Self-Perceived Stress of Undergraduate Students Before and After Participation in a Breathing Meditation Intervention: A Mixed Methods Study

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LOYOLA UNIVERSITY CHICAGO

SELF-PERCEIVED STRESS OF UNDERGRADUATE STUDENTS BEFORE AND AFTER PARTICIPATION IN A BREATHING MEDITATION INTERVENTION: A MIXED METHODS STUDY

A DISSERTATION SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL IN CANDIDACY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY PROGRAM IN HIGHER EDUCATION

BY CINDY ONEIDA SLOAN

CHICAGO, IL

MAY 2015
ACKNOWLEDGEMENTS

I would like to thank all of the people who made this dissertation possible, starting with my exceptional professors in the Higher Education Program at Loyola University Chicago. The academic experiences they designed were challenging, interesting, and rewarding. Foremost, I most sincerely want to thank my committee chair, Dr. Terry Williams. His expertise, high expectations, encouragement, and genuine interest in my success made a demanding process manageable. Additionally, Dr. Terri Pigott provided much appreciated and significant direction for the quantitative segment of the investigation. Her guidance enabled me to collect meaningful data, which resulted in a robust mixed methods study. I also would like to acknowledge Professor Emeritus Dr. Jennifer Haworth who compelled me to consider the realm of contemplative education and the spiritual lives of college students. Our intense conversations led to my interest in the role contemplative practices could play in the well-being of undergraduate students.

I would also like to extend my genuine appreciation to the University of St. Francis. First, to the President’s Cabinet for granting funding to complete the doctoral program. This accomplishment may not have been possible without their assistance. Second, my thanks go to Dr. Carol Wilson who championed my research on campus and served on my dissertation committee. She validated the importance of my research topic and provided encouragement throughout the process. Third, I offer my gratitude to Provost Frank Pascoe for allowing the research to take place on campus and for his
ongoing support. Fourth, the study could not have been conducted without the cooperation of the College of Nursing, Social Work Department, and the Duns Scotus Program. Each of these areas provided opportunities and support for me to recruit student volunteers. Finally, my sincere gratitude goes to Kimberly Beck, Geri Brent, Kristin Emerson, and Margaret Honiotes who assisted me with participant recruitment, room arrangements and communication.

I especially want to thank my good friend and colleague Dr. John Gambro. His guidance, expertise, patience, encouragement, and sense of humor have consistently served as a lamp to a sometimes darkened path. John is a true exemplar of St. Francis of Assisi and his pursuit of the *summum bonum*, highest good, inspires me to be a better person each and every day.

Finally, I would like to thank my soulmate, Lea Christine Sloan. This accomplishment could never have been realized without her daily encouragement, kindness and doses of humor. Whenever I needed a boost, her belief in my abilities inspired me to sustain the long and arduous dissertation process. In addition to being an endless and precious source of support she also served as an indispensable colleague. She graciously and skillfully offered feedback, edited countless drafts, and served as peer reviewer. Without question, her valuable insights elevated the quality of the study. Lea is truly my *anam cara* and I am blessed.
“Smile, breathe and go slowly.”

—Thích Nhất Hạnh
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<tr>
<td>ACCA</td>
<td>American College Counseling Association</td>
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<td>ACHA</td>
<td>American College Health Association</td>
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<td>ACT</td>
<td>American College Testing</td>
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<td>AIS</td>
<td>American Institute of Stress</td>
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<td>CCMS</td>
<td>Center for Contemplative Mind in Society</td>
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<td>EEG</td>
<td>Electroencephalographic</td>
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<td>EPP</td>
<td>Eight-Point Program</td>
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<td>fMRI</td>
<td>Functional Magnetic Resonance Imaging</td>
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<td>GPA</td>
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<td>Institutional Review Board</td>
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<td>MBSR</td>
<td>Mindfulness-based Stress Reduction</td>
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<td>MBCUL</td>
<td>Mindfulness-Based Coping with University Life</td>
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<td>MBT</td>
<td>Mindfulness-based Therapy</td>
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<td>MRI</td>
<td>Magnetic Resonance Imaging</td>
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<td>NCHS</td>
<td>National Center for Health Statistics</td>
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<td>National Institute of Mental Health</td>
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<td>NM</td>
<td>Nursing Majors</td>
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<td>PET</td>
<td>Positron Emission Tomography</td>
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<td>Abbreviation</td>
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<tr>
<td>SR&amp;RP</td>
<td>Stress Reduction and Relaxation Program</td>
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<td>Social Work Majors</td>
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<td>TM</td>
<td>Transcendental Meditation</td>
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<td>USF</td>
<td>University of St. Francis</td>
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ABSTRACT

This mixed methods study examined the effects of an eight-week breathing meditation intervention on the self-perceived stress of undergraduate students. Previous research suggests meditation is an effective strategy to alleviate stress and stress-related symptomatology (Baer, 2003; Conley, Travers, & Bryant, 2013; Shapiro, Brown & Astin, 2011). Forty-one undergraduate student volunteers participated in the study and were randomized into either an intervention group or control group. The intervention group met once per week for eight weeks and participated in a nine minute guided breathing meditation. At the conclusion of eight weeks participants, when compared with the control group, reported significantly lower stress as specified on the Perceived Stress Scale (PSS; Cohen, Kamarack, & Mermelstein, 1983). Individual case study analyses and a cross-case analysis further validated these findings. The breathing meditation technique demonstrated itself to be an effective strategy for undergraduate students to manage their self-perceived stress.
CHAPTER ONE

INTRODUCTION

It’s Tuesday. The alarm goes off at 10:45 a.m.—just enough time for Chelsea, an undergraduate sophomore, to make it to her 11:10 a.m. Anatomy class. At 12:40 p.m. she heads across campus to the fitness center for a 45-minute weight training session. Chelsea is a talented disc and shot put thrower, and she receives an athletic scholarship that significantly offsets her tuition. Friday there is an important track meet and next year’s scholarship funding depends, in part, on her performance. Without the scholarship, Chelsea would not be able to afford to attend her particular university.

An impending 2:30 p.m. Calculus class leaves only enough time to fly by the snack shop after weight training. At 4:00 p.m. Chelsea races across campus to the university Cyber Café to meet her “little sister,” Aretha, from the local Big Brothers Big Sisters program. Being a member of the university honors program, Chelsea is accountable for 50 service hours each semester. The girls catch up with what’s happened since last week and then settle in to do Internet research on whales for a report Aretha is doing for her fourth grade class.

Chelsea crashes on her bed at 5:45 p.m. and takes a well-needed nap before the Student Government Association (SGA) meeting at 7:00 p.m. where Chelsea serves as a sophomore class senator. Pizza is usually provided at the SGA meetings so she’s able to save time by not going back to the cafeteria. To help defray costs not provided by her athletic scholarship, Chelsea has a job at the Residence Hall Help Desk. Her shift is 9:30 p.m. to 2:00 a.m. four nights each week. Fortunately for Chelsea, Tuesday nights are typically pretty quiet and she will be able to study for a high stakes exam in her British Literature class the next morning at 9:00 a.m.

Her shift finally ends and she makes her way back to her room. After showering she catches up on Facebook for about an hour and reviews one last time for her British Literature exam. Chelsea’s head hits the pillow at 4:00 a.m. After such an intense day sleep should come easily, but nearly wide awake Chelsea takes an Ambien, makes a mental to do list, and begins to feel anxiety creep in. She murmurs to herself, “There are just not enough hours in the day….”
Rationale for the Study

This chapter establishes the foundation for this study, which investigates the self-perceived stress of undergraduate college students before and after they are exposed to a breathing meditation intervention. The magnitude and preponderance of anxiety-related disorders among undergraduate college students are conveyed (ACHA 2014; Gallagher, 2014; mtvU, Associated Press, College Stress and Mental Health Poll, 2009). The definition of stress and a common anxiety-related disorder reported by students are also proposed (American Institute of Stress [AIS], n.d.; Lazarus, 1966; Selye, 1956). Additionally, current interventions available to stressed students are surveyed (Regehr, Glancy, & Pitts, 2013). The correlation between self-perceived stress and the interrelationship of body, mind, and spirit appear to be verified, as well (Baer, 2003; Hofmann, Sawyer, Witt, & Oh, 2010; Shapiro, Brown & Astin, 2011a). Finally, the connection between contemplative practices (i.e., various forms of meditation) and psychosocial well-being appear to be confirmed (Byrd & McKinney, 2012; Gallagher, 2014, Kitzrow, 2003; Shapiro, Brown, Thoresen, & Plante, 2011b). The value of the study is three-fold. First, undergraduate college students are experiencing serious and increasing levels of stress that interfere with their psychosocial well-being. Second, research on stress for undergraduate students is only beginning to emerge and more is clearly needed. Finally, effective, easy-to-access, and economical interventions to combat student stress need to be identified to set a foundation for students’ formative years and later life experiences in society.

Undergraduate college students are undeniably busy and often lead frenetic lives. New to the multi-faceted responsibilities of adulthood, an emerging adult, the period
beginning in the late teens and into the twenties (Arnett, 2000), may be overwhelmed by combinations of academics, extra-curricular activities, financial responsibilities, maintaining a job, or possibly providing for a family. With research related to the well-being of traditional college students surfacing, it is becoming clear that anxiety-related disorders have evolved into a serious concern on college campuses (ACHA, 2014; mtvU and Associated Press College Stress and Mental Health Poll, 2009).

In spring 2014 the American College Health Association (ACHA) conducted its annual National College Health Assessment and surveyed 79,266 college students, 87% of the sample having undergraduate status, from 140 campuses (ACHA, 2014). The researchers examined a broad range of health-related data with items specific to physical health (e.g., infections, weight, sexual activity) and psychosocial health (e.g., anxiety-related disorders, sleep issues, relationship difficulties). Among the findings, 30.3% and 21.8% of students reported that stress and anxiety, respectively, impeded their academic success. These findings are noticeably up from the fall 2012 ACHA National College Health Assessment where 28.4% of students reported that stress and 19.3% reported that anxiety impeded their academic performance. The most recent assessment (ACHA, 2014) indicated 47.4% of students found academics to be traumatic or very difficult to handle. In general, 43.7% of students surveyed stated they experienced more than average stress, 11% identified their stress levels as being tremendous, and a substantial 54% reported experiencing overwhelming anxiety. Further, 14.3% of students identified themselves as being diagnosed or treated professionally for anxiety. This is prominently up from the fall 2012 report (ACHA, 2012) where 12.1% of the students
identify as such. These may be under-reported data considering the potential stigma associated with mental health treatment (Tucker-Ladd, 1996-2011).

Validating these findings are data garnered from an mtvU and Associated Press College Stress and Mental Health Poll (2009) where investigators surveyed more than 2,240 undergraduate students across 40 random four-year institutions. Among the findings, 85% reported experiencing stress on a daily basis with school work (77%) and grades (74%) being the primary contributors. On a larger scale, the National Institute of Mental Health (NIMH, n.d.) states that anxiety disorders are the most common form of mental illness affecting 18.1% of all adults in the United States suggesting that anxiety-related disorders do not cease once a student graduates from college. Further, the National Center for Health Statistics (NCHS) reported that the period from 1988 to 2008 saw almost a 400% increase in the use of antidepressant medications among Americans aged 12 and older (Pratt, Brody, & Gu, 2011). The convenience and often immediate results of pharmaceutical interventions may, in part, contribute to the significant increase (HelpGuide.org, n.d.b). The data confirm that the psychosocial well-being of emerging adults is a serious concern on college campuses. The data also appear to confirm the need for alternative routes to psychosocial well-being that may be provided by contemplative practices such as meditation (Burns, Lee, & Brown, 2011; Conley, Travers, & Bryant, 2013; Deckro et al., 2002). Additionally, campus counseling professionals report a number of alarming mental health trends that substantiate the need for alternative mental health interventions to support psychosocial well-being of undergraduate students.
Mental Health Crisis on Campus

The mental health of college students is steadily declining and many are in crisis (ACHA, 2014; Byrd & McKinney, 2012; Egan et al., 2013; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; Pryor et al., 2012). Counseling centers have evolved into active critical hubs on campuses providing a spectrum of services to meet the complex needs of students. In support of this assertion are more than three decades of data garnered by the American College Counseling Association (ACCA). The ACCA annually sponsors the National Survey of College Counseling which aggregates data from lead administrators of college and university counseling centers across the country. Among other elements, data include information about the health trends and needs of college students (Gallagher, 2014).

The 2014 National Survey of College Counseling involved participants from 275 colleges and universities that have approximately 3.3 million students enrolled. Among the lead administrator respondents, 11% of their students pursued counseling services, with 52% of these having serious psychological problems. Further, of the administrator reports, 94% perceive more students have acute psychological difficulties, and 86% observe a continued increase in the number of students who begin college already taking psychiatric medication. They also regrettably report 125 college students committed suicide during the survey year. Of these, 86% had not sought assistance from university counseling services. Finally, compared to five years ago 58% of the administrators have noticed an increase of clients with clinical depression and 89% have noticed an increase in clients with anxiety related disorders (Gallagher, 2014).
Campus counseling service directors also believe associated mental health issues are on the rise. Many estimate a substantial increase in related student problems including non-prescription drug use (59%), self-injury (35%), alcohol abuse (36%), and eating disorders (21%) (Gallagher, 2014). The rise may be, in part, associated with the mental health condition of incoming first-year students. The American Freshman National Norms (Pryor et al., 2012) survey is administered annually to full-time undergraduate students who are entering college for the first time. While there is a fall 2013 report (Eagan, Lozano, Hurtado, & Case, 2013), the following items were not reported. Hence, the 2012 (Pryor et al., 2012) results included reports from 192,912 first-year students who attended 283 four-year higher education institutions. Nearly one-third (30.4%) of the new college students identified themselves as being overwhelmed as high school seniors. This statistic is 1.9% higher than the 2011 findings (Pryor et al., 2012). These data are bolstered by the American College Health Assessment (2014) results where students reported feeling overwhelmed by responsibility (86.4%) and anxiety (54%), hopelessness (46.4%), depression (32.6%), and more than average stress (43.7%). It is clear college students are beleaguered, not very resilient to life demands, and have poor coping strategies (Kitzrow, 2003; Levine & Cureton, 1998). These statistics far exceed the 11% of college students who actually seek counseling services (Gallagher, 2014). While severe mental health issues undeniably require professional assistance, the broad population suffers from anxiety and stress-related issues. Learning and performing self-care practices such as meditation may provide students relief from the stress they experience and improve their psychosocial well-being (Burns, Lee & Brown, 2011; Conley, Travers, & Bryant, 2013; Deckro et al., 2002).
Undergraduate college students, specifically, experience a number of life changing events. Becoming self-sufficient and possibly living away from home for the first time, developing new relationships, acquiring different interests, and increased academic demands are all typical of the college years. Albeit exciting, the transition can be accompanied by significant social, academic, and personal stress (Darling, McWey, Howard, & Spencer, 2007; Hudd et al., 2000; Ji & Zhang, 2011).

**Stressed Students**

The definition of stress varies somewhat throughout the literature; however, most definitions appear to be grounded in the individual work of Hans Selye (1956), a prominent endocrinologist, and Richard S. Lazarus (1966), a well-known psychologist both interested in the scholarship of stress. The generally accepted definition attributed to Lazarus defines stress as the emotional response when life “demands exceed the personal and social resources the individual is able to mobilize” (Stress Management from Mind Tools, n.d., para. 7).

According to the American Institute of Stress (American Institute of Stress [AIS], n.d.) stress can be categorized as (a) acute, an episodic stress experience exhibited as an immediate fight or flight response to circumstances such as earning a bad grade or frustration with a roommate; (b) chronic, ongoing and often ignored experiences that may be triggered by issues such as tuition bills and unhappy relationships; (c) eustress, stress associated with positive events such as an athletic performance or excitement about an upcoming event; or, (d) distress, constant daily stress related to depression and financial difficulties that cannot be disregarded. All types of stress may have a physiological response, but chronic stress is the primary culprit as it is ongoing stress that has not been
reconciled. Virtually all body systems are vulnerable to stress including the nervous, musculoskeletal, respiratory, cardiovascular, endocrine, gastrointestinal, and reproductive systems (AIS, n.d.).

Given life transitions typical of a college student, it is reasonable to speculate that many experience stress and they are both biologically and emotionally vulnerable. They may not be able to tolerate the increased stress associated with college demands or be equipped with appropriate coping strategies (Bland, Melton, Welle, Bigham, 2012; Byrd & McKinney, 2012; Emmons, 2007; Pritchard, Wilson, & Yamnitz, 2007; Welle & Graf, 2011). College students are susceptible to potentially harmful trajectories considering the possible destructive outcomes of unmanaged stress. Excess drinking, smoking, poor dietary choices, eating disorders, and other risky behaviors have all been correlated with students’ inability to manage the challenges of college life and maintain a sense of well-being (Economos, Hildebrandt, & Hyatt, 2008; Hudd et al., 2000; Murphy, Hoyme, Colby, & Borsari, 2006; Oliver, Reed, & Smith, 1998; Pritchard, Wilson, & Yamnitz, 2007). Cognitive functioning and sleep may also be hindered, further exasperating academic success and overall life satisfaction (Palmer, 2013; Pedersen, 2012).

According to researchers, the stress that college students experience is not only engaged by emotional responses to actual experiences, but students’ perceived levels of stress may also negatively influence well-being. “Students with high levels of stress tend to perceive themselves as less healthy; they possess lower levels of self-esteem; and they are more prone to practice a number of unhealthy habits” (Hudd et al., 2000, p. 6). Most importantly, research suggests the stress students experience may not diminish without intervention. Left unaddressed, well-being may continue to decline as they advance
through college (Bewick, Koutsopouloub, Miles, Slaa, & Barkham, 2010; Pritchard & Wilson, 2003). Moreover, those with minimal inherent coping are at greater risk of becoming depressed (Emmons, 2007). Most importantly, research suggests the stress students experience may not diminish without intervention. Left unaddressed, well-being may continue to decline as they advance through college (Bewick et al., 2010; Pritchard & Wilson, 2003). Moreover, those with minimal inherent coping are at greater risk of becoming depressed (Emmons, 2007).

**Mental Health Interventions Used on the Campus**

Reports from both students and counseling center administrators confirm the mental health of college students continues to decline (ACHA, 2014; Byrd & McKinney, 2012; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; Pryor et al., 2012). So much so, the crisis has made its way into conventional media such as *The New York Times* (Lewin, 2011), *Business Week* (Di Meglio, 2012), and *Psychology Today* (Reifman, 2011). Even a Google search on the Internet with key terms “college student stress” leads to several websites designed to support students who feel overwhelmed. Psyche Central (n.d.), ULifeline (n.d.), HelpGuide (n.d.a), and The Campus Companion (n.d.) are a few of the prominent support sites that appear in the search. Within these Internet resources, mental health issues are defined (e.g., anxiety, depression, eating disorders, stress) and are often accompanied by an inventory whereby students are able to self-diagnose. If severe symptoms are evident, they are encouraged to seek professional assistance. However, some mental health issues (e.g., stress, anxiety) may be reduced or alleviated by self-initiated coping strategies such as exercise, relaxation techniques, sleep, and good nutrition.
Numerous colleges and universities such as University of Illinois Chicago (n.d.), University of Florida (n.d.), University of Georgia (n.d.), Franciscan University (n.d.), Southern Methodist University (n.d.), and Arizona State University (n.d.) also appear in the same Google search. This is evidence that the key words “college student stress” are prolific on their respective websites and is possibly the result of lead administrators of college and university counseling centers having knowledge of all the data associated with college student stress (ACHA, 2014; Gallagher, 2014; mtvU and Associated Press College Stress and Mental Health Poll, 2009). Further, when perusing almost any college or university website one can find the institution’s respective counseling or wellness center. These pages typically provide information about the particular center (services provided, hours, how to make an appointment, insurance) and may also provide supplementary resources intended to support students who may not come to the wellness center but could use mental health support. Just as in the aforementioned public websites, these internet pages often assist students with differentiating their experience (e.g., depression or stress) and provide strategies to prevent or offset the consequences of compromised mental health. Since only a little more than 10% of the student population visits campus counseling and wellness centers and with lead administrators reporting that they are understaffed (Gallagher, 2014), mental health assistance via the Internet may be necessary to address the widespread psychosocial well-being issues on college campuses.

Stress, specifically, is a common complaint among undergraduate students (ACHA, 2014; Gallagher, 2014; mtvU and Associated Press College Stress and Mental Health Poll, 2009; Pryor et al., 2012). Over the past three decades numerous research studies have been conducted to discover effective interventions for decreasing student
stress (Regehr et al., 2013). The most recent studies involve interventions that apply various forms of contemplative practices and relaxation methods such as relaxation techniques (Deckro et al., 2002; Dowd, Kolcaba, Steiner, & Fashinpaur, 2007; Jain et al., 2007), wellness seminars (Conley et al., 2013; Dziegielewski, Turnage, & Roest-Marti, 2004), Transcendental Meditation (Burns, Lee, & Brown, 2011), and movement-based experiences including activities such as dance, Pilates, Taiji quan, and yoga (Caldwell, Harrison, Adams, Quin, & Greeson, 2010; West, Otte, Geher, Johnson, & Mohr, 2004). Finally, a range of mindfulness-based studies, which could be categorized as contemplative practices and have primarily been influenced by the seminal work of Jon Kabat-Zinn, has been conducted (Chiesa & Serretti, 2009; Kabat-Zinn et al., 1992; Lynch, Gander, Kudielka, & Walach, 2011; Shapiro et al., 2011b).

While the effectiveness of such interventions is emerging in scholarship, they appear to be underutilized coping strategies on college campuses. This is noticeably evidenced by the volume of students reporting they routinely experience high levels of stress (ACHA, 2014; Byrd & McKinney, 2012; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; Pryor, et al. 2012). The gap may be associated with higher education professionals being unaware of the link between body, mind, spirit, and well-being and the effectiveness of contemplative practices to combat stress, improve stress tolerance, and enhance psychosocial well-being (Chiesa & Serretti, 2009; Regehr et al., 2013; Welle & Graf, 2011).

**Mental Health and Well-being**

In the United States, well-being is generally sorted into two categories: physical and mental health (Nordqvist, 2009). Physical health relates to being free of disease and
illness, while maintaining good fitness and nutrition; whereas, mental health concerns “cognitive and emotional well-being” (p. 2). The World Health Organization (WHO, 2014) reveals a psychosocial perspective when defining mental health as “a state of well-being in which every individual realizes his or her own potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (WHO, 2014, para. 1). Similarly, for centuries Eastern traditions have viewed health as the well-being of the body, mind, and spirit (Chan, Ho, & Chow, 2002; Ng, Yau, Chan, Chan, & Ho, 2005). Viewing health through Eastern traditions suggests that well-being is reliant on the evolution of the interconnectedness of body, mind, and spirit rather than examining each in isolation. While consistent with the broader WHO (2014) definition, the addition of spirit implies a more holistic view of health to include mind and spirit.

**Contemplative Practices**

Five decades of studies summarized in several meta-analyses (Baer, 2003; Hofmann et al., 2010; Shapiro, Brown, & Astin, 2011a) suggest body, mind, and spirit may all be positively influenced by the routine integration of contemplative practices (e.g., meditation, prayer, yoga) into one’s life. While the maintenance of physical well-being is often obvious, the nurturing of the mind and spirit is more elusive. A growing body of research suggests that contemplative practices enhance physical and psychosocial well-being and moreover may assist college students with navigating their increasingly complex and stressful lives (Burns et al., 2011; Conley et al., 2013; Hofmann et al., 2010; Lynch et al., 2011).
Many ancient texts, more than 2,000 years old, from Eastern spiritual and religious traditions such as Hinduism and Buddhism and their associated contemplative practices continue to have a positive influence on many who engage in such activities (Ornstein, 2008). Comparable expressions from Judeo-Christian customs date back to the twelfth century in their written form, and earlier for those of oral origins have also proven themselves to be viable options to improve psychosocial well-being (Fox, 2007). Subsequently, a great many contemplative practices have made their way into contemporary society enhancing religious and spiritual pursuits, health, and well-being (Baer, 2003; Hofmann et al., 2010; Shapiro et al., 2011a). Religious and spiritual habits (i.e., contemplative practices) can offer direction and a scaffold of support that may help alleviate life’s challenges (Hill & Pargament, 2003). Further, contemplative practices may offer a point of access to preserve and improve psychosocial well-being.

**Meditation.** Psychosocial well-being is a complex construct that is codependent and intertwined with physical health (Chan et al., 2002; Ng et al., 2005; Seligman, 2011). Keeping the aforementioned mental health statistics in mind, teaching college students strategies to cultivate their psychosocial well-being makes good sense (ACHA, 2014; Byrd & McKinney, 2012; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; mtvU and Associated Press College Stress and Mental Health Poll, 2009; NIMH, n.d.; Pryor et al., 2012). One approach includes contemplative practices which are generally personal exercises that calm and concentrate the mind (Center for Contemplative Mind in Society [CCMS], n.d.a). Research suggests that these personal pursuits (e.g., meditation, centering prayer, yoga) could be gateways to improved psychosocial well-being (Baer, 2003; Hofmann et al., 2010; Shapiro et al., 2011a; Shapiro et al., 2011b).
Little is written about contemplative methods as a collection as exhibited by the CCMS (n.d.b) in its *Tree of Contemplative Practices*. However, calming and focusing the mind appear to be the common desired outcome whether observing one’s heartbeat, repeating a mantra, resting in a yoga pose, or experiencing the Divine through centering prayer (CCMS, n.d.b). While there are numerous meditation techniques, the vast majority rest on a continuum between two categories: focused/turning-off or insight/opening-up one’s awareness (Kabat-Zinn et al., 1992; Ornstein, 2008). Turning-off awareness requires the meditator to dismiss thoughts and not linger with sensory perceptions. The meditator pointedly concentrates the mind on one single fixation such as a mantra or object (e.g., flame of a candle, breath). The opening-up of awareness is on the other side of the continuum and is referred to as mindfulness or insight meditation. Contrary to focused meditation, opening-up meditation allows one’s thoughts and senses to be active while being deeply aware. The purpose is for the meditator to observe oneself with inquisitiveness and acceptance (Hofmann et al., 2010; Kabat-Zinn et al., 1992; Ornstein, 2008). Not surprisingly, the specific techniques and subsequent outcomes of many contemplative practices all have a meditative quality and have endured for centuries due to the design of the human central nervous system which allows for physiological responses to stimuli (Ornstein, 2008). Both turning-off and opening-up meditation practices can bring the practitioner to single-pointed awareness, which appears to have a positive effect on the well-being of the practitioner (Hofmann et al., 2010; Kabat-Zinn et al., 1992; Shapiro et al., 2011a).

From a psychological perspective, Ornstein (2008) metaphorically describes the practice of meditation as a “mental vacation.” Ceasing routine mental activity and
focusing attention for a period of time offer the mind the opportunity to reprogram thought processes and perceptual habits (Goleman, 1976). The mind becomes more acute and awareness is heightened. To add depth to the understanding of mental activity it is important to appreciate what Bruner (1957) refers to as the categorization of perception. To manage the massive quantities of incoming information the mind instinctively constructs categories leading to inferences made by the perceiver. The preponderance of inputs never reaches one’s consciousness. For example, a city dweller may not notice the sound of the siren even if it was blaring directly outside of her or his apartment building. No attention may be given to the sound until another companion category is activated, such as the smell of smoke. Meditation offers a portal to awareness and a rebooting of cognitive functions (Ornstein, 2008). Through concentrated focus one is able to become more aware of the informational inputs, as the metaphorical mental vacation exemplifies.

In addition to sensory inputs, information related to involuntary bodily functions such as breathing, heartbeat, and digestion are constantly being selected and rejected without conscious thought (Ornstein & Dewan, 2008). Ordinarily, much of what one experiences is either involuntary or so routine that it is unconscious (Bruner, 1957; Ornstein & Dewan, 2008). While the goal of contemplative practices is not necessarily to bring attention to or to control these functions, it is important to recognize that the brain is constantly engaged. This further emphasizes the necessity to offer a mental respite in order for the mind to rejuvenate, a strategy that could be quite useful for busy and stressed college students (Burns et al., 2011; Deckro et al., 2002).

Burns et al. (2011) and Deckro et al. (2002) underscored this point in studies that are separated by nearly ten years. Their research targeted the college student audience,
and both studies demonstrated promising results for managing the effects of psychosocial distress. They justifiably question why meditation is an untapped resource for enhancing the mental health of many college students. Cost effective, simple to implement, and often successful (Burns et al., 2011; Hofmann et al., 2010; Kabat-Zinn et al., 1992; Lynch et al., 2011), higher education professionals should take notice and consider the benefits of integrating meditation and similar contemplative practices as an option within their campus wellness programming.

**Purpose of Study and Research Questions**

The college years may be a significantly stressful experience for many students; however, it is particularly stressful for high performing students who often enter equally stressful and demanding careers. The purpose of this study was to examine a select group of undergraduate student self-perceptions of stress before and after engaging in a contemplative practice intervention (i.e., breathing meditation) over an eight-week period using both a control and an intervention group. Three particular groups of undergraduate students were studied: nursing majors, social work majors, and a group of mixed major honors students.

My interest in this study stems from three perspectives: personal, observational, and societal. My personal experience with meditation and its positive effects on my psychosocial well-being have been undeniable. I believe I would have been better able to navigate life challenges and be better able to tolerate stress if I had been exposed to meditation in early adulthood, or even adolescence. In my role as associate dean I observe and interact with college students who are highly stressed. Informal conversations with students lead me to believe they are unaware of the long term negative
consequences of stress and do not have coping strategies. From a more global perspective, routinely engaging in meditation, of any variety, may promote a healthier general population. Related health issues of which stress may be a symptom (e.g., depression, cardiovascular disease, autoimmune dysfunction) may diminish along with the financial burden they may impose. Breathing meditation is free, simple, and may be an effective means for one to support psychosocial well-being.

With the intention of contributing to the scholarship that correlates meditation with undergraduate student psychosocial well-being, three research questions guided my study:

1. What are undergraduate student self-perceptions of stress?
2. What circumstances contribute to undergraduate student perceived stress?
3. What effect does breathing meditation have on undergraduate student self-perceived stress?

**Significance of the Study**

It is clear college students are experiencing serious and increasing levels of stress, depression, and anxiety (ACHA, 2014; Byrd & McKinney, 2012; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; Pryor et al., 2012). Simultaneously, prescription drug use for the aforesaid maladies has increased significantly (Gallagher, 2014; Pratt, Broady, & Gu, 2011). While generally not rigorous, the empirical research associated with contemplative practices, particularly meditation, suggests that physical and psychosocial well-being may be enhanced by those who engage in such experiences (Conley et al., 2013; Hofmann et al., 2010; Kabat-Zinn et al., 1992; Shapiro et al., 2011a). Specifically related to college students, employing contemplative practices may
enhance their psychosocial well-being by offering nonprescription strategies to accommodate their increasingly complex lives. While research is rapidly emerging to address the link between stress and contemplative practices, a broad gap in knowledge specifically associated with undergraduate students exists (Nagel & Sgoutas-Emch, 2007; Repetti, 2010; Shapiro et al., 2011a; Shapiro et al., 2011b). In addition, the preponderance of existing research is quantitative in design and may not capture the personal and esoteric nature of psychosocial well-being as related to body, mind, and spirit. Subsequently, the body of knowledge related to contemplative practices (i.e., breathing meditation) and the psychosocial well-being of college students would be significantly served by a mixed methods design study.

To support the context of my research and to design a useful study, the review of the literature in the following chapter will describe the nature of contemplative practices, specifically meditation, and the reported effects on those who practice. While undergraduate students are my research subjects, there is a gap in scholarship examining undergraduate students and meditation. Therefore, the review of literature includes studies with student and non-student subjects.
CHAPTER TWO

REVIEW OF LITERATURE

It’s Tuesday. The alarm goes off at 6 a.m. and Sam slowly slinks out of bed and onto the floor. It had been a late night studying for an upcoming 11:45 a.m. Geography quiz. On his hands and knees Sam loosens his spine as he was taught in a wellness seminar he participated in during the first semester of his freshman year. He makes his way up into a Downward Facing Dog pose and moves into a slow Sun Salutation flow. After about 10 minutes Sam is alert and ready to begin a very busy day. He dresses and meets his cross-country teammates at 6:30 a.m. for their morning 6 mile run. Sam is a talented distance runner and was heavily recruited by several universities. Consequently, he receives an athletic scholarship that significantly offsets his tuition. Friday there is an important track meet and next year’s scholarship funding depends, in part, on his performance. Without the scholarship, Sam would not be able to afford to attend this particular university.

At 7:15 a.m. he showers, quickly checks Facebook, makes his way to the cafeteria and has his typical bowl of oatmeal, yogurt, and a banana. While eating breakfast Sam chats with his buddies and then settles in to review his geography notes. At 8:30 a.m. he proceeds to the Academic Resource Center where he works as a tutor 18 hours a week. After tutoring he darts across campus for his 11:45 a.m. Geography quiz. The timing of this class is problematic because Sam only has enough time to grab a prepared sack lunch from the cafeteria rather than being able to select his own meal.

At 1:15 p.m. Sam heads back to the cafeteria, grabs his sack lunch, makes a quick stop to pick up his calculus notebook, and heads to his 2:30 p.m. class. He’s early, so he eats and reviews his notes. At 4:00 p.m. Sam races across campus to the university Cyber Café to meet his “little brother,” Antonio, from the local Big Brothers Big Sisters program. Being a member of the university honors program, Sam is accountable for 50 service hours each semester. The boys catch up with what’s happened since last week and then settle in practice adding and subtracting fractions. After leaving Antonio, Sam finds his favorite chair in a quiet section of the café. He sits comfortably with his feet on the floor, turns-off his thinking, brings attention to his breath, and takes several deep and focused breaths. This brief activity refocuses and recharges Sam for the events of the evening. After, he thumbs through his recent text messages, checks Facebook, and walks to the cafeteria at 5:45 p.m. He is always famished on sack lunch days!
Next on the agenda is the 7:00 p.m. Student Government Association (SGA) meeting where Sam serves as a sophomore class senator. After SGA, Sam makes his way to the fitness center for a late 45-minute cross-training session. While working out, Sam mentally reviews his British Literature notes and begins to worry a little about a high stakes exam the next morning at 9:00 a.m. He reminds himself that he’s been doing well in this class and there is no reason to believe he’s not prepared for the exam.

At 9:45 p.m. Sam finds himself back in his room. He takes a quick shower, changes, and hangs out with his friends in the common area until 11:00 p.m. – longer than he had planned. It’s been a long day and he is tempted to fall right into bed. Instead, he sitsuates himself on the floor of his room, gently closes his eyes, and begins a 15-minute breathing meditation, a practice he also learned in the freshman wellness seminar. His head hits the pillow at 11:30 p.m. and his mind begins to perseverate on tomorrow morning’s exam. He recognizes his obsessive thinking and refocuses his mind on his breath. Soon, Sam is sound asleep.

Introduction

Undergraduate college students lead demanding lives and are often overwhelmed by academic, social, and financial responsibilities. Balancing these obligations may be stressful to students, to alarming degrees, who consequently report experiencing a variety of anxiety-related disorders (ACHA, 2014; Byrd & McKinney, 2012; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; mtvU and Associated Press College Stress and Mental Health Poll, 2009; Pryor et al., 2012). Research further indicates that traditional undergraduate college students, those aged 18 to 22 years old, do not have appropriate coping strategies to manage stressful circumstances and may be physically and emotionally at risk (Bland et al., 2012; Byrd & McKinney, 2012; Emmons, 2007; Pritchard, Wilson, & Yamnitz, 2007; Welle & Graf, 2011). Understandably, higher education officials are seriously concerned (Gallagher, 2014). This chapter reviews research associated with using contemplative practices, particularly meditation, as a coping strategy to combat stress and improve psychosocial well-being.
While acute mental health issues undoubtedly require professional medical assistance, the majority of the undergraduate student population reports suffering from anxiety and stress-related issues (ACHA, 2014; Gallagher, 2014; mtvU and Associated Press College Stress and Mental Health Poll, 2009). At the same time a preponderance of university counseling center administrators report being understaffed and that the majority of stressed students do not seek assistance. Thirty years of research suggest that alternative routes to psychosocial well-being, such as those provided by contemplative practices, particularly meditation, may be an unconventional, but effective, strategy for coping with stress (Burns, Lee, & Brown, 2011; Conley, Travers, & Bryant, 2013; Deckro et al., 2002; Regehr et al., 2013). While the effectiveness of contemplative practices is beginning to emerge in the research, they appear to be underused coping strategies on college campuses. This may be attributed to higher education professionals’ unfamiliarity with the relationship between body, mind, spirit, and well-being and the potential value of utilizing contemplative practices, like meditation, to manage stress and improve psychosocial well-being (Chiesa & Serretti, 2009; Regehr et al., 2013; Welle & Graf, 2011).

Definitions of well-being are explored within the chapter (Nordqvist, 2009; World Health Organization [WHO], 2014) as are related theoretical frameworks (Goleman, 1976; Hofmann et al., 2010; Iyengar, 1988; Seligman, 2011; Shapiro et al., 2011a; Shearer, 1982; Stanley, 2009). The nature of contemplative practices is presented including a definition (Center for Contemplative Mind in Society [CCMS], n.d.a; Finley, 2000), examples (CCMS, n.d.a), and history and purpose (Cahn & Polich, 2006; Goleman, 1976; Kabat-Zinn et al., 1992; Keating, 2003; Iyengar, 2001; Ornstein, 2008;
Thurman, 2006). Contemplative practice techniques are described to establish the intent of meditative methods which will be the focus of this study (Kabat-Zinn et al., 1992; Keating, 2003; Iyengar, 2001; Ornstein, 2008; Shearer, 1982; Thurman, 2006). Seminal studies are introduced providing a foundation regarding the effects of contemplative practices on practitioners (Anand & Chhina, 1961; Anand, Chhina & Singh, 1961a; Anand, Chhina & Singh, 1961b; Kabat-Zinn et al., 1992; Wenger, Bagchi & Anand, 1961) as well as more current research (Chambers, Lo, & Allen, 2007; Hofmann et al., 2010; Li, Goldsmith, & Goldsmith, 2012; Praissman, 2008; Rocha et al., 2012; Ross & Thomas, 2010). Neurological findings of the effects of meditation are presented to demonstrate the brain activity many practitioners experience while engaging in and as an outcome of meditation (Chambers, Lo, & Allen, 2008; Creswell, Way, Eisenberger, & Lieberman, 2007; Lazar et al., 2005; Luders, Toga, Lepore, & Gaser, 2009; Luders et al., 2012; Mohan, Sharma, & Bijlani, 2011; Ritskes, Ritskes-Hoitinga, Stodkilde-Jorgensen, Baerentsen, & Hartman, 2003). Various studies are presented demonstrating the potential physiological effects, such as improved heart rate and blood pressure, of contemplative practices like meditation (Baer, 2003; Hofmann et al., 2010; Li, Goldsmith, & Goldsmith, 2012; Praissman, 2008; Rocha et al., 2012; Ross & Thomas, 2010). Additionally, several methodological issues are considered (Belding, Howard, McGuire, Schwartz, & Wilson, 2010; Ferguson, Williamson, & Castaño, 2010; Lavallee, Koren, & Persinger, 2011; Mohan et al., 2011). The chapter concludes with a research stream directly associated with college students, meditation, and stress reduction (Burns et al., 2011; Hall, 1999; Lynch et al., 2011; Oman, Shapiro, Thoresen, Plante, & Flinders, 2008; Shapiro et al., 2011a; Regehr et al., 2013).
Well-being: Body, Mind, and Spirit

In the United States well-being is generally separated into two categories, physical and mental health (Nordqvist, 2009). Physical health relates to being free of disease and illness, while maintaining good fitness and nutrition, whereas mental health concerns “cognitive and emotional well-being” (p. 2). The World Health Organization ([WHO], 2014) takes a more psychosocial perspective when defining mental health and articulates that mental health is “a state of well-being in which every individual realizes his or her own potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (p. 1). Similarly, for centuries Eastern traditions have viewed health as the well-being of the body, mind, and spirit (Chan et al., 2002; Ng et al., 2005). Viewing health from an Eastern perspective suggests that well-being is reliant on the evolution of the interconnectedness of body, mind, and spirit rather than examining each in isolation. While consistent with the broader WHO (2014) definition, the addition of spirit implies a holistic view of health. Thus, for the purpose of this literature review psychosocial well-being will include the overlay of body, mind, and spirit.

Five decades of research summarized in several meta-analyses (Baer, 2003; Hofmann et al., 2010; Shapiro et al., 2011a) suggest that the body, mind, and spirit may all be positively influenced by the routine integration of contemplative practices (e.g., meditation, prayer, yoga) into one’s life. While the maintenance of physical well-being is often obvious, the nurturing of the mind and spirit is more elusive. Contemplative practices may offer points of access to preserve and improve psychosocial well-being. Related, the inclusion of religiosity (i.e., religion and spirituality) as a dimension of
holistic health is a relatively new field of study (Berry & York, 2011; Hill & Pargament, 2003; Inzlicht, McGregor, Hirsh, & Nash, 2009). While there is inconsistency regarding the meanings of religion and spirituality (Hill & Pargament, 2003), scholars contend that religious beliefs and being part of a religious congregation may be underestimated as related to well-being (Berry & York, 2011; Inzlicht et al., 2009; Seeman, Dubin, & Seeman, 2003). Hence, identifying the characteristics of psychosocial well-being and understanding the possible scientific correlation to contemplative practices may be of significant service to higher education professionals as they attempt to create environments conducive to improving the psychosocial well-being of their students.

**Frameworks for Well-being**

The purpose of this segment of the literature review is to reveal ways well-being has been defined and characterized. Psychosocial (Huppert & So, 2009; Seligman, 2011) and spiritual or contemplative (Goleman, 1976; Shearer, 1982; Stanley, 2009) frameworks for well-being are examined.

**Positive psychology.** While positive psychology is not a contemplative practice, it is a contemporary psychological construct utilized to cultivate psychosocial well-being. Seligman (1998, 2011), the pioneer of positive psychology, introduced it to the field of psychology in 1998. The perspective he brought to his colleagues was that psychologists were spending the preponderance of their time trying to fix what is wrong with people rather than trying to nurture what is right with them. He postulated that positive psychological traits (e.g., forgiveness, optimism, kindness) could outweigh negative psychological traits (e.g., blame, pessimism, cruelty) and lead to a greater sense of well-being (Seligman, 1998).
While soaring in popularity in the field of psychology and in pop culture (Sin & Lyubomirsky, 2009), positive psychology has received serious criticism during its tenure (McNulty & Fincham, 2012). In a review of numerous studies, four being longitudinal, McNulty and Fincham contend that characteristics such as forgiveness, optimism, and kindness are not fundamentally positive and should not be labeled as such because context has a strong influence on how to psychologically interpret the trait. Good characteristics such as forgiveness and optimism could negatively impact well-being (e.g., a battered wife who continues to forgive her abuser, a gambler who is optimistic about her next win). Nonetheless, a recent meta-analysis conducted by Sin and Lyubomirsky (2009) validate that positive psychology considerably improves well-being and may also be a successful means for managing depression. However, McNulty and Fincham (2012) challenge these findings because, in addition to the contextual issue, the studies are largely cross-sectional and have not established any long-term results. While they are complimentary concerning the broader view of well-being that positive psychology has stimulated, they believe, “psychology is not positive or negative – psychology is psychology” (p. 108).

With that being said, Seligman (2011) is at the forefront of well-being and has proposed a well-being theory that is a combination of five elements: positive emotion (e.g., pleasure, happiness), engagement (e.g., being with those who bring out personal best), meaning (e.g., being part of something bigger than oneself), accomplishment (e.g., achieving something one considers important), and positive relationships (e.g., being with those who cultivate well-being). The elements function together, rather than in isolation, similar to the BMS model (Chan et al., 2002). Seligman (2011) views well-being as a
construct and believes it is a more accurate measure about how one is experiencing life. It is not rooted in pleasure or reliant on the variability of happiness (e.g., I feel happy today therefore I have a high level of life satisfaction).

It is important to note that Seligman’s (2011) well-being theory came subsequent to his original happiness theory. Happiness theory was based solely on positive emotion, which is now one of his five elements of well-being. Well-being maximizes all five elements simultaneously leading to a more coherent positive state. Even though Seligman does not explicitly pursue body, mind, and spirit, well-being theory does seem to be holistic in nature. Chan et al. (2002) and Ng et al. (2005) may approve of well-being theory due to its foundation in balance, but would likely view happiness theory as hedonistic since it emphasizes feeling good rather than altruistic dispositions such as kindness and gratitude. From the perspective of Seligman’s critics, McNulty and Fincham (2012) did not explicitly comment on well-being theory, however they did state that well-being is established “jointly by the interplay between those characteristics and qualities of people’s social environments” (p. 102), leading to believe that well-being theory may be more accepted by his critics.

The purpose of well-being theory is to “increase the amount of flourishing in your own life and on the planet” (Seligman, 2011, p. 26) which appears to be underpinned by the WHO (2014) definition of mental health. Huppert and So (2009), who created an operational definition of flourishing, assert that those who flourish have an elevated state of psychological well-being and are able to experience positive emotions while effectively participating in life. They conducted a 43,000 subject survey, the European Social Survey (ESS), of people 16 years and older. One of the variables was the
relationship between life satisfaction and flourishing. The findings indicated that people who are satisfied with life are not necessarily flourishing and people who are flourishing do not necessarily have a high level of life satisfaction. Based on this information, Huppert and So (2009) and Seligman (2011) conclude that well-being and flourishing are comprehensive constructs that cannot be sufficiently measured by the one-dimensional nature of life satisfaction.

**Well-being and contemplative practices.** Associated with well-being, ancient Eastern meditation methods aim to foster healthy states of mind to circumvent unhealthy states of mind (Goleman, 1976). Goleman explains the opposing healthy and unhealthy states of mind as expressed in the Buddhist system of psychology known as Abhidhamma: understanding/delusion, modesty/shamelessness, altruism/self-interest, calmness/anxiety, generosity/greed, or vitality/lethargy. According to the Abhidhamma, it is believed that unhealthy states of mind may be blocked by or replaced with healthy states of mind that are grounded in mindfulness and insight through meditation.

Similarly, Stanley (2009) draws upon early Christian contemplative healing traditions and identifies eight basic human characteristics prone to imbalance as possible risk factors for major illnesses: gluttony, lust, greed, anger, sadness, anxiety, vainglory, and pride. To offset the imbalance, remedies proposed by the early Christian mystics included such contemplative practices as prayerful meditation, silence, mindfulness focused on God’s love, and fasting.

Comparably, the *Yoga Sutras* impart eight limbs of yoga which focus on healthy states of mind that may be nurtured through the aforementioned methods (Iyengar, 1988; Shearer, 1982). The *Yoga Sutras* are attributed to Patanjali, a second century sage, who
described the limbs as: universal morality, personal observances (e.g., purity, contentment), body postures (e.g., moving the body for health and vitality), breathing awareness exercises, control of the senses (e.g., abstaining from material and emotional attachment), concentration and cultivating inner perceptual awareness, devotion or meditation on the Divine (e.g., extreme concentration with the purpose of seeking truth), and union with the divine (e.g., transcending of self) (Doran, n.d.). Iyengar (2001) explains Patanjali’s basis for yoga is giving one the ability to “calm the chaos of conflicting impulses and thoughts” (p. 15).

The states of mind (Goleman, 1976; Iyengar, 1988; Shearer, 1982) and human characteristics (Stanley, 2009) are similar in nature to the attributes of psychosocial well-being expressed in the scholarship of Chan et al. (2005), Huppert and So (2009), and Ng et al. (2005). Comparatively, Seligman’s (2011) theory of well-being appears to be grounded in the product of a healthy state of mind (e.g., positive emotions, engagement), however it also involves cultivation of his proposed five elements through exercises (e.g., practicing kindness and gratitude on a routine basis). Regardless of the religious, spiritual, or psychological lens, eluding unhealthy states of mind through purposeful practice seems to be a common pursuit. While research is associated with various expressions of contemplative practice the preponderance of scholarship revealed in the literature is associated with Eastern-based meditation (Baer, 2003; Hofmann et al., 2010; Shapiro et al., 2011b).

Given the data (ACHA, 2014; Gallagher, 2014), it is evident a large population of undergraduate college students are not experiencing psychosocial well-being. This may be contributed, in part, to not understanding the relationship between body, mind, and
spirit. The data also suggest many may not be flourishing or have an understanding of maintaining a healthy state of mind. Engaging in routine contemplative practices may contribute to increased balance and psychosocial well-being.

**Contemplative Practices**

**Definition**

Contemplative practices are generally personal pursuits that intensify, focus, and quiet the mind (Center for Contemplative Mind in Society [CCMS], n.d.a). Finley (2000) further develops this definition by adding a heart dimension. He explains “a contemplative practice is any act, habitually entered into with your whole heart, as a way of awakening, deepening, and sustaining contemplative experience of the inherent holiness of the present moment” (p. 46). As shown in Table 1 (CCMS, n.d.b), numerous options exist for contemplative experiences. The CCMS (n.d.b) organizes them into seven distinct clusters within its *Tree of Contemplative Practices*. Even though contemplative practices originated from and are most commonly associated with Eastern religious traditions, comparable customs have also been prevalent in contemporary Christian religious circles for the past 40 years (Fox, 2007). Individual practices may have either a spiritual or religious intent or a combined purpose. Therefore, the actual experience will depend on the goal with which the individual enters into the context. While contemporary expressions (e.g., meditation, centering prayer, yoga) are personal, the practices are not restricted to solitary endeavors and may be exercised in groups or congregations, as well.
Table 1. Tree of Contemplative Practices

<table>
<thead>
<tr>
<th>Contemplative Practice</th>
<th>Examples of Expression</th>
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<tbody>
<tr>
<td>Stillness</td>
<td>centering prayer and insight meditation</td>
</tr>
<tr>
<td>Movement</td>
<td>yoga and walking meditation</td>
</tr>
<tr>
<td>Creation process</td>
<td>chanting and contemplative art</td>
</tr>
<tr>
<td>Activist</td>
<td>volunteering and bearing witness</td>
</tr>
<tr>
<td>Generative</td>
<td>lectio divina and loving-kindness meditation</td>
</tr>
<tr>
<td>Ritual and cyclical</td>
<td>Shabbat/Sabbath and vision quest</td>
</tr>
<tr>
<td>Relational</td>
<td>deep listening and storytelling</td>
</tr>
</tbody>
</table>

**History**

Historically, contemplative practices as exhibited within Buddhism evolved in India approximately 15 centuries ago and are often referred to as concentrative and mindfulness practices (Cahn & Polich, 2006; Goleman, 1976; Ornstein, 2008; Thurman, 2006). According to Thurman:

> It is fair to say that classical Indian civilization incorporated the contemplative far more than any other, then or now. The contemplative marked that civilization in every way. It caused it to develop unparalleled ‘inner sciences,’ as they are often called, which were shared among the various religions. (p. 1765)

From a psychological perspective, these ancient practices or methods can be viewed as psychological systems designed to bring peace and alertness of mind to the person who engages in them (Ornstein, 2008). Comparable, but not identical, methods exist in most major non-western religions such as Hinduism, Islam, and Eastern Orthodoxy as well as in Christianity and Judaism (Goleman, 1976; Ornstein, 2008; Stanley, 2009). Forms of prayer expressed in Christianity (e.g., centering prayer, contemplative prayer) and in Judaism (e.g., intoned prayers, movement) can also be generally described as concentrative meditation as they seek to quiet the mind by interrupting routine compulsive thinking (Ornstein, 2008; Stanley, 2009). Bourgeault (2008) aptly refers to
this as fracturing the “tyranny of your usual mind” (p. 141). St. John of the Cross and St. Teresa of Avila, early Christian mystics, saw the immeasurable benefits of clearing the mind with the intention to join one’s spirit with God. They advocated contemplative prayer as it was practiced in third century Christendom (Fox, 2007; Stanley, 2009).

While conservative Christian scholars may not agree, some believe the steps of the meditation process taught by St. John of the Cross are strikingly similar to the meditation instructions attributed to Patanjali in the Yoga Sutras (Ornstein, 2008; Shearer, 1982). Although considerable similarities exist between contemplative practices advocated by the Christian mystics and Eastern traditions, such as endeavoring to calm the mind while remaining open, alert, and present, it is important to note the distinctions. Father Thomas Keating, leader of the Christian contemplative resurgence and creator of contemporary centering prayer, frequently compares Eastern and Christian meditation practices (Ferguson et al., 2010; Keating, 2009). Keating asserts that one of the crucial differences between the practices is that centering prayer gives attention to the heart and the divine love of God rather than to the mind; its purpose is to foster one’s relationship with God rather than to calm the mind. He also conveys that “Centering Prayer is not a concentrating practice, nor an exercise of attention. It is an exercise of intention” (p. 142). While Keating does not recognize Eastern meditation traditions as emphasizing one’s intention, many practices from the Buddhist and Hindu traditions do utilize intention as a means to mindfulness (Nhat Hanh, 2006; Shapiro, Carlson, Astin, & Freedman, 2006). However, within the Buddhist practice the emphasis is on enlightenment and compassion rather than a closer relationship with God. Enlightenment may be viewed as a cognitive construct; however, compassion may be considered an attribute of the heart. While these
variations are in harmony with the aforementioned general definition of contemplative practices (CCMS, n.d.a; Finley, 2000), marked differences occur between Eastern and Christian meditation practices.

**Meditation Techniques**

**Turning-off and opening-up.** While numerous contemplative practices are noted in the Tree of Contemplative Practices (CCMS, n.d.b) and in Eastern traditions (e.g., Buddhism, Hinduism), meditation is the most common form of contemplative practice. While numerous methods of meditation occur, the vast majority fall along a continuum between two categories, either concentrative, which is *turning-off*, or mindfulness, which is *opening-up* one’s awareness to the external world (Cahn & Polich, 2006; Kabat-Zinn et al., 1992; Ornstein, 2008). In Buddhism these two categories are referred to as *shamatha*, meaning calming, and *vipashyana*, meaning insight or transformation (Thurman, 2006).

When *turning-off* awareness, thoughts and sensory responses related to the environment are restricted by deeply focusing the mind on a single point such as a mantra, prayer, one’s breath, or a meditation object such as a flower, flame, or religious article. While this type of meditation is also demonstrated in other religious customs, the definition and purpose differ from one faith tradition to another. When practicing centering prayer in the Christian tradition a mantra is only used to bring one’s attention to the present moment and it is released once the mind is present (Keating, 2009).

The second category of meditation, *opening-up* of awareness, is sometimes identified as mindfulness or insight meditation. It involves being intensely attuned to one’s consciousness and senses. *Opening-up* meditation is approached with a spirit of curiosity and acceptance while refraining from judgment. With concentrated attention in
the present moment, the practitioner follows and observes thoughts and sensations with the goal of insight through self-observation (Hofmann et al., 2010; Kabat-Zinn et al., 1992; Ornstein, 2008; Thurman, 2006). Christian contemplation, a profound spiritual and divine union with God (Keating, 2003), may loosely be compared to opening-up meditation. However, according to Keating contemplation is an imprecise practice that cannot be controlled. When engaging in contemplation, the practitioner experiences a deepened encounter with the Divine transcending self with the intention of receiving enlightenment. Centering prayer may be one vehicle of entry to a level of God consciousness (Keating, 2009; Rohr, 1999).

**Yoga.** Hindu yoga practices fall into the concentrative and mindful categories, as well. The term yoga is generally applied and may denote specific breathing techniques, meditations, and body postures also known as *asanas*, or yoga may be a combination of all three. According to Iyengar (2001), one of the principal gurus credited with bringing yoga to the West, “the primary aim of yoga is to restore the mind to simplicity, peace, and poise, and free it from confusion and distress” (p. 12). Accordingly, it is proposed that yoga practices may lead to improved health and harmonization of the body, mind, emotions, and spirit (Li et al., 2012; West et al., 2004). The essential related text is the *Yoga Sutras* which are attributed to Patanjali (Shearer, 1982). Little is known about Patanjali and he may have been mythical. However, most believe the ancient sage and physician roamed India during the second century BCE. Ledgerwood (n.d.), a modern mystic and founder of the acclaimed *Yoga Center of California*, describes eight forms of yoga. While all are authentic yoga methods, Western culture associates seven of them with meditation rather than yoga. The eighth method, hatha yoga, is what Western culture
identifies as yoga. Even though the yoga methods vary, the common theme is the turning-off or the opening-up process with the purpose of fostering a greater sense of calmness, awareness, and wellness.

**The Effects of Contemplative Practices on Practitioners**

Physiological effects such as heart rate, blood pressure, and brain activity as related to meditation, prayer, and other spiritual or religious exercises on practitioners have been studied for decades. As previously stated, contemplative practices are generally considered personal pursuits that intensely focus and quiet the mind (CCMS, n.d.a). While the review includes several methods of contemplative practice, the preponderance of the research centers on traditional Eastern styles of meditation. This section of the chapter includes a review of seminal studies, neurological findings, and additional physiological and psychological findings of research associated with contemplative practices. Lastly, methodological problems identified by researchers in critiques are reviewed.

**Seminal Studies**

The earliest studies that garnered serious attention in the scientific community occurred in the 1960s. They were provoked by curiosities surrounding Eastern yogis who appeared to be able to demonstrate atypical physiological control of heartbeat, breathing, and their autonomic nervous system activity (Anand & Chhina, 1961; Anand, Chhina, & Singh, 1961a; Anand, Chhina, & Singh, 1961b; Wenger, Bagchi, & Anand, 1961). Since that time, numerous clinical and empirical studies have been conducted which have been received with mixed reviews by the scientific community. The merit of the practice or
method under investigation often emerges in the results by the observed reduction of stress, anxiety, or depression.

Considerable evidence suggests that contemplative practices may have a positive effect on the management of stress, anxiety, and depression (Chambers et al., 2007; Kabat-Zinn et al., 1992; Koszycki, Benge, Shlik & Bradwejn, 2007; Li et al., 2012; Miller, Fletcher, & Kabat-Zinn, 1995; Praissman, 2008; West et. al, 2004) which would be of significant benefit to undergraduate college students. A seminal study conducted by Jon Kabat-Zinn et al. (1992) brought to the forefront the potential benefits of meditation in a clinical setting. The inquiry involved an extensive, eight week out-patient program that was centered on intensive mindfulness meditation (i.e., insight) training. Twenty-four people were selected for the study with 22 completing the program. All participants had a specific psychiatric diagnosis with generalized anxiety disorder being a concomitant diagnosis.

While the Kabat-Zinn et al. (1992) study has received criticism (Hofmann et al., 2010), prior studies were generally less rigorous lacking standardized diagnostic assessment measures or not clearly defining the criteria leading to the diagnosis of an anxiety disorder (Delmonte, 1985). At the program culmination, significant improvement in anxiety related symptoms were noted in 20 of the 22 participants and the progress had been maintained in a three-month follow-up. Further, in a unique three-year follow-up study (Miller et al., 1995), 10 of the original people indicated that they were still practicing mindfulness meditation as previously trained. Seven of the 18 were practicing at what was considered to be a moderate to high frequency, 16 regularly practiced breathing techniques, 17 reported that the mindfulness meditation practice had an
important to very important positive influence on their life, and 16 reported that the training had long-term value for them. The complexity and long-term success of this study led to the design and recognition of several mindfulness-based clinical treatments such as the Stress Reduction and Relaxation Program (SR&RP), Mindfulness-based Stress Reduction (MBSR), and Mindfulness-based Therapy (MBT) that continue to be prescribed and empirically studied (Hofmann et al., 2010; Praissman, 2008).

These seminal studies paved the way for more complex neurological research. With the assistance of sophisticated technologies (e.g., functional magnetic resonance imaging, positron emission tomography) the potential effects of meditation on psychosocial well-being continues to be confirmed. This knowledge could significantly serve higher education professionals as they attempt to create environments conducive to improving the psychosocial well-being of their students (Shapiro et al., 2011a).

**Neurological findings.** Neurological responses of those who meditate have been an interest of neurobiologists for 30 years. Even though the details of neurological technology are beyond the scope of this review, having a basic understanding of the advanced tools being utilized for neurological research related to contemplative practices is important. Research strongly suggests that contemplative practices, particularly meditation, may improve cognitive processes such as attention, concentration, memory, learning, language and verbal reasoning, emotions, and problem solving (Chambers et al., 2008; Creswell et al., 2007; Lazar et al. 2005; Luders et al., 2009; Luders et al., 2012; Mohan et al., 2011), all of which would directly benefit the undergraduate college student population. The methods utilized vary in complexity ranging from self-report inventories (Chambers et al., 2008) to data gathered from functional magnetic resonance imaging.
(Creswell et al., 2007; Newberg, Pourdehnad, Alavi, & B’Aquili, 2003). While not plentiful, some research suggests that meditation may have no or little impact on cognitive processes. For example, Josefsson and Broberg (2011) conducted a study with 92 people. About half were considered meditators who had at least two years of meditation experience and the remaining participants had no experience at all. Data were garnered from surveys and the results of attention tasks outside of meditation. The findings suggest that meditation had no effect on sustained and executive attentional performance. However, the results do propose that meditators may have a heightened sense of internal processes (e.g., breathing, heart rate), but this did not appear to assist when responding to external stimuli outside of meditation.

With a combination of sophisticated technologies neuroscientists are able to monitor brain activity when a person is engaged in meditation (Creswell et al., 2007; Newberg et al., 2003). Williams (n.d.) explains that while magnetic resonance imaging (MRI) produces a static image of the brain that is useful in distinguishing subtle differences in soft tissue areas of the body, functional magnetic resonance imaging (fMRI) gauges cerebral blood flow relative to the amount of oxygen in the brain. The area of the brain with the highest concentration of oxygen in the blood is where neural activity is greatest. During concentrated meditation of advanced practitioners, elevated oxygenation has been observed in the frontalis medius, a part of the frontal lobe area of the brain (Newberg et al., 2003; Ritskes et al., 2003). This region is considered to “be associated with enhanced insights and attentiveness, heightened interests, sharper mental focusing, and deeper emotional resonances” (Ritskes et al., 2003, p. 5). Positron emission tomography (PET) observes blood flow and metabolism in the brain during meditation.
It has been noticed that areas of the brain associated with happiness, positive thinking, and compassion may be aroused in this area of the brain (Williams, n.d.), a region highly responsible for one’s sense of psychosocial well-being.

In the past decade, neurological research has focused on the lasting effects of meditation and investigators have utilized long-term meditators as their subjects (Lazar et al., 2005; Luders, et al., 2012; Newberg et al., 2003; Williams, n.d.). During MRI’s, neuroscientists are able to measure the thickness of gray matter in the brain. It is believed that gray matter improves the brain’s ability to communicate by reinforcing neurological cellular connections affecting processes such as attention, interception (e.g., itch, hunger), and sensory processing (Lazar et al., 2005). Marked differences in the thickness of gray matter between meditators and non-meditators have been observed indicating that contemplative practices, with a calming and focusing effect on the mind, may have the potential to restore and possibly increase gray matter. This finding is significant because brain tissue has been known to slowly deteriorate with age (Lazar et al, 2005; Luders et al., 2009). Hence, the potential long-term positive effect of meditation on traditionally-aged college students as they progress further into adulthood is profound.

The latest research reveals that long-term meditation may also have a positive effect on the neuroplasticity of the brain. By means of MRI, Luders et al. (2012) have observed an increase in the number of folds in the cerebral cortex, the area of the brain that processes information. With this knowledge, it is postulated that physiological changes in the brain may also be attributed to long-term meditation. From a pragmatic perspective it is important to note that of the long-term meditators in the aforementioned studies, not all were full-time practitioners (e.g., monks, nuns). Many of the subjects were
lay people who maintain careers and families and also engage in routine contemplative practice (Lazar et al., 2005; Luders et al., 2012). Therefore, it is possible to suggest that routine contemplative practices may be beneficial to the general population.

**Additional physiological and psychosocial findings.** Extensive research does appear to strengthen the proposition that contemplative practices have a beneficial effect on the physiological and psychosocial well-being of those who practice. From a physiological wellness perspective, several comparison studies and meta-analytic reviews reveal that an individual’s heart rate, blood pressure, and immune system may respond positively when subjects engage in contemplative exercises. Further, symptoms (e.g., nausea, anxiety) that aggravate diseases such as cancer, chronic pain, fibromyalgia, and heart disease may also be relieved by treatments that involve contemplative practices (Baer, 2003; Hofmann et al., 2010; Li et al., 2012; Praissman, 2008; Ross & Thomas, 2010). However, given all of the benefits of meditation, researchers have found that some physical conditions do not respond positively. Those diagnosed with epilepsy or a predisposition to seizures may experience negative effects when meditating and may be cautioned against engaging in meditation practices (Jaseja, 2010).

Among the studies related to yoga, the Rocha et al. (2012) investigation was unique and insightful. Over the course of a six-month period the researchers examined physiological and psychological parameters of individual participants in a hatha yoga course. The participants were 36 healthy men, ages 20 to 40 years, who were enlisted in the Brazilian army. It is typically difficult to isolate the potential positive effects of hatha yoga because the results are often confounded by the simultaneous physical invigoration of this method of yoga practice as well as the overall physical fitness of the subjects prior
to the treatment (Ross & Thomas, 2010; West et al., 2004). These people were already physically fit and the treatment group participants continued to maintain their fitness protocol through the duration of the study. The people in the control group participated in four 60 minute physical fitness sessions each week and those in the treatment group participated in two 60 minute physical fitness sessions and two 60 minute yoga sessions each week. The participants completed inventories related to depression, anxiety, and stress; completed tests measuring short and long-term memory; and had their cortisol levels measured. Cortisol is commonly known as the “biochemical marker of stress” (Mohan et al., 2011, p. 210). At the end of the six months, when compared to the control group, the treatment group participants demonstrated significantly reduced measures related to depression, anxiety, and stress; significant improvement in short and long-term memory; and lower cortisol levels. However, at the onset of the study the subjects did not have heightened levels of depression, anxiety, stress, or cortisol. Even so, the treatment group participants did demonstrate positive physical and psychosocial effects that can be directly attributed to hatha yoga.

**Methodological problems.** Researchers have critiqued studies associated with contemplative practices and have found different types of limitations and weaknesses. These limitations include the use of inappropriate assessment tools, small sample sizes, reliance on participant self-reports, lack of randomization, absence of a control group, unclear identification of the type of meditation practice being investigated, inconsistency in the populations studied, isolation of the condition being treated, and falling short in terms of methodological complexity (Baer, 2003; Hofmann et al., 2010; Li et al., 2012; Sedlmeier, Eberth, & Schwartz, 2014; Shapiro et al., 2011a).
Most recently, Sedlmeier et al. (2014) add an appropriate unit of analysis and precise theories of meditation to the long list of criticisms. Their examination of the literature suggests findings specifically related to Transcendental Meditation (TM) may be overstated. While TM is the meditation method most commonly researched published in professional scientific journals, they posit that without appropriate units of analysis and theories of meditation it is impossible to make specific predictions or measure the effect of such an intervention. Further, within the meta-analysis, the researchers observed “TM studies contained more positive effects than might be expected by chance” (p. 618). However, the point of their research was not to dismiss the potential positive effects of meditation, but to point out that even though TM is abundant in the literature the positive findings may be exaggerated when compared to other forms of meditation. Further, they underscore that “finding out more about the effects of meditation has the potential both to enrich psychological theories and to yield practical benefits to human kind” (p. 621).

Among the studies with the most methodological problems are those involving non-clinical research (i.e., the participants do not have a measurable medical diagnosis such as high cholesterol). These studies tend to be confounded by troubles such as contrived stressors, insufficient practice with the treatment, or biased participants. For instance, Mohan et al. (2011) led people who had no prior meditation experience in a guided meditation technique to which they had only been briefly exposed. The researchers measured the participant ability to recover from or prevent stress and anxiety induced by computer games. Belding et al. (2010) examined heart rate, blood pressure, and anxiety of subjects who, in front of a video camera, were instructed to persuade a fictitious prospective employer to hire them. Participants used prayer or self-talk to
determine if there was any effect on the physiological or psychological measures. Ferguson et al. (2010) utilized parishioners who identified themselves as religious and had varying experience with prayer to determine the effects of centering prayer on stress, anxiety, and one’s relationship with God. The spirit and significance of these research efforts are appreciated and it is understandable that the esoteric nature of the topic makes research design, participant selection, and implementation challenging. Among most of the studies based in the participants being taught a contemplative method, it is uncommon for the credentials of the person leading the instruction to be revealed. It seems this component would be vital to the results of the study and may explain the significant success of Kabat-Zinn’s work (Kabat-Zinn et al., 1992; Miller et al., 1995). Being a long-term practitioner himself, he may be more proficient at delivering instruction either directly to the subjects being studied or selecting appropriate facilitators. Further and often unaddressed is the level of meditation experience of the people selected for inquiries. Lavallee et al. (2011) conducted a study with four inexperienced (i.e., average of eight months) and four experienced (i.e., average of 18 years) meditators. While engaged in mindfulness meditation, the investigators took Electroencephalographic (EEG) measures of participants’ neurological reactions to auditory stimuli whereby tones were initiated at two different frequencies. Commonly, a third tone that does not really exist is perceived by the brain. Experienced meditators could ignore the third tone and their meditation was unhindered, whereas inexperienced meditators could not ignore the tone as evidenced by the results of their EEG. This suggests that meditation experience is a significant variable to consider when designing a study. Nonetheless, evidence continues to suggest that engaging in contemplative practices, specifically meditation, is
a reliable means by which to sharpen the mind and cope with stress. The literature strand that follows reviews research directly associated with meditation, stress, and undergraduate college student populations.

**Meditation and Undergraduate College Students**

Of the scholarship related to meditation, limited research with a focus on traditionally-aged, college students exists. More scarce is scholarship specific to their psychosocial well-being (Baer, 2003; Hofmann et al., 2010; Li et al., 2012; Praissman, 2008; Ross & Thomas, 2007). A 2013 meta-analysis conducted by Regehr et al. reviewed 24 cognitive, behavioral, or mindfulness studies designed to measure an intervention’s influence on anxiety symptoms. The studies selected were limited to those published in peer-reviewed journals and those including university student populations that were random or parallel cohort design. Of the 24 studies, only eight identified explicit undergraduate student populations. Further, of the eight, only five studies applied a meditation-based technique as the intervention (Astin, 1997; Burns et al., 2011; Lynch et al., 2011; Oman et al., 2008; Shapiro et al., 2011b).

Among the five investigations, the Burns et al. (2011) Transcendental Meditation (TM) study is the only *turning-off*, or *shamatha*, intervention whereby practitioners concentrate on clearing and focusing the mind. Conversely, those with MBSR-type interventions use techniques designed to assist practitioners with *opening-up*, or *vipashyana* (Cahn & Polich, 2006; Kabat-Zinn et al., 1992; Ornstein, 2008; Thurman, 2006), and tend to be more complex. Generally MBSR interventions are eight weeks in length, participants meet weekly for approximately 90-minutes each session, and one full day is allocated for a retreat. During the intervention participants learn how to mindfully
scan their bodies, perform sitting and walking meditation, assume certain yoga postures, and execute certain breathing techniques (Center for Mindfulness in Medicine, Health Care, and Society, n.d.).

One variation of the MBSR (Kabat-Zinn et al., 1992) is the Mindfulness-Based Coping with University Life (MBSUL) which was developed specifically for college students and piloted by Lynch et al. (2011). The eight-week program mirrors, in part, the MBSR with weekly discussion topics relevant to college students. Participants were recruited from a university campus population with ages ranging from 19 to 60 years. The sample also included graduate students; however, the published study does not clearly identify how many. Since the study was identified as having an undergraduate student sample in the meta-analysis (Regehr et al., 2013) it is possible the participants were primarily undergraduates. The students met for 90-minutes one night a week. The nonrandomized study began with 23 participants and 15 were assigned to the treatment group. However, by the end of the MBSUL program there were only 10 participants remaining in the treatment group. A range of measures was taken with one being the Perceived Stress Scale (PSS; Cohen, Kamarack, & Mermelstein, 1983; Cohen & Williamson, 1988). The researchers point out that no statistically significant differences were found between the control and treatment group participants even though the groups were not randomized. Related to the PSS, $z = -.55$ and $p = .58$, respectively. However, significant data differences were observed between the two groups associated with the PSS at the end of the treatment, $z = .95$ and $p = -.34$ respectively. The MBSUL program appears to assist college students with managing their stress.
Another similar MBSR program is the Eight-Point Program (EPP), a program founded by Eknath Eswaran (Blue Mountain Center of Meditation, n.d.). EPP includes spiritual fellowship and spiritual reading components within the program giving it a religious dimension not typical within MBSR. Oman et al. (2008) conducted a study comparing MBSR and EPP. A randomized group of 47 first- and second-year college students participated in eight weekly meetings lasting about 90 minutes each. Neither intervention included an all-day retreat. The study was comprised of several data points including participants’ perceived stress. The results, on all of the measures, did not demonstrate a significant difference between each of the treatments. However, compared with the control group, the participants receiving the intervention reported larger decreases in perceived stress ($p < .05$, Cohen’s $d = -.45$ pretest $SD$s) that persisted in an eight-week follow-up ($p = -.47$). A distinct feature of this study is the two-month follow-up which demonstrated the treatment persisted over time, further validating the potential effectiveness of meditation on undergraduate student populations. Shapiro et al. (2011b) republished the study. Unlike Lynch (2011), Oman et al. (2008) retained most of their participants. To encourage retention, students were paid $60 throughout the study (i.e., $10 after pretest, $20 after posttest, and $30 after the follow-up surveys). Further, the institution was faith-based which may have made the spiritual components of EPP more appealing to the students and may have been a good fit instrument.

As previously mentioned, TM is the only study that deviated from the MBSR format. It is a technique brought to the United States by Maharishi Mahesh (1966) and popularized by Harvard psychology professor Ram Dass (1971). It is a trademarked program with very little explicit information about the method available to the public.
Facilitators are certified and must teach within the intended framework of the program. TM is a “technique that allows your mind to effortlessly settle inward, through quieter levels of thought, until you transcend the thinking process and experience the most silent and peaceful level of your own awareness — pure consciousness, your innermost Self” (Transcendental Meditation, n.d.b). It is noted for its simplicity with participants committing themselves to six consecutive days of training led by a certified TM instructor which includes one 45-minute presentation, a one-hour personal training session, and four 45-minute group presentations. Participants also meditate twice a day for 15 to 20 minutes, once in a group and another session individually (Burns, 2011). Among stress reduction techniques, TM is the most widely researched method of meditation in professional scientific journals and has yielded findings that support its effectiveness at reducing a number of physical and psychosocial maladies including stress (Alexander, Robinson, Orme-Johnson, Schneider, & Walton, 1994).

Burns et al. (2011) secured a grant to conduct a TM study with first-year college students in a seminar course. Forty-three participants began the study with attrition leaving the researchers with 33 data sets. Among other measures, the findings demonstrated a significant effect on self-reported levels of stress, \( t(16) = 2.64 < .018 \), consistent with numerous other TM related studies (Alexander et al., 1994). While the authors believe TM would be an effective supplemental strategy for university counseling centers to utilize with students, they note that the trademarked program is cost prohibitive. Of the aforementioned studies, the TM program, while requiring the least amount of time investment, consistently yields positive results.
Shapiro et al. (2011a) also conducted an extensive review of literature centering on integrating meditation into higher education. Well-designed studies with meditation-based treatments were selected and the findings provide significant support for the potential benefits of meditation for the college student population (e.g., stress reduction, enhanced focus). Of most significance, the review draws attention to the fact that the number of studies with college students pales in comparison to clinical and non-clinical studies that target the general population.

Among the studies in the review, several were associated with stress, anxiety, and depression (Shapiro, Brown, & Biegel, 2007; Shapiro, Schwartz, & Bonner, 1998; Tang, et al., 2007) and, to varying degrees the researchers, also implemented MBSR-type treatments using the Kabat-Zinn et al. (1992) study as an exemplar. Shapiro et al. (2011a) took great care to include studies where the meditation training utilized for the treatment went beyond cursory instruction, consequently adding authenticity to the results. Overall, significant positive effects were found for symptoms related to non-clinical anxiety disorders.

This review includes an investigation of the dispositional effects of undergraduate students which included data measured through a fMRI (Creswell et al., 2007). While the inquiry did not involve any type of meditation or mindfulness practice, the data garnered indicated that college students who were predisposed to being more mindful, as determined by a battery of measures prior to the fMRI, were more emotionally stable and could recover more quickly when their mood had been purposefully negatively altered. These findings may suggest that being mindful helps regulate mood states, which would be a valuable life skill particularly during the college years. Since both turning-off and
opening-up meditation lead to increased awareness, meditation practice is expected to help regulate mood (Cahn & Polich, 2006; Kabat-Zinn et al., 1992; Ornstein, 2008; Thurman, 2006).

Some of the research Shapiro et al. (2011a) reviewed did not focus on college students simply because the scholarship is not available. One critical area lacking was research associated with cognitive functioning and academic performance. While the studies reviewed provide evidence of improved attention, thickening of gray matter in the brain, and the ability to quickly shift attention, the subjects are largely not college students (Jha, Krompinger, & Baime, 2007; Lazar et al., 2005; Slagter et al., 2007). One exception is a study conducted by Hall (1999). Over the course of a spring semester the investigator studied the influence of a basic meditation process on cumulative grade point average (GPA) as a measure of academic performance. Fifty-six undergraduate students participated to fulfill a course requirement. They met twice a week for a one-hour study session. For the treatment group participants, meditation instruction and practice took place the first and last 10 minutes of the study session. Additionally, participants were encouraged to use the techniques any time they studied outside of the prescribed sessions. The control group participants met twice a week for one hour without any instructions to meditate. The in-class meditation included techniques to focus attention, to relax, and to breathe. At the conclusion of the semester, a one-factor analysis revealed there was a significant difference in GPA between the groups ($p < .014$) with the means of the meditating group and control group being 2.93 and 2.48 correspondingly. However, as previously mentioned as a concern, few details were given about the graduate students
who facilitated the study sessions or about the specific meditation methods the students practiced.

While all of these studies demonstrate the value of utilizing meditation as a means to combat stress, many overarching methodological limitations confound the findings (e.g., lack of randomization, sample size, lack of a control group, attrition, and unbalanced gender groups). One methodological limitation related to meditation-based studies may be the complexity of the intervention. MBSR techniques involve a significant time investment. Unless the program is embedded within a course or seminar, the general student population may not be mature enough to withstand a lengthy program. Therefore, the meditation treatment within the Hall (1999) study, given its flaws, may be an appropriate entry for students as they are able to see the immediate value of their meditation practice. Having a positive experience with a brief and effective meditation practice may pave the way for engaging in more complex experiences such as MBSR. While the TM method is succinct and has substantial data to support its value as a tool for stress management, it may also be cost prohibitive (Alexander et al., 1994; Burns et al., 2011).

Despite the limited, explicit scholarship related to the college audience, a growing number of higher education professionals have begun to integrate meditation into college academics (Bush, 2011; Repetti, 2010). Repetti states:

Research collectively shows that mindfulness improves the ability to maintain preparedness, orient attention, process information quickly and accurately, handle stress, regulate emotional reactions, and cultivate positive psychological states; that one-pointedness practice improves academic achievement; and that meditation enhances creativity, social skills, and empathetic responses. These findings clearly justify a shift toward contemplative pedagogies. (p. 12)
In addition to Repetti’s summary, meditation offers students an opportunity to cultivate their introspective skills. Introspection is valuable in an academic setting because it can lead to a deeper, richer experience with the content of the curriculum (Bush, 2011). Coinciding with the contemplative movement in higher education, a contemplative philosophy of education has emerged that is underpinned by what the student, as a human being, brings to class. Even though the identified curriculum is typically the predominant feature of a course, the platform for learning is the student’s interior self (e.g., intentions, heart, values, beliefs, self-understanding, spirituality, emotional maturity, creativity) (Bush, 2011; Kirsch, 2009; Repetti, 2010). Championing the movement is the Association for Contemplative Mind in Higher Education (Association for Contemplative Mind in Higher Education, n.d.), an initiative of the Center for Contemplative Mind in Society (CCMS, n.d.c). The association serves higher education professionals who recognize and value the benefits of contemplative living through introspective pursuits. It is a hub for professionals who desire to infuse contemplative practices into their academic courses and advance rigorous and meaningful scholarship in the area.

**Conclusion**

Modifying the traditional definition of well-being to a holistic body, mind, and spirit definition may be a more appropriate way to view health (Chan et al., 2002; Ng et al., 2005; WHO, 2013). Additionally, there seems to be a positive connection between contemplative practices and well-being for many individuals (Kabat-Zinn et al, 1992; Ornstein, 2008). Contemplative practices such as meditation have been a part of religious and spiritual exercises for more than 2,000 years (Fox, 2007; Ornstein, 2008; Thurman, 2006). While the practices are unique to each religious or spiritual tradition, the
psychology of why they are effective remains static: calming, focusing, and opening up the mind, important elements of physical and psychosocial well-being (Ornstein, 2008). With the menu of contemplative practices being relatively broad, it is possible that various points of access, such as meditation, are suitable for both religious and nonreligious individuals and, therefore, could be appropriate in a variety of settings including higher education (Repetti, 2010). The ability to focus and quiet the mind within the fabric of a frenetic culture can possibly have significant practical benefits for college students. Higher education professionals should take notice and consider the benefits of integrating meditation into their campus wellness programs.

Chapter Three will present the methodology of the study. Considering the strengths and limitations of the studies reviewed in Chapter Two, a concise and potentially effective breathing meditation with a sample of undergraduate college students was conducted.
CHAPTER THREE

METHODOLOGY

The purpose of this study was to examine a select group of undergraduate student self-perceptions of stress before and after engaging in breathing meditation, a contemplative practice. Breathing meditation is one technique or intervention for reducing stress (Burns et al., 2011; Regehr et al., 2013). The study includes a control and an experimental group with the intervention occurring over an eight-week period during a regular semester of coursework. Three particular groups of undergraduate students were studied: nursing majors, social work majors, and a group of mixed major honors students. Based on my review of the research literature, a key assumption I held as the researcher was that I anticipated the treatment would have a positive effect on the intervention group.

This chapter presents the research questions, methodological design, the selection of participant sample, intervention procedures, instruments, data collection and analyses, and anticipated limitations. The chapter concludes with a summary.

Research Questions

With the intention of contributing to the scholarship that associates meditation with undergraduate student psychosocial well-being, three research questions guided the study:

1. What are undergraduate student self-perceptions of stress?
2. What are the circumstances that contribute to undergraduate student perceived stress?
3. What effect does breathing meditation have on undergraduate student self-perceived stress?

Research Design

I implemented a mixed-methods research design to examine undergraduate students’ self-perceived stress before and after engaging in a breathing meditation intervention. While research suggesting contemplative practices enhance physical and psychosocial well-being is steadily emerging, a clear disparity exists in empirical research involving undergraduate college student subjects (Burns et al., 2011; Conley, Travers, & Bryant, 2013; Hofmann et al., 2010; Shapiro et al., 2011a). Further, related research is broadly quantitative in design and may overlook the crucial, descriptive elements, which are at the center of psychosocial well-being such as awareness or mindfulness, presence of mind, and emotional experiences and responses (Kabat-Zinn, et al., 1992; Ornstein, 2008; Seligman, 2011). Consequently, the body of knowledge related to contemplative practices (e.g., meditation) and the psychosocial well-being of college students would be meaningfully served by a mixed methods design study.

Traditionally, either quantitative or qualitative methodology has been at the center of research design. However, mixed methods research integrates a blend of both quantitative and qualitative methods within a single study and is becoming more conventional (Creswell & Clark, 2011). Each method answers “different questions; qualitative methods refer to *what kind*, and quantitative methods to *how much of a kind*” (Kvale & Brinkmann, 2009, p. 117). Morse (2003) advocates the use of the mixed methods approach and suggests applying more than one research strategy to a study may expand the scope of the design, could expedite the researcher’s understanding, and may
well capture a more comprehensive portrayal of human behavior. While this is an appealing outcome, merging qualitative and quantitative approaches requires that critical attention be given to each (Bryman, 2006). Additionally, the mixed methods design may transcend limitations associated with pure quantitative and qualitative research by one approach balancing, or offsetting, the other (Brewer & Hunter, 2006). While one methodology generally has priority, both data strands, quantitative and qualitative, are collected either simultaneously or consecutively (Creswell & Clark, 2011).

Mixed methods research is primarily reliant upon a pragmatic theoretical perspective (i.e., postmodernism) insomuch as it seeks to find meaning beyond the numerical data (Patton, 2002). From this perspective, an appropriate research method is selected to answer a question, rather than a question being devised to suit a particular research method (Morgan, 2008). Issues associated with language, meaning, and usefulness are also at the center of the pragmatic theoretical perspective (Morgan, 2008; Tashakkori & Teddlie, 1998).

Since integrating quantitative and qualitative methods adds a layer of complexity to a research study, it is important that the researcher has good reason to implement the mixed methods approach. Bryman (2006) identifies 16 potential reasons for selecting the mixed methods design. For the purpose of this study, I have identified seven of these reasons that support my decision to utilize a mixed methods design which basically encompass the notion of balance in a study where there is no clearly delineated preferred path. Thus, for my study I capitalized on specific strengths of each method in a mixed methods approach.
For the quantitative perspective, I constructed a situation that eliminates the potentially confounding influence of many variables, allowing me to credibly establish cause-and-effect relationships, if they exist. Another strength of including a quantitative aspect is that the research results will be relatively independent of my bias or perspective.

Alternatively, qualitative data were brought into the fold based on the participants’ own categories of meaning and provided individual case information. Further, the qualitative focus provided understanding and description of people’s personal experiences of phenomena and data in the words and categories of participants. This, in turn, led to exploring how and why phenomena occur in certain situations. Further, this study does more than just measure an outcome, for example the heart rate of a person; it also attempts to measure more personal and subjective responses.

Numerical data collection lends itself to focused closed responses that can help categorize information; whereas qualitative responses are more open-ended and allow for depth and enriched responses. Ultimately, I garnered quantifiable information that was enriched by details provided in the qualitative information collected.

**Embedded Design**

Since I employed both quantitative and qualitative methods within the study, I utilized a fixed mixed methods research design whereby the use of both methods was predetermined. The philosophical paradigm of the study was the Embedded Design, as described by Creswell and Clark (2011), with interaction between the quantitative and qualitative strands informing my analysis at the conclusion of the study. A closely related philosophical paradigm, Pragmatic Sequential Design, is described by Mertens (2010). Within these paradigms, while both quantitative and qualitative data are critical, as the
researcher I determined the quantitative data takes precedence with the qualitative data providing valuable insights that may lead to depth of meaning. Sequential timing was implemented with quantitative data components collected both at the onset and at the conclusion of the intervention and qualitative data were collected after the post-intervention quantitative data were collected. Finally, the data garnered from both strands were mixed at the conclusion of the study informing the analysis phase of the project.

The rationale for implementing Embedded Design is to develop a deeper understanding of the self-perceived stress of undergraduate students, related stressors, and whether the treatment has an effect on self-perceived stress. To accomplish this, both a post-positivist and constructivist worldview underpinned this research study. Since the research questions primarily seek to “examine causes that influence outcomes” (Creswell, 2003, p. 7), the post-positivist lens is appropriate for the quantitative elements of the investigation. Additionally, the postpositive claims (i.e., determination, reductionism, and empirical observation and measurement) are consistent with the research and shaped the implementation and analysis. The constructivist lens naturally supports the qualitative elements of the research and the associated knowledge claims (i.e., understanding, multiple participant meanings, social and historical construction, theory generation) and provided a framework for interpreting the qualitative data and the blending of both data strands (Creswell & Clark, 2011). While an emphasis was placed on the quantitative data, the constructivist position helped avoid potential hegemony of the aforesaid data strand and fostered a more comprehensive understanding of each participant’s responses that extends beyond isolated numerical findings.
A visual representation of my application of the Embedded Design is as follows in Figure 1 (Creswell & Clark, 2011).

![Diagram of Embedded Design Application]

Figure 1. Embedded Design Application

**Participants**

This section of the chapter will describe the study participants. Participants were a convenience sample recruited from a Midwest four-year university and involved 41 undergraduate student participants whose ages range from 19 to 58 years of age. I selected three different undergraduate student populations who, anecdotally, have been identified as being highly stressed: students from the honors program, nursing majors, and social work majors. In order to provide a thorough description of the sample, I collected demographic information from the participants including gender, age, year in college, major, honors student status, and work and athletic scholarship obligations.

**Honors program.** The honors program (HP) students attend college full-time and are from a variety of majors whose class standing ranges from second to fourth-year. The students primarily enter the HP at the beginning of their first-year. Criteria for admission into the HP include a graduating high school grade point average (GPA) of 3.5
and a composite score of 24 on the American College Testing exam (ACT). Qualifying students are interviewed by current HP students who evaluate each applicant’s involvement in previous service experiences as well as her or his general fit with the program. Once admitted, HP students must maintain a cumulative GPA of 3.25 or higher, participate in cultural experiences and service, and attend mandatory meetings. All HP students must register for three one-hour HP seminars, take seven honors courses, conduct a research project, conduct a research thesis, and fulfill a 90-hour non-graded service requirement. Roughly a quarter of the students have a major in the sciences and about the same proportion are athletes. The highest honor a graduating senior can receive for curricular and co-curricular achievement has been awarded to an HP student seven of the past eight years. Additionally, four have been student government presidents and, routinely, about half of the Resident Assistants and Peer Ministers are HP students. After speaking with the HP advisor about my research, she agreed to grant the students service hours for participating in the study. I attended an Honors Program meeting to explain the nature of the study and invited students, who are at least in their second year, to voluntarily participate. The recruitment process is detailed in a separate forthcoming section.

**Nursing majors.** The nursing program is highly selective and is known for being academically rigorous. Nonetheless, the baccalaureate program at this institution only has a five to six percent attrition rate as compared to the 10 to 12% among nursing students across the nation. To be admitted to the nursing major (NM), students must have already attained a 3.0 GPA and passed the Test of Essential Academic Skills, a high stakes licensure exam for the profession. The nursing major’s participants will be first semester,
third-year students enrolled in their first clinical experience, a tremendously challenging semester. During the semester these full-time students are concurrently enrolled in four upper division nursing courses. Participants were recruited to volunteer for the study from two different sections of the required courses. Some of these students were both HP and NM. An informational meeting was held to explain the nature of the study and invite students to voluntarily participate.

**Social work majors.** Students enrolled in the social work (SW) major are exposed to stressful academic and field-based situations. Third and fourth year students will be recruited to participate in the study. Third-year students are normally enrolled in three-to-five upper division social work courses. Fourth-year students are typically enrolled in three-to-four upper division courses along with a 240 hour field internship. The field internship requires students to operate as a social worker at a social service agency carrying their own caseloads. All social work courses involve writing intensive assignments. Students must maintain a minimum of a 2.0 GPA in their major courses and a 2.5 GPA overall. There is approximately a 3% attrition rate in the major. It is possible some of these students would be both HP and SW. An informational meeting was held to explain the nature of the study and invite students to voluntarily participate. The participant recruitment email and the informed consent for all three groups can be found in Appendices A and B respectively.

**Recruitment process.** The first communication was from an HP, NM, or SW administrative assistant recognizable to the prospective participants. They contacted the students via email approximately three weeks prior to the study. Following the eligibility requirements (i.e., at least 18 years of age, undergraduate, fulltime, nursing major, social
work major, or involved in the honors program), liaisons garnered the names and email addresses of prospective student participants and, approximately three weeks prior to the study, sent an introductory letter (see Appendix A) and the informed consent form (see Appendix B) through campus email. I did not have any knowledge regarding which individual students were invited. The letter introduced me, provided a synopsis of the study, and explained the components and length of the study. Students were directed to attend the meeting to learn more about my research and to volunteer to participate in the study. Approximately one to two weeks prior to the study, I met with the student groups to explain the nature of the study, answer questions, invite students to voluntarily participate, and provide the informed consent form (see Appendix B). Those who agreed to participate completed the informed consent forms and also completed the demographic information (see Appendix C), and responded to the Undergraduate Stress Questionnaire (USQ) (Crandall, Preisler, J., & Aussprung, 1992) (see Appendix D) and the Perceived Stress Scale (PSS) (Cohen, Kamarack, & Mermelstein, 1983; Cohen & Williamson, 1988) (see Appendix E). These meetings took place before or after previously scheduled and required sessions for their respective programs.

**Gaining access to the institution and participants.** The following describes how I accessed the institution and participants selected for study. I secured approval from my dissertation committee, the Institutional Review Board (IRB) at my graduate institution, Loyola University Chicago (LUC), and the IRB of the institution where the study was conducted. I received approval to conduct the study from the responsible parties at the university where the study was conducted (i.e., dean of the nursing students, the honors program advisor, the social work department chair). A letter was sent to the
provost summarizing the research, describing the intended study and the data to be collected, and formally requested institutional cooperation (see Appendix F). The provost formally granted permission to conduct the study at the institution (see Appendix G).

**Intervention Procedures**

This section describes the intervention procedures. The intervention group met with me once per week for approximately 15 minutes for a total of eight weeks. The first session was longer in order to describe the breathing meditation technique. The session ended with a nine-minute guided audio-recorded breathing meditation. A transcript of the guided breathing meditation is included in Appendix H.

Due to scheduling constraints, the treatment was given on different days and times during the eight weeks of the experiment (i.e., Mondays at 1:00 p.m., Tuesdays at 5:00 p.m., and Wednesdays at 5:00 p.m.). However, every effort was made to make the experiences identical. Each took place in a regular classroom and utilized a prerecorded audiotape for the guided breathing meditation. Each intervention group met weekly with approximately seven days between treatments. While most participants attended the same session each week, students’ were able to attend on a different day if they had a scheduling conflict. Even though this may have posed a minor limitation to the study, it did not impede the valuable data that were garnered from the experience. I recorded attendance each week and stressed how important it was to attend all of the sessions. I also emailed the students each week to remind them of the breathing meditation session (see Appendix I).
Data Collection Procedures

This section of the chapter will provide information about Phase 1 and Phase 2 data collection techniques, instruments, procedures, and data analysis.

Phase 1 and 2 data collection. Quantitative data included two collection points: Phase 1 at first meeting and Phase 2 at final meeting. Two instruments, the USQ (see Appendix D) and the PSS (see Appendix E), were administered and included 41 undergraduate student participants. Approximately 160 students are involved in the honors program, nursing and social work majors groups. About 40 were necessary to meet the minimum criteria for the study. The honors program students received service hours for their participation, the fourth-year social work majors received extra-credit in a required research course, and the nursing and third-year social work majors were motivated by the nature of the study. Since they intend to be healthcare practitioners, they were interested in the potential effect of meditation on self-perceived stress. While this is a small convenience sample, this number of subjects meets the “rule of thumb” associated with experimental research conducted with surveys (Mertens, 2010; Onwuegbuzie, Jiao, & Bostick, 2004). Approximately half of the participants were assigned to the intervention group and approximately half were assigned to the control group.

Quantitative data were collected from all participants during Phase 1.

Simple random sampling using a table of random numbers was used to assign students who volunteered to participate to an intervention or control group for the quantitative strand of the study. Simple random sampling is a probability-based technique whereby “each member of the population has an equal and independent chance of being selected” (Mertens, 2010, p. 318). This was a good fit for the study given that the basis
for employing random samples is to probabilistically generalize the findings to a broader equivalent population (Shadish, Cook, & Campbell, 2002). In the case of this study, the findings have limited generalizability due to the nature of a convenience sample; however, the findings still provided useful knowledge about undergraduate student populations who are experiencing stress. Further, utilizing the table of random numbers circumvented one of the primary drawbacks of simple random assignment: researcher bias which could unconsciously arise when using devices such as coins or spinners (Mertens, 2010).

Participants were assigned a unique code number provided on the informed consent form (see Appendix B). The assigned code provided the ability to match pretest and posttest data and to identify the most interesting cases in the study. The participants included the assigned code number on each of their two pre-tests and demographic information forms. I collected the forms upon completion of the session. The informed consent forms were collected by an administrative assistant who assisted me with this part of the study. The forms were stored in a locked filing cabinet in the office of the College of Education. I had no need to personally access these documents.

Prior to completing the forms, I explained the purpose of the assigned code to the participants and assured them I would not have access to which name is associated to which code number. Their responses on the pretest and posttests were anonymous and I interacted with the data using their corresponding code rather than name. I further explained that the exception will be the participants who agree to be interviewed. To identify interviewees, I selected the most interesting cases as determined by the pretest and posttest data. I then provided the corresponding assigned numbers to the
aforementioned administrative assistant. The administrative assistant invited the potential informants, via email, to participate in this phase of the study. If they agreed, the administrative assistant gave the participants name and corresponding code number to me. I was only able to associate a name and number with the six participants who agreed to be interviewed.

Given the institution where the study was completed is small (i.e., fewer than 2,000 students on campus), the students who volunteered for the study knew they were assigned to the control or intervention group. To ensure all of the students had timely and accurate information, they were informed through email of their group assignment and were also given specific information regarding meeting location, time, and attendance expectations, (see Appendices J and K).

**Phase 3 data collection.** Phase 3 included the qualitative strand of the study and sought to “understand the world from the subjects’ points of view, to unfold the meaning of their experiences” (Kvale & Brinkman, 2009, p. 1). The qualitative data were collected during Phase 3, included six participant interviews, and followed a phenomenological research approach. With the underpinning of the qualitative strand being the constructivist paradigm, a phenomenological research approach is a reasonable decision. “The key characteristic of phenomenology is the study of the way in which members of a group or community themselves interpret the world and life around them” (Mertens, 2010, p. 235). Phenomenological researchers are interested in understanding the perceptions and meanings individuals assign to an experience which clearly supported my research of undergraduate student self-perceptions of stress before and after engaging in a contemplative practice intervention.
An interview group of six participants from the experimental group meets the “rule of thumb” associated with phenomenological research (Mertens, 2010; Morse, 1994). The group was a nested and purposeful sample selected from the most interesting cases that arose when analyzing pretest and posttest data (Teddlie & Tashakkori, 2009). To secure six volunteers, seven participants were invited to be interviewed. To participate, volunteers signed a second informed consent form specific to this phase of the study (see Appendix L). The interviews were held in a conference room on-campus and were each approximately 25 to 45 minutes in length. They were audio recorded for later transcription, member checking, and the peer review process.

**Instrumentation.** Participants completed a demographic questionnaire (see Appendix C) and two surveys at the first meeting: the Undergraduate Stress Questionnaire (see Appendix D) (USQ; Crandall et al., 1992) and the Perceived Stress Scale (see Appendix E) (PSS; Cohen et al., 1983; Cohen & Williamson, 1988). The demographic questionnaire included items such as gender, age, ethnicity, year in college, number of hours working a job each week, and number of hours engaged in other non-academic pursuits each week (e.g., athletics, clubs, etc.). The rationale for two different quantitative instruments was to garner more detail regarding the nature and origin of potential stress which proved useful when making recommendations for effective interventions when addressing undergraduate student stress.

The Undergraduate Stress Questionnaire (USQ; Crandall et al., 1992) is a checklist comprised of 82 items reflecting possible life events undergraduate students may encounter (see Appendix D). Each item checked by a respondent is considered a tally and the USQ score is determined by the sum of the tallies. While the events range in
severity (e.g., death of a family member versus did badly on a test), all events receive the same count (i.e., none of the items are weighted). The USQ was inspired by the widely utilized Holmes and Rahe’s (1967) Social Readjustment Rating Scale (SRRS) and revised to reflect life events appropriate for the college student population. The development of the USQ centered on two goals: (1) developing an instrument for a particular population (i.e., college students) and (2) implementing it with a range of students in order to address methodological issues. Six comprehensive studies evolved to accomplish these two goals. As summarized by Crandall et al. (1992), “on the basis of these studies, the USQ appears to be a valid, reliable, and well-behaved measure of life events stress of college students” (p. 656) demonstrating sufficient psychometric properties of 0.80 internal consistency, 0.71 split-half reliability, and test-retest reliability over the course of six weeks. Adding to the instrument’s appeal, the USQ is a checklist that takes less than five minutes to complete. However, even with the established reliability and validity of the instrument, the USQ has not broadly been used in scholarship with exception of published dissertations (Benejam, 2013; Gefen, 2010; Ramsey, 2013). With a variety of instruments to choose from, such as the College Undergraduate Stress Scale (Renner & Mackin, 1998) and the Hassles Assessment Scale (Sarafino & Ewing, 1999), researchers are able to select instruments appropriate for their respective needs. To that end, the USQ is the ideal choice for this study insomuch as the items in the instrument best fit the sample population. Permission to use the USQ is given by the author as noted on the email exchange with the author (see Appendix M).

Since the USQ is more than 20 years old, some of the items did not reflect current trends associated with well-being on college campuses. At the forefront is the influence
of social networking and other personal technology advancements. Further, some items needed to be adjusted given the institution had a large commuter population and the participants are primarily third and fourth-year students. To accomplish this, I met with the university counseling office to determine if the USQ items reflect current stressful occurrences for students on campus. Consequently, I revised 13 items (i.e., 9, 13, 16, 27, 32, and 57) and replaced 13 items (i.e., 3, 4, 17, 22, 44, 51, 53, 54, 62, 63, 64, 74, and 80). Finally, I provided another line for an open-ended response at the end of the questionnaire.

The Perceived Stress Scale (PSS) (see Appendix E) is the most extensively used instrument for measuring self-perceived stress (Al kalaldeh & Abu Shosha, 2012; Cohen, 1994). Respondents complete a 10-item psychometric scale (0 = never to 4 = very often) to gauge the magnitude of their thoughts and feelings regarding life circumstances during the previous month. The data garnered from this instrument complements data from the USQ in that it identifies how well student respondents are generally managing the stressful experiences reported in the USQ. The PSS has demonstrated a moderate internal reliability of 0.78 (Cronbach’s α) and 48.9% of the variance is explained through factor principal components analysis with two factors, positively and negatively worded items. Cohen and Janicki-Deverts (2012) conducted a recent national study of 2,000 men and women using the PSS. The findings are helpful in that they provide a perceived-stress score benchmark that was very valuable for the purpose of data analysis in this study. The PSS appears to be an optimal instrument for measuring perceived stress and is desirable for its reliability and brevity. Further substantiating the quality of the instrument, numerous recent studies with college students have elected to use the PSS including
Bodenlos, Noonan, and Wells (2013), Chao (2012), Geslaini and Gaebelein (2013), and May and Casazza (2012). Permission to use the PSS is given by the author as noted on the instrument (see Appendix E).

The interview protocol (see Appendix N) included open-ended questions consistent with the 12 aspects of phenomenological interviews posed by Kvale and Brinkmann (2009). Six purposefully selected participants from the experimental group were interviewed (Mertens, 2010; Morse, 1994). The nested sample provided an opportunity to better understand the life stressors college students experience and the effect of meditation on their perceived stress (Kvale & Brinkman, 2009).

**Data collection and timeline.** As previously stated, a mixed-methods study is complex and requires thoughtful attention be given to both the quantitative and qualitative strands while capitalizing on the relationship between the two data sets (Brewer & Hunter, 2006; Bryman, 2006; Creswell & Clark, 2011). As recommended by Creswell and Clark, the researcher should “advance a qualitative strand that includes ‘persuasive’ qualitative data collection procedures and a quantitative strand that incorporates ‘rigorous’ quantitative procedures” (p. 172). To ensure the study met these standards, Table 2 outlines the procedures that were applied.

**Data Analysis**

Table 2 documents the procedures of the study. Beyond the demographic information, the study provided two quantitative data sources, the Undergraduate Stress Questionnaire (USQ) and the Perceived Stress Scale (PSS). The USQ data identified stressful life events the participants experienced in the semester of the study. The PSS data measured participants’ self-perceived stress as ranked on a psychometric scale
associated with thoughts and feelings experienced in the past month. The interview transcripts provided qualitative information regarding the effectiveness of breathing meditation and enhanced an understanding of the overall usefulness of the intervention.

Table 2. Data Collection Procedures

<table>
<thead>
<tr>
<th>Prior to Treatment</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week Three</td>
<td>Email introduction letter (see Appendix A) &amp; consent form (see Appendix B) to prospective participants.</td>
</tr>
<tr>
<td>Weeks Two and One</td>
<td>Met with prospective participants in their respective and required settings to explain the purpose of the study and to answer questions. At the meeting, participant volunteers completed the informed consent form, demographic form, and two pretests. An indiscriminate participant number was assigned for pretest and posttest comparisons and to identify interview participants. The signed consent forms, pretest, and posttest were collected. An administrative assistant kept the signed consent forms in a locked cabinet in the College of Education office.</td>
</tr>
<tr>
<td>Week One</td>
<td>Using random numbers participants were assigned to an intervention or control group. Participants were notified via email of their group assignment and related instructions.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Treatment Begins</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week One</td>
<td>The intervention group received instruction in breathing meditation and participated in a nine-minute guided breathing meditation. There were no requirements of the control group until week-eight.</td>
</tr>
<tr>
<td>Week Two</td>
<td>Analyzed Phase 1 demographic, USQ, and PSS pretest data.</td>
</tr>
<tr>
<td>Weeks Two through Seven</td>
<td>Intervention group met for approximately 15 minutes and participated in a nine minute guided breathing meditation.</td>
</tr>
<tr>
<td>Week Three</td>
<td>Interview protocol were finalized based on Phase 1 quantitative data.</td>
</tr>
<tr>
<td>Week Eight</td>
<td>The intervention group participated in a nine-minute guided breathing meditation and completed the USQ and PSS (posttests). The control group at another time during the week completed the USQ and PSS (posttests).</td>
</tr>
</tbody>
</table>
Analyzed Phase 2 USQ and PSS posttest data.

A nested sample of participants was selected from the most interesting cases that arose after analyzing the pretest and posttest data from the intervention group. An administrative assistant invited potential participants, via email, to participate in a one-on-one interview. Invitations continued until six volunteers were recruited. I was given the participant’s name after they agree to participate in the interview. I knew the names of students who chose to participate.

<table>
<thead>
<tr>
<th>Post Treatment</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week Ten</td>
<td>Phase 3 was implemented. Two interviews, approximately 45-minutes each, were conducted with a nested sample from the experimental group. The qualitative data were analyzed and the protocol was minimally revised.</td>
</tr>
<tr>
<td>Week Eleven</td>
<td>Phase 3 continued with four additional 25 to 45-minute interviews with the nested sample.</td>
</tr>
<tr>
<td>Subsequent Weeks</td>
<td>Member checking was employed to ensure accuracy of meaning associated with the transcripts. Qualitative data were then analyzed, quantitative data and qualitative data were analyzed together, and conclusions were established.</td>
</tr>
</tbody>
</table>

Table 3 outlines the quantitative analysis procedures which are Phase 1 pretest and Phase 2 posttest data analysis. The Phase 3 qualitative data analysis was based on the protocol which was finalized after the Phase 2 data analysis. Nonetheless, the interview methods were phenomenological and included several aspects of qualitative research interviews as described by Kvale and Brinkmann (2009). They were conducted as semi-structured life world interviews with the intent to “understand themes of the lived everyday world from the subjects’ own perspectives” (p. 27). To circumvent potential power asymmetry, I considered the interview to be a *conversation* with the goal of understanding what effect breathing meditation had on self-perceived stress. The subsequent transcript was a *co-authored document* reflective of my and the informant’s experiences (Kvale & Brinkmann, 2009).
Table 3. Phase 1 Quantitative Analysis Procedures

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Analysis Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are undergraduate student self-perceptions of stress?</td>
<td>Compute descriptive statistics on the Perceived Stress Scale pretest for the entire sample including means, standard deviation, and frequencies. This will provide an overall understanding of the level of perceived stress of the entire sample.</td>
</tr>
<tr>
<td>What are circumstances that contribute to undergraduate student perceived stress?</td>
<td>Compute descriptive statistics on the Undergraduate Stress Questionnaire for the entire sample including means, standard deviation and frequencies.</td>
</tr>
<tr>
<td>What effect does breathing meditation have on undergraduate student self-perceived stress?</td>
<td>Compare means on the Perceived Stress Scale pretests of the control and experimental groups to the posttests of the control and experimental groups using ANCOVA to determine if there are any statistically significant differences (p &lt; 05).</td>
</tr>
</tbody>
</table>

The nature of qualitative analysis does not lend itself to lockstep procedures (Kvale & Brinkmann, 2009). With that being said, the researcher must still have a plan knowing that it may be re-directed as the study ensues. While Kvale and Brinkmann significantly influenced the tone of this strand of the study, Charmaz (2007) and Corbin and Strauss (2008) also suggest qualitative analysis techniques that were useful. Even though their work is primarily associated with grounded theory, the techniques are appropriate for other qualitative frameworks (Mertens, 2010). The preliminary method of qualitative analysis included three steps. First, the transcripts were analyzed through categories established a priori such as primary and secondary stressors, effect of stress on a daily basis, breathing meditation, and breathing meditation as a strategy to combat the stress of undergraduate students in general. Open coding followed which led to improving, enhancing, and rejecting the categories set a priori with the continued search for patterns, themes or trends. Finally, I blended the qualitative and quantitative findings.
and examined them through a postpositive constructivist lens with the aim of bringing
deeper meaning to the quantitative results.

**Trustworthiness.** Mixed methods research involves quantitative and qualitative
methodology and researchers must be cognizant of the potential validity and
trustworthiness issues inherent in each approach. “In quantitative research, the researcher
is concerned about issues of validity at two levels: the quality of the scores from the
instruments used and the quality of the conclusions that can be drawn from the results of
the quantitative analysis” (Creswell & Clark, 2011, p. 210). The instruments selected for
Phase 1 and Phase 2, the Undergraduate Stress Questionnaire (USQ; Crandall et al.,
1992) and the Perceived-Stress Scale (PSS; Cohen et al., 1983; Cohen & Williamson,
1988) both demonstrate content validity. In other words, the data derived from using
these instruments are known to be “meaningful indicators of the construct being
measured” (Creswell & Clark, 2011, p. 210). While the PSS has established criterion-
related validity, the USQ does not. Therefore, data garnered from the USQ were only
used to help explain events that could possibly influence responses to the PSS.

The authenticity of quantitative methodology is commonly justified by the
internal validity, external validity, and reliability of the study (Creswell & Clark, 2011).
Unfortunately, no study is immune to internal validity or external validity threats. To
preserve internal validity, I was mindful of threats such as history, maturation, and testing
that may influence the relationship among variables. However, two threats were given
primary consideration: selection and attrition. Although the student participants were
randomly assigned to the control and intervention groups, there was no guarantee the
groups selected will be equivalent demographically. However, once the data were
analyzed it was apparent the control and intervention groups were comparable. If they
had not been, the data would be manipulated, as described in Table 2, to control for any
differences between the groups.

Given the small sample size, attrition is also a serious consideration. Fortunately,
only one participant of the entire sample did not posttest. Even though internal validity is
vital in quantitative studies, external validity must also be carefully considered. A
primary limitation of this study was the small participant sample size, which prevents a
range of student representations. Since the findings of this study have imperfect
generalizability, it is my hope this research will encourage further studies with a more
representative and robust college student population. Finally, quantitative reliability must
also be taken into consideration. While the reliability of the USQ and PSS instruments
diminishes over time, the eight-week duration of the study should minimize this concern
(Cohen & Williamson, 1988; Crandall et al., 1992).

The qualitative methods were employed during Phase 3 of the study. Lincoln and
Guba (1985) suggest researchers consider four criteria to ensure trustworthiness in
qualitative research: credibility, dependability, transferability, and confirmability.
Credibility, similar to internal validity, addresses the degree to which the researcher
truthfully reports the data garnered. To establish credibility, member checks were utilized
to assure the accuracy of the interview transcripts. Informants had the opportunity to
clarify their responses, which led to more truthful and possibly deeper interpretation. Two
of the six informants responded to my request to review each of their respective
transcripts; of those two no amendments were needed. Since two data sets were collected
in Phase 1 and 2, triangulation was also utilized to determine the credibility of the qualitative findings.

Dependability, similar to reliability, addresses the integrity of the data collected. A colleague who is familiar with meditation and the college student population was used as a peer reviewer. To guarantee confidentiality, the names of the participants were not revealed to the peer reviewer. She read the transcripts, helped identify themes, and relevant, reliable, and consistent codes. Once the codes were identified, interpretation of the student interview transcripts was more dependable.

Transferability, comparable to external validity, is concerned with “the inquirer’s responsibility for providing readers with sufficient information on the case studied and the case to which findings might be transferred” (Schwandt, 2007, p. 299). Thick descriptions of the interview findings and meaningful quotes from the participants painted a detailed picture of the informants. Such rich detail assists the reader with understanding the meaning behind the data and to be a better consumer of the research (Lincoln & Guba, 1985).

Confirmability relates to the fulfilled purpose of the research. Are the data able to confirm an association between breathing meditation and self-perceived stress? While I anticipated there would be a clear association between breathing meditation and self-perceived stress, conducting the research allowed me to confirm my assertions.

**Limitations**

This section addresses several limitations associated with the study and ways to mitigate their potential influence. First, utilizing a convenience sample limits the generalizability of the results and external validity is compromised. Even though this is
true, utilizing the honors program students presents a cross-section of majors as well as year in college that provides broader understanding of the undergraduate college student experience. Second, while a quantitative sample size of 41 subjects meets the “rule of thumb,” small sample sizes also limit the generalizability of the findings (Mertens, 2010; Onwuegbuzie et al., 2004). Third, the predictive validity of the Perceived Stress Scale (PSS) rapidly declines after four to eight weeks (Cohen, 1994); therefore, conducting the study for eight weeks may compromise the findings. However, an eight-week breathing meditation intervention is the timeframe that is consistent with the Mindfulness-based Stress Reduction programs initiated by Kabat-Zinn et al. (1992). The needs of the instrument and the intervention may have counterbalanced one another. Fourth, and conversely, receiving the treatment only once per week for eight weeks may constrain the potential influence of meditation. It has been established that intense meditation programs have a positive effect on self-perceived stress (Burns et al., 2011; Regehr et al., 2013); however, the shorter, but focused, meditation intervention may be more accessible and practical for the undergraduate college student population. Fifth, perceived stress and psychological distress are difficult to differentiate; however the PSS only measures perceived stress (Cohen & Williamson, 1988). Since the student participants did not receive a psychological evaluation, the sample included some who experience psychological distress, a confounding variable. However, whether the stress is perceived or a consequence of psychological distress, it is still experienced as stress and, therefore, may not significantly influence the findings. Finally, interviewer bias and power asymmetry must also be considered. To combat this, during the study I routinely monitored my internal dialogue and focused on the stories conveyed by the participants,
whether through quantitative or qualitative means. As researcher, it was important I 
acknowledge that the participants and I are not equal partners; the relationship is 
asymmetric. However, while the structure of the study is defined by the researcher, the 
participants are the ones who bring meaning to the findings (Kvale & Brinkman, 2009).

Summary

The mixed methodology of the study was presented in this chapter. This included 
the research questions and a description of the research design, participants, and the 
intervention procedures. It also detailed the data collection techniques, instruments, data 
analysis methods, and anticipated limitations. Through this mixed methods study I sought 
to better understand the underlying perceived causes of stress and identify whether 
breathing meditation is a useful intervention for undergraduate students. In Chapter Four, 
I will share the findings and address the three research questions that guided this study.
CHAPTER FOUR
DATA ANALYSES AND RESULTS

Within this chapter I share my analysis of the findings of the influence of breathing meditation on the self-perceived stress of undergraduate college students. This mixed methods investigation was comprised of 41 participants; 20 in the control group and 21 in the intervention group. Data were collected from two surveys, the Perceived Stress Scale (PSS) and the Undergraduate Stress Questionnaire (USQ) at pretest (i.e., Phase 1) and posttest (i.e., Phase 2) intervals. Interviews were conducted during Phase 3 of the study and with a nested sample of students who had participated in the intervention group.

As intended, data were collected for approximately 10 weeks beginning in late August 2014 through the second week of November 2014. Analyses immediately followed and continued for approximately two months. Analyses were completed in two stages: quantitative data analyses and qualitative data analyses with integrated triangulation. Each step of the analyses is described in forthcoming sections.

Participant Demographics

The participants in the study were a convenience sample of 41 full-time undergraduate students recruited from a small Midwest four-year university. While there were 42 participants through the duration of the study, one intervention group member did not posttest and, as researcher, I decided not to include his data in my analysis. As described in Chapter Three, the group included three specific undergraduate student
populations who, anecdotally, have been identified as being highly stressed: students from the honors program, social work majors, and nursing majors. Table 4 provides participants’ demographic information at a glance. All were full-time students whose class standing ranges from second to fourth-year. While the mean age of the participants was 22, 90% were 19 to 22 years of age. More than two-thirds were participating in the honors program and almost three-fourths of the students’ were working for an income at the time of the study. Appendix Q provides more detailed demographic information about the sample.

Table 4. Participant Demographics at a Glance

<table>
<thead>
<tr>
<th></th>
<th>Intervention Group N=21</th>
<th>Control Group N=20</th>
<th>Combined Total</th>
<th>Combined Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9</td>
<td>5</td>
<td>14</td>
<td>34.20%</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>15</td>
<td>27</td>
<td>65.86%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 to 22</td>
<td>20</td>
<td>17</td>
<td>37</td>
<td>90.24%</td>
</tr>
<tr>
<td>25 to 58</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>9.74%</td>
</tr>
<tr>
<td>Honors Program</td>
<td>16</td>
<td>12</td>
<td>28</td>
<td>68.29%</td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>17.08%</td>
</tr>
<tr>
<td>Social Work</td>
<td>4</td>
<td>7</td>
<td>11</td>
<td>26.77%</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>9</td>
<td>23</td>
<td>56.15%</td>
</tr>
<tr>
<td>Working</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>12</td>
<td>30</td>
<td>73.27%</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>8</td>
<td>11</td>
<td>26.83%</td>
</tr>
</tbody>
</table>

The intervention group completed the pretests at the onset of the study and the posttests in the eighth week. The group also met once each week to participate in breathing meditation for a total of eight sessions. Over the duration of the study, the vast majority of the participants experienced roughly 72 minutes, nine minutes per week, of
breathing meditation. Among the group, 20 participants attended all eight sessions and one attended seven sessions. As previously mentioned, the intervention group was comprised of 22 participants, however 21 completed the posttests. Therefore, 21 were included in the quantitative and qualitative data analysis. It is important to note the participant who did not posttest attended seven of the eight sessions. Unfortunately, illness prevented him from attending the last breathing meditation session and completing the posttests. The control group met to pretest at the onset of the study and to posttest in the eighth week. All 20 members of the control group completed the posttests.

**Quantitative Data Analyses**

The mixed methods design of the research study required that I analyze both quantitative and qualitative data. Both data sets, individually and the interaction between the two, informed my analysis. Prior to the onset of the study, I determined the quantitative data would take precedence in my analysis and that I would rely on the qualitative data to provide critical insight into a deeper understanding of the influence of breathing meditation on undergraduate students’ self-perceived stress. Within an embedded design, sequential timing was implemented and the quantitative data elements were collected in Phase 1 and Phase 2: at the onset and at the conclusion of the intervention. Because I felt it would be beneficial to include a range of student experiences in the interviews, the subsequent Phase 1 and 2 data analyses informed my selection of the interviewees for Phase 3, the qualitative stage of the study.

Quantitative data were harvested from two instruments: the Perceived Stress Scale (PSS) and the Undergraduate Stress Questionnaire (USQ) (see Appendices E & D). The PSS identified participants’ self-perceived stress as ranked on a psychometric scale.
related with thoughts and feelings experienced in the past month. Data gleaned from the instrument allowed me to plausibly authenticate a cause-and-effect relationship between self-perceived stress and breathing meditation detached from the confounding sway of many variables and researcher bias. The USQ appears to be a complementary instrument in that it pinpoints stressful life events the participants experienced in the past month which may help to explain the circumstances that contribute to undergraduate students’ self-perceived stress.

Forty-one undergraduate college students completed the PSS and USQ pre- and posttests. Descriptive statistics of the sample are provided in Appendix A with a summary of the group in a forthcoming segment. At the start of the study 20 volunteers were randomly assigned to the control group and 22 to the intervention group. At the conclusion of the intervention, I collected posttest data from all 20 members of the control group and 21 members of the intervention group. In all, each of the 41 participants took both the pre- and posttests. The quantitative data garnered from these students informed the three research questions established for the study:

1. What are undergraduate student self-perceptions of stress?
2. What are circumstances that contribute to undergraduate student perceived stress?
3. What effect does breathing meditation have on undergraduate student self-perceived stress?

What are undergraduate student self-perceptions of stress? To gain an overall understanding of the self-perceived stress of undergraduate college students, data were examined from the PSS pretest for the entire sample. Statistical analyses were performed using SPSS version 22.0 [or PASW Statistics 22] to compute descriptive statistics.
including means, standard deviation, and frequencies. As noted in Table 5, the PSS pretest mean score for the sample was 20 ($SD = 5.26783$). To explain the value of the PSS score I referred to a recent administration of the instrument by Sheldon Cohen, one of the creators of the PSS. In 2009, Cohen and Janicki-Deverts (2012) conducted a national 2,000 person study using the PSS to “assess the degree to which situations in life are perceived as stressful” (p. 1323). The results were aggregated by age with 223 of the respondents being 18 to less than 25 years old (see Table 6). This is a reasonable comparison group since more than 90% of the participants within the present study were aged 19 to 22. Using these means as a benchmark, it appears the participants in my study were comparatively more stressed ($M = 20$) than the national sample ($M = 16.78$).

Table 5. PSS Pretest Entire Sample

<table>
<thead>
<tr>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>23.00</td>
<td>9.00</td>
<td>32.00</td>
<td>20.0000</td>
<td>5.26783</td>
</tr>
</tbody>
</table>

Table 6. PSS Results Cohen and Janicki-Deverts (2012)

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>N</th>
<th>PSS Mean Score</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 to less than 24</td>
<td>223</td>
<td>16.78</td>
<td>6.86</td>
</tr>
<tr>
<td>25 to 34</td>
<td>433</td>
<td>17.46</td>
<td>7.31</td>
</tr>
<tr>
<td>35 to 44</td>
<td>331</td>
<td>16.38</td>
<td>7.07</td>
</tr>
<tr>
<td>45 to 54</td>
<td>419</td>
<td>16.94</td>
<td>7.83</td>
</tr>
<tr>
<td>55 to 64</td>
<td>372</td>
<td>14.50</td>
<td>7.20</td>
</tr>
<tr>
<td>65 and older</td>
<td>222</td>
<td>11.09</td>
<td>6.77</td>
</tr>
</tbody>
</table>

The frequencies of the sample are presented in Table 7 and reveal almost three-fourths of the PSS scores fell between 15 and 25 with the most frequently reported scores being 18 and 25. The PSS scores ranged from 9 to 32, and demonstrate extremely low or extremely high self-perceived stress as compared to the majority of the sample. The PSS
pretest mean score and the frequencies address the first question by demonstrating the participants’ self-perceptions of stress were high at the onset of the study.

Table 7. PSS Pretest Frequencies

<table>
<thead>
<tr>
<th>Value</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.00</td>
<td>1</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>11.00</td>
<td>2</td>
<td>4.9</td>
<td>4.9</td>
<td>7.3</td>
</tr>
<tr>
<td>12.00</td>
<td>1</td>
<td>2.4</td>
<td>2.4</td>
<td>9.8</td>
</tr>
<tr>
<td>13.00</td>
<td>3</td>
<td>7.3</td>
<td>7.3</td>
<td>17.1</td>
</tr>
<tr>
<td>15.00</td>
<td>1</td>
<td>2.4</td>
<td>2.4</td>
<td>19.5</td>
</tr>
<tr>
<td>16.00</td>
<td>2</td>
<td>4.9</td>
<td>4.9</td>
<td>24.4</td>
</tr>
<tr>
<td>17.00</td>
<td>2</td>
<td>4.9</td>
<td>4.9</td>
<td>29.3</td>
</tr>
<tr>
<td>18.00</td>
<td>5</td>
<td>12.2</td>
<td>12.2</td>
<td>41.5</td>
</tr>
<tr>
<td>19.00</td>
<td>1</td>
<td>2.4</td>
<td>2.4</td>
<td>43.9</td>
</tr>
<tr>
<td>20.00</td>
<td>2</td>
<td>4.9</td>
<td>4.9</td>
<td>48.8</td>
</tr>
<tr>
<td>21.00</td>
<td>4</td>
<td>9.8</td>
<td>9.8</td>
<td>58.5</td>
</tr>
<tr>
<td>22.00</td>
<td>2</td>
<td>4.9</td>
<td>4.9</td>
<td>63.4</td>
</tr>
<tr>
<td>23.00</td>
<td>3</td>
<td>7.3</td>
<td>7.3</td>
<td>70.7</td>
</tr>
<tr>
<td>24.00</td>
<td>3</td>
<td>7.3</td>
<td>7.3</td>
<td>78.0</td>
</tr>
<tr>
<td>25.00</td>
<td>5</td>
<td>12.2</td>
<td>12.2</td>
<td>90.2</td>
</tr>
<tr>
<td>26.00</td>
<td>1</td>
<td>2.4</td>
<td>2.4</td>
<td>92.7</td>
</tr>
<tr>
<td>28.00</td>
<td>2</td>
<td>4.9</td>
<td>4.9</td>
<td>97.6</td>
</tr>
<tr>
<td>32.00</td>
<td>1</td>
<td>2.4</td>
<td>2.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

What are circumstances that contribute to undergraduate student perceived stress?

To clarify the circumstances that contribute to undergraduate students’ self-perceived stress, data were harvested from the Undergraduate Stress Questionnaire (USQ) pre- and posttest for the entire sample. The data analyses were accomplished by utilizing SPSS and analyzing descriptive statistics including means and frequencies. The subsequent data
constructed a picture of the stressful events that contributed to the students’ self-perceived stress.

Participants responded to 82 items (i.e., stressful events) on the USQ at pre- and posttest intervals. Table 8 displays the mean and range reports at pre- and posttest time. A slightly larger number of stressful events were identified by the participants at the conclusion of the study. The circumstances listed on the USQ include an assortment of academic, financial, and personal stressors (see Appendix D). As previously noted, the circumstances identified on the USQ are not weighted in any way. The instrument is being used to identify the events students found to be stressful. Graph 1 displays the frequencies of the items selected at pre- and posttest time. Analyzing the data set as a whole, pre- and posttest, nine stressful circumstances were selected by more than 25 participants at both testing intervals. Therefore, the items displayed in Table 9 appear to be more characteristic of this particular sample of undergraduate college students. Among these, thoughts about the future, lots of deadlines, and no sleep were the most frequently reported stressful events identified by the respondents.
Graph 1. USQ Pre- and Posttest Results
Table 8. USQ Pre- and Posttest Mean and Range

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>41</td>
<td>24.56</td>
<td>8 to 50</td>
</tr>
<tr>
<td>Posttest</td>
<td>41</td>
<td>27.02</td>
<td>8 to 50</td>
</tr>
</tbody>
</table>

Table 9. Items Selected on the USQ by more than 25 Participants on the Pre- and Posttest (N=41)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thoughts about the future</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>2</td>
<td>Lots of deadlines to meet</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>No sleep</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>4</td>
<td>Thought about unfinished work</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>Assignments in all classes due the same day</td>
<td>26</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>Sat through a boring class</td>
<td>28</td>
<td>32</td>
</tr>
<tr>
<td>7</td>
<td>You have a hard upcoming week</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>Feel unorganized</td>
<td>27</td>
<td>31</td>
</tr>
<tr>
<td>9</td>
<td>Lack of money</td>
<td>27</td>
<td>29</td>
</tr>
</tbody>
</table>

While some of the items selected remained steady between pre- and posttest, there were six spikes in the data at the time of the posttest. For the purpose of the analysis, a spike was determined if an item was selected by at least 10 or more respondents at posttest than at pretest. The items that spiked included had a lot of tests, went into a test unprepared, did worse than expected on a test, had a class presentation, crammed for a test, and stayed up late writing a paper. All of the spiked circumstances were associated with course assignments and tests. This may be contributed to timing as the posttest was taken the week of midterm examinations.

Conversely, no items comparably dipped at posttest (i.e., items selected by at least 10 fewer respondents at posttest than at pretest). Overall, the data convey a range of
stressful circumstances that contribute to the self-perceived stress of undergraduate students which addresses the second research question.

What effect does breathing meditation have on undergraduate student self-perceived stress? Understanding the effect of breathing meditation on the self-perceived stress of college students required applying a *t* test and ANCOVA to the data collected from the Perceived Stress Scale (PSS). The *t* test was used to compare the means of each group individually; the pretest of the intervention group to the posttest of the intervention group and the pretest of the control group to the posttest of the control group. ANCOVA was then utilized to compare any differences between the intervention and control group at posttest and to determine if there were any statistically significant differences (*p* < .05).

T-test statistics computed using SPSS determined the significance of the PSS posttest data as related to the pretest data (see Tables 10 and 11). The analyses indicate the change in the self-perceived stress of the intervention group from pre- to posttest fell considerably and significantly (*p* = .031; *t* = 2.322). Therefore, there is a good chance that participating in the breathing meditation sessions may have had a positive influence on the participants’ self-perceived stress over the eight weeks of the intervention. Specifically, the intervention group’s posttest score may have decreased from 20 to 17 as a consequence of participating in breathing meditation.

Table 10. PSS Paired Samples Statistics: Intervention Group

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>20.333</td>
<td>21</td>
<td>5.04315</td>
<td>1.10050</td>
</tr>
<tr>
<td>Posttest</td>
<td>17.142</td>
<td>21</td>
<td>5.45239</td>
<td>1.18981</td>
</tr>
</tbody>
</table>
Table 11. PSS Paired Samples Test: Intervention Group

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>95% Confidence Level of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Pre- &amp; Postest</td>
<td>3.19048</td>
</tr>
</tbody>
</table>

Related to the control group, the t-test analyses indicate the change in the self-perceived stress of the control group from pre- to posttest rose significantly \((p = .032; t = -2.311)\) (see Tables 12 and 13). Specifically, the control group’s posttest score increased from 19.65 to 22.1 over the duration of the study.

Table 12. PSS Paired Samples Statistics: Control Group

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>19.6500</td>
<td>20</td>
<td>5.60334</td>
<td>1.25294</td>
</tr>
<tr>
<td>Posttest</td>
<td>22.1000</td>
<td>20</td>
<td>4.25379</td>
<td>.95118</td>
</tr>
</tbody>
</table>

Table 13. PSS Paired Samples Test: Control Group

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>95% Confidence Level of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Pre- &amp; Postest</td>
<td>-2.45000</td>
</tr>
</tbody>
</table>

The test of between-subjects effects analysis (i.e., ANCOVA) was utilized to conduct comparisons between the intervention and control groups. The analysis indicated
a significant difference on the posttest means when controlling for pretest differences
with an effect size of .261 ($F = 13.411; p = .001$) (see Tables 14 and 15).

Table 14. Posttest Descriptive Statistics

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>17.1429</td>
<td>5.45239</td>
<td>21</td>
</tr>
<tr>
<td>Control</td>
<td>22.1000</td>
<td>4.24379</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>19.5610</td>
<td>5.45458</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 15. Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>405.087²</td>
<td>2</td>
<td>202.543</td>
<td>9.805</td>
<td>.000</td>
<td>.340</td>
</tr>
<tr>
<td>Intercept</td>
<td>383.957</td>
<td>1</td>
<td>383.957</td>
<td>18.586</td>
<td>.000</td>
<td>.328</td>
</tr>
<tr>
<td>PSSPReBothGroups</td>
<td>153.361</td>
<td>1</td>
<td>153.361</td>
<td>7.424</td>
<td>.010</td>
<td>.163</td>
</tr>
<tr>
<td>Group</td>
<td>277.043</td>
<td>1</td>
<td>277.043</td>
<td>13.411</td>
<td>.001</td>
<td>.261</td>
</tr>
<tr>
<td>Error</td>
<td>785.011</td>
<td>38</td>
<td>20.658</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16878.000</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1190.098</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. $R^2$ Squared = .340 (Adjusted R Squared = .306)

Additionally, when comparing the estimated marginal means (see Table 16) of the
intervention and control groups to the mean of the normative group reported in the Cohen
and Janicki-Deverts (2012) study, the intervention group ($M = 17.019²$) was near the
normative group means ($M = 16.78$) and the control group ($M = 22.230²$) was
comparatively higher. Therefore, the third question is addressed; breathing meditation
appears to have a positive effect on undergraduate student’s self-perceived stress. That is,
participating in breathing meditation may have had a positive influence on participant’s
self-perceived stress.
Table 16. Estimated Marginal Means

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>17.019a</td>
<td>.993</td>
<td>15.009</td>
<td>19.029</td>
</tr>
<tr>
<td>Control</td>
<td>22.230a</td>
<td>1.017</td>
<td>20.171</td>
<td>24.290</td>
</tr>
</tbody>
</table>

In conclusion, the quantitative phase of the investigation revealed three key findings. First, as determined by the PSS pretest mean score, the participants were relatively stressed. Their mean score was higher than the PSS mean score established in the Cohen and Janicki-Deverts (2012) study for similarly aged people. Second, there are a wide range of circumstances that promotes stress for undergraduate college students. While the preponderance of the events are associated with academic responsibilities, other circumstances such as thoughts about the future, sleep issues, and money are also stressful. Finally, breathing meditation appears to have a positive influence on self-perceived stress. The $t$ test analyses indicate the change in the self-perceived stress of the intervention group from pre- to posttest fell considerably and was found to be significant ($p = .031; t = 2.322$). Conversely, the $t$ test analysis of the control group indicates the change in the self-perceived stress of the control group from pre- to posttest rose significantly ($p = .032; t = -2.311$). The test of between-subjects effects analysis (i.e., ANCOVA) confirmed a significant difference on the posttest means when controlling for pretest differences with an effect size of .261 ($F = 13.411; p = .001$). All of these findings authenticated the probability that breathing meditation had a positive effect on the self-perceived stress of the participants. The next segment of Chapter Four presents the qualitative analyses conducted during Phase 3 of the study.
Qualitative Data Analyses

Qualitative data were collected during Phase 3 of the research study whereby six participants were interviewed. The group was a nested and purposeful sample selected from the most interesting cases that arose when analyzing pretest and posttest data (Teddlie & Tashakkori, 2009). Specifically, I sought to speak with participants who had a range of experiences such as those who had high PSS pretest and low PSS posttest reports, high PSS pretest and high PSS posttest reports, low USQ posttest reports and high PSS posttest reports, and high USQ posttest reports and high PSS posttest reports. A phenomenological research approach was employed to capture more personal and subjective responses of the participants (Mertens, 2010). The conversations provided insight into individual experiences of phenomena (i.e., self-perceived stress, stressors, and breathing meditation) and led to a deeper understanding of how and why phenomena occur in certain situations and the perceptions and meanings individuals assign to an experience (Creswell & Clark, 2011; Kvale & Brinkman, 2009; Mertens, 2010).

Several steps were followed in the analysis to ensure trusworthiness and the integrity of my interpretation. Charmaz (2007), Corbin and Strauss (2008), and Kvale and Brinkman (2009) informed my procedures leading me to the qualitative analysis steps presented in Table 17. To maintain focus in the analysis, it was vital that I remain true to the original research questions:

1. What are undergraduate student self-perceptions of stress?
2. What are circumstances that contribute to undergraduate student perceived stress?
3. What effect does breathing meditation have on undergraduate student self-perceived stress?
It is important to note that the data collected in Phase 3 primarily address research questions two and three. While research question one is best understood within the quantitative data set, the qualitative data did provide enhanced understanding of the students’ self-perceived stress.

The first stage of the analysis process was to develop a reliable codebook. The transcripts were analyzed through categories established *a priori*: primary and secondary stressors, effect of stress on a daily basis, breathing meditation, and breathing meditation as a strategy to combat the stress of undergraduate students in general. Since the sample was small, I applied open coding to all six transcripts and continued to search for patterns, themes, or trends leading to a more useful codebook. I recruited a colleague as a peer reviewer. She was a practical choice because she is a meditation practitioner and also teaches undergraduate students. She applied the codebook to one transcript and I revised the codebook based on our subsequent conversation of emerging patterns and themes. The same process was applied to each of the six transcripts. We then coded each of the six transcripts using the final codebook. The data were documented in a table and were referred to for each case analysis and for the group analysis. Due to the meticulous development of the codebook, I attained an inter-reliability of 94%.
Table 17. Steps of Qualitative Data Analysis

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review field notes</td>
<td>Field notes were kept for each of the eight weeks of the intervention. The notes included nuances such as the timeliness and engagement of the participants, the atmosphere of the room, and any questions that may have been asked.</td>
</tr>
<tr>
<td>Conduct interviews</td>
<td>Six interviews were conducted from a nested and purposeful sample selected from the most interesting cases as determined by the quantitative data reports.</td>
</tr>
<tr>
<td>Organize and prepare data for analysis</td>
<td>Interviews were transcribed.</td>
</tr>
<tr>
<td>Member checking</td>
<td>Transcripts were sent to the informants via their school email address to offer the opportunity to clarify their responses.</td>
</tr>
<tr>
<td>Review all of the data to develop an initial codebook</td>
<td>Both the quantitative and qualitative reports of each interview participant were reviewed, looking for emerging themes and patterns, and a codebook was written.</td>
</tr>
<tr>
<td>Coding the data</td>
<td>A peer reviewer used the preliminary codebook to code one transcript.</td>
</tr>
<tr>
<td>Peer review check</td>
<td>Discussed the findings with the peer reviewer.</td>
</tr>
<tr>
<td>Revise codebook</td>
<td>Made revisions to the codebook based on the conversation with the peer reviewer.</td>
</tr>
<tr>
<td>Revise codebook</td>
<td>A peer reviewer used the revised codebook to code a second transcript. The same process was followed with each of the remaining four transcripts.</td>
</tr>
<tr>
<td>Re-code data</td>
<td>Using the final codebook, coded all the data from each transcript continuing to look for major interconnecting, opposing or intersecting themes.</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Utilized thick descriptions to describe the raw data while considering the meaning of the themes and their interconnectedness.</td>
</tr>
<tr>
<td>Triangulation</td>
<td>Revisited the quantitative data reports and integrated the quantitative and qualitative elements.</td>
</tr>
<tr>
<td>Reliability check</td>
<td>Consulted with the peer reviewer throughout the analysis, referred back to the member checks, and the dissertation committee chair read the study and provided insights leading to a more accurate representation of the findings.</td>
</tr>
</tbody>
</table>
Codebook Information

The data were consistently coded as described throughout the analysis process. Table 18 displays the major codes and sub-codes determined for the codebook. The first set of major codes addresses the second research question and, to a lesser degree, the first research question. The codes include: Primary Stressors, Most Stressful Experiences, Less Serious Stressors, Future Stressors, Effect of Stress on a Daily Basis, and Strategies to Manage or Alleviate Stress. The second set of codes was established to address the third research question, and these codes include Breathing Meditation and Undergraduate Students in General. Sub-codes were developed, as appropriate, to cultivate a more accurate representation of the participant’s meaning.

The results of the qualitative analysis are provided in the next section where six individual cases are closely examined. The data harvested from the conversations are then coupled with their PSS and USQ quantitative reports to triangulate the findings. The rich voices of Kalinda, Darrin, Jamie, Ann, Dean, Sam bring greater clarity and meaning to all of the data sets.
<table>
<thead>
<tr>
<th>Code</th>
<th>Sub-code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Stressors - Research Question 1 &amp; 2</td>
<td>Academics</td>
<td>Comments regarding anything stressful associated with course load, assignments, tests, projects, grade point average, field experiences</td>
</tr>
<tr>
<td></td>
<td>Finances</td>
<td>Comments regarding anything stressful associated with loans, scholarships, parental support, or living expenses</td>
</tr>
<tr>
<td></td>
<td>Extra-curricular responsibilities</td>
<td>Comments regarding anything stressful associated with work, clubs, sports, parenting</td>
</tr>
<tr>
<td></td>
<td>Relationships</td>
<td>Comments regarding anything stressful associated with family, friends, significant others</td>
</tr>
<tr>
<td></td>
<td>Health issues</td>
<td>Comments regarding anything stressful associated with physical or mental health</td>
</tr>
<tr>
<td></td>
<td>Living arrangements</td>
<td>Comments regarding anything stressful associated with where the student resides</td>
</tr>
<tr>
<td>Most Stressful Experience Research Question 1 &amp; 2</td>
<td>Academics</td>
<td>Comments regarding anything extraordinarily stressful associated with course load, assignments, tests, projects, grade point average, field experiences</td>
</tr>
<tr>
<td></td>
<td>Finances</td>
<td>Comments regarding anything extraordinarily stressful associated with loans, scholarships, parental support, or living expenses</td>
</tr>
<tr>
<td></td>
<td>Extra-curricular responsibilities</td>
<td>Comments regarding anything extraordinarily stressful associated with work, clubs, sports, parenting</td>
</tr>
<tr>
<td></td>
<td>Relationships</td>
<td>Comments regarding anything extraordinarily stressful associated with family, friends, significant others</td>
</tr>
<tr>
<td></td>
<td>Health issues</td>
<td>Comments regarding anything stressful associated with physical or mental health</td>
</tr>
<tr>
<td></td>
<td>Living</td>
<td>Comments regarding anything identified as less</td>
</tr>
<tr>
<td>Less Serious Stressors Research Question 1 &amp; 2</td>
<td>Finances</td>
<td>Comments regarding anything identified as less stressful associated with loans, scholarships, parental support, or living expenses</td>
</tr>
<tr>
<td></td>
<td>Extra-curricular responsibilities</td>
<td>Comments regarding anything identified as less stressful associated with work, clubs, sports, parenting</td>
</tr>
<tr>
<td></td>
<td>Relationships</td>
<td>Comments regarding anything identified as less stressful associated with family, friends, significant others</td>
</tr>
<tr>
<td></td>
<td>Health issues</td>
<td>Comments regarding anything identified as less stressful associated with physical or mental health</td>
</tr>
<tr>
<td></td>
<td>Living</td>
<td>Comments regarding anything identified as less</td>
</tr>
<tr>
<td>Future Stressors Research Question 1 &amp; 2</td>
<td>arrangements</td>
<td>stressful associated with where the student resides</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>--------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Academics</td>
<td>Comments regarding anything identified as a future stressor associated with course load, assignments, tests, projects, grade point average, field experiences</td>
<td></td>
</tr>
<tr>
<td>Graduation</td>
<td>Comments regarding anything identified as a future stressor associated with getting a job, finding a new place to live, paying bills</td>
<td></td>
</tr>
<tr>
<td>Effect of Stress on a Daily Basis Research Question 1 &amp; 2</td>
<td>Sleep</td>
<td>Descriptions regarding sleep habits, limitations, obstacles</td>
</tr>
<tr>
<td></td>
<td>Physical complaints</td>
<td>Descriptions regarding ailments such as migraines and body tension</td>
</tr>
<tr>
<td></td>
<td>Cognitive complaints</td>
<td>Descriptions regarding ability to focus, concentrate, racing thoughts</td>
</tr>
<tr>
<td></td>
<td>Emotional complaints</td>
<td>Descriptions regarding emotional responses such as crying, frustration, and anger</td>
</tr>
<tr>
<td>Strategies used to Manage or Alleviate Stress Research Question 1 &amp; 2</td>
<td>Relationships</td>
<td>How and when experiences with family, friends, significant others are used to cope with stress</td>
</tr>
<tr>
<td></td>
<td>Exercise</td>
<td>How and when physical activities are used to cope with stress</td>
</tr>
<tr>
<td></td>
<td>Unhealthy habits</td>
<td>How and when potentially harmful activities are used to cope with stress (e.g., drinking)</td>
</tr>
<tr>
<td></td>
<td>Healthy habits</td>
<td>How and when other experiences are used to cope with stress (e.g., positive thinking)</td>
</tr>
<tr>
<td></td>
<td>TV, gaming, surfing the internet</td>
<td>How and when electronic activities are used to cope with stress</td>
</tr>
<tr>
<td>Breathing Meditation Research Question 3</td>
<td>Positive effect</td>
<td>Descriptions of positive thoughts, feelings, physical or cognitive experiences associated with breathing meditation</td>
</tr>
<tr>
<td></td>
<td>Negative effect</td>
<td>Descriptions of negative thoughts, feelings, physical or cognitive experiences associated with breathing meditation</td>
</tr>
<tr>
<td></td>
<td>Reasons to meditate</td>
<td>Explanations associated with why a person should use breathing</td>
</tr>
<tr>
<td></td>
<td>Past experiences</td>
<td>Explanations about past meditative experiences such as meditation, yoga, visualization, relaxation</td>
</tr>
<tr>
<td>Undergraduate Students in General Research Question 3</td>
<td>Ideas and opinions about introducing breathing meditation as a strategy to alleviate or manage the stress of undergraduate students in general</td>
<td></td>
</tr>
</tbody>
</table>
Individual Case Studies

Kalinda

*I think most of the time I’m just like well it’ll work out. Like, somehow it’ll work out. Somehow it always does, somehow it’ll be fine. Yeah, I mean sometimes I think about it, I think about the future, but I can’t control the future!*

Kalinda is a 20 year-old nursing major in her third year. She lives on campus and began attending the university as a first year student. She is one of six children and her home is out-of-state. Her college education is financed through loans, a cross-country scholarship, and an academic scholarship. She has a boyfriend, who also lives on campus, whose major is pre-medicine. She has a calm, yet vibrant, presence and appeared to easily settle into the breathing meditation routine.

The section opens with a rationale for selecting Kalinda as an informant and follows with data gathered from our conversation. During our discussion she shared her personal circumstances, primary stressors, most stressful experience, less serious stressors, the effect of stress on a daily basis, strategies to alleviate or manage stress, future stressors, and her experiences with breathing meditation. A segment on triangulation follows whereby the findings from our conversation combined with Kalinda’s quantitative results are examined. The case analysis closes with a conclusion.

**Rationale.** I invited Kalinda to be interviewed because her PSS and USQ reports were quite interesting. Appendix Q details her Perceived Stress Scale (PSS) and Undergraduate Stress Questionnaire (USQ) reports as compared to each individual participant and the average scores of the participant groups (i.e., control, intervention, and interviewee). Her PSS results were considerably lower than her peers, however her USQ results were slightly higher than average on the pretest and noticeably higher on the
posttest. In other words, Kalinda experienced a larger number of stressful events both pre- and posttest, however her self-perceived stress scores remained relatively low (see Appendix Q). Appendix R details her USQ report which indicated a number of academic, personal, and financial stressful events and she did not select any significant life events (e.g., death of a family member or friend, ongoing health issues). Additionally, her responses for the supplementary posttest items (see Appendix X) indicated she felt breathing meditation helped to reduce some of her stress and that she will probably use breathing meditation as a way to reduce her stress in the future. However, knowing that Kalinda was a cross-country athlete at the university, I suspected her low PSS reports were primarily due to being a runner which has been identified as an effective strategy for college students to manage stress (King, Singh, Bernard, Merianos, & Vidourek, 2012). Even though I believe running influenced Kalinda’s low self-perceived stress, our discussion provided critical details that told a more complete story of her experiences.

**Personal circumstances.** My conversation with Kalinda took place in the afternoon between one of her classes and cross-country practice. Even though the session was in the middle of her academic and athletic responsibilities she was noticeably relaxed, focused, and conveyed a sense of lightheartedness and humor throughout the interview. I found her responses to be understandable, thoughtful, and cohesive, thus leaving less opportunity for interviewer bias.

During our chat Kalinda described her parents as being “working class” and also shared that neither went to college. She also pointed out that her family lives in a three bedroom ranch with one bathroom. She is the fifth child to go to college and the only one to attend an out-of-state university. She speaks positively about her family and expressed
that it was hard to leave her family and go away to college. She implied that she is responsible to finance her education and that navigating all of the details associated with going to college such as financial aid, loans, and scholarships was challenging:

And that was hard too, coming to school and then not having my parents here, you know. I was 17 years old and I have to go to financial aid, and I have to go here and I have to sign up for loans, and I have to do all this stuff by myself, and that was hard.

It was interesting to speak with a student with supportive parents who do not provide much practical help related to college. Since Kalinda is a first generation college student, her parents may not have the cultural capital to be able to more fully participate in their daughter’s post-secondary experience. When speaking of her family she laughs and explained that everyone is expected to do their part:

My family isn’t very emotional, so we don’t, we don’t talk about emotions a whole lot. Umm, or stress. It’s just kind of like that you do like what you need to do kind of thing. That’s how it’s always been I feel like, there’s 6 kids in my family, I’m one of 6 and my parents both just kind of do what they need to do. Neither of them have a college education, neither of them, you know are they’re very much working class so it’s like you do what you have to do kind of thing and you don’t really complain about it.

**Primary stressors.** As documented in her USQ reports, Kalinda quickly confirmed that school and paying for school are her primary stressors. However, during our conversation she predominantly talked about stress associated with her academic responsibilities. Through the duration of the nursing program there are numerous requirements including challenging courses, high-stakes testing, field-based experiences, and maintaining a 3.0 grade point average. Consequently, Kalinda has to make her academic performance a priority in order to maintain status in the nursing program and retain her academic scholarship. She chuckled as she shared:
In nursing school there’s a lot of tests so preparing for tests and trying to prioritize, which tests are more important because many times I’ll have more than one test in a week, or quizzes, If I don’t have a test in a class then I have a quiz. So some days, some weeks, I’ll have three tests and three quizzes or two tests and two quizzes or whatever so it’s hard to prioritize sometimes. Sometimes you have to say ‘OK, I have a lower grade in this class so I’m gonna study more for this test than that test’. So, it’s just kind of stressful to prioritize classes.

In this segment she clearly identifies \textit{time} as being the primary problem and that sometimes she has to make choices about how she is going to allocate her time.

Kalinda identified having an athletic scholarship as stressful because it interferes with her ability to fulfill her academic responsibilities. Even though she enjoys running and appreciates the schedule it requires her to maintain, she believes it is challenging:

I really love running but it’s, it’s stress. It’s also stressful just competing and then always having practice. I mean it’s, it’s a good thing I feel, that I have practice. It kind of keeps me, it’s like a set thing, like this time of the day I run so everything else revolves around that. So like, I have class in the morning and then this time of the day I run and then after that I study. So like, it keeps me on schedule but it’s also kind of stressful if it’s, you know, if it’s gonna be a harder day, if it’s gonna be a harder run, then it’s not relaxing. It’s just more, kinda more stress a little bit.

It appears eating, sleeping, studying, and socializing must be tailored around her practice and competition schedule.

While her whole week is extremely busy, particularly in the fall since cross-country is a fall sport, she identified her most challenging day as being Tuesday:

We will meet at the track at 6 in the morning and start running so we have to out of bed and leaving by 5:30; the first class is at 8:00. So, we rush and then I don’t have time to shower I just grab food and go. So it’s stressful to get back in time for the test but then like, you have to eat something because you just burned off a thousand calories like, you have to eat something. So getting back in time to get food and get over there and, you know, you don’t have time to study in the morning.
She didn’t go into detail; however, her tone and body language suggested she was resentful when she compared her schedule to her non-athlete peers. She assumes they are able to spend more time studying, particularly in the mornings, yet she says they still complain about not having enough time:

Most students will wake up early and they still have a few hours to study but I have 10 minutes to get back to class….I get back from workouts in the mornings on Tuesdays I usually get a to-go box and my teacher lets me eat in class.

Kalinda thinks her peers are studying early in the mornings; however, she is suggesting this based on what she would be doing as opposed to what she empirically knows to be true. Regardless, since Kalinda seems to be able to maintain all of her athletic and academic responsibilities it implies she is able to effectively manage her time even though she may not have as much undelegated time as her peers.

Paying for college is also a primary stressor and while she would like to have a part-time job to offset her expenses she explains “I really don’t have time for a job between being a fulltime student and then I’m also an athlete here, so that takes up a lot of time. I don’t have a whole lot of time.” Her manner was slightly defensive when she shared this and I suspect she has had to previously explain that having an athletic scholarship is like having a job. It is not an optional extra-curricular responsibility. Even though Kalinda identifies school and paying for school as her primary stressors, it seems the thread that weaves these together is time management. Even though Kalinda appears to be successful at managing her responsibilities, if she had more time her college experience would be much less challenging.

Most stressful experience since being an undergraduate student. Not surprisingly, Kalinda’s most stressful experience is also coupled with academic
achievement. During her first semester at the university she was enrolled in a biology class taught by a novice adjunct professor. The professor’s expectations were very high and the majority of the students in the class were not doing well. Having the requirements of the nursing program forefront in her mind, she was terrified this course would prevent her from being admitted to the College of Nursing and that she would lose her academic scholarship:

And then there’s so many requirements to get in to the nursing program in the first place I was like, I don’t want get screwed over just because this guy thinks that we’re not doing enough! You know, because I went to his office and talked to him too and he was like maybe it’s just that you’re not studying enough and I was like, NO I am studying enough! I study all the time for this class and he’s like, sometimes you just have to have priorities. He wanted me to put that in front of everything else, you know. I mean, I also get academic money so I was scared about that.

On several occasions Kalinda notes that she doesn’t believe she is a very emotional person or that her family is very emotional, nonetheless this experience brought her to her advisor’s office in tears. She said:

And I don’t cry you know, like I said, my family’s not emotional, I’m not a super emotional person, but like I was like I really wanna do this. I don’t understand why I’m not passing, like I’m usually a very good student and but no one was, no one was passing, you know.

The situation was resolved, but it did cause her to rethink her major and shook her confidence. Ironically, I think the situation also influenced her future academic experiences. When she sought the professor’s help, he indicated that she was not studying enough or prioritizing well. Even though she disagreed, I believe this experience influenced her ability to prioritize and implement a rigid study schedule. While this was a stressful experience, and significant for Kalinda, comparatively it may not be as intense
as other significant life events such as being the victim of a crime or ongoing health issues.

**Less serious stressors.** Kalinda refers to her secondary stressors as being annoying. She said, “I use that term a lot. Like, because I get annoyed a lot but again I kind of just internalize it I don’t really like act, like act on it…” At the top of her list is living in the dorm. Even though she has experience sharing a small home with five siblings, she is still annoyed that the dorm is not as clean as she would like it to be and some of her dorm mates are not as tidy as they could be. It is a tolerable annoyance that she doesn’t complain about. She also describes time with her boyfriend as being a minor stressor and it connects to stress related to school or fulfilling academic responsibilities. Although she enjoys being with her boyfriend, she isn’t able to fully appreciate their time together:

I love my boyfriend to death, I’ve been with him for 4 years but…it’s, it’s hard to make time to talk to him sometimes, to go down and hang out with him, because we’ll get talking, and then we’ll be talking for 2 hours and then, it’s not that I, that I’m like “oh I wasted that time” but I’m like Oh my gosh I should’ve been studying!

She also mentions speaking with her mother on the telephone as being a minor stressor:

And then talking to my mom, making time, because my mom’s in Michigan, my family’s in Michigan, so making time to talk to her, and she talks a lot! So if I call her, I’ll be on the phone for an hour, hour and a half, because she misses me and I miss her.

It does not appear that the content of the conversation is stressful or that Kalinda is stressed after their chat, it is simply a chunk of time in an already busy day.

**Effect of stress on a daily basis.** While Kalinda believes she is stressed, she thinks she manages her stress better than most of her peers. “I think that I deal with stress
better than most people. I don’t really talk about it a whole lot, like I just kind of deal with it in my own way.” This is a very true statement based on her PSS and USQ reports. When I asked her to describe why she believes this she said “I’m kind of introverted about it. And if I do talk about it, it’s like laughing about it, like ‘Ugh, I don’t know how I’m going to survive this week!’” Therefore, it seems talking about her stress and stressors may not be helpful. It also appears she recognizes when she is stressed, does not make a big deal out of it, and generally has confidence she will survive the situation. She validates this by smiling and saying, “Ready as I’ll ever be! Like, bring it on!”

Consistent among more than 75% of the participants, based on the USQ data (see Appendix R), Kalinda struggles with sleep. Her primary concern is having enough time to sleep; she usually makes sure to give herself five hours. Typically she studies from 6:00 P.M. to 11:30 P.M., is asleep by midnight, and is up for practice at 5:30 A.M. In addition to having enough time to sleep, she also revealed that racing thoughts sometimes prohibit her from falling asleep. “I’ll lay down and I just like, your mind is just racing like thinking about like all the things that you have to do….eventually it calms down, half an hour or and I’m usually asleep by midnight.” Other times she cannot fall asleep because she has studied too long, leading to racing thoughts. However, she wanted to clarify she does not think she has stress induced insomnia. I asked her how much sleep she needs to feel refreshed and she said she feels best when she has had seven hours of sleep. If the five hours of sleep a night is accurate, Kalinda appears to be sleep deprived: “Sometimes I’m just falling asleep while I’m studying and then I just give up and go to bed.”
Strategies to alleviate or manage stress. Being a runner may help Kalinda manage her stress and she seems to be able to recognize when she is feeling relief from her stress. Even though she is antagonistic about her day-to-day schedule revolving around running, she is generally positive about practice and enjoys running alone and with her teammates. She said “Running helps…a lot…especially if I’m having a stressful day, and running with my friends especially because then you can bond about everything that’s going on.” She thinks running alone has a relaxing and therapeutic effect and looks forward to the one or two days a week when she has this opportunity:

It’s just kind of relaxing and you just kind of go away in your mind to just think about whatever you want and you know, work out problems by yourself instead of having to talk to somebody else about it. Not that it’s a bad thing to talk to somebody else but sometimes it’s just, like people don’t tell you what you want to hear kind of thing.

Prior to our fifth breathing meditation session she anecdotally commented that she was not overly serious about running. She identified herself as a good runner with respectable times and that she wasn’t going to push herself harder than necessary. I do not know what opinion her coach would have about this, but from my perspective Kalinda has a healthy attitude regarding her sport as related to college. Her ultimate goal appears to be to earn a degree so she can become a nurse and she runs to help pay for college. She does her best, but she is not going to prioritize running over fulfilling her academic responsibilities.

Even though she mentioned spending time with her boyfriend as being a less serious stressor, she came back to the topic. She explained that even though she feels there are things she should be doing to prepare for her classes she does not feel like she is wasting her time when they “hang out.” She views their time together as a way to alleviate her stress.
I feel like it’s more important to spend time with him because it’s more relaxing sometimes. And if I’m thinking about it that much then obviously I need that time to hang out with him for a little bit.

The couple also shares a weekly ritual of watching The Walking Dead, a television show. This year only Kalinda and her boyfriend watch the show but for the past two years they watched with a larger group of friends. However, last semester everyone graduated except Kalinda and her boyfriend and now it is only the two of them. She still identifies this as a stress alleviating activity, but misses the camaraderie of the larger group:

So it was definitely more fun last year and it was more exciting, you know, we would bring food and everyone would go pile in this little tiny dorm room and sit on the floor and watch the Walking Dead together, so it was definitely more fun last year, but it’s still routine and it’s still something that’s kind of stress relieving, you don’t have to think about school for a little while, you just hang out.

In terms of strategies to combat stress, I think at the forefront is Kalinda’s positive attitude. She does not appear to take herself or her circumstances too seriously:

I think most of the time I’m just like well it’ll work out. Like, somehow it’ll work out. Somehow it always does, somehow it’ll be fine. Yeah, I mean sometimes I think about it, I think about the future, but I can’t control the future!

**Future stressors.** When asked about potential future stressors, Kalinda laughed and said “definitely passing nursing school, passing everything!” She thinks she is well positioned and will ultimately graduate on time but occasionally she has a lull in confidence. She shared, “Umm, right now it looks pretty good but it’s still, in the back of your head you’re like well, they’re smarter than me and they somehow failed so, you know.”

Additionally, she and her boyfriend are talking about finding an apartment together. She identifies this as a potential stressor: “And then, my boyfriend and I had talked about getting an apartment, so that’s kind of stressful. Like we never, we live in
the same hallway but it’s definitely not the same as living together. She’s uncertain about
what will happen after graduation as he hopes to go to medical school. They have been
together for a long time and she has not decided if she wants to follow him to medical
school or look for a job in a place that she would like to be:

He wants to go to med school, he just took his MCAT so he wants to go to med
school and umm, making the choice to follow him or stay wherever I wanna be so
that’s kind of difficult. But, I mean, after five years of being in a relationship with
him, it’s kind of like, I don’t wanna say ‘you go wherever you have to go to med
school and then me stay.

**Breathing meditation.** Kalinda did not participate in breathing meditation
outside of the intervention. However, she thought it would have been beneficial, but she
just felt like she did not have the time. When asked about the effects of breathing
meditation, she said it helped her focus and retain information when studying.
Specifically, she had a Pharmacology class right after the breathing meditation session
and each class began with a quiz or a test. She said, “I’d be studying before I came to
meditation and then we would meditate and then I would go back and it seemed like I
retained more information or like, it was easier to stay focused.” She also shared that on
the days she meditated “it was a little bit easier to prioritize things… it made Mondays
easier, I think.”

Even though she thought breathing meditation would be a good thing to continue
in the future, “it was helpful enough to where I think it would be good to keep doing it”,
it would need to be something she got into the routine of doing:

It’s kind of one of those things, kind of like the *Walking Dead* or talking to my
boyfriend, like I have to make time for it because it’s good, like it helps you relax
and, you know, so, I think it would be good like in the morning.
Kalinda thinks breathing meditation would be useful for undergraduate students, particularly for first year students. She identified freshman orientation week as the time for it to be introduced, particularly for resident students because she said, “it’s such a big change from being at home.”

When I inquired about her previous experiences with meditation Kalinda revealed that her high school cross-country coach taught the team visualization techniques. She was with the coach for four years and consequently used the technique to prepare for races throughout her high school career. She found the technique useful and still uses it occasionally to prepare for competitions. The visualization technique the coach taught was intended to encourage pacing and endurance and not for the purpose of stress management. However, I postulate that Kalinda’s experiences with visualization helped her to learn and trust that the breathing meditation technique could have a positive effect.

**Triangulation.** The findings from Kalinda’s PSS, USQ, and interview suggest she has stressful events happening in her life and that breathing meditation possibly had a positive influence on her well-being (see Appendix Q). At the onset of the study her PSS pretest score was comparatively lower than her peers and eight weeks later her posttest score declined by only one more point. This implies she generally had a lower level of self-perceived stress upon entering and exiting the study. Her sub-scores are what I would expect based on our interview with the exception of her response to item number four. Here she indicates that she very often feels nervous and stressed. While this was initially a surprise, based on our conversation, I reminded myself that she is incredibly stressed and appears to employ strategies helping her to not get overwhelmed. Additionally, the
posttest was near midterm; knowing the high-stakes testing regime of the nursing program, it makes sense that she would report being nervous or stressed at that time.

As reported on the USQ, the stressors in Kalinda’s life remained comparatively high throughout the duration of the study (see Appendix Q). The majority of the items she selected were characteristic of traditional undergraduate stressors and none of the items selected suggest a significant life experience (see Appendix R). However, the item heard bad news hints there may have been difficult life circumstances Kalinda opted not to share in the interview. Since she indicated that she is “introverted” about her stress, she may have been selective about what she chose to reveal in our conversation.

Kalinda’s interview confirmed the above data and also intimated that while she had a positive experience with breathing meditation as a means of channeling focus; it may not have influenced her self-perceived stress. However, knowing Kalinda’s concern about academic performance, the fact that her PSS score decreased at the time of midterm examinations suggests the intervention may have been influential. Although she did not use breathing meditation on her own outside of the intervention sessions, she spoke positively about her experience and said she would like to continue using breathing meditation.

**Conclusion.** Overall, Kalinda experiences a great deal of stress and has adopted strategies that appear to help her manage her self-perceived stress. Experiences such as being from a large family, living away from home, and being a runner may have helped her to be independent and have a positive and sustainable attitude toward college. She seems to manage her time, has realistic performance expectations, maintains relationships, and has a sense of humor. I believe the word that best characterizes Kalinda
is managing. She is invested in achieving her goals of graduating from college and becoming a nurse, but she is not defined or limited by those goals.

**Darrin**

_Becoming a parent…it was literally in the middle of my spring semester. I was still trying to feel out college as a freshman and like I didn’t have a job, so becoming a parent, being a freshman in college and not having a job, and having no idea how you’re going to support another person, is probably the most, well it is the most stressful thing I’ve experienced as a college student._

Darrin is a 22 year-old nursing major in his third year. He began attending the university as a first year and his college education is financed through financial aid and student loans. He has a girlfriend, who is the mother of their three year-old child; all three live with his mother and step-father and teenaged brother and sister. He has a warm presence and became noticeably calmer as the semester progressed as he settled into a breathing meditation routine by the third week of the intervention.

The section opens with a rationale for selecting Darrin as an informant and follows with data gathered from our conversation. During our discussion he shared his personal circumstances, primary stressors, most stressful experience, less serious stressors, the effect of stress on a daily basis, strategies to alleviate or manage stress, future stressors, and his experiences with breathing meditation. A segment on triangulation follows whereby the findings from our conversation combined with Darrin’s quantitative results are examined. The case analysis closes with a conclusion.

**Rationale.** Appendix Q details Darrin’s Perceived Stress Scale (PSS) and Undergraduate Stress Questionnaire (USQ) as compared to the individual participants and the average scores of the participant groups (i.e., control, intervention, and interviewee). I invited him to engage in a conversation about the influence of breathing
meditation because his PSS pretest and USQ pretest and posttest scores were higher than the control and intervention group average. Additionally, and most importantly, his PSS posttest score was half of the control and intervention group average. Further, his posttest PSS score was lower than both the intervention and interviewee groups’ posttest averages. This is particularly interesting because over the course of the semester the stressful events Darrin identified remained relatively steady, however his self-perceived stress dropped tremendously. Therefore, over the course of the intervention he experienced a relatively large number of stressful events and simultaneously had less self-perceived stress by the end of the intervention.

Darrin’s USQ report indicated a number of academic, personal, and financial stressful events including significant life events such as being the victim of a crime and family responsibilities (see Appendix S). I did not learn that Darrin was a young parent until the sixth week of the intervention. However, once this came to my attention I deduced his high pretest reports were primarily due to the responsibilities associated with parenthood. I also suspected he would have a lower PSS posttest report because he appeared to enjoy the meditation sessions and became perceptibly more light-hearted as the weeks ensued. However, I did not expect such a dramatic change in his posttest score. Our conversation provided important insight into understanding Darrin’s stressors and his experience with breathing meditation.

**Personal circumstances.** My conversation with Darrin took place in the late afternoon between his classes. He arrived promptly donning a broad smile. He was relaxed, focused, and appeared to be excited about sharing his experience with breathing meditation. His responses were straightforward and cohesive but, at times, incomplete.
Follow-up questions provided opportunities for me to glean greater detail throughout the conversation.

During the interview Darrin disparagingly described his family:

My family is actually really lazy, my mom is retired so she just like, she literally lays in bed all day and plays Farmville, even when it’s nice outside. Like, she, she actually has a big garden and my stepdad is a worker, so all he does is work. Yeah, but my siblings they’re all pretty lazy too. I think it’s, I think we’re genetically lazy.

He is grateful he and the “mother of his child” are able to live with his parents, but he is simultaneously unhappy with what he perceives to be their level of initiative in life.

**Primary stressors.** When I questioned about the primary stressors in his life, as expected, he immediately responded:

I’m a very young parent, I’m only 22, I became a parent when I was 19, and I started college here at St Francis before that. And like, before my first spring semester, my girlfriend gave birth, so yeah. That’s probably the biggest stressor, being a parent. Then school, then work, but they’re all pretty high up there.

Being a young parent is, by far, the most significant stressor in Darrin’s life. However, he elaborated on the details associated with this stressor when I questioned him about the most significant stressors in his life.

While he did not elaborate on why school is a primary stressor, it is understandable considering the academic, clinical, and testing requirements of the nursing program. Anecdotally, prior to the meditation sessions he would often share what he was studying, the experiences he was having in clinical, and upcoming quizzes and tests. It was clear academics are a priority for Darrin and accordingly a primary stressor.

Currently, he has a part-time job at a grocery store, but is only able to work two or three days a week during the school year due to academic and clinical workload. It is not
a particularly stressful job, but it does require time away from school and his parenting responsibilities. He said he chooses to work during the school year because he wants to be able to contribute to household expenses. He is able to work more days during the summers, which offers him a financial buffer.

**Most stressful experience since being an undergraduate student.** We revisited becoming a parent when I asked him to describe the most stressful experience he has had as an undergraduate student. It was clear that becoming a parent was not a responsibility he expected to have while attending college. His son was born in the middle of his second semester at the university:

I was still trying to feel out college as a freshman and like I didn’t have a job, so becoming a parent, being a freshman in college and not having a job, and having no idea how you’re going to support another person, is probably the most, well it is the most stressful thing I’ve experienced as a college student.

Becoming a parent for the first time is stressful at any age, under the best of circumstances, so unexpectedly becoming a parent at 19 years of age was undoubtedly challenging. He did not elucidate the details of his circumstances such as the relationship with his son’s mother or the involvement of her family, but he does describe how the birth of his son influenced his life as a college student. He explained:

I stopped working on schoolwork. So like if you look transcript, that spring semester is like my lowest grades in all my college experience. And the semester after that is my second lowest….I used to exercise a lot, a LOT. Like three or four or five times a week. Like at least three, sometimes six times a week and then after my son was born I just stopped exercising altogether.

Even though Darrin shared that he did not know if this lapse was due to stress or if he simply did not have enough time, it appears he may have suffered symptoms related to postpartum depression.
Less serious stressors. Darrin perceives his financial obligations to be a less serious stressor. While this is a primary stressor for many undergraduate college students, the weighty responsibilities related to being a young father coupled with being in a rigorous major appears to trump all other stressors. Even so, he is very conscientious and he prioritizes contributing to the household expenses:

I think bills are less serious than school and work, but because I live with my mom and my stepdad still, and my son lives with me. But I buy all the groceries and [pay] the bills like the car insurance and gas and I pay the electric bill and the gas bill for the house. So like, my parents don’t ask me to do that but I do it anyways just to show them that I’m grateful.

He also elaborated on his part-time job

It’s just stressful because sometimes I don’t make a lot of money. Especially in school. During the summer I make a lot more money because I work more hours. But with school and clinicals I only work like two or three days a week now. By choice still, but I didn’t manage my money good enough, so… it’s a lot less of a stressor than most people would imagine though.

As our conversation continued I was drawn to Darrin’s sense of accountability, appreciation, and thoughtful nature. He is diligently working to make the most of his circumstances and prepare his family of three to be fully independent.

He also identifies his siblings as being a minor source of stress and revisits his contempt of laziness, “It’s just like my parents have raised lazy children.” From Darrin’s perspective, his brother and sister do not prioritize well or take school seriously. He further describes his brother as having Attention Deficit Disorder (ADD) and is unhappy that he spends most of his time playing video games and watching television. He is also disappointed by his sister’s low high school grade point average and is concerned about where she will be able to be admitted to college. It seems Darrin is concerned about his brother and sister’s future, possibly creating more stress for him.
Effect of stress on a daily basis. As we shifted the discussion towards the effects of stress, he shared:

I think that it affects my ability to cope with everything like around. Like those are my 3 main stressors, but me focusing on those stressors affects my ability to concentrate sometimes. Or it affects my ability to concentrate on tests.

He specifically notes his inability to concentrate on tests and “adapt or cope with an acute stress problem, like a bill will come up or my mom has asked me to do something.”

Regrettably, he revealed he sometimes gets angry. He blamed his primary stressors (i.e., parenting, school, and work) and does not think he would get so angry if he was not so stressed. He further shared that he experiences anxiety, “I think I have anxiety sometimes because I just have a million things running through my mind. I don’t have any physical expressions of anxiety but like I’m always focused on like what could go wrong.” He said he sometimes does not realize how stressed he is until well after the event and believes a “normal person” (i.e., one who is not overly stressed) is able to address stressors as they arise.

Although Darrin identified no sleep as a stressor on the USQ pre- and posttests (see Appendix C), during the interview he said sleep is less of a problem. “That’s one thing I do not sacrifice for anything, you know. Like, I’ll blow off a test or studying for a test to sleep, I won’t cram.” He does sometimes have difficulty falling asleep due to racing thoughts, but he usually makes sure he gets eight hours of sleep each night. He did clarify, however, that he did struggle with insomnia the two semesters that followed the birth of his son. He also shared that he has to eat breakfast otherwise, especially if it is a stressful day, he can expect to get a headache. Otherwise, he is sometimes “completely exhausted” at the end of the day.
Darrin also associates no longer exercising as a symptom of his stress. Even though he is understandably pressed for time, he completely stopped exercising once his son was born. He shared:

I played football in high school, so I had to lift weights a lot, and run, I had to do that too. But after high school I didn’t want to run as much, I was kind of lazy. So I lifted weights until my son was born. I feel like I’m occupying empty space, just like laying around, you know, doing nothing.

It is possible he eliminated an activity that had been acting as his primary stress management technique. Relatedly, at several points in our conversation I validated that he does not have much discretionary time. When it came up during this segment he said:

No I don’t, but still you, you tend to make time to be lazy, I feel like. Well, I tend to make time to be lazy sometimes. Like even when the times not there, like I should be studying or like, like, doing laundry or cleaning or you know, like giving my son a bath or something, or cooking...yeah, but I just blow off my responsibilities and lay down. It’s almost like, it’s almost like I’m sick all the time or something. But I’m not sick I’m just lazy.

He appears antagonistic about being lazy, and is critical of himself and others.

**Strategies to alleviate or manage stress.** Darrin believes he has limited control of his stressors, but understands he needs to take an active role in reducing his self-perceived stress. Surprisingly, the first strategy he mentioned was breathing meditation. He smiled when he said, “I actually do the breathing meditation sometimes, like once a week, but like otherwise I don’t really do a lot.” He explained that he typically finds a quiet place at home, sits on the floor, selects a classical station on *Pandora*, and follows the breathing meditation technique we used during the intervention. He would “breathe and just listen to music and focus on breathing and like nothing else, you know like, clear my mind.” Another strategy he uses to combat stress is relaxation, or “doing nothing”.

Unfortunately, when he chooses to relax he thinks it is at the expense of something he should be doing:

Sometimes I just blow off my responsibilities like, you know, I’m not as great of a dad as I could be, or I have a lot of studying to do and I’m just like, yeah whatever. I just go inside, just relax like, try to relax anyways. Or just do nothing. Literally I’ll just lay on my bed and stare at the ceiling or something.

He appeared to have a more positive association with meditation as a means of relaxation as opposed to doing nothing.

**Future stressors.** Darin takes his academic performance very seriously and is already thinking about a future stressor, the National Council Licensure Examination (NCLEX-RN). This is a capstone test that determines whether you are competent to be a licensed entry-level nurse. A student must pass the exam in order to be employable and practice as a nurse. He explained, “I’m anticipating that as being very stressful but I’m preparing for it currently, I’m doing alright, so it shouldn’t be too bad.”

Furthermore, he is also anxious to get a job and move out since he, the mother of his child, and his son all live with his parents and siblings:

And then moving out. Moving out is a big stressor, thinking about that. Because then I will have to worry about money probably a lot more. And finding a job, finding a real job as a nurse not at a grocery store).

He probably anticipates worrying more about money once they move into their own place because he knows there will be more bills and he may bear the financial responsibility of their family of three.

**Breathing meditation.** As just documented in the supplemental posttest items and above (see Appendix H), Darrin participated in breathing meditation on his own during the period of the intervention. When I asked him what effect it had on him,
whether it be related to the intervention or meditating on his own, he said it helps him to relax and perform better on tests. He explained:

We didn’t start doing breathing meditations until after my first pharmacology test and my pharmacology class is actually just like right after the breathing meditation at 2 o’clock. So the first test I was actually really stressing out while I was taking it…there was so many things running through my mind that I couldn’t focus when I was taking. So I read a question maybe like ten times before I could actually comprehend it. Every test thereafter, like after breathing, cause that was like, within an hour after the breathing meditation, I would take it and like clearly be able to think about the question on the first read, and I’d always be like the first person done. And I would score like, 90’s, mid 90s on the test.

Breathing meditation was an effective strategy to help Darrin be calm and focused. He said some people in the intervention group felt it helped them to be more alert; however, he felt his primary response was a sense of calm. He was less “anxious and overwhelmed” and it helped to “clear his mind”. He was quite animated when describing his experience and hopes he continues to meditate on his own but he is afraid “it might be one of those things that I phase out because I’m lazy”. Laziness is a clear fear of Darrin’s as it comes up throughout the interview. Nonetheless, he particularly believes he will be “more stressed out” if he stops meditating.

I think if I stopped like breathing meditation or just like stopped making time for myself then I would respond a lot differently. I’d probably be more stressed out. Because comparatively at the beginning of the semester, before we started breathing meditation, I did feel more stressed than I do now after I’ve been doing it for 2 months, once a week. I’ve probably spent like 20 minutes a week on it, so it’s not that bad.

I asked why he thinks breathing meditation works for him:

“I think it works well for me because, like I said earlier, it umm my mind. I think I have anxiety sometimes because I just have a million things running through my mind. I don’t have any physical expressions of anxiety but I’m always focused on what could go wrong. But after breathing, or just after like breathing meditation or meditation in general my mind is pretty clear. I don’t remember thinking about what could go wrong, really. I’m just thinking about what’s going on right now
and that’s it. So it, it clears my mind and that’s what helps lower stress for me, when I’m stressed out because I just have too much stuff on my mind.”

Darrin previously experienced yoga in a physical education course in high school, but did not have any experience with meditation specifically. He felt yoga helped him to relax, but thinks, for him, meditation is a better strategy for managing his stress. Even though he believes breathing meditation can be a useful strategy for managing stress, he recognizes that it may not be effective for all undergraduate students. He suggested offering a one credit hour meditation course that students could take as an elective.

**Triangulation.** All of the data garnered from Darrin’s PSS, USQ, and interview suggest he has stressful events happening in his life and that breathing meditation may have a positive influence on his well-being (see Appendix Q). At the onset of the study his PSS pretest and USQ pretest scores implied he had a high level of self-perceived stress and a number of life stressors. Eight weeks later his posttest scores reflected lower self-perceived stress and a fairly consistent number of life stressors. His life circumstances had not changed but his self-perceived stress report was significantly lower.

Among the participants, Darrin’s Perceived Stress Scale (PSS) pretest score was higher than average and his posttest score significantly lower than average (see Appendix Q). Further, the posttest was completed near midterm making the findings especially dramatic. His stressors remained high, in Darrin’s own words, “the stressors themselves are still there” however the perception of his stress diminished (see Appendix S). Whether it be an effect of breathing meditation or not, by the end of the intervention it appeared that he was managing his stress more effectively. Additionally, Darrin’s
Undergraduate Stress Questionnaire (USQ) pretest and posttest scores were considerably higher than average (see Appendix Q). While the majority of the items he selected, as identified in Appendix S, were characteristic of traditional undergraduate stressors, he also identified *family responsibilities* suggesting a potentially significant life experience.

Darrin’s interview confirmed the above data and also suggested that he did, in fact, have a positive experience with breathing meditation as a strategy to reduce self-perceived stress. He opted to use breathing meditation as a stress reduction technique outside of the intervention and spoke positively about the results he experienced (see Appendix X).

**Conclusion.** At 22 years of age, Darrin is a traditional undergraduate college student with family responsibilities uncharacteristic of his peers. On the USQ he identified numerous stressors in his life ranging from annoyances to serious circumstances and, as reported on the PSS, came to the study with a high level of self-perceived stress (see Appendices Q and S). While Darrin appears to be able to maintain his responsibilities, he had not effectively managed the associated stress. His parents have demonstrated support by letting his family live with them while he finishes school, however he did not mention his family or the mother of his child as being sources of emotional support. He expressed anecdotally that he wants to be a good father and is committed to finishing school and becoming a nurse practitioner. Considering all of the peripheral issues associated with Darrin’s life, the word I select to characterize him is *resigned*. He has accepted his circumstances and, at this point, is moving forward. He is excited about breathing meditation and believes if he continues it will have a positive influence on his well-being.
Jamie

What I’ve noticed recently is when I have nothing to do my mind is still going. So sometimes I’ll be sitting there thinking and I don’t want to be thinking about stuff I want to be thinking about other stuff but it’s like stuff that I can’t get off of....

Jamie is a second year, 19 year-old nursing major who is also an honors student. She began attending the university as a first year and lives with her parents and older brother. Her college is financed through loans and financial aid. She has a boyfriend, who attends the same university and is also a second year student. While she is a commuter, she spends a great deal of time on-campus attending classes, working, and participating in extra-curricular activities. One of her part-time jobs is working for the university as an Ambassador. In this role she primarily gives individual and group tours of the college campus. She is friendly and has an animated presence.

The section opens with a rationale for selecting Jamie as an informant and follows with data gathered from our conversation. During our discussion she shared her primary stressors, most stressful experience, less serious stressors, the effect of stress on a daily basis, strategies to alleviate or manage stress, future stressors, and her experiences with breathing meditation. A segment on triangulation follows whereby the findings from our conversation combined with Jamie’s quantitative results are examined. The case analysis closes with a conclusion.

**Rationale.** Appendix Q details Jamie’s Perceived Stress Scale (PSS) and Undergraduate Stress Questionnaire (USQ) reports. I invited her to engage in a conversation about the influence of breathing meditation because her PSS pretest score was higher and her posttest score was substantially higher than the control and intervention group average. In other words, her self-perceived stress increased over the
duration of the study. However, curiously, her USQ report was lower than the group averages. Meaning, she identified fewer stressful events in the pre- and posttest (see Appendix T). Additionally, at the end of the intervention she indicated on the supplemental items that participating in the study created a little additional stress for her, she never engaged in the meditation on her own, it did not reduce any of her stress, and that she does not intend to use breathing meditation in the future (see Appendix X).

Jamie indicated several characteristically stressful academic and personal events in her USQ reports and also identified ongoing health issues as a stressor (see Appendix T). Speaking with Jamie was important because, unlike the majority of the participants, she did not have a positive experience with breathing meditation. Atypical of the vast majority of participants, her phone would occasionally vibrate during the breathing meditation session and on two occasions she was noticeably jarred at the sound of the ending meditation bell. Until the interview, I did not have a clear sense about her experience (i.e., engagement, enjoyment, usefulness). Fortunately, our conversation provided important details helping me to better understand Jamie’s stressors and her experience with breathing meditation.

**Introduction.** My conversation with Jamie took place in the late afternoon right after giving a campus tour to a group of grade school children. She burst into the room on time; her energy was palpable. Before the interview began she vivaciously shared with me her experience with the children and clearly communicated that she “loves her job”. She was smiling, appeared to be motivated to share her experience with breathing meditation, and said she was “happy” she could help. Throughout the interview, Jamie spoke rapidly, was verbose and shared elaborate intimate details about her personal
circumstances. While I was able to weave together a story, there was a sizable amount of peripheral information to distill.

**Primary stressors.** When I asked Jamie about the primary stressors she experiences, her home life was her first response. She revealed that both of her parents are alcoholics and that her mother is now “five months sober”; she shared that her mother has had a drinking problem since Jamie was 12 years old. However, her mother is currently attending Alcoholics Anonymous meetings, seeing a therapist, and seems serious about recovery. Jamie conveyed that things have become significantly better at home since her mother decided to get sober. Further complicating her home life is her father’s drinking problem, she said “he retired when I was a senior in high school and life like changes a little bit and I think drinking is a problem now with him.” Currently he has a part-time job as a bartender; however, Jamie deems this as problematic because he is able to drink on the job.

She quickly jumped to her next primary stressor: school. Jaime stated “Oh, Jesus, school! Anything to do with school!” She explained that she was in the midst of studying for the Test of Essential Academic Skills (TEAS) exam, a required high-stakes test required by the nursing program. She had already taken the test once and had missed the cut-score. Jamie was concerned because students are only able to take the TEAS test twice, “I didn’t pass the first time so I have to study again and like that’s stressful because like if I don’t pass that then I can’t be a nurse.” She also stated it was difficult to simultaneously take classes while studying for the test saying “I also have all this other stuff due in classes that I have to take time for, too. So it’s like trying to manage the time.”
The third primary stressor Jamie mentioned was an off-campus part-time job as a hostess at a restaurant. She said, “I absolutely hate it so that stresses me.” She explained that the restaurant does not have many customers, there is a lot of time with nothing to do, and she would “rather be doing homework”. She also disclosed that she does not really “pay attention” and is “not engaged” when she is at work. Further, she does not connect with any of her co-workers and is appalled that some employees come to work drunk. It is important to note that by this point in our conversation she has made it clear that she is an “extrovert” and a “people person, so not being able to “connect” with her co-workers is very challenging for Jamie. She keeps the job because she is able to work on Sundays and “It’s a job that I have to have because I need to pay for my phone bill.” She wants to obtain another position as a hostess, but said it is hard to find an employer where she will be able to work only on Sundays.

While talking about her primary stressors Jamie took out a plastic box which turned out to be a diabetes test kit. Continuing with her responses she simultaneously tested her blood sugar level. When I had the opportunity I asked if her health was a primary stressor she replied:

Yeah sometimes. It’s really difficult. I’m usually really good with my diabetes but I also go to my therapist. I kind of like, like… I have OCD stuff. It’s not like touching, it’s like pure OCD…my mind won’t stop thinking about one thing and it’s really annoying.

Jamie shared that she recently realized she has had Obsessive-Compulsive Disorder (OCD) since she was a child, but was only recently diagnosed:

I’m trying to work through that with my therapist, but I’ve recently realized that I had that [OCD] over the summer. Before I ignored it. Over the summer I was like, my god, are these like mental problems? So it’s really hard sometimes to like focus on one thing.
Jamie clarified that it is sometimes difficult to focus on both of her health related issues: diabetes and OCD. Both require management and she finds handling the two concurrently to be challenging:

Yes, like trying to balance it. Honestly…the OCD…but I’ve noticed recently it will take precedence because I can’t stop thinking about something and I don’t want to be thinking about it. So it’s really upsetting when I’m like thinking about the stuff that I don’t…I know isn’t me or like upsets me, but my mind is like, you have to. So then I’m also like, oh right I have diabetes so I have to think about that and it’s sometimes hard and I’ll be like, my sugar’s 200 and I have to give a correction but if I was focusing on that instead of thoughts that I don’t need to be, I could be fixing that. So it has been a struggle recently. Most of the time I’m a really good diabetic… and I’ve been better now like I had lunch, my sugar’s pretty steady so that’s like a stessor. And also, when trying to focus on something, especially with the brain, this used to be a problem. You try not to think…a person with OCD that’s hyperactive, so then it’s like, don’t think about something! So then I’m like thinking about not thinking about certain thing. Which sounds really messed up to somebody who maybe doesn’t understand.

Jamie had been speaking rapidly throughout the interview and picked up the pace when explaining the dilemma of managing her health issues. Even though she shared a great deal of personal information, she appeared comfortable and continued to speak to me as if I were a close confidant.

**Most stressful experience since being an undergraduate student.** Since we had already discussed a number of concerns I was unsure which direction Jamie would go when I asked about the most stressful event she has had as a college student. However, she quickly and simply stated, “I can’t control my mom or my dad.” She then shared a few lengthy stories associated with her family, primarily related to arguing with her parents or grandmother. Many of the disagreements were over trivial things such as doing the laundry, cleaning her room, putting dishes in the sink, and the like.

It’s so stupid they fight over the most boring stuff. My brother and I are in the middle. I’ve always been the one that’s like, taking care of everyone and like,
trying to keep the peace and like walking on eggshells…it is what it is. Well my brother doesn’t care. He, Christ, he screams! He’s an emotional wreck and I just feel bad.

The family dynamics appear to be so dysfunctional that there was a period of time where she was afraid to go home. “Yeah I was like afraid to go home last semester. This semester it’s better but my dad’s drinking now and I just hear it from my mom. Like, I’ve always had to pick sides.

She also explained that things are somewhat better because she is able to spend so much time at school and views it as a refuge of sorts:

The most liberating thing was to be able to not be at home…. So the most liberating thing was to be able to be a commuter and come here. And have friends and do stuff and even if I was here at school working, it was better than being at home. So the fact that I could like get away from it was awesome. So I feel like coming here helps me deal with it a lot.

**Less serious stressors.** Seeing a therapist is a less serious stressor in Jamie’s life.

She shared that sometimes the weekly commitment and the work they do together are difficult. “I see a therapist every other week on Fridays. So that’s kind of a stressor.”

However, she does like her therapist:

She listens. Her thing is like, I want you to come here and tell me everything, and then I’ll give you ways to help deal with the stress. And she’s actually suggested like breathing and stuff, so that’s kind of why I wanted to do this too, to see if it helped.

Based on the entirety of the interview, it appears Jamie keeps herself quite busy which may also be a secondary stressor. She engages herself with enjoyable activities such as working as an ambassador and contributing to the school play but, being a nursing major and an honors student, she still has a number of academic responsibilities to fulfill in addition to managing her home life and health issues.
Effect of stress on a daily basis. With such serious circumstances to contend with I was very curious about how the stress affected her daily life. She shared that sometimes the stress is so overwhelming that she privately cries “because I don’t want people to see me cry.” She also often experiences an upset stomach which she thinks is an “anxiety response.” She gets frustrated because she feels like she is doing this to herself:

I just freaked myself out so much that I’ve felt like I’m sick. I’ve done this to myself and it’s dumb. I recognize that it’s dumb but at the time whatever I’m worrying about seems so real that I can’t get over it, but then like a couple hours later, I’m like why? I don’t like that I get to that point.

She also notices that when she is focused on something other than her thoughts, her brain will interrupt and tell her she should be thinking about something:

I’ll notice that I’m engaged in the movie and I’m not thinking about something so my brain will be like ‘Oh you want to think about something’ and I’m like, no! I want to watch the movie! I don’t want to do that. I’ve noticed, for the most part, I can like turn off but sometimes if it’s so bad then I can’t…and it kind of sucks.

Jamie thinks she usually gets enough sleep but sometimes she has difficulty falling asleep. However, she described a scenario that may, in fact, routinely happen. She believes the bigger problem may be getting too much sleep:

What I’ve noticed recently is when I have nothing to do my mind is still going. So sometimes I’ll be sitting there thinking and I don’t want to be thinking about stuff I want to be thinking about other stuff but it’s like stuff that I can’t get off of, and I’ll be able to fall asleep. But other times I’ll be just up and mostly if I’m up I’m not worrying about thoughts that I know I don’t need to be worrying about. It’ll be school or I’m anxious that I have a test the next day. So then I can’t really sleep that much. I’m like, if I haven’t prepared as much as I wanted to, ‘Oh my God! I’m gonna fail it!’ Then I keep thinking about it. For the most part, I get sleep…it’s not getting sleep, it’s maybe getting too much.

Strategies to alleviate or manage stress. Jamie shared several strategies she uses to relieve her stress. One stress reliever is working as an ambassador:
I do, I really like work because I’m an extrovert, I think out loud and I’m a people person. And as an Ambassador you talk to people all the time! So when I’m talking to people, I’m not thinking about stuff most of the time. Sometimes a thought will like creep into my mind and then actually it’s like really bad because, to get rid of the thought, I wanna say something. So I’ll stop talking to the person and say something in my head and then come back. This is recent and I don’t like that. But it generally it distracts me from it so I really like work.

Another strategy she finds very helpful is talking to people about the stressful events in her life. She relies on three friends from high school, her boyfriend, and her therapist. She said, “I talk about it. I have to tell someone.” She finds driving and listening to music useful, as well. Since she is a commuter she is in the car every day for about 45 minutes. She will sometimes also go for a drive when she needs to separate herself from a stressful event at home:

I’ll go and drive. And I’ll just think about what’s going on and I’ll have music on. I can think and be productive with thinking. That’s a real big stress reliever. And it’s weird because I’m a commuter…commuters hate driving! But I love to go and just drive.

Talking to herself is also a stress reliever:

Because I’m extroverted, I talk to myself. I have to think out my thoughts instead of just having it be on my brain, because when it’s on my brain it gets too much and I can’t handle it. So I’ll talk to myself, like in my room. I’ll be like this is dumb, stop thinking about this or like, just whatever the situation is, if there’s nobody there I’ll talk to myself.

Although she does not regularly exercise any longer, Jamie previously “worked out” regularly and found that to be a good way to manage her stress:

I totally can tell a difference from working out and not working out. And I noticed it last year when I stopped because I didn’t have time. I felt like I was so much more stressed even though it was sometimes stressful to make time to work out…but for that 30-45 minutes I’m just listening to music. And it’s ok. And I feel so much more like energized so I know that that’s like a difference, I can tell that.
While likely not a healthy way to manage her stress, she disclosed that she sometimes numbs herself, “Like sometimes I felt like I’ve been like numb to situations. Like really numb, like I just don’t care. And I don’t know if that’s me subconsciously detaching from it. I don’t get engaged.”

Since she is such a high energy person I was curious if Jamie ever felt calm. When I inquired about this she said:

Probably I’m most calm before I go to bed. Even though stuff’s coming in to my mind, I’ll try to think about something really happy. I can remember as a kid I would have bad thoughts or watch something scary or I’d have a bad dream, that’s like a normal kid thing, but I’d think about daisies and I would think about flowers and looking at flowers, and that calmed me as a kid. Now I just think about something that makes me happy!

**Future stressors.** In terms of future stressors, Jamie referred back to re-taking the TEAS exam and how important it is that she minimally achieves the cut-score. This also led to a story about her mother pressuring her to study for the exam. Her mother and father both feel they have a vested interest in her success and should be able to “tell her what to do” because they are signing for her student loans.

**Breathing meditation.** As previously mentioned, Jamie’s PSS reports indicated that she did not have a positive experience with breathing meditation. When we discussed the intervention, specifically, she was very positive about it but felt as though it was something she personally was not able to do because of her OCD.

I don’t think it worked because I wasn’t able to just, just focus on breathing. But I would sit there for the 9 minutes and as soon as we started I wanted to stop because it was quiet time and it was all this stuff that maybe I was trying not to think about during the day would just come flooding in… and then I’m doing like mental compulsions and I, I’m like ‘No, no, no, no, no! So I wasn’t even focusing on the breathing or the guy…all I knew was when he said ‘this is going to come to an end’. I was like, ok we’re done! So I think I wasn’t able to focus on it and then I couldn’t appreciate it. So then it didn’t work.
Even though the meditation was less than 10 minutes, it was too long of a period of time for Jamie and a tidal wave of thoughts would flood in as soon as she purposefully tried to quiet her mind. Therefore, in this case, the breathing meditation experience actually appeared to cause racing thoughts:

And, honestly, the idea of meditating scares me because everything just comes up into my brain and then I get an anxiety-like response from it. So it scares me. It’s almost like I have to keep hyperactive but at the same time I’m still thinking about stuff all the time. But the fact that I could just be like calm… I would have a chance to think about it and it freaks me out.

Jamie shared that she had previous experiences with meditation and relaxation techniques in a physical education course in high school but did not find any of the methods useful. Her therapist also introduced her to a variety of relaxation techniques, but none are reliably successful:

She was telling me about tensing and relaxing the muscles. I’ve tried something like that before and I was like, this is dumb. I tried it in her office. She made me sit back and do it, and I’m like, this is relaxing to my muscles but not my mind! Like that’s honestly what I thought. Then she told me every thought I had, make it a balloon and it flies away and I tried, it. It worked for a good 10 seconds and then I’m like, no, it’s not working because …well, it’s not floating away, it’s still in my mind! And then she told me to sit, like how we sit kind of, and she said, for just a minute, just focus on your breathing and then if you think about something, start over. Like I can’t! Sometimes I’ll sit there for a little bit and try to start over. But I think it’s been too stressful for me to like, try it so I’m afraid to try it.”

**Triangulation.** All of the data garnered from Jamie’s PSS, USQ, and interview suggest Jamie has a high level of stress and that the breathing meditation intervention was not effective in helping to reduce her stress (see Appendix Q). At the onset of the study her PSS and USQ pretest scores demonstrated she had a high level of self-perceived stress and was experiencing several life stressors. Eight weeks later her posttest scores
reflected higher self-perceived stress, as indicated by the PSS, and a fairly consistent number of life stressors, as documented in the USQ (see Appendix T).

Jamie’s Perceived Stress Scale (PSS) pre- and posttest scores were higher than average among the control and experimental group averages. Further, her posttest score was much higher (see Appendix Q). However, the number of items she identified as stressors on the USQ remained lower than all of the other group averages. This may be contributed to Jamie’s ongoing home and health issues. These are such large stressors for her that other stressors, characteristic of undergraduate students, may pale in comparison. Additionally, some of the items on the USQ are customarily more stressful than others (e.g., couldn’t find a parking space versus the death of a family member or friend). However, the participants’ selections have not been weighted (i.e., couldn’t find a parking space and the death of a family member or friend are both valued at one point).

It is important to remember that my purpose for using the USQ in this study is to have a sense of the stressful events college students experience and not to measure the severity of each of the stressors.

Jamie’s interview confirmed the above data and also suggested that breathing meditation, as a strategy to reduce self-perceived stress, was not effective and may have been a negative experience. She indicated that she does not plan to use the strategy in the future (see Appendix X). Even though the technique was not effective, anecdotally Jamie spoke positively about being in the study and found it helpful to better understand her thinking patterns.

**Conclusion.** At first glance, Jamie is a 19 year old traditional undergraduate college student. However, her home life and ongoing health issues have had a significant
influence on her well-being. She entered and exited the research study with a high-level of self-perceived stress (see Appendix Q). Since the posttest findings were harvested mid-semester, it is possible her PSS score was influenced by the traditional testing demands of midterm along with concurrently preparing to retake the high-stakes TEAS exam, a few weeks after the interview. Among the intervention group participants Jamie, comparatively, is an anomaly in that she did not find intervention useful as a stress reduction strategy. Her USQ findings revealed several stressors in her life that could loosely be categorized as *frustrations* seeming as if she did not have as many stressful events going on in her life as her peers (see Appendix T). However, during our conversation it appeared her *ongoing health issues* and home life were overwhelming stressors. Even though Jamie seems to be able to maintain her responsibilities, she does not seem to be effectively managing the subsequent stress; Jamie is very conscious of this reality. Considering central family and health issues related to Jamie’s life, the phrase I select to characterize her is *fragmented*. She has serious stressful problems in her life and her OCD complicates her ability to be focused and peaceful. Nonetheless, she has a lighthearted personality, a positive attitude and is making the most of her experiences on campus.

**Ann**

*Talking to people afterwards, everyone enjoyed it, and I enjoyed it! I thought it was a nice change from the typical daily life of a college kid just going, going, going. To take that time to, you know, calm yourself down and re-, you know, focus everything.... I’ve definitely felt more stressed out since meditation ended.*

Ann is a 22 year-old honors student in her fourth year. She is double majoring in social work and criminal justice and will likely also graduate with a minor in Spanish.
She began attending the university as a first year and her parents are helping to finance her college education. She has lived on-campus since her first semester. Ann has had a boyfriend for the past seven months who is the father of a five year-old child. The child primarily lives with his mother but he is often with them on the weekends. Ann is friendly and frequently commented throughout the duration of the study that she enjoyed coming to the breathing meditation sessions.

The section opens with a rationale for selecting Ann as an informant, an introduction, and follows with data gathered from our conversation. During our discussion she shared her primary stressors, most stressful experience, less serious stressors, the effect of stress on a daily basis, strategies to alleviate or manage stress, future stressors, and her experiences with breathing meditation. A segment on triangulation follows whereby the findings from our conversation combined with Ann’s quantitative results are examined. The case analysis closes with a conclusion.

**Rationale.** Appendix Q details Ann’s Perceived Stress Scale (PSS) and Undergraduate Stress Questionnaire (USQ) reports as compared to all of the individual participants and the average scores of the participant groups (i.e., control, intervention, and interviewee). I wanted to speak with Ann about the influence of breathing meditation on her self-perceived stress because her PSS and USQ pretest scores were comparatively higher than all of the participants and her PSS posttest was relatively much lower. Additionally, her USQ pre- and posttest scores were consistently high. That is, she identified many events that contributed to her self-perceived stress but the level of her self-perceived stress declined considerably at posttest. Similar to Darrin, her PSS posttest
score was nearly half of the control and intervention group averages even though the stressful events she identified remained high and steady.

Ann’s USQ report indicated a number of academic, personal, and financial stressful events including the death of a family member or friend at posttest, a potentially significant life event (see Appendix U). While I did not know what the findings would show, I suspected the intervention had a positive influence on Ann’s self-perceived stress because she frequently expressed that she enjoyed the breathing meditation sessions. However, I did not expect such a remarkable change in her posttest score. Our conversation allowed me to better understand Ann’s stressors and her experience with breathing meditation.

**Introduction.** I met with Ann late afternoon after one of her shifts at work and she arrived wearing her work uniform. She was punctual and displayed a warm smile. Before the interview began she shared that she was excited to talk to me about her experience with breathing meditation. Her responses were thoughtful and cohesive. It was easy to comprehend what she wanted to convey thus subjecting the interview to less interviewer bias.

**Primary stressors.** Our conversation opened with Ann sharing that she considered school to be a primary stressor in her life. She said, “Mostly school. Having 2 majors, like it’s rough.” She went on to explain:

This semester I have 18 credit hours and so I have both majors and I’m only 6 credits shy of a minor in Spanish, so it’s like, yeah...this semester I’m taking 18 credit hours and then 20 hours a week of work. So I feel like I hardly ever have any down time.
Consistent with previous interviews, Ann has limited time to fulfill her academic responsibilities and her circumstances are compounded by the choice to be a double major. She explained that the rigor of her assignments is not the problem; it is a combination of the volume and the challenge of completing group assignments:

For social work we have a lot of group projects, we have a lot of detailed projects. They’re not hard but they’re tedious, like it involves a lot of, umm, we have to go a community assessment where each group has to go into the community and interview people and do all these reports and stuff, and we have to like keep going back and forth to the communities, which is hard when you have internships, jobs, sports, and you know, every class and everything like that, trying to figure out a time when 4 people all have a day off and a couple hours off. Like for us, we have to drive all the way down to Pilsen. So, last week I had a group project, a 10 page paper, a presentation due in another class, a 10 page paper due in a 3rd class, AND a framework due in my social work class. All due on the same day, I was like ‘Oh!’

Ann was visibly distraught when describing the above situation. In fact, she raised her hand in the air at the end of her reply to punctuate her frustration. Later in our discussion she clarified that she is confident in her academic abilities and that it is more a matter of having the time to fulfill them.

A second primary stressor for Ann is associated with her boyfriend. Since he has a young son he also has all of the responsibilities of a parent:

When I started dating my boyfriend I not only became a girlfriend but he has a 5 year old. So, it’s kind of like, on the weekends when we have him I get that like step-mom kind of position.

She elaborated and told me that she loves his son very much. He is a good boy and enjoyable to be around. Her stress is predominantly related to the responsibilities she has when he is with them:

So I get up early with him, make him breakfast, do whatever with him, make him lunch, make him dinner, take care of him all day, me and my boyfriend. That’s, that’s stressful because it does take away time from doing my homework and stuff
like that. And it’s kind of like, like I knew he had a kid when I started dating him but I also didn’t expect it to be like, so much.

Ann explained he is with them every Friday into Saturday and once a month the entire weekend. Throughout our dialog about this topic she continued to clarify how much she loves the little boy and that he is easy to be around. Her stress is primarily associated with the time commitment involved with caring for a child:

This giant ball of energy…he loves me and baby mama loves me, so I mean it works. But it is stressful because it does take away take a lot of time and I’m not used to, I mean I’m like used to kids and stuff like but I’m not used to like being like a kind of mother like.

She said “I have a lot to do” and clarified that everything is easier to manage when all of her assignments are not due at the same time:

When I had everything due at once, that’s when I start to worry about it. Like when it’s all jam-packed into like 2 days. Everything is due and I have papers and presentations and tests and other tests and another paper like all at one time. That’s when I start to worry about it but if it’s just like normal…like, ok I have a paper this week and then I have a test next week and, you know, a little more spread out and then I’m okay.

Most stressful experience since being an undergraduate student. Ann shared that her sophomore year was the most stressful experience she had as an undergraduate student. Her demeanor shifted as she recollected a number of stressful incidents that occurred during that time period:

My sophomore year, like the beginning of the year was probably like the most stressful period. I was trying to quit smoking and me and my boyfriend broke up after 2 years, my godmother was diagnosed with ovarian cancer, and my uncle killed himself all within a month period.

While she did not elaborate, I observed that she was saddened as she listed these events. She previously shared with me that she is a smoker and explained her bad association with quitting smoking:
So, I started smoking again. And then I tried to quit again, a couple weeks later, or a couple months later. My godmother was re-diagnosed after her chemo and everything 6 months to the day. And then my grandpa was diagnosed with cancer as well. So, I started smoking again!

Even though she made the last statement with a laugh, based on our previous conversation I knew there was seriousness about the connection. That is, quitting smoking leads to bad things happening. She went on to describe more things that happened during that year as well as the responsibilities she was trying to balance:

I was also an RA at the time, in Duns Scotus [honors program], school, work, umm I was trying to join a sorority over at Lewis so I was driving back and forth to Lewis every night. So I had a lot going on all at once.

Ann explained her year was further complicated by drinking, “I started drinking a lot that semester, which is probably really bad because I wasn’t of age, but I did. However, she did recognize she was contributing to her difficult circumstances and made efforts to get things back on track:

It took me till the end of the semester to be like, I need to get this straight because my grades failed really bad. I didn’t fail anything, I just didn’t do as well as I should have and I was like sick a lot more than usual, so. That was rough.

I followed up by asking if maintaining her grade point average has been a challenge as a consequence of the events that happened during her sophomore year. She replied, “I’ve had a couple rough semesters, but overall I stay in Duns Scotus [honors program] so that’s good.”

**Less serious stressors.** Ann’s less serious stressors emanate from her parents, social life, and work to a much lesser degree. As I previously described, Ann’s parents are financing her tuition beyond what she is able to earn through the work-study program.
Given this, she feels they are overly concerned about her academic performance and do not understand the difference in rigor between high school and college expectations:

I love my mom; she’s great, like my parents are great. I’m lucky to have them be able to pay my way through school. And then they’re paying most of my loans and stuff as well. But, they’ve never been to school, or they’ve never been to a college, so they don’t quite understand the stress level of school and they kind of try to push me a little hard. And I mean I appreciate them wanting me to do well and everything, but it’s hard to explain to them like, sometimes I’m going to have a rough semester and they’re sitting here thinking like, well all through high school I was you know, mostly a straight “A” student. You know, high honors and so why am I not the same way in college? My mom gets mad if I get a “C” and I’m like, I’m going to have a couple rough classes. And they don’t quite understand that so it’s…it gets frustrating at times.

Ann also works about 20 hours on campus. While she likes her job and the flexibility she has, when she has a lot of academic deadlines it is still a great deal of time to invest given all of her other responsibilities. She interjects throughout this segment that she is doing the best that she can do given the numerous demands in her life. She expressed that balancing everything is stressful and she misses having a social life:

All my friends and my boyfriend and everything, they’re all in school. They understand you’re busy. It still sucks when you don’t have time to hang out with your friends or your schedules are so opposite.

She mentioned something else associated with this while we were discussing her sophomore year that is relevant to her minimized social life: “I don’t go out. I don’t do anything. I mean, I’m in school, working, doing homework or hanging out with a 5 year old. Like, that’s my life.” Even though she made it clear that she wants to be with her boyfriend, his parental responsibilities also seem to interfere with Ann’s ability to socialize outside of their relationship.
**Effect of stress on a daily basis.** The effects of the stress she experiences appear to wreak havoc on Ann. She has had a decrease in appetite and migraines. The first symptom she shared was her decreased appetite:

The past like month has been stressful, as far as like school work and everything because I’ve had so much going on. And, so I haven’t really been eating like I normally do. Normally I’m fine when I’m eating and stuff, but, I don’t know, I just haven’t really had an appetite lately, I guess.

She revealed that this had been going on for “three weeks-ish.” I asked if she thought she had time to eat or was it all due to a diminished appetite. She replied, “I can make time to eat, I can eat during my classes…my teachers don’t care, but I’m hungry but like, nothing sounds good. It’s…I don’t have an appetite for anything.” She immediately shifted to her migraines. I knew Ann struggled with migraines because she told me about them prior to one of our breathing meditation sessions. She thought meditation actually helped to alleviate the symptoms. During the interview she expounded:

I take *Relpax* which is a prescription that my mom gets so she’ll give me just a couple if they get bad enough to where I need them. Last Thursday I had a migraine, I have been fighting the migraine for about 2 weeks now. But last Thursday was like super bad! I made it through maybe 20 minutes of my class and I felt like I was going to be sick and I left, and I just laid in bed all day. Put a pillow over my head, just slept.

I asked if she thought her migraines were stress induced and she replied, “I’m pretty sure. Or lack of sleep, that might be it…and a good reason, too. A combination.” This served as a segue for us to discuss her sleep.

Not surprisingly, Ann says she does not sleep much or enough. If the number of hours she says she sleeps is accurate, she is most certainly another student who is sleep deprived:
I’ll stay up all night and then I’m just like dragging all day. On average I probably like [sleep] maybe 16 hours a week. I’ll sleep maybe like 3 or 4 hours a night, if that. There’s a lot of nights where I pull all-nighters or I’ll take like a half an hour nap.

She attributes her lack of sleep primarily to staying awake to study or do homework.

However, sometimes she wants to go to sleep but cannot because she habitually stays awake. I asked if she has always had these sleep habits and she reflected and said, “In my first two years I was ok, but as I started getting farther into my major and like the classes started getting harder, it kind of just…I’d rather stay awake and be tired.” In Ann’s case, apparently she is able to sleep but she simply does not have enough time to sleep.

**Strategies to alleviate or manage stress.** Other than breathing meditation, which arose later in our conversation, Ann does not regularly use any strategies to alleviate her stress. She had made some good life choices in the past such as quitting her job as a Resident Assistant at the end of her sophomore year and minimizing *partying* but she has not integrated anything that may reduce the symptoms of her stress. However, she did share that she swam competitively for 11 years and played softball for eight years, both in school and in summer leagues. She explained:

I don’t really have time to do that anymore. Every once in a while I’ll get up to the gym, up to the park district and go swimming, but like I’ll just like do laps. It relaxes me …when I get in the water, chlorine is like my comfort smell. Like I just walk in there and I’m like oh my god this is great!

This is clearly a happy recollection for Ann. Her voice softened as she smiled ear to ear and gazed at the ceiling. Her manner then became heavier and she continued:

I don’t have time and I don’t have a car right now. I got into a car accident last summer, killed my car. So right now I’m like relying on everybody else for rides, or using my roommate’s car and she has practice during the day. So when I’m free she’s gone at practice, so I just don’t have time or the means to get there. But when I do get up there to go swimming it’s, it’s nice.
I became very curious about what she actually experienced when she went swimming.

When I asked, her broad smile came back her voice lifted and she said,

    Oh yeah! As soon as I get in the pool I’m just like everything is just gone. It’s just calm and all I can hear is the water. Like I have my swim cap on and I’m just like, YES!

Even though swimming is currently a sporadic experience for Ann, it was clear Ann knew what it feels like to have a release from her stress.

**Future stressors.** Ann explained a few potentially stressful events. In the short term, she thought finals week was going to be “a little rough” due to her course load. She also mentioned aggravations associated with a summer and vacation time job she has at “stupid Kmart.” Apparently, the human resources department took her “out of the system” when she went back to school in August. Consequently, in order to work over winter break she will have to complete the application process again including watching numerous training videos. In the long term, Ann and her boyfriend are trying to find an apartment so they can move in together. However, she did not think that would happen until next year because she has a housing contract with the school. In terms of graduation in a year and a half she said, “As for graduation stuff, I’m looking for the light at the end of the tunnel!”

**Breathing meditation.** As indicated on Ann’s post survey, she did feel breathing meditation helped to alleviate her self-perceived stress and participated in breathing meditation approximately seven to nine times outside of the intervention sessions. I inquired about when she chose to meditate on her own:

    Like I said, I can’t sleep at night; I’m used to like not sleeping. So now when I try to fall asleep it’s hard for me to fall asleep. So I don’t know I just like started like
“in…out” [breathing]. When I lay there my mind’s running in a million different
directions. So then I tried doing that [breathing meditation] and the next thing I
knew I was like waking up and I was like hmm…I guess it worked! So now if I
want to fall asleep, especially on the weekends when I can sleep a little bit, if I
can’t sleep then I just do that and it helps me fall asleep.

I asked what effect breathing meditation had on her after our intervention sessions. She
replied, “I felt a lot more like…I’m trying to think of the word…just like ‘calm’ during
the week. I’m like, ok, just relax it’s fine.” I probed further and inquired about what she
thought the effects would be if she continued with breathing meditation. She said she felt
it would help her with her sleep. She is especially worried about getting back into a
healthy sleep routine once the semester is over and she has the time to sleep:

Once I’m not overwhelmed with the end of the semester projects and papers and
everything like that. When I actually have time to sleep because now I’m kind of
worried, because I’m not used to sleeping, that like I really won’t be able to sleep.

Ann also shared that she thinks using breathing meditation during finals week would be
particularly useful. She said, “I think doing it during finals week will be helpful because
everyone’s super stressed.” She thinks that during finals weeks students typically do not
take time for themselves:

You’re sitting there going, going, going trying to get everything straight and, you
know, [you need to] take that time to just focus yourself. So I think that will be
helpful, if I were to do that. So I could just like focus myself into like, what I’m
doing like, what am I working on, what am I studying for, what paper am I
writing.

Related to undergraduate students, in general, she thought breathing meditation
would be “really beneficial” as a strategy for them to manage their stress:

Talking to people afterwards, everyone enjoyed it, and I enjoyed it! I thought it
was a nice change from the typical daily life of a college kid just going, going,
going. To take that time to, you know, calm yourself down and re-you know,
focus everything. I think it would be really beneficial.
She thought it would be good to introduce it to first years because: “you’re just transitioning into college and you don’t really know what it’s like yet, and it just gets harder from there.” If they are introduced to the strategy early on Ann thinks “it would make it easier to stay with it and manage everything as you go on.”

Participating in the research study was Ann’s first introduction to meditation. However, her prior calming experiences with swimming may have helped her to engage in the breathing meditation. Overall, she felt it was a very useful strategy for her to combat stress and she intends to use it in the future. However, at the end of our conversation she did say, “I’ve definitely felt more stressed out since meditation ended.”

This possibly means the weekly routine of the intervention may have been helpful for reminding Ann of the positive effects of the strategy.

**Triangulation.** All of the data garnered from Ann’s PSS, USQ, and interview suggest Ann has a high level of stress and that the breathing meditation intervention appears to be effective in helping to manage her self-perceived stress (see Appendix Q). At the onset of the study her PSS and USQ pretest scores demonstrated she had a high level of self-perceived stress and was experiencing comparatively more life stressors than her peers in the study. Eight weeks later, her posttest scores reflected lower self-perceived stress, as indicated by the PSS, and a fairly consistent number of life stressors, as documented in the USQ. Additionally, her life circumstances, numerous credit hours, and helping her boyfriend with his son had not changed over the duration of the study.

Ann’s Perceived Stress Scale (PSS) and Undergraduate Stress Questionnaire (USQ) scores were higher than average among the control and experimental group averages. Further, her PSS posttest score was much lower (see Appendix Q) and her
stressors, as noted on the USQ, remained fairly steady (see Appendix U). Even though Ann experiences stressors typical of undergraduate students, her *pseudo role as a stepmother* may be her most stressful life event confounding her stressors more typical of undergraduate students (i.e., *assignments all due on the same day, sitting through a boring class*). It is also important to note that Ann identified the *death of a family member or friend* on her USQ posttest. The death of a loved one is often a stressful and challenging event in life. Even so, Ann’s self-perceived stress significantly declined as observed on the PSS posttest. Further, as with all of the participants, the posttests were taken during the week of midterm exams, traditionally a stressful period for undergraduate students.

Ann’s interview confirmed the above data and also suggested that breathing meditation, as a strategy to reduce self-perceived stress, may be effective and was a positive experience for Ann. She also shared that she will be using the strategy in the future (see Appendix X). Anecdotally, Ann was excited about being in the study and found breathing meditation help her to calm herself and to sleep better.

**Conclusion.** From a quantitative perspective, Ann is an incredibly stressed college student whose self-perceived stress declined over the duration of the study. My conversation with her confirmed these data and provided additional details about her role as a pseudo stepmother. Even though she does not bear the primary responsibilities of a fulltime parent, the consequential time constraints do impact her daily life. As disclosed in Appendix U, USQ findings mainly disclosed stressors typical of being an undergraduate college student and one which may, in fact, have been more stressful if the instrument had been weighted (i.e., *death of a family member or friend*). Even though
Ann appears to be able to maintain her numerous responsibilities and status as an honors student, it is apparent she battles with some of the physical and emotional manifestations of stress (e.g., decreased appetite, sleep issues, migraines). Considering the fullness of Ann’s life, the word I select to characterize her is overcommitted. A preponderance of her stress is related to the responsibilities associated with being a pseudo parent concurrent to pursuing a double major, sustaining a large number of credit hours, and working. Nevertheless, my experience with Ann suggests she is generally a positive person who wants to manage her stress. Based on her pre- and posttest findings, breathing meditation may be a strategy she can use to bring a greater sense of calm to her daily life and allow her to sleep.

Dean

*You don’t even realize how stressful the situation is and then it kind of hits you and then like all of the sudden you’re like, wow!*

*It was a feeling of powerlessness that I never want to experience... I never want to feel again. It’s the worst.*

Dean is a 25 year old fourth year student who, at the time of our conversation, was a month away from graduation. He transferred from a community college as a third year student and is a social work major who lives at home with his parents. He works 16 to 20 hours per week and did not indicate any financial problems in our conversation or in his surveys. He did mention, however, that his parents have been “very supportive” of his education. Dean has a gentle and quiet presence and seemed as though he enjoyed coming to the meditation sessions. He would arrive early to help arrange the room and would stay afterwards to put the furniture back in order. We would often engage in friendly conversation prior to our session.
The section opens with a rationale for selecting Dean as an informant, an introduction, and follows with data gathered from our conversation. During our discussion he shared his primary stressors, most stressful experience, less serious stressors, the effect of stress on a daily basis, strategies to alleviate or manage stress, future stressors, and his experiences with breathing meditation. A segment on triangulation follows whereby the findings from our conversation combined with Dean’s quantitative results are examined. The case analysis closes with a conclusion.

**Rationale.** Appendix Q details Dean’s Perceived Stress Scale (PSS) and Undergraduate Stress Questionnaire (USQ) reports as compared to all of the individual participants and the average scores of the participant groups (i.e., control, intervention, and interviewee). I wanted to speak with Dean about the influence of breathing meditation on his self-perceived stress because, among all of the participants and participant groups in the study, his PSS pretest score was average and his USQ pre- and posttest scores were below average. Meaning even though he had average self-perceived stress, the number of events he identified on the USQ were below the average number selected by the control, intervention, and interviewee groups. Further, Dean’s PSS posttest findings were comparatively below average among all of the groups (i.e., control, intervention, interviewee) and, while still below average, his USQ score increased on the posttest. This implies his self-perceived stress decreased while the stressors in his life concurrently increased.

Dean’s USQ pre and post reports indicated a number of personal stressful events including being the *victim of a crime* on the pretest, a potentially significant life event (see Appendix V). Academic stressful events were selected on both the pre and post
surveys with a noticeable increase on the posttest. I did not know what the qualitative data would exhibit, but I suspected the intervention had a positive influence on Dean’s self-perceived stress because the data harvested from the supplemental posttest items (see Appendix X) revealed that he had meditated on his own during the study, breathing meditation helped to reduce a little of his stress, and in the future he would probably continue using meditation as a way to reduce stress. Our conversation gave critical insight into Dean’s life circumstances, stressors and experience with breathing meditation.

**Introduction.** I met with Dean mid-afternoon after one of his morning classes. He arrived on time with a kind and calm presence. Before the onset of our conversation he articulated he had an interest in behavioral science and was pleased he could help with the study. His responses were thorough, but not overly verbose, and he was articulate. Therefore, a majority of his forthcoming story is in his own words.

**Primary stressors.** Our conversation began with Dean sharing that his primary stressors involve school and work and that over the summer the two were intertwined:

It juggles between school and work usually. Umm, a lot of the summer was stressful. I was going to, I was doing my internships so I was working anywhere between 30-40 hours a week at my internship but then working another 20 hours a week at my job in addition to going to class. So that definitely, you know builds up things pretty quickly in terms of stress, you know.

He clarified that he considered the internship to be a *job* in addition to his ongoing part-time job at a restaurant. I then asked whether the stress was primarily associated with the number of hours or the type of work. He explained:

My internship was working in foster care and so that was another, you know. It’s stressful enough just working that job, and then having to work it for long hours and trying to shift between working in foster care and then going and working in a
restaurant, you know. And you’re still thinking about one job while you’re going to the other, and back and forth. And going to class, you know, that was most of my stress the past year or so.

I requested that he prioritize the two, work and school, and he selected school as the primary stressor:

I’d say school in general because it’s the most critical in terms of, you know, my future and a lot of, all the rest of the stress. The internship is mostly, in conjecture with school in general so the stress from the internship still kind of counts towards school because it’s mostly school related stress, too.

The amount of time Dean invested in his internship, attending class and completing assignments, in addition to his part time job was clearly overwhelming for him. He slowly shook his head as he said:

I mean towards the end, when I was trying to like crunch and get all my hours in because we needed to complete umm, 480 hours of certain like hours of the internship. And then, I think 31 of those hours were in the classroom and then the rest were in with the internship. And so towards the end I was trying to crunch and get them all in before the semester started. And yeah I was working easily about 40 hours a week there and then 20 hours at my other job.

While the summer semester ended more than two months prior to our interview, it appeared Dean was still experiencing aftereffects of the experience as these were the primary stressors he discussed.

**Most stressful experience since being an undergraduate student.** Sadly, Dean’s most stressful experience since being a college student also happened during the very same summer semester. He revealed a lengthy but important story:

In around mid-July my girlfriend at the time was raped. And I was, uhh, that day I was working a 10 hour day at my internship. I was there from eight or nine in the morning until eight or nine o’clock at night because I was transporting one of the clients. And so, the client was there late for the client meeting and I got a call at like eight o’clock from my girlfriend saying that she was raped. That was, that was probably one of the most stressful….It’s probably, I mean without a doubt, it
was one of the hardest things I’ve ever been through in my life and I never ever want to go through it again.

Dean maintained his composure as he shared this experience but was noticeably disheartened. He explained how difficult this was given his chosen profession and his subsequent doubts:

My whole reason for going into social work was like, based around domestic violence and you know, rape prevention, that kind of stuff. It made me rethink like everything in general just because I mean, at the time I was you know, controlled and I was just, you know going through it. I was in control of myself and I said everything I needed to say correctly like, I wouldn’t change how I acted in the situation but it was just, it makes you rethink everything you were doing with your entire major.

He went on to explain the succeeding dynamics of the relationship with his then girlfriend and the added responsibilities he absorbed in his role:

Afterwards it was a lot of, almost like secondary PTSD where it’s just like, she was, she had a lot of times where she’d remember the situation, you know, and go back to it. She’d have like, she’d just like re-experience the event over and over again. She’d have some days where she’d be fine and other days she’d just break down. We have since broken up but I still keep in contact with her and we’re still decent friends, and she’s still having a lot of difficulties there.

Dean did not reveal specifically why the two broke up, but he explained the role her parents played in the situation and how it further complicated the circumstances:

So…yeah I mean her, her parents blamed her for it. It’s just her culture, they blamed her for it and everything like that, and they gave her no support whatsoever. And then they would call her names and everything else. They didn’t support her at all, so she’s…yeah that whole situation is pretty much been a huge stressor in life.

He then elaborated about his experience with the situation:

And it was, umm it’s hard to…it’s hard to keep just staying friends with somebody that needs so much support from you. It’s like you want to kind of distance yourself from that relationship a little bit more but yeah she called me a lot like just all the time just because I was the only support for her.
When describing his feelings about this significant life event he said, “It was a feeling of powerlessness that I never want to experience… I never want to feel again. It’s the worst.”

Dean then reflected back to the summer semester in general and said, “So all of that, wrapped up into the 60 hours I was working, so you can see what my summer was like.”

**Less serious stressors.** Being sensitive to and respectful of the seriousness of our conversation I was reluctant to transition too quickly to less serious stressors. Once I was fairly confident he had shared everything he wanted to express, I gently shifted the topic.

Dean finds his job at the restaurant to be frustrating. He said:

I work at a Texas Roadhouse restaurant. And I work in the kitchen and, really, like I’m one of those intense critical thinkers so everything has to be done like by the books and everything has to be orderly and everything working and I don’t slack around in the workplace because I’m there to do the job and get it done and do it right.

His tone and speed of his words led me to believe that this job may, prior to his unexpected summer experiences, actually be a primary stressor. He elaborated:

It frustrates me a lot when other people don’t have the same work ethic and don’t take the same seriousness that I do. So that’s probably my biggest stressor because I, in the past that’s really aggravated me a lot so, stressed me out a lot. And usually it’s, I mean right now I’m only working like 2 days a week, just to keep up with school and everything right now, but I’ve worked more in the past like during the school semester and that’s probably one, it’s not one of those stressors that you know, keeps me down through the entire week but it’s definitely one that you know for the moment just frustrates the heck out of me.”

After sharing a few more details about his job he hesitated, looking up as he tried to think of other things he considers to be lesser stressors. He spoke briefly about his family saying that his home life is “usually fine” and there are “no real stressors”. Additionally,
he shared, “My parents are extremely supportive of everything I do, helped me through college like immensely, so there’s no stressors there.” He paused again and after a moment stated, “I mean small things like body image. Like everybody struggles with body image I think a little bit, just about.”

**Effect of stress on a daily basis.** Dean conveyed several effects that he attributes to the stress he experiences such as muscle tension, headaches, sleep, and anger. He shared, “Usually I worry about stuff a lot, so I mean it’s kind of hard to sleep and everything else when you’re just kind of thinking of stuff constantly.” He further described his sleep issue saying:

I sleep more, a lot, when I’m stressed and stress kind of builds into a depression when you’re just kind of so overwhelmed…. So I sleep a lot more, especially when I’m stressed and school starts and take a lot more naps and everything else.

Dean also thinks he experiences anger as a response to stress:

Yeah but another is like anger. I have like, especially when I’m extremely stressed and I get frustrated with the situation, I get a whole lot of anger and everything too, just like at the situation I just want to be done and I just want to find a quick solution but they aren’t always there I think.

He goes on to explain how the impact of stress suddenly overwhelms him and revisits the complexity of his summer semester:

You don’t even realize how stressful the situation is and then it kind of hits you and then like all of the sudden you’re like wow! That was pretty much how my internship was it was like I don’t know how I’m doing this right now, I’m doing 60 hours a week and still somehow like maintaining life.

**Strategies to alleviate or manage stress.** Dean knows that he experiences effects of stress and tries to help manage it by setting aside time for himself late at night to watch movies or play video games. He shared:
I decided that past 10 o’clock I won’t do any homework or any work or schoolwork, nothing, past 10 o’clock. I usually, I stay up pretty late, I prefer that time of day just because it’s quieter, nothing else is around you….I usually watch a movie or like video games and stuff like that. That’s like predominantly my kind of release, like activity for myself that tides me over for the most part.

I asked if he is able to completely let go of his stressors while he is engaging in his late night activities. He replied:

I usually just fully engage myself in whatever I’m doing, so you know, remove myself from everything else for a while so I focus just on that, just remove everything else for a while. And that usually helps, for the most part. I’ve played games and stuff for a long time so it’s never stopped working. It’s usually good place to just kind of hide for a while.

I thought it was interesting that Dean used the word “hide”. I specifically inquired if he presently exercised or if he exercised in the past. He explained that he had in the past but has been “really bad about it for a while now.” Interestingly, he revealed:

I bought a punching bag a couple of years ago and for a while that was also kind of a release, especially with anger, to be honest. I used that for a while. I haven’t used that in a good amount of time though. I hit it every once in a while.” I wanna get back to it, probably after I graduate. Get more physical activity in my life. But for now I’m just focused on school and homework and I’ll probably get back to physical activity probably after I graduate.

Dean, along with many of his peers, has difficulty making time for exercise and views it as something he wants to return to after graduation. While they engaged in physical activity prior to college, and recollect the benefits, they still feel as though they do not have enough time to incorporate physical activity into their very busy college lives.

**Future stressors.** During our conversation Dean briefly addressed future stressors such as graduating the following month and finding a job. However, from our brief encounters prior to the meditation sessions, I also know he is contemplating graduate school but first believes he needs to work for a while.
Breathing meditation. Related to breathing meditation, I already knew Dean had practiced the technique outside of the intervention sessions and that he wanted to continue using meditation as a strategy to reduce stress. I asked when he used the strategy on his own. He shared:

On occasion like if especially if I was stuck somewhere waiting for like a long period of time like in the doctor’s office and stuff like that where you know I was just sitting and didn’t have anywhere to go and like, nothing available at my disposal to do anything with, I usually just kind of sat and meditated. Kind of, kind of rehearsed the breathing exercises I had for a while. I kind of reused them. I figured I’m here let’s try to use the time to relax and see if that passed the time and whatever.

I inquired whether he ever purposefully used the strategy to calm himself or relax. He explained he had tried using breathing meditation a couple of times and that the experience “just kind of calmed myself down and focused my head a little bit and get some of the stress out of my life.”

He said it is particularly in effective instances when he is “frustrated or angry”:

I think the breathing techniques just kind of help just…just kind of slow my heart rate, just kind of deescalate myself a little bit and kind of focus on whatever I was thinking about. Just trying to get it out of my head or move my thoughts to something other than whatever I was just thinking about.

Apparently Dean also struggles with thinking about things he does not want to be thinking about. He said the effectiveness of his meditation depended on how stressful his day was and the complexity of the issues he was facing. On more challenging days he said:

Like even mediating on those specific days is a little bit harder just because those problems didn’t go away or you’re still thinking about them. So even if you’re successful in meditation, you still kind of wander back to those they kind of come back. So it kind of depends for me on the severity of the events of the day.
I questioned Dean about his self-perceived stress and if he thought it had changed over the duration of the intervention. He said he has “felt a lot less stress” but he does not know if it is attributed to breathing meditation or if the semester is comparatively less stressful than previous semesters, especially last semester. He said:

I didn’t worry as much this semester as I have in previous semesters. I’m not like super anxious about anything like I was in previous semesters. I don’t feel like there’s anything you know scary coming up that I’m worried about getting done or anything like that. Like I have a couple big projects but it’s, it doesn’t seem like it’s that hard in comparison to like things I’ve done in the past.

His overall experience was positive enough that he believes he will use the “breathing exercises” or “other exercises that would also be beneficial” in the future to help manage his stress:

I definitely like breathing exercises a lot, just because it does help you calm down a little bit and focus on you know, realizing that you are just kind of like, super angry or frustrated or whatever, just kind of stop. I think that’s probably the most I’ve gotten out of this, just the fact that learning how to identify when you’re in those kind of situations and take the like the right steps to kind of calm yourself down, instead of you know, unhealthy stuff.

Dean thinks introducing stress management strategies to first year students is the place to begin. He said:

At the beginning of freshman year when they’re just starting out, before the stress hits and reality sets in, and all the fun things you’re going to have to do when you’re a senior. Umm, definitely early, like I feel like students wait too long to worry about what they’re going to do with their stress.

He felt it would be helpful if they are able to find a strategy and focus on it throughout their college careers. Even though he finds breathing meditation useful he said the best strategy “would depend on the person”. He explained physical activities such as “running” may be best for some people because gets the “body moving” and one of the “top methods that can be utilized” for stress management. He mentioned that he is 25
years old and that many of the younger students “don’t really talk” and do not have a way
of coping with their stress. Dean explained:

A lot of people coming in here are 18 and stuff. I feel like it would’ve helped a lot
to understand how to manage stress earlier on instead of you know, several years
later when you’re in the thick of it, like trying to cope with stress.

In terms of previous experiences with meditation, Dean was introduced to
Transcendental Meditation (TM) in a psychology course at the community college he
attended. He does not recall participating in a meditation but the professor, who was a
credentialled TM instructor, encouraged the students to pay $500 and take his course.
Dean disclosed this was a “negative experience” because the professor advertised the
course and the benefits of TM throughout the semester. Obviously, his single experience
did not deter him from volunteering to participate in this study.

**Triangulation.** All of the data garnered from Dean’s PSS, USQ, and interview
suggest he has experienced serious stressors and that the breathing meditation
intervention may have been an effective strategy for him to manage his self-perceived
stress (see Appendix Q). At the inception of the study, his PSS and USQ pretest scores
demonstrated he had average self-perceived stress and identified that he had relatively
fewer stressful events than his peers. Eight weeks later, his posttest scores reflected lower
self-perceived stress, and a larger number of life stressors.

Among the control, experimental, and interviewee group averages (see Appendix
Q) Dean’s Perceived Stress Scale (PSS) pretest score was average and his Undergraduate
Stress Questionnaire (USQ) pretest score was comparatively below average.
Additionally, his PSS posttest score was lower than the aforementioned group averages
and his stressors, as noted in Appendix V, increased. Even though Dean experiences
some stressors typical of undergraduate students, his significant life experience (i.e., being a victim of a crime) may have influenced what he considered to be a stressful event. Notably, the events Dean identified on the USQ posttest were heavily academic. As with all of the participants, the posttests were taken during the week of midterm exams, traditionally a stressful period for undergraduate students, and this may have contributed to the increase. Further, with Dean’s impending graduation, he may have had weightier assignments due at the end of the semester also possibly causing an increase in his USQ posttest score.

My interview with Dean confirmed the above data and further explained the intensity of his stress when entering the study. At posttest time, he was two months further away from the significant life event that occurred the previous semester (i.e., being the victim of a crime) which may have also influenced his self-perceived stress over the duration of the study. Nonetheless, all of the data confirm breathing meditation, as a strategy to reduce self-perceived stress, may be effective and was a positive experience for Dean. Further, he reported that in the future he will likely use breathing meditation as a technique to reduce stress (see Appendix X).

**Conclusion.** Only examining the quantitative data would lead one to believe Dean experiences less self-perceived stress than his peers due to the lower number of stressors he experiences in his life. My conversation with him illuminated my understanding of his stressors and more fully revealed the intensity of his experiences. This is another case where, if the USQ had been a weighted instrument, Dean’s pre- and posttest scores may have been higher. At face value, and other than selecting being a victim of a crime, his USQ pretest findings mainly disclosed personal stressors typical of being an
undergraduate college student such as breaking up with a girlfriend and being concerned about my appearance with an increase of academic-type items on the posttest such as had a lot of tests and stayed up late writing a paper. Even though Dean appears to be able to maintain his school and work responsibilities he struggles with some of the physical and emotional manifestations of stress (e.g., sleep issues, headaches). Considering Dean’s story, the word I select to characterize him is powerless. A preponderance of his stress is attributed to the horrific event his girlfriend recently experienced. This event dominated his life and made an already stressful semester nearly impossible. While the event is over, it appears as if Dean continues to battle associated stress and that it affects other facets of his life. Overall, I find Dean to be a compassionate person who believes he can influence his circumstances and manage his stress. Based on his pre- and posttest findings, breathing meditation may be a strategy he can use to combat the powerlessness he experiences.

Sam

Most of the times though it was more like I was physically pausing even though mentally I’m still thinking through like, I need to do this, I need to do that. You know, cause that’s my whole day. I’m thinking about what I need to do and from when I get up and in the shower I’m still thinking about like all the homework I could be doing.

Sam is a 19 year-old honors student who began at the university as a first year student. He lives with his family and commutes to campus. He is a mathematics and actuarial science major in his second year. He works 6 to 10 hours per week and indicated financial problems on the surveys even though his college is being financed by his parents. Sam is soft-spoken and reserved but is also friendly when engaged in
conversation. He always arrived just on time for our weekly meditation sessions and often had an unsettled presence as if he had rushed from one place to another.

The section opens with a rationale for selecting Sam as an informant, an introduction, and follows with data gathered from our conversation. During our discussion he shared his primary stressors, most stressful experience, less serious stressors, the effect of stress on a daily basis, strategies to alleviate or manage stress, future stressors, and his experiences with breathing meditation. A segment on triangulation follows whereby the findings from our conversation combined with Sam’s quantitative results are examined. The case analysis closes with a conclusion.

**Rationale.** Appendix Q discloses Sam’s Perceived Stress Scale (PSS) and Undergraduate Stress Questionnaire (USQ) reports as compared to all of the individual participants and the average scores of the participant groups (i.e., control, intervention, and interviewee). I wanted to meet with Sam to discuss the influence of breathing meditation on his self-perceived stress because, among all of the participants and participant groups in the study, his PSS pretest score was lower than average and his USQ pretest score was slightly higher than average. Implying, even though he had lower than average self-perceived stress, the number of events he identified on the USQ was slightly higher than the average number selected by the control, intervention, and interviewee groups. Interestingly, Sam’s PSS and USQ posttests revealed his self-perceived stress and number of stressful events increased over the duration of the study. In fact, his PSS posttest score was higher than the average score of the control, intervention, and interviewee groups. This suggests that both his self-perceived stress and stressful events increased over the period of the study.
Sam’s USQ pre and post findings indicated a number of academic, personal, and financial stressful events characteristic of undergraduate students (see Appendix W). However, on his post USQ he reported having Generalized Anxiety Disorder and Obsessive Compulsive Disorder in the other category. This is potentially a significant life event that may influence many facets of his life. His responses for the supplementary posttest items (see Appendix X) seemed to be contradictory. He reported that participating in the study created a lot of additional stress, he meditated on his own one to two times during the study, breathing meditation helped to reduce a little of his stress, and that he would probably use meditation in the future to reduce his stress. Given all of Sam’s reports, the fact he thought the intervention only helped to reduce his stress a little and that he wanted to continue with meditation was puzzling to me and made me especially curious to speak with him. Our time together helped me to better understand Sam’s quantitative reports, his life circumstances, and his experience with breathing meditation.

**Introduction.** I met with Sam near noon after one of his morning classes. He arrived on time donning a pleasant smile. He did not appear to be as frenetic as he was when he arrived at our breathing meditation sessions. His responses were succinct and easy to understand. This was the shortest of all six interviews.

**Primary stressors.** Our time together began with Sam revealing that he believed his primary stressor is school. I asked if it was the number of credit hours, the rigor of the courses, or something else and he responded:

Mainly the amount of school work, especially deadlines, tests to study for, just trying to get everything done, in like a given amount of time. And the difficulty would come somewhat after that, yeah.
I asked a couple of clarifying probes and it was clear that school as related to *academics* is Sam’s primary stressor. While he likes the subject area of his major, it is difficult and demanding and he sees this as his most significant source of stress. Further, he did not mention maintaining his grade point average or his status as an honors student as being specific associated issues.

During this segment Sam also shared some general information about his ongoing health issues and how this impacts his role as a student:

> I’ve been diagnosed with a generalized anxiety disorder, and OCD, so umm, I just generally feel nervous all the time, even if there’s no reason. So you have that on top of school. And then OCD uhh, yeah you can have random like anxious thoughts and then you have to do stuff from that, so that in addition to school, I’d say are the main stressors.

While he did not disclose when he had been diagnosed, I suspect it was sometime during the intervention as he did not indicate the problem on his USQ pretest. I asked at what point in life stress became overwhelming for him and he responded:

> It definitely started as a high school student. I probably noticed I was more stressed in general maybe about midway through high school. Umm, but it definitely it progressed more when I got to college.

**Most stressful experience since being an undergraduate student.** I inquired about what Sam considered to be his most stressful event since attending college and he mentioned finding a parking space on campus and revisited the stress he experiences associated with academics:

> Finding a parking spot is definitely one of those. Ummm, for courses there really isn’t anything specific. There were definitely some that were harder than others but umm, it’s, it’s probably, it’s really just overall. All of the courses on top of each other are just one big stressor.
Unlike previous informants, Sam’s stressful experiences appear to revolve only around the academic components of university life that appear to be confounded by his ongoing health issues. I inquired if he had ever considered changing his major. He said:

I thought about switching to math education, so uhhh, I don’t know if it’s going to happen but…. because of the stress and I, I mean I just simply may enjoy it more, doing that.

He explained he has thought about switching to math education because he likes to tutor:

Yeah, just from experiences like tutoring and stuff like that. The kids I noticed, I mean I enjoyed tutoring in the moment, while I’m doing it and umm, so that that’s kind of what motivated me to think about it. But then, then I’m up late at night stressing about should I switch or not.

Sadly, as Sam previously shared, most of his thoughts, good, bad or indifferent, induce stress.

**Less serious stressors.** As we moved forward in our conversation, it was clear Sam had difficulty identifying his less serious stressors. Looking up, he took a long thoughtful pause before he responded:

I’m trying to think where to even start. I mean I guess like something like an example we talked about the parking, like finding a parking spot, I mean that’s just something small that’s like ok, it’s like it’s not horrible but it’s just like those extra things in there that make it more difficult. Ummm, I’m trying to think of other good examples that are small. Uhhh….

I asked if he had any siblings as they are sometimes a secondary source of stress:

Yeah, I have siblings. Umm, I’m the oldest. For the most part it’s nothing bad like, so. Uhhh, trying to think of good examples, like my parents, like I mean we have like my parents have a good amount of money but then it’s always stressful. Like it’s always kind of tight with things. So, I guess that could be like an added, like, it’s kind of always there. Ummm…
I asked if he experiences the stress of other people and he nodded saying, “And they’re paying for my college too and that stresses me out too.” This helped to explain why Sam indicated he had financial issues on his USQ reports.

**Effect of stress on a daily basis.** I felt Sam had shared everything he could about his stressors so we advanced to discussing how stress affects him on a daily basis.

Inability to concentrate, concerns about sleep, and appetite, along with his ongoing health issues, were the issues he discussed:

I definitely say I’m just more nervous and anxious all the time. I probably can’t focus as well, but still find a way to get the work done. Umm, I’m more tired because I don’t sleep as much, or I just feel tired from the stress…. I may have a decreased appetite. I generally don’t eat for breakfast, or for lunch, I’m just not…I’m probably hungry I just don’t have an appetite for anything. And then my appetite will pick up later on at night. That’s when I’ll eat a lot of stuff. Umm, so it could be a result of stress uhh, it’s hard to tell really what it is.

Since sleep issues appear to be common among undergraduate college students, I asked him to elaborate about how he experiences the problem. He said, “I don’t have difficulty falling asleep but I never feel tired at night. My thoughts are racing where I just don’t wanna go to sleep, so I stay up very late, like on a daily basis.” He described his thoughts as “Things I need to do and my mind just doesn’t stop. So I’ll be thinking about things I need to do in addition to just, anything random I came up with.” I inquired about how many hours he is able to sleep each night and he said only four to five but that he tried to catch up on the weekends by sleeping 10 to 12 hours a night. During the school week he does sometimes need a sleep break, “If I only had like four hours of sleep then I’ll take a nap.” In addition to Sam’s stress, he is also probably sleep deprived.

**Strategies to alleviate or manage stress.** Considering the difficulties Sam experiences as a consequence of his stressors, I was curious to hear if he had any
strategies to alleviate the stress he experiences. As we segued into the topic, he brought up is part time job at a tutoring center:

I started my tutoring job at Mathnasium, I talked to you about it earlier, in the summer. I would get very stressed before work, because I was new there. I didn’t know the people and it gave me a lot of anxiety to talk to people that I didn’t know that well. I had that at first, but now when I’m tutoring I’d probably say that, yeah for the most part, it’s kind of a nice break from my school work where I, I’m not thinking about it as much, I’m just thinking about like, in the moment of tutoring or whatever kids I’m with.

I was relieved to hear that Sam had moments of serenity and that he was able to identify this particular activity as being somewhat stress relieving. He also brought up his circle of close high school friends as being a way to combat his stress before he came to college:

In high school it helped that I would hang out with a lot of my close friends. Just like joking around with them, it would help me forget about it. Like you know, how I’d just have fun with them.

While he has friends in college, he doesn’t have the same stress relieving experience with them. Additionally, many of his high school friends went away to college and he is not able to socialize with them as frequently. Sadly, he stated, “I don’t’ have that outlet as much anymore.”

In the late evenings he tries to make sure he engages in activities he enjoys such as watching television shows and surfing the web. Unfortunately, his homework load sometimes pushes these activities later into the evening or into early the next morning creating less opportunity for sleep:

At the end of the day I’ll watch a couple of tv shows. I’ll go through and I’ll watch an episode a night and like I’ll eat something before I go to sleep. Yeah, I’ll surf the web before I go to sleep, so yeah that’s like my relaxing time I go to sleep, I guess you could say. The problem is, if I’m up late doing homework and I still want to have that time, then I’m up later and then I get less sleep.
Future stressors. I asked Sam if he felt he had any upcoming events that would be stressful. His response inferred he was not able to project too far into the future:

I’m pretty behind in some classes. So it’s just getting through the semesters, it’s just the upcoming school work for this week and the rest of the semester is probably like the stressful.

I probed to determine if he is technically behind or if he is behind from his own perspective:

Like there’s assignments that are late and stuff. But um, credit wise, I push myself a lot. Even though I’m just finishing up in fall my sophomore year, I’ll be at junior standing. So after that I can take less classes, so I’m looking forward to that. So like credit wise I’m not behind but like, assignments, yeah they’re really late.

While Sam said he is only enrolled in 16 credit hours this semester, he said he has taken many courses in his major that most students take as third year students likely making his academic experience more rigorous.

Breathing meditation. As previously mentioned, I was quite curious about Sam’s experience with breathing meditation. I asked if he felt like it had any effect:

There were probably like 2 sessions where I probably did feel a little more refreshed and focused and clear, and my thoughts were more clear from doing it. And then other times if there wasn’t really that much of an effect from it.

He went on to describe that he thinks it is helpful to pause and that breathing meditation was an opportunity to do that:

I think it’s helpful to take a moment to pause, because you’re going through the whole day, doing, you know, you’re just constantly working, so the pause can be helpful to if you need to relax, to get refocused, stuff like that.

I requested that he explain why he felt participating in the study created a lot of additional stress for him:
There were times when I we’d have the breathing meditation at like 5 right? So I’d be working in the library on a project before that and my mind would be going like ‘Ok how can I figure this out let’s go through this’. And then I’d have to take a break midway through to go and do that [breathing meditation] so that’s how I said it would throw me off more.

He went on to explain it was stressful for him to disrupt his stream of thought while doing homework to go and participate in the breathing meditation. Making it even more challenging for Sam, whatever he was engaged in prior to our session lingered in his mind while he was trying to meditate. Sam continued:

If I do pause, I think I mean it just brings the stress levels down a bit. You can kind of look at what you have to do again, stuff like that. Most of the times though it was more like I was physically pausing even though mentally I’m still thinking through like, I need to do this, I need to do that. You know, cause that’s my whole day. I’m thinking about what I need to do and from when I get up and in the shower I’m still thinking about like all the homework I could be doing.

This response set helped me to better understand why Sam may have appeared unsettled when he arrived at our breathing meditation sessions. I asked Sam why he thought his self-perceived stress went up during the study and he said he thought, “it increased due to schoolwork.”

We transitioned our conversation and began discussing his future plans with breathing meditation:

I think like I’ll continue giving it a try you know, try different times, different stuff. Uhh, probably will do to work with it after the semesters over. And then if I can get used to it then maybe bring it back in if I have more work. So I’ll definitely try it out more.

Even though participating in the study was a stressful experience for him, he apparently still believes the practice could be helpful in managing his stress.

Our time together ended with Sam sharing another experience he had with meditation. He regularly sees a therapist to help him with his OCD and they did a similar
breathing practice once or twice during the period of the intervention. He mentioned, again, that he thinks it’s a good method but he, “just can’t find a time to get around to do it.” He thinks undergraduate students could benefit by learning and using breathing meditation to help manage their stress.

I think the main part is you want to get everyone to at least try it. Umm, I’d say if a course offered extra credit to just go do breathing meditation, to try it out, where it’s not like you have to go do that instead of doing work.

Sam thinks it will be easier for students to make time for it if breathing meditation is taught and practiced within a course. Then the meditation practice would not take away from time doing other things required in the course:

Then if people realize ‘oh it benefitted me, too’, then they could keep doing it because they just see it as useful. So basically if it was offered as an extra credit or something…It could help.

With that said, Sam also points out that some people may be so stressed that they need more than breathing meditation to manage their stress.

**Triangulation.** All of the data garnered from Sam’s PSS, USQ, and interview suggest he has experienced substantial stress and that the breathing meditation intervention did not appear to be an effective strategy for him to manage his self-perceived stress (see Appendix Q). At the launch of the study, his PSS and USQ pretest scores demonstrated he had below average self-perceived stress and identified an average number of stressful events as compared with his peers. Eight weeks later, his posttest scores reflected higher self-perceived stress and a larger number of life stressors.

Among the control, experimental, and interviewee group averages (see Appendix Q) Sam’s Perceived Stress Scale (PSS) pretest score was comparatively below average and his Undergraduate Stress Questionnaire (USQ) pretest score was average.
Additionally, his PSS posttest score was higher than the aforementioned group averages and his stressors, as noted on the USQ, increased. Even though Sam experiences some stressors typical of undergraduate students, academics appear to be the most stressful for him (see Appendix W). His circumstances are also confounded by his General Anxiety Disorder and OCD. As with all of the participants, the posttests were taken during the week of midterm exams, traditionally a stressful period for undergraduate students, and this may have contributed to the increase in Sam’s scores.

My conversation with Sam confirmed the above data and further explained the increase in his stress over the duration of the intervention. Even so, Sam conveyed in the interview and on the supplemental posttest items that he is likely to try breathing meditation in the future as a strategy to manage his stress (see Appendix X).

**Conclusion.** Sam’s case was interesting due to his opposing reports (i.e., his self-perceived stress went up but he still wants to try to implement the strategy). Our conversation clarified my understanding of his stressors and the state of his mental health. While he seems as if he experiences stressful events typical of undergraduate students, his Generalized Anxiety Disorder and OCD seem to exacerbate his self-perceived stress. While Sam is trying to manage his academic responsibilities, he struggles with some of the physical and emotional manifestations of stress (e.g., sleep issues, change in appetite, racing thoughts). Bearing in mind Sam’s circumstances, the word I select to characterize him is *overwhelmed*. The majority of his stress is associated with academic obligations and it is overwhelming his ability to maintain healthy life habits (e.g., eating and sleeping regularly). Generally, I find Sam to be bright young man who is committed to being a good student. He is *overwhelmed* by his circumstances and, at the time of the interview,
is not able to implement changes in his life to combat his stress. Based on his pre- and posttest findings, breathing meditation may or may not be a strategy he can use to contend with feeling *overwhelmed*. In the next section I will share the findings of the cross-case analyses where the informants are examined as a group.

**Cross-Case Analyses**

Once the individual interviews were analyzed I conducted a cross-case analysis of all six informants as a group. Continuing with a phenomenological research approach, I sought to encapsulate the personal and subjective responses of the participants into common themes related to self-perceived stress, stressors, and breathing meditation (Creswell & Clark, 2011; Kvale & Brinkman, 2009; Mertens, 2010). The aim was to apply the findings to a broader population by harnessing the essence of the stories shared by each of the informants. The forthcoming themes were established in consultation with the peer reviewer to ensure trustworthiness and the integrity of my interpretation. To maintain focus in the analysis, it was vital that I remain true to the original research questions:

1. What are undergraduate student self-perceptions of stress?
2. What are circumstances that contribute to undergraduate student perceived stress?
3. What effect does breathing meditation have on undergraduate student self-perceived stress?

As in the individual case studies, it is important to note that the data collected in Phase 3 primarily address research questions two and three. While research question one is best understood within the quantitative data set, the qualitative data did provide enhanced understanding of the students’ self-perceived stress. The aforementioned
codebook had previously been utilized (see Table 17) to tally the number of times the codes and sub-codes were referred to in the interviews. For the purpose of the cross-case analysis, if a code or sub-code was addressed by at least five of the six informants it was coupled with a theme. Consequently, the themes that emerged that addressed research question one would include concerns related to academic pressures; time management; finances; physical, cognitive and emotional frustrations; and significant life events. The final theme, pausing, addresses research question three. The analysis presented in the sections that follow is organized according to these themes.

**Academic Pressures**

Academic pressures were articulated by all six informants. The pressures influenced their self-perceptions of stress and are frequently the primary contributor to their stress. Whether it be completing assignments or preparing for tests, academic pressures are ongoing. Sam was overwhelmed by the amount of school work, “especially deadlines, tests to study for, just trying to get everything done.” Kalinda was managing, but she concurred, “there’s a lot of tests so preparing for tests and trying to prioritize which tests are more important.” Ann, being overcommitted, is a double major and finds it to be, “rough!” She also conveyed “a lot of group projects” increase the pressure. While group projects are not hard, from the informants’ perspectives, they required a great deal of coordination and time.

Ann and Dean are both social work majors and they expressed frustration with their internship responsibilities. The previous semester Dean was involved in an internship, taking classes, and working a part-time job. All things considered, he was likely engaged with these experiences about 65 hours per week; he expressed a sense of
powerlessness and frustration. He said, “it builds up things pretty quickly in terms of stress.” Three informants were nursing majors and, in the words of Kalinda, there are “so many requirements to get in to the nursing program.” All three nursing majors addressed the TEAS and NCLEX exams as being stressful. While the NCLEX is taken at the end of the nursing program, Darrin is already thinking about it, “I’m anticipating that as being very stressful.” One informant, Sam, who is an actuarial science major, was so stressed he couldn’t even consider anything beyond the current semester; he said, “upcoming school work for this week and the rest of the semester is probably like the most stressful.”

While there were other stressors discussed in the interviews, academic pressures are central to the students’ stress. This theme addresses research questions one and two whereby the group consensus was that events leading to academic pressures are the primary contributors to student self-perceptions of stress. A theme directly related to academic pressures is time management. It was challenging to tease this away from academic pressure as they are very closely related.

**Time Management**

Given the demands of college life, effective time management is essential. In addition to having stressful majors, half of the informants were in the honors program. They all lead busy academic lives along with extra-curricular responsibilities such as work and in one case athletic responsibility. While they appear to be surviving with their time constraints, all of them mentioned not having enough time as an irritant. Kalinda shared she often doesn’t have time to take care of her personal needs after early morning cross-country practice. She said “I rush and then I don’t have time to shower, I just grab
food and go.” She also conveyed not really having time to spend with her boyfriend or her mother.

Ann talked about a number of time intensive responsibilities she had the previous year. She was a resident assistant, in the honors program, fulfilling academic responsibilities, and trying to join a sorority. After describing this she stated, “So I had a lot going on all at once!” While Sam feels confident in his academic abilities, he does not feel like he has enough time to get everything done and he said, “I’m pretty behind in some classes.” Jamie sees her therapist every other week. Even though she feels the sessions are helpful, she said it is hard to set aside the time. Five of the six informants expressed that prior to college they had been engaged in regular exercise such as lifting weights, swimming, football, and softball. Even though they enjoyed these activities and felt they were helpful in terms of managing their stress, they have discontinued participating because they just do not have the time. Finally, near the end of each interview, I asked five of the interviewees what, if anything, they felt would interfere with continuing a breathing meditation routine. All stated they felt time may interfere with their ability to continue. This theme also addresses research questions one and two whereby the group consensus was that time management is a primary contributor to undergraduate student self-perceived stress. Finances were the next predominant theme to emerge.

**Finances**

While the informants did not collectively describe finances as being a huge concern, it was a theme that emerged through parallel elements such as issues in the workplace, fulfilling athletic scholarship responsibilities, and paying for tuition and living
expenses. Also five of the informants indicated finances as being a concern on their Undergraduate Stress Questionnaire. Five of the six students have part-time jobs to offset their expenses and one has an athletic scholarship which is, in effect, a job. Four of the students revealed that their parents are helping to finance their college tuition, however even that can be stressful. Sam expressed that although his parents have “a good amount of money,” their family finances are always tight and it stresses him because they are paying for his college tuition. Darrin’s parents do not appear to be helping him pay for college, but they let him and his small family of three live with them. This, in turn, appears to produce guilt on the part of Darrin and he consequently works part-time so he can help to pay the household expenses. He said, “my parents don’t ask me to do that but I do it anyways just to like show them that I’m grateful.” Jamie and Dean expressed they are frustrated with their coworkers. Dean shared, “It frustrates me a lot when other people don’t have the same work ethic… that really aggravated me and stressed me out a lot.” Jamie also found her coworkers to be a source of her stress and her experience with them caused her to dislike her job. She directly stated, “I absolutely hate it so that stresses me.” While Sam now enjoys his job as a math tutor, the position initially created a great deal of anxiety for him, he said, “I would get very stressed before work, because I was new there. I didn’t know the people so it gave me a lot of anxiety to talk to people that I didn’t know that well.” The theme associated with finances addresses research questions one and two. While finances were not plainly stated, all six informants had financial circumstances that contributed to their self-perceived stress. Physical, cognitive, and emotional frustrations were the next principal theme to emerge.
Physical, Cognitive, and Emotional Frustrations

All of the aforementioned stress is not without consequence. All six of the informants communicated one or more physical, cognitive, or emotional frustrations that they attribute to stress. Overall body tension and headaches were common complaints; however, the overarching issue was related to sleep. Five of the six informants shared their issues associated with sleep, primarily falling asleep and getting enough sleep. Kalinda disclosed, “I don’t fall asleep very easily.” Dean concurred when he said, “I mean it’s kind of hard to sleep.” However, he also added, “I sleep more, a lot when I’m stressed and stress kind of builds into a depression.” Sam mentioned, “I don’t sleep as much….My thoughts are racing where I just don’t wanna go to sleep.” Ann revealed, “I’ll stay up all night and then I’m just like dragging all day.” Two informants felt they had a decreased appetite. Ann said, “I’m hungry but nothing sounds good…I don’t have an appetite for anything.”

Each interviewee also conveyed difficulties associated with habitual thinking which impacts their ability to focus and concentrate. While Jamie struggles with Obsessive Compulsive-Disorder (OCD) and her circumstances are more severe than most, her words represented a united voice when she said, “I can’t stop thinking about something and I don’t want to be thinking about it.” Dean’s words validated this when he said, “you’re just kind of thinking of stuff constantly.” It can even interfere when they are trying to do something they enjoy such as spending time with friends or family or watching a movie.

Four of the informants disclosed they sometimes experienced emotional responses due to their stress. Both Darrin and Dean shared that stress causes them to feel
unnecessarily angry. Darrin feels like the things that make him angry are unimportant; he said, “it’s not really something to get angered at.” Darrin also feels frustrated because he does not feel he has normal reactions to stressful situations because he cannot recognize and process the event in real time. He said, “I feel like a normal person would be able to handle it, at the time of being stressed.” Two of the students disclosed that they sometimes cry in private and Jamie shared she sometimes detaches herself. She said, “I felt like I’ve been numb to situations.” Ann struggles with smoking in an effort to deal with emotional circumstances and, in the past, has used alcohol as a means to quell her emotional stress. Like the previous three themes, this theme addresses research questions one and two given the entire group revealed one or more physical, cognitive, or emotional frustrations that they attribute to stress. In the next section I address the last theme related to research questions one and two: significant life events.

**Significant Life Events**

Of the six informants, five were managing significant life events beyond what may be considered ordinary pressures of college life. Darrin is a very young parent. His girlfriend unexpectedly became pregnant his first semester of college. While they are living with his parents, it is still quite stressful. He said the most difficult experience was “having no idea how you’re going to support another person.” Jamie is diabetic, has OCD, and lives at home with parents who struggle with alcoholism. Her circumstances would be incredibly difficult even without any ongoing health issues. Consequently, she experiences tremendous stress and anxiety on a daily basis which is further confounded because, she said, “I can’t control my mom or my dad.” Dean suffered a horrific experience only a couple of months prior to the onset of the study. His girlfriend was
raped. He shared, “it was one of the hardest things I’ve ever been through in my life and I never ever want to go through it again.” Ann is dating a fellow student who is the father of a five year old son. She loves her boyfriend and his son, but feels a great deal of stress associated with her pseudo step-mother role. The son is with them each weekend; she said, “that’s stressful, because it does take away time from doing my homework and stuff like that.” Sam was recently diagnosed with generalized anxiety disorder and OCD. He disclosed, “I just generally feel nervous all the time, even if there’s no reason.”

**Pausing**

Pausing is the theme that addresses research question three: What effect does breathing meditation have on undergraduate student self-perceived stress? Five of the six informants found pausing to do a brief breathing meditation once a week helped them to manage their stress. Two of the students expressed meditating assisted them academically by improving the retention and recall of information. Three felt it gave them a greater sense of clarity. As stated by Darrin, breathing meditation “clears my mind and that’s what helps lower stress for me, I’m stressed out because I just have too much stuff on my mind.” Two informants shared they became more alert and three believed the experience helped them to be calm and relaxed. Ann disclosed, “I felt a lot more…like calm during the week.” While Sam did not consistently have a positive experience with breathing meditation, he stated, “I think it’s helpful to take a moment to pause…if you need to relax, to get refocused, stuff like that.” He went on the say, “If I do pause, I think it just brings the stress levels down a bit.”

Three of the informants were inspired to do breathing meditation on their own. Dean shared that he would practice while he was waiting somewhere like a doctor’s
office and also used it at times when his emotions were surfacing; he said, “especially instances where I’m just frustrated or angry.” Four informants consistently experienced a positive effect after the breathing meditation session. Kalinda’s session was on Monday afternoons and she said, “I think it made Mondays easier.” Darrin struggles with worrying about things that could potentially go wrong. He said, “after breathing meditation or meditation in general my mind is pretty clear, like I don’t remember thinking about what could go wrong, really.” Dean said learning breathing meditation helped him to identify stressful situations “and take the right steps to kind of calm yourself down, instead of you know, unhealthy stuff.” All five expressed a desire to continue with breathing meditation as a technique to alleviate or manage their self-perceived stress.

Jamie is the only informant who did not find breathing meditation to be useful as her OCD prevented her from being able to pause. She said, “I don’t think it worked because I wasn’t able to just, just focus on breathing.” She also found that all of her thoughts from the day would cascade forward when she would attend the breathing meditation sessions. This made her quite uncomfortable and discouraged her from continuing the practice beyond the study. Given Jamie’s mental health circumstances, as well as Sam’s, they may both be better served by shortened meditation sessions and possibly even an alternate method such as walking meditation. Each agreed that they need to pause and disengage their thinking, but their racing thoughts interfere with their ability to focus.
Conclusion

The cross-case analyses supported the previous quantitative and qualitative results in the present study. Six key themes emerged from the cross-case analysis. First, undergraduate students experience a tremendous amount of stress which is primarily induced by academic pressures. Second, time management is closely tied to academic pressures and often acts a concurrent stressor. Third, while finances were not explicit, there were concomitant elements that prompted stress. Fourth, the preceding stress prompts various physical, cognitive, and emotional issues that bewilder the complex lives of undergraduate students. Fifth, significant life events which, based on this sample, may be characteristic of undergraduate students often confound and complicate these students’ daily lives. Finally, the sixth key theme revealed that four of the six informants reliably experienced positive effects after breathing meditation such as a sense of calm, alertness, and greater ability to focus that extended beyond the breathing meditation session. The breathing meditation intervention created an opportunity for the students to pause and disrupt their racing thoughts leading to a decreased self-perceived stress.

The data analyses in Chapter Four confirm the positive effect of breathing meditation on undergraduate student self-perceived stress. The quantitative, qualitative, and combined results address all three research questions and lead to a more meaningful understanding of undergraduate student experiences. Consequently, a strategy to combat and possibly alleviate stress has been revealed that appears to be accessible and possibly effective for many college students. In Chapter Five I provide a summary of my study along with conclusions, discussion, and recommendations.
CHAPTER FIVE

SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

In this Chapter, I present my summary, conclusions, discussion, and recommendations centered on the findings reported in Chapter Four. This chapter opens with a summary of the study and continues with conclusions and discussions related to each of the three research questions. Themes established from the common elements and experiences shared among the participants will be discussed and related to current and relevant scholarship. Implications and recommendations pertinent to higher education stakeholders will be explored. Recommendations for associated research and my future plans for research regarding the self-perceived stress of undergraduate college students and breathing meditation are shared. A narrative of the strengths and limitations of my study will be presented to inform and perhaps improve future related research. Finally, the chapter closes with a conclusion.

Summary

Traversing the college years may be a considerably stressful period of time for many undergraduate students. Those who choose majors with requirements such as maintaining a high grade point average, high-stakes testing, and numerous challenging courses are particularly vulnerable to stress. An inability to manage perpetual stress may lead to cognitive functioning and sleep issues further interfering with academic achievement and quality of life (Palmer, 2013; Pedersen, 2012). Unmanaged, ongoing
stress could also lead students to potentially detrimental trajectories in their efforts to survive the pressures of college life. Poor eating habits, eating disorders, smoking, irresponsible drinking, and other risky behaviors have all been connected with students’ failure to cope with the inherent challenges of college and to preserve a sense of well-being (ACHA, 2014; Economos, Hildebrandt, & Hyatt, 2008; Hudd et al., 2000; Murphy et al., 2006; Oliver, Reed, & Smith, 1998; Pritchard, Wilson, & Yamnitz, 2007).

Additionally, it has been established that chronic stress negatively impacts physical health. According to the American Institute of Stress (n.d.) essentially all body systems are susceptible to stress including the nervous, musculoskeletal, respiratory, cardiovascular, endocrine, gastrointestinal, and reproductive systems. Compromised body systems lead to physical consequences exhibited in the health of college students such as a high incidence of infections, headaches, and high blood pressure, which are either instigated or further complicated by stress (ACHA, 2014). The present study addresses many of these findings and recognizes reoccurring issues associated with sleep, concentration, headaches, and anxiety as reported by the student participants.

The purpose of this study was to examine a select group of 41 undergraduate students’ self-perceptions of stress before and after engaging in a contemplative practice intervention of breathing meditation with nine minutes per session once a week over an eight-week period using both a control and an intervention group. Three particular groups of undergraduate students were studied: nursing majors, social work majors, and a group of mixed major honors students. The quantitative pretest data confirmed the participants in the study were experiencing higher levels of stress when compared to similarly aged individuals (Cohen & Janicki-Deverts, 2012). An analysis of the quantitative and
qualitative posttest results validated that breathing meditation most likely had a positive influence on the self-perceived stress of the participants in the intervention group.

As revealed in the literature, college students, in general, are experiencing serious and increasing levels of stress, depression, and anxiety (ACHA, 2014; Byrd & McKinney, 2012; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; Pryor et al. 2012). Simultaneously, the use of prescription drugs intended to reduce the symptoms of stress has also increased considerably (Gallagher, 2014; Pratt, Brody, & Gu, 2011). Given a myriad of methodological issues, the empirical research that is coupled with contemplative practices, particularly meditation, indicates physical and psychosocial well-being may be improved by those who engage in (i.e., practice) such pursuits (Conley, Travers, & Bryant, 2013; Hofmann et al., 2010; Kabat-Zinn et al., 1992; Shapiro et al., 2011a). Therefore, utilizing contemplative practices such as breathing meditation may be a nonprescription remedy for managing and possibly alleviating stress associated with the frenetic lives characteristic of many college students. Even though research is quickly surfacing to address the relationship between stress and contemplative practices, scholarship directly correlated with undergraduate students is sparse (Nagel & Sgoutas-Emch, 2007; Repetti, 2010; Shapiro et al., 2011a; Shapiro et al., 2011b).

The mixed methods design of this study is particularly significant as the prevailing research is quantitative and may not capture the subjective and esoteric dynamics of psychosocial well-being as related to body, mind, and spirit. It is the hope of this researcher that the knowledge base associating contemplative practices with psychosocial well-being of college students will be meaningfully supplemented by the intentional mixed methods design of the investigation.
Conclusions and Discussion

The common characteristics among the participants and the subsequent themes that emerged from this study led to key findings and then to conclusions that expand current research. The three research questions that guided my study follow.

Student Self-Perceptions of Stress

The data revealed the participants in the study had relatively high self-perceptions of stress as compared to a national group of people of a similar age range (Cohen & Janicki-Deverts, 2012). To determine this, the Perceived Stress Scale (PSS) (see Appendix E) was administered at pre- and posttest intervals to determine the level of self-perceived stress of the participants. The PSS is an instrument designed by Cohen, Kamarack, and Mermelstein in 1983 and is the most extensively used instrument for measuring self-perceived stress (Alkaldeh & Abu Shosha, 2012; Cohen, 1994). As described in Chapter Four, I referred to a recent administration of the scale to explain the value of the PSS scores. Cohen and Janicki-Deverts (2012) conducted a 2,000 person national study to evaluate stressful life circumstances. The findings were aggregated by age with 223 of the respondents being 18 to less than 25 years old. This is a reasonable comparison group since more than 90% of the participants within the present study were aged 19 to 22. However, the study has far reaching implications as it addresses a full range of people aged 18 and older. Using the means established by Cohen and Janicki-Deverts (2012) as a benchmark, it appears the participants in the present study were comparatively more stressed ($M = 20$) than the national sample ($M = 16.78$).

While I anticipated a higher level of self-perceived stress given more than two-thirds were honors students who also had demanding majors, it was unexpected that
three-fourths would report self-perceived stress above the mean score presented in the Cohen and Janicki-Deverts (2012) study. Upon reflection, this makes sense considering the onset of the study was at the start of the fall semester, typically the time students receive syllabi. Considering the participants were enrolled as full-time students, managing 12-18 credit hours or four to five courses each, maintaining jobs and various other responsibilities, I underestimated the impact looming assignments and deadlines would have on student self-perceived stress at the beginning of the semester. Hence, the self-perceived stress appears to have been influenced by the anticipation of a difficult semester in addition to lingering or current life events. A history of poor coping strategies also likely cultivated an expectation of stress (Kitzrow, 2003; Levine & Cureton, 1998). Those with inadequate intrinsic coping strategies are at greater risk of becoming depressed and may have tendency to worry about things in the future, such as a hard upcoming semester (Emmons, 2007).

As demonstrated by the findings of the Perceived Stress Scale (PSS) survey, the participants felt nervous and stressed by a seeming inability to manage routine responsibilities and the circumstances associated with their personal lives. Conversations with the students, informally and through interviews, confirmed they often felt nervous and experienced immense stress when managing their everyday responsibilities and situations. They also conveyed they thought being stressed was unhealthy and that they generally lacked confidence in their ability to circumvent stress. Some were intimidated by short term upcoming quizzes or exams, while others were unsure how they were going to meet all of the long term demands of the semester. These findings coincide with the
Hudd et al. (2000) findings which suggested students with high self-perceived stress also perceive themselves to be less healthy overall and often exhibit low self-esteem.

Understandably, student self-perceived stress is sometimes compounded by significant life experiences (i.e., ongoing health issues, victim of a crime); however, a majority of the respondents reported higher than what they believe to be normal stress. This conclusion is substantiated by the findings from several large and representative studies including the National College Health Assessment (NCHA) (ACHA, 2014), American Freshman: National Norms Fall 2012 (Pryor et al., 2012), the National Survey of College Counseling (Gallagher, 2014), and the mtvU and Associated Press College Stress and Mental Health Poll (2009). Of these, the NCHA is most relevant since the participants in the study were current college students and the data were collected very recently. Within the NCHA (2014), more than half of the students reported their overall level of stress throughout the last 12 months as being more than average stress to tremendous stress.

These findings demonstrate that undergraduate college students perceive they experience an enormous amount of stress. Common emotional manifestations such as feeling overwhelmed, hopeless, anxious, and depressed often lead to physical and cognitive complaints. Sleep issues, inability to concentrate, and headaches are indicators not easily ignored and consequently add another layer of stress as the students are clearly aware of their problems. As previously stated, the participants in the study conveyed a high level of self-perceived stress. Their data are validated by the aforementioned research suggesting undergraduate students, in general, believe they experience tremendous stress. While the stress reported from this sample was higher than a national
group of similarly aged people, their reports may be higher because of their major, status as honors students, or possibly because it was the start of the semester (Cohen & Janicki-Deverts, 2012).

**Circumstances that Contribute to Undergraduate Student Self-Perceived Stress**

A number of academic, personal, and financial circumstances contribute to undergraduate student self-perceived stress. The Undergraduate Stress Questionnaire’s (USQ) exhaustive inventory identifies 82 stressful circumstances or events that may occur in an undergraduate student’s life. For the purpose of the study, the students identified stress inducing circumstances they had experienced within a month of the pre- and posttest applications. The findings were consistent with the reports from the mtvU and Associated Press College Stress and Mental Health Poll (2009), the National Survey of College Counseling (Gallagher, 2014), and the National College Health Assessment (ACHA, 2014).

Again, the most significant of the aforesaid studies is the National College Health Assessment (NCHA) (ACHA, 2014), which is current and essentially hone in on specific events that trigger stressful feelings perceived by college students. Since self-perceived stress is only one segment of the survey, it is not as detailed as the USQ. Nonetheless, a section of the survey asked the students to report experiences in the last 12 months that were traumatic or very difficult to handle. The top five categories the respondents identified as being stressful were *academics, finances, intimate relationships, family problems*, and *sleep difficulties*. While the purpose of the USQ is different than the National College Health Assessment (NCHA), which examines the overall health of college students, the findings from my sample of 41 undergraduate college students are
similar to the data gathered from approximately 68,961 undergraduate students across the nation. The top five specific events identified on the USQ posttest were academically related: *had a lot of tests, lots of deadlines to meet, assignments in all classes due the same day, crammed for a test, and sat through a boring class*. No sleep and lack of money were the seventh and tenth circumstances respectively that were most frequently selected. These findings were confirmed by the interview informants individually and within the cross-case analyses.

While the majority of participants primarily conveyed academic related complaints on the USQ, a number of disheartening stressful circumstances were also disclosed. For example, at posttest one student reported being the *victim of a crime*, eight students identified the *death of a family member or friend*, 10 had *ongoing health issues*, 12 *felt nobody understands them*, and 20 *felt isolated*. While it appears academic related circumstances are the overwhelming source of undergraduate student stress, there is also a number of challenging and significant life circumstances that many are concurrently attempting to manage.

**Effect of Breathing Meditation on Undergraduate Student Self-Perceived Stress**

Overall, breathing meditation appears to have had a positive effect on undergraduate student self-perceived stress. As detailed in Chapter Four, Cohen and Janicki-Deverts (2012) conducted a national study using the PSS to determine stressful life circumstances. The respondents who were 18 to less than 25 years old had a mean score of 16 on the PSS. This is a comparatively representative sample and a good benchmark for the present study since 93% of the participants were aged 19 to 25.
While the control and intervention group participants were relatively equal in terms of their self-perceived stress at the onset of the study, with mean scores of 19.65 and 20.33 respectively, the groups were clearly unequal at the conclusion of the study. As reported on their pre- and posttest surveys, the control group experienced an increase in its PSS mean score (i.e., 22.10 at posttest as compared to 19.65 at pretest) and the intervention group experienced a decrease in its PSS mean score (i.e., 17.14 at posttest as compared to 20.33 at pretest). An analysis of the data using ANCOVA determined the findings were statistically significant and confirmed that there is a good chance breathing meditation had a positive effect on the participants in the intervention group.

These are dramatic results considering the nature of the intervention, which was only nine minutes of breathing meditation each week for eight weeks. While the effect size of .261 was not robust, it is healthy considering the extent of the intervention. With as little as 72 minutes of breathing meditation, the intervention group moved slightly more than one quarter of a standard deviation over the course of the study. In addition, the supplementary data regarding the effect of breathing meditation indicated 20 of the 21 participants found the technique useful for reducing stress. Of the group, 17 of the participants conveyed the experience was worthwhile enough that they will probably use some kind of meditation technique in the future to combat stress.

Anecdotal observations from my field notes also suggested the intervention was helpful to the volunteers. First, of the 21 students in the intervention group only one participant missed one session during the eight weeks of breathing meditation. This was unexpected and quite remarkable considering the frenetic lives of undergraduate students. Second, many of the participants were noticeably in a hurry and tense upon arriving to
the sessions. While they were usually on time, it was clear they were operating on a tight schedule and there was somewhere to go or something to do directly after the intervention. Nevertheless, I observed that the participants typically left the session with a recognizable lighter burden (e.g., relaxed breathing, peaceful expressions, less abrupt movements). Third, at least eight of the 21 students commented to me how much they looked forward to breathing meditation at some point during the study. As we neared the conclusion, at least three also shared that they were disappointed the sessions would be ending. Consequently, we have made plans to continue the sessions in the spring semester based on the request of three students.

**Implications and Recommendations for Higher Education Stakeholders**

Given the data reports from the mtvU and Associated Press College Stress and Mental Health Poll (2009), the National Survey of College Counseling (Gallagher, 2014), and particularly the National College Health Assessment (ACHA, 2014), undergraduate students are incredibly stressed and need strategies to cope with the multifaceted demands of college life.

The findings of this study confirm that college students have a relatively high level of self-perceived stress and clearly suggest breathing meditation may be a useful strategy for managing the effects of psychosocial distress.

As described in Chapter Two, recent neurological research has demonstrated the profound and lasting effects of meditation (Lazar et al., 2005; Luders et al., 2012; Newberg et al., 2003; Williams, n.d.). Among other things, the studies have revealed that meditation has a calming and focusing effect on the mind, an exceedingly useful result for undergraduate students who are sleep deprived and burdened by racing thoughts and
an inability to concentrate. Furthermore, it has been proposed that meditation may have the potential to restore and possibly increase the brain’s gray matter (Lazar et al., 2005; Luders et al., 2009). This finding is noteworthy because it is believed that gray matter improves the brain’s neurological cellular connections influencing processes such as attention, interception (e.g., itch, hunger), and sensory processing (Lazar et al., 2005). Since brain tissue has been known to slowly deteriorate with age, undergraduate college students could benefit tremendously from the long-term positive effects of meditation as they advance into adulthood (Lazar et al., 2005; Luders et al., 2009).

Several meta-analyses over the course of 50 years also suggest the body, mind, and spirit may all be positively influenced by the regular incorporation of contemplative practices such as meditation in daily life (Baer, 2003; Hofmann et al., 2010; Shapiro et al., 2011a). While the needs of the physical body may be obvious, cultivating the mind and spirit are more esoteric. As presented in Chapter Two, meditation may provide an opportunity for undergraduate college students to improve psychosocial well-being. While sparse, the scholarship available regarding meditation and the college student audience is encouraging (Burns et al., 2011; Deckro et al., 2002).

Understandably, meditation may not be an effective method for reducing or managing the stress of all undergraduate students; however, it is cost effective, easy to implement, and often successful. Thus it makes good sense to incorporate it into the college experience (Burns et al., 2011; Hofmann et al., 2010; Kabat-Zinn et al., 1992; Lynch et al., 2011). While it appears obvious campuses should integrate meditation as an option within campus wellness programming, considering most students do not seek psychosocial support for their self-perceived stress meditation may not be the most
effective means to meet the psychosocial needs of the majority of students (Gallagher, 2014).

The participants who were invited to be interviewed for the qualitative phase of the study had several suggestions regarding how to introduce meditation on campus. As a group, they strongly felt all first year students should be taught a contemplative method such as breathing meditation during a required course or experience. While the method introduced may not resonate with all students, they believed it would be an opportunity for the first year students to recognize the need for a healthy strategy to mitigate their stress. Several believed the introduction to meditation should not be something extra the first year students must do, but rather an expectation they are given time to do. If they find practicing meditation beneficial, they will be more likely to pursue the technique on their own. In other words, learning the practice should be built in to their requirements and not something higher education professionals should hope the students will encounter on their own. Offering an elective one credit-hour meditation course each semester could be a supplemental opportunity to help cultivate a habit. The interviewees thought this would help students establish a routine and not require them to find time to do it on their own. Another group consensus was that it would be best to teach the strategy before the subsequent cascade of academic responsibilities pummels the first year students. First year students do not know what to expect and may become quickly overwhelmed. As stated by one of the informants, Dean, “I feel like students wait too long to worry about what they’re going to do with their stress.” Therefore, providing instruction to first year students during orientation, within a first year program, or during a required one credit
hour student wellness course may encourage students to consider their stress management strategies sooner rather than later.

Based on the scholarship and the findings of the present study, I highly recommend higher education stakeholders take notice. Senior-level policy makers need to consider the long and short term ramifications of highly stressed undergraduate students. While the well-being of students is a priority, as evidenced by the presence of wellness and counseling centers on many college campuses, it appears the services that students receive may be more reactionary rather than preemptive. Since it is clear based on the National Survey of College Counseling, which aggregates data from lead administrators of college and university counseling centers across the country, wellness and counseling centers are understaffed and student mental health issues are on the rise, it makes good sense to allocate funding to prevent many of the aforementioned mental and physical health issues and promote psychosocial wellness (ACHA, 2014; Gallagher, 2014). Mandating and supporting a campus-wide strategic psychosocial wellness plan that includes easy and low cost strategies such as meditation would create a healthier campus, nurture student resilience, and may also encourage student retention.

In the presence or absence of cabinet support, senior-level administrators (i.e., president, provost, vice presidents, deans, directors) should also consider the positive implications of a campus-wide strategic psychosocial wellness plan and how it may well support academic success programming, resilience, and retention. If the cabinet is unaware of the psychosocial strains on students and the aforementioned benefits of utilizing strategies such as meditation, the first step is to effectively inform the cabinet of the potential value added (Burns et al., 2011; Conley et al., 2013; Deckro et al., 2002).
Second, it is essential for senior-level administrators to cultivate a knowledge base for faculty and others who have direct interactions with students (e.g., student affairs professionals, coaches). With proper professional development and resources, these stakeholders may also see the advantage of using meditation, or other contemplative practices, to ease the burden and promote the wellness of the students. Particularly related to faculty, presenting the information through the lens of scholarship may be helpful in developing an understanding of why promoting stress management strategies such as meditation may be worthwhile for their students and possibly even them (Burns et al., 2011; Conley et al., 2013; Deckro et al., 2002; Lazar et al., 2005; Luders et al., 2012; Newberg et al., 2003; Williams, n.d.). Appealing to the faculty with research based information could stimulate empathy for the students and possibly circumvent push back. Minimally, the information may encourage them to consider how students who are less stressed could improve the conditions of their teaching responsibilities.

For all of those who directly influence students (e.g., faculty, directors of student life, coaches, wellness centers), as presented in Chapter Two, the research base is replete with evidence that meditation, specifically, leads to enhanced well-being. This may be observed by the students experiencing fewer colds and infections, avoiding unhealthy stress management techniques (i.e., drinking, smoking), enhanced ability to concentrate and process information, and possibly overall improved performance. A few minutes of breathing meditation or a relaxation technique before class, athletic practice, or even a student senate meeting may improve the quality of their experience and accomplishments.
Related to the students themselves, the findings of the present study and broader research validate they are extremely stressed. Further, the results of the present study demonstrated that breathing meditation, for many, is an effective and easy method to relieve their self-perceived stress. The strategy is not time intensive and it can be done any place at any time. Students should think through the positive consequences of investing a few minutes of their time each day. While the participants in the present study engaged in breathing meditation for less than nine minutes per week for eight weeks, the benefits are more significant with more frequent applications (Kabat-Zinn et al., 1992; Ornstein, 2008). Pausing with a brief breathing meditation before a class, practice, an athletic competition, a student meeting, or an unavoidable approaching stressful encounter can bring a sense of calm and increased focus improving the quality of their experience.

Due to the evidence provided in this study and the cited research, breathing meditation is a sensible method to teach undergraduate students as an approach to handle and possibly alleviate stress. Breathing meditation is non-threatening, non-sectarian, and requires little training and minimal time. In merely nine minutes per week the students in the intervention group experienced a significant reduction in self-perceived stress. While more frequent and slightly longer applications would likely reap more dramatic results, a short weekly meditation practice built into their college life could be beneficial and used as a technique for managing their stress at any time. Since students already feel they are overcommitted, fragmented, overwhelmed, powerless, resigned to their circumstances, and minimally managing, a short meditation practice is appealing and may persist due to the ease and immediate positive effects of the practice.
Implications and Recommendations for Research

Research directly related to meditation and an undergraduate college student audience is scant. Hence, more scholarship associated with contemplative practices, in general, is needed. Given the learning environment of college and university campuses, presenting students with opportunities to be involved with research is a natural fit. This is especially so if the research potentially benefits the participants in the study as well as the general student population. Of the existing research involving meditation and college students, the participants tend to be graduate students. While meditation appears to be effective for all age groups, the unique and complex challenges of undergraduate students need to be considered by the investigators so there may be a direct correlation of the findings to the said population.

Benefits of Mixed Methods Design Studies

While there is a preponderance of quantitative research relative to the general public, there are an insufficient number of qualitative studies and even fewer with a mixed methods design. Considering the present study, while the quantitative data were significant, it would have been impossible to know the depth of the students’ struggles without having had personal conversations with them. Even though the Undergraduate Stress Questionnaire (USQ) is a comprehensive inventory, the survey was unable to substantiate the significant life events concurrent with college responsibilities. For example, Ann is in an intimate relationship with a person who has a five-year-old son and, for all intents and purposes, she has assumed the role of a step parent. However, on the USQ she did not select family responsibilities as one of her stressors. Dean indicated he had heard bad news, and while this is a broad category, I would have never known he
was referring to being given the horrifying news that his girlfriend had been raped. Both Jamie and Sam selected can’t concentrate, however the extreme extent of their inability to concentrate was made clear in our conversation. Kalinda identified an erratic schedule contributed to her stress, however problems with balancing athletic and academic scholarships along with the significant demands of the nursing program were clarified when we had the opportunity to sit down and speak. Darrin designated family responsibilities as a stressor in his life and I would have not known he had unexpectedly become a parent the second semester of his first year without the interview.

Conversely, all of the events each informant listed on the USQ were not discussed in our conversations. Without the inventory, the scope of their complaints would not have been clear. While in some cases, the participants, and particularly the interviewees, identified numerous stressful events on the USQ, the numbers of events do not necessarily correlate with their level of self-perceived stress. More stressful events do not inevitably mean greater self-perceived stress. This was validated at the conclusion of the intervention when the PSS mean score of self-perceived stress of the intervention group decreased and the number of stressful events identified on the USQ increased. Further, and most importantly, the quantitative findings from the Perceived Stress Scale (PSS) were obtained without researcher bias and provided a comparable benchmark for the level of self-perceived stress the students were experiencing.

Clearly the value of this study is the intermingling of the quantitative and qualitative findings. First, the quantitative phase I designed allowed me to reliably establish objective cause-and-effect relationships independent of my bias or perspective. Second, the qualitative data enhanced the participants’ quantitative reports and provided
individualized and cross-case information. The subjective qualitative focus provided a deeper understanding of each participant’s personal accounts of phenomena (i.e., self-perceived stress and breathing meditation) in the participants’ own expressions. Even though not all of the participants were interviewed, their quantitative reports provided me with enough information to select a sensible range of participant experiences in an attempt to capture the essence of the broader college-aged population in the interviews. In the end, the combined data helped this researcher understand the magnitude of undergraduate college student stress and led to interpreting how and why breathing meditation could be used as an effective technique to manage and possibly alleviate their self-perceived stress.

**Recommendations to Improve Meditation Research**

There are different types of meditation such as Mindfulness-based Stress Reduction (Kabat-Zinn et al., 1992) and Transcendental Meditation (Transcendental Meditation, n.d.a). However, constraints such as the time commitment required of the students, cost of training or facilitator, and the complexity of the practice may be deterrents for many institutions or students. Consequently, additional research utilizing simple meditation techniques (i.e., breathing meditation) would deepen and strengthen the knowledge base. Parallel neurological research would significantly bolster scholarship by providing concrete evidence of the brain activity of student meditators and student non-meditators. Such proof would undoubtedly shed light on the positive implications of meditation as related to undergraduate college students.

To give credibility to research efforts that do not have metrics, scholarship associated with establishing appropriate units of analysis and precise theories of
meditation are desperately needed (Sedlmeier, Eberth, & Schwartz, 2014). Without such parameters inherent methodological issues will endure and the significant value of meditation will be unsubstantiated. Such scholarship will most certainly be complicated and time intensive; however, the outcome would provide common academic language and evidential benchmarks leading to reliable and valid instruments that may be applied to meditation research. Relatedly, standardization of the meditation techniques being studied and ensuring facilitators are not only trained in the meditation method but also personally practice the technique will bring added authenticity to the investigations.

**Recommendations for Future Research**

The present study establishes a strong foundation for additional research. The quantitative data sets associated with the Perceived Stress Scale (PSS) and the Undergraduate Stress Questionnaire (USQ) could easily be disaggregated to explore questions specific to gender, age, academic status, academic major, and number of hours working as associated with student self-perceived stress and breathing meditation. The individual groups could be examined by addressing questions such as: What are the most frequent stressors reported by female third year students? Which stressful circumstances are most frequently reported by students who work 15 or more hours each week? What is the self-perceived stress of students who are enrolled in majors within the natural sciences? As established in Chapter Two, the knowledge base would be best served by more mixed methods studies; however, any research related to meditation and the self-perceived stress of undergraduate students will improve scholarship and provide additional evidence to higher education stakeholders of the need for psychosocial support for undergraduate college students.
Designing a mixed methods study related to a campus first year program that incorporates meditation or other contemplative practices into the curriculum could also be beneficial. Do native students who complete a first year program report less self-perceived stress as third year students than third year students who have not completed the first year program? The findings may be enlightening and could possibly answer the question whether stress management strategies taught within a first year program curriculum lingered beyond the first year. Possibly piloting a semester-long, elective, one credit hour breathing meditation course that is graded through pass or fail could provide an investigator with volunteers willing to gauge their self-perceived stress. Quantitative and qualitative data gathered from those taking the course as compared to a control group of volunteers not enrolled in the course could provide meaningful information about the effectiveness of the technique and provide an opportunity to extend the duration of the intervention beyond eight weeks.

Conducting pure qualitative studies directly associated with meditation and undergraduate students is also desirable. Investigations that help higher education stakeholders better understand students’ personal experiences will improve the knowledge base and hopefully inform campus wellness planning. A valuable baseline study would be to uncover what students know about meditation and whether or not they are using it as a strategy to combat stress. Through individual interviews or focus groups the question could be posed: Do undergraduate college students use meditation as a technique to alleviate stress? Or, what are undergraduate students’ perceptions of meditation? It is clear from the above, since research about meditation and undergraduate students is in its infancy, there are numerous questions to be asked and answered. The
above recommendations are a platform to stimulate further thinking and to encourage additional research in this exceedingly interesting and critical area whereby the psychosocial well-being of undergraduate students may be improved.

As a higher education professional, my primary aim is to continue to teach undergraduate students breathing meditation to help improve their psychosocial well-being. As a researcher, my principal interest is to continue to collect data using the Perceived Stress Scale (PSS) and the Undergraduate Stress Questionnaire (USQ) to monitor the effects of the intervention as it is introduced to different groups of students. Additionally, since a number of the participants in the intervention group were second and third year students, I hope to conduct another round of surveys and interviews to determine if the eight week experience persisted in any way. It will be interesting to compare students who opted to continue with the breathing meditation group and those who did not.

**Research Strengths and Limitations**

This section addresses the strengths and limitations associated with the present study and the ways I moderated the influence of the limitations. There were several strengths associated with the study. First, the mixed methods design provided a more complete picture of undergraduate college student self-perceived stress, stressors, and the influence of breathing meditation. Both the quantitative and qualitative phases of the investigation informed one another providing a more robust and complete understanding of the findings. Second, the presence of a control group provided a good opportunity to make comparisons thus strengthening the analysis. Third, while the Perceived Stress Scale (PSS) and the Undergraduate Stress Questionnaire (USQ) are not intended to be
complementary instruments, they were exemplary choices for this study in that the combined data led to a more comprehensive grasp of their meaning and bolstered the final analysis. Fourth, breathing meditation was an appropriate choice for a college student population and was an easy technique for them to learn; by the second week they appeared comfortable with the practice. Fifth, considering the busy lives of college students, nine minutes appeared to be a period of time that did not overwhelm the participants. This was affirmed in that the students returned each week to participate in the intervention. Sixth, the significant results suggest small persistent applications of breathing meditation likely have a positive influence on undergraduate student self-perceived stress. Seventh, the findings of this study have advanced scholarship and have provided evidence that further research regarding meditation would be substantially enhanced with more mixed methods designed studies using contemplative strategies that are easily accessible to undergraduate college students. Lastly, I meditate and have used breathing meditation as one of my own stress-relieving techniques for more than a decade. I believe being an experienced meditator provided additional authenticity to the study as I had practical experiences.

In terms of limitations, first, utilizing a convenience sample minimized the generalizability of the findings and external validity was compromised. However, given the size of the institution and the groups from which the participants were recruited (i.e., honors program, nursing majors, and social work majors), a cross-section of undergraduate students was represented in the sample. Second, the size of the sample (i.e., 41 participants) also limited the generalizability of the findings (Mertens, 2010; Onwuegbuzie, Jiao, & Bostick, 2004). Nonetheless, an effect size of .261 is healthy and
provides further validity to the findings. Third, the predictive validity of the Perceived Stress Scale (PSS) quickly decreases after four to eight weeks (Cohen, 1994); thus, the study was designed to promptly end in the eighth week hindering the impact of decreased validity. Fourth, while I had anticipated eight weeks may not be long enough to measure the influence of breathing meditation on self-perceived stress, the shorter, but focused, meditation intervention was accessible and practical for the undergraduate college student population. Fifth, the PSS (Cohen & Williamson, 1988) only measures perceived stress and not psychological distress; however, the qualitative reports helped untangle these potentially confounding variables and nurtured researcher sensitivity during analysis. Further, whether the stress is perceived or resulting from psychological distress, it is still experienced as stress and I do not believe it drastically influenced the findings. Finally, interviewer bias and power asymmetry are also limitations whenever research involves qualitative elements. To circumvent interference, I was attentive to the stories shared by the participants and I acknowledged that the participants and I are not equal partners.

Conclusion

In view of the findings conveyed in the literature, undergraduate college students are experiencing serious and increasing levels of stress, depression, and anxiety (ACHA, 2014; Byrd & McKinney, 2012; Gallagher, 2014; Kitzrow, 2003; Levine & Cureton, 1998; Pryor et al., 2012). Empirical research associated with contemplative practices, especially meditation, indicates value may be added to physical and psychosocial well-being by those who take part in such endeavors (Conley et al., 2013; Hofmann et al., 2010; Kabat-Zinn et al., 1992; Shapiro et al., 2011a).
Past research associated with contemplative practices, particularly meditation, has demonstrated it is a worthwhile strategy to study because of the positive effects on psychosocial well-being. Nevertheless, to date the scholarship has been seriously hindered as a result of methodological flaws, a lack of units of analysis and meditation theories, an omission of mixed methods designed studies, and not utilizing participants from undergraduate student populations (Nagel & Sgoutas-Emch, 2007; Repetti, 2010; Shapiro et al., 2011a; Shapiro et al., 2011b). While this study circumvented a number of the methodological concerns (e.g., mixed methods, utilizing appropriate instruments, randomization, clearly identified intervention, need for controls, undergraduate student population), room for improvement exists (Baer, 2003; Hofmann et al., 2010; Li et al., 2012; Sedlmeier, Eberth, & Schwartz, 2014; Shapiro et al., 2011a).

Meditation research is gaining momentum and has been especially strengthened by emerging neurological findings (Chambers, Lo, & Allen, 2008; Creswell et al., 2007; Lazar et al., 2005; Luders et al., 2009; Luders et al., 2012; Mohan, Sharma, & Bijlani, 2011). By applying more sophisticated neurological measures to future studies including undergraduate student populations, it is hoped that justification of meditation as strategy to manage stress can be achieved. As demonstrated by this study, breathing meditation is one meditation method that appears to have great promise for helping undergraduate college students cope with some of the more stressful issues common among them.

The current knowledge base confirms and is further validated by the World Health Organization that the balance of body, mind, and spirit is necessary for psychosocial well-being (Baer, 2003; Chan, Ho, & Chow, 2002; Hofmann et al., 2010; Ng et al., 2005; Shapiro et al., 2011a; WHO, 2014). Considering the holistic and
potentially overwhelming nature of stress, this researcher is hopeful that higher education professionals will consider incorporating an accessible meditation technique such as breathing meditation into the first year student experience. Taking such a step could help to prepare beginning students for managing stresses typical of the college years and help to improve their overall psychosocial well-being. From a broader lens, cultivating healthy stress management techniques in college will equip students to navigate future stressors and perhaps circumvent the physiological and psychological ramifications of stress suffered over long periods of time.

_Breathing in, I calm body and mind. Breathing out, I smile._
_Dwelling in the present moment I know this is the only moment._

—Thích Nhất Hạnh
APPENDIX A

SAMPLE RECRUITMENT EMAIL
SAMPLE RECRUITMENT EMAIL

_A department liaison will email the letter to the prospective participants_

Dear student name,

My name is Cindy Sloan and I am a student in the Higher Education doctoral program at Loyola University Chicago (LUC). I am also the Associate Dean in the College of Education at the University of St. Francis (USF). I am conducting a research study about the relationship between self-perceived undergraduate student stress and breathing meditation. I am inviting you to take part in this study because you are a fulltime nursing major, social work major and/or an honors student. I am hoping to learn more about how to help undergraduate students manage stress.

If you agree to participate in this study you will be asked to:
- Provide anonymous demographic information in order to establish a profile of the research study participants.
- Complete four surveys (each taking less than 5 minutes to complete).

If you agree to participate in this study you may be asked to:
- Participate in a group guided breathing meditation session once per week for a total of eight weeks (i.e., eight sessions).
- Participate in a 45-minute interview in the ninth or tenth week of the study.

You will not be required to provide your name on any of the surveys. Instead, your survey responses will be identified with a code number that will be unique to you. I will use the code to compare your pretest and posttest survey responses. If you are asked to participate in an interview, your interview responses will be confidential and only I will know who your information belongs to.

If you agree to participate in the research study, you will be randomly assigned to a _control group_ or to an _experimental group_. You will not have a choice about which group you will be participating in because the groups will be randomly assigned.

Your participation in the research study is voluntary. There are no monetary rewards for choosing to participate. However, you may appreciate learning an easy technique that could help you manage stress as well as be a part of a collection of data (you and all of the other study participants) that will inform higher education professionals about the influence of breathing meditation on undergraduate self-perceived stress.

If you are interested in participating in the study, please read the attached Informed Consent Form and send me an email letting me know your intent. I will be attending your _class/meeting_ on _date_ to further explain the study and answer questions. Pizza and beverages will be provided for you while we discuss the study. You can also ask me
questions through email (csloan@stfrancis.edu), on the telephone (815.740.6124), or you can drop by my office (Tower Hall, S313).

Thank you in advance for your consideration!

Sincerely,
Cindy Sloan
APPENDIX B

INFORMED CONSENT MATERIALS
INFORMED CONSENT MATERIALS

CONSENT TO PARTICIPATE IN RESEARCH

Project Title: The Self-perceived Stress of Undergraduate College Students Before and After Participation in a Breathing Meditation Intervention: A Mixed Methods Study

Researcher(s): Cindy Sloan
Faculty Sponsor: Dr. Terry Williams

Introduction: You are being asked to take part in a research study being conducted by Cindy Sloan for a dissertation under the supervision of Dr. Terry Williams in the Department of Higher Education at Loyola University of Chicago. The study is about whether a breathing meditation intervention will influence the self-perceived stress of undergraduate college students. You have been asked to participate because you are at least 18 years of age and a fulltime undergraduate student who is also a nursing major, social work major, and/or an honors program student. A maximum of 100 student volunteers will participate in the study. Please read this form carefully and ask any questions you may have before deciding whether to participate in the study.

Purpose: The purpose of this study is to (a) identify undergraduate student self-perceptions of stress, (b) examine the circumstances that contribute to self-perceived stress, and (c) determine what effect breathing meditation has on self-perceived stress.

Procedures: After you have read this document and asked any related questions AND if you agree to be in the study, you will be asked to:

- Provide demographic information in order to establish a profile of the research study participants. This is anonymous unless you are selected and agree to be interviewed.
- Respond to a total of four five minute surveys; the Perceived Stress Scale (PSS), a 10-item rating scale to gauge the extent of thoughts and feelings regarding life circumstances during the previous month and the Undergraduate Stress Questionnaire (USQ), a checklist comprised of 82 items reflecting possible stressful life events undergraduate students may encounter. Each survey will be taken twice: once immediately after the informational meeting (if you choose to participate) and again eight weeks later.
- Participate in a control group or an experimental group. Participants will be randomly assigned to a group after the informational meeting.

The control group participants will only participate in the demographic data collection and the surveys.

The experimental group participants will provide demographic data, complete the surveys, and participate in the guided breathing sessions once per week for eight weeks, September 8 through November 14, 2014. The sessions will be in groups of about 20
students and will be scheduled on a predetermined day and time. The breathing 
meditation segment of the session will be about 9 minutes; the duration of each weekly 
meeting will be about 20 minutes. Experimental group participants may also be asked to 
engage in a 45-minute interview.

Risks/Benefits: The potential risks of participating in this study are minimal. There may 
be a loss of privacy between you, me, and the other participants as well as the 
inconvenience of completing the surveys, and attending the guided breathing meditation 
sessions. The purpose of the study is NOT to process or resolve difficulties that may 
be causing you stress. If you experience discomfort during the intervention, you are free 
to withdraw from the study at any time and encouraged to seek professional assistance. 
Attached is contact information for local mental health care providers. Many also accept 
our university’s student insurance plan.

The potential benefits of participating in the study include experiencing a sense of peace 
and calm, learning an easy stress reduction technique, and the satisfaction of being able to 
provide important information to higher education professionals. While you may or may 
not personally benefit directly from this study, the complete results of the research will be 
provided to you to inform you of the usefulness of breathing meditation on undergraduate 
student stress.

Confidentiality: The only people who will know you are a research participant are me, 
the administrative assistant, the other participants in the study, and anyone else whom 
you choose to inform. No information about you or provided by you during the research 
will be disclosed to others without your written permission, except if necessary to protect 
your rights or welfare (for example, if you are injured and need emergency care or when 
the USF or LUC Institutional Review Boards monitors the research or consent process) 
or if required by law. Volunteers will be assigned a unique code number. Your name, 
code number, demographics and survey responses will never be directly associated with 
one another unless you agree to participate in an interview. Additionally, all documents, 
audio recordings, and email exchanges will be kept secure at all times during the study 
and destroyed upon completion of the study.

Voluntary Participation: Participation in this study is voluntary. If you do not want to 
be in this study, you do not have to participate. Even if you decide to participate, you are 
free not to answer any question or to withdraw from participation at any time without 
penalty.

Contacts and Questions: If you have questions about this research project, please feel 
free to contact me, Cindy Sloan, at csloan@stfrancis.edu or 815.740.6124. You may also 
contact my faculty sponsor, Dr. Terry Williams (twillia@luc.edu or 312.915.7002). If you 
have questions about your rights as a research participant, you may contact the Loyola 
University Office of Research Services at (773) 508-2689.
Statement of Consent: Your signature below indicates that you have read the information provided above, have had an opportunity to ask questions, and agree to participate in this research study. You will be given a copy of this form to keep for your records.

Participant’s Signature ______________________ Date ____________

Researcher’s Signature ______________________ Date ____________

        ####
        Code Number
APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE
DEMOGRAPHIC QUESTIONNAIRE

Participant Code ____________________

This questionnaire will help the researcher better understand the composition of the students participating in the research study. Please complete this honestly and thoughtfully. Your responses are anonymous, will be kept confidential, and will not affect your standing at the University of St. Francis in any way.

1. **Gender:** ____ Female    ___ Male    ___ Other

2. **Age:** _____

3. Are you a fulltime undergraduate student this semester (Fall 2014)?
   _____Yes    _____No

4. **Which of the following best describes you:**
   _____ Undergraduate second-year (sophomore)
   _____ Undergraduate third-year (junior)
   _____ Undergraduate fourth-year (senior)
   _____ Other _______________________

5. **What is your major?**
   __________________________________________________________

6. **Are you participating in the Honors Program this semester?**
   _____Yes    _____No

7. **This semester, about how many hours are you working for an income each week?**
   _____ None
   _____ 1–5 hours
   _____ 6–10 hours
   _____ 11–15 hours
   _____ 16–20 hours
   _____ 20–25 hours
   _____ 25–30 hours
   _____ Other _____ hours
8. This semester, about how many hours do you participate in athletics each week as a result of an athletic scholarship requirement?

______ I don’t have an athletic scholarship
______ 1–10 hours
______ 11–20 hours
______ 21–30 hours
______ 31–40 hours
______ Other _____ hours
APPENDIX D

THE UNDERGRADUATE STRESS QUESTIONNAIRE
THE UNDERGRADUATE STRESS QUESTIONNAIRE

Participant Code __________________

*Please check the appropriate stressors in your life that have affected you during this semester.*

1. _____ Death (family member or friend)
2. _____ Had a lot of tests
3. _____ *Issues with social media interactions
4. _____ *Ongoing health issues
5. _____ Victim of a crime
6. _____ Assignments in all classes due the same day
7. _____ Breaking up with boy/girlfriend
8. _____ Found out boy/girlfriend cheated on you
9. _____ *Lots of deadlines to meet (projects, research papers, etc.)
10. _____ Property stolen
11. _____ You have a hard upcoming week
12. _____ Went into a test unprepared
13. _____ *Lost something (especially wallet or cell phone)
14. _____ Death of a pet
15. _____ Did worse than expected on test
16. _____ *Had an interview for an internship or job
17. _____ *Athletic or team responsibilities
18. _____ Did badly on a test
19. _____ Parents getting divorce
20. _____ Dependent on other people
21. _____ Having roommate conflicts
22. _____ *Transportation difficulties
23. _____ Got a traffic ticket
24. _____ Missed your period and waiting
25. _____ Thoughts about future
26. _____ Lack of money
27. _____ *Dealt with incompetence at a university office
28. _____ Thought about unfinished work
29. _____ No sleep
30. _____ Sick, Injury
31. _____ Had a class presentation
32. _____ *Applying for or finding a job
33. _____ Fought with boy/girlfriend
34. _____ Working while in school
35. _____ Arguments, conflicts of values with friends
36. _____ Bothered by having no social support of family
37. _____ Performed poorly at a task
38. _____ Can't finish everything you needed to do
39. _____ Heard bad news
40. _____ Had confrontation with an authority figure
41. _____ Maintaining a long-distance boy/girlfriend
42. _____ Crammed for a test
43. _____ Feel unorganized
44. _____ *Financial problems (tuition bills, student loans)
45. _____ Feel isolated
46. _____ Parents controlling with money
47. _____ Couldn't find a parking space
48. _____ Noise disturbed you while trying to study
49. _____ Someone borrowed something without permission
50. _____ Had to ask for money
51. _____ *Family responsibilities, wife/husband and/or children
52. _____ Erratic schedule
53. _____ *Spiritual or religious struggles
54. _____ *Feel like nobody understands me
55. _____ Registration for classes
56. _____ Stayed up late writing a paper
57. _____ *Someone you expected to call, text, or contact you did not
58. _____ Someone broke a promise
59. _____ Can't concentrate
60. _____ Someone did a "pet peeve" of yours
61. _____ Living with boy/girlfriend
62. _____ *People talking about me behind my back
63. _____ *Distracted by social media
64. _____ *Concerned about my appearance
65. _____ No time to eat
66. _____ Felt some peer pressure
67. _____ You have a hangover
68. _____ Problems with your computer
69. _____ Problem getting home from bar when drunk
70. _____ Used a fake ID
71. _____ No sex in a while
72. _____ Someone cut ahead of you in line
73. _____ *Not enough funds in checking account
74. _____ Visit from a relative and entertaining them
75. _____ Decision to have sex on your mind
76. _____ Spoke with a professor
77. _____ Change of environment (new doctor, dentist, etc.)
78. _____ *Exposed to upsetting TV show, book, movie, or game
79. _____ Got to class late
80. _____ *Experienced cyber-bullying
81. _____ Sat through a boring class
82. _____ Favorite sporting team lost

Other___________________________________________________________________

*New or revised items

APPENDIX E

PERCEIVED STRESS SCALE
PERCEIVED STRESS SCALE

Participant Code ______________

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

Date______________________ Age__________
Gender (Circle): M F Other

0 = Never 1 = Almost Never 2 = Sometimes Often 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4

2. In the last month, how often have you felt that you were unable to control the important things in your life? ..........

3. In the last month, how often have you felt nervous and “stressed”? … 0 1 2 3 4

4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4

5. In the last month, how often have you felt that things were going your way? ................. 0 1 2 3 4

6. In the last month, how often have you found that you could not cope with all the things you have to do? 0 1 2 3 4

7. In the last month, how often have you been able to
control irritations in your life?

8. In the last month, how often have you felt that you were on top of things? ……………………… 0 1 2 3 4

9. In the last month, how often have you been angered because of things that were outside of your control? 0 1 2 3 4

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4

Additional posttest items (not in the original PSS):

11. How many times have you initiated breathing meditation on your own during the eight weeks of the study? Circle the approximate number of times.

1 2 3 4 5 6 7 8 9 10 11-15 16-20 21-25 26-30 more than 31

12. Did participating in the research study create any level of additional stress for you? Circle your response.
   a) It created a lot of additional stress
   b) It created some additional stress
   c) It created very little additional stress
   d) I did not create additional stress

The PSS Scale is reprinted with permission of the American Sociological Association, from:


APPENDIX F

LETTER TO PROVOST
Dear Provost Pascoe,

I am writing to request your permission to conduct a ten-week doctoral research study on our campus. The study is about whether a breathing meditation intervention will influence the self-perceived stress of undergraduate college students. The research will be conducted by me, Cindy Sloan, a doctoral degree candidate from Loyola University Chicago (LUC). Prior to the beginning of the study, I will gain approval from the Institutional Review Boards from our university and LUC. It is my hope to conduct the research study September 8 through November 14, 2014.

Current research suggests college students are experiencing serious and increasing levels of stress, depression, and anxiety (ACHA, 2012; Byrd & McKinney, 2012; Gallagher, 2012). Research associated with meditation proposes that physical and psychosocial well-being may be enhanced by those who engage in meditation (Burns, Lee, & Brown, 2011; Conley, Travers, & Bryant, 2013; Regehr, Glancy, & Pitts, 2013). Further, meditation may be a beneficial technique for alleviating the stress associated with undergraduate students’ increasingly demanding and complex lives (Lynch, Gander, Kohls, Kudielka & Walach, 2011; Oman, Shapiro, Thoresen, Plante, & Flinders, 2008; Regehr et al., 2013). Even though research is rapidly emerging to address the link between stress and meditation, there is a broad gap in knowledge specifically related to undergraduate students.

The purpose of this research study is to (a) analyze a group of fulltime undergraduate student self-perceptions of stress, (b) examine the circumstances that contribute to undergraduate student perceived stress, and (c) determine what effect breathing meditation has on undergraduate student self-perceived stress. The students I would like to participate in the study would be from the honors program and the nursing and social work major populations. I have already spoken with the HP advisor, Dr. Lisa Hedrick, the College of Nursing dean, Dr. Carol Wilson, and the Social Work Department Chair, Dr. Lorri McMeel and they are willing to allow me to work with their students.

Student participation in the research study will be completely voluntary. They will receive a detailed explanation of the study, the related expectations, and will be given the informed consent form to verify their desire to participate. Student volunteers will be free to withdraw from the research at any time. During the study, student participants will be asked to provide anonymous demographic information and to complete a total of four surveys. The surveys are short with each taking less than 5 minutes to complete. One survey is the Perceived Stress Scale (PSS) and is the most widely used instrument for measuring self-perceived stress. Participants will respond to a 10-item Likert rating scale to gauge the extent of thoughts and feelings regarding life circumstances during the previous month. The second survey is the Undergraduate Stress Questionnaire (USQ). The USQ is a checklist comprised of 82-items reflecting possible stressful life events.
undergraduate students may encounter. Each survey will be taken twice: once at an informational meeting at the beginning of the research study and again in eight weeks.

Roughly half of the students will be in the experimental group and will participate in a guided breathing meditation once per week for eight weeks, a total of eight sessions. The guided breathing meditation sessions will be in a group of about 20 students and will be scheduled on a predetermined day and time. While the breathing meditation portion of the session will be about 9 minutes, the duration of each weekly meeting will be about 20 minutes from start to finish. The first and last session may be about 10 minutes longer, 30 minutes, in order to explain breathing meditation or complete the post surveys.

The other half of the students will be in the control group. They will provide demographic data and complete the same four surveys; two at the informational meeting, if they choose to participate, and two during the eighth week. Students who agree to participate will not have a choice about which group they will be participating in, control or experimental, because the control and experimental groups will be randomly assigned.

Six students from the experimental group will be selected to engage in a 45-minute interview which will take place during the ninth and tenth week of the study. Student participants may elect to participate in the breathing meditation but decline being interviewed. There are no consequences if they decline. The interviews will take place in a private room on campus. Only the student, an administrative assistant, and I will know they have volunteered to be interviewed. Their identity will remain confidential and the information collected from the interview will not be associated with them at any point within the timeframe of the study or at any future date. In the interviews students will be asked questions regarding their perceived-stress and whether or not they found breathing meditation to be a useful strategy for stress reduction. They have the right to refuse to answer any question without consequence or to end the interview. Interviews will be digitally audio recorded which will be disclosed to the interviewees. Those who are interviewed will also be asked to provide feedback on their interview transcript to assure accuracy of the participant’s oral responses and have the opportunity to provide additional meaning, as necessary.

The potential risks of participating in this study are minimal. There may be a loss of privacy between them, me, and the other participants as well as the inconvenience of completing the surveys, attending the guided breathing meditation sessions, participating in an interview, and providing feedback about their interview transcript. The potential risks of participating in the intervention, guided breathing meditation, are also minimal. Breathing meditation is simply focusing the mind on the breath. While thoughts or feelings may arise the focus of the meditation is only on the breath. When thoughts or feelings appear, they are not explored but rather, gently and consciously, acknowledged and then dismissed in order to return the focus to the breath.

The purpose of the study is to (a) analyze a group of undergraduate student self-perceptions of stress, (b) examine the circumstances that contribute to undergraduate
student perceived stress, and (c) determine what effect breathing meditation has on undergraduate student self-perceived stress and NOT to process or resolve difficulties that may be causing their stress. If they experience discomfort during the intervention, they are free to withdraw from the study at any time. Further, all participants will be provided with the attached contact information for local mental health care providers who accept our university’s student insurance plan and an additional list of local resources. If a student expresses discomfort during the study, they will be encouraged to seek professional assistance.

The potential benefits of participating in the study include experiencing a sense of peace and calm after the guided breathing meditation, learning an easy stress reduction technique that they can access when feeling stressed, and the satisfaction of being able to provide information to higher education professionals regarding the influence of breathing meditation on the self-perceived stress of undergraduate students. While they may or may not personally benefit directly from this study, the complete results of the research will be provided to them to inform them of the usefulness of breathing meditation on undergraduate student stress.

It is my hope that you will give permission for our institution to participate in this research study. Please do not hesitate to ask additional questions if you need clarification. You may contact me by telephone (815.740.6124), email (csloan@stfrancis.edu), or contact my faculty advisor, Dr. Terry Williams (twillia@luc.edu or 312.915.7002).

Best regards,

Cindy Sloan
APPENDIX G

INSTITUTIONAL PERMISSION FROM PROVOST
INSTITUTIONAL PERMISSION FROM PROVOST

From: Frank Pascoe
To: Sloan, Cindy
Subject: Re: Request: Dissertation Study  Date: Thursday – May 15, 2014 9:01 AM

Cindy,
I approve your request to conduct a ten-week doctoral research study on our campus as detailed in your proposal.

-Frank

Dr. Frank Pascoe
Provost and VPAA
Professor of Biology
University of St. Francis
500 N. Wilcox St.
Joliet, IL 60435
Phone: 815/740-3216
Fax: 815/740-6366
E-mail: fpascoe@stfrancis.edu

>>> Cindy Sloan 5/15/2014 8:55 AM >>>

Dear Dr. Pascoe,

Please see the attached letter regarding my request to conduct my dissertation study on the University of St. Francis campus during the Fall 2014 semester.

Best regards,

Cindy Sloan

Cindy Sloan
Associate Dean
University of St. Francis
College of Education
500 Wilcox Street
Joliet 60435

phone: 815-740-6124
fax: 815-740-2264

Please consider the environment before printing this e-mail
GUIDED BREATHING MEDITATION TRANSCRIPT
(8 minutes & 49 seconds)

Beginning chime (tone)

So we begin by sitting comfortably, upright.

Sitting quietly.

Consciously taking awareness into your posture and making sure that you’re upright.

Sitting in a way that gives you a sense of dignity, also sitting comfortably and relaxed.

Then beginning to find the sensations of the breath and letting your awareness ride on the breath.

Just as your body may gently rise and fall as if you were floating on warm buoyant water.

The mind’s just resting on the breath, almost effortlessly.

And, just letting the breath happen.

So that the breath is flowing in and out of the body at its own rate,

And you’re simply aware of the physical sensations as the breath rises and falls

And now, I’d like you to notice the exhale part of the breath cycle by saying to yourself, internally, on every out breath the word “out”,

So as the breath flows out you’re saying the word “out” to yourself, very softly,

And, as you notice the mind wandering, just gently and persistently, bring it back to the breath, once again,

Doing this over and over, as many times as you need to,

And, as you say the word “out” on each exhalation, noticing the sense of letting go that takes place throughout the body as you breathe out.

You can notice the chest letting go, the belly, the shoulders falling, the spine settling.

Perhaps noticing a sense of letting go, even in other parts of the body.

And, as the body relaxes on each exhalation, you may notice the mind becoming a little calmer. And now, as you continue to follow the breath, I suggest you pay particular attention to the inhalation.
This time saying the word “in” as the breath flows into your body.

And, if you notice that the mind is wandering, bring it back over and over again to the physical sensations of the breath.

And, noticing how putting your attention more onto the in breath changes your experience.

So, when you notice the in breath, you may perhaps notice more of a sense of energy being drawn into the body.

A sense of expansion, of upward movement, of increasing mental alertness.

And, if you wish, you can continue to follow the breath, particularly noticing the in breath.

Or, if you prefer, emphasize the calming effect of acknowledging the out breath.

You can return to saying “out” on each out breath.

Or, if you prefer, you can let go of saying “in” or “out” and you can simply follow the rise and fall of the breath.

Simply, following the breath.

Until you feel ready.

In your own time, when it feels appropriate, to bring your awareness more into the outside world.

And to bring the exercise to an end

Ending chime (tone)
APPENDIX I

REMINDER EMAIL TO STUDENTS
Dear student’s name,

Just a reminder that the stress and breathing meditation study will meet day/date/time in room building and number. Please do your best to be on time.

Looking forward to seeing you on day and date!

Best regards,

Cindy Sloan
EMAIL TO INFORM THE CONTROL GROUP

Dear student’s name,

You have been randomly selected to participate in the control group for the study on undergraduate student stress and breathing meditation. You have already provided demographic data and have completed two surveys. We will reconvene on the eighth week and you will complete two post surveys.

These session will be held in room, on day/date/time. The session will be approximately 15 minutes in length in order to have time to complete the surveys.

Since you are participating in the control group, it is very important that you attend and that you arrive on time. I will send a reminder email the week before, but please make sure to put the dates, times, and locations on your calendar.

Please do not hesitate to contact me if you have any questions or concerns. I will see you day and date!

Best regards,
Cindy Sloan
APPENDIX K

EMAIL TO INFORM THE EXPERIMENTAL GROUP
EMAIL TO INFORM THE EXPERIMENTAL GROUP

Dear student’s name,

You have been randomly selected to participate in the experimental group for the study on undergraduate student stress and breathing meditation. You have already provided demographic data and have completed two surveys. You will now participate in guided breathing meditation sessions once per week for eight weeks and complete two more surveys in the eighth week. The interview participants will also be selected from your group. If you are selected, if you so choose, you may decline to be interviewed.

Your breathing meditation sessions will be held in room, on day/date/time, beginning date. The first and eighth sessions will be approximately 30 minutes in length in order to explain breathing meditation or complete the post surveys. The second through the seventh sessions will be approximately 20 minutes in length. The breathing meditation sessions will conclude on day, ending date. No special clothing is necessary for breathing meditation. Just come as you are.

Since you are participating in the experimental group, it is very important that you attend each of the eight sessions and that you arrive on time. I will send a reminder email each week, but please make sure to put the sessions on your calendar.

Please do not hesitate to contact me if you have any questions or concerns. I will see you on day and date!

Best regards,

Cindy Sloan
APPENDIX L

INFORMED CONSENT MATERIALS FOR THE INTERVIEWS
INFORMED CONSENT MATERIALS FOR THE INTERVIEWS

CONSENT TO PARTICIPATE IN RESEARCH

Project Title: The Self-perceived Stress of Undergraduate College Students Before and After Participation in a Breathing Meditation Intervention: A Mixed Methods Study

Researcher(s): Cindy Sloan
Faculty Sponsor: Dr. Terry Williams

Introduction: You are being asked to take part in an interview that is part of the research study being conducted by Cindy Sloan for a dissertation under the supervision of Dr. Terry Williams in the Department of Higher Education at Loyola University of Chicago.

The study is about whether a breathing meditation intervention will influence the self-perceived stress of undergraduate college students. You have been asked to participate in an interview because you participated in the breathing meditation intervention. A maximum of six student volunteers will be interviewed. Please read this form carefully and ask any questions you may have before deciding whether to participate in this part of the study.

Purpose: The purpose of this study is to (a) identify undergraduate student self-perceptions of stress, (b) examine the circumstances that contribute to self-perceived stress, and (c) determine what effect breathing meditation has on self-perceived stress.

Procedures: To determine who will be interviewed, I will select certain code numbers and forward them to Administrative Assistant’s Name who will have access to your original Informed Consent Form. This is the only form listing your name and code number together. You will then be:

- Contacted through campus email by Administrative Assistant’s Name. It is your choice whether or not to participate in the interview. There are no consequences if you decline. If you agree to be interviewed, only then will the administrative assistant tell me your name and code number.
- Interviewed in the ninth or tenth week after the breathing meditation sessions have ended. The interview will take place in a private room on the USF campus and will be audio-recorded. You will be asked questions regarding your perceived stress and whether or not you found breathing meditation to be a useful strategy for stress reduction. You have the right to refuse to answer any question without consequence or to end the interview.
- Asked to provide feedback on the interview transcript to make sure it is accurate and for you to have the opportunity to clarify your responses as you feel necessary. A colleague and I will analyze the interview transcript; however, your interview responses will be confidential and only I will know who the transcript belongs to.
Risks/Benefits: The potential risks of participating in the interview are minimal. There may be a loss of privacy between you and me as well as the inconvenience of providing feedback about your interview transcript. The purpose of the interview is **NOT to process or resolve difficulties that may be causing you stress.** If you experience discomfort during the interview, you are free to discontinue at any time. Attached is contact information for local mental health care providers many of whom accept our university’s student insurance plan. If you experience any discomfort, whether or not you discontinue the interview, you are encouraged to seek professional assistance.

The potential benefits of participating in the interview is the satisfaction of being able to provide information to higher education professionals regarding the influence of breathing meditation on the self-perceived stress of undergraduate students. While you may or may not personally benefit directly from this study, the complete results of the research will be provided to you to inform you of the usefulness of breathing meditation on undergraduate student stress.

Confidentiality: If you agree to participate in an interview, I am the only person who will be able to connect your name and code with your demographic and survey responses. You will only be known by your code number during the interview data analysis. No information about you or provided by you during the interview will be disclosed to others without your written permission, except if necessary to protect your rights or welfare (for example, if you are injured and need emergency care or when the USF or LUC Institutional Review Boards monitors the research or consent process) or if required by law. However, if during the interview you reveal a stressful event involving sexual assault, as a responsible employee of our university I am obligated to report the event to the institution’s Title IX Coordinator in the Human Resources department.

Voluntary Participation: Participating in an interview is voluntary. If you do not want to be interviewed, you do not have to participate. Even if you decide to be interviewed, you are free not to answer any question or to withdraw from participation at any time without penalty.

Contacts and Questions: If you have questions about this research project, please feel free to contact me, Cindy Sloan, at csloan@stfrancis.edu or 815.740.6124. You may also contact my faculty sponsor, Dr. Terry Williams (twillia@luc.edu or 312.915.7002). If you have questions about your rights as a research participant, you may contact the Loyola University Office of Research Services at (773) 508-2689.

Statement of Consent: Your signature below indicates that you have read the information provided above, have had an opportunity to ask questions, and agree to be interviewed. You will be given a copy of this form to keep for your records.
Participant’s Signature  Date

Researcher’s Signature  Date

####
Code Number
APPENDIX M

PERMISSION TO USE THE USQ
PERMISSION TO USE THE USQ

From: Cindy Wrobbel
To: Crandall, Chris
Subject: Re: Request for Permission to use the USQ

Thank you so much, Dr. Crandall! I will most definitely share my findings with you.

Be well,
Cindy

>>> Chris Crandall <crandall@ku.edu> 10/25/2013 3:07 PM >>>
Yes, please go ahead. If you find anything interesting using the USQ, I would love to hear about it.

On 10/25/13 2:04 PM, Cindy Wrobbel wrote:
Dear Dr. Crandall,

My name is Cindy Wrobbel and I am a doctoral student at Loyola University Chicago. I am working on my dissertation and would like permission to use the Undergraduate Stress Questionnaire that you and your colleagues developed in the early 90s. It is truly an excellent instrument that I believe is a perfect fit for my dissertation.

I hope to conduct a mixed methods study on the influence of breathing meditation on the perceived stress of undergraduate students. I am happy to give you more information and how I found the USQ if you so desire.

Regards,
Cindy

Cindy Wrobbel
Associate Dean
University of St. Francis
College of Education
500 Wilcox Street
Joliet 60435

phone: 815-740-6124
fax: 815-740-2264
APPENDIX N

INTERVIEW PROTOCOL
INTERVIEW PROTOCOL

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<td>3. The effect breathing meditation has on undergraduate student self-perceived stress.</td>
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| Interview Topics: | 1. What stressors do students experience and to what extent do they believe they influence their well-being? |
|                   | 2. To what extent do students believe breathing meditation combats stress? |
|                   | 3. Will students continue to use breathing meditation as a strategy to mitigate stress? |
|                   | 4. What experiences have students previously had with meditation? |

Interview Script

Thank you for agreeing to be interviewed today. My name is Cindy Sloan and I will be facilitating the interview. We will be spending the next 45 minutes talking about your experiences with stress, your self-perceived stress before and after breathing meditation, and whether or not you think breathing meditation is a useful strategy to alleviate the stress of undergraduate college students. I am especially interested in hearing anything you are comfortable sharing about your personal thoughts and stories related to the questions I will be asking. There are no right or wrong responses and all of your comments will remain confidential. I am conducting several interviews and no names will be attached to identify statements made by individual people. It is also important to understand that your responses will have no bearing on your standing at the university; I am simply interested in what you think about breathing meditation as related to stress. I will be listening and, with your permission, I would also like to audiotape our interview to capture all of the details of your answers. I will take some notes so I do not miss nonverbal cues that cannot be captured on an audio recording.

During the interview you have the right to refuse to answer any question without consequence or even to end the interview. The audio recording will be transcribed and about one week after the interview you will receive an email with your interview transcript. You will be asked to provide feedback to help assure the accuracy of your responses and to give you the opportunity to provide additional meaning, as necessary.

Are there any questions before we begin?

[Address questions if any are raised]
There are three primary topics I am going to address in the interview. I am interested in knowing what kind of stressors you experience and how they influence your well-being, what you think about using breathing meditation as a strategy to alleviate stress, and if you will continue to use breathing meditation.

**Introductory Question**
I would like to begin today’s interview by you sharing with me your age, major, and how long you have been at the university.

**Topic 1: Life Stressors and How they Influence Well-being**
A. What are the primary stressors in your life?
   1) Probe: Describe what you think stresses you out the most.
   2) Probe: Explain how this stress affects you on a daily basis.
      a. Are there any symptoms you experience that you think are caused by your stress?
      b. What do you experience that leads you to believe you are stressed?
      c. Is there anything that you experience in your mind or body that indicates to you that you are stressed?
      d. Some people experience symptoms like anxiety and insomnia when they are stressed. Have you experienced any symptoms like this? If you do, how long do the symptoms persist?
B. What is the most stressful experience you have had since being an undergraduate student?
   1) Probe: Describe how you think this impacted your well-being.
   2) Probe: What happens that leads you to believe the stress has impacted your well-being?
C. Describe stressors in your life that you think are less serious. Explain how these impact your well-being.
D. Are there any ongoing less serious stressors that may end up being primary stressors for you?
   1) Probe: Are there additional stressors that you think you will have to deal with within the next year?
   2) Probe: Describe how you manage less serious stressors?
E. Explain anything you have done in the past to help alleviate your stress.
   1) Probe: Some people do things like run, talk with friends, surf the Internet, or play video games to relieve stress. Do you do anything like this? If yes, is it effective?

**Topic 2: View of Using Breathing Meditation to Relieve Stress**
A. Did you engage in breathing meditation in-between the weekly sessions?
   1) Probe: Explain why you did or did not engage in breathing meditation outside of the weekly sessions.
   2) Probe: What led you to engage in breathing meditation in-between sessions? Describe the experience.
3) Probe: Did you use breathing meditation as a strategy to manage your stress at any point in-between sessions? Describe the circumstances. Did it help?
B. Do you think your level of stress has changed since participating in breathing meditation? Explain why you think this is so?
   1) Probe: On the days that you practiced breathing meditation, did you notice any differences in the rest of the day? What were they?
   2) Probe: Describe anything that you noticed that was different. If there were not any differences, why do you think that was so?
   3) Probe: Were there any differences with your sleep on those nights? What were they?
C. During the study, explain any effect breathing meditation had on the stressors we just discussed.
D. Do you think you will use breathing meditation in the future to help manage your stress?
   1) Probe: Describe why you think breathing meditation works or does not work for you.
   2) Probe: What draws you or prevents you from using breathing meditation in the future?
E. In general, do you feel breathing meditation is a useful strategy for undergraduate college students to use to help alleviate stress? Explain why or why not.
   1) Probe: When and where do you think students should be taught breathing meditation?

**Topic 3: Past Experiences with Meditation**

A. Prior to participating in the study, did you have a routine meditation or meditation-like practice? Some examples could be contemplative prayer, insight meditation, walking meditation, or Transcendental Meditation?
   1) Probe: Describe your meditation practice.
   2) Probe: Where did you learn to meditate?
   3) Probe: Why and how often do you practice?
   4) Probe: How long have you been practicing this technique?
B. Is there anything you would like to add about stress, breathing meditation, or other stress reduction strategies that I have not asked about so far in the interview?

Thank you very much for participating in the interview today. Your insights will help me better understand undergraduate student’s self-perceptions of stress and the effects of breathing meditation.
APPENDIX O

CONFIDENTIALITY AGREEMENT FOR TRANSCRIBERS
TRANSCRIBER CONFIDENTIALITY AGREEMENT

I, [Insert Printed Name], agree to transcribe the interviews for the doctoral research of CINDY SLOAN entitled "Self-perceived Stress of Undergraduate Students Before and After Participation in a Breathing Meditation Intervention: A Mixed Methods Study." I will maintain strict confidentiality of the data files and transcripts. This includes, but is not limited to, the following:

- I will not discuss them with anyone but the researcher.
- I will not share copies with anyone except the researcher.
- I agree to turn over all copies of the transcripts to the researcher at conclusion of the contract.
- I will destroy the audio files I receive upon conclusion of the contract.

I have read and understand the information provided above.

[Signature]
Transcriber's Signature

[Signature]
Researcher's Signature

[Date]
Date
APPENDIX P

CONFIDENTIALITY AGREEMENT FOR PEER REVIEWERS
CONFIDENTIALITY AGREEMENT FOR PEER REVIEWERS

PEER REVIEWER CONFIDENTIALITY AGREEMENT

I, LEA SLOAN, agree to peer review interview transcripts for the doctoral research of CINDY SLOAN entitled "Self-perceived Stress of Undergraduate Students Before and After Participation in a Breathing Meditation Intervention: A Mixed Methods Study." I will maintain strict confidentiality of the transcripts. This includes, but is not limited to, the following:

- I will not discuss them with anyone but the researcher.
- I will not share copies with anyone except the researcher.
- I agree to turn over all copies of the transcripts to the researcher at conclusion of the research.

I have read and understand the information provided above.

[Signature]

Peer Reviewer’s Signature [Date] 12-17-14

[Signature]

Researcher’s Signature [Date] 12-17-14
APPENDIX Q

PARTICIPANT AND GROUP DESCRIPTIVE STATISTICS AND SURVEY REPORT AVERAGES
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<td>M</td>
<td>21</td>
<td>MATH</td>
<td>Y</td>
<td>20-25</td>
<td>Control</td>
<td>18</td>
<td>24</td>
<td>13</td>
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</tbody>
</table>

|   | Participant Group Average |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | Control Group Average |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | Intervention Group Average |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | Interview Group Average |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
APPENDIX R

UNDERGRADUATE STRESS QUESTIONNAIRE INFORMANT RESPONSES:

KALINDA
<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had a lot of tests</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Issues with social media interactions</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Assignments in all classes due the same day</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>Lots of deadlines to meet (project, research papers, etc.)</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>You have a hard upcoming week</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Went into a test unprepared</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Did worse than expected on test</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Athletic or team responsibilities</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Did badly on a test</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Transportation difficulties</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Got a traffic ticket</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Thoughts about future</td>
<td>X**</td>
<td>X**</td>
</tr>
<tr>
<td>Lack of money</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Dealt with incompetence at a university office</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Thought about unfinished work</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>No sleep</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Fought with boy/girlfriend</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performed poorly at a task</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Heard bad news</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Maintaining a long-distance boy/girlfriend</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Crammed for a test</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Feel unorganized</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Financial problems (tuition bills, student loans)</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Couldn't find a parking space</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Noise disturbed you while trying to study</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>Had to ask for money</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Family responsibilities, wife/husband and/or children</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Erratic schedule</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Stayed up late writing a paper</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Someone did a &quot;pet peeve&quot; of yours</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Distracted by social media</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Concerned about my appearance</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Someone cut ahead of you in line</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Not enough funds in checking account</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Spoke with a professor</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Change of environment (new doctor, dentist, etc.)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Got to class late</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sat through a boring class</td>
<td></td>
<td>X**</td>
</tr>
</tbody>
</table>
APPENDIX S

UNDERGRADUATE STRESS QUESTIONNAIRE INFORMANT RESPONSES:

DARRIN
<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had a lot of tests</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Victim of a crime</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Assignments in all classes due the same day</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Lots of deadlines to meet (project, research papers, etc.)</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>You have a hard upcoming week</td>
<td></td>
<td>X*</td>
</tr>
<tr>
<td>Went into a test unprepared</td>
<td></td>
<td>X*</td>
</tr>
<tr>
<td>Did worse than expected on test</td>
<td></td>
<td>X*</td>
</tr>
<tr>
<td>Dependent on other people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation difficulties</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Thoughts about future</td>
<td>X**</td>
<td>X**</td>
</tr>
<tr>
<td>Lack of money</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Dealt with incompetence at a university office</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Thoughts about unfinished work</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>No sleep</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Sick, Injury</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Had a class presentation</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>Apply for or finding a job</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Fought with boy/girlfriend</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Working while in school</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Bothered by having no social support of family</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Performed poorly at a task</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Can’t finish everything you need to do</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Heard bad news</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Crammed for a test</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Feel unorganized</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Financial problems (tuition bills, student loans)</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Couldn't find a parking space</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Noise disturbed you while trying to study</td>
<td></td>
<td>X*</td>
</tr>
<tr>
<td>Someone borrowed something without permission</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Had to ask for money</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Family responsibilities, wife/husband and/or children</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Erratic schedule</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Registration for classes</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Stayed up late writing a paper</td>
<td></td>
<td>X**</td>
</tr>
<tr>
<td>Someone you expected to call/text did not</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Can’t concentrate</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Living with boyfriend/girlfriend</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Not enough funds in checking account</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Visit from relative and entertaining them</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Change of environment (new doctor, dentist, etc.)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Exposed to upsetting TV show, book, movie, or game</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Event</td>
<td>X*</td>
<td>X**</td>
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<tr>
<td>--------------------------------------</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>Sat through a boring class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorite sporting team lost</td>
<td>X</td>
<td>X</td>
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APPENDIX T

UNDERGRADUATE STRESS QUESTIONNAIRE INFORMANT RESPONSES:

JAMIE
Undergraduate Stress Questionnaire (USQ): Jamie

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had a lot of tests</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>Ongoing health issues</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Assignments in all classes due at the same day</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>Lots of deadlines to meet (project, research papers, etc.)</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>You have a hard upcoming week</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Went into a test unprepared</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>Did badly on a test</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Thoughts about the future</td>
<td>X**</td>
<td>X**</td>
</tr>
<tr>
<td>Lack of money</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Thought about unfinished work</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Working while in school</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Can’t finish everything you need to do</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Crammed for a test</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Feel unorganized</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Couldn't find a parking space</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Noise disturbed you while trying to study</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>Had to ask for money</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Someone broke a promise</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Can’t concentrate</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Concerned about my appearance</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Problems with my computer</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Not enough funds in checking account</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Change of environment (new doctor, dentist, etc.)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Got to class late</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sat through a boring class</td>
<td></td>
<td>X**</td>
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</table>
APPENDIX U

UNDERGRADUATE STRESS QUESTIONNAIRE INFORMANT RESPONSES: ANN
### Undergraduate Stress Questionnaire (USQ) - Ann

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death (family member or friend)</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Had a lot of tests</td>
<td></td>
<td>X**</td>
</tr>
<tr>
<td>Assignments in all classes due the same day</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Lots of deadlines to meet (project, research papers, etc.)</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Property stolen</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>You have a hard upcoming week</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Went into a test unprepared</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Lost something</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Dependent on other people</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Transportation difficulties</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Missed your period and waiting</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Thoughts about future</td>
<td>X**</td>
<td>X**</td>
</tr>
<tr>
<td>Lack of money</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Dealt with incompetence at a university office</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Thoughts about unfinished work</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>No sleep</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Sick, Injury</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Had a class presentation</td>
<td></td>
<td>X*</td>
</tr>
<tr>
<td>Fought with boy/girlfriend</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Working while in school</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Arguments, conflicts of values with friends</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Can’t finish everything you need to do</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Heard bad news</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Had a confrontation with an authority figure</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Crammed for a test</td>
<td></td>
<td>X**</td>
</tr>
<tr>
<td>Feel unorganized</td>
<td></td>
<td>X**</td>
</tr>
<tr>
<td>Financial problems (tuition bills, student loans)</td>
<td>X*</td>
<td>X</td>
</tr>
<tr>
<td>Parents controlling with money</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Couldn’t find a parking space</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Noise disturbed you while trying to study</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>Had to ask for money</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Family responsibilities, wife/husband and/or children</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Erratic schedule</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Stayed up late writing a paper</td>
<td></td>
<td>X**</td>
</tr>
<tr>
<td>Can’t concentrate</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Distracted by social media</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>No time to eat</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>You have a hangover</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Problems with your computer</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>No sex in awhile</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Not enough funds in checking account</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Spoke with a professor | X | X  
Got to class late | X | X  
Sat through a boring class | X* | X**
APPENDIX V

UNDERGRADUATE STRESS QUESTIONNAIRE INFORMANT RESPONSES:

DEAN
## Undergraduate Stress Questionnaire: Dean

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Items elected by more than 50% of the participants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had a lot of tests</td>
<td>X**</td>
<td>X**</td>
</tr>
<tr>
<td>Victim of a crime</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Breaking up with boy/girlfriend</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Went into a test unprepared</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Did worse than expected on a test</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Did badly on a test</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Thoughts about future</td>
<td>X**</td>
<td>X**</td>
</tr>
<tr>
<td>Thoughts about unfinished work</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Sick, Injury</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Had a class presentation</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Working while in school</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Heard bad news</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Feel unorganized</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>Feel isolated</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Couldn't find a parking space</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Feel like nobody understands me</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Someone you expected to call, text, or contact you did not</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Stayed up late writing a paper</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>Can’t concentrate</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Distracted by social media</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Concerned about my appearance</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Problems with your computer</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Decision to have sex on your mind</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Exposed to upsetting TV show, book movie, or game</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Got to class late</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Sat through a boring class</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Other: Car accident</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

*Items selected by more than 75% of the participants*
APPENDIX W

UNDERGRADUATE STRESS QUESTIONNAIRE INFORMANT RESPONSES: SAM
Undergraduate Stress Questionnaire (USQ) - Sam

<table>
<thead>
<tr>
<th>Items elected by more than 50% of the participants</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had a lot of tests</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Assignments in all classes due the same day</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Lots of deadlines to meet (project, research papers, etc.)</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>You have a hard upcoming week</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>Dependent on other people</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Thoughts about future</td>
<td>X**</td>
<td>X**</td>
</tr>
<tr>
<td>Lack of money</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Thoughts about unfinished work</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>No sleep</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Working while in school</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Crammed for a test</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>Feel unorganized</td>
<td>X**</td>
<td></td>
</tr>
<tr>
<td>Financial problems (tuition bills, student loans)</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>Feel isolated</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Parents controlling with money</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Couldn’t find a parking space</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Noise disturbed you while trying to study</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Had to ask for money</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Erratic schedule</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Spiritual or religious struggles</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Feel like nobody understands me</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Stayed up late writing a paper</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>Can’t concentrate</td>
<td>X*</td>
<td></td>
</tr>
<tr>
<td>No time to eat</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Got to class late</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sat through a boring class</td>
<td>X*</td>
<td>X**</td>
</tr>
<tr>
<td>Favorite sporting team lost</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
APPENDIX X

SUPPLEMENTAL POSTTEST ITEMS
### SUPPLEMENTARY POSTTEST ITEMS

<table>
<thead>
<tr>
<th>Question</th>
<th>Did participating in the research study create any additional stress for you?</th>
<th>About how many times did you meditate on your own during the eight weeks of the study</th>
<th>To what degree did breathing meditation help reduce your stress?</th>
<th>In the future, will you use meditation (breathing or any other kind of meditation) as a way to reduce your stress?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalinda</td>
<td>Created a little additional stress</td>
<td>Never</td>
<td>It helped reduce some of my stress</td>
<td>Probably yes</td>
</tr>
<tr>
<td>Darrin</td>
<td>It did not create additional stress</td>
<td>1 to 3 times</td>
<td>It helped reduce some of my stress</td>
<td>Definitely yes</td>
</tr>
<tr>
<td>Jaime</td>
<td>It created a little additional stress</td>
<td>never</td>
<td>It did not help reduce any of my stress</td>
<td>Definitely no</td>
</tr>
<tr>
<td>Ann</td>
<td>It did not create additional stress</td>
<td>7 to 9 times</td>
<td>It helped reduce some of my stress</td>
<td>Probably yes</td>
</tr>
<tr>
<td>Sam</td>
<td>It created a lot of additional stress</td>
<td>1 to 3 times</td>
<td>It helped reduce a little of my stress</td>
<td>Probably yes</td>
</tr>
<tr>
<td>Dean</td>
<td>It did not create additional stress</td>
<td>1 to 3 times</td>
<td>It helped reduce a little of my stress</td>
<td>Probably yes</td>
</tr>
</tbody>
</table>
REFERENCES


VITA

Cindy Oneida Sloan was born in Chicago, Illinois and raised in Madison Heights, Michigan. Prior to attending Loyola University Chicago, she earned a Bachelor of Religious Education from William Tyndale College in Farmington Hills, Michigan. Upon graduation she pursued the education profession and received a Master of Arts in Teaching degree from National Louis University in Evanston, Illinois and a Master of Science in Educational Leadership degree from the University of St. Francis in Joliet, Illinois.

While at Loyola, and currently, Sloan serves as the Associate Dean of the College of Education at the University of St. Francis. In this multifaceted role she has developed and oversees several academic programs and also functions as the college Professional Standards Board chair and the NCATE Coordinator. In 2011 she was the recipient of the university Innovation Award for her development and implementation of Chrysalis which is an innovative discernment experience for undergraduate education majors. Sloan lives in Channahon, Illinois.