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## Coping Mechanisms in Graduate School: A Discipline Comparison

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### Cover Page Footnote

Portions of these findings were presented at the Mid-America Undergraduate Psychology Research Conference, Indiana, United States, and as a poster at the Florida Undergraduate Research Conference, Florida, United States. There are no conflicts of interest to disclose. Correspondence concerning this article should be addressed to: sandramontenegro@knights.ucf.edu.

# Coping Mechanisms in Graduate School: A Discipline Comparison

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**ABSTRACT:** The current study aimed to provide an overview of graduate students' stress and coping mechanisms. Per self-reported questionnaires, participants (N=95) rated their experiences with academic-related stressors, common coping mechanisms, and strain outcomes (somatic symptoms, insomnia, and burnout). This study found that task-related stressors were the most prevalent for graduate schoolwork. More specifically, graduate students in STEM, Arts & Humanities, and Social Sciences rated the amount and difficulty of the tasks (quantitative and qualitative properties of tasks) as the highest stressors in graduate school. The preferred coping strategies across all fields were planning and emotional coping. Additionally, students in STEM reported more significant organizational constraints and interpersonal conflict than graduate students in Arts & Humanities, and Social Sciences. Finally, students in Arts & Humanities reported more maladaptive coping mechanisms than students in the other two groups. These findings can guide program directors and administrators in informing initiatives to enhance graduate students' well-being.

**KEYWORDS:** Coping, Graduate School, Stress

**AUTHOR NOTE:** Portions of these findings were presented at the Mid-America Undergraduate Psychology Research Conference, Indiana, United States, and as a poster at the Florida Undergraduate Research Conference, Florida, United States. There are no conflicts of interest to disclose. Correspondence concerning this article should be addressed to: sandramontenegro@knights.ucf.edu.

**THE PEGASUS REVIEW:**UNIVERSITY OF CENTRAL FLORIDA  
UNDERGRADUATE RESEARCH JOURNAL**14.2:** 55-73**INTRODUCTION**

The study of coping mechanisms among graduate students derives from documented concerns about physical and mental health strains as students undergo a graduate program. According to a twelve-month follow-up study assessing the mental health of students, 24% of graduate students reported stress affecting their academics, and 63% reported feeling overwhelmed (American College Health Association, 2019). In a phone survey study, 55% of graduate students considered stress a significant challenge, and 43% indicated their stress was more than they could handle (Repak, 2006).

Coping mechanisms mediate the relation between stressors and well-being. Students are more likely to succeed in programs that recognize the components of their whole life (i.e., demands and obligations) while facilitating adequate coping mechanisms. This study compares graduate students' experiences with their life demands, coping, and stress consequences. Moreover, the study invites students to recognize discipline-specific barriers and participate in solutions to their own insomnia, burnout, and physical health stressors.

The graduate student population falls between undergraduates and workforce studies. Compared to their undergraduate counterparts, graduate students report higher academic strain (Ickes et al., 2015; Wyatt & Oswalt, 2013). The studies in occupational health consider high-stress occupations, including teaching, but typically exclude graduate assistantship positions. Previous studies analyzed mental health among graduate students as a whole or only among few disciplines (e.g., nursing, and social work).

Addressing the mental health of graduate students positively correlates to student retention. In STEM Master's programs, 10% of students leave after six months and 17% after one year, and with only 66% completing their degree by the end of a four year program (Council of Graduate Schools, 2013). Stress in graduate school could lead students to either drop out or spend more time than expected to graduate. Although graduate school dropout rates are rarely disclosed to the public, the Ph.D. completion project estimated that Ph.D. completion rates are only 56.6% (Sowell et al., 2008). Furthermore, completion rates varied only slightly among study fields: 49% in Arts & Humanities, 55% in Mathematics and Physical Sciences, 56% in Social Sciences, and 63% in Life Science and Engineering (Smallwood, 2004).

This study's observations contribute to the impact of wellness practices and stress management on graduate students by analyzing the current state and needs. Moreover, this study's observations extend to aid universities in seeking solutions that support student success. Extending support for graduate students would allow them to focus on innovating their fields. By enhancing students' experience, we will likely see a positive impact on research and education while creating a diverse and globally competitive workforce.

**Aims of the Study**

This study explores whether graduate students in different disciplines differ in the level of stressors they face and the coping strategies they use. By comparing responses from graduate students in STEM, Arts & Humanities, and Social Science, I aimed to gain a broad overview of which stressors and strategies prevail.

**Objectives**

1. Classify coping mechanisms according to the literature on the subject.
2. Determine differences in scholarship between disciplines to instruct hypotheses of differences/similarities of stressors and coping mechanisms across disciplines.
3. Collect data from students in each discipline group through an online self-reported questionnaire.
4. Identify the most prevalent and less prevalent stressors and coping strategies and the relation between coping and health outcomes (sleep, burnout, and physical symptoms).
5. Compare discipline group responses using ANOVA and post hoc test procedures to determine significant differences in students' reactions in different fields.

**Theoretical Framework**

Stress is a "non-specific response of the body to any demands made upon it" (Selye, 1973). A stressor is a threat stimulus that induces physiological (e.g., increased heart rate and temperature), psychological (fight-or-flight responses), and behavioral outcomes (e.g., counterproductive behavior). In this context, students' stressors are expected to lead to insomnia, burnout, and physical health. The transactional theory of stress and coping (TTSC) proposes that stress is a transaction between the individual and the environment where the

individual appraises its resources to manage the demands of the environment (Lazarus, 1966). During the appraisal, the individual determines whether the circumstance is a threat (stressor). If it is determined that the demand is a stressor, the individual may adopt a form of coping to reduce stress. According to Lazarus and Folkman (1984), “coping is all the cognitive and behavioral efforts to master, reduce, or tolerate demands” (p. 152). Coping mechanisms moderate the relationship between stressors and strain so that the stressors have a reduced impact on health. It is expected that, in the presence of high academic stress, students that adopt coping strategies, would reduce physical and mental harms.

### Types of Coping

In general, coping strategies can either focus on avoiding or actively managing the stressor (Jex et al., 2001). For instance, denying a problem is an avoidance strategy, while planning reflects an active approach. In graduate school, an active coping mechanism is more effective because avoiding academic demands will harm students’ progress. A common way to conceptualize coping mechanisms divides strategies into problem-solving and emotional-focused mechanisms (Folkman & Lazarus, 1980). If students do not believe they have the capacity or resources to face the challenge, they will turn to emotion-focused coping (Lazarus & Folkman, 1987). Emotion-focused coping includes changing the situation’s meaning rather than the situation itself. Emotion coping may help students by encouraging them to persevere despite resources or challenges.

On the other hand, if the students assess that they possess the resources required to meet a threat, they could manage the stressor with problem-focused coping mechanisms. This problem-focused mechanism alters or manages the stress decision-making and direct action. In addition, this coping style encourages students to advance and complete their academics, for example, the action of creating a plan to meet deadlines exemplifies a problem-focused response.

### Health Risks of Stress

Graduate students commit to complete programs ranging from one to six years. During that time, they may experience prolonged states of stress that may result in increasing health concerns. Stress becomes chronic when coping does not occur. Thus, if students do not cope early on in their academic career, they are at high risk to develop psychological and physiological complications. Physiological responses can affect the cardiovascular

system through high blood pressure (Schwartz et al., 1996), high cholesterol levels and a heightened risk of cardiovascular disease (Vrijkotte et al., 1999). In addition, hormones (e.g., cortisol) partially affect the cardiac system (Sonnetag & Frese, 2013). The excretion of cortisol in chronic stress contributes to coronary heart disease illnesses (Schulz et al., 1998). Stress also affects the immune system (Herbert & Cohen, 1993) and may increase the odds of musculoskeletal disorders (Bongers et al., 1993).

### Physical Symptoms and Stress

The study includes physical symptoms because of their relationship with occupational demands. For example, Gastrointestinal symptoms and sleep significantly correlate to occupational stressors, as found in a job stressors and physical symptoms meta-analysis (Nixon et al., 2011). Organizational constraints and interpersonal conflict are also strongly correlated with physical symptoms (Nixon et al., 2011). Physical health outcomes were measured using the Physical Symptoms Inventory (Spector & Jex, 1998). The scale assesses stomach symptoms, headaches (Bendtsen, 2003), eye strain, backache, and dizziness. Cortisol release increases nerve sensitivity, muscle tension, and inflammations. Thus, eye strain, backache, and tension-type headaches are relative to stress-induced cortisol release (Gura, 2002). Hypertension (changes in the blood pressure/heart rate) may be the primary cause of experiencing dizziness in stressful times (Sparacino, 1982). Chronic stress is associated with stomach diseases, changes in appetite (Kandiah et al., 2008; Ochi et al., 2008), digestion, nausea, heartburn, and cramps (Nixon et al., 2011). Although the scale measures how often the participants visit a doctor because of the stress-induced symptoms, I asked participants to identify the frequency of the symptoms for this study. This step was employed according to the idea that students could be less likely to visit a doctor when experiencing symptoms that might be caused by stress.

### Sleep

Sadeh and colleagues assessed 36 students with actigraphy and daily logs and found that coping mechanisms moderated the relationship between stress and sleep (2004). Additionally, sleep quality affects academic performance (Dewald et al., 2010) and work performance (Henderson & Horan, 2021). Stress can delay sleep onset; for example, work stressors produce cortisol, reduce melatonin, and increase insomnia

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(Jansson & Linton, 2006). We cannot measure sleep only through quantity. It is necessary to ask participants about the quality of their sleep. A common problem with measures of sleep quality is that the length often burdens participants (Henderson & Horan, 2021). Recent studies have used the Jenkins scale to assess sleep quality and minimize participants' burden (Jenkins et al., 1988; Scott & Judge, 2006).

**Burnout, Counterproductive Behaviors, and Stress**

Long-term affective reactions to stress can impact a student's mental health and well-being through burnout (Leiter, 1991) and counterproductive work behaviors (CWB). Emotional exhaustion, low self-efficacy, and feelings of low personal accomplishment characterize burnout (Maslach & Jackson, 1981). Higher academic stress is related to high burnout scores and lower self-efficacy (Jenaabadi et al., 2017). In a study of Ph.D. clinical psychology students, advisor support and a psychological sense of community moderate the relationship between stress and burnout (Kovach et al., 2009). Workers who experience burnout also indicate health-related problems (physical and psychological), isolation, and interpersonal issues (Cordes & Dougherty, 1993). CWB includes absenteeism, tardiness, turnover, and decreased productivity (Makhdoom et al., 2019). All of which are damaging to the students' academic progress.

CWB refers to behaviors that harm the organizations and others in the organization, including "theft, sabotage, verbal abuse, withholding efforts, lying, refusing to cooperate, physical assaults" (Spector & Fox, 2002). Stressors may influence negative behavioral responses, including violence and hostility (Chen & Spector, 1992). Counterproductive academic behaviors (CAB) include cheating, poor effort, and plagiarism (Cuadrado et al., 2020). In previous studies 47% of graduate students reported engaging in cheating behaviors (Rosentiel, 2006). In addition, 25% of graduate students indicated paraphrasing/copying a few sentences from written sources without adding citations (McCabe, 2005). A meta-analysis studying the antecedents of CWB found that employees experiencing more stress and workload were more likely to come late to work (Lau et al., 2003). Interpersonal conflict and organizational constraints were positively related to CWB (Penney & Spector, 2005). Temporary workers who experienced higher economic stressors, interpersonal conflict, and organizational constraints reported more emotional exhaustion, disengagement, and an increased frequency

of CWB (Striler et al., 2021). The relation between stress and CWBs demonstrates that without coping, stress can harm the climate and culture of a graduate program. The effects of nonsocial stressors (organizational constraints and workload) moderated the relation between CWB and interpreting others' behaviors as hostile, which is known as hostile attribution style (HAS) (Goh, 2007). That is to say, individuals scoring high on HAS engage in more CWB in high-stress levels. Reactions to CWB include lack of communication and low productivity (Spratlen, 1995).

**Variation Among Disciplines**

Disciplines shared a four-part scholarship foundation: discovery, research, teaching, and serving (Boyer, 1990); however, disciplines vary in the weight and arrangement of these elements (Interdisciplinary Task Force, 1993), as well as their methodologies, values, mission, and objectives (Bronwyn & Alton, 1993). In the case of STEM disciplines, the focus is placed on applying problem-solving, critical thinking, analytical thinking, and reasoning to reach human wants and needs (Brophy et al., 2008; Merrill & Daugherty, 2009; National Science Board, 2007). Arts & Humanities include Languages, Literature, History, Philosophy, Visual, and Performing Arts. Scholarship in Arts & Humanities is based on creation, process, and product (Interdisciplinary Task Force, 1993). Scholarship in the Social Sciences consists of understanding issues holistically, evaluating data, questioning assumptions, reasoning, and using problem-solving communication (The Academy of Social Sciences & British Educational Research Association, 2013). Social Sciences may follow a naturalistic approach (e.g., studying social phenomena as an ecology) (Martin & McIntyre, 1994), but also cover critical social issues including hidden bias (e.g., race and gender). The discipline allows the use of qualitative and quantitative methods and extends the boundaries of the scientific techniques outside white-coated scientists in laboratories (Blanche et al., 2006).

**Demands and Coping in Graduate School: Variation or Similarities Among Fields**

A study commissioned by Grad Resources and conducted by Dr. Robert Woodberry in 2010 found that work-life balance was among students' primary concerns. In a separate study, 60% of graduate students indicated they needed to achieve more balance in their lives (Repak, 2006). However, both men and women in STEM consider that achieving life balance is more



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difficult in their career as opposed to other career options they considered (Tan-Wilson & Stamp, 2015). In addition, regardless of academic discipline, students often fulfill different roles simultaneously: teacher, student, researcher, spouse, parent, or caregiver. (Myers et al., 2012). Based on Meyers' study, we might conclude that work-life balance difficulties could be similar among disciplines.

In one study by Rummell (2015), clinical psychology graduate students reported academic coursework pressures as their top-rated stressor (68%), while science students reported spending an average of 54 hours per week in school activities. However, in other studies, graduate students have generally reported school activities amounting to 60 hours per week (Willyard, 2012). Graduate students in STEM fields often spend 50 to 60 hours per week working in a laboratory (Berezow, 2018). There is no report on time dedicated towards degree progress per week for Arts & Humanities students, and there is a lack of studies surveying Social Sciences as a whole because there are many fields within that discipline. Quantitative workload could be similar among disciplines since the process, techniques, and structure of creative work for qualitative workload add layers of complexity to work in Arts & Humanities.

Psychology graduate students indicated that a better connection with the faculty was their top suggestion for the graduate program (Rummell, 2015). Graduate students often push to master skills even when lacking guidance (Repak, 2006). Supervisor relations could play a central role in the student's environment. Another social support for students comes from peers and family, but many students' enrollment requires relocating far from home. Although students may find meaningful interpersonal relationships with their cohorts, such possibilities also depend on the department's environment. One example considers how interpersonal conflict influences women's burnout in STEM (Minnotte & Pedersen, 2019). The STEM department environment may be very competitive, which could hinder relationships. Likewise, equipment dependence on STEM fields could lead to higher organizational constraints.

The delayed entry into the job market can produce financial concerns during academic years. When comparing disciplines, 26-40% of STEM graduate students take loans vs. 56% in Social Sciences and 55% in Arts & Humanities (Kang, 2017). By comparison, the mean amount of debt varies from STEM (\$5,302 to \$11,695 USD) vs. Arts & Humanities (\$21,223 USD),

and Social Sciences (\$24,872 USD) (Kang, 2017). The STEM disciplines' emphasis on addressing practical human needs could lead to higher financial support (Interdisciplinary Task Force, 1993).

Previous studies indicated concerns related to stress and burnout in graduate students. The stress-strain framework points out that appraisal (coping) is a crucial step that helps us mitigate health risks associated with stress. Although there are no good or wrong ways to cope, some coping methods are more practical to overcome educational challenges and avoid physiological and psychological health. There are similarities among graduate students regarding the level of education individuals attain and the higher academic expectations they face. However, there are no single solutions to stress management that fit all graduate students. The need for multiple solutions reflects how, among disciplines, work is produced and evaluated differently according to the field.

### Research Questions

Our study investigates whether students' stress experiences and coping strategies differ across disciplines. The general research questions for explorative research are as follow:

1. What are the most prevalent stressors and coping mechanisms used in graduate school?
2. Do students in different disciplines differ in stressors or coping mechanisms?
3. The final consideration details the relationship between coping and health outcomes (physical symptoms, burnout, and sleep).

## METHODS

### Participants

At a large public university, STEM, Social Sciences, and Arts & Humanities have enrolled a sum of approximately 3500 graduate students. I contacted 28 graduate program assistants and professors from STEM, Social Sciences, and Arts & Humanities. 8 program assistants responded to our email and sent the survey to their graduate students. The number of students in each program varies. The number of survey attempts totaled 152, and the number of completed questionnaires was 101. 8 responses had to be deleted because the participant response time was too short. The total sample size consisted of 97 graduate students.

**Table 4.**  
*Means, Standard Deviations, and One-Way Analyses of Variance*

Variables	Arts and Humanities		STEM		Social Science		Total		<i>F</i> (2,94)	<i>P</i>	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
<b>Stressors</b>	4.29	0.65	4.39	0.82	4.05	0.66	4.22	0.76	2.059	0.133	0.042
Quantitative Workload	5.64	0.95	5.44	1.10	5.37	1.08	5.44	1.06	0.545	0.582	0.011
Qualitative Workload	5.98	0.59	5.75	0.98	5.74	0.85	5.76	0.90	0.781	0.461	0.016
Work-lifeBalance Conflict	5.53	1.21	5.40	1.25	5.22	1.37	5.35	1.30	0.472	0.625	0.010
Interpersonal Conflict	1.87	0.92	2.49	1.19	1.75	0.85	2.03	1.05	5.371**	0.006	0.103
Conflict with Advisor	2.03	0.97	2.57	1.56	2.09	1.11	2.26	1.28	1.816	0.168	0.037
Organizational Constraints	3.06	1.13	3.96	1.23	3.18	1.09	3.38	1.24	5.80**	0.004	0.110
Financial Demands	5.93	1.42	5.15	1.79	5.02	1.76	5.29	1.72	2.568	0.082	0.052
<b>Coping by Group</b>											
Problem-focused	3.69	0.37	3.53	0.63	3.77	0.39	3.66	0.49	2.231	0.113	0.045
Emotion-focused	3.83	0.46	3.57	0.76	3.85	0.43	3.74	0.58	2.444	0.092	0.049
Maladaptive	2.72	0.54	2.37	0.42	2.34	0.51	2.46	0.51	5.631*	0.005	0.107
<b>Coping Mechanism</b>											
Positive Reframing	3.99	0.61	3.74	0.98	4.09	0.68	3.93	0.79	1.765	0.177	0.036
Acceptance	3.69	0.58	3.48	0.89	3.76	0.54	3.63	0.69	1.490	0.231	0.031
Active	3.75	0.55	3.68	0.78	4.05	0.52	3.82	0.66	3.276*	0.042	0.065
Behavioral Disengagement	1.63	0.58	1.82	0.64	1.62	0.54	1.71	0.61	1.275	0.284	0.026
Denial	1.77	0.70	1.46	0.50	1.50	0.67	1.57	0.63	2.113	0.127	0.043
Emotional Support	3.82	0.81	3.50	1.22	3.71	0.71	3.65	0.95	0.932	0.397	0.019
Instrumental Support	2.79	0.57	3.48	1.04	3.66	0.77	3.61	0.83	1.094	0.339	0.023
Mental Disengagement	3.41	0.69	3.09	0.67	3.19	0.83	3.21	0.74	1.514	0.225	0.031
Planning	4.06	0.61	3.99	0.79	4.28	0.53	4.11	0.66	1.784	0.174	0.037
Religion	1.73	1.24	2.44	1.57	2.52	1.57	2.26	1.51	2.571	0.082	0.052
Restrain	3.18	0.47	3.04	0.75	3.13	0.59	3.09	0.62	0.424	0.656	0.009
Suppression	3.69	0.72	3.47	0.71	3.75	0.74	3.65	0.73	1.427	0.245	0.029
Venting	3.55	0.84	2.83	0.87	2.99	0.68	3.08	0.85	6.776**	0.002	0.126
Exercise habits	2.85	1.04	2.29	0.99	2.41	0.92	2.48	0.98	2.513	0.087	0.052
Alcohol Coping	2.30	1.21	1.74	0.94	1.58	0.86	1.84	1.02	4.336*	0.016	0.084
<b>Other Alcohol Consumption</b>											
Alcohol Enhancement	2.55	1.11	2.09	1.03	1.97	1.09	2.20	1.15	2.315	0.104	0.047
Alcohol Social	2.79	1.29	2.65	1.22	2.41	1.22	2.64	1.24	0.793	0.456	0.017
Alcohol Drinking Total	2.55	1.11	2.16	0.86	1.98	0.94	2.23	0.98	2.714	0.071	0.055
<b>Outcomes</b>									<i>F</i> (2,94)		
Somatic Symptoms	29.35	10.37	34.15	8.79	34.34	7.20	33.32	9.01	2.984	0.056	0.061
Insomnia	1.88	0.91	2.16	1.05	2.15	1.03	2.14	1.05	0.739	0.480	0.016
Burnout	3.82	0.98	3.69	0.96	3.62	0.87	3.71	0.91	0.332	0.718	0.007

\*Significant at the .05 probability level. \*\*Significant at the .01 probability level.



Participants were enrolled in various academic programs, including Chemistry, Biology, Computer Science, and Engineering in STEM (35%); Psychology, Sociology, Public Affairs, and Political Science in Social Studies (36%); Writing, Literature, and Theater in Arts & Humanities (24%). 5 students from the Business school were excluded from the sample because their major did not fit under Social Sciences, Arts & Humanities, or STEM (e.g., Finances). As shown in Table 2, 28% were enrolled in a master's program, and 54% were in Ph.D. programs. The sample had a higher proportion of women (63%) than men (37%). Their average age was 28, with the youngest being 22 and the oldest at age 50 ( $SD=5.34$ ). Participants identified as Black (4%), Hispanics (13%), Asian or Pacific Islanders (7%), White (69%), and Multiracial (4%).

## Materials

### *Stressors – Demands*

The analysis included 7 demand sources. All constructs were measured in a matrix of 7 Likert scale points, from “strongly disagree” to “strongly agree.” The stressor items’ average score quantified the totals for each stressor, as seen with, Cronbach’s Alpha, number of items, and reverse scoring in Table 3. The design of the Quantitative Workload Inventory (QWI) determines the amount of work, not the job’s difficulty (Spector & Jex, 1998). Cognitive demands Dimension from Copenhagen Psychosocial Questionnaire (COPSOQ III) measured qualitative workload identified as workload difficulty (Kristensen & Borg, 2003). The scale evaluates workers’ working conditions, health, and well-being. The construct of Interpersonal conflict focuses on how well employees get along with others at work. The scale, ICAWS, was adapted to fit a student-employee sample for interpersonal conflict and supervisor relationships. Very few studies target the mental health of graduate students in relation to their supervisor; however, one article measured Supervisor/Mentor support to the students (Evans et al., 2018). Organizational constraints refer to interference with work. The Organizational Constraints Scale ([OCS]; Spector & Jex, 1998) was based on eight areas of constraints (Peters & O’Connor, 1980). The items chosen for this study focused on equipment, interruptions from others, and lack of information. Developed from the Work Foundation scale (Daniels & McCarragher, 2000), the Checkscale 7 targets the shortcomings of the previous work-life balance measurements, including extending the application to employees who don’t have a partner or have children (Dex & Bond, 2005). This

study used the Checkscale 7 scale because of participant demographics. The measure acknowledges that employee students have diverse and unique family responsibilities. Financial concerns were the last assessed stressor, using the Financial Anxiety Scale ([FAS]; Shapiro & Burchell, 2012) and the Student Financial Well-Being Scale (Norvilitis et al., 2003). FAS addressed the emotional aspect of financial management. Student Financial Well-Being was used in a study on college students’ debts, stress, and money perceptions.

### *Coping Mechanisms*

COPE assessed the use of positive reframing, acceptance, active coping, behavioral disengagement, denial, emotional support, instrumental support, mental disengagement, planning coping, religious coping, restrain, suppression, and venting habits. Participants responded on a 5-point Likert scale from very frequently to never. Physical activity can reduce stress. CPAQ ask about light, moderate, vigorous physical activity. Participants responded on a five-point scale according to how frequently they exercise: 1 day (1), 1-2days (2), 4-5 days (3), 6-7plus days (4). The total score was the average of the four items. Alcohol consumption may be a dangerous way to cope, but not all alcohol and drug consumption indicates that usage is a coping mechanism. DMQ-R measures the use of alcoholic beverages as a coping mechanism for young adults (Cooper, 1994; Grant et al., 2007). Participants responded on a 5-point Likert scale from always to never. The total score was computed using the average among the 5 items. See sample items and Cronbach’s alpha in Table 3.

### *Outcomes*

**Insomnia.** Insomnia in a work context examines how sleep can affect the employee’s work and job satisfaction (Jenkins et al., 1988). Although the scale is self-reported and sleep needs vary from person to person, the measure correlates with objective standards of sleep quality (Jenkins et al., 1988). This scale has been used in previous studies (Scott & Judge, 2006). Participants responded on a 5-point Likert scale from very frequently to never. The total score was calculated as the average of the 4 items.

**Physical Symptoms.** The Physical Symptoms Inventory ([PSI]; Spector & Jex, 1998) assesses physical, somatic health symptoms that have been associated with psychological distress. Although the original measure used No/Yes/Yes with a doctor’s visit, as response items, we used a 5-point Likert scale (very frequently, frequently, sometimes, rarely, and never) in the study, because of

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the student-employees sample. The participants were deemed less likely to visit a doctor. The total scores were calculated with the sum of the items.

**Burnout.** 4 items assessed work-related burnout using The Copenhagen Burnout Inventory (Kristensen et al., 2005). The measure related to fatigue and psychological well-being. Participants responded on a 5-point Likert scale going from strongly agree to strongly disagree.

### Data Collection

Surveys were emailed to academic program department representatives, who then distributed the surveys to potential participants via email. The study was described to participants as research designed to examine strain and coping mechanisms among graduate students by comparing relative demands among disciplines. Participants in the study were asked to complete a survey by answering questions about their experiences with different role stressors, coping mechanisms, and strain measures (including insomnia, somatic symptoms, and burnout). The study took approximately 20 minutes to complete. Participants completed the survey online through Qualtrics.

## RESULTS

### Data Analysis

Before addressing the research questions and hypothesis, potential outliers were identified by checking mistakes in data file input, the impact of outliers, question misunderstandings, and signs of lack of effort from a participant. Each variable was analyzed independently using graphs, variability, and central tendency measures. This study uses ANOVA to analyze and compare responses on stressors and coping mechanisms from students in each field. The Tukey HSD determined the specific difference between academic discipline responses. Finally, a correlation was conducted to address the relationship between health outcomes and coping mechanisms.

#### Research Questions 1

**Stressors.** Mean responses to stressors are found in Table 4. Across fields, students reported qualitative workload to be the most prevalent demand in graduate school ( $M = 5.76$ ,  $SD = 0.90$ ). The least frequent stressor across disciplines was interpersonal conflict ( $M = 2.03$ ,  $SD = 1.05$ ).

**Coping Mechanisms.** Overall, students reported emotional-focused coping ( $M = 3.74$ ,  $SD = 0.58$ ) as the highest compared to active and maladaptive coping. Students generally say that planning was the most prevalent strategy ( $M = 4.11$ ,  $SD = 0.66$ ) and denial of less frequently coping mechanism use ( $M = 1.57$ ,  $SD = 0.61$ ). Descriptive statistics of the variables are shown in Table 4.

#### Research Question 2

After factoring in the discipline, there were significant differences in a few of the stressors and coping mechanisms used by graduate students in STEM, Arts & Humanities, and Social Sciences. The results of the Tukey test can be seen in Table 5.

**Stressors.** There were no significant differences among disciplines on the experience of work-life conflict and quantitative workload. There was no significant difference in qualitative workload, supervisor conflict, or financial stress. However, organizational constraints and interpersonal conflict in STEM were significantly higher than in other fields. Only the responses for interpersonal conflict and organizational constraints significantly differed among disciplines (see Figure 1). STEM students reported higher interpersonal conflict ( $M = 2.49$ ,  $SD = 1.19$ ). Despite the low average of reported interpersonal conflict, the difference between the means was significant among disciplines [ $F(2, 94) = 5.371$ ,  $p = 0.006$ ]. The results of the Tukey test indicated that STEM students reported higher interpersonal conflict than Arts & Humanities students ( $M = 1.87$ ,  $SD = 0.92$ ) and social sciences students ( $M = 1.75$ ,  $SD = 0.85$ ), these occurrences were higher than they would have been by chance. STEM students reported higher experiences with organizational constraints ( $M = 3.96$ ,  $SD = 1.23$ ). The mean difference was significant among disciplines [ $F(2, 94) = 5.80$ ,  $p = 0.004$ ]. The results of the Tukey test indicated that STEM average response to organizational constraints was significantly higher than Arts & Humanities ( $M = 3.06$ ,  $SD = 1.13$ ) and Social Sciences ( $M = 3.18$ ,  $SD = 1.09$ ).

**Coping Mechanisms.** As shown in Figure 2, there are some differences among disciplines in the coping mechanism type used. Active coping mean differences among disciplines were significant [ $F(2, 94) = 3.276$ ,  $p = 0.042$ ], but only between Social Sciences ( $M = 4.05$ ,  $SD = 0.52$ ) and STEM ( $M = 3.68$ ,  $SD = 0.78$ ). Arts & Humanities had the highest mean response to venting ( $M = 3.55$ ,  $SD = 0.84$ ), the means difference for venting

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**Table 5**  
*Results from Post-Hoc Tukey Test*

Variables	P	
	A&H	STEM
<b>Interpersonal Conflict</b>		
Arts and Humanities		
STEM	0.042*	
Social Sciences	0.891	0.008*
<b>Organizational Constraints</b>		
Arts and Humanities		
STEM	0.009*	
Social Sciences	0.921	0.016*
<b>Maladaptive Coping</b>		
Arts and Humanities		
STEM	0.015*	
Social Sciences	0.008*	0.973
<b>Active Coping</b>		
Arts and Humanities		
STEM	0.911	
Social Sciences	0.150	0.046*
<b>Venting Coping</b>		
Arts and Humanities		
STEM	0.002*	
Social Sciences	0.018*	0.677
<b>Alcohol Coping</b>		
Arts and Humanities		
STEM	0.076	
Social Sciences	0.015*	0.787

\*The mean difference is significance at the 0.05 level.

between the disciplines was significant [ $F(2, 94) = 6.776$ ,  $p = 0.002$ ]. The results on the Tukey test indicated the mean of Arts & Humanities was significantly higher than the mean response of STEM ( $M = 2.83$ ,  $SD = 0.87$ ) and Social Sciences ( $M = 2.99$ ,  $SD = 0.68$ ). Finally, Arts & Humanities indicated the highest mean response to alcohol coping ( $M = 2.30$ ,  $SD = 1.21$ ), [ $F(2, 94) = 4.336$ ,  $p = 0.016$ ]. The Tukey test indicated alcohol coping differs significantly between Arts & Humanities and Social Sciences ( $M = 1.58$ ,  $SD = 0.80$ ) but not between Arts & Humanities and STEM ( $M = 1.74$ ,  $SD = 0.94$ ).

**Coping Clusters.** On the use of grouped coping mechanisms, Arts & Humanities, students reported

higher use of maladaptive coping, including venting and alcohol drinking. The means difference of maladaptive coping was significant [ $F(2,94) = 5.631$ ,  $p = 0.005$ ] (See Figure 3). The Tukey test results indicated that the average use of maladaptive coping for Arts & Humanities ( $M = 2.72$ ,  $SD = 0.54$ ) was scientifically higher than both the STEM ( $M = 2.37$ ,  $SD = 0.42$ ) and Social Sciences groups ( $M = 2.34$ ,  $SD = 0.51$ ).

**Research Question 3**

The correlations (Table 6) indicated a weak negative correlation between maladaptive coping and somatic symptoms ( $r(95) = -0.246$ ,  $p = 0.016$ ). Maladaptive coping and burnout were moderately positively correlated ( $r(95) = 0.362$ ,  $p < 0.001$ ). Maladaptive coping did not relate with insomnia or physical symptoms but indicated a moderate relationship with burnout. The only correlation (positive) with insomnia was with religious coping ( $r = 0.398$ ,  $p < 0.001$ ). Burnout correlated (positive) with behavior disengagement ( $r = .208$ ,  $p = 0.04$ ), denial ( $r = .298$ ,  $p = 0.003$ ), mental disengagement ( $r = .249$ ,  $p = 0.015$ ), venting ( $r = .256$ ,  $p = 0.0012$ ), and alcohol coping ( $r = .256$ ,  $p = 0.0012$ ). The reports of physical symptoms correlated (negative) with denial ( $r = .298$ ,  $p = 0.003$ ) instrumental support ( $r = -.240$ ,  $p = 0.019$ ), mental disengagement ( $r = .283$ ,  $p = 0.006$ ), , and venting ( $r = -.298$ ). Physical symptoms correlated (positive) with religious coping ( $r = .259$ ,  $p = 0.011$ ).

**DISCUSSION**

The purpose of this investigation was to provide an overview of stress, coping, and strain outcomes in graduate students with the aim to guide wellness initiatives. One of the implications of targeting student mental health is decreasing dropout rates. Across all discipline clusters, the most prevalent stressors (quantitative and qualitative workload) and coping mechanisms (planning and positive reframing) tended to be the same. STEM students depend on equipment that is often costly, so these students may have limited availability leading to organizational constraints. Arts & Humanities students reported higher use of maladaptive coping. Throughout this study, maladaptive coping practices did not indicate effects on unhealthy physical symptoms, but burnout and maladaptive coping mechanisms had a significant moderated correlation.

**Limitations**

One of the main limitations is reflected in the usage of a one-time self-reported data collection. Although

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self-reported data gathered through Likert scales is one of the most used tools in psychology and reduces the effort needed in participation, interpreting the results requires a caveat. For example, if some participants felt uncomfortable reporting extreme scores on a Likert scale, there may not be enough variations to notice a statistical phenomenon. Despite the limitations of the self-reported method, the approach was deemed fit with the state of current literature while minimizing graduate students' demands/stress. In academics, students have higher and lower stress periods based on semester and their point of seniority. Future studies with repeated measures would allow researchers to observe response patterns over time. Participants are more likely to report considering socially acceptable responses with self-reported data. The use of non-invasive devices to measure physical outcomes could be a way to approach sleep measures. Our study did not include academic performance as an outcome, which could be an essential consequence of poor mental health in graduate school.

**Implications for Practice**

Primary stressors to address are qualitative and quantitative workload. Well-structured academic plans would ease qualitative and quantitative stressors by allowing students to plan ahead and accomplish the high volume of complex requirements. For example, details can be added to manuals including information about hours spend and deadlines that previous successful students have follow. Academic coaching is an additional support that can allow students to further develop time management skills and utilize positive reframing to change their attitude towards obstacles. Coaching can equip students with problem-solving skills while being a safe space to monitor student's burnout. STEM programs benefit the most from a strong administrative team that keeps track of equipment maintenance, supplies storage, and managerial forms to prevent organizational constraints demands in students.

**Future Research Directions**

Arts & Humanities graduate students reported higher use of maladaptive coping and may be at higher risk of burnout, which could be linked to their turnover rate. Art & Humanities students report slightly higher rates of turnover (49%) compared to STEM (55%-63%) and Social Sciences (56%) (Smallwood, 2004). STEM and Social Sciences students have participated in previous burnout studies (Minnotte & Pedersen, 2019; Rummell, 2015). Research should also be conducted among Arts &

Humanities students to understand maladaptive coping.

The interpersonal conflict was the least prevalent stressor reported among graduate students in all fields. Even considering the low average, STEM students reported higher interpersonal conflict than the other disciplines. Future research should seek to understand why STEM students experience more interpersonal conflict. A possible factor to consider is the language and cultural barriers experienced by international STEM students. For example, compared to other disciplines, U.S. programs in STEM tend to receive a higher percentage of international students (Anderson, 2013). In conclusion, future research on graduate students' health can focus on Arts & Humanities students' risks of maladaptive coping and STEM students' experiencing interpersonal conflict.

**CONCLUSIONS**

Our work reflects on the stressors, coping mechanisms, instances of burnout, somatic symptoms, and sleep difficulties experienced by graduate students in Arts & Humanities, Social Sciences, and STEM. Among all the academic disciplines, quantitative and qualitative workload are primary stressors faced by students. The students mostly cope with stress through actively planning for deadlines and by positively reframing problems. The results of this study suggest detailed academic plans and coaching as two ways to reduce these workload stressors. This study recommends the following focuses toward remedying stress among graduate students according to their disciplines: 1. Lessen organizational constraints and interpersonal conflict among STEM students; 2. Arts & Humanities students should be moved away from burnout by discouraging maladaptive coping mechanisms. Both issues stand to be solved through planning and positive reframing.



**THE PEGASUS REVIEW:**UNIVERSITY OF CENTRAL FLORIDA  
UNDERGRADUATE RESEARCH JOURNAL**14.2:** 55-73**REFERENCES**

- Academy of Social Sciences & British Educational Research Association (2013). *Making the case for the social sciences*. Routledge. <https://www.bera.ac.uk/publication/making-the-case-for-the-social-sciences-education>
- American College Health Association [ACHA] (2019). *College health assessment II: Graduate and professional student executive summary Spring 2019*. <https://www.acha.org/>
- Anderson, S. (2013). The importance of international students to America. *National Foundation for American Policy Brief*, 1-22.
- Bendtsen, L. (2003). Central and peripheral sensitization in tension-type headache. *Current pain and headache reports*, 7(6), 460-465. <https://doi.org/10.1007/s11916-003-0062-9>
- Berezow, A. (2018). *Is there a mental health crisis among graduate school students?* American Council on Science and Health. <https://www.acsh.org/>
- Blanche, M. T., Blanche, M. J. T., Durrheim, K., & Painter, D. (2006). *Research in practice: Applied methods for the social sciences*. Juta and Company Ltd.
- Bongers, P. M., de Winter, C. R., Kompier, M. A., & Hildebrandt, V. H. (1993). Psychosocial factors at work and musculoskeletal disease. *Scandinavian Journal of Work, Environment & Health*, 19(5), 297-312. <https://doi.org/10.5271/sjweh.1470>
- Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the professoriate*. Princeton University Press.
- Bronwyn, A., & Alton, R. O. (1993). Differences among the disciplines. *New Directions for Higher Education*, 81, 23-62. <https://doi.org/10.1002/he.36919938105>
- Brophy, S., Klein, S., Portsmore, M., & Rogers, C. (2008). Advancing engineering education in P-12 classrooms. *Journal of Engineering Education*, 97(3), 369-387. <https://doi.org/10.1002/j.2168-9830.2008.tb00985.x>
- Carver, C. S. (2013). COPE Inventory. *Measurement instrument database for the social science*. [www.midss.org](http://www.midss.org)
- Chen, P. Y., & Spector, P. E. (1992). Relationships of work stressors with aggression, withdrawal, theft and substance use: An exploratory study. *Journal of Occupational and Organizational Psychology*, 65(3), 177-184. <https://doi.org/10.1111/j.2044-8325.1992.tb00495.x>
- Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment*, 6(2), 117-128. <https://doi.org/10.1037/1040-3590.6.2.117>
- Cordes, C. L., & Dougherty, T. W. (1993). A review and an integration of research on job burnout. *Academy of Management Review*, 18(4), 621-656. <https://doi.org/10.2307/258593>
- Council of Graduate Schools (2013). *Completion and attrition in STEM master's programs: Pilot study findings*. <https://legacy.cgsnet.org/completion-and-attrition-stem-master%E2%80%99s-programs-0>
- Cuadrado, D., Salgado, J. F., & Moscoso, S. (2020). Individual differences and counterproductive academic behaviors in high school. *Plos One*, 15(9), 1-19. <https://doi.org/10.1371/journal.pone.0238892>
- Daniels, L., & McCarragher, L. (2000). *The work-life manual: Gaining a competitive edge by balancing the demands of employees' work and home lives*. Industrial Society.
- Dewald, J. F., Meijer, A. M., Oort, F. J., Kerkhof, G. A., & Bögels, S. M. (2010). The influence of sleep quality, sleep duration and sleepiness on school performance in children and adolescents: A meta-analytic review. *Sleep Medicine Reviews*, 14(3), 179-189. <https://doi.org/10.1016/j.smrv.2009.10.004>
- Dex, S., & Bond, S. (2005). Measuring work-life balance and its covariates. *Work, Employment and Society*, 19(3), 627-637. <https://doi.org/10.1177/0950017005055676>
- Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology*, 36(3), 282-284. <https://doi.org/10.1038/nbt.4089>
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, 21(3) 219-239. <https://doi.org/10.2307/2136617>



**THE PEGASUS REVIEW:**UNIVERSITY OF CENTRAL FLORIDA  
UNDERGRADUATE RESEARCH JOURNAL**14.2:** 55-73

Goh, A. (2007). *An attributional analysis of counterproductive work behavior (CWB) in response to occupational stress*. University of South Florida. <https://digitalcommons.usf.edu/etd/2535>

Grant, V. V., Stewart, S. H., O'Connor, R. M., Blackwell, E., & Conrod, P. J. (2007). Psychometric evaluation of the five-factor modified drinking motives questionnaire—revised in undergraduates. *Addictive Behaviors*, 32(11), 2611-2632. <https://doi.org/10.1016/j.addbeh.2007.07.004>

Gura, S. T. (2002). Yoga for stress reduction and injury prevention at work. *Work*, 19(1), 3-7. PMID: 12454346

Henderson, A. A., & Horan, K. A. (2021). A meta-analysis of sleep and work performance: An examination of moderators and mediators. *Journal of Organizational Behavior*, 42(1), 1-19. <https://doi.org/10.1002/job.2486>

Herbert, T. B., & Cohen, S. (1993). Stress and immunity in humans: A meta-analysis review. *Psychosomatic Medicine*, 55, 364-379. <https://doi.org/10.1097/00006842-199307000-00004>

Ickes, M. J., Brown, J., Reeves, B., & Zephyr, P. M. D. (2015). Differences between undergraduate and graduate students in stress and coping strategies. *Californian Journal of Health Promotion*, 13(1), 13-25. <https://doi.org/10.32398/cjhp.v13i1.1810>

Interdisciplinary Task Force. (1993). *The work of arts faculties in higher education (revised 2009)*. <https://nasm.arts-accredit.org/publications/assessment-policy/arts-faculties/>

Jansson, M., & Linton, S. J. (2006). Psychosocial work stressors in the development and maintenance of insomnia: A prospective study. *Journal of Occupational Health Psychology*, 11(3), 241-248. <https://doi.org/10.1037/1076-8998.11.3.241>

Jenaabadi, H., Nastiezaie, N., & Safarzaie, H. (2017). The relationship of academic burnout and academic stress with academic self-efficacy among graduate students. *The Educational Review*, 49(3), 65-76. <https://doi.org/10.15804/ter.2017.49.3.05>

Jenkins, C. D., Stanton, B.-A., Niemcryk, S. J., & Rose, R. M. (1988). A scale for the estimation of sleep problems in clinical research. *Journal of Clinical Epidemiology*, 41(4), 313-321. [https://doi.org/10.1016/0895-4356\(88\)90138-2](https://doi.org/10.1016/0895-4356(88)90138-2)

Jex, S. M., Bliese, P. D., Buzzell, S., & Primeau, J. (2001). The impact of self-efficacy on stressor-strain relations: Coping style as an explanatory mechanism. *Journal of Applied Psychology*, 86(3), 401-409. <https://doi.org/10.1037/0021-9010.86.3.401>

Kandiah, J., Yake, M., & Willett, H. (2008). Effects of stress on eating practices among adults. *Family and Consumer Sciences Research Journal*, 37(1), 27-38. <https://doi.org/10.1177/1077727X08322148>

Kang, K. (2017). *Doctorate Recipients From U.S. Universities: 2017*. <https://nces.nsf.gov/pubs/nsf19301/data>

Kovach, H., Murdock, N. L., & Koetting, K. (2009). Predicting burnout and career choice satisfaction in counseling psychology graduate students. *The Counseling Psychologist*, 37(4), 580-606. <https://doi.org/10.1177/0011000008319985>

Kristensen, T. S., & Borg, V. (2003). *Copenhagen psychosocial questionnaire (COPSOQ)*. <http://www.mentalhealthpromotion.net/>

Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work & Stress*, 19(3), 192-207. <https://doi.org/10.1080/02678370500297720>

Lau, V. C., Au, W. T., & Ho, J. M. (2003). A qualitative and quantitative review of antecedents of counterproductive behavior in organizations. *Journal of Business and Psychology*, 18(1), 73-99. <https://doi.org/10.1023/A:1025035004930>

Lazarus, R. S. (1966). Psychological stress and the coping process. *The American Journal of Psychology*, 83(4), 634-637. <https://doi.org/10.2307/1420698>

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer. <https://doi.org/10.1017/S0141347300015019>

**THE PEGASUS REVIEW:**UNIVERSITY OF CENTRAL FLORIDA  
UNDERGRADUATE RESEARCH JOURNAL**14.2:** 55-73

- Lazarus, R. S., & Folkman, S. (1987). Transactional theory and research on emotions and coping. *European Journal of Personality*, 1(3), 141-169. <https://doi.org/10.1002/per.2410010304>
- Leiter, M. P. (1991). Coping patterns as predictors of burnout: The function of control and escapist coping patterns. *Journal of Organizational behavior*, 12(2), 123-144. <https://doi.org/10.1002/job.4030120205>
- Makhdoom, I. F., Atta, M., & Malik, N. I. (2019). Counterproductive work behaviors as an outcome of job burnout among high school teachers. *Bulletin of Education and Research*, 41(2), 79-92. <https://eric.ed.gov>
- Martin, M., & McIntyre, L. C. (1994). *Readings in the philosophy of social science*. MIT Press.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, 2(2), 99-113. <https://doi.org/10.1002/job.4030020205>
- McCabe, D. L. (2005). Cheating among college and university students: A north American perspective. *International Journal for Educational Integrity*, 1(1), 1-11. <https://doi.org/10.21913/IJEI.v1i1.14>
- Merrill, C., & Daugherty, J. (2009). *The future of T.E. masters degrees: STEM [Paper presentation]*. International Technology Education Association.
- Minnotte, K. L., & Pedersen, D. E. (2019). Department environment and work-to-life conflict among faculty in the STEM fields. *Journal of Family Issues*, 40(10), 1299-1320. <https://doi.org/10.1177/0192513X19837316>
- Myers, S. B., Sweeney, A. C., Popick, V., Wesley, K., Bordfeld, A., & Fingerhut, R. (2012). Self-care practices and perceived stress levels among psychology graduate students. *Training and Education in Professional Psychology*, 6(1), 55-66. <https://doi.org/10.1037/a0026534>
- National Science Board (U.S.). (2007). *A national action plan for addressing the critical needs of the U.S. science, technology, engineering, and mathematics education system*. National Science Foundation. [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsb07114](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsb07114)
- Nixon, A. E., Mazzola, J. J., Bauer, J., Krueger, J. R., & Spector, P. E. (2011). Can work make you sick? A meta-analysis of the relationships between job stressors and physical symptoms. *Work & Stress*, 25(1), 1-22. <https://doi.org/10.1080/02678373.2011.569175>
- Norvilitis, J. M., Szablicki, P. B., & Wilson, S. D. (2003). Factors influencing levels of credit-card debt in college students. *Journal of Applied Social Psychology*, 33(5), 935-947. <https://doi.org/10.1111/j.1559-1816.2003.tb01932.x>
- Ochi, M., Tominaga, K., Tanaka, F., Tanigawa, T., Shiba, M., Watanabe, T., Fujiwara, Y., Oshitani, N., Higuchi, K., & Arakawa, T. (2008). Effect of chronic stress on gastric emptying and plasma ghrelin levels in rats. *Life Sciences*, 82(15-16), 862-868. <https://doi.org/10.1016/j.lfs.2008.01.020>
- Penney, L. M., & Spector, P. E. (2005). Job stress, incivility, and counterproductive work behavior (CWB): The moderating role of negative affectivity. *Journal of Organizational Behavior*, 26(7), 777-796. <https://doi.org/10.1002/job.336>
- Peters, L. H., & O'Connor, E. J. (1980). Situational constraints and work outcomes: The influences of a frequently overlooked construct. *Academy of Management Review*, 5(3), 391-397. <https://doi.org/10.2307/257114>
- Repak, N. (2006). *Emotional fatigue: Coping with academic pressure*. Grad Resources. <https://gradresources.org/dealing-with-emotional-fatigue/>
- Rosentiel, T. (2006, September 26). *Getting a grad degree in cheating*. Pew Research Center. <https://www.pewresearch.org/2006/09/26/getting-a-grad-degree-in-cheating/>
- Rummell, C. M. (2015). An exploratory study of psychology graduate student workload, health, and program satisfaction. *Professional Psychology: Research and Practice*, 46(6), 391-399. <https://doi.org/10.1037/pro0000056>
- Sadeh, A., Keinan, G., & Daon, K. (2004). Effects of stress on sleep: The moderating role of coping style. *Health Psychology*, 23(5), 542-545. <https://doi.org/10.1037/0278-6133.23.5.542>

**THE PEGASUS REVIEW:**UNIVERSITY OF CENTRAL FLORIDA  
UNDERGRADUATE RESEARCH JOURNAL**14.2:** 55-73

Schulz, P., Kirschbaum, C., Prüssner, J., & Hellhammer, D. (1998). Increased free cortisol secretion after awakening in chronically stressed individuals due to work overload. *Stress Medicine*, 14(2), 91-97. [https://doi.org/10.1002/\(SICI\)1099-1700\(199804\)14:2<91::AID-SMI765>3.0.CO;2-S](https://doi.org/10.1002/(SICI)1099-1700(199804)14:2<91::AID-SMI765>3.0.CO;2-S)

Schwartz, J. E., Pickering, T. G., & Landsbergis, P. A. (1996). Work-related stress and blood pressure: Current theoretical models and considerations from a behavioral medicine perspective. *Journal of Occupational Health Psychology*, 1(3), 287-310. <https://doi.org/10.1037/1076-8998.1.3.287>

Scott, B. A., & Judge, T. A. (2006). Insomnia, emotions, and job satisfaction: A multilevel study. *Journal of Management*, 32(5), 622-645. <https://doi.org/10.1177/0149206306289762>

Selye, H. (1973). The evolution of the stress concept: The originator of the concept traces its development from the discovery in 1936 of the alarm reaction to modern therapeutic applications of syntoxic and catatonic hormones. *American Scientist*, 61(6), 692-699. PMID: 4746051

Shapiro, G. K., & Burchell, B. J. (2012). Measuring financial anxiety. *Journal of Neuroscience, Psychology, and Economics*, 5(2), 92-103. <https://doi.org/10.1037/a0027647>

Sliter, K. A., & Sliter, M. T. (2014). The concise physical activity questionnaire (CPAQ): Its development, validation, and application to firefighter occupational health. *International Journal of Stress Management*, 21(3), 283-305. <https://doi.org/10.1037/a0035638>

Smallwood, S. (2004). *Doctor dropout*. The Chronicle of Higher Education. <https://www.chronicle.com/article/doctor-dropout/>

Sonnentag, S., & Frese, M. (2013). *Stress in organizations*. John Wiley & Sons, Inc..

Sowell, R., Zhang, T., Redd, K., & King, M. (2008). *Ph.D. completion and attrition: Analysis of baseline program data from the Ph.D. completion project*. Council of Graduate Schools.

Sparacino, J. (1982). Blood pressure, stress, and mental health. *Nursing Research*, 31(2), 89-94. <https://doi.org/10.1097/00006199-198203000-00006>

Spector, P. E., & Fox, S. (2002). An emotion-centered model of voluntary work behavior: Some parallels between counterproductive work behavior and organizational citizenship behavior. *Human Resource Management Review*, 12(2), 269-292. [https://doi.org/10.1016/S1053-4822\(02\)00049-9](https://doi.org/10.1016/S1053-4822(02)00049-9)

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology*, 3(4), 356-367. <https://doi.org/10.1037/1076-8998.3.4.356>

Spratlen, L. P. (1995). Interpersonal conflict which includes mistreatment in a university workplace. *Violence and Victims*, 10(4), 285-297. <https://doi.org/10.1891/0886-6708.10.4.285>

Striler, J., Shoss, M., & Jex, S. (2021). The relationship between stressors of temporary work and counterproductive work behaviour. *Stress and Health*, 37(2), 329-340. <https://doi.org/10.1002/smi.2998>

Tan-Wilson, A., & Stamp, N. (2015). College students' views of work-life balance in STEM research careers: Addressing negative preconceptions. *CBE—Life Sciences Education*, 14(3), 1-15. <https://doi.org/10.1187/cbe.14-11-0210>

Vrijlkotte, T. G., Van Doornen, L. J., & De Geus, E. J. (1999). Work stress and metabolic and hemostatic risk factors. *Psychosomatic Medicine*, 61(6), 796-805. <https://doi.org/10.1097/00006842-199911000-00012>

Willyard, C. (2012). Need to heal thyself. *Grad PSYCH*, 10, 28-31. <https://doi.org/10.1037/e740272011-015>

Wyatt, T., & Oswalt, S. B. (2013). Comparing mental health issues among undergraduate and graduate students. *American Journal of Health Education*, 44(2), 96-107. <https://doi.org/10.1080/19325037.2013.764248>

## APPENDIX A: TABLES

**Table 1**

*Classification and Descriptions of Coping Mechanism*

Classification	Coping Mechanism	Description
Problem Focused Coping	Active	Seeking to do something about the situation
	Planning	Creating a strategy for action
	Instrumental Support	Looking for assistance in the tasks
Emotion Focused-Coping	Acceptance	Acknowledging the tasks is what it is
	Emotional Support	Looking for affective support in another person
	Denial	Denying the situation
	Positive Reframing	View challenges in a positive light
At Risk of Dysfunction	Religious	Religiously frame a response to stressors
	Alcohol-Drug Use	Consuming alcohol and other drugs to cope
	Behavioral Disengagement	Reduce behavioral efforts in difficult situations
	Mental Disengagement	Diverging cognitively from the stressor
	Venting	Seeking validation of fears and concerns

**Table 2**

*Sociodemographic Characteristics of Participants at Baseline*

Baseline Characteristics	N	%
Graduate Program		
Master	34	28%
Doctorate	65	54%
Year in Graduate School		
First	27	28%
Second	27	28%
Third	19	20%
Fourth	13	13%
Fifth	11	11%
Gender		
Female	59	63%
Male	35	37%
Taking Care of Children or Elders	14	15%
Race and Ethnicity		
American Indian or Alaskan Native	0	0%
Black/African American	4	4%
Hispanic/Latino	13	13%
Asian/Pacific Islander	7	7%
Caucasian/White	72	69%
Decline to answer	2	2%
Multi-Racial/Mixed	4	4%

*Note.*  $N = 97$ . ( $n = 34$  for STEM,  $n = 35$  for Social Science, and  $n = 26$  for Arts & Humanities). Participants were, on average, 26.1 years old ( $SD = 4.24$ ).

**Table 3.**  
*Measures Detailed Information*

Construct	Scale	Citation	Sample Item	Cronbach's Alpha	N	Scoring
<b>Stressors</b>						
Quantitative Workload	Quantitative Workload Inventory (QWI)	(Spector & Jex, 1998)	"My work leaves me with little time to get things done"	0.734	4	No reverse scoring
Cognitive Demands	Cognitive demand Dimension from Copenhagen Psychological Questionnaire (COPSOQIII)	(Kristensen & Borg, 2003)	"My work requires that I remember a lot of things"	0.726	4	No reverse scoring
Interpersonal Conflict	Interpersonal Conflict at Work Scale (ICAWS)	Adapted (Spector & Jex, 1998) Adapted (Spector & Jex, 1997)	"At the university, people are rude to me"	0.675	4	No reverse scoring
Relationship with Supervisor	Interpersonal Conflict at Work Scale (ICAWS)	(Evans, 2018)	"There is a good atmosphere between my supervisor and me"	0.875	4	All items were reverse scored
Organizational Constraints	Organizational Constraints Scale (OCS)	(Spector & Jex, 1997)	"Lack of equipment or supplies"	0.752	4	No reverse scoring
Work-life Balance Conflict	Checks7 Student Financial Well-Being	(Dex & Bond, 2005) (Norvilitis et al., 2003)	"The demands of my work interfere with my home and family life"	0.88	5	No reverse scoring
Financial Demands	Financial Anxiety Survey (FAS)	(Shapiro & Burchell, 2012)	"I worry about repaying my student loans or credit cards" "Thinking about my finances can make me feel anxious"	0.863	3	No reverse scoring
<b>Coping Mechanism</b>						
Positive Reframing			"I look for something good in what is happening."	0.848	4	
Acceptance			"I accept the reality of the fact that it happened."	0.649	4	
Active			"I concentrate my efforts on doing something about the problem"	0.721	4	
Behavioral Disengagement			"I just give up trying to reach my goal"	0.663	3	
Denial			"I say to myself this isn't real"	0.707	4	
Emotional Support			"I've been getting comfort and understanding from someone"	0.898	4	
Instrumental Support	Cope Inventory	(Carver, 2013)	"I've been getting help and advice from other people"	0.78	4	No reverse scoring
Mental Disengagement			"I sleep more than usual"	0.401	4	
Planning			"I make a plan of action"	0.834	4	
Religion			"I put my trust in God"	0.976	4	
Restrain			"I hold off doing anything about it until the situation permits"	0.523	4	
Suppression			"I put aside other activities in order to concentrate on this"	0.623	3	
Venting			"I get upset and let my emotions out"	0.809	4	
Exercise Habits	Concise Physical Activity Questionnaire (CPAQ)	(Sliter & Sliter, 2014)	"How many days per week did you engage Light aerobic activity (Ex: Shopping, housework, leisurely walking) at least 20 consecutive minutes?"	0.788	4	No reverse scoring
Alcohol Consumption Coping	Drinking Motives Questionnaire		"To forget your worries"	0.908	5	No reverse scoring
<b>Outcomes</b>						
Insomnia		(Jenkins et al., 1988)	"Had trouble falling asleep"	0.788	4	No reverse scoring
Somatic Symptoms	Physical Symptoms Inventory (PSI)	(Spector & Jex, 1998)	"An upset stomach or nausea"	0.856	10	No reverse scoring
Burnout	Work Related Burnout - The Copenhagen Burnout Inventory	(Kristensen et al., 2005)	"I feel worn out at the end of the day"	0.783	4	No reverse scoring



**Table 6.**  
*Correlations for Survey Coping Mechanism and Outcomes*

Variable	M	SD	df	PSI	Insomnia	Burnout
Coping by Group						
Problem-focused	3.657	0.49	95	-0.067	0.064	-0.034
Emotion-focused	3.736	0.58	95	-0.060	0.078	-0.067
Maladaptive	2.462	0.51	95	-.246*	-0.076	.362**
Coping Mechanism						
Positive Reframing	3.93	0.79	95	0.039	0.082	-0.193
Acceptance	3.63	0.69	95	-0.029	0.081	0.129
Active	3.82	0.66	95	0.060	0.033	-0.169
Behavioral Disengagement	1.71	0.61	95	0.003	0.145	.208*
Denial	1.57	0.63	95	-.348**	-0.174	.298**
Emotional Support	3.65	0.95	95	-0.122	0.016	-0.060
Instrumental Support	3.61	0.83	95	-.240*	-0.047	0.041
Mental Disengagement	3.21	0.74	95	-.283**	0.010	.249*
Planning	4.11	0.66	95	0.123	0.065	-0.161
Religion	2.26	1.51	95	.259*	.398**	-0.170
Restrain	3.09	0.62	95	-0.111	0.124	0.017
Suppression	3.65	0.73	95	-0.022	0.078	0.117
Venting	3.08	0.85	95	-.298**	-0.144	.256*
Exercise habits	2.48	0.98	93	-0.008	-0.050	-0.137
Alcohol Consumption Coping	1.84	1.02	95	-0.047	-0.124	.215*

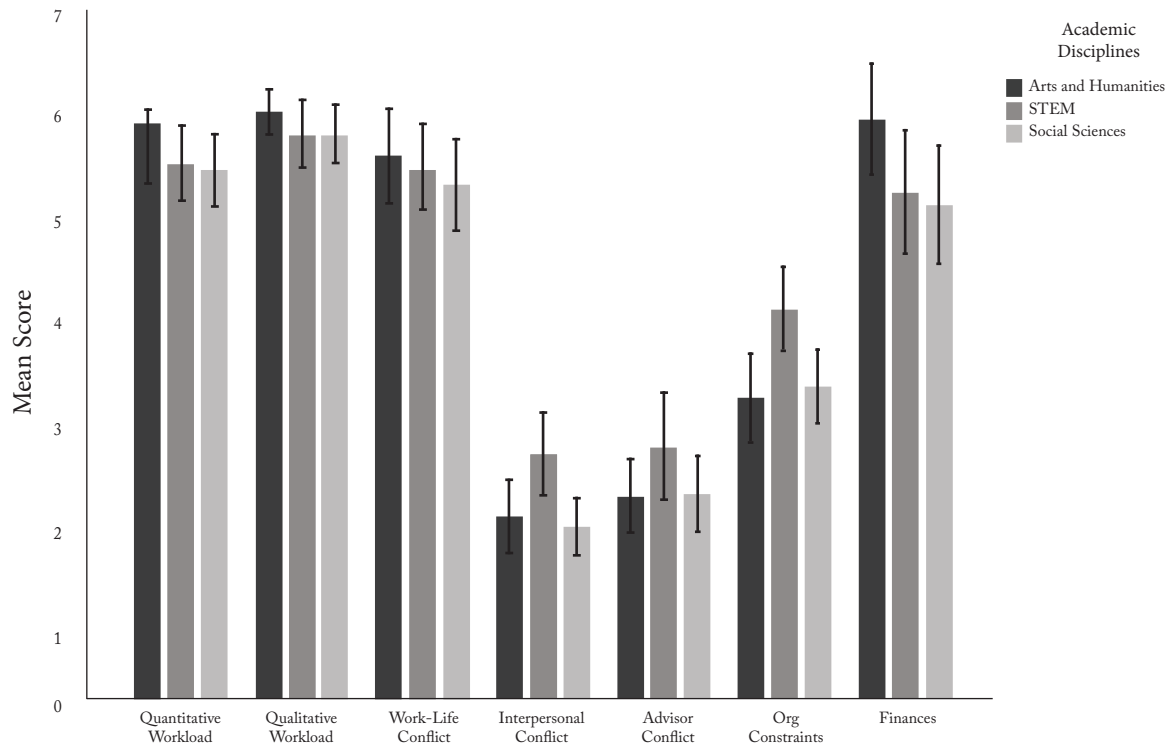
\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## APPENDIX B: FIGURES

**Figure 1.**

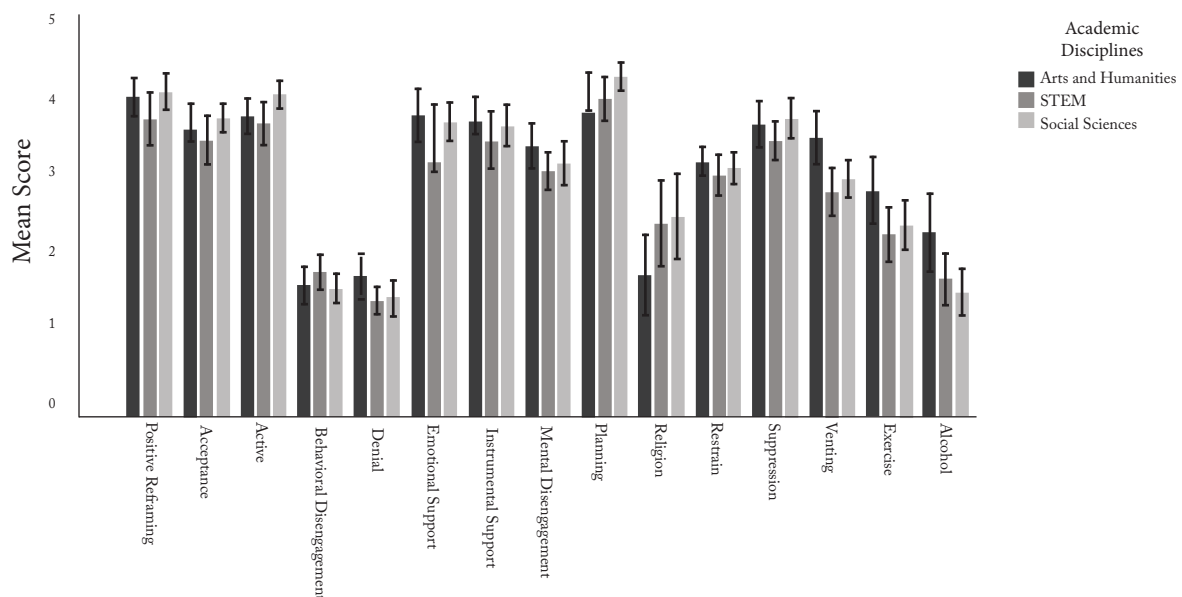
*Mean Score of Stressors*



Note. Error bars represent 95% confidence interval

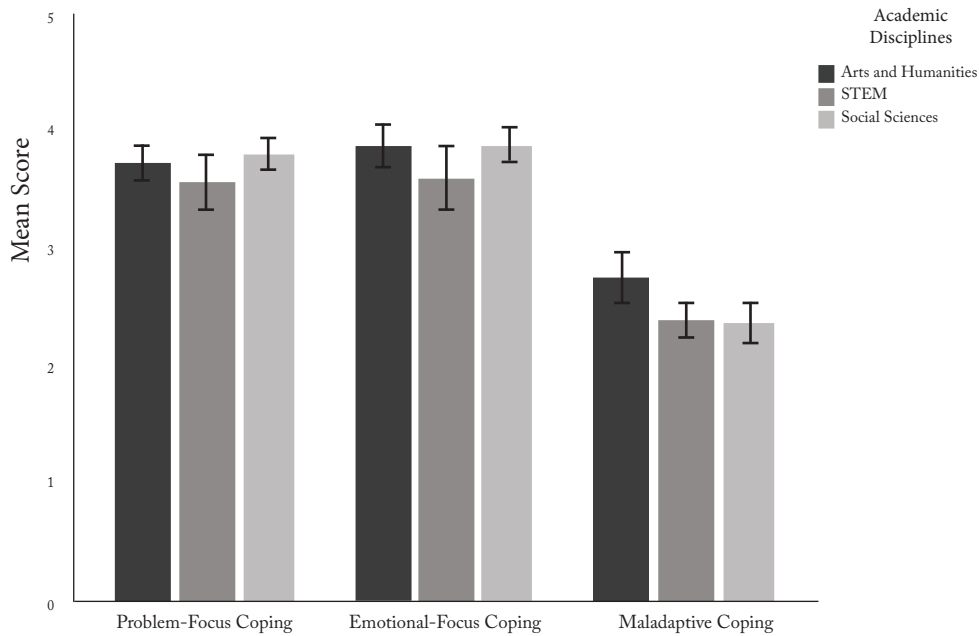
**Figure 2.**

*Mean Score of Coping Mechanisms*



Note. Error bars represent 95% confidence interval

**Figure 3.**  
*Mean Score of Coping Mechanism Groups*



*Note.* Error bars represent 95% confidence interval