Exploring Burnout among Graduate Teaching Assistants

Dr. Michael R. Berta, Embry-Riddle Aeronautical Univ., Daytona Beach

Dr. Berta provides a well rounded perspective to higher education organizations. He holds a BA in Organizational Psychology, MA in eEducation, and Ed.D. in Educational Leadership specializing in curriculum and instruction with specific concentration in distance education quality. An educational leader with 20 years of experience accomplishing strategic goals in higher education through technology, design, education, and innovation. Mike is the Associate Director, Center for Teaching and Learning Excellence working within the College of Engineering at Embry-Riddle Aeronautical University – Daytona Beach Campus.

Dr. James J. Pembridge, Embry-Riddle Aeronautical Univ., Daytona Beach

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Introduction

Burnout is a condition that occurs when individuals are exposed to sustained work-related stress conditions resulting in emotional exhaustion, depersonalization, and decreased efficacy in assignments and tasks [1]. Other research described the condition as psychological or physiological responses to prolonged work stressors [2] including unresolvable stress and difficulty feeling effective or satisfied with self or work [3]. Medical research classifies burnout as part of depression indicating symptoms including exhaustion, decreased focus on personal health habits, reduction in social or interpersonal activities, and work-related withdrawal [3].

Maslach and Jackson [1] originally focused burnout research on human services professionals where employees spent large amounts of time focused on involvement and betterment of people other than themselves as practitioners. It became evident that worker stress was not isolated to the human service professions and research expanded to include exploration of sustained stress of workers across non-human services professions [4, 5]. More recently, burnout research examines the educational environment including student performance [6, 7], and teaching professionals [8]. The research also includes examinations of higher education faculty [2, 9].

Research in burnout, particularly academic and higher education burnout, is without much examination of graduate teaching assistants (GTAs) who occupy both the role of learner and emerging teaching professionals [2] with various responsibilities relating to the education of students other than themselves. However, a comparable perspective to the experience of the GTA is that of the pre-service teacher who participates in a teaching practicum at the elementary or secondary education levels. In their work, Gold [10] indicated that burnout can begin as early as the student teaching experience and carry on through their professional careers. Fives, Hamman, and Olivarez [11] further summarized that research indicating that factors associated with role ambiguity, lack of decision making power, and perceived lack of control contribute to burnout among these pre-service student-teachers.

Contemporarily, higher education news highlights the burnout of graduate students. Wedemeyer-Strombel [12] discussed the personal sacrifice of graduate school in terms of lost relationships citing the immersive, exhaustive, and unyielding demands of graduate student responsibilities. The immersive, demanding, and sacrifice-oriented acculturation of graduate students becomes normalized in higher education because advisors and faculty control much graduate students' professional career through their personal support of graduate student work as has been the pattern throughout the history of graduate studies [13-15]. Advice to graduate students cites the intense rigors of the job and place delayed value on the stress management for some later-career satisfaction and success [15]. Wedemeyer-Strombel [16] explained that graduate school culture should remain rigorous but that the sacrifice, over-reliance, and sometimes abuse of graduate students for indiscriminate and wide-ranging tasks contribute to the stress, burnout, and depression of these students. Socially, doctoral candidates share their own experiences with prolonged stress environments as well. One ongoing conversation takes place on Twitter under the hashtag #phdlife cites numerous doctoral candidates discussing the work challenges, feeling burned out, advocating for self-care, and calling for change. Wedemeyer-Strombel [16]

suggested that continuing the necessary challenge of rigorous graduate studies is not in conflict with enacting support systems to improve the burnout condition of graduate students to enhance their academic and personal accomplishments.

Purpose of the Study

During the Fall 2018 semester, graduate teaching assistants from both engineering and non-engineering divisions of the university participated in a semester-long orientation and support program designed to increase their ability to positively affect student success. The orientation program consisted of a two-day conference focusing on teaching practices, student feedback, inclusiveness, and shared experiences from existing graduate teaching assistants. Following the conference, graduate teaching assistants were encouraged to attend monthly meetings to explore issues they were facing and provide just-in-time support. Graduate Teaching Assistants with class instruction assignments also participated in formative midcourse evaluations of their teaching and consultations with the teaching center at the university. During the monthly meetings, graduate teaching assistants identified that they felt pressured and stressed as part of their manifold roles of student, graduate teaching assistant, researcher, and individual. The university's teaching center developed an internal burnout study in response to their request to inform programming, support, and policy decisions surrounding the university's graduate student population; particularly those with graduate teaching assistantships.

The purpose of this study was to characterize the burnout of engineering graduate teaching assistants during a traditional semester of a 4-year, medium-sized, private institution, with a strong focus on STEM.

Research Questions

To accomplish the purpose of characterizing the burnout of engineering graduate teaching assistants during a traditional semester, this study attempts to answer three research questions.

1. How do engineering graduate teaching assistants experience burnout?
2. What factors relate to burnout in engineering graduate teaching assistants?
3. How do tasks assigned to engineering graduate teaching assistants relate to their burnout experience?

Methodology

This study utilizes an exploratory quantitative methodology to address the research questions. During one of the monthly meetings, graduate teaching assistants from across the university participated in a self-reporting survey that sought to further understand their perceptions of stress and exhaustions shared with the teaching center's professional staff during those meetings.

Data collection

The survey included a total 29 items that identified student demographics, perceived roles and responsibilities, perceptions of priority, time, and stress of specific activities, sense of autonomy, and a burnout questionnaire. The assessment of burnout was conducted using items from the Oldenburg Burnout Inventory (OLBI). The OLBI (Appendix A) contains 16 Likert items that

measures burnout on a scale of exhaustion and disengagement [17]. The instrument includes both positive and negatively worded items and includes questions assessing both cognitive and physical elements of exhaustion [18]. Respondents were able to select Strongly Agree, Agree, Disagree, and Strongly Disagree, with the higher the numerical value indicating a higher level of burnout. While the competing Maslach Burnout Inventory (MBI) is widely used in research, the Oldenburg Burnout Inventory was selected from other instruments because it provided an equally reliable, valid, and openly available inventory to assess burnout [18].

Through the open discussions with the GTAs, it was determined that the roles and related responsibilities varied widely across the institution. There were variances in the types of environments where they taught (lab, classroom) and the responsibilities that they engaged. One survey item requested that participants select "all that apply" to their role. These responsibilities included: Grading assignments, Instructing a class (non-lab), Teaching assistance (in a classroom), Grading quizzes and tests, Teaching assistance (lab), Providing feedback to students, Monitoring safety in a lab, Assisting students in their research, Assisting faculty in their research, Providing lab instruction, Substituting for faculty teaching, Holding office hours, and Teaching assistance (non-lab; non-classroom).

GTAs also indicated during the monthly meetings that there were misalignments in their perceptions of time, priority, and stress across four main areas: family/personal time, health/self-care, GTA responsibilities, personal coursework as a student, and research for their degree. As a result, three questions were included that requested respondents to rank the time, priority, and stress for each of the areas.

The last items of the survey were open response. One of the open response question, "With regard to your job/role as a GTA, describe how you experience autonomy with your various responsibilities" was added to identify if the issues with autonomy, identified in student teachers [11], were also prevalent among the GTAs. The other two questions sought to identify any other factors from their role as a GTA that contribute to their burnout and any other experiences regarding their GTA experience that they would like to share.

Participants

This study was conducted a 4-year, medium-sized, private institution, with a strong focus on STEM. While the undergraduate population is very high, the institution offers several master and doctoral degrees across the university.

Overall, the survey was electronically distributed to 82 GTAs who were participated in the monthly GTA meetings. In total, there were four mixed-population meeting groups of GTAs from 3 colleges; noting that a fourth college does not have GTAs. These included a college of engineering, college of arts and science, and a college of aviation. The survey was initially distributed prior to the third monthly meeting of GTAs that occurred 10 weeks into the term. Only one reminder was sent to non-respondents. 62 GTAs fully completed the survey for a response rate of 83%. Table 1 provides a summary of demographics for all GTA respondents and those specific to engineering.

Table 1. Respondent summary and demographics

	All GTAs	Engineering
Total Participants	68	48 (70%)
First time GTA	37%	33%
Sex		
Female	66%	73%
Male	31%	25%
Race		
White/Caucasian	40%	31%
Asian/Pacific Islander	35%	40%
Black or African American	6%	6%
Hispanic or Latino	13%	15%
Degree		
Masters	56%	58%
Doctoral	44%	42%

Analysis

Prior to the analyses associated with answering the research questions, the reliability and validity of the OLBI was measured to compare to previously reported validations. During this offering of the OLBI, the internal consistency, as measured by the Cronbach alpha score was .845. In other reports of validation, the scores ranged from .74-.87 [18]. A confirmatory factor analysis of the responses in this study, loading onto two principal factors (exhaustion and disengagement) explained 43% of the variance in the model.

The research questions were evaluated using descriptive statistics included the mean and standard deviation for measures of burnout, inclusive of individual measurements of exhaustion and disengagement. Medians were used to summarize responses where item-level Likert responses were analyzed and with respect to the rankings for the time, priority, and stress questions.

Due to limitations in the normality of the data and use of Likert items in the OLBI and rankings in the time, priority, and stress items, the non-parametric Mann-Whitney U test was used to compare samples. A Bonferroni correction was implemented as a result of the repeated measures to compare responses for each of the demographic categories of first time GTA, sex, race,

degree. Therefore, the null hypothesis of the statistical operations was rejected if the p-value was less than 0.0125. An additional effect size was calculated for each of these comparisons.

A linear regression was also used to evaluate which factors related to burnout among the GTAs and to identify which GTA tasks were significantly associated with burnout.

Limitations

While, the OLBI was developed and validated to measure burnout, it requires the respondents to self-report their perceptions of burnout, which may not fully align with clinical diagnoses of burnout at the time of the reporting. This self-reported perception of burnout was conducted at a singular time during the semester and does not indicate if burnout changes throughout the semester nor if the reported level indicates the maximum or minimum levels of burnout GTAs experienced.

Additional limitations in the interpretations of the findings can be attributed to the context of the institution. There is no direct evidence to support that these findings are transferable to other institutions and degree programs. Instead, the demographics of the participants and characteristics of the institution are provided to aid in the transferability of the findings. The context can also introduce variations into the roles and responsibilities of that institution. For this reason this paper analyzes how those roles and responsibilities relate to the construct of burnout.

Results

Engineering GTA levels of burnout

The average total burnout score (standard deviation) across all engineering graduate teaching assistants was 2.15 (.33) with a similar average score of 2.15 (.45) on items associated with exhaustion and 2.16 (.35) for disengagement. In previous studies of human service professionals, an exhaustion score greater than 2.25 and a disengagement score greater 2.10 corresponded to "problematic" burnout and best predicted physician-diagnosed burnout [19, 20]. On average it appears that the sample of engineering GTAs were not experiencing exhaustion associated with burnout, but they were experiencing disengagement. However, an examination of the distribution of scores shows that 67% of the engineering GTAs had an exhaustion scores greater 2.25 with a maximum score of 3.14 and 90% had disengagement scores greater than 2.10 with a maximum score of 3.56.

Overall, GTAs viewed their own research as the highest ranked area stress, requiring the most time, and having the highest priority (Table 2). In comparison, GTA responsibilities were ranked third behind research and their own coursework as an area of stress. Their GTA responsibilities were also ranked second for taking the most time, behind their research, and have an equal priority to their coursework, right behind research.

Table 2. Engineering GTA median rank of priority, time, and stress

	Stress	**Priority**	**Time**
Research	1	2	1
Coursework	2	3	3
GTA Responsibilities	3	3	2
Family / Personal Time	4	4	5
Health / Self-care	5	4	4

In comparison to non-engineering GTAs, engineering GTAs experiences statistically significantly less exhaustion ($p = .008$) and disengagement ($p = .002$) (Table 3). In addition, engineering GTAs placed ranked the stress ($p = .004$), priority ($p=.000$), and time ($p=.004$) that their research takes statistically higher than their peers.

Table 3. Comparison between engineering and non-engineering measures of exhaustion and disengagement.

	Non-Engineering GTA	**Engineering GTA**	*p*	*(d)*
Exhaustion	2.47	2.15	.008	(.745)
Disengagement	2.51	2.15	.002	(.822)

Factors related to burnout

A stepwise linear regression of the demographic factors (including first time GTA, sex, race, and degree being pursued) returned an R-squared less than .1 indicating a poor model using the provided factors. Therefore the measures for exhaustion and disengagement were compared individually across the different factors.

Overall there were no statistically significant differences between the demographic categories for neither exhaustive nor disengagement (Table 4). However, the effect sizes notes medium effect sizes for regarding the experience (d = .651) of the GTA and the sex (d = .536) of the GTA with respect to exhaustion. Within these demographics, respondents indicated that first-year GTA experienced less exhaustion than more experiences GTAs and female GTAs experienced more exhaustion than their male colleagues.

Table 4. Comparison of exhaustion and engagement measures by demographic categories

	Exhaustion		**Disengagement**	
	Mean	*(d)*	*Mean*	*(d)*
Experience				
First Year	1.97	(.651)	2.19	(.148)
Non-First Year	2.24		2.14	
Sex				
Female	2.32	(.536)	2.15	(.028)
Male	2.08		2.16	
Race				
White	2.19	(.128)	2.27	(.471)
Non-White	2.13		2.10	
Degree				
Masters	2.12	(.149)	2.11	(.310)
Doctoral	2.19		2.22	

* indicates p<.0125

An additional comparison across the demographic categories was conducted for the rankings of stress, priority, and time for each of the critical areas identified by the GTAs. The only statistically significant difference was observed between the Masters and Doctoral student with respect to the ranking of time they spent on GTA responsibilities (p=.012). Doctoral students indicated a higher ranking of time required for GTA responsibilities than Masters students.

GTA tasks and burnout

A linear regression analysis was used to test if the tasks assigned to GTAs significantly predicted exhaustion and disengagement scores. The results of the regression utilizing the nine tasks (grading assignments, Instructing a class (non-lab), Teaching assistance (in a classroom), Teaching assistance (lab), Monitoring safety in a lab, Assisting students in their research, Assisting faculty in their research, Providing lab instruction, Holding office hours) for the GTAs as independent variables and exhaustion as the dependent variable returned a

significant regression equation ($F(9,38)=2.55$, $p<.05$), with an $R2$ of .377. Within this model, teaching assistance in a class ($B = .321$, $p < .01$) and teaching assistance in a lab ($B = .404$, $p < .05$) were significant predictors of exhaustions.

Using the 9 tasks as predictors for disengagement did not yield a statistically significant model and therefore the results were not robust to be reported.

Discussion and Recommendations

This study attempts to better understand burnout in engineering GTAs. A gap in the research and literature on this specialized, yet diversely tasked, group of graduate students exists. Burnout literature and research has examined prolonged stress in human service workers, non-human service professionals, students (undergraduate and graduate), and educators determining that individuals suffering burnout demonstrate symptoms of exhaustion; professional and personal disengagement; reduced performance effectiveness; and are at-risk for reduced persistence on tasks and goals [1, 2, 4-9]. This study indicated that engineering GTAs, while less than non-engineering GTAs, are experiencing burnout as it relates to exhaustion (67%) and engagement (90%). A contributing factor for engineering GTA burnout was related to the direct instruction and student feedback tasks. This contributing factor is support by human services burnout research [1] and education-related burnout research related to students, graduate students, teachers, and higher education pre-tenure faculty [2, 6-9, 21-23]. Complicating the condition of burnout is the lack of prioritizing or participating in self-care or social support (Table 2).

Burnout is a condition that shares characteristics with a depression diagnosis including exhaustion, decreased focus on personal health habits, reduction in social or interpersonal activities, and work-related withdrawal [3]. Institutions are increasing their awareness of student mental health including that of burnout among graduate students [2, 21-24]. This study results correspond to the body of literature and indicates a need for further institutional investigation. Institutions of higher education should investigate policies, procedures, and conditions of GTAs and adopt research-based intervention and prevention initiatives to reduce GTA and graduate student burnout [23].

Job Clarity, Supervisory Mentorship, and Representation

Research in graduate student burnout suggests that the lack of role clarity is a contributing factor to burnout [11, 20]. While the results of this study show that no significant relationship exists between number of tasks performed by GTAs and burnout, exploratory discussions with GTAs corresponds to the research on role ambiguity. Evidence-based practice in prevention of burnout suggests that GTA roles should be clearly defined and the weight of varying tasks considered to determine both equity and stressor potential to reduce burnout [11, 20].

Supervising faculty members play a critical role forming the professional careers of GTAs both during their studies and post-graduation [16]. As such, they play a primary role in identifying problematic burnout among GTAs in their charge [21, 23]. Institutions are recommended to implement professional development for faculty who supervise GTAs [21, 23]. Development in the area of identifying signs and symptoms of burnout; connecting students to campus support

services; empathizing with their own experiences and strategies; and managing work demands and deadlines are recommended to manage burnout among engineering GTAs. The opportunity to create a dialogue with GTAs about shared graduate school experiences has an additional benefit of increased mentorship [21, 23].

The condition of engagement was a significant finding in this study. Ninety percent (90%) of engineering GTAs indicated some level of disengagement from their work. Di Pierro [21] discussed the condition of voiceless graduate students as a contributing factor to stress and disengagement among graduate students. During the monthly meetings participants in the study shared feedback that indicated a lack of perceived connection to their work, students, and the institution including policies that prevented them from feeling engaged. These included improved parking access to assist in arriving to GTA work assignments and increased representation of GTAs in student and institutional governance. It is recommended that institutions investigate policies and procedures for potential burnout contribution and seek to increase the representation of GTA feedback in governance and policy making [23].

Well-Being Initiatives and Social Support Networks

Burnout shares numerous symptoms with diagnosed depression [3] and the increased focus on student well-being in higher education [2, 21-24] suggests that institutions engage in proactive initiatives designed to prevent burnout in GTAs. Research from Lipson, et. al. [23] suggests that targeted outreach and well-being programs can reduce burnout among at-risk populations on campus. This study concluded that engineering GTAs reported some feelings of exhaustion (67%) and disengagement (90%) along with and a lack of self-care (rated last or near last in priority and time spent) indicating that this specialized group of graduate students might qualify as an at-risk population. Exploratory discussions with study participants corresponded with these evidence-based practices including suggestions for dedicated areas to take part in self-care.

The data from this study also showed a lack of prioritization and use of support from social networks (Table 2). Institutions might consider the development of social or academic networks for GTAs [23]. These social networks can provide the necessary support and pathways to provide feedback directly to the institution [23] which also has an additional benefit for non-local or international GTAs without a local social system [21]. Again, GTAs shared commentary that disciplinary and graduate student-specific groups carried a perceived benefit for their studies and work.

Conclusion and Future Research

This study attempted to better understand the burnout condition among engineering GTAs at a 4-year, medium-sized, private institution, with a strong focus on STEM. Results of the study demonstrate that the majority of engineering GTAs were experiencing exhaustion and disengagement from their work. A contributing factor to the burnout was the emotional labor of direct instruction and providing feedback to students while no clear complicating factor or number of tasks was indicated. The participants in this study prioritized their GTA responsibilities, research, and studies above their own self-care and social support lending itself to continued feelings of burnout. Several recommendations were derived from the results of the

study and evidence-based practice. These include job clarity; professional development for supervising faculty; mental wellness outreach and programming; development of mentorship and support networks; and investigation into institutional policies potentially adding to feelings of burnout.

Future research into engineering GTA burnout is recommended. Additional studies surrounding conditional factors in GTA burnout is encouraged. More research also might include the historical context and normalization of burnout in engineering graduate studies and assistantships. Finally, a larger, multi-institutional, examination of engineering GTA burnout is strongly recommended to more completely understand and examine potential improvements to engineering graduate programs resulting in reduced burnout and improved accomplishment.

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Appendix A: The Oldenburg Burnout Inventory (OLBI)

1. I always find new and interesting aspects in my work. [R]
2. There are days when I feel tired before I arrive at work.
3. It happens more and more often that I talk about my work in a negative way.
4. After work, I tend to need more time than in the past in order to relax and feel better.
5. I can tolerate the pressure of my work very well. [R]
6. Lately, I tend to think less at work and do my job almost mechanically.
7. I find my work to be a positive challenge. [R]
8. During my work, I often feel emotionally drained.
9. Over time, one can become disconnected from this type of work.
10. After working, I have enough energy for my leisure activities. [R]
11. Sometimes I feel sickened by my work tasks.
12. After my work, I usually feel worn out and weary.
13. This is the only type of work that I can imagine myself doing. [R]
14. Usually, I can manage the amount of my work well. [R]
15. I feel more and more engaged in my work. [R]
16. When I work, I usually feel energized. [R]