortunate to have had an amazing network of loved ones, mentors, and supporters who have helped me to make something I once thought impossible a reality. First of all, I would like to thank my advisor, *Liz Williams*. While many were in my corner, cheering me along, most of those folks weren't forced to be quite as intimately involved as Liz was. Liz, thank you for nudging me when I needed a nudge, slowing me down when I got ahead of myself, and supporting me when "real life" found a way to steal my motivation. Thank you for helping me to see that what I was doing was important, timely, and worth studying. I feel so lucky to have you as my advisor, and there is no one I would have rather had on my side during this journey.

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Thanks also go to my friends who supported me through the last four years, made me laugh, and asked to hear about my research even when they didn't really want to know. Thank you to friends who understood when I had to turn down making plans in favor of writing, meeting about writing, or defending my writing. A couple of friends deserve special thanks for the role that they played in this journey. *Lisa*, thanks for forcing me to go back to school, even when I wasn't sure I wanted to. *Kelly*, thank you for dragging my behind out of bed on weekend mornings that would have otherwise been spent sleeping in and lounging around in my pajamas. Knowing that we were going through this together made the voyage a little less intimidating.

I also could not have gotten to this point without the support of Student Affairs and Campus Life at UMass Amherst. Thank you to the *Student Activities and Involvement* and *Residential Life* for participating in the study and endorsing the value of this work. It is no small thing to be a part of a campus culture that encourages learning and professional development.

And last, but certainly not least, thank you to my committee: *Liz Williams, Ryan Wells,* and *Matt Davidson*. This was certainly a learning process, and I am appreciative of both the challenges you provided and support you readily offered. Thank you for challenging me to do more, while also being willing to concede that this was a dissertation and not a career when I decided not to follow yet another path in my study. You were more than just signatures on some paperwork, and I am appreciative of your talents and the lessons you have taught me.

ABSTRACT

THE STRESS PROBLEM: EXPLORING THE INTERSECTIONS OF STUDENT STRESS, INVOLVMENT, AND PROBLEM-SOLVING SELF-EFFICACY

MAY 2014

DAWN L. RENDELL, B.S., NORTHERN ARIZONA UNIVERSITY

M.Ed., UNIVERSITY OF MASSACHUSETTS AMHERST

Ed.D. UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Elizabeth A. Williams

College students over the last three decades have reported increasing levels of stress (Astin A. W., 1998; Twenge, 2006). As students come to college feeling overwhelmed, student affairs professionals must prepare to address the issue of stress and explore possible interventions and program. Previous research on college student stress has tended to focus on bivariate relationships. Researchers have explored how technology, gender, race, and problem-solving confidence are related to perceived stress. Many studies have focused on the relationship between problem-solving efficacy and stress, as well as problem-solving skill development as an intervention to help manage stress.

Participants in this study were 627 undergraduate students at a four-year, highly residential, primarily White, public University in the Northeast who were involved in student government, residence hall associations, Greek letter organizations, and identity based cultural organizations. The purpose of this dissertation was to explore the relationship between problem-solving confidence and students' perceptions of their stress, while controlling for race, gender, technology use, and involvement. Participants

were asked to complete on online survey that included questions about their technology use, extracurricular involvement, perceived stress, and problem-solving confidence. I utilized bivariate statistical analysis, one-way analysis of variance, and linear regression to analyze relationships and differences between sub-groups

Significant findings include the absence of a difference between stress and problem-solving confidence among men and women involved in leadership positions. Results of this study confirm a negative relationship between perceived stress and problem-solving self-efficacy, even after controlling for other factors contributing to stress. Furthermore, this dissertation contains implications for student affairs practitioners and directions for future study. Implications for student affairs professionals include designing intentional programmatic and advising interventions aimed at developing problem-solving confidence and efficacy to help student leaders better manage stress and increase student wellness and success. Areas of future study include gaining further understanding of female student leaders as well as expanding research to include a variety of organization types.

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CHAPTER 1

INTRODUCTION

College students are reporting feeling stressed at higher levels than ever before. In a 2010 national study, first-year students at four-year institutions reported the highest levels of anxiety and the lowest levels of mental wellbeing since the Higher Education Research Institute began gathering these data in 1985 (Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010). On a survey of 27,774 college students, 53.5% reported feeling overwhelmed in the last two weeks; 86.1% reported feeling overwhelmed in the last year (American College Health Association, 2012). In the last year, 21.2% said they had been treated or diagnosed with a mental health condition, and 6.6% of students reported that they had seriously considered committing suicide (American College Health Association, 2012).

Over the last 30 years, the number of students reporting feeling overwhelmed, stressed, or anxious has steadily increased (American College Health Association, 2012; Astin, 1998; Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007). In 2006, 28.7% of entering first-year students reported feeling overwhelmed by all that they had to do, up from 18.1% when the question was first asked in 1985 (Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007).

Not only are students increasingly reporting being anxious or overwhelmed, the amount of anxiety they report feeling is greater. According to one study, “Anxiety increased so much that the average college student of the 1990s was more anxious than 85% of students in the 1950s and 71% of students in the 1970s” (Twenge, 2006, p. 107). This trend is consistent across a number of studies and is too large to be solely the result

of reporting bias (Twenge, 2006). The degree to which young adults are feeling overwhelmed is a very real problem that warrants the attention of campus administrators and mental health professionals.

Factors Contributing to Stress

It is clear that there has been an increase in student stress. In order to understand college student stress fully, one must consider why stress levels have gone up. Research suggests that it has more to do with when you were born than it does with genetics (Twenge, 2006). We must, then, consider what has changed over the past four decades that would lead to differences between generations.

There are a number of factors that may contribute to the upward trend in student stress over the past 30 years. As the economy has worsened, college students have indicated that they are concerned about their finances (American College Health Association, 2012; Astin A. W., 1998; Bushong, 2009b; Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010; Robotham & Julian, 2006). In 2011, when asked what stressors had been traumatic or very difficult to handle, finances were the second most frequently cited source of stress (American College Health Association, 2012).

Currently, the most commonly cited source of stress for students is academics (American College Health Association, 2012). Students feel an increased drive to succeed academically (Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010). In order to relieve their stress, students often commit more time to studying and completing academic work rather than recreating in a manner that would help to relieve their stress (Ragsdale, Beehr, Grebner, & Han, 2011). As a result, they experience heightened levels of stress.

While the average income for parents of college students has steadily increased, the increasing cost of college at a rate greater than inflation contributes to financial concerns (Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007). More students are reporting concerns about their ability to pay for college. Perhaps as a result of concern about their finances or out of a need to help fund their educations, today's students are working for pay more than past generations (Astin, 1998; Robotham & Julian, 2006). Many students report that they have major concerns about their ability to finance their education (Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010). This would suggest that some of the stress is a combined result of concern for finances and pressure to succeed academically as they are also working to pay for school. Although we may not be able to pin down the exact causes of stress, we have enough information to know who is at increased risk.

Consumption of television media as well as technology may also play a role in the amount of stress people experience. The average number of hours Americans spend watching television has increased over the last 50 years (Robinson & Martin, 2009). People who spend more time watching television are more likely to be anxious (de Wit, van Straten, Lamers, Cuijpers, & Penninx, 2011), agoraphobic, and to perceive greater threats to their personal safety (Comer, Furr, Beidas, Babyar, & Kendall, 2008).

The amount of time someone spends on the Internet has also been linked to negative mental health outcomes. More than ever, college students are connecting to their world through smartphones, tablets, laptops, and other forms of technology (Dahlstrom, de Boor, Grunwald, & Vockley, 2011). This constant barrage of information and increased demand of time and resources can lead students feel to more isolated, anxious,

depressed and stressed (de Wit, van Straten, Lamers, Cuijpers, & Penninx, 2011; Dokoupil, 2012; Kalwar, 2010; Ohannessian, 2009). Although being more connected keeps students in touch with loved ones and can help to foster relationships, being this connected also causes increased stress.

Evidence suggests that not all students are equally impacted by stress (American College Health Association, 2012; Museus& Quaye, 2008; Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010; Szyzmanski & Sung, 2010; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008). Women are more likely to report feeling greater than average stress (57.3%) than their male peers (43.9%) (American College Health Association, 2012). Additionally, students who belong to ethnic minority groups experience additional stressors as a result of societal oppression and prejudice (Museus & Quaye, 2009; Szyzmanski & Sung, 2010; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008). Research suggests that students in traditionally underrepresented groups, such as Black/African American, Hispanic, and Asian students, are at greater risk for becoming overwhelmed and stressed. Not only are they faced with the "typical" stressors of college, they also experience stress as a result of prejudice and bias on their campuses and in the larger society. As more women, racially/ethnically underrepresented students, and sexual minorities enter college campuses, we should expect that they will contribute to the upward trend of students reporting feeling overwhelmed.

Mental Health Services

Though the number of students reporting mental health concerns has increased, the services available to them have not expanded in stride (Bushong, 2009b; Farrell, 2008). First-year students are increasingly indicating that they anticipate they will need to

use counseling and/or mental health services once they enroll (Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010). Approximately one in ten incoming students indicated that they expected to utilize mental health resources on their campus, and health centers report that they are experiencing an increase in demand (Bushong, 2009a). However, they are also reporting that they are understaffed and do not have the ability to meet the demand that they are experiencing (Bushong, 2009b; Farrell, 2008).

If counseling centers are unable to meet demand, they will have to find ways to be more efficient in providing services (Farrell, 2008). Perhaps other campus offices and staff can provide some relief. Given the limited resources available for professional mental health interventions, student affairs professionals and campus administrators should seek out ways in which they can help students manage day to day stress so that they do not reach a breaking point. The overall wellness of college students cannot be ignored as student affairs professionals seek help them succeed. Any focus on student success is incomplete if interventions are not in place to assist students in maintain their physical, mental, and spiritual health. Maslow asserted that people cannot begin to form healthy relationships, learn about themselves, or move towards self-actualization until their basic physiological needs are met and they feel safe (Maslow, 1943). Any threat to safety, whether psychological or physical, inhibits the ability of students to engage in higher order processes, such as developing relationships and a sense of self, that support student success. Their need to find safety will overwhelm their other needs and become primary. Therefore, student affairs professionals seeking to support student success must ensure student wellness.

Research indicates that poor problem-solving skills are related to higher stress levels (D'Zurilla & Sheedy, 1991; Davila, Constance, Burge, Paley, & Daley, 1995; Fraser & Tucker, 1997). There is evidence that simply feeling equipped to handle a problem, whether one actually has the skills or not, will lead to lower stress levels in the face of a challenge (D'Zurilla & Sheedy, 1991). Students who have confidence in their problem-solving abilities are less likely to become overwhelmed because they feel that they can overcome the obstacles that they are facing.

Student affairs professionals who understand the relationship between problem-solving confidence and stress are better able to intentionally develop interventions and programs that assist in the development of problem-solving efficacy. Extracurricular activities have been shown to help undergraduate students develop skills in problem-solving, critical thinking, and conflict resolution (Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001; Kuh, 1995; Hall, Forrester, & Borsz, 2008). Student organizations, such as student government and cultural clubs, become venues through which students can practice these skills. For instance, students planning campus events might have to develop a campus-wide event on a limited budget, requiring them to critically think about how they can cut costs, collaborate with others, and creatively find ways to save money. As they prioritize their expenses, they may experience conflict with their peers and have to find ways to compromise while maintaining positive relationships. In this way, something as common as planning an event for a student organization can become a learning lab for developing problem-solving skills. Campus activities offices and student affairs have an opportunity to work intentionally with student clubs and organizations to develop the skills that may help them to manage their stress.

Purpose of Study

The purpose of this study is to explore the relationship between problem-solving confidence and students' perceptions of their stress, while controlling for race, gender, technology use, and involvement in a population of traditionally aged undergraduate students at a four-year, residential university. Research indicates that there are different outcomes for students based on the type of organizations in which they are involved (see for example: Astin A.W., 1993; Kuh, 1995; Terenzini, Pascarella, & Blimling, 1996). These cognitive outcomes include critical thinking skills, self-awareness, social competence, and learning to work with people who are different that oneself. There is also evidence that there is a negative relationship between students' problem-solving confidence and reported stress (see for example: D'Zurilla & Sheedy, 1991; Davila, Constance, Burge, Paley, & Daley, 1995; Fraser & Tucker, 1997). However, there appears to be a lack of research about how involvement might be related to stress levels and problem-solving confidence.

This study will seek to answer a number of questions. First, I will examine to what extent involvement in undergraduate student organizations is related to both stress and problem-solving confidence. Past research indicates that I can expect to find different outcomes based on the type of organization students belong to (Astin A. W., 1993; Hernandez, Hogan, Hathaway, & Lovell, 1999). Because, the extent to which students are actively involved is also related to outcomes such as self-awareness, reflective thought, and social competence (Astin A. W., 1999; Terenzini, Pascarella, & Blimling, 1996), I will explore how time spent on student organizations and position within the organization are related to stress and problem-solving.

In order to explore the relationships between stress, problem-solving, and involvement, I conducted an online survey. Participants were undergraduate, traditionally aged students involved in cultural student organizations, student government, Greek letter organizations, and residence hall associations. The instrument included the Problem-Solving Confidence Scale from the Personal Problem-Solving Inventory, the Perceived Stress Scale, self-reported use of technology and time spent on organizations, and demographic information.

For the purposes of this study, I focused on problem-solving self-efficacy and not on skill. For the purposes of this study, I use confidence and self-efficacy interchangeably. Research on college students indicates that higher confidence in their skills is related to lower levels of stress (D'Zurilla & Sheedy, 1991). The Personal Problem Solving-Inventory contains several of scales, including the one that will be used in this study, the Problem-Solving Confidence scale. This measure was developed and tested with college students and is highly correlated with other problem-solving measures (PsycNET, 2011).

I measured stress with the Perceived Stress Scale (PSS). The PSS, which is one of the most widely used measures of stress (Cohen, 1994), is used to measure the degree to which students view life events over the last month to be stressful. This measure is widely used in studies of college student stress (Cohen, Kamarck, & Mermelstein, 1983; Friedlander, Reid, Shupak, & Cribbie, 2007; Goldman & Wong, 1997). These two scales, along with demographic information, will be utilized to examine where and to what extent relationships exist and develop an explanatory model for perceived stress.

Significance of Study

Helping students to cope with stress has a number of positive impacts including improving their physical health (Glaser & Kiecolt-Glaser, 2005), preventing more serious mental health concerns (Davila, Constance, Burge, Paley, & Daley, 1995; Heath, Toste, Nedecheva, & Charlebois, 2008; Yang & Clum, 1994), and increasing the likelihood that a student will succeed. People who are under stress are at an increased risk for illness (Glaser & Kiecolt-Glaser, 2005), and prolonged stress decreases the human body's ability to fight off infections. As a result, stressed individuals are more likely to be infected by colds, flu, HIV/AIDS, meningitis, respiratory infection, herpes, and mononucleosis. College students living in densely packed residence halls are already at greater risk for some infections, including meningitis (Harrison, Dwyer, Maples, & Billmann, 1999). It stands to reason that prolonged stress would put an already at-risk population at even greater risk.

Not only are people under stress more likely to become infected, they take longer to heal (Glaser & Kiecolt-Glaser, 2005). Stress triggers an inflammation response that causes the body to heal more slowly than it would if one were not under stress. As a result, students under stress who become sick are likely to stay sick longer, possibly missing more class than peers who are able to manage their stress more effectively.

Physical health is a concern, but students who experience prolonged stress are also at risk for developing more serious mental health problems. Studies indicate that prolonged stress is linked to self-harming behaviors and depression (Davila, Constance, Burge, Paley, & Daley, 1995; Heath, Toste, Nedecheva, & Charlebois, 2008; Yang & Clum, 1994). Students under stress who lack social support are more likely to report

suicidal ideation (Chang, Sanna, Hirsch, & Jeglic, 2010; Esposito & Clum, 2003; Yang & Clum, 1994). It is imperative that institutions provide students with opportunities to develop healthy coping mechanisms so that every day stress does not lead to a mental health crisis.

It is possible that providing opportunities that encourage the development of problem-solving skills might prove to help students manage their stress before they reach the point of feeling overwhelmed or out of control. This study will explore how involvement is related to problem-solving and stress. Stress management may not only promote better physical and mental health for students, it may also increase the odds of student success. Students who are unable to cope with stress in an effective manner are less likely to persist (Bray, Braxton, & Sullivan, 1999). Thus, it is in an institution's best interest to assist students in developing coping strategies such as problem-solving.

With this study, I seek to understand the extent to which student organization involvement is related to problem-solving confidence. Furthermore, this study will fill a gap in the research by exploring the relationship between involvement, stress, and problem-solving.

Definitions

Before delving further into this topic, it is important to define key terms. In this section, I will define involvement, stress, problem-solving, and the types of student organizations that will be studied.

Leader. For the purposes of this study, I refer to all members of the four organization types as leaders. Previous research suggests that students who are members of an organization do not differ from organization leaders in terms of cognitive

development (Foubert & Grainger, 2006). Because they do not differ in outcomes, I assert that students who choose to get involved in these four types of organizations are leaders by virtue of their involvement in organizations that are highly visible and contribute to the campus culture.

Involvement. In his seminal work on Involvement Theory, Astin (1999) conceptualized of student involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 518). When referring to the academic experience, Astin was not solely referring to time in the classroom, studying, or doing homework. He included time spent in extracurricular activities in his view of the academic experience. Astin asserted that the time spent in any activity is related to the learning that results. Therefore, one might surmise that if the development of problem-solving skills is an outcome of involvement in student organizations, more time and energy invested in the activity would lead to greater outcomes.

Involvement occurs along a continuum (Astin A. W., 1999; Hernandez, Hogan, Hathaway, & Lovell, 1999). Some students will invest more time in one part of their collegiate experience than will others. Some students might not get involved at all. Others will invest more energy at one time than another. In this sense, involvement is not static and varies across individuals.

For this study, I will measure involvement in two ways. I asked students to provide an estimate of the amount of time they devote in a week to their student organizations. I also asked participants to indicate their position with the organization as an indicator of their investment (for example, are they a general body member or on the executive board).

Stress. There are a number of ways to define stress. For example, measures of college student mental health, including large national surveys such as the Freshman Survey, ask students to indicate whether they have felt overwhelmed by all they needed to do (American College Health Association, 2012; Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007). The Perceived Stress Scale (PSS) asks participants to indicate how often they have been upset, felt out of control, or could not cope with situations in their lives (PsycNET, 2011). For the purposes of this study, stress is feeling overwhelmed, out of control, or unable to cope. Students who score higher on the PSS perceive their stress levels to be higher than those students with lower scores (Cohen, 1994; Cohen, Kamarck, & Mermelstein, 1983).

Problem-Solving Self Efficacy. Problem-solving is defined by D'Zurilla and Goldfried define problem-solving as "a behavioral process, whether overt or cognitive in nature, which (a) makes available a variety of potentially effective response alternatives for dealing with the problematic situation and (b) increases the probability of selecting the most effective response among these various alternatives" (1971, p. 108). In this study, I will specifically be measuring students' confidence or self-efficacy to problem-solve. Problem-solving confidence and self-efficacy will be used interchangeably and will refer to a student's belief that they can effectively utilize problem-solving skills when faced with a challenge/problematic situation.

Student Organizations. For this study, I will compare the problem-solving confidence, involvement, and perceived stress of members of four different types of undergraduate student organizations: 1) cultural organizations, 2) residence hall associations, 3) Greek letter organizations, and 4) student government.

Cultural organizations. Cultural organizations provide a space for students to explore their race/ethnicity, connect to faculty and staff members who share their heritage, give back to their communities, and express their heritage (Museus, 2008). At Primarily White Institutions (PWIs), they allow students to connect with students who are similar to them on a campus where they are in the minority (Dunkel & Schuh, 1998). Cultural organizations play a role in helping underrepresented students persist by catering to their social and academic needs and helping them to feel connected to the institution (Dunkel & Schuh, 1998; Museus, 2008).

Residence hall associations. Residence hall associations determine and meet the needs of students living in campus housing (The National Association of College and University Residence Halls, Inc., 2005). These associations exist to develop community between campus residents as well as advocate for their needs. Residence hall associations typically develop programming for campus residents and advise administrators on policies related to residential students (Dunkel & Schuh, 1998) and can take several forms. For the purposes of this study, residence hall associations consist of an executive board and a general body of representatives from specific residential communities.

Greek letter organizations. Greek organizations take a variety of forms (Dunkel & Schuh, 1998). Generally, Greek organizations are single-gendered groups with missions that promote philanthropy, social connections, and academics. In recent years, their benefits to campus have been called into question by researchers, and they have been characterized by others as exclusive, engaging in risky behavior, and contradicting institutional values (Whipple & Sullivan, 1998). For the purposes of this study, I will focus on fraternities and sororities that are members of the Intra-Fraternity Council and

National Panhellenic Conference, organizations intended to bring together chapters from across the country and promote positive values (Dunkel & Schuh, 1998).

Student government. Student governments serve as the official representation of students to the administration of an institution (Dunkel & Schuh, 1998). They may be complex organizations and serve a variety of functions including allocating student fees, participating in conduct processes, and providing direct services to students. Student governments may advocate on behalf of students on issues such as tuition increases and class availability.

CHAPTER 2

LITERATURE REVIEW

College Student Stress

More than ever before, college students are reporting that they are overwhelmed, anxious, and stressed (Kadison, 2004; Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007; Robotham & Julian, 2006; Twenge, 2006). In 2006, 28.7% of the incoming class in the United States reported feeling overwhelmed by all they had to do, an increase of 10.6 percentage points from the first time the Higher Education Research Institute (HERI) first asked this question in 1985 (Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007). In 2010, the upward trend continued when 29.1% of entering first-year students reported that they were overwhelmed by all that they had to do (Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010). The number of students reporting they were overwhelmed continues to rise. In 2009, 53% of college students reported that they had been stressed enough to prevent them from socializing, whereas in 2011, this increased to 63% of students (mtvU and Associated Press, 2010b), a 10 percentage point increase in just two years.

More students than ever are struggling with stress and psychological issues (Kadison, 2004). Eight in ten college students report that they experience stress in their day-to-day lives (Lipka, 2008; mtvU and Associated Press, 2006). Most students (86.1%) report that they have felt overwhelmed in the last year, and 22.2% report that they were treated for a mental health concern in the last year (American College Health Association, 2012). Students face a number of mental health challenges: twelve percent of students report that they have a diagnosis of anxiety, 5.6% report being diagnosed or

treated for panic attacks in the last year, and 7.3% report that they have been diagnosed with both depression and anxiety (American College Health Association, 2012).

The challenge of supporting students' mental health needs becomes more pressing once the consequences of feeling overwhelmed are considered. Some students may become so overwhelmed that they engage in self-harming behaviors such as cutting or suicide. In one study, 6.6% of students indicated that they had seriously considered suicide in the last year (American College Health Association, 2012), and another study reported that 9% considered suicide in the last year (mtvU and Associated Press, 2010a). As many as 13% of college students have a friend that attempted suicide, and 20% report that a friend has talked to them about committing suicide in the last year (mtvU and Associated Press, 2010a). Almost 70% of students report that a friend has posted something online that they considered a cry for help (mtvU and Associated Press, 2010a). College students may not just be struggling to manage their own mental health. Many, it seems, are also supporting friends as they struggle to cope.

The struggle with stress is not a phenomenon limited to the transition of the first year. In fact, stress levels for college students seem to peak in the junior year (mtvU and Associated Press, 2006). Whereas 39% of college freshman report feeling the pressure to handle more and more, 63% of juniors report feeling this pressure. Fifty-two percent of women in their junior year reported feeling so stressed that they did not feel able to function (mtvU and Associated Press, 2006). This rise in stress in the junior year indicates that mental health issues are not simply a matter of adjusting to a new environment or a transition into college. These concerns are persistent and warrant

attention. Whereas 8% of freshman report having considered suicide, 21% of seniors admit that they have thought about it (mtvU and Associated Press, 2006).

What makes addressing this problem even more challenging is that some students cannot or will not admit that they are finding life overwhelming. Many students seem to be proud of their stress, attempting to one up each other with stories of all they have to do (mtvU and Associated Press, 2006). Rather than recognizing that they are struggling, many students brag about their burdens. Students are often unable to articulate that they are feeling overwhelmed or stressed and unaware that they may need help (Robotham & Julian, 2006).

Surely, other generations experienced more severe stressors such as war, institutionalized discrimination, and segregation on the basis of race and gender. However, studies do indicate that this increase in self-perceived stress is real. As one author explained, "Anxiety increased so much that the average college student of the 1990s was more anxious than 85% of students in the 1950s and 71% of students in the 1970s" (Twenge, 2006, p. 107). There is a lack of research on why this may be. Perhaps greater access to college and better medications have given students who might not have gone in the past a chance to pursue higher education, bringing their mental health conditions with them. Perhaps changes in how we communicate and engage with our world have led to changes in our perceived stress levels. What is certain is that the effects are too large for this increase in stress and mental health concerns to be coincidence or reporting bias (Twenge, 2006).

Factors Contributing to Stress

The number of overwhelmed and anxious students has steadily increased over the last 40 years (American College Health Association, 2012; Astin A. W., 1998; Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007; Twenge, 2006). This is a trend in a number of studies and is too large and consistent to be solely the result of reporting bias. This suggests that the stress one experiences has more to do with when one was born than genetics (Twenge, 2006). This begs the question, what has changed to cause students to perceive so much more stress?

Currently, students report academics and finances as their top two stressors (American College Health Association, 2012). Students self-report that they are more driven to succeed academically than past generations have indicated (Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010). Many students report feeling a constant need to prepare for the next step, leading to cramming their semesters with more internships and classes to distinguish themselves among their peers when it comes time to find a job (mtvU and Associated Press, 2006). Students are experiencing increased competition, not just for jobs, but also for seats in classes they need in order to graduate and secure employment. When academic stress becomes overwhelming, students often attempt to relieve the stress by working harder on their academics and forgoing recreation -- which often increases stress rather than relieving it (Ragsdale, Beehr, Grebner, & Han, 2011). When there is no release, everyday stressors that might not otherwise have overwhelmed a student may become too much to bear.

As they are managing the pressures of academic success, students are increasingly reporting being concerned about their finances and ability to pay for school (American

College Health Association, 2012; Astin A. W., 1998; Bushong, 2009b; Pryor J. H., Hurtado, DeAngelo, Palucki Blake, & Tran, 2010; Robotham & Julian, 2006). Finances are second only to academics as a primary stressor of college students (American College Health Association, 2012). Students are working more than they have in the past in order to make ends meet and pay for school (Astin A. W., 1998; Robotham & Julian, 2006). This takes time away from school and studying, which, one might assume, might lend itself to greater academic stress.

For first-year students, one source of academic pressure includes adjusting to college work (Upcraft, Gardner, & Associates, 1989). First-year students face an ecological transition as they experience changes to their setting, role, and expectations in a new environment. Additionally, many students experience an increase in cultural diversity as they join the campus community (Kadison, 2004). This ecological transition is stressful for many students (Upcraft, Gardner, & Associates, 1989). Many first-year students are not simply experiencing an increase in academic rigor or a change of location. Their environment differs so greatly from the one to which they are accustomed that they become overwhelmed.

Though there is greater academic pressure to succeed and a higher level of stress around finances, it seems unlikely that these two factors alone contribute to such a drastic change in student stress. Growing stress levels must be attributable to additional factors. Recent research indicates that our increasing interactions with media and technology may contribute to increasing stress levels.

Television media. Americans are spending more time watching television (Robinson & Martin, 2009). The average number of hours adults spend watching TV has

increased 60% since the 1960s. As a greater number of channels and hours of programming have become available, Americans have taken advantage of the opportunity. As more programming options have become available, more people are reading the newspaper less in favor of watching the news on TV (Robinson & Martin, 2009).

Some might question whether this change in time spent watching television has any relationship with the reported rise in stress levels. Current research suggests that it does. Spending more time watching TV has been associated with increased levels of agoraphobia and anxiety (de Wit, van Straten, Lamers, Cuijpers, & Penninx, 2011). Children who spend more time watching TV perceive more threats to their personal safety and feel at greater risk of harm than those who watch fewer hours (Comer, Furr, Beidas, Babyar, & Kendall, 2008). This difference is even more marked in those who are already prone to anxiety. The rise in stress may not be solely a result of how much television one watches. The content of the programs can also have negative impacts.

As the country transitions away from print media, TV has become a primary source for news (Robinson & Martin, 2009). In studies of children, those who watch more hours of TV news report greater levels of anxiety (Szabo & Hopkinson, 2007). Children who watched more coverage of the September 11, 2001 attacks had a higher likelihood of developing signs of PTSD than those children who did not watch coverage (Otto, et al., 2007). Twelve years later, many of the children who watched this coverage unfold on their TVs are now attending our colleges and universities. They bring with them their fears and anxieties, shaped by the news coverage that they watched as young children.

Media shapes our expectations of the world. This influence is not limited to the news. Shows intended for entertainment also shape our world views and expectations. This influence is not always positive. Habitual viewers of shows aimed at "tweens" were more likely to report that they expected to experience middle school as unfriendly and full of bullies (Mares, Braun, & Hernandez, 2012). Consequently, these adolescents were more anxious and nervous about their experiences at school.

Media can also influence self-perceptions. Watching music television correlates to lower levels of self-esteem in women (Grabe & Hyde, 2009). Music videos often send messages that lead women to view themselves as sexual objects. Time spent watching music television relates to lower math confidence and increased anxiety in women (Grabe & Hyde, 2009). This may begin to explain why media consumption has positive and protective impacts on boys but leads to higher rates of anxiety and depression in girls (Ohannessian, 2009). Men are likely sent more positive messages, while women are often viewed as sexual objects.

Though TV watching has increased 60% since the 1960's, the average amount of time Americans spend watching TV has only increased 6.67% since 1975. Stress has increased at a much higher rate since that time. It seems likely that some other phenomenon must be at play as well, and usage of the Internet and mobile technologies may have a role.

Technology. Technology is ubiquitous on college campuses. The average college student owns about a dozen pieces of technology (e.g. smartphones, tablets, laptops, mp3 players, etc.) that they utilize for both personal and academic pursuits (Dahlstrom, de Boor, Grunwald, & Vockley, 2011). Students show a clear preference for "smart" devices

that link them to the Internet, phone, and a variety of other applications. More than half of students own a smartphone, 10% own an iPad or tablet, and 90% own a laptop (Dahlstrom, de Boor, Grunwald, & Vockley, 2011).

Being this connected to and dependent upon technology means that students constantly receive a lot of information. Three quarters of students send and receive an average of 75 e-mails a day, 74% send and receive an average of 84 text messages, 58% report checking their Facebook account at least 13 times per day, and 11% post or read 112 tweets (Dahlstrom, de Boor, Grunwald, & Vockley, 2011). On average, people under the age of 50 report checking their phone for text messages and social media updates at least once every 15 minutes (Dokoupil, 2012). This constant "checking in" is often fueled by a fear of missing out (Dokoupil, 2012). Something might happen that one would miss out on by not being constantly connected. This fear could be related to missing an important e-mail about work or being the last to know about a significant change in a friend's life.

Internet usage. Researchers have begun to measure how connected students are to the Internet in attempt to understand the changing environment, and it appears that they are very connected. In 2010, nine out of ten students reported that they visited a social media site in the last week (mtvU and Associated Press, 2010a). One-third of students reported that they spent six or more hours per day on the Internet, either connecting through their phones, computers, or other organizational device (mtvU and Associated Press, 2010b). Put another way, one-third of students were spending at least one-quarter of their day online. That's at least 42 hours per week. Clinicians consider 38

hours or more online per week to be a symptom of Internet addiction (Dokoupil, 2012). If this is true, one-third of college students appear to be addicted to the Internet.

There is an ongoing debate about technology's link to mental health (Ohannessian, 2009). Some argue that the Internet attracts rather than causes socially anxious people (see for example Caplan, 2007). It is possible that those with a proclivity for being socially anxious find the Internet a non-threatening way to connect with others.

There are also those that contend that the Internet has many positive effects on users. Surfing the Internet can be a tool to relax when life gets stressful. Watching TV shows online, connecting to social media, playing games, and shopping may all be ways to recreate when life becomes overwhelming (mtvU and Associated Press, 2010a). The Internet is often used to entertain and maintain relationships, strategies that are appropriate to manage stress (Leung, 2007). For those who feel isolated, the Internet can be a source of support and help that allows them to feel less isolated and alone (Leung, 2007). Often, socially anxious people feel less shy online, and, as a result, gravitate to online communication to make a connection (Bonetti, Campbell, & Gilmore, 2010). Relationships online can cause less anxiety than face to face encounters (Yen, 2012).

Unfortunately, the reduction in social anxiety experienced online can come at the expense of real, face to face relationships (Yen, 2012). Reliance on online relationships and communication may also prevent students from developing skills that they would normally develop offline that would help them in the world beyond college. For instance, about half of college students report that they have utilized technology to avoid a confrontation, rather than deal with it (mtvU and Associated Press, 2010a). Conflict resolution is a skill that will serve students well, both in the workplace and socially.

However, many of them have learned to avoid face-to-face conflict by utilizing technology.

As Americans are increasingly "connected" online, we must also consider the consequences. Spending greater amounts of time online has been linked to demonstrating compulsive personality traits (Dokoupil, 2012), higher incidents of depression (de Wit, van Straten, Lamers, Cuijpers, & Penninx, 2011; Dokoupil, 2012), anxiety (Kalwar, 2010; Ohannessian, 2009), stress (mtvU and Associated Press, 2006), and feelings of isolation (mtvU and Associated Press, 2010a). If students are truly "connecting" to others online, one would expect the positives to outweigh the negatives, but it seems that these online relationships do not provide the same benefits as "real life" relationships. Four in ten students have more than 500 "friends" online, though only 11% report that they would be comfortable reaching out to those friends when they faced difficult times (mtvU and Associated Press, 2010a). Most students seem to recognize that a "Facebook" friend is not necessarily the same as a "real life" friend. Nonetheless, 85% of students report that they feel connected as a result of social networking; 14% report that it makes them feel even more isolated. Additionally, spending time online often means spending less time with loved ones and can lead to a loss of real world social connections, further impacting mental health (Dokoupil, 2012). It would seem that students do not realize just how unconnected they may be in a seemingly connected world.

Although there is an ongoing debate about the role of technology in students' increasing stress levels, mounting evidence suggests that it plays a role. It is imperative that we consider what it is about the technology in our lives that adds to stress levels. Nearly half of students reported that they have trouble determining whether people are

serious when communicating online (mtvU and Associated Press, 2010a). Not being able to the read visual or audio cues from the person one is communicating with may make it difficult to determine the tone of a conversation. Rather than alleviating social anxiety, this may add to it.

Spending time online also puts greater demands on the time of users (mtvU and Associated Press, 2006). Checking Facebook, updating statuses, and communicating through texts just adds to the list of tasks that one must accomplish in a given day; time students would otherwise spend engaging in activities that might relieve stress is spent online. The time spent online is often sedentary and may take students away from recreational activities such as physical exercise. People who exercise have better mental health outcomes. Consequently, students who are spending time online may be choosing sedentary activities rather than active ones, and this may have negative consequences for their mental health (de Wit, van Straten, Lamers, Cuijpers, & Penninx, 2011; Dokoupil, 2012).

Sedentary behavior, increased demands on time, and confusing communication may not be the only sources of stress. One study has found that web use also causes the brains of users to "rewire" in a manner similar to drug addicts (Dokoupil, 2012). Researchers conducted a study comparing experienced web users and people using the Internet for the first time. In initial brain scans, the frontal cortexes of those with Internet experience looked different from those who were not Internet users. The brains of those who used the Internet had more high speed nerve cells. Those who were addicted to the Internet had brains that looked similar to those of drug and alcohol addicts. The parts of the brain linked to speech, memory, motor control were smaller than those of non-users.

After initial brain scans, non-Internet users were asked to spend five hours online during a one week period. After just five hours of usage, their brains showed signs of rewiring and began to look like those of experienced users (Dokoupil, 2012). This study provides physical evidence that Internet usage may negatively impact the mental health of users in a similar manner to substance abuse.

Regardless of the cause, it is clear that our increasing use of the Internet has consequences. Internet usage, "leads to behavior that people are conscious is not in their best interest and does leave them anxious and does make them act compulsively" (Dokoupil, 2012, p. 27). The Internet, "fosters our obsessions, dependence, and stress reactions" (Dokoupil, 2012, p. 27). Although, Internet addiction is not currently included in the Diagnostic and Statistical Manual of Mental Disorders (DSM), the 2013 edition will list Internet Addiction Disorder as a topic requiring further study (Dokoupil, 2012). It is notable that other countries, such as Korea, China, and Taiwan already consider Internet addiction a health crisis (Dokoupil, 2012).

Cellular phones. Even when students are able to step away from their PCs, many are still connected. Smartphones provide a nearly constant link to others and are another source of information. Today's phones serve many of the same functions as computers. Not only do phones connect students through text messages and phone calls, they also provide a link to social networking and a variety of other apps and sites that can produce a constant stream of information.

Even if students do not have a smartphone, they are connected in other ways. On average, a cell phone user sends and receives 400 text messages per month (Dokoupil, 2012). This number has increased by four times since 2007. The average teenager, an age

group many college students fall into, sends and receives 3,700 texts per month, more than nine times the average cell phone user. The number of texts sent and read by teens per month has doubled since 2007. Clearly, people, especially young people, have become more dependent on their technology and are using it at increasing rates.

This increasing rate of connectivity can have negative consequences. Communicating via mediums such as text messages limits one-on-one interactions in favor of technology-facilitated relationships (Chapman, 2010). Text messaging can lead to unique stressors as well. Sixty percent of students said that they spent time thinking about why someone did not text them back immediately (Chapman, 2010; mtvU and Associated Press, 2010a). Eighty-five percent said that they felt the need to provide an immediate response to at least half of the messages they received (mtvU and Associated Press, 2010a). The pressure to remain connected and interpret meaning can be overwhelming. Students seem to believe that they must respond immediately, and they expect the same from others.

Technology addiction. So, are Americans addicted to technology? Increasingly, it would seem that the answer is yes. Nearly 50% of iPhone users report feeling addicted to the device (Hope, 2010; Ng, 2011). Three in four people report that they sleep next to it (Hope, 2010; Ng, 2011), 41% report that losing it would be considered a "tragedy" (Hope, 2010; Ng, 2011), and 25% consider their iPhone an extension of themselves (Hope, 2010). Fifteen percent of iPhone users identify themselves as media addicts (Hope, 2010).

Perhaps it would be helpful to limit or remove technology from our lives. Unfortunately, for many college students, the absence of technology would not decrease

their stress. For 57% of college students, removing technology from their lives would actually be more stressful (mtvU and Associated Press, 2010a). The same percentage of students report that a social media blackout would increase their stress (Chapman, 2010). Only 25% believed that a break from their technology might be calming (mtvU and Associated Press, 2010a).

Researchers at the University of Maryland decided to test what would happen if students gave up their technology for a day. They asked students to give up the Internet and their mobile devices for one day and log their feelings (Dokoupil, 2012). Two hundred students participated, and many identified that they were addicted to technology. This led researchers to conclude that, "Most college students are not just unwilling, but functionally unable to be without their media links to the world" (Dokoupil, 2012, p. 28). Even though Internet and technology users might prefer not to be as connected, they are constantly lured by the short term rewards. Use of these types of technology, similar to compulsive gambling, causes dopamine to release in the brain, causing a sort of "high" for users (Dokoupil, 2012). The loss of these short term rewards can be stressful, and this stress may outweigh the long-term potential gains of lessening or giving up the use of technology.

The debate may continue about whether technology negatively impacts the mental health of users. Some may continue to assert that any negative correlations are simply the result of technology attracting those that are already struggling. Regardless, it is increasingly clear that people are struggling, and that technology is increasing the impacts of mental health problems, if not causing them. As one author states, "it doesn't matter whether our digital intensity is causing mental illness or simply encouraging it

along, as long as people are suffering" (Dokoupil, 2012, p. 30). Researchers may be hesitant to assert that exposure to television, social-media, and the Internet are the cause of skyrocketing stress, but it would be a huge coincidence if the technology usage and stress are not related. Therefore, researchers should include questions about technology usage when studying stress and explore possible relationships.

Gender and Mental Health. Even with the societal changes in our technology use, not all people are impacted equally. Women are more likely than men to report feeling overwhelmed by all that they need to accomplish (American College Health Association, 2012; Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007; Reisberg, 2000). In a study of college student health, 91% of women reported feeling overwhelmed by all that they had to do, compared to 76.4% of men (American College Health Association, 2012). Although stress levels change throughout college, the gender gap remains relatively constant (mtvU and Associated Press, 2006). Consistently, women report higher levels of stress and mental distress.

As stated above, 7.3% of college students report having been diagnosed with both depression and anxiety (American College Health Association, 2012). However, this statistic does not tell the whole story. While only 4% of men have been diagnosed with both conditions, women were more than twice as likely, at 8.8%, to report having been diagnosed with both depression and anxiety (American College Health Association, 2012). When asked to list stressors, women report a great number of stressors than their male counterparts in many studies (Hanklin, Mermelstein, & Roesch, 2007; Matud, 2004), and, when they report a similar number of stressors, women report that the stressors they faced had a greater impact on their mental wellbeing (Matud, 2004). It

should be noted that women might be socialized to be more comfortable reporting stress than males. Even when causes of stress are the same as those of their male counterparts, adolescent females exhibit greater levels of depression (Hanklin, Mermelstein, & Roesch, 2007; Nolen-Hoeksema, 2001) and anxiety disorders (Nolen-Hoeksema, 2001). Whatever the reason, women seem to experience greater impacts of stress (Matud, 2004). They consistently perceive their experiences to be more stressful than their male counterparts, and the resulting stress results in greater negative impacts on their mental health and wellness. There are a variety of possible reasons for this difference. Explanations for the stress- gender gap include types of stressors (Hanklin, Mermelstein, & Roesch, 2007; Matud, 2004; Nolen-Hoeksema, 2001; Smedley, Myers, & Harrell, 1993), coping mechanisms (Matud, 2004; Nolen-Hoeksema, 2001; Reisberg, 2000; Sax & Harper, 2007), and brain differences (Nolen-Hoeksema, 2001; Wang, 2007).

Women and men report experiencing different stressors related to their role as college students. When it comes to academics, 46% of women report that they find college more stressful than they anticipated, while only 26% of men report this experience (mtvU and Associated Press, 2006). Although women do better academically in college, they have less confidence about their academics than their male counterparts, especially when it comes to math (Sax & Harper, 2007). A lack of confidence can lead to greater stress and anxiety. The stress women experience can lead them to feel more overwhelmed by the transition to campus than their male peers.

Though academic stressors differ, there are other differences in the stressors men and women experience. Men typically report experiencing stressors that are achievement based (Hanklin, Mermelstein, & Roesch, 2007). Specifically, men report work, money,

and relationships as their primary sources of stress (Matud, 2004). Women, however, experience more interpersonal stressors (Hanklin, Mermelstein, & Roesch, 2007). The primary stressors women face center on the family and the health of their loved ones. Women's self-concept is more other-based than that of their male counterparts (Nolen-Hoeksema, 2001). Men experience stress based on who they want to be and what they want to become. Women are more likely to experience stress based on the expectations and opinions that they believe others have of them. Women are also more likely to be caregivers than men, adding additional stress (Matud, 2004). Where stress is concerned, women's stress has an external locus of control. They cannot control the opinions and expectations of others. Men, however, experience stress with an internal local of control. Perhaps the self-imposed stress feels less overwhelming than the stressors women report, which are generally out of their control.

Additionally, women have societal stressors that men are less likely to experience. Women must cope with living in a sexist society that puts them at greater risk of discrimination, battering, sexual assault, and harassment (Matud, 2004). Exposure to music television has been linked to lower self-esteem in women, including lower confidence in their mathematical abilities (Grabe & Hyde, 2009), perhaps contributing to the academic anxiety previously discussed. Researchers posit that this is a result of consistently seeing women portrayed as objects of sexual desire. Not only do young women and girls experience daily messages about their worth and standing in society, women are more likely to have to work to pay for school (Reisberg, 2000). Women who have to work to pay for school would likely have less time to engage in stress relieving activities, such as sports or relaxing, and greater demands on their time. Women

experience the world and college in a very different way from men, and this seems to lead to increased stress and anxiety.

The ways in which men and women seek to cope with stress also differ (Matud, 2004; Nolen-Hoeksema, 2001; Reisberg, 2000; Sax & Harper, 2007). In their downtime, men are more likely to engage in stress-relieving activities such as sports, exercise, and recreational activities, all of which can aid in the reduction of stress (Reisberg, 2000). In addition to participating in activities that help to relieve stress, men are more likely to approach stressful situations with active coping and problem-solving strategies (Nolen-Hoeksema, 2001). In contrast, women are more likely to spend their off time in goal oriented work such as volunteering, studying, and extracurricular activities (Reisberg, 2000). Unlike the recreational activities men gravitate toward, the activities women tend to engage in are not as conducive to relieving stress and, in some cases, may heighten stress levels. Women participate in less physical exercise that can help manage stress when they are feeling overwhelmed (Sax & Harper, 2007). Additionally, women tend to employ coping strategies that are more passive and based in emotion (Matud, 2004). Women are also more likely to ruminate on a problem (Nolen-Hoeksema, 2001). Rumination does little to relieve stress and can impair the ability to problem-solve. It is likely that gender difference in coping and stress management account for at least part of the difference in stress levels. Because women do not utilize as many outlets for stress relief as men, small stressors may build up and become more overwhelming. The difference in coping strategies may also explain why men and women report differing levels of stress when faced with the same stressors.

Some might argue that men report lower stress levels because they have been socialized to believe that it is not acceptable to admit to feeling overwhelmed (Reisberg, 2000). This may be true. However, there is also evidence of biological brain differences between men and women that impact how they respond to stressful situations (Nolen-Hoeksema, 2001; Wang, 2007). Men and women exhibit different biochemical processes under stress. In particular, there are differences in cortisol levels (Nolen-Hoeksema, 2001). Women's bodies release cortisol at a higher level than men's when they are under stress. Cortisol, in turn, impacts other biochemical processes that in turn influence mood. This difference in biochemical processes may explain some of the differences in stress levels between men and women.

Women and men may also engage different parts of the brain when stressed, leading to differing coping strategies (Wang, 2007). While men tend to cope with stress with a "fight or flight" reaction, women tend to engage a "tend and befriend" strategy. Women under stress are more likely to respond by caring for others and fostering relationships (Taylor, 2006). The strategies women employ as a result of their brain processes are more likely to lead to rumination, which, as stated above can impair problem solving and does not alleviate stress (Wang, 2007). Caring for others may also take time away from other tasks, causing women to become more stressed. The combination of differing stressors, coping strategies, and biological responses help to understand why differences exist between reported stress levels of men and women and gender differences must be considered when studying stress.

Race and Stress. Stress and stressors also differ by race (Museus & Quaye, 2009; Roberts, Gilman, Breslau, Breslau, & Koenen, 2011; Robotham & Julian, 2006;

Szyzmanski & Sung, 2010; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008; Williams, Yu, Jackson, & Anderson, 1997). Researchers have linked race related stress, and the experiences that contribute to this stress, to higher incidents of post-traumatic stress disorder (PTSD) (Roberts, Gilman, Breslau, Breslau, & Koenen, 2011), diminished psychological and physical health (U.S Department of Health and Human Services, 2001; Williams, Yu, Jackson, & Anderson, 1997), and suicide (U.S Department of Health and Human Services, 2001). Racial stress takes a toll on the mental health of racial minorities in the United States (Williams, Yu, Jackson, & Anderson, 1997). People of color face additional stressors as a result of systematic oppression and prejudice that they must overcome on a day to day basis (Museus & Quaye, 2009; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008). As a result, their experiences may differ greatly from those of their White peers.

One would be misadvised to ignore race when exploring the impacts of stress on college students, as an increasing number of students of color are coming to campus and bring unique experiences that must be taken into account. Racial minorities experience greater health concerns and lower life expectancies (U.S Department of Health and Human Services, 2001). The cultural and social contexts surrounding race such as socioeconomic differences, exposure to violence, and other risk factors affect mental health (U.S Department of Health and Human Services, 2001). Minority college students, in general, report higher levels of stress (Smedley, Myers, & Harrell, 1993). These students face the day to day stressors of being in college in addition to those that stem from being a racial minority. This stress has no relation to prior academic success, indicating that it is a result of a societal problem (Smedley, Myers, & Harrell, 1993).

College becomes an additional stressor for some students of color, such as African American women who find the integrated college experience to be more stressful than the more homogeneous communities they may be coming from (Woods-Giscombe & Lobel, 2008). Not only must they adjust to a new academic environment, they must navigate a very different racial landscape than they are accustomed to. For some students, this may be the first time they are attending a school that is primarily Caucasian, and, thus, the first time they experience being the only student of color in a class. The new stress that comes with the transition to college for all students may be heightened for students of color attending PWIs.

Many students of color are also in lower socioeconomic brackets, which adds to their stress (Williams, Yu, Jackson, & Anderson, 1997). This may be why we see difference between Asians, who tend to be in higher economic brackets, and African Americans (Roberts, Gilman, Breslau, Breslau, & Koenen, 2011). In fact, when stress experienced as a result of race is removed from the equation, African Americans' mental health surpasses that of Caucasians, further supporting the theory that many racial minorities face additional stress as a result of race (Williams, Yu, Jackson, & Anderson, 1997). Chronic stressors such as discrimination put racial minorities at greater risk for a variety of health problems (Williams, Yu, Jackson, & Anderson, 1997).

Students of color are also less likely to utilize resources that might help them manage their stress. In general, Caucasians are more likely than racial minorities to seek help for mental health issues from a mental health professional (U.S Department of Health and Human Services, 2001). When racial minorities seek help, they are more likely to turn to a general practitioner, clergy, or friends and relatives. When they do seek

out professional help for mental health issues, there is often a lack of trust in medical professionals, and racial minorities are more likely to report that they felt unfairly judged by a healthcare provider (U.S Department of Health and Human Services, 2001). Different racial groups hold a variety of stigmas about mental health and health care professionals that may prevent them from getting help when they need it.

Additionally, people from different cultural backgrounds report their symptoms in different ways (U.S Department of Health and Human Services, 2001). This, in turn, may delay a healthcare provider from helping a patient. For example, Asians often describe their mental health symptoms in terms of physical symptoms. An Asian patient might describe symptoms as dizziness and fail to describe the emotional symptoms. Consequently, even when they have the same symptoms as their Caucasian counterparts, racial minorities are less likely to get help, and, when they do seek it out, treatment may be delayed as a result of different communication styles (U.S Department of Health and Human Services, 2001).

One should not assume that all ethnic minorities experience the same stressors. In fact, people from different racial backgrounds experience different stressors (Robotham & Julian, 2006) and effects of stress (Smedley, Myers, & Harrell, 1993; Williams, Yu, Jackson, & Anderson, 1997). In general, African Americans experience more stress than other groups as a result of institutionalized racism and discrimination (Smedley, Myers, & Harrell, 1993). Consequently, their psychological wellbeing is more at risk (Williams, Yu, Jackson, & Anderson, 1997). For example, African Americans have higher incidents of PTSD related to discrimination than Caucasians and Asians (Roberts, Gilman, Breslau, Breslau, & Koenen, 2011). The higher stress burden they face impacts their adaptation to

and ability to connect with the colleges they choose to attend (Smedley, Myers, & Harrell, 1993). African Americans experience a more negative campus climate than Caucasians, Latino/as, and Asians (Ancis, Sedlacek, & Mohr, 2000). They experience the college campus as a place where racism, unfair treatment, hostility, and pressure to conform to stereotypes add to the everyday stressors of academics and transitioning to a new environment. African Americans are more likely to use an active coping approach to solving problems (U.S Department of Health and Human Services, 2001), a tactic that is usually protective. Yet, they are still the racial group with the highest level of stress.

African American women face the added stress of being female in addition to their racial minority status, and do not see their status as a woman and their status as African American as separate (Woods-Giscombe & Lobel, 2008). The discrimination they face as women in a sexist society and African American in a racist society compound to create a higher level of minority stress.

The experiences of Asians differ from those of African Americans (Ancis, Sedlacek, & Mohr, 2000; Iwamoto & Liu, 2010; Kadison, 2004; Roberts, Gilman, Breslau, Breslau, & Koenen, 2011). Asian and Asian American students face unique stressors, such as parental pressure to succeed (Kadison, 2004). These students also often report feeling unfairly treated by faculty and staff due to racial stereotypes (Ancis, Sedlacek, & Mohr, 2000). Asians report unfair treatment at a lower rate than African American students and a higher rate than Hispanics. In general, they perceive campuses to be less racist than their African American counterparts do, though they report experiencing discrimination in and out of the classroom. In studies of Asians and stress, race related stress does not appear to be associated with measures of mental health as it is

for others (Iwamoto & Liu, 2010). In other words, although they report experiencing racism, it does not have the same negative impacts as it does for other racial groups. Consequently, Asians have lower incidents of PTSD related to discrimination (Roberts, Gilman, Breslau, Breslau, & Koenen, 2011).

Asians may also cope differently when faced with stress. Asians tend to cope with stress through avoidance rather than dwelling (U.S Department of Health and Human Services, 2001). As was previously stated, rumination and dwelling on a problem can adversely affect mental health. Therefore, it is possible that utilizing avoidance tactics may serve as a protective factor, perhaps explaining their lower stress levels.

In contrast to African Americans and Asians, Hispanics report stress levels that are more similar to those of Caucasians (Farley, Galves, Dickinson, & de Jesus Diaz Perez, 2005). Mexican Americans born in the United States do not report coping strategies or stress levels that are significantly different from Caucasians. In fact, in one study, Mexican citizens and U.S. born Mexican Americans reported better physical and mental health than all other racial groups (Farley, Galves, Dickinson, & de Jesus Diaz Perez, 2005). That is not to say that they do not face unique stressors. Hispanic men report higher levels of occupational stress than Caucasian men, possibly as a result of a greater number of hurdles in the path to attainment (Salgado de Snyder, Cervantes, & Padilla, 1990). Hispanic women are at greater risk for psychological problems than their Hispanic male counterparts are. This is not entirely surprising, as this gender effect seems to exist across races, as described previously.

Many Hispanic students also face the stress of living in two cultures (Romero & Roberts, 2003). Students may speak Spanish at home and need to switch and speak

English at school. Both languages must be spoken well, causing stress in both the home and school context. This type of bicultural stress has been associated with higher incidents of depression, even when other factors are controlled for (Romero & Roberts, 2003).

On college campuses, Hispanic students report feeling stereotyped and experiencing inequitable treatment (Ancis, Sedlacek, & Mohr, 2000). However, they report having these experiences at a lower rate than other racial minority groups. One explanation is that college attending Hispanics are more acculturated. Acculturation has been linked to lower stress, explaining why acculturated Hispanic college students experience less stress (Ancis, Sedlacek, & Mohr, 2000). Because acculturated students are more likely to identify with the culture of the majority, the environment at a PWI may not feel as threatening. In fact, it may feel like the norm. Non-college attending Hispanics report different experiences and feelings than their college attending/more acculturated peers. In general, Hispanics are more comfortable with their racially different peers than African American and Asian students (Ancis, Sedlacek, & Mohr, 2000). It is not surprising, then, that they experience their campuses as more welcoming.

Immigration status may also be a contributing factor in some cases (Salgado de Snyder, Cervantes, & Padilla, 1990; U.S Department of Health and Human Services, 2001). Immigrants face the additional stress of acculturating to a new society, and this experience is greater for immigrants who arrive as refugees (U.S Department of Health and Human Services, 2001). This is true across a number of cultures. Further complicating the issue, even within an ethnic or racial group, experiences may vary by home country (Salgado de Snyder, Cervantes, & Padilla, 1990). For instance, immigrants

from Central America report higher stress levels than Mexican immigrants, perhaps as a result of the struggles they faced in their home country.

In general, evidence suggests that underrepresented students and racial minorities are at greater risk for mental health problems. These students carry the burden of an increased number of stressors due to systematic oppression, discrimination, and racism. Colleges must be prepared to support student success for all students as they come to campus by becoming informed about the issues they face and being prepared to respond. Researchers should take this into account when measuring student outcomes and stress. Rather than grouping all college students together, as many developmental theorists have, researchers and practitioners must consider how campus experiences may differ, resulting in dissimilar stressors.

Negative Impacts Resulting from Stress

It is a fact that college students are reporting higher levels of stress than ever before, regardless of the cause. This should be of concern to campus administrators as they assist students in maintaining an overall sense of wellness and success. Stress can have negative impacts on the academic success, physical health, and mental health of students.

Stress can impact parts of a student's life that may inhibit academic success (Goldman & Wong, 1997). Nearly two-thirds of students surveyed reported that stress had kept them from their school work in the last few months (mtvU and Associated Press, 2010a). Missed school work may lead to feeling overwhelmed and will almost certainly

negatively impact students' chances of academic success. Not only can stress become overwhelming, but it has also been linked to short term memory loss (Luine, Villegas, Martinez, & McEwen, 1994), which could, in turn, impact students' academic success. Students who are unable to manage stress are less likely to persist through graduation (Bray, Braxton, & Sullivan, 1999), which should be of concern to campus administrators committed to student success. Surely, campus administrators can agree that the ultimate sign of student success is persisting through graduation, something that students who cannot manage their stress are less likely to accomplish.

Physically, stress can have a number of negative impacts on student health. Stress can lower the body's ability to employ an immune response (Glaser & Kiecolt-Glaser, 2005). A lowered immune response can lead to an increased chance of infection by colds, flu, HIV/AIDS, meningitis, respiratory infection, herpes, and mononucleosis. Students often live in tight quarters such as residence halls, which already puts them at greater risk of infection (Bruce, et al., 2001; Harrison, Dwyer, Maples, & Billmann, 1999; Sun, Wang, Zhang, & Sundell, 2011), and stress may increase this risk. Bodies under stress also take longer to heal wounds (Glaser & Kiecolt-Glaser, 2005). Illness and increased recovery times may cause students to miss classes and negatively impact their academic success. Missed classes may lead to making up work, greater stress, and a cycle of stress and sickness that can be hard to overcome.

Stress may also lead to more severe mental health concerns. Students who are unable to cope with stress are more likely to engage in self-harm and report feeling depressed (Davila, Constance, Burge, Paley, & Daley, 1995; Yang & Clum, 1994). In studies of college students, stress led students to feel depressed, withdraw from others,

feel overwhelmed, and consider suicide (mtvU and Associated Press, 2006). This suggests that helping students to manage stress may prevent the escalation to more severe mental health concerns that may have even greater negative impacts. Campus administrators should seek ways to help students manage everyday stressors so that they do not compound over time and escalate into more serious mental health concerns.

Obstacles to Getting Help

Even when students recognize that they may need help for their mental health problems, there may be obstacles that stand between them and the help that they need. In 2007, 85% of college counseling centers in the United States reported that they were getting more requests for appointments than they had in the past (Farrell, 2008). A number of these students had previous histories of mental health problems and were seeking to continue care. Additionally, campus counseling centers report that the students they are seeing are seeking help for more complex problems than students in the past (Benton, Robertson, Tseng, Newton, & Benton, 2003). Unfortunately, student mental health needs and a campus's available resources may not be equal.

Many college and university administrations don't see emotional health as something that they are responsible for supporting (Kadison, 2004). This may lead to counseling centers that are understaffed and underfunded (Farrell, 2008), but even when they do provide mental health services, colleges are not able to meet the increasing mental health needs of the student body (Farrell, 2008). The International Association of Counseling Services recommends that campuses provide one counselor for every 1,500 students (Farrell, 2008). In 2009, the average student to staff ratio was one counselor for every 1,952 students (Bushong, 2009b). The ratio at four-year public institutions was

even higher at one counselor for every 2,607 students. Student need has outpaced campus resources, placing a barrier between students who want help and the services that they require.

Understaffing is not the only hurdle for students who may need mental health counseling. Social stigmas surrounding mental health services are very real and may be as great of a barrier for students to overcome as a lack of services. Some students are reluctant to take advantages of services that are available to them. Many students report that they recognize the value in getting help, but feel that counseling is not for them (mtvU and Associated Press, 2006). Although 49% of students would encourage a friend to get help, only 22% report that they would get help for themselves. Half of students report that they are aware of the resources on their campus, but only 20% report that they would use them (Lipka, 2008). Women are more likely to report that they would seek counseling (mtvU and Associated Press, 2006). Though only 15% of men report that they would seek help, 28% of women would consider counseling. 69% of men report that they are unlikely or not at all likely to seek help for mental health problems, and men are also less likely to report that they would suggest mental health counseling to a friend (mtvU and Associated Press, 2006). A general stigma seems to exist that prevents students from taking advantage of counseling, and this stigma seems to be greater for men.

It is important to understand why students choose not to utilize campus counseling and mental health services. Many students believe that the problem will solve itself or that counseling will be ineffective (mtvU and Associated Press, 2006). Furthermore, there is a stigma associated with asking for help. Seventy-two percent of students report that there is a fear of embarrassment associated with seeking mental

health counseling, and only 23% would be comfortable with their friends knowing that they had sought out help (mtvU and Associated Press, 2006). For many students, this fear may prove too great of an obstacle and prevent them from seeking help. Campuses must find other ways to support students in managing their stress. Student affairs practitioners and counseling centers are unlikely to erase a lifetime of learning social stigmas about counseling. Therefore, they should seek to develop interventions that help students manage stress before the counseling center is needed in order to promote student wellness and success.

Stress and Problem-Solving Confidence

Students are experiencing greater stress but do not have the resources available to them to cope with the stress they are experiencing. Even when resources are available to them, students may not take advantage of the services offered. The challenge, then, becomes designing interventions that students will choose to participate in that will also facilitate their mental well-being. Devoting time and resources to developing students' problem-solving is one possible solution.

In a 1991 study of college student stress, students with lower problem-solving skills at the beginning of the semester reported higher stress levels at the end of the semester (D'Zurilla & Sheedy, 1991). Those students without the skills to problem-solve experienced more stress during the semester than those who were able to problem-solve. A number of studies have duplicated this correlation (for example Davila, Constance, Burge, Paley, & Daley, 1995; Fraser & Tucker, 1997). Students who have better problem-solving skills report less stress because they feel certain that they can solve the problems that they face (Fraser & Tucker, 1997).

Higher levels of stress and lower problem-solving skills have been linked with increases in suicidal ideation (Grover, et al., 2009). Adolescents who face stress but had lower problem-solving efficacy were more likely to report thoughts of suicide than those who had better problem-solving skills. A lack of problem-solving skills has also been linked to self-injurious behavior (Nock & Mendes, 2008). Self-injurers tend to have lower problem-solving skills, even when they are not faced with a stressful situation. They can come up with multiple solutions to a problem, but they tend to select a maladaptive solution. Overall, people who self-injure tend to have less confidence in their ability to perform the skills necessary to solve a problem and to select an adaptive solution (Nock & Mendes, 2008). Deficits in problem-solving skills can have bigger impacts than students feeling overwhelmed. For some, this sense of feeling overwhelmed, combined with an inability to solve the problems that they face, can lead to more serious mental health concerns, including self-injury and suicide.

Stress levels are related to one's ability to develop solutions to the challenges one encounters (D'Zurilla & Sheedy, 1991), and students without effective coping strategies are not as able to control their reactions and emotions when facing stressful situations (Heath, Toste, Nedecheva, & Charlebois, 2008). Surprisingly, a student does not need to have better problem-solving skills to reduce their stress in the face of a challenge. The belief that one can solve a problem, whether one can or cannot, may be sufficient to reduce stress (D'Zurilla & Sheedy, 1991).

Increased problem-solving confidence is related to lower levels of depression, hopelessness, and suicidal ideation (Esposito & Clum, 2003; Yang & Clum, 1994). Students who report having confidence in their problem-solving skills report lower levels

of stress (Baker, 2003). This effect occurs because having confidence in their problem-solving skills is enough to help students feel in control and reduce their stress levels (D'Zurilla & Sheedy, 1991). These students have higher expectations of success (Baker, 2003), are more motivated to try and solve their problems (Baker, 2003), and feel in control and equipped to respond to issues that arise (D'Zurilla & Sheedy, 1991). Even when a problem requires skills beyond their current skill set, they feel more in control and confident that they can solve the problem. Student affairs practitioners who are concerned with student wellness and success may find that helping students develop their problem-solving skills and confidence may help them to manage their stress.

Grover, et al. state that "well-developed problem-solving abilities may buffer the negative impact of both episodic and chronic stress, at least with regard to suicidal ideation" (2009, p. 1286). Not only can developing problem-solving skills help students to manage day to day stressors that may arise, such as exams or an argument with a roommate, these skills can also help students to manage more long term stressors. It should be noted that problem-solving skills seem to be most related to managing shorter term stressors (Grover, et al., 2009). However, if we can help students to manage short term stress, they may become less overwhelmed.

Researchers suggest that prevention programs aimed at developing problem-solving skills can reduce the risk of suicide (Grover, et al., 2009) and reduced depression (Bell & D'Zurilla, 2009) by helping people to manage their stress. If student affairs practitioners can help students to see problems as challenges and opportunities, develop confidence, and commit to solving problems rather than avoiding them, we may be able to help them manage their stress and increase their chances of success (Bell & D'Zurilla,

2009). Specifically, helping students to develop self-efficacy about problem-solving may help them to work through challenges that they face while on our campuses and beyond.

Researchers have explored the relationships between stress, the Personal Problem-Solving Inventory (PSI), and the three scales that make up the PSI: Problem-Solving Confidence (PSC), Approach Avoidance Style (AAS), and Personal Control (PC) (Heppner & Peterson, 1982). Of the three scales in the PSI, Problem-Solving Confidence has the highest correlation to measures of stress (Largo-Wight, Peterson, & Chen, 2005). This suggests that helping students to develop problem-solving skills and develop problem-solving confidence may help them to more effectively manage their stress. Administrators should seek out interventions that help students to develop this confidence so that everyday stressors such as school work and social interactions do not become overwhelming and lead to more serious mental health issues.

Student Organizations and Involvement

Students who are involved in extracurricular activities report that they primarily experience positive personal development outcomes (Logue, Hutchens, & Hector, 2005). Students involved in student organizations and leadership opportunities demonstrate increased decision-making skills (Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001), willingness to take risks, critical thinking skills, conflict resolution skills, and problem-solving skills (Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001; Hall, Forrester, & Borsz, 2008; Kuh, 1995). In a qualitative study of 149 students, participants in student organizations reported that their involvement required them to plan, organize, manage, and make decisions (Kuh, 1995). Many students reported that they had increased their interpersonal competence (46.4%) and cognitive complexity (15.3%). Students in Kuh's

study attributed their growth to their out of class experiences, including leadership positions. In a four-year, longitudinal study, students who were involved in student organizations showed greater cognitive development according to Chickering's Vectors than those who were not involved, even after their first year (Foubert & Grainger, 2006). In their senior year, students who had gotten involved had higher levels of development in the areas of establishing and clarifying purpose, educational involvement, career planning, lifestyle management, and cultural participation. All of these areas showed growth from the first-year to senior year (Foubert & Grainger, 2006). These research findings suggest that student involvement in extracurricular activities may help students to develop cognitively, including the problem-solving skills and confidence needed to help students manage their stress effectively.

Simply being tangentially involved with an extracurricular activity will not lead to an increase in problem-solving skills. Astin's theory of student involvement suggests that students must also be invested in the activity (Astin A. W., 1999). When examining involvement, one cannot simply ask what students are involved in. It is also necessary to examine how much time they are devoting to these activities. Involvement is the amount of energy a student invests in the college experience, including student organizations and extracurricular activities (Astin A. W., 1999). Highly involved students will devote more time to their activities. As a result of this behavior, they will see increased outcomes in both development and institutional commitment. As Astin stated, the "amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program" (p. 519).

Involvement is a function of time spent on the task. It is not, necessarily, a function of position within the organization. In a four-year, longitudinal study, students who joined or led a group showed greater cognitive development at senior year than those who simply attended a meeting or did not get involved (Foubert & Grainger, 2006). There was no difference between joining and leading a group, suggesting that involvement is not about the position one holds, but the degree to which a student commits to the organization. Those who commit will see greater benefits. Growth is largely influenced by the interpersonal interactions that involvement provides (Terenzini, Pascarella, & Blimling, 1996). Students do not need to be on the board of an organization to develop the relationships that contribute to their personal and cognitive growth. Student organizations provide a forum that exposes students to new people, and thus new ideas and ways of thinking.

Being involved in extracurricular activities can lead to beneficial outcomes, but being too involved can have negative consequences (Upcraft, Gardner, & Associates, 1989). Although involvement theory seems to imply that greater involvement leads to more and better outcomes, Astin does acknowledge that there are likely to be limits beyond which benefits cease to occur and involvement may, in fact, lead to undesirable outcomes (Astin A. W., 1999). This is important to keep in mind when studying student involvement.

The ways in which students engage may be as important as how much they engage. In order to develop skills and confidence, students must be engaged in experiences that are purposeful (Kuh, 1995). Different types of student organizations facilitate the development of different outcomes (Busseri & Rose-Krasnor, 2008; Logue,

Hutchens, & Hector, 2005). For example, student involvement in social Greek organizations is associated with gains in leadership abilities (Astin A. W., 1998). Students who are involved in experiences that provide them the opportunity to discuss issues related to race and ethnicity show gains in critical thinking and problem-solving skills. Students involved in recreational sports report gains in critical thinking, problem-solving, and ability to work with others (Hall, Forrester, & Borsz, 2008). Those who get involved in student government demonstrate increases in political liberalism and hedonism (Astin A. W., 1999). Depending on the focus of the organization, activities, and manner in which students are engaging, students may experience different outcomes.

Current research tends to focus on one type of organization at a time, and usually researchers do not compare different types of organizations in one study. For instance, there is a lack of research about involvement in residence halls. Even Astin's (1999) work on involvement lumps several types of "clubs and organizations" in one category. There has been very little research conducted about involvement beyond where students live (on or off campus), Greek life, athletics, student employment, and faculty interaction (Terenzini, Pascarella, & Blimling, 1996). There is a gap in our knowledge about how different types of student organizations may contribute differently to student development.

Researchers must study how and why different activities lead to different outcomes so that campus administrators will be better able to focus their time and efforts (Kuh, 1995). Because it can be difficult to ascertain which campus activities lead to which outcomes, researchers and administrators alike should be cautious when making generalizations about involvement in student organizations (Logue, Hutchens, & Hector,

2005). Further research should focus on comparing outcomes of involvement in different types of organizations and avoid generalizing about involvement as a whole.

Current Study

There are many studies about college students exploring the causes of student stress, involvement, and problem-solving, but research until this point has not explored the intersection of involvement with stress and problem-solving. Furthermore, few, if any, studies on stress and problem-solving take into account the role of technology in producing or exacerbating stress. This study seeks to expand upon previous research about the relationship between problem-solving confidence and stress through the theoretical framework of involvement theory while also taking into account students' use of technology.

This study explores how different types of involvement are related to student outcomes. Kuh (1995) has challenged researchers to study how and why different activities lead to different outcomes so that student affairs practitioners can better focus their efforts. Previous research has suggested that involvement in different types of organizations leads to different outcomes (Astin A. W., 1993), such as critical thinking, problem-solving, and conflict resolution (Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001). This study explores whether there are differential outcomes for stress and problem-solving confidence between students involved in different types of student organizations.

Finally, this study seeks to develop an explanatory model for stress that takes into account demographic characteristics, problem-solving confidence, technology usage, and student involvement. This model may inform practitioners about who is at risk for feeling

overwhelmed and to what extent certain factors contribute to student stress. The use of linear regression will also allow me to better understand the relationship between stress in problem-solving by controlling for other factors related to stress and isolating individual relationships. By better understanding student stress, involvement, and problem-solving, student affairs professionals will be better situated to develop interventions that increase student success and wellness.

CHAPTER 3

METHODS

Introduction

If involvement theory and the previously cited research on involvement and problem-solving hold true, one should expect that undergraduate students who are more involved in student activities would see greater increases in their problem-solving skills than those who are not involved. Furthermore, if the research on the relationship between problem-solving and stress is accurate, one should also expect to find that students who are involved should have greater problem-solving self-efficacy and, as a result, lower stress levels. One might also expect to find that involvement in different types of activities may lead to differences in problem-solving confidence and, consequently, stress levels.

However, involvement does not occur in a bubble. Students, as discussed above, experience a number of stressors including use of technology and institutionalized discrimination and micro-aggressions as a result of gender and/or race. One must take these factors into account when studying involvement, stress, and problem-solving. With this study, I began to explore the relationships between stress, involvement, and problem-solving confidence as well as how race, gender, and use of technology come into play.

Research Questions

I sought to answer a number of questions in this study. First, I examined to what extent involvement in student organizations is related to the outcomes of both stress and problem-solving confidence. Past research suggests that cognitive outcomes, such as critical thinking, inter-personal skills, and cultural participation, differ based on the

type(s) of organization one belongs to (Astin, 1993; Hernandez, Hogan, Hathaway, & Lovell, 1999). Depth of student involvement impacts outcomes (Astin, 1999). Students who are more involved are more likely to report growth in areas such as establishing and clarifying purpose, education involvement, career planning, academic autonomy, and lifestyle management than those who are only tangentially involved (Foubert & Grainger, 2006). Consequently, I explored how length of involvement and role within the organizations were related to stress and problem-solving. Research questions for this study include:

1. To what extent does previous research that finds a negative correlation between problem-solving efficacy and stress hold true for student leaders?
2. To what extent is involvement in student organizations related to stress?
    a. Do differences exist between different types of organizations?
    b. Do differences exist between genders?
    c. Do differences exist between races/ethnicities?
3. To what extent is involvement in student organizations related to problem-solving confidence?
    a. Do differences exist between different types of organizations?
    b. Do differences exist between genders?
    c. Do differences exist between races/ethnicities?
4. To what extent is technology use related to stress?
    a. Do differences in technology use exist between genders?
    b. Do differences in technology use exist between races/ethnicities?

5. To what extent do demographics, technology use, involvement, and problem-solving confidence explain the variance in PSS scores?

Study Participants

The institution had approximately 20,600 undergraduate and 4,300 graduate students and a residential population of approximately 12,500. The target population for this study was all undergraduate members (n=1909) of student government, residence hall, cultural, and social Greek organizations at a large, public, research university in the Northeast. Members were invited to participate in an online survey. Membership in these organizations was defined in this study as being listed on a membership roster for student organization.

In order to invite participants, I obtained membership lists from the heads of the offices that advise the student organizations in both Student Activities and Residential Life. Staff members who kept up to date records of membership provided lists of members for Greek, student government, and residence hall association. I downloaded membership lists for cultural organizations from a campus website on which student organizations post current rosters and relevant organization information. Because the lists for cultural organizations were not actively monitored by a staff member and contained students who were no longer a part of the organization, the first communication with potential participants included a sentence asking students who were not currently members of the study organizations to contact me. I, then, removed these students from the list of invitees. Additionally, skip logic was used on the survey to disqualify students who indicated that they were no longer a member of one of the organizations in the study.

Greek students made up more than half of the study population, while student government (SGA) only accounted for about 7%. In order to make sure that there were adequate respondents to allow for comparison among the sub-groups, I invited all involved students to participate. By inviting all students in the target population to participate in the survey, I aimed to have enough participants in each type of student organization and racial/ethnic group to be able to do statistical comparison between groups. If I had only invited a sample of students, the chances that I would not have enough cases in each group would have been greater and led to less robust comparisons.

Social Greek organizations. These student organizations included the approximately 475 current, active members of 17 sororities and fraternities. I focused on fraternities and sororities that were members of the Intra-Fraternity Council and National Panhellenic Conference. These national councils bring together chapters from across the country and promote positive values such as philanthropy and scholarship (Dunkel & Schuh, 1998). Fraternities and sororities with a cultural focus were not included in this study. Cultural Greek organizations are both cultural and Greek, and, as a result, could confound the findings. As a result, they have been excluded.

Cultural organizations. These student organizations included the approximately 690 members of the 14 cultural organizations registered with Student Activities, such as Black Student Union, Latinos Unidos, Arab Students Club, Jewish Student Union, and the Caribbean Students' Association. The cultural groups in this study were groups that provide a forum for students to explore their racial or ethnic identity, connect to the University, and express their heritage (Dunkel & Schuh, 1998; Museus, 2008).

Residence Hall Associations. This student organization included the approximately 470 members of the University's Residence Hall Association (RHA). Members of this organization develop programming for campus residents and advise administrators on policies related to residential students (Dunkel & Schuh, 1998). The Residence Hall Association is comprised of a seven member executive board and a General Body. Their general body is composed of representatives from 29 Hall Governments and 6 Area Governments. Members of Hall Government and Area Government are also participants in the Residence Hall Association. Hall Governments represent one to three residence halls and include an executive board and a programming board. Area Governments represent a geographical area of campus and consist of four executive board members.

Student Government Association. Student government includes the approximately 100 elected and appointed members of the Executive Cabinet, Judicial Branch, and Student Senate. The Student Government Association (SGA) serves as official representation of students to the trustees and administration of the University (Dunkel & Schuh, 1998).

Rationale. I selected the population of these four specific types of student organizations because doing so allowed me to compare between groups with different missions, characteristics, and memberships. The organizations consisted of students that span all four class years, a variety of racial and ethnic backgrounds, and programs of study. As previously noted, different types of student organizations are associated with different learning and developmental outcomes. For example, students in Greek organizations are more likely to demonstrate gains in leadership skills (Astin A. W., 1998), and students in groups that provide opportunities to discuss race and ethnicity,

such as cultural organizations, demonstrate greater problem-solving and critical thinking skills. As a result, I explored potential differences by organizational type and did not assume that all student leaders would experience the same outcomes, regardless of type of organization. I needed to analyze the results by taking the type of involvement into consideration.

Survey Instrument

I used an online survey to collect data for this study. Surveys are a useful method of gathering data because they can be relatively short, be easy to answer, be used to gather a breadth of information (Cresswell, 2009), and have a relatively quick turnaround time (Suskie, 2009). The survey consisted of 53 items and had five topical sections: demographics, campus involvement, technology, problem-solving, stress, and commitment. Continuous data allowed me to compare means to determine relationships (Mertler & Vannatta, 2010). Consequently, whenever possible, I utilized open-ended survey questions for numeric-type data, such as number of hours spent on organization tasks.

Demographics. The demographic section of the survey consisted of four questions and asked participants to indicate class standing (freshman, sophomore, etc.), gender, age in years, and race/ethnicity. These variables allowed me to make comparisons between groups and to draw conclusions about changes over time based on cross-section of the population.

Participants indicated class standing by selecting freshman, sophomore, junior, or senior. Participants indicated their gender by clicking the radio button for either male,

female, transgender, or prefer not to answer. Students typed their age in years in a small text box.

Students were also asked to indicate their race/ethnicity from a list. In order to account for students who are multi-racial/ethnic, students were able to select all that apply. Designations followed the University's categories and include: American Indian/Alaska Native, Asian, Black/African American, Hawaiian/Pacific Islander, Hispanic/Latino, and White (non-Hispanic).

Campus Involvement. The campus involvement portion of the survey consisted of four questions that asked students about how and to what extent they were involved in the undergraduate student organizations in this study. The first question asked students to select the types of organizations in which they were currently involved and provided the categories used for this study: Student Government Association, Cultural Organization, Residential Student Organization, and Greek Organization. For clarity, the survey included a description of the organizations that fall under each category. Participants selected all applicable organization types.

The next questions asked for specific information about involvement and engagement. I asked participants to indicate whether they are on the executive board of an organization or are a member. I assumed that executive board officers would have higher levels of involvement than would general body members. This question was one measurement of the students' involvement level in the organization. Astin asserts that involvement alone is not enough to facilitate growth for a student. A student must invest time and energy in the experience (1999). It is likely that students who are leaders of an organization (presumably the executive board) will have a higher level of investment than

general members. With this question, I explored how different levels of involvement relate to outcomes.

Student development theory also informed the next two open ended questions. I asked participants to indicate the total number of organizations they were involved in and estimate the time they spent doing activities related to student organizations during the previous week. In this case, more organizational involvement and time spent on task indicated greater investment.

Technology. The third section of the survey focused on participants' use of technology. Recent studies show that use of technology and media consumption can be stressors for students (Dokoupil, 2012; Hope, 2010; mtvU and Associated Press, 2010a). Therefore, these questions were included to explore how technology use relates to the stress and problem-solving confidence of student leaders. Three questions required yes or no answers and asked whether students have a smartphone, Facebook account, and/or Twitter account. Three questions were numeric and open ended. Students were asked to estimate the number of texts they sent the during the previous day, the time they spent online engaged in various activities, and the number of times they logged on to social networking sites the previous day. For each question, students were provided a specific activity (for example, how much time they spent watching TV online) and asked to estimate how much time they spent on that task the previous day. Using these subcategories, I calculated a value for the total time spent online.

Problem-solving. The problem-solving section consisted of 11 Likert-type items with a six point scale ranging from "strongly disagree" to "strongly agree." All items in this section were from the Problem-Solving Confidence Scale of the Personal Problem-

Solving Inventory (PSI). The PSI measures problem-solving skills in everyday situations (PsycNET, 2011). The full instrument consists of 32 Likert-type items and 3 scales: Approach Avoidance Style, Personal Control, and Problem-Solving Confidence.

In tests of US and cross-cultural samples, the PSI has high internal consistency (.90 alpha coefficient) (Heppner & Baker, 1997). A high internal consistency indicates that related questions have similar responses (Patten, 2009). Simply put, this means that Question A would be answered similarly to Question B because they are asking for similar information. Internal consistency indicates that participants answer as we would expect them to answer given their previous answers. Additionally, participants score similarly on retests at two and three weeks (r=.89 at two weeks and .81 at three weeks) (Heppner & Baker, 1997). This suggests that the instrument is reliable (Patten, 2009). That is to say, it consistently provides similar results.

Although reliability is important, validity is even more essential (Patten, 2009). Cross validation indicates that findings on the PSI are consistent across multiple college student samples (PsycNET, 2011). Scores on the PSI are highly correlated to scores on other measures of problem-solving (Heppner & Baker, 1997). The high correlation of the PSI with other measures indicates that the instrument is a valid measurement of the problem-solving skills and confidence of college students. Though the scale was designed for use with the general population, the authors of the scale specifically mention its usefulness with college students for student affairs practitioners (Heppner & Baker, 1997), and the PSI was designed using a sample of college students (Heppner & Peterson, 1982).

For my instrument, I only used the Problem-Solving Confidence (PSC) scale of the PSI. Because longer surveys tend to have lower response rates (Dillman, 2007; Heppner & Baker, 1997), I wanted to keep the survey as short as possible. Due to the fact I was working with a relatively small population, it was even more important to maximize response rates in order to have enough statistical power to make comparisons between groups. As a result, I chose to use only one of the scales of the PSI, resulting in 11 items rather than 35.

Using only one of the three scales did lessen my ability to draw conclusions about problem-solving in relation to stress. Because I focused solely on confidence, I cannot draw conclusions about actual skill. Although all three scales of the PSI predict stress, in a study by Largo-Wight, Peterson, and Chen (2005), PSC had the highest correlation with perceived stress. Baker (2003) asserts that people with higher confidence in their skills are more motivated to solve problems and have a higher expectation of success. In other words, problem-solving confidence predicts the use of effective problem-solving strategies (MacNair & Elliott, 1992). If this is true, then there was no need to use the two other scales that measure problem-solving, as the PSC would adequately measure problem-solving and predict stress. When considering the costs and benefits of using the entire instrument, I believe that there is greater benefit to a shorter survey using one strong measure than using all three.

Typically, when the PSC is utilized, a lower score indicates greater skill. However, for the purposes of this study, I have reversed the scoring of the scale so that a higher score indicates higher confidence. The Perceived Stress Scale, which I explain in detail below, assigns a higher numerical value to greater stress. In order to better

understand the relationship between stress and problem-solving, I have reversed the scale of the PSC to make it more comparable.

Stress. I measured stress using the 10 item Perceived Stress Scale (PSS), the most widely used scale for measuring perceptions of stress (Cohen, 1994). It measures the extent to which life is perceived as unpredictable, uncontrollable and overwhelming using 10 Likert-type items that ask how frequently participants have felt overwhelmed in the past month (Cohen, 1994; Cohen, Kamarck, & Mermelstein, 1983). The Likert-type scale ranges from "never" to "always."

In three samples, two of college students, the scale had an alpha reliability between .84 and .86 (Cohen, 1994). These scores suggest that the measure is reliable (Patten, 2009). The PSS is often used in studies of college student stress (for example, Chang, 2006; Friedlander, Reid, Shupak, & Cribbie, 2007; Goldman & Wong, 1997) and was designed and tested with college students (Cohen, Kamarck, & Mermelstein, 1983). Therefore, this scale is an optimal measure of college student stress.

The PSS accurately predicts utilization of health centers, physical symptomology related to stress, social anxiety, and smoking cessation, indicating that this is a valid measure of stress (Cohen, Kamarck, & Mermelstein, 1983). The PSS is preferable to life event scales, another measure of stress, because, unlike life event scales, the PSS predicts health outcomes related to stress levels (Cohen, Kamarck, & Mermelstein, 1983). Life event scales simply measure the number of stressful events someone experiences, not how stressed one feels as a result of these events. In contrast, Cohen designed the PSS to measure how people feel as a result of events that have occurred. Some students may find mid-terms to be incredibly stressful, while others may feel ready for exams and

experience little stress. Therefore, it is important to measure how a participant experiences the events rather than know that the event happened. The PSS measures to what extent participants find the events they have experienced over the last month to be overwhelming, stressful, or out of their control. Given these facts and the validity of the PSS in studies of college students, I used it for this study.

Survey design. I designed the survey for this study using the Tailored Design Method (Dillman, 2007). As a result, I placed more personal/challenging questions at the end of the survey, as Dillman suggests. Participants are less likely to quit as a result of challenging questions when they have already invested several minutes (Dillman, 2007). This format also allows participants to see the progression and relationship of questions and have a better understanding of why they are being asked.

I employed Likert scales throughout the survey, as they are easy to understand for most survey participants (Patten, 2001). I did not offer "neutral" as an option, because participants often choose it when they do not want to make a difficult choice (Patten, 2001). The two published scales did not include a "neutral" option, and, by not using it, I provided consistency throughout the instrument. Participants were not required to answer all questions on a screen before moving to the next. Requiring responses can cause both frustration for the participant and concerns for human subject boards (Dillman, 2007). Participants may have legitimate reasons for not responding, and should be allowed this option.

Prior to survey implementation, I asked two experienced survey researchers to review the survey and provide suggestions for improvement. These reviewers included two University staff members responsible for assessment and evaluation design and

implementation. Reviewers can be helpful by checking for content appropriateness, appearance, language, and double barreled questions (questions that ask more than one thing at a time) (Patten, 2001; Suskie, 2009). Having people review my work who are experienced in the creation of survey instruments was useful in designing a survey that would get the best results possible (Patten, 2001). Items that reviewers found potentially problematic were reconsidered or rewritten as appropriate.

Data Collection

I collected data during two weeks in early February 2013. When deciding a method for implementing a survey, for example whether to use on online format, it is important to consider the population that will be participating (Dillman, 2007; Fowler, Jr., 2009). Because they are involved in several types of groups, students in this study do not all meet at a single time when a survey could be administered in person. Mailing the survey would be challenging, because students often do not update their local address with the University. Many students list their home address, which may be many hours away from campus, limiting their access to the instrument if mailed.

However, this generation of college students is very connected to the Internet. Nationally, approximately 90% of college students own a laptop computer (Dahlstrom, de Boor, Grunwald, & Vockley, 2011). Nearly all students spend at least a part of their day online, with 33% reporting that they spend at least a quarter of their day connected to the Internet (mtvU and Associated Press, 2010b). Additionally, the administration of the campus in this study uses e-mail as the primary method of contacting students, and many classes utilize online quizzes or reading materials. There is an expectation that students on this campus are checking e-mail and have access to the Internet, whether in their

room, apartment, or the library. I employed an Internet survey, as it is both the most efficient and accessible method for this population.

Online surveys have many benefits. Online tools allow for ease of design such as skip logic when questions pertain to only a portion of participants, drop down menus when there are many choices, eye catching layouts (Dillman, 2007), and an even higher speed of return than paper and pencil surveys (Fowler, Jr., 2009). In addition, online surveys provide participants with time to think about their answers or check information when items require recall (Fowler, Jr., 2009). Unlike phone or in-person surveys, participants do not have to provide their answer directly to the researcher, which may encourage them to answer more honestly when asked sensitive questions (Fowler, Jr., 2009). Online formats have been shown to be an effective way of measuring college student stress and produce results similar to paper and pencil surveys (Fortson, Scotti, Del Ben, & Chen, 2006).

There are some challenges when utilizing Internet surveys, such as being limited to participants with computer access and skills, researcher access to e-mail addresses, and enlisting the cooperation of students with whom a researcher may not have regular contact (Fowler, Jr., 2009). As stated above, using the Internet should not limit participants in this case, because students are already expected to be using the Internet.

In some cases, Internet surveys can be a challenge because there is no "phonebook" for e-mail addresses. One cannot randomly dial e-mail addresses as they might on the phone, or select a sample from addresses listed in the phonebook. However, each student in the target population for this study is provided with a University e-mail

address that they are expected to check regularly for University communications, which I was able to access through the Student Activities and Residential Life offices.

Enlisting cooperation could have been a challenge, because I did not have regular contact with most of these students. I addressed this in three ways. First, I made sure that the survey was salient to them (Dillman, 2007; Fowler, Jr., 2009). People are more likely to respond to a survey that asks about their current behavior, feelings, and interests. My survey asked questions related to their current experiences as a student leader. Second, I notified staff in Student Activities and Residential Life that the survey was happening so that advisors and administrators could encourage students to complete the survey and would be able to answer general questions if a student came to them. In addition to the above mentioned methods, I used an incentive to encourage student participation. Establishing reciprocity with participants is integral to the success of a survey, and incentives can be either social ("you will benefit from this information because…") or material (money or prizes) (Dillman, 2007). In this case, there was not a clear social benefit to the participants. Consequently, I opted to offer a lottery-based, material incentive. When I invited students to participate, I indicated that students who completed the survey would be eligible to win one of three $20 gift certificates to a popular, local pizza restaurant.

There is some debate about the usefulness of incentives and lotteries (see for example, Cook, Heath, & Thompson, 2000). However, there is recent evidence that lotteries can contribute to higher response rates (Deutskens, De Ruyter, Wetzels, & Oosterveld, 2004; Laguilles, Williams, & Saunders, 2011) and can lower the number of students who start but do not finish a survey (Laguilles, Williams, & Saunders, 2011).

Though some suggest that incentive type does not matter (Deutskens, De Ruyter, Wetzels, & Oosterveld, 2004), there is evidence that the type of incentive can either narrow or enhance the gender gap (Laguilles, Williams, & Saunders, 2011). Typically, women respond to surveys at higher rates than men do, but a well-chosen incentive can narrow this gap, whereas, a poorly chosen incentive can widen it. Participants in this study had the opportunity to win a gift certificate to a pizza restaurant that is popular among most of the undergraduate students, men and women alike. It was my hope that this would both boost the survey completion rate and entice men to participate.

Communication

I used four points of contact to maximize survey response (Dillman, 2007). Because technology has forced researchers to change their methods rapidly, I considered whether past methods for ensuring high response rates would work with the new tools of the trade. In this case, would communication methods that ensured high return rates for mail surveys work with Internet surveys? In fact, methods that work to increase response rates for mail surveys are also effective for Internet surveys, including using multiple points of contact and personalizing communications (Cook, Heath, & Thompson, 2000; Dillman, 2007; Fowler, Jr., 2009).

The first point of contact with participants was a pre-notice e-mail. These notices are most effective when sent out two days before the survey (Dillman, 2007). As a result, the pre-notice was sent out on February 4th, 2013 and the survey began on February 6th. I gave participants until February 15th to complete the survey. While most students were included in this mailing, SGA took longer to provide a complete list of participants. Most

SGA members were included in the initial mailing, but 22 students received a pre-invite on February 11th, and I gave them until February 19th to complete the survey.

The pre-invite informed participants that a survey would be sent to them in two days, informed them of the purpose of the survey, thanked them in advance, and let them know about the incentive. These are all important characteristics of a pre-notice and can help to increase response rates (Dillman, 2007).

The second point of contact was the survey invitation. This communication consisted of an e-mail "cover letter" containing a link to the survey. The e-mail outlined why they were selected to participate in the survey, the purpose of the survey, a statement of confidentiality, instructions, and who to contact with a question (Dillman, 2007; Fowler, Jr., 2009). The e-mail also included my best estimate of the time it would take to complete the survey. The cover letter can reduce the perceived cost to the participant when it indicates that the time it will take them to complete the instrument is short (Dillman, 2007).

The third and fourth points of contact were reminder e-mails. Without follow up contacts, surveys can have a return rate that is 20 to 40 percentage points lower than surveys that do utilize follow up communication (Dillman, 2007). These follow ups work best when sent early so that the survey is fresh on people's minds (Deutskens, De Ruyter, Wetzels, & Oosterveld, 2004). I sent the first reminder four days after sending the survey and the second eight days into the survey. For students who I added later, I sent the first reminder three days after the initial e-mail and the second e-mail five days after the invite. By utilizing the communication methods outlined in the Tailored Design Method,

my response rates were high enough to ensure that the data would be useful (Dillman, 2007).

Informed Consent and Confidentiality. I informed participants that participation in the survey was voluntary in the invite and the introduction to the instrument. Clicking on the "next" button to enter the survey served as implied consent and I informed participants that they were able to skip questions that they did not want to answer.

Confidentiality notices were included both in the e-mail invite and on the introductory page to the survey before respondents clicked "next." In order to preserve confidentiality, I saved e-mail and IP addresses only with the aggregate data set on the server on which the survey was housed. I did not download any of the identifying data with the data set, and I only used e-mail addresses to select winners for the lottery incentive.

Data Analysis

For this study, I utilized data gathered from a population. Typically, significance tests are not used unless the data are collected using a random sample (Hagood & Price, 1952). Researchers using random samples use statistics to determine whether differences are significant. In a population or census study, researchers consider all differences real and significant. Because I did not select a random sample, statistical theory suggests that I would not use significance tests to determine sample bias.

However, there is some debate about how to define a population. Does a true population really exist? Any population is a subset or sample of a larger, ever changing population (Rubin, 1985). Populations are different at the time of data gathering than they

will be when the study is published due to birth, death, immigration, etc. Therfore, a population at one time point is merely a purposeful sample of a constantly evolving population.

In this case, students might have chosen to sever ties with an organization, graduated, matriculated, or separated from the University between the time I asked them to participate and the completion of the study. As a result, the memberships of organizations are not static. They, like the general population, are ever changing. Therefore, I considered the data to be a sample of a larger population and employed tests of statistical significance when analyzing data. I analyzed all data using SPSS, a computer based statistical program that can perform a wide array of statistical tests (Cronk, 2004). I have included a summary of research questions, statistical tests, and independent and dependent variables in Table 1.

I considered a p-value of .05 significant. A p-value indicates the risk of a Type I error (Mertler & Vannatta, 2010). A Type I error occurs when one falsely concludes that the hypothesis is wrong. For instance, a null hypothesis for this study was that stress and problem-solving confidence are not related. If I ran statistical tests and determined that, in fact, these two factors are related, I would reject my null hypothesis if p was less than or equal to .05. In this case there is a 5% chance that I have incorrectly rejected my null hypothesis.

Demographics. I calculated frequencies to determine if participants were demographically representative of the target population with respect to gender, class year, and organization type. In any sample, there is a risk of selection bias (Patten, 2009). People self-select whether they will take the survey. There may have been differences

between those who did and did not participate. I utilized cross-tabs and Chi-squared tests to determine whether students who started the survey but did not finish differed from their peers with respect to demographic characteristics (Cronk, 2004).

Congruence with previous research. Because I utilized published scales with established reliability and validity over time, it was not necessary to utilize factor analysis. Previous research suggests that there is a correlation between students' problem-solving confidence and their perceived stress (Largo-Wight, Peterson, & Chen, 2005; MacNair & Elliott, 1992). I calculated a Pearson correlation coefficient to determine the extent to which a relationship existed between the two scales in the survey. Pearson correlation coefficients (r) are used when interval or ratio data are being used (Mertler & Vannatta, 2010). In this case, I used interval data. Correlation coefficients (signified by r) range from -1 to 1. Correlations of +/- .3 or below were considered weak, .31 to .7 were moderate, and .71 to 1 were considered strong.

I also calculated the Chronbach's alpha for the scales, a measure of internal consistency (Cronk, 2004). This test served to establish reliability by determining the degree to which each item that makes up the scale is measuring the same concept. Values range from 0 to 1. Higher scores indicate greater reliability.

I utilized item analysis to determine whether deleting any scale items would increase the overall Chronbach's alpha of the scales. Based on this analysis, I then made determinations about whether to continue to include items that lowered the Chronbach's alpha. Items were only removed if they lowered the score by .1 or more.

As was the case for all survey items, students were not required to answer all scale related questions. As a result, some students responded to some questions for a

scale and not others. In order to include as many students as possible, I calculated the scores for all students who responded to at least seven of the 10 (PSS) or 11 (PSI) items on the scale. The final score is an average of the scores on each of the items that the student answered rather than a total for all scores. Typically, both scales are reported using a total score (Cohen, 1994; Heppner & Peterson, 1982). However, because I included all participants who completed at least seven items of the scale, I report the results as mean scales.

Involvement, stress, and problem-solving confidence. I measured involvement two ways in the instrument: the number of organizations a student belonged to and the number of hours they spent participating in activities related to their organizations. I utilized Pearson correlations to determine to what extent involvement was correlated with perceived stress and problem-solving confidence.

I calculated one-way analysis of variance (ANOVA) to determine whether group differences on the PSS and PSC scales were significant. ANOVA is similar to a t-test, in that it compares the means of groups, but one uses ANOVA when there are more than two groups being compared (Mertler & Vannatta, 2010). For this study, I used ANOVA to determine differences between types of organizations for PSS and PSC. I also used ANOVA to determine whether there were differences in involvement, PSS, and PSC scores between different races/ethnicities and to explore whether there were variations between executive board members and general body members. Because some racial/ethnic groups had only a few participants, I also used t-tests to compare White students and students of color on measures of involvement, PSS, and PSC.

I used T-tests to explore whether differences existed between genders with regards to involvement. The t-test measures the differences between the means of two groups (Mertler & Vannatta, 2010). For this study I used t-tests to determine gender differences on both scales. I utilized crosstabs to compare the racial/ethnic makeup of each organization type

Technology usage. I utilized Pearson correlation coefficients to determine the extent to which PSS and PSC scores were related to the number of hours participants spent online and texting and the number of times they logged on to social networking sites. These correlations helped me to draw conclusions about the interactions of technology and stress, in particular.

I used ANOVA to explore the differences between races/ethnicities in time spent online, number of texts, and social network usage. I also used T-tests to explore the differences between genders and students' time online, number of texts, and social network usage. I used Cross-tabs to determine differences between genders and races/ethnicities for smartphone ownership and social networking accounts.

Explanatory model of stress. Multiple regression analysis either predicts or explains relationships among variables (Allison, 1999; Ethington, Thomas, & Pike, 2002; Mertler & Vannatta, 2010). Many studies of higher education use multiple regression analysis to explain relationships between variables. Regression can help to explain how a phenomenon (in this case, stress) varies from student to student. Multiple regression analysis assumes that the dependent variable is "related to and influenced by multiple interrelated factors (the independent variables)" (Ethington, Thomas, & Pike, 2002, p.264).

I utilized linear multiple regression to develop a model for explaining stress in relation to the independent variables. Linear regression creates a best fitting line that I could use to predict the value of a dependent variable based on the values of the independent variables (Allison, 1999; Mertler & Vannatta, 2010). In standard multiple regression, all variables are entered simultaneously and each independent variable is measured as if all others had already been entered into the equation and evaluated on the basis of what it adds to the prediction of the dependent variable (Mertler & Vannatta, 2010). Using this statistical tool also allows me to isolate relationships, effectively controlling for variables that contribute to stress and isolate the relationship between stress and problem-solving confidence. I have included a summary of independent variables in Table 2.

Standard practice recommends having fifteen subjects for every independent variable when utilizing regression (Mertler & Vannatta, 2010). The model I employed included 20 independent variables, requiring at least 300 participants to employ regression. I did meet this threshold and was able to utilize regression analysis. In order to include the highest number of cases possible, I used mean replacement for blank values.

Before entering variables into the equation, some required dummy coding (Allison, 1999; Ethington, Thomas, & Pike, 2002). I used dummy coding to assign values to variables that do not have a numerical value, such as gender. When a variable has more than two categories, I omitted one. Omitted categories are up to the researcher, and choosing one over the other does not make a difference in the outcome (Ethington, Thomas, & Pike, 2002).

There are a few important statistics to report when using regression. R^2 explains the amount of variance in the dependent variable explained by the independent variables (Mertler & Vannatta, 2010). For example, an R^2 of .145 explains 14.5% of the variance in the dependent variable.

Tolerance statistics measure the collinearity of independent variables (Allison, 1999; Mertler & Vannatta, 2010) and range from zero to one. Values closer to zero indicate that the independent variable is collinear with another variable. There is not a set value for excluding variables based on their tolerance value. However, Allision (1999) suggests that one should be concerned if this value is less than .4. It would be false to assume that any one variable influences the dependent variable on its own. Therefore, some collinearity is expected. For example, it may be found that students of color are less likely to have access to technology than Caucasian students. In this case, race would be correlated to technology. As a result, to assert that technology alone influences stress would be false. Race and technology are not completely independent of one another.

Beta coefficients for each independent variable, also known as the regression coefficient, become the constant for the variable in the regression equation (Mertler & Vannatta, 2010). Each variable has an associated Beta coefficient. When reported, standardized Betas are used. These represent the regression coefficient if all independent variables were measured using the same metric (Ethington, Thomas, & Pike, 2002). This statistic can also be used to describe the "weight" of each independent variable (Mertler & Vannatta, 2010). That is to say, the Beta value describes how much influence each variable has in the model. Higher values indicate greater influence. Significance tests are

utilized to determine whether these values are statistically different from zero (Allison, 1999).

Mahalanobis distances are calculated when regression is utilized and used to identify the outliers (Ethington, Thomas, & Pike, 2002; Mertler & Vannatta, 2010). In order to determine whether there are outliers, I first determined the critical value. The critical value was determined by using the number of independent variables as the degrees of freedom and then using a critical value chart to determine the critical value (Mertler & Vannatta, 2010). In this case, the degrees of freedom value was 20 and the critical value was 45.315. Mahalanobis distances above 45.315 indicate a possible outlier, and I explored these cases further (Ethington, Thomas, & Pike, 2002; Mertler & Vannatta, 2010). I ran the model both with and without outliers to explore their effect on the overall model. Results for the regression model can be found in Table 15.

I used residual plots, which plot the Mahalnobis distance and the predicted value using the model, to confirm whether the relationship between independent and dependent variables is linear (Ethington, Thomas, & Pike, 2002; Mertler & Vannatta, 2010). These plots should be roughly rectangular and scores should be clustered around the center (Mertler & Vannatta, 2010).

CHAPTER 4

RESULTS

Of the 2048 students invited to take the survey, 715 took the survey. I removed respondents who did not meet eligibility requirements (e.g. membership in study organizations, current student status, undergraduate v. graduate student) from the final data set. I determined which participants were ineligible based on two checks: responses to survey items intended to determine eligibility and whether they were still an active student when checked by the campus assessment office. In total, I determined that 139 students who I initially invited to participate were actually ineligible. As a result, the total target population was 1909. A total of 627 eligible students responded to the survey providing a final response rate of 32.84%, commensurate with other well conducted studies' response rates for web-based surveys (Cook, Heath, & Thompson, 2000; Kaplowitz, Hadlock, & Levine, 2004; Laguilles, Williams, & Saunders, 2011).

Of the 627 students who took the survey, 552 completed the entire survey (88.0%). I defined completing the survey as having reached the end of the survey and completing at least one item on each page. Table 4 outlines completion rates by gender, class year, race/ethnicity, and organization type. Black/African American participants completed the survey at a lower rate (77.6%) than their peers in other racial/ethnic groups. Students who were involved in more than one study organization completed the survey at a higher rate (94.3%) than students in any of the other organization categories. There were no other major differences in completion rates among participants.

Women were overrepresented among respondents. While 65.2% (409) of respondents were women, women comprised 55.87% of the study population (see Table

3). As was noted previously, women are more likely than men to complete surveys. When considering the data as an aggregate, it will be important to consider how women differ from men and how this might influence aggregate data. Whenever possible, I have reported statistics for men, women, and the aggregate.

Class years were approximately evenly represented, with about a quarter of the respondents being freshmen, sophomores, juniors, and seniors (Table 3). Multi-racial and White students were overrepresented among respondents (Table 3). These differences may be the result of overrepresentation of organization types or differences in reporting between the University and the study. For example, Student Government was primarily composed of White students. Because White students are overrepresented, it would skew the racial/ethnic data as well. As would be the case of any study that took place at a primarily White institution, aggregate data will skew towards the average of White students. As a result, whenever possible, I have broken data down by race/ethnicity in addition to providing the average for all participants.

Table 3 outlines the number of students involved in each of the organization types studied for both the population and participants. Students reporting that they were involved in more than one type of the organizations in this study were overrepresented (see Table 3). This is likely due to how Student Activities kept rosters for Cultural organizations. While Student Activities, Residential Life and Student Government kept official records for Student Government, the Residence Hall Association (RHA), and Greeks, Cultural organization memberships were tracked through a website with which students self-select to enroll. As a result, it is likely that there was a group of students that are involved in Cultural organizations who did not receive invitations for the study.

Additionally, it is apparent that there were some students who, according to my records, were only involved in one type of study organization but were actually involved in more than one. This is likely a result of these students not enrolling at all on the website for Cultural organizations or only officially enrolling in one type of organization while participating in others. RHA students were also overrepresented in the participants. This is likely due to the fact that they were familiar with me and had received e-mails from me previously as a result of their involvement in these organizations.

Respondents ranged in age from 17 to 34. The median age for respondents was 20 years. I asked participants to identify the total number of student organizations they were involved in on campus, including the four types of organizations I studied as well as others in which they might be involved. The median number of organizations was two and the mean was 2.4. Of the 608 respondents that answered the question, 50.2% said that they were on the Executive Board of an organization on campus, and 10.2% reported that they were on the Executive Board of more than one organization. Information about the target study population was not available for these items. Therefore, I was not able to determine whether the proportion of students serving on an organization's executive board was representative of the population.

Descriptives

I utilized one-way ANOVA to determine whether there was a significant difference in the number of organizations participants in each racial/ethnic group were involved in and found that there was a significant difference ($F(6, 587)=4.85$, $p<.001$). The mean number of organizations participants were involved in by race/ethnicity is provided in Table 5. A post-hoc Tukey test indicated that significant differences existed

between Black/African American students and their Multi-Racial and White counterparts ($p<.05$). On average, Black/African American participants were involved in a greater number of student organizations (M=3.16, SD=1.4) than their peers, at more than ½ of a standard deviation from the mean of all participants. Asian students had the second highest mean at 2.77 (SD=1.4).

Table 6 outlines what types of organizations students are involved in by race/ethnicity. Almost 2/3 of Black/African American participants are involved in Cultural organizations. Almost 60% of White participants were members of Greek organizations. Other racial/ethnic groups have more evenly distributed involvement across organization types.

Table 7 outlines the racial/ethnic makeup of each organization type. As you will see, Greek organizations and SGA are more than 90% White, though White students only comprise 65.39% of respondents. White students comprise only 13.8% of Cultural organizations and 41% of the participants who indicated involvement in more than one organization type. Cultural organizations include a large percentage of Black/African American (44.7%) and Asian (30.9%) students. Black/African American and Asian students represent 10.7% and 13.6% of the study participants respectively. Asian students also comprised nearly 1/3 of students involved in multiple organization types and only 2.7% of Greeks. All other organizations' memberships roughly reflected the makeup of study participants.

Congruence with Previous Research

As outlined above, scale scores were determined by calculating the mean of all items for all participants that completed at least seven items on the scale. For the

Perceived Stress Scale (PSS), 550 participants completed the entire 10 item scale and 572 completed at least seven items. For the Problem-Solving Confidence scale (PSC), 551 participants completed the entire 11 item scale and 588 completed at least seven items. Both scales had high levels of internal consistency, as indicated by their Cronbach's alpha (PSS=.85 and PSC=.86). I ran item statistics to determine whether any items on the scale lowered the Cronbach's alpha score. In other words, I used Cronbach's alpha to determine whether deleting any items on a scale would increase the score. All items on the PSS contributed positively to the scale. Item ten ("In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?") on the PSC slightly lowered the alpha score. With the item, the Chronbach's alpha is .86. Without it, the alpha increases to .87. However, in order to compare to previous studies and because the scale has high internal consistency even with this item, I chose to include item ten when calculating respondents' scores on the PSC. There was a moderate, negative correlation between respondents scores on the PSS and PSC (r=-.354, p=.001) (Figure 1). Higher problem-solving confidence was related to lower perceived stress. This negative correlation is consistent with previous studies of college students (for example, Baker, 2003; Fraser & Tucker, 1997) and suggests that the measures used are valid for this population.

Involvement and Stress

The average PSS score for all respondents was 1.60 (n=572) and scores ranged from 0 to 3.6 on a scale from 0 to 4. The median for the total number of student organizations participants were involved in, including the four types in this study, was two and the mean was 2.42. The median number of organization types a student was

involved in was 1 and the mean was 1.12. On average, participants spent 11.53 hours on organization-related tasks the previous week. Attending meetings (3.15 hours) and attending events (2.93 hours) were the two tasks respondents reported accounted for the greatest amount of time. Planning for meetings (1.05 hours) was the task on which students reported spending the least amount of time. A breakdown of time on tasks related to their student organizations can be found in Table 8.

There were no significant correlations between respondents' PSS scores and total time spent on organization-related tasks or the total number of organizations in which a student was involved. None of the individual organization tasks (e.g. planning meetings, attending events, etc.) were correlated with PSS. However, the number of study organization types a student was involved with was weakly, positively correlated to the PSS score ($r=.101$, $p=.05$). In other words, if a student was involved in more than one type of organization studied, they were more likely to have a slightly higher score on the PSS.

As another measure of involvement, I ran a one-way ANOVA to determine whether there was variation between participants who did not serve as members on an executive board and those who did. The mean PSS scores were 1.6 for students who did not serve on an executive board ($SD=.57$), 1.6 for students on one executive board ($SD=.63$), and 1.8 for students who served on the executive board of more than one organization ($SD=.60$). There were significant differences between these groups ($F(2, 568)=3.1$, $p<.05$). A post-hoc Tukey indicated that the significant difference was between participants who served on one board and students who served on more than one.

Students who served on more than one executive board reported slightly higher stress than those who did not, though this difference was relatively small.

Differences between organization types. I ran one-way ANOVAs to determine whether differences existed between the PSS scores of students involved in different types of organizations. The results of the ANOVA indicate that there are significant differences between organization types ($F(4, 567)=3.91$, $p<.01$). The mean PSS score and standard deviations for each organization type can be found in Table 9. A post hoc Tukey test indicated that the significant differences existed between students involved in Greek organizations and students who were involved in multiple types of organizations ($p=.05$). Students involved with more than one type of organization reported the highest mean PSS score ($M=1.77$, $SD=.66$) while Greeks reported a lower average average ($M=1.52$, $SD=.56$). These results suggest that students involved with Greek organizations perceived a lower level of stress in their lives than students who were involved in more than one type of organization. While SGA participants had the lowest mean PSS score (M-1.41, $SD=.44$), any differences between their scores and the scores of other respondents were not significant.

Differences between genders. The mean PSS score for women was 1.57 and was 1.64 for men. After running a t-test, I found no significant difference between the PSS scores for men and women ($t(349)=-1.18$) Interestingly, this is inconsistent with previous studies investigating the relationship between stress and gender.

Differences between races/ethnicities. A one-way ANOVA indicated that there were significant differences between racial/ethnic group scores on the PSS ($F(6, 557)=2.55$, $p=.05$). A post hoc Tukey test indicated that the significant differences were

between White (M=1.54, SD=.59) and Asian (M=1.77, SD= .55) participants (p=.05). Asian participants had significantly higher perceived stress than their White peers. Asian participants had a higher mean PSS score than all groups with the exception of Hawaiian/Pacific Islanders (M=1.90, SD=1.10). However, only three participants indicated that they identified as Hawaiian/Pacific Islander, making it impossible to compare them with other groups. American Indian/Alaska Natives had the lowest score (M=1.20, SD=.66). However, this group is also too small for meaningful comparisons. In order to include all participants, including those in groups too small for meaningful comparison, I ran a t-test to compare means of White participants and those who were students of color. There was a significant difference (t(570)=-3.19, p=.001) between White students (M=1.55, SD=.59) and students of color (M=1.72, SD=.60). Students of color had a higher mean PSS score, indicating greater perceived stress, than their White peers did. Average scores for each race/ethnicity can be found in Table 10.

Involvement and Problem-Solving Self-Efficacy

The average PSC score for all respondents was 4.94 (n=588), and scores ranged from 1.09 to 6.0 on a scale from 1 to 6. There was no significant correlation between PSC and the total number of organizations a student was involved with or how many organization types in which a student was involved. There was a weak, positive correlation between the time a participant spent on tasks related to student organizations and mean PSC score (r=.121, p=01). Time spent on organizations was collected by asking how much time a participant had spent on specific tasks the previous week (e.g. planning meetings, attending events, etc.), and some tasks were weakly, positively correlated to the PSC. These included time spent attending meetings (r=.158, p=.01),

planning meetings (r=.094, p=.05), and planning for events (r=.102, p=.05). Respondents who indicated that they spent more time on the aforementioned tasks were more likely to have a slightly higher confidence in their problem-solving abilities than their peers who spent less time on these tasks.

I utilized a one-way ANOVA to determine whether there were significant differences in problem-solving confidence between participants who served as members of one executive board (M=5.0, SD=.56), those who served on more than one board (M=5.0, SD=.52), and those who did not belong to an executive board (M=4.9, SD=.53). There was a significant difference between these groups ($F(2, 582)=5.1$, $p<.01$), and a post-hoc Tukey test indicated that the significant difference was between participants who served on one executive board and students who were not executive members ($p<.05$). Participants who did not serve as executive board members had a slightly lower average PSC score. However, this difference is very small, and is not meaningfully significant.

Differences Between Organization Types. A one-way ANOVA indicated that the PSC scores varied significantly by organization type ($F(4, 583)=5.56$, $p=.001$). A post hoc Tukey test indicated that significant differences existed between SGA (M=5.15, SD=.54) and cultural organizations (M=4.78, SD=.50, p=.05), cultural organizations and Greeks (M=5.03, SD=.5, p=.001), and participants involved in multiple types of organizations (M=4.84, SD=.71) and Greeks (p=.05). Participants involved in cultural organizations reported the lowest problem-solving confidence, while SGA members had the highest confidence. The mean PSC score for members of RHA (M=4.93, SD=.47) did not differ significantly from other organization types and was close the mean for all

participants (M=4.94, SD=5.5). The average PSC scores for each type of organization can be found in Table 9.

Differences between genders. The average PSC score (M=4.94) was identical for women (n=382, SD=.55) and men (n=200, SD=.54) (t(580)=.08).

Differences between races/ethnicities. A one-way ANOVA indicated that PSC scores varied by race/ethnicity (F(6, 573)=5.72, p=.001). A post hoc Tukey test indicated that the significant difference was between White (M=5.02, SD=.50) and Asian students (M= 4.64, SD=.69, p=.001). White students reported the highest confidence in their problem-solving skills, while Asian students had the lowest mean PSC score. All other racial/ethnic group mean PSC scores were in the range of 4.87 and 4.90 and did not vary significantly from those of other groups.

Because some racial/ethnic groups were too small to allow for meaningful comparisons, I also utilized a t-test to determine if there were significant differences between the means of White students (M=5.02, SD=.50) and students of color (M=4.79, SD=.62) and found that White students were more likely to have greater confidence in their problem-solving skills than students of color were (p<.001). The average PSC scores for each racial/ethnic group can be found in Table 10.

Technology and Stress

On average, participants reported spending 10.86 hours online during the previous day. A breakdown of what participants spent their time doing online can be found in Table 11. I calculated a Pearson correlation to determine the relationship between the total amount of time online and stress and found no significant correlation.

The majority of participants reported owning a smartphone (86.8%), having an active Facebook profile (96.3%), and using Twitter (69.0%). The mean number of text messages participants reported sending the previous day was 80.91 (SD=115.7) and the median was 45. The mean number of times students logged into social media sites was 18.05 (SD=50.7), and the median number was ten. The number of text messages sent and number of times students logged into social media sites the previous day were not significantly related to their PSS scores.

Differences between genders. T-tests revealed no significant differences were found between genders and the time that they spent online ($t(540)=.42$, $p=.68$), the number of text messages they sent ($t(543)=1.59$, $p=.11$), or the number of times they logged into social media the previous day ($t(489)=.91$, $p=.36$). A breakdown of gender totals for active Facebook profiles, Twitter usage, and smartphone ownership can be found in Table 12. The percentages of men and women were roughly equal for having an active Facebook profile, using Twitter, and owning a smartphone. There do not appear to be significant differences in technology use by gender.

Differences between races/ethnicities. I used a one-way ANOVA to determine if there were differences between races/ethnicities and their technology usage. I found significant differences between groups and the number of times they logged into social media sites ($F(6)=25.66$, $p=.001$) and time spent video chatting ($F(6)=2.4$, $p<.05$), on doing homework online ($F96)=3.84$, $p<.001$), and reading blogs ($F(6)=3.77$, $p=.001$). There were no significant differences for total time spent online, number of texts sent, or time spent on social media sites, instant messaging, watching TV/movies, playing games, writing blogs, or reading/watching the news.

Post hoc Tukey tests further illuminated where differences existed. Significant differences existed between American Indian/Alaska Natives (M=337, SD=574.19) and multi-racial (M=24.35, SD=14.89, p=.001), Asian (M=14.63, SD=27.15, p=.001), Black/African American (M=15.69, SD=32.61, p=.001), Hawaiian/Pacific Islander (M=20.00, SD=.00, p=.001), Hispanic/Latino (M=11.56, SD=13.86, p=.001), and White (M=16.69, SD=24.60, p=.001) students and the number of times they logged into social media sites. I will note here that only three students reported being American Indian/Alaska Natives. Therefore, the group is too small for meaningful comparison, and differences are likely the result of one American Indian/Alaska Native participant reporting logging into social media sites 1,000 times the previous day, which is likely an exaggeration.

Black/African American students spent significantly more time on e-mail (p=.05), online homework (p=.05), and reading blogs (p=.01) than White students. Black/African American participants averaged 2.58 hours on e-mail (SD=.58), 4.10 hours on homework (SD=3.07), and .67 hours reading blogs (SD=1.83). White participants spent 1.38 hours on e-mail (SD=2.78), 2.69 hours on homework (SD=2.03), and .22 hours reading blogs (SD=.51). Asian participants spent more time (M=.37, SD=.86) than White participants (M=.15, SD=.41) video chatting (p=.05). Hispanic/Latino participants (M=.81, SD=1.31) spent more time reading blogs than White participants (p=05). I found no other significant variances in time spent online between racial/ethnic groups. A breakdown of time spent online by race/ethnicity can be found in Table 13.

Table 12 outlines racial/ethnic group totals for active Facebook profiles, Twitter usage, and smartphone ownership. Black/African American and American

Indian/Alaskan Native participants were less likely to have an active Facebook profile. Because only three participants identified as American Indian/Alaska Natives, the group is too small for meaningful comparisons and will not be discussed further. While 96.3% of study participants had an active Facebook profile, only 85.5% of Black/African American participants had an active profile. Asian (45.0%) and Hispanic/Latino (54.5%) participants were less likely than respondents as a whole (69.0%) to use Twitter, while White participants (75.5%) report having an active Twitter account at a higher rate than their peers. There were no other substantial differences in Twitter, Facebook, and smartphone usage.

Explanatory Model for Stress

I utilized linear regression analysis to develop an explanatory model for stress and determine how independent variables related to the stress scores (PSS) of participants. This model also allowed me to control for a variety of variables related to stress and isolate those that were significant contributors to stress. Table 2 outlines the independent variables for this test. Table 14 includes a correlation matrix for all variables included in the final analysis of the explanatory model. This table includes all variables and flags those with significant influence on stress, including time spent online watching TV, time on social media sites, and PSC score.

This model was significant in predicting stress ($F(20, 606)=6.21$, $p<.001$). The residual plot (Figure 1) indicates that the relationship between the independent and dependent variables is linear. The initial results of the regression analysis indicated that the independent variables explained 14.3% of the variance in the independent variable ($R^2=.170$, Adjusted $R^2=.143$, $p<001$). Table 15 outlines Beta and significance values for

each independent variable. The amount of time spent online watching/reading the news (standardized Beta=-.148, p<.05) and PSC scores (standardized Beta=-.357, p<.001) were significant predictors of PSS. No other independent variables were significant predictors in the initial model.

Once initial results were obtained, I used the Mahalanobis distances to determine whether there were any outliers among participants. I utilized 20 independent variables, which meant that there were 20 degrees of freedom in a Chi-squared test, such as the test used to determine the Mahalanobis distance. The critical value for 20 degrees of freedom is 45.315. Forty-one cases had Mahalanobis distances greater than the critical value. I excluded these participants and reran the analysis.

Once I excluded outliers, the final model accounted for 19.6% of the variance in stress among participants (R^2=.224, Adjusted R^2=.196) and significantly predicted stress (p<.001). Once outliers were removed, three independent variables had a significant influence on stress: time reading/watching the news (standardized Beta=-.082, p<.05), time on social media sites (standardized Beta=.116, p<.01), and PSC score (standardized Beta=-.417, p<.001). Time on social media sites had a positive relationship with stress. That is to say, participants who spent more time on social media site tended to report slightly higher perceived stress. Time spent reading and/or watching news had a negative relationship with PSS score. Unexpectedly, participants who spent more time consuming news were more likely to report a lower stress score. However, the standardized Beta for news was very low, suggesting a low influence on stress. PSC score was the most related to PSS score with a negative relationship. As expected, participants who had more confidence in their problem-solving abilities generally reported lower perceived stress.

Table 15 provides Standardized Beta and significance values for all independent variables once outliers were removed. The residual plot (Figure 2) indicated that the relationship between the independent and dependent variables is linear.

Limitations

This study was exploratory in nature, and, as a result, has limitations that must be considered before drawing broader conclusions or applying the findings in practice. Here, I will highlight the most significant limitations.

This study focused on one campus. As a result, some groups (e.g. American Indian/Native Alaskan) were represented in numbers that were too small to allow for meaningful comparisons. Additionally, the study institution was a mid-sized, four-year, public, residential, primarily White campus, and the experiences of participants in this study might limit the external validity. For instance, Cultural organizations may serve a different role on a primarily Black/African American campus than they do on a primarily White campus. As a result, one might find that the outcomes differed for students involved in cultural organizations on campuses with a different racial composition. Practitioners and researchers alike should be cautious in drawing universal conclusions, and more research should be conducted to determine how different campus types might contribute differently to the experiences of students. Larger studies should also be conducted to allow for more meaningful comparison between racial/ethnic groups to better understand how their experiences and characteristics differ from those of their peers.

For this study, I only looked at four types of student organizations. While these groups included types of organizations not typically studied in student development

research (e.g. RHA) (Terenzini, Pascarella, & Blimling, 1996), there are many other types of student organizations on college campuses that may provide opportunities for problem-solving skill development and contribute to students' cognitive growth. Indeed, some may also contribute to stress reduction by providing students with outlets for their frustration or endorphin producing exercise. It is worth exploring how other organization types might contribute to the student experience.

As previously noted, I experienced challenges determining the memberships of cultural organizations. Due to the method of record keeping for these groups, it is likely that there were active participants who I did not invite to participate in this study. Therefore, it is possible that there may be differences that I could not capture here or that students who did not have the opportunity to participate would have caused mean scores for cultural organizations to center closer to the mean for all participants. While the records for cultural organizations were likely not complete, I did feel it was important to include these groups in the study. Because many students of color, in particular Black/African American students, are only involved in cultural organizations, I would have been remiss to exclude them in this study.

It is worth noting here that I did not include Greek organizations that historically serve underrepresented populations (e.g. historically Black/African American or Asian fraternities and sororities). Had they been included, demographics of Greeks, in particular the racial composition, would likely have looked very different. I chose to exclude these groups because, while they are Greek, they are also cultural organizations. I felt that this would confound the results, as they did not fit any one category and were very similar to

two of the categories in the study. Therefore, the experiences of these students are only included if they are members of other organizations.

Relationships reported in this study cannot be considered causal because of the survey design—independent of the cumulative nature of these effects. While involvement in student organizations provides a number of opportunities for student learning and growth, the learning that occurs is, "probably cumulative rather than catalytic" (Terenzini, Pascarella, & Blimling, 1996, p. 159). That is to say, the experiences that students have over a lifetime, both in and out of the classroom and organization setting, build upon one another. Any one experience would likely have a relatively small effect on overall learning, and that effect would be influenced by previous experience. It is unlikely that a student's first encounter with a problem would result in significant changes in their problem-solving confidence. However, as they experience novel problematic situations over time and discover new approaches, these experiences, in total, contribute to development of confidence in their abilities. Students' pre-college experiences would play a role in these findings, as well as their college experiences. I did not include a control group of students who are not actively involved in student organizations in this study, which further limits my ability to draw conclusions about the effects of involvement. Future studies could ask more questions to control for previous experience and/or include a control group to allow for greater comparisons.

While there are limitations to this study, as there are with any study, there is still knowledge to be gained from it. This exploratory study provides a jumping off point for a discussion about the role of involvement in helping students to develop skills that will

help them to manage stress and serve them well in their lives beyond college. Any limitations should be considered as opportunities for future research and exploration.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

With this study, I explored the relationship between stress and problem-solving confidence among college student leaders, controlled for a number of factors known to influence stress including technology, gender, and race. Guided by previous research about stress, I explored the relationships between technology use, race, gender, involvement, and problem-solving efficacy and student leaders' perceived stress. I found that not all of these factors were significantly related to stress. However, the combination of variables does contribute to our understanding of the lives of student leaders and factors that may contribute to stress student leaders experience on a day-to-day basis. In this section, I will discuss the implications of my findings and suggest areas for future research.

Problem-Solving Confidence

The primary focus of this study was to explore the relationship between problem-solving confidence and stress among student leaders. Not surprisingly, problem-solving confidence was moderately and negatively related to scores on the Perceived Stress Scale (PSS). On average, students with greater problem-solving self-efficacy reported experiencing less stress. Using linear regression, I controlled for a number of factors contributing to stress, including technology use, race/ethnicity, and gender. After controlling for these factors, PSC score was the most influential variable in the explanatory model for perceived stress (standardized Beta=-.417, $p<.001$). While students of color appeared to report higher levels of stress than their White peers in bivariate correlations, when other variables are controlled for through regression, race was no

longer a significant variable. This suggests that problem-solving confidence was the primary explanation for differences in stress levels among college student leaders. Previous bivariate studies have also found a negative relationship between problem-solving confidence and perceived stress (Davila, Constance, Burge, Paley, & Daley, 1995; Fraser & Tucker, 1997). Students with greater confidence in their problem-solving abilities believe they can effectively manage problems they encounter, and, therefore, challenges are less stressful for them than they are for their less confident peers (D'Zurilla & Sheedy, 1991). This study took research on stress one step further by controlling for a variety of variables that have previously been found to contribute to stress and confirmed that problem-solving confidence was the factor most related to a student's perceived stress level.

Not surprisingly, participants in this study scored on the high end of the PSC scale (mean score of 4.94 out of 6.0). One would have to be confident to run for office or join a group where they might not know anyone. How student leaders are distinctive relative to their non-leading peers warrants further study. Such investigation may help us to better understand how to most effectively support student leaders as well as other, less involved students.

Explanatory Model for Stress

Participants in this study had an average Perceived Stress Scale (PSS) score of 1.60 on a scale of 0 to 4 (n=572). Although this mean indicates that students tended to score on the "less stressed" end of the scale, scores are higher than the national norms provided by the scale author (Cohen, 1994). It should be noted that the norm group data are two decades old, and based on the knowledge that students have reported higher

levels of stress over the last three decades (American College Health Association, 2012), one would expect participants in this study to score higher than students from 20 years ago. On average, norm groups aged 18-29 scored 1.42. Student leaders in this study perceived their lives to be more stressful than college aged individuals from 20 years ago, and this was true across racial/ethnic groups. National norms were available for White, Black/African American, and Hispanic racial/ethnic groups, and participants in this study scored higher than their norm groups across the board. In this study, White participants had an average score of 1.54, Black/African Americans averaged 1.74, and Hispanics averaged 1.65. In the national study, participants who identified with each racial/ethnic group scored 1.28, 1.47, and 1.40 respectively. Because norms for the PSS are two decades old, future researchers should consider replicating this study with a control group of uninvolved students in order to allow for more useful comparisons.

Previous research outlined in the literature review suggested that technology use, minority racial status, and identifying as female would be related to higher levels of stress and problem-solving confidence would be negatively related to stress. I also expected to find that level of involvement would be positively related to scores on the Problem Solving Confidence (PSC) scale, based on Astin's Theory of Involvement and research about cognitive development and extracurricular involvement (e.g. Astin A. W., 1993; Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001; Kuh, 1995; Terenzini, Pascarella, & Blimling, 1996). Some of my findings indicate that previous research about stress may not always hold true for student leaders, while other findings such as the negative relationship between problem-solving self-efficacy and perceived stress, are consistent with previous studies.

Problem-solving confidence was, by far, the variable most related to stress. A number of other variables were included in the regression in order to better understand the relationship between stress and problem-solving confidence by controlling for factors known to contribute to stress. Each of the variables outlined in this section was included in the regression analysis because previous research suggested that they were related to stress. While social-media use and news consumption were the only two variables besides problem-solving confidence to rise to the level of significance, all variables are discussed here in order to provide a clearer understanding of their roles in students' lives.

Technology. Not surprisingly, student leaders in this study were very connected via technology. Participants reported spending almost half of their day online. The vast majority (87%) of students own a smartphone, and they reported sending and receiving an average of almost 81 text messages the previous day. The percentage of students who owned a smartphone was higher than I expected. In a 2011, study, only half of undergraduate students in a national survey had a smartphone (Dahlstrom, de Boor, Grunwald, & Vockley, 2011), versus 86.8% of this study's participants. It is possible that the percentage is higher in this study because it occurred two years later and more students have adopted the technology. It is also possible that the participants in this study adopt advanced technology more readily or have greater advantages that enable them to afford smartphones. Nonetheless, 86.8% of students utilize phones that provide them with a constant connection to the Internet and social media, in addition to the phone calls and text messages non-smartphones provide, and they use these phones to stay connected.

Participants varied in the number of text messages they sent and received, but they averaged almost 81 text messages per day, which translates to approximately 2,400

text messages per month. A national study of teen technology usage reported that teenagers sent and received an average of 3,700 text messages per month (Dokoupil, 2012), 1,300 more than participants in this study. It is not clear whether participants in this study under reported their text messaging or somehow differ from other teens with regard to how they use their phones. How student leaders use their phones is worth further consideration, as it might help practitioners understand how students connect to others and how best to connect with them. As we begin to learn more about how stress and technology use are related, an understanding of the relationship may also help us to design interventions aimed at helping students to manage their day-to-day stress.

I also asked students to report how much time they had spent the previous day watching or reading the news, whether on television or online. On average, participants spent about 39 minutes watching or reading the news. This practice, contrary to previous research (for example, de Wit, van Straten, Lamers, Cuijpers, & Penninx, 2011; Comer, Furr, Beidas, Babyar, & Kendall, 2008; Szabo & Hopkinson, 2007), was very weakly, and negatively related to stress in the linear regression model. Previous research indicated that those who spend more time consuming news would be more stressed. However, participants who devoted more time to news consumption were slightly more likely to have a lower PSS score. I questioned why more news consumption might be related to lower stress, especially given the number of negative stories in news broadcasts. "News" was not defined for participants in this this study, and it is possible that the type of news participants were consuming and the manner in which they were consuming it could, in fact, be stress-relieving rather than stress-inducing. In 2004, 21% of 18-29 year olds cited Saturday Night Live and the Daily Show as news sources about the presidential campaign

(The Associated Press, 2004). In 2007, Jon Stewart tied with Brian Williams, Tom Brokaw, Dan Rather, and Anderson Cooper as a journalist people admired (Pew Research's Journalism Project Staff, 2008). Shows such as Saturday Night Live and the Daily Show report the news with comedic and satirical twists. Consequently, although these shows may report on stories likely to be stress or anxiety inducing via a conventional news broadcast, they may actually reduce stress among their viewers because the news is delivered as comedy. An economic crisis might seem less stressful with funny captions and when politicians are being poked fun at. It also may be that these stories go less into the depth, including showing less disturbing footage, than evening news broadcasts do, glossing over the dire state of circumstances in news stories about war and economic collapse.

When young people do consume more traditional news sources, they may also be seeking to avoid those stories that are upsetting (Diddi & LaRose, 2006). College students are less likely than older adults to utilize news sources that go in depth. The school paper, Internet portals such as Yahoo, and late night comedians are cited as the most common sources for news. Diddi and LaRose describe college students as "news grazers." They may skim headlines, read human interest stories, or read about the latest celebrity breakup, but they are not likely to read an in-depth story about United States involvement in Afghanistan.

While news consumption was very weakly, positively related to stress in the final model, PSS score was not related to the usage of technology (e.g. time online, number of texts, etc.) in the linear regression model. While some research has suggested that stress increases with technology use (for example, Dokoupil, 2012 & mtvU and Associated

Press, 2006), other researchers have asserted that technology can also help connect students to loved ones and provide recreation that relieves stress (for example, Leung, 2007 and mtvU and Associated Press, 2010a). It is also possible that stress and technology usage were not correlated in this study because technologies such as cell phones and e-mail have become so ubiquitous that most students are using them at similarly high levels. It is possible that, with an average level of internet use well above the 38 hours per week that clinicians define as symptomatic of internet addiction (Dokoupil, 2012), participants are "maxed out" on the amount of stress the internet would bring to their lives. Technology may have become so normalized that less usage is more abnormal than high usage. As a result, we do not see a significant relationship between stress and technology use in the final model.

I included technology usage in the explanatory model to assess how usage might contribute to the overall stress of a student leader. In the final model, the amount of time participants spent on social media sites during the previous day was related to their PSS score (standardized Beta=.116, $p<.01$). Constant checking of social media sites has been linked to a Fear of Missing Out (FOMO) (Dokoupil, 2012). Many students constantly check these sites not wanting to miss out on opportunities and to avoid being the last to know the latest information. The constant checking in places a great demand on students' time, leading to increased stress (mtvU and Associated Press, 2006). Social media can also make students feel isolated, if they perceive their online "friends" having more fun, being happier, and being more successful than they are (mtvU and Associated Press, 2010a). It is also important to note that social media usage differed by race. Asian and Hispanic participants were less likely to use Twitter, and Black/African American

students were less likely to have an active Facebook profile, though these groups indicated greater perceived stress than their White peers.

While, like previous studies, the results regarding stress's relationship with technology were mixed in this study, my results suggest that social media usage is related to stress. The more time a participant reported spending on social networking sites the previous day, the more likely he or she would be to report a higher perceived stress level. As student affairs practitioners, we need to pay attention to the role that social media plays in the lives of our students. While we may find this to be an effective method for communicating with students, social media may also contribute to students feeling isolated and overwhelmed. Thus, social media is a double edged sword, and its usage is worth further exploration so that we may better support our students and help them to develop healthy habits. The findings of this study do support previous research about the relationship between stress and social media.

Race/Ethnicity. Previous research has indicated that the daily systematic oppression and micro-aggressions faced by racial and ethnic minorities can contribute to higher levels of stress than is experienced by their White peers (Museus, 2008; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008). Although I did not ask questions about stressors such as micro-aggressions, I did find that participants of color reported an higher average PSS score than their White peers (1.72 v. 1.55), consistent with previous studies exploring the relationship between race and stress. Although the ANOVA results indicated that the only significant differences were between White and Asian students, the two largest groups in this study. Other racial/ethnic groups had smaller numbers of participants, making comparisons difficult. T-tests indicated that White students reported

less stress than all students of color. In the final model, race was not a significant indicator of stress, suggesting that the differences in stress that appear to be attributed to race in an analysis of variance and bivariate analysis may actually be attributable to problem-solving confidence. Students of color reported less confidence in their problem-solving skills than their White peers, which may account for the differences in perceived stress. In order to test this idea, I ran the regression model and omitted PSC as a variable. Once PSC was removed from the regression equation, race did become a significant variable (standardized Beta=.012, $p<.05$). Students of color were dummy coded as 0 and White students as 1. Therefore, this result suggests that students of color were more likely to report higher perceived stress. Because race/ethnicity is not an influential variable in the regression equation when PSC is included, it suggests that the relationship between race/ethnicity and PSS score may be mediated by PSC. Race cannot be ignored as a part of the conversation about stress, and further study is warranted.

Gender. I found no significant difference between the mean PSS scores of men and women in this study, despite previous research indicating that women report feeling overwhelmed more often than men (American College Health Association, 2012; Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007; Reisberg, 2000). Gender was also not a significant indicator in the final model. My findings suggest that female student leaders may be different from their less involved peers.

Societally, young women lack role models in prominent leadership positions. For example, among Fortune 500 companies, only 15% of board members, 6% of executives, and 2% of CEOs are women (Eagly & Carli, 2008). The United States has never had a female president or vice president. Women compose only 18.5% of the U.S Congress

(Center for American Women and Politics, 2014) and 10% of governors (National Foundation for Women Legislators, 2014). Women in the business world face greater discrimination than their male peers (Eagly & Carli, 2008; Lemkau, 1982) and resistence to female leaders (Eagly & Carli, 2008). Typically, behaviors that benefit men in leadership roles are looked down on when exhibited by a woman (Eagly & Carli, 2008).

The fact that women have so few female role models in positions of power and leadership led me to question what would make a woman get involved in a collegiate leadership position. Might the reason that women in this study were so similar to men be because women who get involved have different characteristics than their female peers who do not get involved? It is possible that women who choose to get involved, like women in male-dominated professions, are different from their peers in important ways (Lemkau, 1982; Newton & Stewart, 2013). Women in male-dominated jobs more frequently report that they have male role models and tend to be more assertive than women in "gender-typical" jobs (Lemkau, 1982). On the job, these women tend to exhibit more androgenous, than feminine, behavior (Lemkau, 1982; Newton & Stewart, 2013). It is possible that women who get involved in leadership positions on campus exhibit some of these same traits. Perhaps the reason that I did not find a significant difference between women and men is because women involved in leadership positions experience less stress and have more confidence in their problem-solving skills than their less involved peers.

It is possible that it is student leaders in general who are different. However, I would have still expected to find a difference between men and women, leading me to believe that female student leaders may display more "masculine" qualities, similar to women in male-dominated careers. I assert that further research is required to ascertain

whether this finding is consistent in larger studies at multiple instutions, and, if it is, what is different about women in leadership oganizations than their peers who are not.

Involvement. Astin (1999) posited that it likely that there is a turning point whereby much involvement may lead to negative outcomes -- such as students becoming overwhelmed by their level of activity and the challenge of appropriately balancing involvement and their academics. I included a number of items in my survey designed to gauge how much time participants were spending on tasks related to their student organizations, as well as the number of different organizations in which they were involved. There was a weak, positive relationship between the number of study organizations in which a participant was involved and their perceived stress. Involvement in multiple types of study organizations, for example SGA and a Greek organization, was related to greater stress. However, the total number of organizations, including groups beyond the scope of this study, was not related to stress. This finding suggests that not all organizations are alike. Being involved in Student Government, where you are making campus decisions, debating hot topics, and reaching out to constituents may be a very different experience than being involved in the running club. If a student is involved in four organizations, two of which are organizations included in this study and two that are more recreational, it is possible that the two study organizations might put greater demands on time and increase stress, while something like running club would help to relieve stress. Therefore, being in four organizations might not lead to increased stress, but the two more demanding organizations could.

It may also be that students reported involvement in organizations in which they invest minimal time. A study participant might be a member of the snowboard club, but

may only attend their spring break trip to a local ski resort. However, being a senator in Student Government likely entails attending, and preparing for, regular meetings

Participants were also asked to indicate whether they were members of a student organization's executive board. Participants who were on more than one executive board had higher mean PSS scores. However, there was no significant difference between students who were on one executive board and those who were on none. This may be because executive board members also higher mean PSC scores. Higher confidence might help them to take the stress of leading an organization in stride because they believe that they possess the skills to lead and to effectively address any problems that might arise.

None of the involvement variables proved to be significant in the final explanatory model for perceived stress. However, as will be discussed in more detail subsequently, some of these measures were related to problem-solving confidence. While involvement is not correlated with stress, it is possible that it plays a role in developing problem-solving confidence.

Explanatory Model. Overall, the model explains approximately 20% of variance in the stress participants reported. The three significant variables in the model were problem-solving confidence, time engaged with social media, and news consumption. The factors included in this study were by no means exhaustive and were selected to ascertain how involvement and problem-solving confidence contribute to perceived stress. Because technology and race play a role in involvement in terms of how students spend their time with the organizations in which they are involved and the organizations they choose to affiliate with, these variables were also included. I explored how different

types of student organizations might influence problem-solving confidence and/or stress. This study provides a starting point from which to further investigate perceived stress, the role it plays in the lives of student leaders, and some possible interventions aimed at diminishing stress levels and helping students manage the stress they feel.

Student Leaders and Involvement

While the primary focus of this study was to explore the relationship between stress, problem-solving confidence, and involvement among undergraduate student leaders, there were other findings that also have important implications. Primary among these is that it is important for student affairs professionals to recognize that not all student leaders are alike. It would be a mistake to group all student leaders together and assume that they have the same experiences. There were a number of differences among student leaders that were illuminated in this study.

For instance, Black/African American students were involved in more organizations than their peers. While the mean number of organizations participants reported being involved in was 2.4, Black/African American students averaged 3.2. Why would Black/African American students be involved in more organizations than their peers of other racial/ethnic backgrounds?

African-American students are often told that they need to work twice as hard to get half as far in life (Drumming, 2013; Obama, 2013), and this expectation is reflected in popular culture. In a 2013 episode of the popular television show "Scandal," the lead character's father reminds her that their family motto is, "You have to be twice as good to get half as much," (Drumming, 2013). This is not just clever television writing, as Barack Obama pointed out in his 2013 commencement speech at Moorehouse College:

> Everyone of you have a grandma or an uncle or a parent who's told you that at some point in life, as an African American, you have to work twice as hard as anyone else if you want to get by.

This message is passed on to many Black students as children, and, as they enter college, they may feel that success means being more involved than one's peers. It is important for student affairs professionals to be aware of involvement levels among African American students. It is possible that high levels of involvement could be overwhelming for some students and negatively impact their success. Practitioners should also be aware of cultural messages communicated to African-American students and how such messages may impact involvement.

It is also interesting to note student involvement patterns by race/ethnicity. Nearly two-thirds of Black students in this study were involved in cultural organizations, and Black students comprise almost 45% of all cultural organization members. It is possible that at a primarily White institution (PWI) their time at cultural organization meetings and events are rare times where they are not the only person of color in the room. Involvement in cultural organizations gives students of color an opportunity to choose the people with whom they spend their time, something they cannot do in the classroom. In cultural organizations, they can decide on the people with whom they spend time. Cultural organizations likely provide a welcoming environment and help students to alleviate the stress of micro-aggressions they may experience. These organizations may function as "safe havens" where students don't have to explain their feelings because other group members share similar experiences. These types of safe spaces can help students transition to the college environment (Museus, 2008). Cultural organizations provide students an opportunity to come together, express their identity

freely, and begin to advocate for their needs. Therefore, it is not surprising that Black/African American students would choose to focus their involvement in cultural organizations. It is possible that, without these organizations to provide a safe-haven, we might see higher stress levels among minority students

There were other racial differences among student leaders, particularly with regard to problem-solving confidence. White students reported higher problem-solving confidence than their Asian peers. Among some Asians, especially Asian men, there is cultural value placed on self-effacement (Wong, et al., 2012). This cultural tendency for humility may be part of the reason that Asian participants reported lower confidence scores, though all minority groups reported lower average problem-solving confidence than their White peers. This suggests that lower confidence may also be related to micro-aggressions and societal oppression faced by racial and ethnic minorities on a day to day basis.

On average, students of color as a whole reported greater stress and less confidence than their peers. It should not be assumed that all student leaders at PWIs enter the arena of student involvement on equal ground. Instead, we should recognize the diversity of student backgrounds and experiences and tailor supports appropriately. Student affairs professionals should also investigate students' motivations for getting involved in particular types of organizations in order to more intentionally provide support and interventions. Understanding why students get involved will help student affairs professionals to target their efforts. For example, if students are getting involved in cultural organizations in order to have a space to discuss their experiences on campus with others who may have shared experiences, student affairs professionals could design

programming that engages students in dialogue. These dialogues, in turn, might enable administrators to better target their efforts at creating a welcoming and safe environment for all students.

Student Leaders as a Sub-Population

Several of my findings suggest that female student leaders may differ from their less involved female peers. Stress levels did not vary by gender, although in previous of general college student populations, men have reported being less overwhelmed than women (American College Health Association, 2012; Cohen, 1994; Pryor J. H., Hurtado, Saenz, Santos, & Korn, 2007; Reisberg, 2000). Problem-solving confidence also did not vary by gender, despite the fact that men typically score higher on the Problem-Solving Inventory, of which the PSC is a part (Brems & Johnson, 1989). The Multi-Institutional Study of Leadership indicates that men often have greater confidence in their abilities but less actual skill than their female peers (Dugan & Komives, 2007).

The differences from previous studies suggest that further research is warranted to investigate possible differences between student leaders and their less involved peers. Ideally, student affairs practitioners would hope for female and male students to have equal confidence in their problem-solving abilities. Studying student leaders may help illuminate how we can help college women who are not leaders to develop greater confidence and help assure student success.

Studying how student leaders differ from other students may also help us to better understand them as a sub-population. Further research may yield important insights that would improve our ability to adapt interventions and programs to the needs, skills, and

challenges faced by student leaders -- rather than adopting a one-size-fits-all model of program development.

Involvement and Student Outcomes

Involvement in student organizations provides students with opportunities to enhance their collegiate success (Foubert & Grainger, 2006). This study has begun to illuminate how different organizations and levels of involvement are related to different outcomes. For instance, Greeks and Student Government Association (SGA) students had significantly higher average PSC scores than students in cultural organizations. Greeks also had a PSC score that was significantly higher than that of participants involved in more than one type of study organization. It might be that students in these organizations are provided with opportunities to practice problem-solving, and, thus, have greater confidence in their skills. Alternately, these differences might be related to the lower average PSC score of minority participants, as Greeks and SGA are more likely to be White, or students involved in Greek organizations and SGA may come to the experience with greater confidence. I will also note that students with higher confidence may be more likely to join organizations in general. It is also possible that these organizations both contribute to the development of confidence and that this confidence is also related to race.

Cognitive development is complicated. While I cannot infer causality, it is possible that experiences in these student organizations have helped to develop participants' confidence in their problem-solving skills. A relationship between involvement and cognitive growth and skill development is to be expected. Out of classroom experiences have been cited by students as contributors to their cognitive

growth, including learning to make decisions and develop critical thinking (Kuh, 1995). Contrary to research indicating that Greeks show lower cognitive development than their peers in other involvement opportunities (Terenzini, Pascarella, & Blimling, 1996), in this study, they reported greater problem-solving confidence. If I had measured actual skill, it is possible that Greeks would have lower outcomes though they have higher confidence.

Student affairs researchers should continue to explore how involvement in different types of student organizations may be associated with cognitive development outcomes and student success. Research to this point has explored the outcomes for students involved in intercollegiate athletics and Greek organizations, as well as student/faculty interactions and residential students (Terenzini, Pascarella, & Blimling, 1996). There has been very little research about how other types of student involvement and leadership opportunities may contribute to cognitive development and student success. With this study, I begin to add to this body of knowledge. If we are to develop programs for students that are intentionally aimed at helping students to grow, we must understand the benefits and costs of different types of organizations.

We must also work to understand how the level of involvement students choose to take on is related their cognitive growth and mental health. There was not a correlation between PSC scores and the number of total organizations students were involved in or in the number of study organization types in which students were involved. There was, however, a significant difference in the mean PSC scores of students who reported serving as a member of an executive board (M = 5.0) and those who did not (M=4.9). While the difference was statistically significant, it was not a large enough difference to

be considered meaningful. The lack of difference in PSC score is consistent with research that indicates that students who join an organization and those that take on leadership roles do not differ significantly in developmental outcomes (Foubert & Grainger, 2006). Both groups do show greater outcomes than students who just attended a meeting or did not get involved. Both this study and previous research indicate that cognitive development is related to getting involved, not the role that a student plays in an organization. Effect sizes may be small, but these results suggest that growth is complex (Foubert & Grainger, 2006). It is unlikely that one semester of being involved or one intervention will lead to significant gains, but repeated, sustained involvement, in conjunction with other life experiences, may.

While role in an organization is not related to a significant difference in PSC score, there are certain activities that organization members participate in that are related to higher problem-solving confidence. There is a weak, positive correlation between the time participants spent involved in their organizations and PSC. Attending meetings, planning meetings, and planning events were also related to higher PSC scores. This supports Astin's theory that development and student success is related to investment (1999). The more time and effort students invest their extracurricular activities, the more likely they are to achieve cognitive developmental growth. The fact that simply attending meetings is related to higher PSC scores also supports Foubert and Grainger's (2006) assertion that developmental outcomes do not differ between students who join an organization and those who lead an organization.

Student affairs practitioners have a duty to develop programmatic interventions centered around student development and learning (Terenzini, Pascarella, & Blimling,

1996). I cannot assert that involvement in Greek life, Cultural organizations, or Residence Hall Associations (RHA) prompts increases in problem-solving self-efficacy. It is possible that student involvement simply coincides with development as a result of students' current life stages (Foubert & Grainger, 2006). However, even if development and involvement are simply coinciding, it is nevertheless true that student organizations expose students to opportunities to practice problem-solving and interpersonal skills and provide them an arena in which to practice their developing skills. The more exposures they have, the greater the potential is for growth (Terenzini, Pascarella, & Blimling, 1996).

Developmental gains are facilitated by interpersonal interactions and relationships that expose students to new ideas and ways of thinking (Terenzini, Pascarella, & Blimling, 1996). Student organizations are great venues for these relationships to form and for students to cut their teeth and continue to develop their skills. Student affairs professionals must design activities and programs so that they provide students with opportunities to make decisions, plan, and organize, or we are missing an opportunity to assist students in their development and facilitate their success (Terenzini, Pascarella, & Blimling, 1996). This study indicates that there is a positive relationship between these opportunities (e.g. planning meetings and events) and problem-solving confidence, further supporting the importance of student involvement.

Suggestions for Future Research

This study provides insight into the relationship between stress and problem-solving confidence among student leaders at one predominately White university in the Northeast. It begins to explore how student involvement in leadership opportunities is

related to problem-solving confidence, as well as relationships between perceived stress and involvement, technology usage, gender, and race/ethnicity. Hopefully, this research will prompt conversation about, and open the door for, additional research focused on outcomes related to different types of student organizations, women in leadership, and race and leadership

Student Organizations and Developmental Outcomes. This study began to explore developmental outcomes and how they are related to different types of student organizations. Most research to date has focused on involvement in terms of whether a student lives on or off campus, Greek life, intercollegiate athletics, employment, and academic engagement (Terenzini, Pascarella, & Blimling, 1996). Other than Greek life, and to some extent cultural organizations, there is a lack of research about other types of student organizations and the role they play in helping develop the skills students need to succeed in and graduate from college. Student affairs researchers should study additional types of student organizations, such as and conduct more studies that compare organization types on the same measures. These studies would provide practitioners with the information they need to design intentional and meaningful programs and interventions for students.

Women in Leadership. Previous studies have found significant differences between the stress levels and problem-solving confidence of college women and men. The results of this study suggest that female student leaders may differ from their less involved peers. Stress scores and problem-solving confidence of women in this study are not significantly different from those of men. Researchers should continue to study how and why women involved in leadership opportunities and student organizations differ

from other female students. They might consider employing control groups of students who are not involved to examine how college women who are involved may differ from those who are not. With a greater understanding of potential differences, practitioners may be better able to support female student leaders while also developing opportunities for women who do not hold leadership roles to develop skills and confidence.

Race and Leadership. I conducted this study on one, predominately White, highly residential campus. Race is often left out of conversations about student involvement. Through the 1990's, most of what we knew about extracurricular involvement and student development was based on students at PWIs, and, as a result, primarily on White students (Terenzini, Pascarella, & Blimling, 1996). Since the 1990's researchers have begun to acknowledge the changing demographics of our college campus and begun look for differences among sub-groups on college campuses (Pascarella, 2006). Researchers have also begun to explore the effects of attending other types of colleges, including two-year, single-sex, and historically Black institutions. College student researchers must continue to explore how developmental outcomes and impacts of interventions may have a significant impact on some students but not all and how different institution types may impact student experience and outcomes (Pascarella, 2006). Researchers should continue to explore the outcomes of students of color, both at PWIs as well as at more diverse or minority serving institutions. We will not achieve a deeper understanding of how student involvement contributes to cognitive development until we begin to conduct research on a diverse college population. Rather than ignoring possible differences, researchers should explore them and try to understand why they exist. We cannot continue to serve the majority while ignoring the needs and

contributions of the minority. True student affairs practitioners must strive to serve all students, and current research does not facilitate enough understanding for this to occur.

Parental Involvement and Student Development. Research is only just beginning to emerge about parental over-involvement and the impacts on the cognitive development of their students. Many students, especially in their first and second years of college, rely on outside authorities, such as parents, for their definition of self, decision making, and beliefs rather than employing self-authorship (Baxter Magolda, King, Taylor, & Wakefield, 2012) It seems logical to assume that parents who intervene to solve every problem their student faces would end up stunting their student's cognitive development and possibly cause their students to feel greater stress when they face a problem as a result.

There are no clear answers about the impacts of parental involvement, and current research is somewhat mixed. Some researchers report that parental involvement is associated with increased educational success (Shoup, Gonyea, & Kuh, 2009) and that students are merely consulting with parents as they make their own decisions (Pizzolato & Hicklen, 2011). However, other research indicates that "helicopter" parents are increasingly involved in their students' lives at a level that inhibits their ability to develop competence and, as a result, negatively impacts the mental health of their children (LeMoyne & Buchanan, 2011; Schiffrin, et al., 2013). While initial research is somewhat mixed, it does seem likely that "helicopter parents" who hover over their students and intervene when they perceive their child to be in trouble, whether by calling a professor or telling the student what to do, would lessen their child's ability to develop problem-solving competence and confidence. A sense of competence is important to the mental

health of college students, and students have a decreased sense of autonomy when they are being hovered over (Schiffrin, et al., 2013). Over-parenting by exerting a level of control that is inappropriate given a child's age and life stage is associated with increased depression and a decreased satisfaction with life.

Unfortunately, the challenge of over-involved parents does not seem to be subsiding. A recent article described some parents as "snowplows" rather than "helicopters" (English, 2013). Snowplow parents smooth the path for their students and do their best to make sure that they do not encounter any obstacles. Unfortunately, these obstacles provide opportunities for students to gain problem-solving and stress management skills. Researchers should further explore how parents impact student development, and student affairs professionals must design parental interventions based on research to help families understand why it is important for students to solve problems on their own.

Conclusion

With this study, I explored the relationship between problem-solving confidence and stress with student leaders and investigated how student involvement is related to problem-solving confidence and stress. I examined the difference between four types of student organizations: RHA, SGA, Cultural organizations, and Greek life. I found that, even after controlling for a variety of factors, greater problem-solving confidence was related to perceptions of lower stress, involvement was related to increased confidence in problem-solving skills, and that student experiences and outcomes differed according to race/ethnicity.

Understanding stress is complicated, and there are certainly a number of variables contributing to stress among student leaders that I did not explore with this study. This study was exploratory in nature. However, this study does add to the body of knowledge about student involvement and leadership, as well as mental health and possible interventions. My findings support the idea that student organizations may be venues for developing problem-solving confidence and stress management. I also suggest future areas of research that can continue to help student affairs practitioners develop an understanding of involvement, mental health, and identity.

As student affairs professionals, we have a duty to plan programmatic interventions that consciously seek to help students develop the skills necessary for success (Terenzini, Pascarella, & Blimling, 1996). Problem-solving confidence and competence are key to helping students avoid stress and manage the day to day challenges that they will face throughout life. It is important that student affairs practitioners "…work to create meaningful involvement opportunities for students, and should encourage them to join student organizations as a way to promote modest gains in development" (Foubert & Grainger, 2006, pp. 180-181). While no one intervention or program will lead to a student developing the confidence and skills required to be successful, each opportunity to solve a problem, learn from someone else, or fail provides an opportunity to add to their knowledge bank and provide them with more experience on which to draw the next time they face the challenge. College campuses are rife with opportunities for growth, and it is up to student affairs practitioners to guide development by making sure these opportunities are well designed, intentional, and grounded in sound research.

Table 1: Research Questions and Corresponding Statistical Tests.

Research Question	Test	Independent Variables	Dependent Variables
1. To what extent does previous research that finds a negative correlation between problem-solving self-efficacy and stress hold true for student leaders?	Pearson Correlation	-PSS Score -PSC Score	N/A
2. To what extent is involvement in student organizations related to stress?	Pearson Correlation	-Hours spent on organization -Number of organizations -Number of study organizations -PSS Score	N/A
2a. Do differences exist between different types of organizations?	One-way ANOVA	-Organization type	-PSS Score
2b. Do differences exist between genders?	T-Test	-Gender	-PSS Score
2c. Do differences exist between races/ethnicities?	One-way ANOVA T-test	-Race/ethnicity	-PSS Score
3. To what extent is involvement in student organizations related to problem-solving confidence?	Pearson Correlation	-Hours spent on organization -Number of organizations -Number of study orgs -PSC Score	N/A
3a. Do differences exist between different types of organizations?	One-way ANOVA	-Organization type	-PSC Score

Table 1, continued

Research Question	Test	Independent Variables	Dependent Variables
3b. Do differences exist between genders?	T-Test	-Gender	-PSC Score
3c. Do differences exist between races/ethnicities?	One-way ANOVA T-test	-Race/ethnicity	-PSC Score
4. To what extent is technology use related to stress?	Pearson Correlation	-Time spent online -Number of times logged in -Number of texts -PSS Score	N/A
4b. Do differences in technology use exist between genders?	T-Test Crosstabs	-Gender -Gender	-Time spent online -Number of texts -Social network usage -Smartphone ownership -Twitter account -Facebook account
4c. Do differences in technology use exist between races/ethnicities?	One-way ANOVA T-test Crosstabs	-Race/ethnicity -Race/ethnicity	-Time spent online -Number of texts -Social network usage -Smartphone ownership -Twitter -Facebook

Table 1, continued

Research Question	Test	Independent Variables	Dependent Variables
5. To what extent do demographics, technology use, involvement, and problem-solving confidence explain the variance in PSS scores?	Multiple regression analysis	-Demographic characteristics -Technology use -Involvement -PSC score	-PSS Score

Table 2: Descriptions of Independent Variables.

Variable Name	Variable Description
Age	Age in years
Executive Board	Executive board position (No=0, Yes=1)
Facebook	Active Facebook profile (No=0, Yes=1)
Female	Gender (Prefer not to answer=0, Female=1, Male=2, Transgender=3), this item was then dummy coded (Female=1, Male=0)
Number of Organizations	Number of clubs and/or organizations a student was involved in on campus
PSC Score	Averaged composite score of the students' answers to the 11 Likert-type questions of the Problem-Solving Confidence scale, responses on each question range from Strongly Disagree (1) to Strongly Agree (6), total score is an average of responses to all items and ranges from 1 to 6. Scores were computed for all participants who completed at least 7 items
Smartphone	Smartphone owner (No=0, Yes=1)
Tech- Blogging	Combined variable compiled of reading blogs and writing blogs, time on each was added together to create "Blogging" variable, the amount of time to the nearest half hour they spent online reading and writing blogs the previous day, open ended
Tech- E-mail	The amount of time they spent to the nearest half hour online sending/reading e-mail the previous day, open ended
Tech- Games	The amount of time they spent to the nearest half hour online playing games the previous day, open ended
Tech- Homework	The amount of time they spent to the nearest half hour online doing homework the previous day, open ended
Tech- Instant Messaging	The amount of time they spent to the nearest half hour online instant messaging the previous day, open ended

Table 2, continued

Variable Name	Variable Description
Tech- News	The amount of time they spent to the nearest half hour online watching/reading news the previous day, open ended
Tech- TV/Movies	The amount of time they spent to the nearest half hour online watching TV/movies the previous day, open ended
Tech- Video Chatting	The amount of time they spent to the nearest half hour online video chatting the previous day, open ended
Total Time on Orgs	Combined variable compiled of time spent on the organization attending meetings, planning meetings, reading/sending organization e-mails, attending event, planning events and other organization-related work, time on each was added together to create "Total Time on Orgs" variable, the amount of time they spent to the nearest half hour on each task, open ended
Tech-Social Media	The amount of time they spent to the nearest half hour online using social media the previous day, open ended
Text Messages	Estimate of the number of text messages they sent the previous day, open ended
Twitter	Whether they have a Twitter account (No=0, Yes=1)
White/Non-Hispanic	Their race/ethnicity from a list, could select all that apply. This was, then, dummy coded into the White/Non-Hispanic variable (1=Yes, 0=No)

Table 3: Demographic Characteristics of Survey Respondents and Target Population (N=1909, n=627).

	% of target population	# of respondents	% of respondents
Female	55.9%	409	65.2%
Male	44.0%	212	33.8%
Prefer not to answer	NA	2	0.3%
Transgendered	NA	1	0.16%
Freshmen	--	143	23.4%
Sophomores	--	175	28.7%
Juniors	--	152	24.2%
Seniors	--	140	22.3%
Multi-racial	2.0%	28	4.5%
American Indian/Alaska Native	0.1%	3	0.5%
Asian	12.0%	85	13.6%
Black/African American	8.9%	67	10.7%
Hawaiian/Pacific Islander	0.1%	3	0.5%
Hispanic/Latino	5.1%	23	3.7%
White/Non-Hispanic	53.9%	410	65.4%
Unavailable/not reported	8.5%	17	2.7%
SGA	7.0%	59	9.4%
Cultural RSO	25.3%	175	27.9%
RHA	21.8%	197	31.4%
Greek	50.5%	319	50.9%
Multiple memberships[a]	4.5%	106	16.9%

Note. Dashes indicate that the data was unavailable

[a]Race/ethnicity information was not available for students for whom a campus e-mail address was not provided

Table 4: Respondent Survey Completion Rates by Demographic Classification (n=627).

	# of respondents who completed the survey	% of respondents who completed the survey
Female	360	88.0%
Male	186	88.7%
Prefer not to answer	2	100.0%
Transgendered	1	100.0%
Freshmen	123	86.0%
Sophomores	155	88.6%
Juniors	131	86.2%
Seniors	127	90.7%
Multi-racial	26	92.9%
American Indian/Alaska Native	3	100.0%
Asian	76	89.4%
Black/African American	53	77.6%
Hawaiian/Pacific Islander	3	100.0%
Hispanic/Latino	21	91.3%
White/Non-Hispanic	363	88.5%
Unavailable/not reported	22	88.0%

Table 4, continued

	# of respondents who completed the survey	% of respondents who completed the survey
SGA	82	84.5%
Cultural RSO	122	89.1%
RHA	226	86.3%
Greek	100	94.3%
Multiple memberships	552	88.0%

Table 5: Average Number of Student Organizations Participated in by Race/Ethnicity.

Race/Ethnicity	Average Number of Organizations	SD
Multi-racial (n=27)	2.04	1.09
Asian (n=77)	2.77	1.44
Black/African American (n=57)	3.16	1.44
Hispanic/Latino (n=22)	2.55	1.14
White/Non-Hispanic (n=395)	2.29	1.36

Table 6: Organization Type Membership by Race/Ethnicity.

	American Indian/ Alaska Native		Hawaiian/ Pacific Islander		Multi-Racial		Asian		Black/ African American		Hispanic/ Latino/a		White	
Organization Type	n	%	n	%	n	%	n	%	n	%	n	%	n	%
SGA	0	0%	0	0.0%	0	0%	1	1.2%	1	1.50%	0	0%	22	5.4%
Cultural	1	33.3%	0	0.0%	5	17.9%	42	34.1%	42	62.7%	4	17.4%	13	3.2%
RHA	0	0.0%	1	33.3%	11	39.3%	6	17.6%	6	9.0%	7	30.4%	95	23.2%
Greek	2	66.7%	1	33.3%	8	28.6%	1	8.2%	1	1.5%	5	21.7%	237	57.8%
Multiple	0	0.0%	1	33.3%	4	14.3%	17	38.8%	17	25.4%	7	30.4%	43	10.5%

Table 7: Racial/Ethnic Participation in Each Organization Type.

	SGA		Cultural		RHA		Greek		Multiple	
Race/ Ethnicity	n	%	n	%	n	%	n	%	n	%
American Indian/ Alaska Native	0	0%	1	1.1%	0	0%	2	.8%	0	0%
Hawaiian/ Pacific Islander	0	0%	0	0%	1	.7%	1	.4%	1	1.0%
Asian	1	4.2%	29	30.9%	29	11.1%	7	2.7%	33	31.4%
Black/ African American	1	4.2%	42	44.7%	42	4.4%	1	0.4%	17	16.2%
Hispanic/ Latino/a	0	0.0%	4	4.3%	4	5.2%	5	1.9%	7	6.7%
White	22	91.7%	14	13.8%	13	70.4%	237	90.8%	43	41.0%
Multi-racial	0	0.0%	5	5.3%	5	8.1%	8	3.1%	4	3.8%

Table 8: Time Spent on Organization Tasks.

	Mean (hours)	Median (hours)	n
Attending Meetings	3.15	2	605
Planning for Meetings	1.05	1	564
Attending Evens	2.93	2	583
Planning for Events	1.55	1	568
Reading/Sending E-mail	1.53	1	574
Other Organization-related Work	1.65	1	532

Table 9: PSS and PSC Scores by Organization Type.

	PSS			PSC		
Organization Type	Mean	n	Standard Deviation	Mean	n	Standard Deviation
SGA	1.41	24	0.44	5.15	24	0.54
Cultural RSO	1.66	84	0.61	4.78	87	0.50
RHA	1.60	129	0.62	4.93	132	0.47
Greek	1.52	233	0.56	5.03	241	0.50
Multiple memberships	1.77	102	0.66	4.84	104	0.71

Table 10: PSS and PSC Scores by Race/Ethnicity.

Race/Ethnicity	PSS			PSC		
	Mean	n	Standard Deviation	Mean	n	Standard Deviation
Multi-racial	1.61	27	0.66	4.91	27	0.55
American Indian/Alaska Native	1.20	3	0.66	4.88	3	0.32
Asian	1.77	79	0.55	4.64	81	0.69
Black/African American	1.74	56	0.58	4.87	58	0.53
Hawaiian/Pacific Islander	1.90	3	1.10	4.91	3	0.24
Hispanic/Latino	1.65	22	0.68	4.90	23	0.54
White/Non-Hispanic	1.54	374	0.59	5.02	385	0.50

Table 11: Time Spent Engaged in Online Activities.

	Mean (hours)
On Social Media Sites	2.30
E-mailing	1.51
Instant Messaging	0.99
Video Chatting	0.19
Doing Homework	3.13
Watching TV/Movies	1.50
Playing Games	0.34
Reading Blogs	0.30
Writing Blogs	0.06
Reading News	0.65

Table 12: Technology Usage by Gender and Race/Ethnicity.

	Active Facebook Profile	Use Twitter	Own a Smartphone
Women	95.7%	69.1%	86.1%
Men	97.4%	68.9%	87.6%
Multi-racial	100.0%	66.7%	85.2%
American Indian/Alaska Native	66.7%	66.7%	100.0%
Asian	96.3%	45.0%	82.5%
Black/African American	85.5%	69.6%	89.3%
Hawaiian/Pacific Islander	100.0%	66.7%	100.0%
Hispanic/Latino	95.5%	54.5%	90.9%
White/Non-Hispanic	97.9%	75.5%	87.2%

Table 13: Time Engaged in Online Activities by Race/Ethnicity.

Race		Texts Sent	Times Logged into Social Media	Time on Social Media (hours)	Time on E-mail (hours)	Time on Instant Message (hours)	Time Video Chatting (hours)	(hours)	(hours)	(hours)	(hours)	(hours)	Time on Online News (hours)
Multi-Racial	Mean	76.85	14.35	2.36	1.07	0.90	0.27	2.67	1.58	0.42	0.44	0.15	0.79
	Median	50.00	7.50	2.00	1.00	0.00	0.00	2.00	1.25	0.00	0.00	0.00	0.75
American Indian/ Alaska	Mean	52.00	337.00	2.50	1.17	0.83	0.67	4.83	1.00	0.00	0.33	0.00	1.67
Native	Median	50.00	10.00	1.00	1.00	0.50	0.00	5.00	1.00	0.00	0.00	0.00	2.00
Asian	Mean	65.18	14.64	2.57	1.47	0.97	0.37	3.66	1.58	0.55	0.29	0.06	0.68
	Median	30.00	8.50	2.00	1.00	0.50	0.00	4.00	1.00	0.00	0.00	0.00	0.50
Black/ African American	Mean	81.66	15.69	2.47	2.58	0.65	0.14	4.10	1.67	0.10	0.67	0.11	0.53
	Median	40.00	7.00	2.00	1.00	0.00	0.00	4.00	1.50	0.00	0.00	0.00	0.00
Hawaiian/Pacific Islander	Mean	44.33	20.00	3.33	1.33	0.38	0.00	1.17	1.87	0.00	0.27	0.10	0.43
	Median	30.00	20.00	4.00	1.00	0.15	0.00	0.50	0.30	0.00	0.30	0.00	0.30
Hispanic/ Latino	Mean	69.27	11.56	1.68	1.61	1.18	0.14	2.69	0.98	0.31	0.81	0.00	0.67
	Median	35.00	5.00	1.50	1.00	0.25	0.00	3.00	0.50	0.00	0.00	0.00	0.50
White (non-Hispanic)	Mean	86.17	16.79	2.26	1.38	1.04	0.15	2.95	1.48	0.34	0.22	0.05	0.63
	Median	50.00	10.00	2.00	1.00	0.00	0.00	3.00	1.00	0.00	0.00	0.00	0.50

Table 14: Correlation Matrix for Linear Regression of Explanatory Model for Perceived Stress Scale Score. (n=586)

Independent Variable																					
PSS Score	1.000																				
Smartphone	.006																				
Texts	-.060	.138***																			
Facebook	-.060	-.024	.020																		
Twitter	-.060	.187***	.169***	.104**																	
Tech-Social media	0.122*	.000	.205***	.122	.204***																
Tech-e-mail	.064	.012	.122**	-.059	-.020	.295***															
Tech-IM	.014	.039	.110**	.075*	.057	.329***	.161***														
Tech-Video chatting	-.049	-.013	.000	.059	-.042	.098**	.123***	.123**													
Tech-Homework	.026	-.053	.049	.058	-0.070*	.110**	.197***	.107**	.095*												
Tech-TV	.053	.083*	.045	.038	.034	.182***	-.027	.129**	-.041	-.146***											
Tech-Games	.039	.025	-.059	-.037	-.055	.053	-.048	.035	.001	-.127**	.123***										
Tech-News	-.082*	.014	-.037	-.003	-.060	.091*	.234***	.141***	.138***	.072*	.033	.164***									
Tech-Blogging	.026	.044	-.020	.013	.059	.142***	.007	-.009	.049	-.058	.077*	.057	.184***								
PSC Score	-.419***	.069*	.094*	.055	.041	-.078*	.032	-.046	.041	-.042	.012	-.082*	.094*	.009							
Female	-.050	-.020	.049	-.037	.014	.046	.045	.073*	-.026	.039	-.009	-.068	-.014	.025	.011						
White (Non-Hispanic)	-.118	.010	.046	.133***	.207***	.008	-.168***	.009	-.065	-.112**	.023	.003	-.025	-.032	.171***	.045					
E-board	.042	.087	.044	.001	-.010	-.057	.194***	-.034	-.048	-.012	-.119**	-.059	-.014	-.076*	.130***	-.026	-.119**				
Total time on Orgs.	.034	.071*	.033	.089*	.005	.037	.206***	.052	.000	.081*	-.080*	-.024	.128***	-.040	.137***	-.027	.046	.321***			
Age	.034	.003	-.075*	-.041	-.032	-.104**	.061	-.029	-.077*	-.089*	.086*	.055	.061	.078*	.034	.004	-.092*	.155***	.060		
Number of orgs	.056	-.040	-.057	.004	-.113**	.009	.185***	.039	-.007	.166***	-.082*	-.019	.078*	-.042	.064	-.078*	-.156***	.234***	.239***	-.056	
*p≤.05																					
**p≤.01																					
***p≤.001																					

Table 15: Summary of Linear Regression Analysis for Variables Explaining Perceived Stress Scale Scores.

Independent Variable	With Outliers		Outliers Excluded	
	B	□	B	□
Age	.012	.033	.015	.035
Executive Board	.052	.059	.052	.060
Facebook	-.198	-.062	.177	-.046
Female	-.064	-.052	-.043	-.043
# of Organizations	.008	.020	.048	.048
PSC Score	-.387	-.357*	-.417	-.417*
Smartphone	.011	.006	.067	.038
Tech- Blogging	.002	.003	.031	.034
Tech- E-mail	.016	.070	.020	.036
Tech- Games	.022	.054	-.001	-.001
Tech- Homework	-.006	-.023	.001	.004
Tech- Instant Messaging	.010	.039	-.014	-.031
Tech- News	-.060	-.148**	-.064	-.082**
Tech- TV/Movies	.006	.018	.025	.057
Tech- Video Chatting	-.062	-.053	-.040	-.027
Tech-Social Media	.016	.058	.044	.116***
Text Messages	.000	.050	.000	-.042
Total Time on Orgs	.003	.047	.005	.067
Twitter	-.052	-.040	-.078	-.060
White/Non-Hispanic	-.043	-.034	-.010	-.008

*p<.001

**p<.05

***p<.01

Figure 1: Plot of Residuals of Linear Regression of PSS with Outliers Included.

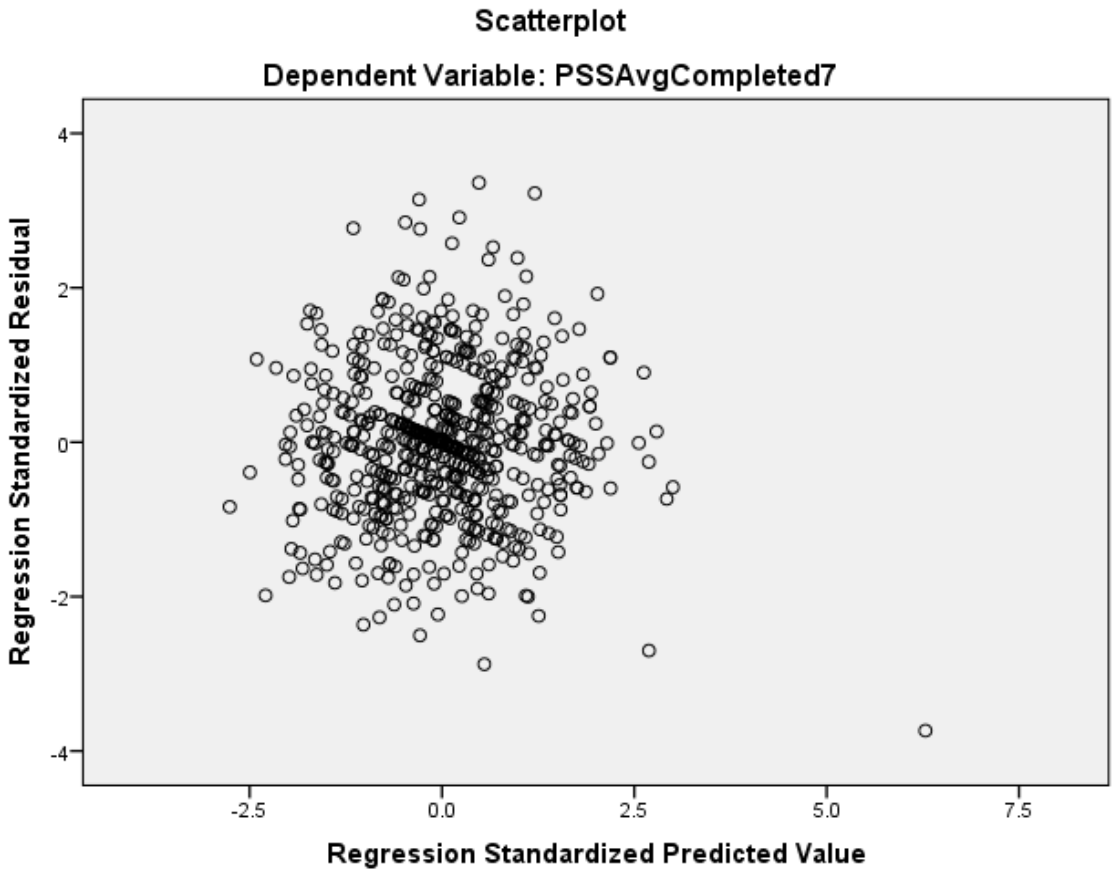
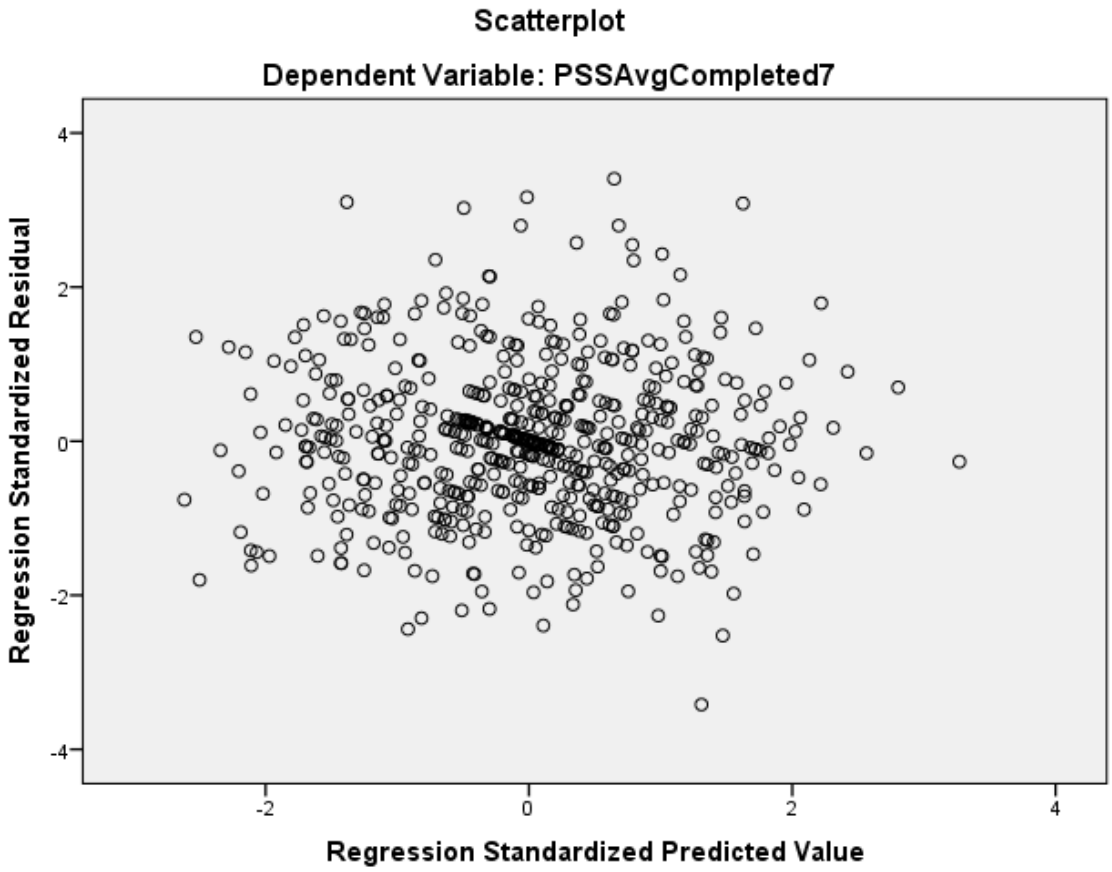


Figure 2: Plot of Residuals of Linear Regression of PSS with Outliers Excluded.



APPENDIX

SURVEY INSTRUMENT

Problem-Solving and Stress of Student Leaders Survey

Thank you for choosing to participate in this study.

This study explores problem-solving and stress levels in students who are members of student organizations at UMass Amherst. This survey is being sent to all undergraduates who are on record as being involved in House Council, Student Government Association, Greek organization, or cultural organization this year. I am hoping that you are willing to participate in this 10-15 minute survey. Data from this survey will be used in my dissertation study and may be published.

Once you complete the survey, you will be entered into a drawing for one of four $20 Antonio's gift certificates. Your e-mail address and name will not be used for any other purpose.

Your responses to this survey are confidential and will be analyzed only after they have been grouped with those of other student leaders. Your name will not be linked to your responses.

Should you need to stop taking this survey at any point, you may close the window. Your information will be saved, and, if you log in from the same computer, you will be able to resume the survey where you left off at a later time.

If you have any questions about this survey, please feel free to contact me, Dawn Rendell at drendell@umass.edu or 413-577-2329.

If you are ready to begin this survey, click NEXT.

Sincerely,
Dawn Rendell
Leadership Education Specialist, Residential Life
Doctoral Candidate in Educational Policy, Research, and Administration
University of Massachusetts Amherst

Problem-Solving and Stress of Student Leaders Survey

Demographics

To start, please answer the following questions about yourself and your leadership involvement.

What is your class year?

What is your gender?

- ◯ Female
- ◯ Male
- ◯ Transgender
- ◯ Prefer not to answer
- ◯ Other

Please indicate your race/ethnicity. You may select all that apply.

- ☐ American Indian/Alaska Native
- ☐ Asian
- ☐ Black/African American
- ☐ Hawaiian/Pacific Islander
- ☐ Hispanic/Latino
- ☐ White (non-Hispanic)

How old are you?

Please enter a number in the text box (e.g. 20)

Are you a member of one of the following types of organizations: Student Government Association, cultural RSO, Residence Hall Association (such as House Council), or Greek organization?

- ◯ Yes
- ◯ No

Problem-Solving and Stress of Student Leaders Survey

This set of questions pertains to your involvement on campus.

Are you currently a member of Student Government Association? (including executive cabinet, senators, etc., but not including Area Government)

- ◯ Yes
- ◯ No

Are you currently a member of a Cultural Registered Student Organization (RSO)? (for example, Haitian American Student Association, Arab Student Club, Jewish Student Union, etc.)

- ◯ Yes
- ◯ No

Are you a member of the Residence Hall Association? (including House Councils and Area Government)

- ◯ Yes
- ◯ No

Are you a member of a Greek organization? (IFC fraternity or Panhellenic sorority, does not include honor societies)

- ◯ Yes
- ◯ No

Problem-Solving and Stress of Student Leaders Survey

In how many different clubs and/or organizations are you currently involved at UMass Amherst (i.e. Registered Student Organizations/RSOs, Student Government, House Council, honor societies, Greek organizations, etc.)?

Please enter a number in the text box (e.g. 4)

Do you hold an executive board position in any of the organizations you are involved with? ***For example, President, Vice President, Treasurer, Secretary, etc.***

- ◯ Yes, in just one
- ◯ Yes, in more than one
- ◯ No

Altogether, how many hours did you spend last week on the following activities related to the groups you are currently involved in?

Please enter a whole number in each text box (e.g. 0 or 4)

Attending meetings	
Planning for meetings	
Attending events	
Planning for events	
Reading/sending e-mail	
Other organization related work	

Problem-Solving and Stress of Student Leaders Survey

Problem-Solving

The following questions ask you to think about how you problem-solve.

Please indicate the extent to which you agree or disagree with each statement below.

	Strongly Agree	Agree	Agree Somewhat	Disagree Somewhat	Disagree	Strongly Disagree
I am usually able to think up creative and effective alternatives to solve a problem.	◯	◯	◯	◯	◯	◯
I have the ability to solve most problems even though initially no solution is immediately apparent.	◯	◯	◯	◯	◯	◯
Many problems I face are too complex for me to solve.	◯	◯	◯	◯	◯	◯
I make decisions and am happy with them later.	◯	◯	◯	◯	◯	◯
When I make plans to solve a problem, I am almost certain that I can make them work.	◯	◯	◯	◯	◯	◯
Given enough time and effort, I believe I can solve most problems that confront me.	◯	◯	◯	◯	◯	◯
When faced with a novel situation I have confidence that I can handle problems that may arise.	◯	◯	◯	◯	◯	◯
I trust my ability to solve new and difficult problems.	◯	◯	◯	◯	◯	◯
After making a decision, the outcome I expected usually matches the actual outcome.	◯	◯	◯	◯	◯	◯
When confronted with a problem, I am unsure of whether I can handle the situation.	◯	◯	◯	◯	◯	◯
When I become aware of a problem, one of the first things I do is to try to find out exactly what the problem is.	◯	◯	◯	◯	◯	◯

Problem-Solving and Stress of Student Leaders Survey

Personal Stress

The following questions ask you to consider how often you have felt stressed in the last month.

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
In the last month, how often have you been upset because of something that happened unexpectedly?	◯	◯	◯	◯	◯
In the last month, how often have you felt that you were unable to control the important things in your life?	◯	◯	◯	◯	◯
In the last month, how often have you felt nervous and "stressed"?	◯	◯	◯	◯	◯
In the last month, how often have you felt confident about your ability to handle your personal problems?	◯	◯	◯	◯	◯
In the last month, how often have you felt that things were going your way?	◯	◯	◯	◯	◯
In the last month, how often have you found that you could not cope with all the things that you had to do?	◯	◯	◯	◯	◯
In the last month, how often have you been able to control irritations in your life?	◯	◯	◯	◯	◯
In the last month, how often have you felt that you were on top of things?	◯	◯	◯	◯	◯
In the last month, how often have you been angered because of things that were outside of your control?	◯	◯	◯	◯	◯
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	◯	◯	◯	◯	◯

Problem-Solving and Stress of Student Leaders Survey

Technology

The following questions ask you to think about your use of technology.

Do you currently own a smartphone? e.g. iPhone, Blackberry, Droid, etc.

- ◯ Yes
- ◯ No

Please provide your best estimate of the number of text messages you sent YESTERDAY.

Do you have an active Facebook profile?

- ◯ Yes
- ◯ No

Do you have a Twitter account?

- ◯ Yes
- ◯ No

Problem-Solving and Stress of Student Leaders Survey

Social Media

Approximately how many times altogether did you access social networking sites YESTERDAY to read statuses or post updates? ***May include Facebook, Twitter, Tumblr, etc.***

Please enter a number in the text box (e.g. 10)

Please indicate your best estimate of how many hours you spent online yesterday, to the nearest half hour. (e.g. 5.5)

Social media sites	
Reading/sending e-mail	
Instant messaging/chatting (Facebook chat, IM, etc.)	
Video chatting (Facetime, Skype, etc.)	
Completing homework	
Watching videos/TV programs/movies	
Playing video games	
Reading blogs	
Writing a blog	
Reading news sites	

Problem-Solving and Stress of Student Leaders Survey

Thank you for participating in this study. If you have any questions about this study, please feel free to contact me, Dawn Rendell, at drendell@umass.edu or 577-2329.

If you are feeling overwhelmed and would like to talk to someone, please contact the Center for Counseling and Psychological Health at 545-2337.

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