

THE ASSOCIATION BETWEEN MATTERING AND MENTAL HEALTH IN
GRADUATE STUDENTS AND FACULTY

by

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The Association Between Mattering and Mental Health in Graduate Students and Faculty

Introduction

Mattering, the perception that one is recognized, cared for, and valued by other people and/or society, is important to one's well-being (Flett, 2021; Rosenberg & McCullough, 1981). For instance, a high sense of mattering is related to positive outcomes, such as having a healthy self-concept, experiencing greater life satisfaction, and being more involved in life and at work (Connolly & Myers, 2003; Pearlin & LeBlanc, 2001).

Alternatively, a low sense of mattering is associated with increased stress, depression, and burnout (Flett et al., 2016; Lenz et al., 2018; Rosenberg & McCullough). Although some research has found a link between mattering and undergraduate students' well-being at school (e.g., Dixon & Kurpius, 2008; Rayle & Chung, 2007), there has been little research on a sense of mattering in graduate students and faculty. There are thus two aims of the current research. First, to the extent that a sense of mattering is associated with mental health-benefiting outcomes (e.g., Flett, 2018a; Flett, 2018b), the current studies explored the associative link among mattering, school/job satisfaction, stress, burnout, depression, and frustration in graduate students (Study 1) and faculty (Study 2). It was hypothesized, in both samples, that a higher sense of mattering would be associated with greater psychological well-being.

Second, research has found demographic disparities on mattering. According to Lombard and Cheryan (2024), a reduced sense of mattering is especially likely to be found in male dominated fields, such as STEM-related (i.e., Science, Technology, Engineering, & Math) professions, as women are often overlooked for their work contributions. One study

has examined gender and career differences in mattering among undergraduate students (Lombard & Cheryan), showing that women felt that they mattered less in their computer science courses as compared to men. Thus, the second aim of the proposed studies was to explore gender disparities in mattering in STEM (vs. non-STEM professions) for both graduate students and faculty. To the extent that women are undervalued in STEM-related fields (e.g., Cribbs et al., 2015), it was hypothesized that women, who are majoring (Study 1) or working (Study 2) in STEM departments on campus (classified by college), would have lower well-being as compared to their non-STEM counterparts, regardless of gender. The well-being of women in STEM should also be lower than men in STEM-related majors and professions.

A Sense of Mattering

The concept of mattering was initially introduced by Rosenberg and McCullough (1981). They argued that a sense of mattering is the subjective perception of feeling important to others and/or society. To matter, an individual should feel valued, significant, important, visible, and heard (Flett et al., 2021). A low sense of mattering, in turn, is associated with feeling non-valued, insignificant, unimportant, invisible, and unheard (Flett et al.). Some have argued that a sense of mattering is central to the human condition in that reduced mattering can negatively impact people's meaning and significance (Crooks et al., 2007), their belongingness needs (Cole et al., 2020), and feeling socially accepted (Elliot, 2009; Schlossberg, 1989). Not only does a high sense of mattering help to provide meaning when faced with challenges, but it can also help to reduce daily life stressors (Deforge et al., 2008; Ueno, 2010).

Mattering is a distinct psychological construct from other well-known topics (e.g., Elliott et al., 2004). For instance, belongingness is the extent to which someone fits in with their environment (Hagerty et al., 1992), including positive attachments, or relationships, with others (Baumeister & Leary, 1995; Brown, 2015; Maslow, 1970). Mattering is similar to belonging as they both involve feeling socially connected. Whereas belonging focuses on an individual's position within a group, mattering is a person's interpretation of others' attitudes and behavior toward them (e.g., feeling valued, recognized; Brown; Hagerty et al.). Someone, for example, may take the lead on a group project in class, earning everyone an 'A' grade. She may, however, fit in poorly with the group (i.e., high mattering, low belonging). Alternatively, an athlete may be well-liked by his teammates, but he rarely gets recognition for his athletic skills (i.e., low mattering, high belonging). Empirical work has demonstrated that mattering and social connectedness are distinct psychological constructs, with moderate correlations between the two (Good et al., 2012).

Additionally, someone may feel interpersonally and existentially important if they matter (Costin, & Vignoles, 2020; Flett, 2021; George & Park, 2014; Marshall, 2001; Rosenberg & McCullough, 1981). Rosenberg and McCullough defined interpersonal mattering as the perception that other people are interested in us, depend on us, or consider us personally significant (also see e.g., Elliott et al., 2004; Rosenberg, 1985). This type of mattering usually involves friends, families, and significant others. Existential mattering, in turn, is the extent to which people feel that their lives are significant and are of value.¹ These

¹ A construct related to mattering and existential mattering is meaning in life (MIL). Specifically, a large literature suggests that MIL is comprised of feeling significant (i.e., mattering), having sense of the world (i.e., coherence), and orientating oneself toward one's goals (i.e., purpose; (Battista & Almond, 1973; Kenyon, 2000; Klinger, 1977). Although mattering is one component of MIL, the two constructs are often assessed separately using different scales of measurement (Steger et al., 2006; Flett, 2021; Rosenberg & McCullough, 1981).

types of mattering are distinct from a sense of mattering in academic and professional contexts. For example, an individual can feel as though she matters greatly to her friends and family (i.e., being socially significant; Rosenberg & McCullough), or that she has a broader existential purpose (George & Park) but does not feel valued and recognized for her work efforts. This type of societal mattering, according to Rosenberg and McCullough, is when a person feels that they are making a difference in broader social organizations, or that their actions have an impact. This includes mattering in organizations such as within teams, at school, or at work (Jung & Heppner, 2015; Reece et al., 2021) – the focus of the current research.

Empirical Support for Mattering on Mental Health and Well-being Outcomes

Empirically, research has found that a high sense of mattering is positively related to emotional and psychological health (e.g., Elliot et al., 2004; Flett, 2021; Rosenberg & McCullough, 1981). For instance, DeForge and colleagues (2008) conducted a study on depressive symptoms in adults in homeless shelters. The researchers found that people who reported the highest levels of depression were the ones who reported the lowest levels of mattering by others around them. Mattering is also related to higher self-esteem (Marshall, 2001), life satisfaction (Lenz et al., 2018), meaning in life (Jung & Heppner, 2017), and happiness (Demir & Davidson, 2013) and lower loneliness (Flett et al., 2016) and suicide ideation (Elliott et al., 2005). Lewis and Taylor (2009), for example, showed that participants, regardless of their religious affiliation, had improved psychological well-being to the extent that they felt supported by their community and that they mattered. Multiple

Research also demonstrates a moderate correlation between mattering and MIL, and mattering has been found to be a precursor to MIL longitudinally (Costin & Vignoles, 2020; George & Park, 2014). Although it is beyond the scope of the current paper, see Costin and Vignoles (2020) and George and Park (2014) for a more thorough discussion on the overlap between MIL, mattering, and existential concerns.

studies have replicated the associative link between mattering and psychological health, demonstrating that a reduced sense of mattering is related to greater feelings of distress, worthlessness, felt insecurity, and a lack of hope (Flett et al., 2021; Heath et al., 2015; Liu et al., 2023).

Mattering has also been studied in work domains including career development (Amundson, 1993), counseling professions (Corbière & Amundson, 2007; Dixon Rayle, 2005), and universities (e.g., France & Finney, 2010; Ost, 2021; Schlossberg et al, 1989). This research has almost exclusively focused on interpersonal mattering while largely ignoring societal mattering (Jung, 2015). In response, a handful of researchers have created scales to specifically explore mattering at work (i.e., the Work Mattering Scale [WMS]; Jung & Heppner, 2017), or within an organization (i.e., the Organizational Mattering Scale [OMS]; Reece et al., 2021). Jung and Heppner, for example, found that work mattering was positively correlated with job satisfaction, work meaning, organizational commitment, life satisfaction, and positive affect. It was negatively correlated with people's intentions to quit. Among nurses, a higher sense of mattering is associated with greater work engagement and lower burnout (Epstein et al., 2020; Mohamed et al., 2022). Finally, when employees have a higher sense of mattering as their work and contributions are recognized in their organization, they experience more job and life satisfaction, a greater willingness to take leadership roles, they demonstrate increased productivity, and are more likely to be promoted (Reece et al.). Low organizational mattering is related to higher levels of anxiety, depression, and withdrawal (Reece et al.). These collective results have been demonstrated using meta-analytic procedures (Kurtessis et al., 2017).

The present research is interested in examining (in part) mattering in college and university students. Why is this an important area of study? First, according to recent statistics, approximately 26% of undergraduate students (i.e., 1 in 4) are at risk for leaving their college or university, either by choice or through dismissal (Mae, 2024). There are 40 million students in the United States who began schooling but are now currently unenrolled (National Student Clearinghouse Research Center, 2022). Students are likely to leave their programs due to financial concerns, emotional stress, and/or mental health problems (Mowreader, n.d.). First-generation college students are also more likely to consider leaving at some point, as are low-income students and minorities, who may need to juggle multiple work and family obligations (Marken, 2024). Identifying and understanding factors that can help improve student retention is of importance. Second, at present, college students in the United States are experiencing mental health concerns at an all-time high. The American College Health Association (2022) found that 77% of college/university students reported moderate to severe instances of psychological distress in 2022, and the Healthy Minds Study (2023) showed that 60% of surveyed participants (i.e., 96,000 U.S. students across 133 campuses) met criteria for at least one mental health diagnosis. Researchers reported that 44% of students had symptoms of depression, 37% experienced anxiety disorders, and 15% of students reported suicide ideation in the past year – the highest recorded rate in the 15-year history of the survey. Alarming, the increase in mental health difficulties in college students has increased by nearly 50% between 2013 and 2023.

To the extent that college students' dropout rate and increasing mental health risks are remarkable, it is important to study factors that may influence and help with enhancing retention and better mental health. Mattering is one of the factors that plays a crucial role in

promoting students' psychological health and school persistence. Students have a higher sense of mattering when their university (i.e., faculty, staff, students) is aware of and support their needs (e.g., Ost, 2021). Several studies have shown that mattering is positively related to university life and degree seeking outcomes. For instance, in a study of 533 first-year college students, a high sense of mattering was associated with reduced stress in relation to class deadlines and study load, a greater ability to finish assignments, and better communication with faculty (Rayle & Chung, 2007). Sclossberg (1989) found that reduced university mattering in college students was related to poorer academic performance, greater stress, and a lower motivation to learn. Following these results, France and Finney (2010) conducted a study among college students. The researchers demonstrated that a higher sense of mattering predicted improved self-efficacy, stronger learning attitudes, more willingness to seek help, and lower stress scores. A high sense of mattering is also associated with greater self-esteem and lower depression in university samples (Dixon & Kurpius, 2008). These findings were mediated by stress in that the reduced stress associated with high self-esteem predicted lower depression scores. In sum, students' sense of mattering is closely related to their academic performance and mental health.

Overall, having defined what mattering is, discussing its convergent and divergent validity with other psychological constructs (i.e., belonging, interpersonal mattering, existential mattering), and reviewing its relationship with psychological health and well-being, the purpose of the following sections is to review literature on mattering in graduate student and faculty samples. It should be noted, however, that limited research has explored mattering in university-related populations as this work is still developing (i.e., interpersonal vs. societal mattering). Of the research that has been conducted, most studies have focused

on undergraduate students, including first-year college students (Gomez, 2009; Isaacson, 2008; Rayle & Chung, 2007), upper-class college students (France & Finney, 2010; Klug, 2008; Sumner, 2012), community college students (Tovar et al., 2009), African American students (Cuyjet, 1998), transfer students (Gomez, 2009; Kodama, 2002), and non-traditional adult students (Schlossberg et al., 1989). Little research has been done in graduate students samples, who are also vulnerable to high dropout rates and mental health problems (Wao, 2010; Bekkouche et al., 2021).

Mattering in Graduate Students and Well-being

Although graduate dropout rates vary by degree program, the national average in the U.S. is about 50% (Chrzanowski & Poudyal, 2018). This number can vary by the type of degree sought as 26% of students enrolled in master's degree programs fail to finish their degrees while 40-60% of Ph.D. degree seeking students do not graduate (Hackett, 2017; Wao, 2010). Additionally, according to statistics provided by the Council of Graduate Schools (n.d.), 10% of graduate students who are pursuing STEM-related degrees leave their programs after 6 months, 17% after 1 year, and 23% after 2 years. Reasons for a lack of degree completion in graduate students include finances/funding, time, department culture (e.g., politics), inadequate advising/mentoring, research and writing ability, and quality of life concerns (Carter, n.d.). Graduate students are also a university population susceptible to mental health risks such as distress, depression, anxiety, and burnout at a high rate (UC Berkeley Graduate Assembly, 2014; Brooks et al., 2017). It is estimated that between 13%-47% of graduate students experience these problems in their programs, which is almost 2-6 times higher than the general population (Bekkouche et al., 2021; Evans et al., 2018). As mattering has been found to be important in the mental health of undergraduate students

(France & Finney, 2010; Rayle & Chung, 2007; Sclossberg, 1989), it could be that a lack of mattering in graduate students is detrimental to their psychological health and well-being.

Research has been limited on graduate students' mattering.

It is inappropriate to generalize findings on mattering and well-being outcomes from undergraduate to graduate populations because graduate students are different from undergraduates in several ways. To begin, the demographic profile of graduate students has changed significantly over time. Offerman (2011), for instance, showed that before 1960, graduate students were predominantly male, White, in their 20s, non-married, and without children – similar to undergraduate student samples at the time. More recently, graduate students are characterized as being more ethnically diverse, older, married, have children, and often work inside (or outside) of their university while studying (Offerman). Graduate students also have less available free time to interact with faculty and staff on campus, are less involved with on-campus services and activities, and experience greater challenges in trying to balance school, work, family, and financial responsibilities, which may all contribute to their level of mattering (Ost, 2021).

Additionally, there is a difference in the learning environment for both groups. Whereas undergraduates are traditionally taught in large lecture halls, with 70 or more students, graduate student education occurs in much smaller settings with one-on-one mentoring with advisors (Ost, 2021). White and Nonnamaker (2009), for instance, examined doctoral students' sense of mattering longitudinally, demonstrating that there are five different facets, extending from narrow and most important (i.e., advisor) to broad and least important (i.e., field): (a) advisors, (b) lab, (c) department, (d) institution, and (e) professional field. If doctoral students feel as though they matter to their advisors, and have supportive

relationships with them, students are more likely to succeed and report higher well-being (White & Nonnamaker). Returning to the topic of societal mattering within universities, most doctoral students work at their institutions as either research (RA) or teaching assistants (TA). This may change faculty and administrative perspectives of them from being students to that of colleagues and/or independent researchers (Gardner, 2009). The extent to which graduate students feel that their professional work is recognized by their university may have a significant effect on their schooling experience.

Empirically, studies have explored the associative link between mattering and well-being outcomes in general graduate student samples. For example, D'Angelo (2010) found that faculty and administrators' willingness and availability to help graduate students were positively related to mattering. Examined further, full-time (vs. part-time) enrollment, doctoral (vs. master's) degree seeking programs, and female (vs. male) students reported higher mattering scores. The type of program matters, too, as graduate students report higher mattering scores when enrolled in the College of Education as compared to Business and Engineering schools (D'Angelo). Similar results have been found for the College of Liberal Arts versus the College of Science (Schneider, 2015). Other work has demonstrated that higher (vs. lower) mattering is associated with a greater program completion, program satisfaction, and less exhaustion, frustration, and burnout (Ost, 2021). Satisfaction was shown to mediate the link between mattering and dropping out in that a greater sense of mattering was related to higher program satisfaction. The extent to which graduate students were satisfied with their program, in turn, predicted a lower willingness to transfer institutions or dropout.

Although some research has studied the relationship between graduate students' mattering and well-being, this work is limited because of its emphasis on interpersonal mattering (i.e., social relationships with peers and/or advisors; e.g., D'Angelo, 2010; Ost, 2021; White & Nonnamaker, 2009). Bridging this gap, Hurley (2023) conducted a study examining graduate students' intentions to finish their degrees based on university (i.e., societal) mattering (e.g., achievement, recognition). Three-hundred and forty-one students completed the study with results showing that higher social (vs. societal) mattering was associated with increased program retention among graduate students (also see Ost, 2021; White & Nonnamaker, 2009, for similar findings). Qualitatively, studies have found similar results regarding doctoral students' persistence and degree completion (e.g., Peltonen et al., 2017; Spaulding & Rockinson-Szapkiw, 2012). Peltonen and colleagues, for example, demonstrated that dropout intentions declined when graduate students felt socially supported by their campus community. In turn, Spaulding and Rockinson-Szapkiw showed that the social/personal match between students and their academic community was associated with higher degree persistence.

In summary, research has found that mattering is negatively correlated with aversive psychological states (e.g., exhaustion, burnout; Ost, 2021; Rayle & Chung, 2007) and academic discontinuation (D'Angelo, 2010; Schneider, 2015). These results, however, are predominantly found in undergraduate students samples and limited research has been conducted among graduate students. Study 1 of the current research remedied this gap by examining graduate students' mattering to the university and its relation to mental health, well-being, and program persistency. Since graduate student's mattering may be related to their mental health, program satisfaction, and attrition, enhancing their mattering may have

implications for improving well-being, academic performance and productivity, and program retention.

Mattering in Faculty and Well-being Outcomes

College faculty are important to the experience and success of students on campus. For instance, research has found that faculty contribute significantly to students' sense of mattering, their academic success, and well-being (e.g., Ost, 2021; Schneider, 2015; White & Nonnamaker, 2009). Although yet to be empirically examined, there is tangential support that faculty are another group of individuals who are emotionally and psychologically vulnerable due to deficits in mattering. For example, from systematic reviews, about 20% professors experienced psychological stress, emotional fatigue, frustration, a lack of motivation, being unfulfilled, depression, anxiety, and even suicidal ideation caused by overload working, multi-tasking, demanding competition and evaluation, and lack of recognition (Johnson & Lester, 2022; Lashuel, 2020; Smith et al., 2022). A lack of recognition may be an indicator of low mattering since mattering involves feeling valued and recognized by others and organizations (Rosenberg & McCullough 1981; Reece et al., 2021).

Although research on faculty mattering is limited, studies on organizational mattering have demonstrated that employees have a need to feel valued and recognized by their coworkers and supervisors (García-Herrero et al., 2017; Reece et al.). Detriments in mattering among work employees are related to increased feelings of depression, anxiety, and a higher likelihood of quitting (Chapman & White, 2019; Epstein et al., 2020; Jung & Heppner, 2017; Salama et al., 2022). An increased sense of mattering in employees is associated with higher job satisfaction and a greater willingness to take leadership roles with more responsibilities (Reece et al.). Applied to college faculty, the lack of mattering may be

associated with various mental health issues such as frustration, depression, and burnout. The well-being stemming from a sense of mattering could carryover to job satisfaction and stress, with implications for the quality of professors' teaching/advising, their relationships with students, and their contributions to the university.

Research in K-12 schools provides a foundation to the mattering of educators. In a qualitative study of school counselors, Curry and Bickmore (2012) found that counselors' mattering was dependent upon administrative support and their connection with students. Wilfong (2021), in a different study, demonstrated that K-12 classroom teachers expressed a greater desire for interpersonal (e.g., having relationships with other people in the school community), intrapersonal (e.g., a sense of teaching purpose), and external (e.g., salary, job stability) mattering. Among educators in Physics, they expressed a higher degree of mattering to the extent that they meant more to their colleagues rather than their discipline (Richards et al., 2018). These findings are similar to the results of mattering research in graduate students (e.g., White & Nonnamaker, 2009).

Understanding the associative link between faculty mattering and well-being may be informed by research on job satisfaction on college campuses. Factors related to increased job satisfaction in faculty include the university atmosphere, school management, and salaries (Byrne et al., 2012; Duong, 2016; Ong et al., 2020). Interpersonally, faculty value their relationships with colleagues, their departmental chairs, and students (Byrne et al.; Duong; Ong et al.). These findings are similar to results on K-12 mattering in educators (i.e., interacting with students & administrators; Curry & Bickmore, 2012; Wilfong, 2021), suggesting that mattering and job satisfaction are closely related to each other. Faculty also report greater job satisfaction to the extent that they enjoy academia in and of itself, such as

supervising, teaching, interacting with students, conducting research, and writing publications (Da Wan et al., 2015). Finally, the high societal reputation of professors is a major source of job satisfaction (Shin & Jung, 2014), which may additionally be related to societal mattering.

Conversely, dissatisfaction and/or a lack of mattering may be related to greater burnout, stress, and reduced job satisfaction in faculty. In a study of 1,920 professors, Gmelch and colleagues (1986) showed that higher stress scores were related to a need to be recognized, time constraints, departmental influence, professional identity, and student interactions, with a need for recognition accounting for the highest proportion of variance in stress scores (i.e., 55%). A need for recognition is almost analogous to a sense of mattering. Additionally, in a survey of 224 nursing faculty, it was found that a higher sense of college mattering was related to lower levels of depression, anxiety, and burnout (Melnyk et al., 2023). Other common sources of stress in faculty include anxiety from and the need to balance between research (e.g., publications & grants; Bird, 2006; Glick et al., 2007), teaching, and administrative responsibilities (Xu & Wang, 2023). Lower mattering and well-being may stem from the stress and exhaustion of needing to work across several different domains (i.e., teaching, research, & service), experiencing challenging student interactions, and having to juggle various responsibilities with limited time (Bird; Glick et al.; Xu & Wang). Given that mattering is an important construct in understanding faculty persons job satisfaction, stress, burnout, and overall university success, Study 2 tested the relationship between such constructs in professors on campus.

Demographic Disparities and Mattering

Although the basic goal of the current research is to examine mattering and psychological well-being in two understudied populations (i.e., graduate students & faculty, respectively), an additional aim is to explore moderators of this relationship. Specifically, mattering can vary as a function of gender and major. Lombard and Cheryan (2024), for instance, have argued that mattering may be an especially important study topic in fields where women, as compared to men, are under-represented in professions, such as science, technology, engineering, and math (i.e., STEM). In fact, women only comprise 20% of persons who hold computer science and engineering degrees, with this number remaining constant for the past 20 years (National Academies of Sciences, Engineering, & Medicine, 2020). Even in fields where the number of women outweigh men, such as in Biology (i.e., 64% of bachelor's degrees belong to women; National Center for Science & Engineering Statistics, 2023), women are still underrated in undergraduate biology classes by men (Grunspan et al., 2016). In professional work settings, women often encounter cues that their contributions are not as valuable as men, including a lack of acknowledgement for their work (Bloodhart et al., 2020; Heilman & Haynes, 2005), being disregarded as a team member (Charleston et al., 2014; Thomas et al., 2018), and being disrupted when they speak (Blair-Loy et al., 2017; Muragishi et al., 2023). These occurrences may result in a lower sense of mattering in women (Lombard & Cheryan, 2024).

Further, there is research demonstrating that women are recognized and valued less at work as compared to men (Davison & Burke, 2000; Haveman & Beresford, 2012; Perras, 2019). This includes a significant pay gap (Perras), having fewer leadership and managerial roles within organizations (Haveman & Beresford), and being perceived as producing lower

quality work (Davison & Burke). Within STEM professions, women engineers and computer scientists, especially Black women, are more likely to be excluded from team projects because they are believed to be less capable (Charleston et al., 2014). Even after demonstrating their competency, women still face low expectations for their contributions from others (Thomas et al., 2018). In education settings, when asked which classmates are the most knowledgeable and successful in science classes, women are identified less than men (Bloodhart et al., 2020). Sarsons and colleagues (2021; also see Sarsons, 2017) conducted a series of studies to explore the tenure and promotion decisions of academic economists based on gender. Utilizing curriculum vitae (CV) and citation index data as an indicator of productivity, they found women, who are denied tenure, produce more single author publications in higher-ranking journals as compared to men, who were also denied tenure. Sarsons et al. also demonstrated that men and women have similar tenure rates the more they publish single author papers (where it is easier to discern author contributions). On co-authored publications, however, men had a 7.4% increase in the likelihood of receiving tenure while women only had a 4.7% increase.

These gender disparities can contribute to a lower sense of mattering in women and a reduced likelihood of pursuing careers in STEM-related fields. For example, when controlling students' self-reported competence, individuals, regardless of gender, are more likely to persevere with math the more others recognize them (Cribbs et al., 2015). This is consistent with research on mattering which demonstrates that low (vs. high) levels of mattering are associated with an increased likelihood of dropping out of school (e.g., Flett et al., 2022; Rosenberg & McCullough, 1981). Of interest, only one study has explored the relationship between mattering and degree intentions between men and women in STEM-

related fields (Lombard & Cheryan, 2024). In this work, undergraduate students were asked to indicate their level of mattering in computer science (e.g., “How much would you feel valued by others in the field?”), their interest in computer science (e.g., “How likely are you to take computer science courses in the future?”), their anticipated success (e.g., “How successful do you think you would be/are at computer science”), and stereotype threat concerns (e.g., “How anxious would you be about confirming a negative stereotype about your gender in computer science?”). Although the results have yet to be fully analyzed (for pre-registered study and preliminary findings see:

https://osf.io/sz4qn/?view_only=97a66633ba1745918afd9269022210a3), results showed that women’s sense of mattering was lower than men’s for students in computer science classes. These findings provide some support that well-being scores as a function of mattering should be examined based on gender and area focus (e.g., STEM vs. non-STEM).

The Current Research

Prior research has demonstrated that a high sense of mattering, at least in interpersonal domains (i.e., friends, family, peers), is associated with positive mental health outcomes, including reduced frustration and burnout, as well as higher school satisfaction and increased college retention rates (France & Finney, 2010; Ost, 2021; Rayle & Chung, 2007). This work has focused primarily on undergraduate student populations while largely ignoring graduate student samples (Gomez, 2008; Isaacson, 2008; Kodama, 2002; Schlossberg et al., 1989; Sumner, 2012). Of the research that has been done, results have shown that the extent to which graduate students feel that they matter to their university, the greater likelihood that they remain enrolled and complete their degrees (Hurley, 2023; see also Ost, 2021; White & Nonnamaker, 2009). A similar pattern of results has emerged with

qualitative assessments of graduate student mattering (Peltonen et al., 2017; Spaulding & Rockinson-Szapkiw, 2012). What remains to be seen, however, is the associative link between mattering in graduate students and their psychological well-being and program retention. Thus, Study 1 examined whether graduate students who score high (vs. low) on university mattering report lower feelings of stress, frustration, burnout, depression, and higher levels of school satisfaction. These outcome variables were selected to be consistent with past research on mattering, in general (Flett et al., 2018a; Flett et al., 2018b), and university mattering, specifically (Dixon & Kurpius, 2008; Rayle & Chung; Ost).

Additionally, although there has been some research on mattering in graduate students, no work has explored mattering in university faculty as a whole. There is some evidence to suggest that higher job satisfaction is related to faculty persons' enjoyment of their academic environment (e.g., teaching, research, student interactions; Curry & Bickmore, 2012, Da Wan et al., 2015; Wilfong, 2021). Gmelch and colleagues (1986) also found that increased stress scores in faculty were related to a need for recognition, feeling pressed for time, departmental factors, a lack of professional identity, and negative student interactions. Although prior research did not explore attitudes toward university mattering per se, studies do suggest that faculty have a need to feel valued by their school environment, with implications for improved emotional and psychological health. For instance, the extent to which nursing faculty matter to their college/university is associated with lower anxiety, depression, and stress (Melnyk et al., 2023). Study 2 sought to extend the findings from the first experiment among graduate students to that of faculty. It was hypothesized that faculty, who report higher mattering, would indicate better mental health (i.e., lower stress, burnout, frustration, depression, & higher job satisfaction).

Finally, research is just starting to identify variables that moderate the relationship between mattering and well-being outcomes in university settings. For example, studies have shown gender differences to where women's contributions at work are less valued than that of men (Davison & Burke, 2000; Haveman & Beresford, 2012; Perras, 2019). This gender disparity is especially likely to occur in male dominated fields such as STEM (Bloodhart et al., 2020; Charleston et al., 2014; Thomas et al., 2018). Integrating these lines of work, Lombard and Cheryan (2024) found that women reported lower mattering scores as compared to men in relation computer science courses. This study was conducted among undergraduate students only while ignoring other university populations (i.e., graduate students, faculty). The final aim of the current work was to explore differences in gender and area focus (both Studies 1 & 2) on mattering and well-being. Specifically, two-way between-subjects analysis of variance (ANOVA) tests examined whether gender (men vs. women) by STEM-focus (STEM vs. non-STEM) interacted to influence mattering scores, with the hypothesis that women, both graduate students and faculty, in STEM fields would report a reduced sense of mattering as compared to men, regardless of STEM-focus. Additionally, first-stage moderated-mediation analyses explored whether lower mattering scores as a function of gender (i.e., women) and area focus (i.e., STEM) were associated with reduced psychological mental health outcomes (i.e., stress, burnout, frustration, depression, & job satisfaction).

Study 1

Research suggests that 50% of students pursuing a doctorate degree will drop out or fail (Wao, 2010). Some studies suggest that, for undergraduates, university retention is associated with better high school GPAs, ACT or SAT scores, and demographic

characteristics (i.e., gender, socioeconomic status [SES], first-generation status; Reason, 2003). Similar predictors have not been found for graduate students due to differences between the two samples (Wao). Graduate students, for instance, are often older ($M_{\text{age}} = 33.3$ years) and married, work full-time, and experience more financial burdens (Offerman, 2011). They are also less able to communicate well with faculty and peers due to limited availability between work, school, and home life (Offerman). Given that a sense of mattering is important to undergraduate students (France & Finney, 2010; Rayle & Chung, 2007), with beneficial effects to their well-being (i.e., academic, emotional, psychological, social; Dixon & Kurpius, 2008; Schlossberg, 1989), one unanswered question is whether similar effects will emerge for graduate student samples?

When students matter to their university, they have a greater sense of connectedness to the college community (e.g., administration, faculty, peers; Rayle & Chung, 2007; White & Nonnamaker, 2009), they become more involved in their academic studies (France & Finney, 2010; Schlossberg et al., 1989), they take part in increased campus activities (Klug, 2008; Sumner, 2012), and they speak more favorably about their college experience (i.e., university ambassadors; Scheneider, 2015). Although there are demographic differences between undergraduate and graduate student samples (Offerman, 2011; Wao, 2010), a sense of mattering (vs. not mattering) may be an important variable in understanding why many graduate students are at increased risk of withdrawing from school. It could be that graduate students respond similarly to undergraduate students in their mattering response; however, graduate students may be at greater risk given the university investment needed to support them through their thesis and dissertation expectations (i.e., faculty, peers, scholars). A lack of mattering in the college experience of graduate students may be associated with feeling

overwhelmed and an increased likelihood of withdrawal (i.e., dropping out; Elliott, 2009; Scheneider).

The purpose of the current study was three-fold. First, given that mattering research in graduate students is lacking, Study 1 examined whether high (vs. low) mattering would be associated with reduced stress, frustration, burnout, and depression and higher university satisfaction. Graduate students were also asked about their likelihood of degree completion and/or withdrawal as this population is particularly vulnerable (Wao, 2010). It was hypothesized that students who scored high on university mattering would report better psychological health and well-being as compared to their low-scoring counterparts (**Hypothesis 1**). High mattering participants were also expected to report greater degree completion intentions. Second, research has demonstrated that improvements in well-being (e.g., satisfaction) as a function of increased mattering affect the academic persistency of students (Ost, 2021; Schlossberg et al, 1989). For instance, Ost (2021) found that graduate students who reported higher mattering to their university also showed greater satisfaction to their school and their program, which in turn, was related with lower tendency to drop out. What Ost did not find was whether program persistency was a function of enhanced mental health associated with higher mattering. Following these findings, an additional goal for Study 1 was to explore whether increases in mental health and well-being related with higher mattering mediates graduate students' intentions to stay in their program (**Hypothesis 2**). This hypothesis was tested with parallel mediation models (see Figure 1). Finally, following Lombard and Cheryan (2024), Study 1 examined demographic characteristics (i.e., gender, STEM focus) that may moderate mattering and well-being outcomes in graduate students. In other words, I tested if women in STEM experience reduced mattering as compared to men

in STEM and their non-STEM counterparts, regardless of gender. I also believed women in STEM would have lower well-being as compared to men in STEM (**Hypothesis 3**). A first-stage moderated-mediated model thus explored if reduced mattering associated with being a woman in STEM is related to reduced psychological health and quitting intentions.

Method

Participants

Participants were recruited in three ways. First, an announcement was placed online via TCU Announce (<https://tcuannounce.tcu.edu/>) to recruit full-time and part-time graduate students from all colleges and departments on campus. Second, a recruitment email was sent to each graduate dean on TCU's campus to forward to students in their program (i.e., Liberal Arts, Medicine, Communication, Education, Fine Arts, Science & Engineering, Nursing & Health Sciences, & Business). Only two college deans and two department chairs forwarded emails to potential participants (i.e., Liberal Arts, Nursing & Health Science, Department of Psychology, Department of Geology). Third, email lists were generated by the principal investigator by collecting contact information from department websites on campus. In all, the researcher emailed approximately 700 graduate students directly to complete the survey. To encourage participation, 50 of the total participants were randomly selected to receive one, \$25 Amazon gift card. A total of 279 graduate students completed the survey. Fifty-two participants were dropped because they did not consent to use their data in the analyses. The final sample resulted in 227 participants. See Table 1 for demographic information.

Power Analysis

Power was based on a study by Ost (2021), who examined mattering scores in a sample of graduate students. Although the primary purpose of this paper was to create a

measure of university mattering, additional results explored the associative link between mattering, burnout, and degree persistence. The final sample size for Ost’s study was 119 graduate students, with effect sizes (i.e., R^2) ranging from .15 to .55. Assuming a moderate effect size (i.e., $R^2 = .30$), and utilizing the *G*Power* software program (Faul et al., 2007), Study 1 needed 134 participants for a two-tailed test (i.e., simple linear regression) at $p = .05$ with power set at $d = .80$ (Cohen, 1992). For the moderation analyses with gender and area focus, while using Hayes’s (2022) PROCESS Macro for moderation in SPSS, 395 participants were needed using *G*Power* analysis with a small effect size ($R^2 = .02$). This is typical for moderation analyses (Aguinis et al., 2005), with a two-tailed test at $p = .05$ with power set at $d = .80$.²

Although power needs were met for simple analyses, the total sample size was too small for the more complex statistics (i.e., first-stage moderation). A sensitivity analysis was performed on the results of the 2-way moderation using *G*Power* (Faul et al., 2007). It demonstrated that with a total sample size of 220, effect size of $f^2 = .017$, and $\alpha = .05$, the power of the 2-way moderation was .406. This insufficiency in power may prevent the current study from detecting a significant result of the moderation.

Table 1
Sample demographic characteristics (Study 1; N = 227)

	Mean (SD)	Range
Age	29.00 (8.66)	19-67
Month in School	19.93 (15.27)	1-80

² Given the methodological and statistical similarities between experiments, Study 2 should require the same number of participants as in this first study.

	<i>n</i>	%
Gender		
Women	157	69.16
Men	65	28.63
Non-binary or other	5	2.20
Ethnicity		
White/non-Hispanic	161	70.93
Hispanic/Latino	33	14.54
Asian	15	6.61
Black/African American	9	3.97
American Indian/Native American	2	.88
Other	7	3.08
Degree		
Master's	139	61.23
Doctoral	85	37.45
Graduate Certificate/Other	3	1.32
College		
Science and Engineering	50	22.03
Nursing and Health Sciences	36	15.86
Liberal Arts	34	14.98
Business	21	9.25
Medicine	13	5.73
Fine Arts	13	5.73
Education	30	13.22

	<i>n</i>	%
Communication	14	6.17
Divinity	11	4.84
Other	2	.88
Enrollment Status		
Full-time	193	85.02
Part-time	34	14.98
Marital Status		
Single	120	52.86
In a Partnership	32	14.10
Married	56	24.67
Engaged	8	3.52
Separated	1	.44
Divorced	5	2.20
Other	5	2.20

Procedure

Participants were told that the study examined the “well-being of graduate students.” Survey responses were completely anonymous and confidential. Specifically, names were collected in a separate survey link for gift card drawing purposes only. The questionnaire was comprised of approximately 25 items and took approximately 5-10 min to complete. At the end of the survey, participants were debriefed about the study’s intentions (i.e., mattering & well-being). Everyone was informed of their right to withdraw data at the end of the survey, with the opportunity to do so (i.e., providing [or not providing] their permission to use data).

Materials

Mattering

Mattering was assessed with a modified version of the General Mattering Scale (Rosenberg & McCullough, 1981). Specifically, participants were instructed to answer seven items that best “represent [your] feelings toward TCU” and “to not think about specific others at your university; rather, try to focus on TCU in general as an entity or whole community.” Items were worded to represent graduate student experiences at the university (i.e., “How important are you to TCU?,” “How much does TCU pay attention to you?,” “Would you be missed by TCU if you went away?,” “How interested is TCU in what you have to say?,” “How much does TCU depend on you?,” “How much does TCU value you as a graduate student?,” & “How much are your contributions/work recognized by TCU?”). All items were rated on a 9-point Likert-type scale (1 = *strongly disagree*, 9 = *strongly agree*). A total score was calculated by averaging the seven items together ($\alpha = .94$).

Satisfaction

Similar to Ost (2021), five questions from the Brief Overall Job Satisfaction Measure II (Judge et al., 1998) were adapted and included in this study (i.e., “I am well satisfied with my graduate studies,” “Most days I am enthusiastic about my graduate schooling,” “Each day at school seems like it will never end,” “I find real enjoyment in my graduate schooling,” & “I consider graduate school rather unpleasant”). Responses were made on 9-point Likert-type rating (1 = *strongly disagree*, 9 = *strongly agree*). Negatively worded statements were reversed-coded, and all items were averaged together for a total score ($\alpha = .87$).

Stress

Participants were asked to complete a modified version of the Workplace Stress Scale (Marlin Company & the American Institute of Stress, 1978), similar to what has been used in

prior work on mattering (Rayle, 2006). For this study, graduate students responded to four items related to stress (i.e., “Graduate school is negatively affecting my physical or emotional well-being,” “As a graduate student, I have too much work to do and/or too many unreasonable deadlines,” “Graduate school pressures interfere with my family or personal life,” & “As a graduate student, I receive inadequate recognition or rewards for good performance”). Responses were made on a 9-point Likert-type scale (1 = *strongly disagree*, 9 = *strongly agree*; $\alpha = .79$).

Frustration

Everyone was asked to answer two items on their level of frustration with graduate school (Peters et al., 1980; “Being frustrated comes with being a graduate student” & “Overall, I experience very little frustration with graduate school”). Participants responded to the items on a 9-point Likert-type scale (1 = *strongly disagree*, 9 = *strongly agree*; $\alpha = .69$).

Burnout

The work-related burnout subscale of the Copenhagen Burnout Inventory (CBI; Kristensen, et al., 2007) was administered to participants. This subscale is comprised of six items and was worded in relation to graduate school (i.e., “Do you feel worn out at the end of the school day?,” “Are you exhausted by the thought of another day at school?,” “Do you feel that every hour at school is tiring for you?,” “Is school emotionally exhausting?,” & “Does your school frustrate you?”). Responses were made on a 9-point Likert-type scale (1 = *never*, 9 = *always*). A total burnout score was computed by taking the average of the six items ($\alpha = .93$).

Depression

Another commonly measured outcome in mattering research is depression (Flett et al., 2012; Krygsman et al., 2022; Taylor & Turner, 2001), including undergraduate samples (Dixon & Kurpius, 2008; Prihadi et al., 2020). For this study, graduate students completed the short version of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). Three items, adapted from Melchior and colleagues (1993), were used (i.e., “I feel depressed,” “I feel lonely,” & “I feel sad”). Items were rated on a 9-point Likert-type scale (1 = *never*, 9 = *always*). A total score was calculated by averaging all items ($\alpha = .85$).

Program Completion and Demographics

Participants were asked to report their reactions to the study, as well as their demographic information (i.e., age, gender, race, relationship status, degree type, time spent at TCU [in months], student status [domestic vs. international], enrollment status [part-time vs. full-time], & their college [Liberal Arts, School of Medicine, Communication, Education, Fine Arts, Science & Engineering, Nursing & Health Sciences, vs. Business]). Additionally, students were asked (a) “How important is it for you to graduate from TCU with your degree?,” (b) “Have you thought about completing your degree at another institution?,” and (c) “I often think about quitting graduate school.” Responses were made on a 9-point Likert-type scale (1 = *not at all*; 9 = *very important/very much*). These questions have been used in prior research on mattering in college samples (Hurley, 2023; Ost, 2021).

Data Analysis Plan

Data was analyzed with SPSS Version 27 (i.e., Statistical Package for the Social Sciences; IBM). Assumption tests were conducted prior to all analyses. Histogram tests were inspected visually to assure that normality was met for regressions. Square root transformations were performed on variables that were non-normally distributed. Linearity

was assessed through the visual inspection of P-P plots on regression residuals. Scatterplots were conducted to ensure the data met homoscedasticity assumptions (Field, 2013). Durbin-Watson (1950) tests were conducted, and the data met the assumption of independent errors (DW values range: 1.88-2.13). Cook's (1977) distance were examined to detect outliers (Cook's distance values $\leq .001$). No case exceeded the cutoff criteria as suggested by Cook (1977).

To ensure that there were no demographic differences in the variables of interest, separate independent *t*-tests and one-way analysis of variance (ANOVA) tests were performed on the data before running the main analyses. Specifically, mattering, mental health (i.e., depression, stress, frustration, burnout, school satisfaction), and program persistency (i.e., quitting intentions, transfer intentions, graduation importance) were examined as a function of gender, degree type (MS vs. PhD.), college, age, ethnicity, enrollment status (full-time vs. part-time), and marital status. After the preliminary tests, simple linear regressions tested the effects of mattering (i.e., predictor variable) on outcome variables (i.e., burnout, frustration, stress, depression, school satisfaction, & program persistency) to test the first hypothesis. For the second hypothesis, mediational analyses were performed to examine whether mental health variables mediated the effects of mattering on graduate students' program persistency. To test the third hypothesis, a two-way between-subjects ANOVA was performed to examine whether graduate students' mattering differed as a function of the interaction between gender (women vs. men) and area focus (STEM vs. non-STEM). Given that the sample size was not large enough in each college, colleges were combined to create a two-level categorical variable (STEM: Science & Engineering, Medicine, & Nursing and Health Sciences vs. non-STEM: Liberal Arts, Communication,

Education, Business, & Fine Arts). This categorization is typical of other work examining the difference between STEM and non-STEM areas (e.g., Laird et al., 2011; Uddin et al., 2021). Following the 2-way interaction, to test whether the differences on mattering carried over to influence mental health, a first stage mediated-moderation model (Hayes, 2022) explored how mattering mediated the 2-way interaction between gender and field focus (STEM vs. non-STEM) on mental health scores.³ For the moderated regression, continuous variables (i.e., mattering) were centered, and categorical variables (i.e., gender and college) were dummy-coded. 5000 bootstrap iterations were performed with moderated regressions.

Results

Preliminary Analyses

Prior to running analyses, outcome variables (i.e., burnout, frustration, stress, depression, school satisfaction, & degree persistency) were examined as a function of different demographic characteristics (i.e., age, month in school, race, gender, college, enrollment type, marital status, program degree type). As depicted in Table 2, age was significantly correlated with burnout (negatively) and satisfaction (positively). Month in school was significantly correlated with depression (positively), stress (positively), intentions to quit (positively), and satisfaction (negatively). For the categorical variables, full-time (vs. part-time) students reported higher burnout; additionally, students in STEM had higher burnout than their non-STEM counterparts. The remaining demographic characteristics (i.e., race, gender, marital status, degree type) were non-significant.

³ Ideally, a 3-way moderated regression would be run on mental health and well-being scores as a function of gender (men vs. women), field focus (STEM vs. non-STEM) and mattering. This was not possible because of power, even if everyone in the TCU community participated in two proposed studies.

Table 2*Correlations between demographic variables, mattering, and outcome variables (Study 1)*

Variable	Mean (SD)	1	2	3	4	5	6	7	8	9
1. Mattering	28.22 (13.71)	-								
2. Burnout	32.02 (12.42)	-.263**	-							
3. Satisfaction	30.91 (8.62)	.421**	-.652**	-						
4. Depression	3.26 (.93)	-.317**	.405**	-.446**	-					
5. Quit Intention	2.67 (2.32)	-.298**	.409**	-.534**	.426**	-				
6. Month in School	19.93 (15.27)	-.136*	.127**	-.186**	.146*	.169*	-			
7. Age	29.00 (8.66)	.027	-.205**	.131*	.068	.026	.202**	-		
8. Stress	18.38 (7.67)	-.371**	.715**	-.629**	.399**	.384**	.194**	-.065	-	
9. Frustration	11.76 (4.06)	-.292**	.627**	-.497**	.378**	.346**	.087	-.045	.637**	-

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table 3*Descriptive and inferential statistics for conditional differences in mental health variables (Study 1)*

	Mean (SD)		<i>t</i>	<i>df</i>	<i>p</i>
	Full-time (<i>n</i> = 193)	Part-time (<i>n</i> = 34)			
Burnout	32.72 (11.97)	28.09 (14.25)	2.02	225	.045
	Mean (SD)		<i>t</i>	<i>df</i>	<i>p</i>
	STEM (<i>n</i> = 99)	Non-STEM (<i>n</i> = 125)			
Burnout	34.38(11.54)	30.57(12.72)	2.32	222	.021

Regression Analyses (Hypothesis 1)

Simple linear regressions were conducted to examine whether mattering predicted mental health outcomes and intentions to quit.⁴ As depicted in Table 4, all results were significant with high (vs. low) mattering associated with reduced depression, burnout, stress and frustration, quitting intentions, and intentions to transfer out of TCU. Additionally, graduate students with higher mattering scores reported greater school satisfaction and the importance of graduating from TCU.

Table 4

Inferential statistics for simple linear regressions for mattering predicting outcome variables (Study 1)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>R</i> ²
Depression	-.02	.01	-5.01	< .001	.10
Burnout	-.24	.06	-4.10	< .001	.07
Stress	-.21	.04	-5.99	< .001	.14
Frustration	-.09	.02	-4.58	< .001	.09
School Satisfaction	.27	.04	6.97	< .001	.18
Quit Intention	-.05	.01	-4.67	< .001	.09
Transfer Intention	-.06	.01	-4.94	< .001	.10
Graduation Importance	.02	.01	2.21	.028	.02

Mediational Analyses (Hypothesis 2)

Three separate parallel mediation models (see Figure 1 for the conceptual model) were performed to examine whether (a) burnout, (b) stress, (c) frustration, (d) school

⁴ Although there was no theoretical or empirical reason to include demographic variables as covariates in any analyses, results were conducted with age, month in school, student status (part-time vs. full-time), and degree type (i.e., STEM vs. non-STEM) as covariates in a separate set of analyses. The reason in doing so was that these demographic variables emerged as being significant while running exploratory tests. Given that the effects of mattering on well-being and quitting intention remained significant with and without covariates in the model, all subsequent findings were for mattering only (i.e., no covariates).

satisfaction, or (e) depression mediated the relationship of mattering on (1) graduation importance, (2) transferring from TCU, and (3) quitting TCU. Analyses were conducted using the PROCESS 4.0 Macro by Hayes (2022; Model 4) in SPSS. Results showed that for graduation importance and transfer intention, satisfaction was the only significant mediator. Higher mattering predicted higher school satisfaction, which in turn was related with higher importance to graduate and lower intentions to transfer from TCU. Depression and satisfaction were significant mediators between mattering and quitting intentions. Specifically, higher mattering was associated with lower depression and higher school satisfaction, which in turn predicted lower quitting intentions. See Table 5-7 for inferential statistics.

Figure 1

Conceptual model for parallel mediation between mattering and graduation importance/transfer intention/quit intention (Study 1)

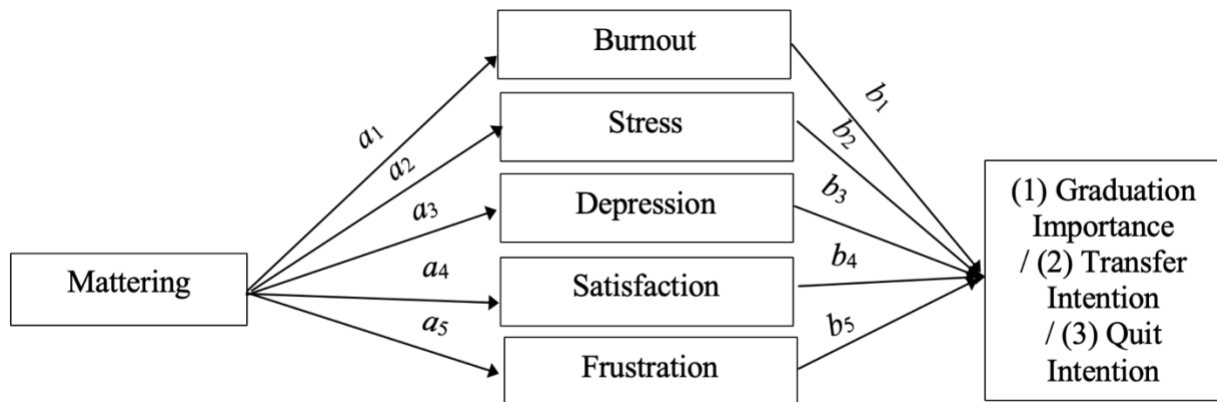


Table 5

Inferential statistics for parallel mediation between mattering and graduation importance (Study 1)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
a_1	-.24	.06	-4.10	< .001	[-.35, -.12]
a_2	-.21	.03	-5.99	< .001	[-.28, -.14]

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95%CI
<i>a</i> ₃	-.14	.03	-4.90	< .001	[-.19, -.08]
<i>a</i> ₄	.26	.04	6.97	< .001	[.19, .34]
<i>a</i> ₅	-.09	.02	-4.58	< .001	[-.12, -.05]
<i>b</i> ₁	.02	.01	1.71	.089	[-.01, .03]
<i>b</i> ₂	.01	.02	.69	.493	[-.03, .06]
<i>b</i> ₃	-.02	.02	-1.05	.294	[-.06, .02]
<i>b</i> ₄	.05	.02	3.01	.003	[.02, .09]
<i>b</i> ₅	<.01	.03	.01	.992	[-.07, .07]
Burnout (indirect effect)					[-.01, .01]
Stress (indirect effect)					[-.01, .01]
Depression (indirect effect)					[-.01, .02]
Satisfaction (indirect effect)					[.01, .02]
Frustration (indirect effect)					[-.01, .01]

Table 6
Inferential statistics for parallel mediation between mattering and transfer intention (Study 1)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95%CI
<i>b</i> ₁	-.01	.02	-.48	.631	[-.05, .03]
<i>b</i> ₂	.06	.03	1.86	.065	[-.01, .13]
<i>b</i> ₃	.03	.03	.89	.371	[-.03, .09]
<i>b</i> ₄	-.08	.03	-2.87	.004	[-.14, -.03]
<i>b</i> ₅	-.08	.06	-1.45	.177	[-.19, .03]
Burnout (indirect effect)					[-.01, .01]

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95%CI
Stress (indirect effect)					[-.03, .01]
Depression (indirect effect)					[-.01, .01]
Satisfaction (indirect effect)					[-.04, -.01]
Frustration (indirect effect)					[-.01, .02]

Table 7

Inferential statistics for parallel mediation between mattering and quit intention (Study 1)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95%CI
<i>b</i> ₁	.01	.02	.56	.576	[-.02, .04]
<i>b</i> ₂	-.01	.03	-.23	.818	[-.06, .05]
<i>b</i> ₃	.09	.02	3.80	<.001	[.04, .14]
<i>b</i> ₄	-.10	.02	-4.43	<.001	[-.14, -.05]
<i>b</i> ₅	.02	.04	.58	.564	[-.06, .11]
Burnout (indirect effect)					[-.01, .01]
Stress (indirect effect)					[-.01, .01]
Depression (indirect effect)					[-.02, -.01]
Satisfaction (indirect effect)					[-.04, -.01]
Frustration (indirect effect)					[-.01, .01]

2-Way Between-Subjects ANOVA (Hypothesis 3)

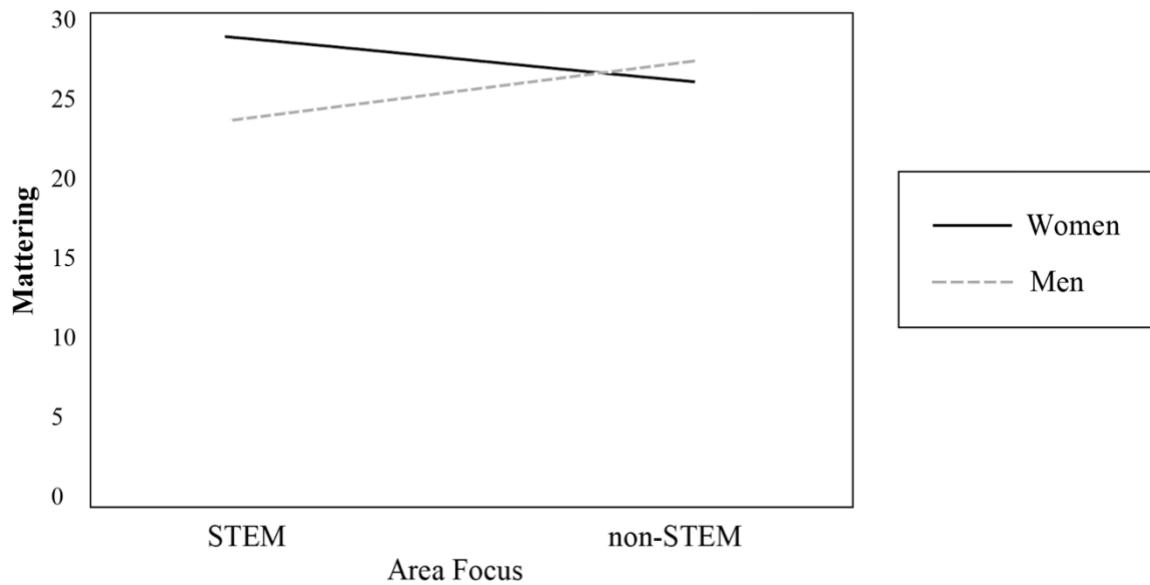
A 2 (gender: women vs. men) × 2 (area focus: STEM vs. non-STEM) between-subjects Analysis of Variance (ANOVA) was conducted to examine whether mattering scores varied as a function of gender and area focus. In other words, this analysis was to test the first stage of moderation-mediation. The results revealed no significant main effects of

gender, $F(1, 216) = 2.10, p = .149, \eta^2_p = .01$, or area focus, $F(1, 216) = .67, p = .413, \eta^2_p < .01$. There was a marginally significant interaction between gender and area focus, $F(1, 216) = 3.70, p = .056, \eta^2_p = .02$. Simple main effect analyses on the interaction showed that in STEM areas, men reported significantly lower mattering compared to women, $p = .031$. In non-STEM areas, there was no difference between men and women on mattering, $p = .707$. Looked at differently, for both women and men, there was no difference in mattering scores between STEM and non-STEM area focus, $ps > .107$. See Table 8 for descriptive statistics. See Figure 2 for the interaction.

Table 8
Descriptive statistics for 2-way ANOVA on mattering (Study 1)

Gender	Area Focus	Mean	SD
Women	STEM	29.93	13.02
	non-STEM	27.69	14.21
	Total	28.76	13.65
Men	STEM	23.08	11.51
	non-STEM	28.66	13.41
	Total	26.60	12.94
Total	STEM	28.26	12.95
	non-STEM	28.01	13.90
	Total	28.12	13.45

Figure 2
Interaction between Gender and Area Focus on Mattering (Study 1)



First Stage Mediated Moderation (Hypothesis 3)

Eight separate first stage moderated-mediation models were performed on whether mattering mediated the 2-way interaction between gender (women vs. men) and area focus (STEM vs. non-STEM) on mental health (i.e., burnout, stress, frustration, depression, & school satisfaction) and degree persistency (i.e., graduation importance, transferring schools, quitting TCU). All analyses were performed using PROCESS 4.0 Model 7 (Hayes, 2022).

For all results,

a 2-way moderated-regression examined the interaction between gender (women vs. men) [dummy coded, women = 0] and area focus (STEM vs. non-STEM) [dummy coded, STEM = 0] on mattering (i.e., mediator). Mattering, in turn, was used to predict each outcome variable in separate models (i.e., burnout, stress, frustration, depression, school satisfaction, graduation importance, transferring schools, & intentions to quit TCU). As previously

reported, the 2-way interaction between gender and area focus was marginally significant on mattering scores (*a* paths), $p_s = .056$. Simple slope tests showed that for students in STEM areas, men had lower mattering compared to women, $p = .031$, and there was no difference between gender in non-STEM areas, $p = .707$.

For the indirect effect of the 2-way moderation predicting mental health and degree persistency variables through mattering, in the STEM condition, the indirect paths were significant on all outcomes, and all indirect paths were non-significant for non-STEM condition. Specifically, these findings suggest that in STEM fields, men reported lower mattering than women. Lower mattering for men, in turn, was associated with higher burnout (*b*₁ path), higher depression (*b*₂ path), lower school satisfaction (*b*₃ path), higher stress (*b*₄ path), higher frustration (*b*₅ path), lower importance to graduate (*b*₆ path), higher intention to quit (*b*₇ path), and higher tendency to transfer (*b*₈ path). The indexes of moderation mediation showed that mattering was a significant mediator in the 2-way interaction between gender and area focus on all mental health and degree persistency variables except graduation importance. See Figure 3 for the conceptual model. See Table 9 for inferential statistics.

Figure 3
Mediated Moderation Examining the Interaction of Gender and Area Focus on Mattering and Outcome Variables

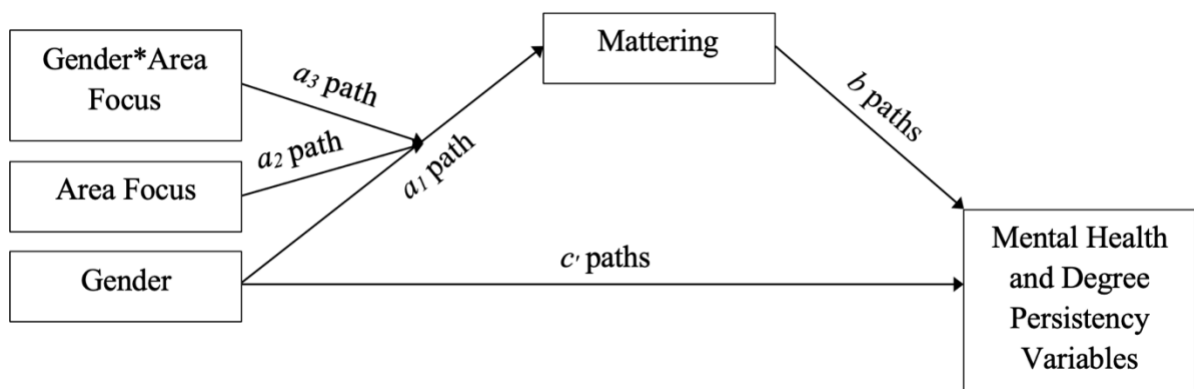


Table 9*Inferential statistics for mediated-moderated regression across all models (Study 1)*

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
Gender (0 = women, 1 = men) [<i>a</i> ₁ path]	-6.85	3.15	-2.18	.031	[-13.05, -.65]	
Area Focus (0 = STEM, 1 = non-STEM) [<i>a</i> ₂ path]	-2.24	2.15	-1.04	.299	[-6.49, 2.00]	
Gender*Area Focus (<i>a</i> ₃ path)	7.82	4.06	1.92	.056	[-.19, 15.82]	
	Women vs. Men					
	STEM	-6.85	3.15	-2.18	.031	[-.13.05, -.65]
	non-STEM	.97	2.57	.38	.707	[-4.09, 6.03]
Burnout (<i>b</i> ₁ path)	-.23	.06	-3.74	< .001	[-.35, -.10]	
Indirect Effect (Gender on Mattering on DV)						
	STEM				[.25, 3.12]	
	non-STEM				[-1.50, .96]	
Index of Moderated Mediation					[-3.90, -.08]	
Depression (<i>b</i> ₂ path)	-.02	.01	-4.65	< .001	[-.03, -.01]	
Indirect Effect (Gender on Mattering on DV)						
	STEM				[.02, .30]	
	non-STEM				[-.14, .08]	
Index of Moderated Mediation					[-.37, -.01]	
Satisfaction (<i>b</i> ₃ path)	.27	.04	6.87	< .001	[.19, .35]	
Indirect Effect (Gender on Mattering on DV)						
	STEM				[-3.59, -.31]	
	non-STEM				[-1.16, 1.69]	
Index of Moderated Mediation					[.17, 4.43]	
Stress (<i>b</i> ₄ path)	-.22	.03	-6.01	< .001	[-.29, -.15]	

		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Indirect Effect (Gender on Mattering on DV)	STEM					[.28, 2.88]
	non-STEM					[-1.33, .99]
Index of Moderated Mediation						[-3.45, -.04]
Frustration (<i>b</i> ₅ path)		-.09	.02	-4.35	<.001	[-.12, -.05]
Indirect Effect (Gender on Mattering on DV)	STEM					[.10, 1.15]
	non-STEM					[-.52, .38]
Index of Moderated Mediation						[-1.41, -.03]
Graduation Importance (<i>b</i> ₆ path)		.02	.01	1.94	.053	[.19, .35]
Indirect Effect (Gender on Mattering on DV)	STEM					[-.27, -.01]
	non-STEM					[-.06, .12]
Index of Moderated Mediation						[-.01, .34]
Quit Intention (<i>b</i> ₇ path)		-.05	.01	-4.80	<.001	[-.07, -.03]
Indirect Effect (Gender on Mattering on DV)	STEM					[.06, .75]
	non-STEM					[-.35, .23]
Index of Moderated Mediation						[-.92, -.02]
Transfer Intention (<i>b</i> ₈ path)		-.06	.01	-4.90	<.001	[-.09, -.04]
Indirect Effect (Gender on Mattering on DV)	STEM					[.07, .83]
	non-STEM					[-.41, .27]
Index of Moderated Mediation						[-1.01, -.01]

Discussion

The purpose of the first study was to examine the associative link between university mattering and (a) mental health and (b) degree persistency (i.e., importance to graduate and program continuation) in a sample of graduate students. The first hypothesis tested whether higher (vs. lower) mattering was related to better psychological health (i.e., low burnout, depression, frustration, stress, & high school satisfaction) and improved student retention (i.e., graduation importance, a reduced likelihood of transferring, or quitting TCU). Overall, the results were consistent with the hypothesis in that graduate students who perceived they mattered reported greater mental health outcomes and indicated higher satisfaction with their program and TCU. These results are consistent with other research on mattering in undergraduate student samples (France & Finney, 2010, Rayle & Chung, 2007, Dixon & Kurpius, 2008), as well as graduate student samples (Ost, 2021; D'Angelo, 2010; Hurley, 2023). Not only did I replicate the results of past studies, but I also demonstrated the positive relationship between mattering and mental health in graduate students was independent of demographic characteristics (e.g., age, time in school, gender, degree type, enrollment status).

Additionally, prior research has found that mental health and well-being outcomes have the potential to mediate the relationship between mattering and students' academic persistence. For example, when students experienced higher mattering, they were more likely to feel satisfied with their program and were less likely to quit (Hurley, 2023). These findings prompted the second hypothesis examined in Study 1, that mental health variables (i.e., depression, stress, burnout, frustration, satisfaction) would mediate the association between mattering and program persistence. The results from the parallel mediations partially

supported the hypothesis. demonstrating that higher mattering correlated with higher school satisfaction, with higher satisfaction predicting lower intention to transfer and higher importance of graduation. In addition, high mattering was associated with reduced depression, with low depression predicting lower quitting intentions. Higher satisfaction associated with increased mattering was also associated with reduced intention to quit. These findings are consistent with past research showing that program satisfaction mediates the link between mattering and program persistency among graduate students (Ost, 2021). The current results extend Ost's research by finding that depression also mediates the link between mattering and quit intention while controlling for school satisfaction and other mental health variables.

Finally, the current research examined how gender and area focus (i.e., STEM vs. non-STEM) could affect mattering scores, with the potential to carry over to mental health and program persistency outcomes. Specifically, prior research has found that when women (vs. men) were asked to estimate how their field would value them if they studied computer science, they reported lower mattering to people in the field (Lombard & Cheryan, 2024). Based on this work, I hypothesized that women graduate students in STEM would report lower mattering when compared to men in STEM and their non-STEM counterparts. The current results showed a marginally significant interaction in that men (vs. women) in STEM (vs. non-STEM) reported reduced mattering - a finding that contrasted with the hypothesis and past research. Following the 2-way interaction, eight separate moderated-mediation models explored whether lower mattering for men (vs. women) in STEM was associated with lower mental health and program persistency. The results showed that men reported greater burnout, depression, stress, frustration, quitting and transfer intentions, and lower school

satisfaction and graduation importance as a function of reduced mattering. No gender differences were found for non-STEM students in mental health and program persistence scores as a function of mattering.

Several possible reasons exist for why the current results did not replicate past findings. First, while Lombard and Cheryan (2024) measured participants' mattering in anticipation of studying computer science, the current research measured mattering from participants' past program experience. It could be that women's actual mattering may be different from their anticipated mattering. Second, past research showed that women generally have higher mattering than men because women usually build better social relationships and tend to derive their mattering from interpersonal relationships (e.g., Bonhag & Froese, 2022; Marshall, 2001; Schieman & Taylor, 2001). Given that social support and interpersonal relationships with peers, professors, and friends and family are crucial to enhance both undergraduate and graduate students' mattering (White & Nonnamaker, 2009; Schneider, 2015; Rayle & Chung, 2007), women in STEM may be more able to form supporting interpersonal bonds, and hence, perceive higher mattering from these connections. Men, however, may be less likely to form these relationships. This possibility, though, needs future empirical examination. Third, and more likely, the current results failed to replicate past findings and support the hypothesis because it had low statistical power. The 2-way interaction only has approximately 40% achieved power, so a potential effect may not be detected. This will be discussed further in the general discussion.

Although not the primary purpose of Study 1, I also examined demographic variables to see whether they correlated with mattering (also see e.g., Lombard & Cheryan, 2024; Rayle & Chung, 2007). The results showed that month in school negatively correlated with

matterings, with a longer time in school being associated with lower matterings. Other demographic variables (i.e., gender, race, age, part-time/full-time status, college, program degree [master's vs. PhD], domestic/international students, marital status) did not significantly correlate with matterings. These findings were inconsistent with past research. For example, researchers previously found that full-time (vs. part-time) students, doctoral (vs. master's) students, female (vs. male) students, and students from Education and Liberal Arts (vs. Business and Engineering) reported higher matterings among graduate students samples (D'Angelo, 2010; Schneider, 2015). One possible explanation for this inconsistency is that the sample size of the current study is small, and the distribution between categories is uneven, which may make the potential effects undetectable.

Since Study 1 results showed that university matterings predicted graduate students' psychological health and program persistence, I decided to explore whether these findings could be extended to faculty, another university population prone to mental health risks. Previous research on university faculty's matterings has been very scant. To my knowledge, only one empirical research examined nursing faculty's matterings to their university and its association with depression, anxiety, and burnout (Melnyk et al., 2023). No work has yet to examine the association between matterings and the psychological health and well-being of university faculty, which led to the purpose of Study 2.

Study 2

The emphasis of the first study was to explore whether the mental health and academic success of graduate students was associated with university matterings. For instance, in a recent survey of over 30,000 undergraduates and 15,000 graduate students across nine colleges in the United States, researchers found higher than average levels of

anxiety and depression (Woolston, 2020). These results are not specific to student samples as stress, anxiety, burnout, and depression are also increasing among faculty (Hammoudi Halat et al., 2023). Specifically, the work life of faculty has become more demanding in recent years as there is a greater need to balance personal and professional responsibilities, along with meeting productivity needs while teaching, doing research, publishing, mentoring students, engaging in professional development, and doing service – all of which can impact mental health and overall well-being (Hammoudi Halat et al.). Twenty percent of research professors, for example, have indicated increased emotional fatigue from multi-tasking, being overworked, tenure pressures, and through a lack of university recognition (Carvajal & Guedea, 2021).

Faculty are also less likely to seek help for their mental well-being because of their university culture, a lack of available resources, leadership factors, stigma perceptions, and competition with others (Smith et al., 2022). This and other studies are drawing attention to the growing stress and anxiety that faculty face due to a lack of control, excessive workloads, reduced autonomy, insufficient resources, work-life imbalance, and reduced support (Adrian et al., 2014; Barnett et al., 2022; Kennedy et al., 2022; Mainous et al., 2018; Molero et al., 2019). Some of the psychological and physical symptoms that faculty report includes higher levels of anxiety, depression, isolation, suicidal ideation, frustration, sadness, irritability, a lack of concentration and motivation, headaches, gastro-intestinal problems, hypertension, and heart attacks (Johnson & Lester, 2022; Lashuel, 2020a, 2020b).

Given the mental health risks of faculty, it is important to understand factors, such as mattering, that may be closely related to their well-being. To shed light on this, there were three purposes of the current study. First, since scarce research has been done in faculty

matterings and mental health, Study 2 examined whether high (vs. low) matterings would be related with reduced burnout, depression, stress, frustration, and higher job satisfaction. Faculty were also asked about the extent to which they would like to quit their job or find another job at other universities. Based on past research finding a negative correlation between nursing faculty's college matterings and mental health problems (Melnyk et al., 2023), it was hypothesized that faculty with high matterings scores would report better mental health as compared to their low-scoring counterparts (**Hypothesis 1**). High matterings in faculty was also expected to be associated with a reduced likelihood of quitting. Second, research has shown that higher matterings to the organization is related with better mental health and well-being (e.g., increased job satisfaction, decreased stress and burnout), more engagement at work, and less intentions to quit (Reece et al., 2021; Jung & Heppner, 2017). Quitting intentions as a function of enhanced mental health associated with matterings has yet to be examined. An additional goal for Study 2 was to explore whether mental health variables mediated the association between university matterings to faculty and their intentions to quit (**Hypothesis 2**). Parallel mediation models were used to test this hypothesis (see Figure 4). Finally, similar to Study 1, Study 2 examined demographic characteristics (i.e., gender, STEM focus) that may moderate matterings and well-being outcomes in faculty following Lombard and Cheryan (2024). Specifically, I tested whether women in STEM experience lower matterings as compared to men in STEM and non-STEM women. I hypothesized that women in STEM would have lower well-being than men in STEM (**Hypothesis 3**). Therefore, a first stage moderated-mediated model explored whether decreased matterings associated with being a woman in STEM is related to reduced mental health and quitting intentions.

Method

Participants

In Study 2, an online Qualtrics survey was emailed to approximately 700 TCU faculty. Recruitment procedures were similar to the first study: (a) placing an advertisement on TCU announce, (b) recruiting college deans to forward a recruitment email to faculty in their college (i.e., Liberal Arts, Medicine, Communication, Education, Fine Arts, Science & Engineering, Nursing & Health Sciences, & Business), and (c) by collecting email addresses from department websites to email faculty directly. Overall, 232 responses were received. Thirty-one participants were dropped because they did not consent to use their data in the analyses. As a result, there were 201 participants. To encourage participation, 50 of the total participants were randomly selected to receive one, \$25 Amazon gift card. See Table 10 for demographic information.

Power Analysis

Power estimates were similar to that of the first study. Although I achieved adequate power to explore simple analyses (e.g., correlations, simple linear regressions), I did not achieve adequate power for more complicated designs (i.e., first stage moderation mediation). Post hoc sensitivity analyses using *G*Power* (Faul et al., 2007) showed that for the 2-way moderation between gender and area focus, with a total sample size of 181, effect size of $f^2 = .001$, and $\alpha = .05$, the achieved power was .064. The achieved power was extremely low, which may prevent detecting a significant result of the moderation.

Table 10

Sample demographic characteristics (Study 2; N = 201)

	Mean (SD)	Range
Age	50.07 (11.29)	20-76

	Mean (SD)	Range
Year at Work	11.94 (8.66)	0-42
	<i>n</i>	%
Gender		
Women	117	58.21
Men	72	35.82
Non-binary/Not respond	10	4.98
Ethnicity		
White/non-Hispanic	151	75.12
Hispanic/Latino	15	7.46
Asian	15	7.46
Black/African American	10	4.98
Other	7	3.48
Faculty Classification		
Adjunct Faculty	11	5.47
Instructor	26	12.94
PPP (Professor of Professional Practice)	28	13.93
Tenure Track Faculty	114	56.72
Other	20	9.95
College		
Science and Engineering	28	13.93
Nursing and Health Sciences	18	8.96
Liberal Arts	49	24.37
Business	26	12.94

	<i>n</i>	%
Medicine	14	6.97
Fine Arts	30	14.93
Education	10	4.98
Communication	15	7.46
Other	4	1.99
Employment Status		
Full-time	184	91.54
Part-time	17	8.46
Marital Status		
Single	18	8.96
In a Partnership	10	4.98
Married	160	79.60
Engaged	2	1.00
Widowed	2	1.00
Divorced	8	3.98
Other	1	.50
Mattering Sources		
Interpersonal Relationship	87	43.28
Academic Career	10	4.98
Department Recognition	7	3.48
Administration	21	10.45
Culture and TCU as a Whole	17	8.46

Materials and Procedure

The materials and procedure were the same as Study 1 except “graduate student” and “school” were replaced by “faculty” and “job.” In addition, a total score for quitting intentions was calculated by averaging three items together (“I am happy with the career I am making for myself at TCU [reverse-coded],” “In the next 3 years, how likely are you to leave at TCU for another career?” and “I often think about quitting my job”) to ensure better reliability. An open-ended question was also asked “When you think about how much you matter to TCU, what comes to your mind? (e.g., students, administration, colleagues, culture, etc...)” to see what sources participants’ sense of mattering to TCU came from. Responses were categorized into five groups (i.e., interpersonal relationships, academic career, department recognition, administration, TCU culture as a whole). See Table 11 for scale reliability for the different measures.

Table 11
Scale reliabilities for Study 2

Measure	Cronbach's <i>a</i>
Mattering	.90
Job Satisfaction	.88
Stress	.88
Frustration	.78
Burnout	.92
Depression	.89
Quit Intention	.81

Data Analyses

The data analytic procedures were identical to the first study. Assumption tests were met for normality, linearity, homoscedasticity, independence of errors, and statistical outliers.

Results

Preliminary Analyses

Similar to Study 1, before running the main analyses, I examined mattering scores and outcomes scores (i.e., burnout, frustration, stress, depression, job satisfaction, & quit intention) as a function of demographic variables (i.e., age, year at work, race, gender, college, faculty classification [e.g., tenure-track, lecturer, etc.], employment status, marital status, mattering source type). Pearson’s correlations showed that age was negatively correlated with burnout (see Table 12). For the categorical variables, faculty in STEM showed higher mattering compared to faculty in non-STEM fields. Full-time faculty were more stressed and burned-out than part-time faculty. As for depression, faculty on tenure track reported greater depression than Professors of Professional Practices (PPP), $p = .021$. Faculty who derived their mattering from TCU culture were more depressed as compared to faculty who derived mattering from their interpersonal relationships and academic career, $ps < .034$ (see Table 13-14 for t -tests and ANOVA statistics). The remaining variables (i.e., year at work, race, gender, marital status) did not significantly impact mattering or any outcome variables.

Table 12

Correlations between demographic variables, mattering, and outcome variables (Study 2)

Variable	<i>Mean (SD)</i>	1	2	3	4	5	6	7	8	9
1. Mattering	29.85 (12.39)	-								
2. Burnout	29.08 (12.48)	-.404**	-							
3. Satisfaction	33.89 (8.18)	.484**	-.766**	-						
4. Depression	8.59 (5.80)	-.241**	.541**	-.505**	-					
5. Quit Intention	11.36 (6.74)	-.501**	.666**	-.761**	.511**	-				

6. Year at Work	11.94 (8.67)	-.074	.039	-.052	.029	.071	-		
7. Age	50.07 (11.29)	.114	-.157**	.102	-.131	-.109	.561**	-	
8. Stress	20.04 (9.13)	-.421**	.842**	-.650**	.503**	.636**	.087	-.100	-
9. Frustration	11.11 (4.58)	-.470**	.711**	-.625**	.419**	.582**	.121	-.100	.729**

Table 13

Descriptive and inferential statistics for conditional differences on mattering and mental health variables (Study 2)

	Mean (SD)		<i>t</i>	<i>df</i>	<i>p</i>
	STEM (<i>n</i> = 60)	non-STEM (<i>n</i> = 134)			
Mattering	32.82 (11.44)	29.03 (12.72)	1.97	191	.050
	Full-time (<i>n</i> = 184)	Part-time (<i>n</i> = 17)			
Stress and Frustration	31.88 (12.67)	23.29 (12.56)	2.68	199	.008
Burnout	29.70 (12.51)	22.47 (10.30)	2.31	199	.022

Table 14

Descriptive and inferential statistics for conditional differences on mental health variables (Study 2)

	Mean (SD)					<i>F</i> (4, 194)	η^2
	Adjunct (<i>n</i> = 11)	Instructor (<i>n</i> = 26)	Professor of Professional Practice (<i>n</i> = 28)	Tenure Track Faculty (<i>n</i> = 114)	Other (<i>n</i> = 20)		
Depression	7.18 (3.37)	8.50 (5.71)	5.68 (3.89)	9.16 (6.01)	10.35 (6.82)	2.75*	.05
	Mean (SD)					<i>F</i> (4, 137)	η^2
	Interpersonal Relationship (<i>n</i> = 87)	Academic Career (<i>n</i> = 10)	Department Recognition (<i>n</i> = 7)	Administration (<i>n</i> = 21)	TCU Culture (<i>n</i> = 17)		
Depression	8.71 (5.83)	6.60 (4.25)	9.14 (5.55)	8.29 (4.76)	13.47 (8.22)	2.95*	.08

* $p < .05$

Regression Analyses (Hypothesis 1)

Simple linear regressions were performed to test whether mattering was associated with faculty mental health and job-quitting intentions.⁵ As shown in Table 15, all results were significant. High (vs. low) mattering predicted lower depression, burnout, stress, frustration, quitting intentions, and higher job satisfaction.

Table 15

Inferential statistics for simple linear regression for mattering predicting outcome variables (Study 2)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>R</i> ²
Depression	-.02	.01	-3.64	< .001	.06
Burnout	-.40	.07	-6.22	< .001	.16
Stress	-.31	.05	-6.54	< .001	.18
Frustration	-.18	.02	-7.50	<.001	.22
Job Satisfaction	.32	.04	7.79	< .001	.23
Quit Intention	-.27	.03	-8.12	< .001	.25

Mediational Analysis (Hypothesis 2)

One parallel mediation model (see Figure 4 for the conceptual model) was conducted to examine whether (a) burnout, (b) stress, (c) frustration, (d) depression, or (e) job satisfaction mediated the association between faculty mattering and intentions to quit. PROCESS 4.0 Macro by Hayes (2022; Model 4) in SPSS was used to perform the analysis. Results showed that stress, depression, and job satisfaction were significant mediators between mattering and quitting intentions. Specifically, a higher intention to quit TCU was

⁵ Similar to Study 1, results were conducted with age, year at work, college (i.e., STEM vs. non-STEM), faculty classification, and mattering source type as covariates in a separate set of analyses because these demographic variables emerged as being significant while running preliminary tests. Given that the effects of mattering on mental health and quitting intentions remained significant with and without covariates in the model, all subsequent findings were for mattering only (i.e., no covariates).

related to greater stress, depression, and lower job satisfaction associated with reduced mattering. See Table 16 for inferential statistics.

Figure 4

Conceptual model for parallel mediation between mattering and quit intention (Study 2)

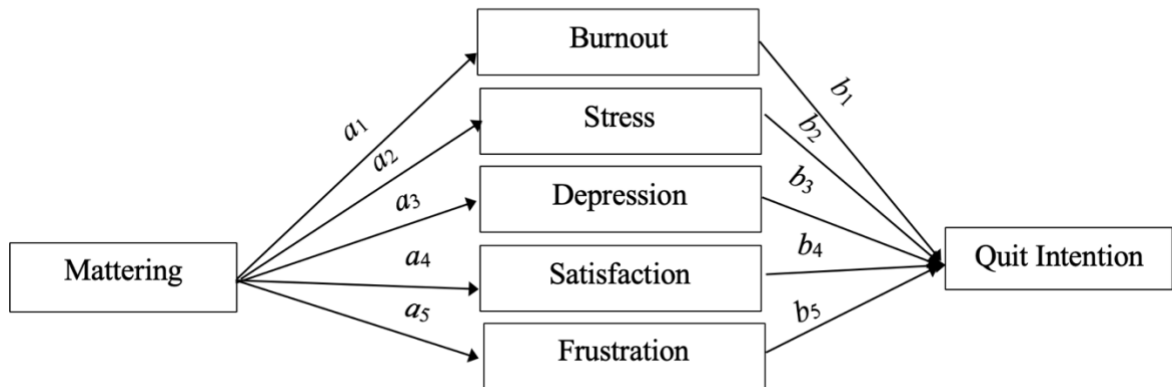


Table 16

Inferential statistics for parallel mediation between mattering and quit intention (Study 2)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95%CI</i>
<i>a</i> ₁	-.41	.07	-6.20	< .001	[-.53, -.28]
<i>a</i> ₂	-.31	.05	-6.53	< .001	[-.40, -.22]
<i>a</i> ₃	-.11	.03	-3.50	< .001	[-.18, -.05]
<i>a</i> ₄	.32	.04	7.77	< .001	[.24, .40]
<i>a</i> ₅	-.17	.02	-7.49	< .001	[-.22, -.13]
<i>b</i> ₁	-.01	.05	-.25	.802	[-.12, .09]
<i>b</i> ₂	.13	.06	2.09	.038	[.01, .26]
<i>b</i> ₃	.14	.06	2.34	.020	[.02, .26]
<i>b</i> ₄	-.42	.60	-6.94	<.001	[-.53, -.30]
<i>b</i> ₅	.04	.10	.40	.688	[-.16, .24]
Burnout (indirect effect)					[-.04, .05]

Stress (indirect effect)	[-.05, -.01]
Depression (indirect effect)	[-.04, -.01]
Satisfaction (indirect effect)	[-.18, -.09]
Frustration (indirect effect)	[-.04, .03]

2-way Between Subjects ANOVA (Hypothesis 3)

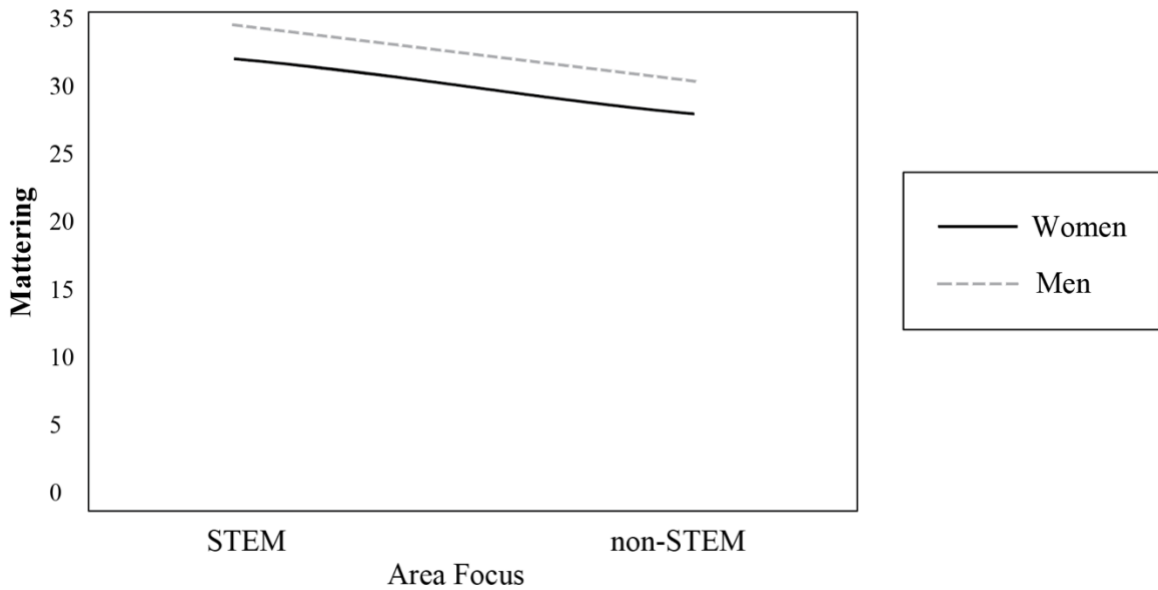
A 2 (gender: women vs. men) \times 2 (area focus: STEM vs. non-STEM) between-subjects Analysis of Variance (ANOVA) was conducted to examine if mattering scores differed as a function of gender and area focus. There were no significant main effects for gender, $F(1, 177) = .65, p = .422, \eta^2_p < .01$, or area focus, $F(1, 177) = 3.52, p = .062, \eta^2_p = .02$. There was no significant interaction between gender and area focus either, $F(1, 177) = .01, p = .915, \eta^2_p < .01$ (see Table 17 for descriptive statistics and Figure 5 for the interaction). Since results were non-significant, I did not meet the first stage of moderation-mediation. For this reason, no moderated-mediation models were performed on the data.

Table 17
Descriptive statistics for 2-way ANOVA on mattering (Study 2)

Gender	Area Focus	Mean	SD
Women	STEM	32.85	11.94
	non-STEM	28.90	12.19
	Total	30.07	12.20
Men	STEM	34.24	9.50
	non-STEM	30.71	12.48
	Total	31.77	11.71
Total	STEM	33.39	10.98

Gender	Area Focus	Mean	SD
	non-STEM	29.60	12.29
	Total	30.73	12.01

Figure 5
Interaction between Gender and Area Focus on Mattering (Study 2)



Discussion

The main purpose of Study 2 was to examine whether faculty mattering is related to depression, stress, frustration, burnout, job satisfaction, and quitting intentions. The first hypothesis examined whether high (vs. low) mattering to the university was associated with lower stress, frustration, depression, burnout, intentions to quit, and higher job satisfaction. Supporting the hypothesis, simple linear regressions found that faculty who felt that they mattered to the university reported a higher satisfaction with their job, a higher likelihood to stay in their position at TCU, and lower mental health suffering. These findings were consistent with past research showing that low mattering among nursing faculty correlated

with higher depression, anxiety, and burnout (Melnyk et al., 2023). The current study added to the scarce research on faculty mattering by extending these results to the entire university faculty and examined job persistence as a function of mattering.

Additionally, Study 2 was the first study, to my knowledge, to examine the link between faculty mattering and quitting intentions via the mediation of mental health and well-being variables. Past research has found that employee's mattering at work is positively associated with job performance, work engagement, and loyalty to the organization (Reece et al., 2021; Jung & Heppner, 2017). Mental health and well-being variables such as workplace stress and job satisfaction are also vital factors that influence intentions to quit (e.g., Allisey et al., 2014; Siu & Cooper, 1998; Simoens et al., 2002). Based on these findings, the second hypothesis of the current study was that quitting intentions of faculty would be associated with mental health issues and reduced job satisfaction from low mattering. A parallel mediation model supported this hypothesis. The results showed that stress, depression, and job satisfaction significantly mediated the link between mattering and intentions to quit. Specifically, lower mattering was associated with higher stress, depression, and reduced job satisfaction, which in turn, led to an increased desire for TCU faculty to want to quit their university employment.

The final goal of Study 2 was to test whether gender (women vs. men) and area focus (STEM vs. non-STEM) interact to influence mattering scores, with carryover effects of mattering to quitting intentions (i.e., moderated-mediation). Previous research has found that women in STEM tend to be underrated and underrecognized for their work contributions when compared to men (Davison & Burke, 2000; Haveman & Beresford, 2012; Perras, 2019). This gender disparity could affect mattering as Lombard and Cheryan (2024) found

that women (vs. men) report lower mattering in STEM-related professions. Following these findings, the third hypothesis of Study 2 was that women (vs. men) in STEM (vs. non-STEM) would demonstrate low mattering. Failing to support the hypothesis, the 2-way interaction between gender and area focus on mattering was non-significant. Given this non-significant interaction, a first stage moderated-mediation model was not performed.

Although not the main purpose of Study 2, I also analyzed the source from which faculty derived their mattering. I asked participants an open-ended question about what came to mind when they thought about “university mattering.” Responses were categorized into five groups: (1) interpersonal relationship (i.e., with fellow faculty and students), (2) academic career (e.g., teaching, research, mentoring, etc.), (3) department recognition, (4) administration, and (5) TCU culture as a whole. Faculty most frequently mentioned interpersonal relationships, or the social connection with students and colleagues (around 43%). Among the rest, the frequency ranking from higher to lower was: (1) administration, (2) TCU culture, (3) academic career, and (4) department recognition. I also examined whether mattering and mental health scores differed across mattering sources. The results showed that only depression differed by mattering source, with faculty who derived mattering from interpersonal relationships reporting lower depression than faculty who derived mattering from TCU culture. These results coincide with past research on K-12 teachers, which found that K-12 faculty also felt that they mattered more to their colleagues and students than administrators (Richards et al., 2018). The findings are also consistent with Rosenberg’s (1985) argument that interpersonal mattering is central to general mattering, with more of an impact on people’s psychological well-being when compared to other aspects of mattering (e.g., societal mattering).

General Discussion

The current research analyzed the association between (1) mattering and mental health outcomes among graduate students and university faculty and (2) moderating factors that influence mattering. The first goal was to examine how mattering was associated with mental health and school/employment persistence. Following prior research on graduate students and faculty mattering (e.g., Ost, 2021; Hurley, 2023; Melnyk et al., 2023), I hypothesized that mattering would be positively associated with graduate students' school satisfaction and program retention as well as faculty job satisfaction and job persistence. Additionally, I hypothesized that mattering would be negatively associated with stress, depression, burnout, and frustration for both graduate students and faculty. The results of two studies demonstrated that graduate students who reported high mattering showed reduced stress, burnout, depression, intentions to quit and transfer, enhanced school satisfaction, and higher importance to graduate from TCU. Similarly, faculty with high mattering were more satisfied with their job, less likely to quit, less stressed, frustrated, depressed, and burned out. These findings supported my hypothesis, suggesting that mattering played an essential role in enhancing graduate students and faculty well-being and their likelihood to stay at TCU.

The second hypothesis for both studies was that reduced intention to quit and heightened importance to graduate (for graduate students in Study 1) were related to enhanced mental health associated with high mattering. Specifically, prior research has demonstrated that graduate students' satisfaction with their school mediates the link between mattering and quitting intentions (Ost, 2021). Researchers have also found that employees' mental health and well-being (e.g., workplace stress, job satisfaction) significantly impact their likelihood to quit (e.g., Allisey et al., 2014; Simoens et al., 2002; Siu & Cooper, 1998).

Because of these findings, I believed that mental health and well-being would mediate the relationship between mattering on school/job persistence. The results found that for graduate students, school satisfaction mediated the association between mattering and (a) graduation importance, (b) transfer intention, and (c) quitting intentions. Depression was another significant mediator between mattering and quitting intentions. For faculty, stress, depression, and job satisfaction significantly mediated the link between mattering and intentions to quit. These findings demonstrate that for both faculty and graduate students, a higher likelihood to stay at TCU is based on greater satisfaction and better mental health associated with high mattering.

The third purpose of this research was to explore the moderation of gender (women vs. men) and area focus (STEM vs. non-STEM) on mattering. Past research has found that women (vs. men) in STEM tend to be undervalued and underrecognized, and they may experience low mattering when compared to men (Davison & Burke, 2000; Haveman & Beresford, 2012; Lombard & Cheryan, 2024). Following these findings, the third hypothesis of both studies was that women (vs. men) in STEM (vs. non-STEM) would report low mattering, which in turn, would carry over to reduced mental health and school/job persistence. The results failed to support the hypothesis in either study. Specifically, Study 1 found that men (vs. women) reported hampered mental health and school persistence as a function of marginally lower mattering, which ran counter to the hypothesis and past research (Lombard & Cheryan). Study 2 did not find a significant interaction between gender and area focus on mattering. These results should be interpreted with caution because of the low power in both studies.

The current findings add to the literature on mattering and mental health in academia. Although various research has been conducted to support the link between high mattering and enhanced well-being among undergraduate students (e.g., Dixon & Kurpius, 2008; Rayle & Chung, 2007), only a handful of studies have focused on graduate students (e.g., D'Angelo, 2010; Hurley, 2023; Ost, 2021) and faculty (Melnyk et al., 2023). For graduate students, the current findings are in alignment with past research on graduate students' mattering; graduate students who feel that they are important, valued, and recognized by their university community are more likely to have better mental health and well-being, and are also more likely to stay at their programs and institutions (Hurley, 2023; Ost, 2021). These findings are also consistent with past research on undergraduate students, which found that mattering is crucial in promoting student well-being and program retention (e.g., Prihadi et al., 2020; Rosenberg & McCullough, 1981; Schlossberg, 1989). The current research supports the idea that mattering is an important contributor to students' psychological health and academic success.

Extending past research, the current research further demonstrates the mediational role of mental health (i.e., stress, frustration, burnout, depression, & school/job satisfaction) between mattering and program retention among graduate students and faculty. To my knowledge, Ost (2021) was the only one who examined this mediational link in a graduate student population. Although Ost found that program satisfaction mediated the association between high mattering and program persistence, they did not find the mediational roles of other mental health variables. The current findings add to this literature by finding that in addition to school satisfaction, depression is also a significant mediator between mattering and quitting intentions. Graduate students expressed a higher intention to quit from the

association between high depression related to low mattering. This mediation demonstrates that to promote graduate student retention, increasing mattering and enhancing mental health would be beneficial.

The current research also expands the limited research on faculty mattering to their college/university. To my knowledge, only one empirical study has examined mattering in nursing faculty. It was found that low mattering to the school was correlated with high anxiety, depression, and burnout (Melnyk et al., 2023). Consistent with Melnyk and colleagues' findings, Study 2 found that faculty who perceived more recognition, attention, and value from TCU were less depressed, stressed, burned out, more satisfied with their job, and were less likely to quit. These findings are also in accordance with past research on employee's mattering, mental health, and quitting likelihood (e.g., Reece et al., 2021; Epstein et al., 2020; Jung & Heppner, 2017). The current research extends these findings to a new and understudied population - university faculty.

Additionally, the current research expands the literature on the mattering of faculty by finding high depression and stress and low job satisfaction was associated with reduced mattering and higher intentions to quit. If faculty feel that they are cared for, needed by, and valued by the university community, then they should report higher psychological well-being and job satisfaction, leading them to remain in their job positions. These findings are consistent with and extend past research on employee job retention, which found that work-related stress and job satisfaction are crucial factors that lead to quitting intentions among employees (e.g., Allisey et al., 2014; Simoens et al., 2002; Siu & Cooper, 1998). Since job persistence is positively associated with mattering as a function of increased job satisfaction

and reduced mental health, the current findings suggest that making faculty feel as if they matter is another important way to achieve better job retention.

In addition to examining the association between mattering and psychological health among graduate students and faculty, another aim of the current research was to explore moderating factors that affect mattering. Specifically, the current research was interested in whether mattering may differ according to the interaction of gender and area focus (i.e., STEM vs. non-STEM). Research has found that women are underrepresented and undervalued (e.g., less recognized for their contribution) compared to men in traditionally male-dominated fields, such as STEM (e.g., Bloodhart et al., 2020; Charleston et al., 2014; Heilman & Haynes, 2005). Given that being recognized and feeling important are crucial to mattering, being disregarded in STEM could potentially correlate with a lower sense of mattering for women (Lombard & Cheryan, 2024). Only one empirical study has examined this topic finding that women undergraduate students reported lower mattering in computer science when compared to men (Lombard & Cheryan). Neither Study 1 nor Study 2 of the current work were able to replicate the results of Lombard and Cheryan, suggesting the need for further research on the topic. There are a number of reasons for the lack of significant results (Study 2) or opposing findings (i.e., men in STEM being affected more than women by mattering; Study 1). As already mentioned, it could be due to the distinction between anticipated (i.e., Lombard & Cheryan) versus retroactive (i.e., Study 2) instances of recalled mattering; women's ability to derive meaning from their interpersonal relationships with others more than men (e.g., Bonhag & Froese, 2022; Marshall, 2001; Schieman & Taylor, 2001), resulting in higher mattering scores (Rayle & Chung, 2007; Schneider, 2015; White & Nonnamaker, 2009); and low statistical power. Future research should attempt to account for

and remedy these limitations to see if gender differences and career professions really do have an effect on people's sense of importance and well-being.

Limitations

Although the current work provides support for the associative link between mattering and psychological well-being in graduate students and faculty, there are some limitations that should be discussed. The first limitation is that all measures across studies are self-report questionnaires. The responses may be subject to biases such as social desirability, especially since I was asking participants about sensitive topics (i.e., quitting intentions). Although both surveys were anonymous and confidential, people may have responded in what they believed was a desirable manner. Second, the current research only surveyed the intention to quit or stay, but intention does not necessarily lead to action. It would be more informative, for example, to survey people who actually quit or transfer to ask about their reasons for doing so. Third, given that both studies were correlational, no causal link can be drawn from any of the results. While it would be informative to manipulate the level of mattering and examine whether mattering causally influences mental health outcomes, mattering has been studied and measured solely as an individual difference, and no manipulation has been developed to date (Flett, 2022).

A fourth limitation is the lack of demographic diversity across both studies. The majority of the participants were women and White. Past research has found demographic differences on mattering and its relationship with well-being. For example, women tend to show higher levels of mattering than men, and women's mental health is more affected by their level of mattering (e.g., Rayle & Chung, 2007; Schieman & Taylor, 2001; Taylor & Turner). The association between mattering and well-being also seems to be more prominent

among ethnic minority groups (e.g., Herring, 1997; Noam, 1999; Rayle & Myers, 2004). The current research did not find any significant effect of demographic variables on mattering for both studies. One possible explanation is the uneven distribution of gender and lack of ethnic diversity. Finally, a fifth limitation of this work was the small sample size in both studies. Not only did this prohibit an ability to explore demographic differences in results, but it affected the possibility of examining a 2-way interaction between gender and area focus on mattering and well-being outcomes.

Future Directions

There are several potential directions for future research. First, although the present work was informative, the design of the study was cross-sectional rather than longitudinal. It would be beneficial for future research to examine the longitudinal effects of mattering. For example, for graduate students, tracking their level of mattering from start to end of their degree programs to see where mattering is most important (or alternatively, at what point do graduate students struggle the most with their mental health and academic performance). For faculty, it would be beneficial to examine their career progress to see if mattering is imperative at certain time points (e.g., pre- vs. post-tenure). Additionally, rather than focus on self-report questionnaires, future studies would benefit from behavioral outcomes such as classroom participation and grades for graduate students, or number of publications, presentations, and/or grant applications for doctoral students and faculty.

Although the present work was interested in exploring how gender and area focus moderate mattering results, there are other additional moderating factors to examine. For example, *need to matter*, or the importance of feeling as if one matters or the motivation to feel as if one matters, might be a factor that influences individual responses to the same level

of mattering (Hopkins, 2021). In Hopkins' research on mid-level university staff, participants with different levels of a need to matter exhibited varying levels of job satisfaction and performance even though they had similar levels of actual mattering. Specifically, people with a greater need to matter combined with actual mattering were happier in their jobs. People who scored low on both a need to matter and actual mattering, however, were less happy, had reduced motivation, and experienced lower job satisfaction. Additionally, a need to matter moderated the link between mattering and mental health variables such as depression, happiness, and job satisfaction (Hopkins). Future research would benefit from considering the impact of a need to matter when examining mattering and well-being in academic settings.

Practical Implications

There are several ways to foster mattering in graduate students. The first one is to emphasize elements of mattering into student engagement programs. For example, adding messages such as "you matter" and "we care" in new student orientations is found to be effective in making students feel they matter (Becker et al., 2017). In addition, Study 1 found that graduate students' mattering decreased as they stayed longer in school. Given that feeling needed from others is an important component of mattering (Rosenberg & McCullough, 1981), and that volunteering is an effective way to promote mattering (Piliavin & Siegl 2007), creating regular chances for graduate students to help each other may be a good way to enhance mattering in the long term. This may include organizing study groups for graduate students to learn from each other or creating volunteering roles in departments for graduate students to participate may enhance their mattering to their peers and their program.

It is also suggested to increase supportive interactions between graduate students and faculty. Di Placito-De Rango's (2018) research found that faculty who regularly communicate with students can be "first-line responders" who provide key support to students with distress. This can let the students feel that they matter because they are cared for when they are in need. For graduate students (especially doctoral students), the relationship with and attitudes from their advisors are crucial in terms of their sense of mattering. White and Nonnamaker (2009) found that the sense of importance to advisors was related to graduate students' mattering scores. Increasing the number of caring interpersonal contacts, especially from advisors and faculty, could be vital in enhancing graduate students' mattering.

It is equally important to foster faculty mattering in order to build a supportive university environment. When the mattering of faculty is low, they are more likely to suffer from stress, depression, burnout, low job satisfaction, have a higher likelihood of quitting (Melnyk et al., 2023), are less likely to care for students (Kim & Rehg, 2018), and are less likely to contribute to their college or university community (Calkins et al., 2019). From the open-ended responses in Study 2, some faculty mentioned, "I feel like I am easily replaceable and do not matter to higher administration" or "TCU culture does not care about faculty." To enhance faculty's mattering, it is important to deliver messages from the administration to make faculty feel that they matter and their welfare is cared about. Creating more opportunities to recognize and value faculty's unique and important contribution to the university is much needed on the administration level to increase faculty mattering (Wilfong, 2021). Additionally, to the extent that the current research found that the majority of faculty derive their sense of mattering from their relationships with students and colleagues, it is

important to encourage faculty to appreciate and support each other to improve their sense of mattering (see e.g., Roos & Borkoski, 2021).

Conclusion

Two studies examined the association between mattering and mental health among graduate students and university faculty. There are three main findings across both studies. First, both found that when graduate students or faculty felt that they were important and valued by the university, they were more likely to feel satisfied with school/work and less likely to suffer from reduced well-being (e.g., depression, stress, frustration, & burnout). They were also less likely to quit. Second, both studies found that the association between mattering and quitting intentions were mediated by mental health variables (i.e., satisfaction, burnout, stress, & depression). Specifically, graduate students and faculty were less inclined to quit as a function of increased satisfaction and decreased mental health issues correlated with higher levels of mattering. Third, the current research examined moderating factors (i.e., gender & area focus) that might influence mattering and its association with mental health. Neither Study 1 nor Study 2 found that feeling that one matters significantly affected the 2-way interaction between gender (women vs. men) and area focus (STEM vs. non-STEM). Overall, the current results demonstrate the significance of implementing mattering-enhancing actions to form a supportive and thriving environment in the academia. The results also illustrate the need for future research to further elucidate moderating factors concerning mattering, the longitudinal effect of mattering on mental health, and studying the factors that might influence mattering.

References

- Adrian, C. M., Cox, S. S., Phelps, L. D., Schuldt, B. A., & Totten, J. W. (2014). Issues causing stress among business faculty members. *Journal of Academic Administration in Higher Education, 10*, 41-46. doi: 10.1037/10183-000
- Aguinis, H., Beaty, J. C., Boik, R. J., & Pierce, C. A. (2005). Effect size and power in assessing moderating effects of categorical variables using multiple regression: A 30-year review. *Journal of Applied Psychology, 90*(1), 94-107. doi: 10.1037/0021-9010.90.1.94
- Allisey, A. F., Noblet, A. J., Lamontagne, A. D., & Houdmont, J. (2014). Testing a model of officer intentions to quit: The mediating effects of job stress and job satisfaction. *Criminal justice and behavior, 41*(6), 751-771. doi: 10.1177/0093854813509987
- American College Health Association. (2022). *Undergraduate Student Reference Group*. Retrieved June 20, 2024, from https://www.acha.org/documents/ncha/NCHA-III_SPRING_2022_UNDERGRAD_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf
- Amundson, N. E. (1993). Mattering: A foundation for employment counseling and training. *Journal of Employment Counseling, 30*(4), 146–152. doi: 10.1002/j.2161-1920.1993.tb00173.x
- Battista, J., & Almond, R. (1973). The development of meaning in life. *Psychiatry, 36*, 409 – 427.
- Barnett, M. J., Lindfelt, T., Doroudgar, S., Chan, E., & Ip, E. J. (2022). Pharmacy-faculty work-life balance and career satisfaction: Comparison of national survey results from

- 2012 and 2018. *Explorations in Research in Clinical and Social Pharmacy*, 5, 100-112. doi: 10.1016/j.rcsop.2022.100112
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529. doi: 10.1037/0033-2909.117.3.497
- Bekkouche, N. S., Schmid, R. F., & Carliner, S. (2022). “Simmering pressure”: How systemic stress impacts graduate student mental health. *Performance Improvement Quarterly*, 34(4), 547-572. doi: 10.1002/piq.21365
- Bird, S. J. (2006). Research ethics, research integrity and the responsible conduct of research. *Science and Engineering Ethics*, 12, 411–412. doi: 10.1007/s11948-006-0040-9
- Blair-Loy, M., Rogers, L. E., Glaser, D., Wong, Y. L. A., Abraham, D., & Cosman, P. C. (2017). Gender in engineering departments: Are there gender differences in interruptions of academic job talks? *Social Sciences*, 6(1), 29-48. doi: 10.3390/socsci6010029
- Bloodhart, B., Balgopal, M. M., Casper, A. M. A., McMeeking, L. B. S., & Fischer, E. V. (2020). Outperforming yet undervalued: Undergraduate women in STEM. *PLoS One*, 15(6), e0234685. doi: 10.1371/journal.pone.0234685
- Bonhag, R., & Froese, P. (2022). Sources of Mattering for Women and Men: Gender Differences and Similarities in Feelings of Social Significance. *Sociological Perspectives*, 65(4), 748-767. doi: 10.1177/07311214211057119
- Brooks, Z., Smith, E., & Netherton, S. (2017). *Impact of graduate studies on mental and physical health: Spring 2015 survey results*. Retrieved June 20, 2024, from

- https://www.researchgate.net/publication/312189812_Impact_of_graduate_studies_on_mental_and_physical_health_Spring_2015_survey_results
- Brown, B. (2015). *Daring greatly: How the courage to be vulnerable transforms the way we live, love, parent, and lead*. Penguin Books.
- Byrne, M., Chughtai, A. A., Flood, B., & Willis, P. (2012). Job satisfaction among accounting and finance academics: Empirical evidence from Irish higher education institutions. *Journal of Higher Education Policy and Management*, 34(2), 153–167. doi: 10.1080/1360080X.2012.662740
- Calkins, C. M., Chavez, M. M., & Rosser, V. J. (2019). Preventing extra costs: The impact of faculty satisfaction and morale. *International Journal of Educational Research*, 97, 77–87. doi: 10.1016/j.ijer.2019.06.010
- Carter, W. (n.d.). *Six Major Reasons Why Graduate Students Don't Finish*. Retrieved June 20, 2024, from <http://helmut.knaust.info/BD/SixMajorReasons.pdf>
- Carvajal, R. F. P., & Guedea, M. T. D. (2021). Stress in university research professors: A systematic review. *Salud Mental*, 44(5), 249–256. doi: 10.17711/SM.0185-3325.2021.032
- Chapman, G., & White, P. (2019). *The 5 languages of appreciation in the workplace: Empowering organizations by encouraging people*. Moody Publishers.
- Charleston, L., George, P., Jackson, J., Berhanu, J., & Amechi, M. (2014). Navigating underrepresented STEM spaces: Experiences of Black women in U.S. computing science higher education programs who actualize success. *Journal of Diversity in Higher Education*, 7(3), 166–176. doi: 10.1037/a0036632

- Chrzanowski, S. M., & Poudyal, R. (2018). Attrition in Graduate School Versus Other Health Professional Programs: Etiologies and Solutions. *Medical Science Educator*, 29(1), 329–331. <https://doi.org/10.1007/s40670-018-00673-2>
- Cohen, J. (1992). Statistical power analysis. *Current Directions in Psychological Science*, 1(3), 98–101.
- Cole, D., Newman, C. B., & Hypolite, L. I. (2020). Sense of belonging and mattering among two cohorts of first-year students participating in a comprehensive college transition program. *American Behavioral Scientist*, 64(3), 276–297. doi: 10.1177/0002764219869417
- Connolly, K. M., & Myers, J. E. (2003). Wellness and mattering: The role of holistic factors in job satisfaction. *Journal of Employment Counseling*, 40(4), 152–160. doi: 10.1002/j.2161-1920.2003.tb00866.x
- Cook, R. D. (1977). Detection of influential observation in linear regression. *Technometrics*, 19(1), 15–18.
- Corbière, M., & Amundson, N. E. (2007). Perceptions of the ways of mattering by people with mental illness. *The Career Development Quarterly*, 56(2), 141–149. doi: 10.1002/j.2161-0045.2007.tb00026.x
- Costin, V., & Vignoles, V. L. (2020). Meaning is about mattering: Evaluating coherence, purpose, and existential mattering as precursors of meaning in life judgments. *Journal of Personality and Social Psychology*, 118(4), 864–884. doi: 10.1037/pspp0000225
- Cribbs, J. D., Hazari, Z., Sonnert, G., & Sadler, P. M. (2015). Establishing an explanatory model for mathematics identity. *Child Development*, 86(4), 1048–1062. doi: 10.1111/cdev.12363

- Crooks, C. V., Scott, K. L., Wolfe, D. A., Chiodo, D., & Killip, S. (2007). Understanding the link between childhood maltreatment and violent delinquency: What do schools have to add? *Child Maltreatment, 12*(3), 269–280. doi: 10.1177/1077559507301843
- Curry, J. R., & Bickmore, D. (2012). School counselor induction and the importance of mattering. *Professional School Counseling, 15*(3), 110-122. doi: 10.5330/psc.n.2012-15.110
- Cuyjet, M. J. (1998). Recognizing and addressing marginalization among African American college students. *College Student Affairs Journal, 18*(1), 64.
- D'Angelo, C. (2010). *An evaluation of graduate students' perceptions of mattering at Rowan University*. Rowan University.
- Da Wan, C., Chapman, D. W., Zain, A. N. M., Hutcheson, S., Lee, M., & Austin, A. E. (2015). Academic culture in Malaysia: Sources of satisfaction and frustration. *Asia Pacific Education Review, 16*, 517–526. doi: 10.1007/s12564-015-9398-1
- Davison, H., & Burke, M. (2000). Sex discrimination in simulated employment contexts: A meta-analytic investigation. *Journal of Vocational Behavior, 56*(2), 225–248. doi: 10.1006/jvbe.1999.1711
- Deforge B. R., Belcher J. R., O'Rourke M., Lindsey M. A. (2008). Personal resources and homelessness in early life: Predictors of depression in consumers of homeless multiservice centers. *Journal of Loss and Trauma, 13*(2–3), 222–242. doi: 10.1080/15325020701769105
- Demir M., Davidson I. (2013). Toward a better understanding of the relationship between friendship and happiness: Perceived responses to capitalization attempts, feelings of mattering, and satisfaction of basic psychological needs in same-sex best friendships

- as predictors of happiness. *Journal of Happiness Studies*, 14(2), 525–550. doi:
10.1007/s10902-012-9341-7
- Dixon, S. K., & Kurpius, S. E. R. (2008). Depression and college stress among university undergraduates: Do mattering and self-esteem make a difference? *Journal of college student development*, 49(5), 412-424. doi: 10.1353/csd.0.0024
- Duong, M. Q. (2016). The Effects of Demographic, Internal and External University Environment Factors on Faculty Job Satisfaction in Vietnam. *Journal of Educational Issues*, 2(2), 113-130. doi: 10.5296/jei.v2i2.9985
- Durbin, J., & Watson, G. S. (1950). Testing for serial correlation in least squares regression: I. *Biometrika*, 37(3/4), 409-428. doi: 10.2307/2332391
- Elliott G. C., Colangelo M. F., Gelles R. J. (2005). Mattering and suicide ideation: Establishing and elaborating a relationship. *Social Psychology Quarterly*, 68(3), 223–238. doi: 10.1177/019027250506800303
- Elliott, G. C. (2009). *Family matters: The importance of mattering to family in adolescence*. Wiley-Blackwell.
- Elliott, G. C., Kao, S., & Grant, A.-M. (2004). Mattering: empirical validation of a social-psychological concept. *Self and Identity*, 3(4), 339–354. doi:
10.1080/13576500444000119
- Epstein, E. G., Haizlip, J., Liaschenko, J., Zhao, D., Bennett, R., & Marshall, M. F. (2020). Moral distress, mattering, and secondary traumatic stress in provider burnout: A call for moral community. *AACN Advanced Critical Care*, 31(2), 146-157. doi:
10.4037/aacnacc2020285

- 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. doi: 10.1038/nbt.4089
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175-191. doi: 10.3758/bf03193146
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics (4th ed.)*. SAGE Publications.
- Flett, G. L., Galfi-Pechenkov, I., Molnar, D. S., Hewitt, P. L., & Goldstein, A. L. (2012). Perfectionism, mattering, and depression: A mediational analysis. *Personality and Individual Differences*, *52*(7), 828-832. doi: 10.1016/j.paid.2011.12.041
- Flett G. L. (2018a). Resilience to interpersonal stress: Why mattering matters when building the foundation of mentally healthy schools. In Leschied A., Saklofske D. H., Flett G.L. (Eds.), *The handbook of school-based mental health promotion: An evidence informed framework for implementation*. Springer. doi: 10.1007/978-3-319-89842-1_20
- Flett G. L. (2018b). *The psychology of mattering: Understanding the human need to be significant*. Academic Press/Elsevier.
- Flett G. L., Burdo R., Nepon T. (2021). Mattering, insecure attachment, rumination, and self-criticism in distress among university students. *International Journal of Mental Health and Addiction*, *19*(3), 1300–1313. doi: 10.1007/s11469-020-00225-z
- Flett G. L., Goldstein A. L., Pechenkov I. G., Nepon T., Wekerle C. (2016). Antecedents, correlates, and consequences of feeling like you don't matter: Associations with

- maltreatment, loneliness, social anxiety, and the five-factor model. *Personality and Individual Differences*, 92, 52–56. doi: 10.1016/j.paid.2015.12.014
- Flett, G. L., Nepon, T., Goldberg, J. O., Rose, A. L., Atkey, S. K., & Zaki-Azat, J. (2022). The Anti-Mattering Scale: Development, Psychometric Properties and Associations With Well-Being and Distress Measures in Adolescents and Emerging Adults. *Journal of Psychoeducational Assessment*, 40(1), 37-59. doi: 10.1177/07342829211050544
- France, M. K., & Finney, S. J. (2010). Conceptualization and utility of university mattering: A construct validity study. *Measurement and Evaluation in Counseling and Development*, 43(1), 48-65. doi: 10.1177/0748175610362369
- García-Herrero, S., Lopez-Garcia, J. R., Herrera, S., Fontaneda, I., Báscones, S. M., & Mariscal, M. A. (2017). The influence of recognition and social support on European health professionals' occupational stress: A demands-control-social support-recognition Bayesian network model. *BioMed Research International*, 2017, 1–14. doi: 10.1155/2017/4673047
- Gardner, S. K. (2009). The Development of Doctoral Students--Phases of Challenge and Support. *ASHE higher education report*, 34(6), 1-127.
- George L. S., & Park C. L. (2017) The Multidimensional Existential Meaning Scale: A tripartite approach to measuring meaning in life, *The Journal of Positive Psychology*, 12(6), 613-627. doi: /10.1080/17439760.2016.1209546
- George, L.S., & Park, C.L. (2014). *Existential Mattering: Bringing Attention to a Neglected but Central Aspect of Meaning? Meaning in Positive and Existential Psychology*. Springer, New York, NY.

- Glick W. H., Miller C. C., Cardinal L. B. (2007). Making a life in the field of organization science. *J. Organ. Behav.* 28, 817–835. doi: 10.1002/job.455
- Gmelch, W. H., Wilke, P. K., & Lovrich, N. P. (1986). Dimensions of stress among university faculty: Factor-analytic results from a national study. *Research in higher education*, 24, 266-286. doi: 10.1007/bf00992075
- Gomez, D. M. (2009). *ACT 101 programs as learning communities: Using the construct of mattering to enhance higher education service delivery*. Marywood University.
- Grunspan, D. Z., Eddy, S. L., Brownell, S. E., Wiggins, B. L., Crowe, A. J., & Goodreau, S. M. (2016). Males under-estimate academic performance of their female peers in undergraduate biology classrooms. *PLoS One*, 11(2), e0148405. doi: 10.1371/journal.pone.0148405
- Hackett, B. (2017) *NASFAA / Issue Brief: Grad School Completion Rates, Earnings Greater Among Higher-Income Students*. www.nasfaa.org. Retrieved June 20, 2024, from https://www.nasfaa.org/newsitem/10949/Issue_Brief_Grad_School_Completion_Rates_Earnings_Greater_Among_Higher-Income_Students#:~:text=Master
- Hagerty BM, Lynch-Sauer J, Patusky KL, Bouwsema M, Collier P. (1992). Sense of belonging: a vital mental health concept. *Arch Psychiatr Nurs*, 6(3):172-7. doi: 10.1016/0883-9417(92)90028-h
- Haizlip, J., McCluney, C., Hernandez, M., Quatrara, B., Brashers, V. (2020). Mattering: How Organizations, Patients, and Peers Can Affect Nurse Burnout and Engagement. *JONA: The Journal of Nursing Administration*, 50(5), 267-273. doi: 10.1097/NNA.0000000000000882

- Hammoudi Halat, D., Soltani, A., Dalli, R., Alsarraj, L., & Malki, A. (2023). Understanding and Fostering Mental Health and Well-Being among University Faculty: A Narrative Review. *Journal of Clinical Medicine*, 12(13), 4425. doi: 10.3390/jcm12134425
- Haveman, H. A., & Beresford, L. S. (2012). If you're so smart, why aren't you the boss? Explaining the persistent vertical gender gap in management. *The Annals of the American Academy of Political and Social Science*, 639(1), 114–130. doi: 10.1177/0002716211418443
- Hayes, A. F. (2022). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach (Vol. 3)*. The Guilford Press.
- Heath K., Garcia G., Hanson B., Rivera M., Hedwig T., Moras R., Reed D., Smith C., Craig S. (2015). *Growing up in Anchorage: Anchorage youth and young adult behavioral health and wellness assessment*. University of Alaska Anchorage: Center for Human Development.
- Heilman, M. E., & Haynes, M. C. (2005). No credit where credit is due: Attributional rationalization of women's success in male-female teams. *Journal of Applied Psychology*, 90(5), 905–916. doi: 10.1037/0021-9010.90.5.905
- Hurley, K. J. (2023). *"The People Make the Place": Evaluating Mattering's Influence on Graduate Students' Intentions to Graduate*. Clemson University.
- Isaacson, M. L. (2008). *Mattering and persistence relative to a first-year seminar for residential students at a Great Plains university*. University of South Dakota.
- Johnson A.P., Lester R.J. (2022). Mental health in academia: Hacks for cultivating and sustaining wellbeing. *Am. J. Hum. Biol.* 34(Suppl. S1), e23664. doi: 10.1002/ajhb.23664

- Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: the role of core evaluations. *Journal of applied psychology*, 83(1), 17-34. doi: 10.1037/0021-9010.83.1.17
- Jung A.-K., Heppner M. J. (2017). Development and validation of a Work Mattering Scale (WMS). *Journal of Career Assessment*, 25(3), 467–483. doi: 10.1177/1069072715599412
- Kennedy D.R., Clapp P., DeLuca J.L., Filtz T.M., Kroon L., Lamberts J.T., Oliphant C.M., Prescott W.A., Ray S.D. (2022). Enhancing Pharmacy Faculty Well-Being and Productivity While Reducing Burnout. *Am. J. Pharm. Educ.* 86(5), 8764. doi: 10.5688/ajpe8764
- Kenyon, G. M. (2000). *Exploring existential meaning: Optimizing human development across the life span*. SAGE Publications, Inc. doi: 10.4135/9781452233703
- Kim, H., and Rehg, M. (2018) Faculty Performance and Morale in Higher Education: A Systems Approach. *Syst. Res*, 35, 308–323. doi: 10.1002/sres.2495.
- Klinger, E. (1977). *Meaning and void*. Minneapolis: University of Minnesota Press.
- Klug, J. M. (2008). *A phenomenological study on students' perceptions of mattering at a selected midwestern public institution*. University of South Dakota.
- Kodama, C. M. (2002). Marginality of transfer commuter students. *Journal of Student Affairs Research and Practice*, 39(3), 233-250. doi: 10.2202/1949-6605.1172
- Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2007, February 23). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work and Stress*, 19(3), 192-207. doi: 0.1080/02678370500297720

- Krygsman, A., Farrell, A. H., Brittain, H., & Vaillancourt, T. (2022). Depression symptoms, mattering, and anti-mattering: Longitudinal associations in young adulthood. *Journal of Psychoeducational Assessment, 40*(1), 77-94. doi: 10.1177/07342829211050519.
- Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management, 43*(6), 1854-1884. doi: 10.1177/0149206315575554
- Laird, T. F. N., Sullivan, D. F., Zimmerman, C., & McCormick, A. C. (2011). STEM/Non-STEM differences in engagement at US institutions. *Peer Review, 13*(3), 23-27.
- Lashuel H.A. (2020). The busy lives of academics have hidden costs—and universities must take better care of their faculty members. *Nature*. Epub ahead of print. doi: 10.1038/d41586-020-00661-w
- Lenz A. S., Watson J. C., Luo Y., Norris C., Nkyi A. (2018). Cross-cultural validation of four positive psychology assessments for use with a Ghanaian population. *International Journal for the Advancement of Counselling, 40*(2), 148–161. doi: 10.1007/s10447-017-9317-8
- Lombard, E. J., & Cheryan, S. (2024). Does my work matter? Reduced sense of mattering as a source of gender disparities. *Social and Personality Psychology Compass, 18*(1). Article e12907. doi: 10.1111/spc3.12907
- Mae, S. (2024). *How America Completes College 2024*. www.salliemae.com. Retrieved June 20, 2024, from https://www.salliemae.com/content/dam/slm/writtencontent/Research/SLM_How-America-Completes-College-Research-report.pdf

- Mainous A.G., 3rd, Rahmanian K.P., Ledford C.J.W., Carek P.J. (2018). Professional Identity, Job Satisfaction, and Commitment of Nonphysician Faculty in Academic Family Medicine. *Fam. Med.* 50(10), 739–745. doi: 10.22454/fammed.2018.273724
- Marcus F.M., & Rosenberg, M. (1987). *Mattering: it's measurement and significance in everyday life. presented at: The 57th annual Eastern Sociological Society Meeting.* Boston, Massachusetts.
- Marlin Company and the American Institute of Stress. (2009) *The Workplace Stress Scale: Attitudes in the American Workplace VII.*
- Marken, S. (2024, February 28). *Black, Hispanic Students at Greatest Risk of Leaving Program.* Gallup.com. Retrieved June 20, 2024, from <https://news.gallup.com/poll/611093/black-hispanic-students-greatest-risk-leaving-program.aspx>
- Marshall S. K. (2001). Do I Matter? Construct validation of adolescents' perceived mattering to parents and friends. *Journal of Adolescence*, 24(4), 473–490. doi: 10.1006/jado.2001.0384
- Maslow, A. H. (1970). *Motivation and Personality (2nd ed.)*. New York: Harper & Row.
- Master's Completion Project.* (n.d.). CGS. Retrieved June 20, 2024, from <https://cgsnet.org/project/masters-completion-project>
- Melchior, L. A., Huba, G. J., Brown, V. B., & Reback, C. J. (1993). A short depression index for women. *Educational and Psychological Measurement*, 53(4), 1117-1125. doi: 10.1177/0013164493053004024
- Melnyk, B. M., Strait, L. A., Beckett, C., Hsieh, A. P., Messinger, J., & Masciola, R. (2023). The state of mental health, burnout, mattering and perceived wellness culture in

- Doctorally prepared nursing faculty with implications for action. *Worldviews on Evidence-Based Nursing*, 20, 142–152. doi: 10.1111/wvn.12632
- Mohamed, S. A., Hendy, A., Ezzat Mahmoud, O., & Mohamed Mohamed, S. (2022). Mattering perception, work engagement and its relation to burnout amongst nurses during coronavirus outbreak. *Nursing Open*, 9(1), 377–384. doi: 10.1002/nop2.1075
- Molero Jurado M.D.M., Pérez-Fuentes M.D.C., Oropesa Ruiz N.F., Simón Márquez M.D.M., Gázquez Linares J.J. (2019). Self-Efficacy and Emotional Intelligence as Predictors of Perceived Stress in Nursing Professionals. *Medicina*. 55(6), 237. doi: 10.3390/medicina55060237
- Mowreader, A. (n.d.). *Report: Cost of College, Stress Pushes Students to Consider Stopping Out*. Inside Higher Ed. Retrieved June 20, 2024, from <https://www.insidehighered.com/news/student-success/health-wellness/2024/04/18/why-college-students-drop-out-school-and-what-can>
- Muragishi, G. A., Aguilar, L., Carr, P. B., & Walton, G. M. (2023). Micro-inclusions: Treating women as respected work partners increases a sense of fit in technology companies. *Journal of Personality and Social Psychology*. 126(3), 431–460. doi: 10.1037/pspi0000430
- National Academies of Sciences, Engineering, and Medicine. (2020). Promising practices for addressing the underrepresentation of women in science, engineering, and medicine: Opening doors. *The National Academies Press*.
- Offerman, M. (2011). Profile of the nontraditional doctoral degree student. *New directions for adult and continuing education*, 2011(129), 21-30. doi: 10.1002/ace.397

- Ong, C. H., Shi, C. H., Kowang, T. O., Fei, G. C., & Ping, L. L. (2020). Factors Influencing Job Satisfaction among Academic Staffs. *International Journal of Evaluation and Research in Education*, 9(2), 285-291. doi: 10.11591/ijere.v9i2.20509
- Ost, J. C., (2021). *Does Mattering Really Matter to Graduate Students?* Doctoral dissertation, North Dakota State University.
- Pearlin L. I., & LeBlanc A. J. (2001). *Bereavement and the loss of mattering*. Cambridge University Press.
- Peltonen, J. A., Vekkaila, J., Rautio, P., Haverinen, K., & Pyhältö, K. (2017). Doctoral students' social support profiles and their relationship to burnout, drop-out intentions, and time to candidacy. *International Journal of Doctoral Studies*. 12, 157–173. doi: 10.28945/3792
- Perras, C. (2019). Moving towards equal pay for professional female athletes: What we can learn from equal pay legislation in Iceland. *Indiana International & Comparative Law Review*, 30(2), xxi–348. doi: 10.18060/25072
- Peters, L. H., O'Connor, E. J., & Rudolf, C. J. (1980). The behavioral and affective consequences of performance-relevant situational variables. *Organizational Behavior and Human Performance*, 25, 79-96. doi: 10.1016/0030-5073(80)90026-4
- Prihadi, K. D., Wong, C., Chong, E. Y., & Chong, K. Y. (2020). Suicidal Thoughts among University Students: The Role of Mattering, State Self-Esteem and Depression Level. *International Journal of Evaluation and Research in Education*, 9(3), 494-502. doi: 10.11591/ijere.v9i3.20587

- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401. doi: 10.1177/014662167700100306
- Rayle, A. D. (2005). Adolescent gender differences in mattering and wellness. *Journal of adolescence, 28*(6), 753-763. doi: 10.1016/j.adolescence.2004.10.009
- Rayle, A. D. (2006). Do School Counselors Matter? Mattering as a Moderator Between Job Stress and Job Satisfaction. *Professional School Counseling, 9*(3), 206–215. doi: 10.1177/2156759x0500900310
- Rayle, A. D., & Chung, K.-Y. (2007). Revisiting First-Year College Students' Mattering: Social Support, Academic Stress, and the Mattering Experience. *Journal of College Student Retention: Research, Theory & Practice, 9*(1), 21-37. doi: 10.2190/x126-5606-4g36-8132
- Reece, A., Yaden, D., Kellerman, G., Robichaux, A., Goldstein, R., Schwartz, B., Seligman M., & Baumeister R. (2021). Mattering is an indicator of organizational health and employee success. *The Journal of Positive Psychology, 16*(2), 228-248. doi: 10.1080/17439760.2019.1689416
- Richards, K. A. R., Gaudreault, K. L., Starck, J. R., & Mays Woods, A. (2018). Physical education teachers' perceptions of perceived mattering and marginalization. *Physical Education and Sport Pedagogy, 23*(4), 445-459. doi: 10.1080/17408989.2018.1455820
- Roos, B. H., & Borkoski, C. C. (2021). Attending to the Teacher in the Teaching: Prioritizing Faculty Well-Being. *Perspectives of the ASHA Special Interest Groups, 6*(4), 831–840. doi: 10.1044/2021_persp-21-00006

- Rosenberg, M. (1985). *Self-concept and psychological well-being in adolescence*. In R. Leahy
- Rosenberg, M., & McCullough, B. C. (1981). Mattering: Inferred significance and mental health among adolescents. *Research in Community & Mental Health*, 2, 163–182.
- Salama, W., Abdou, A. H., Mohamed, S. A. K., & Shehata, H. S. (2022). Impact of work stress and job burnout on turnover intentions among hotel employees. *International Journal of Environmental Research and Public Health*, 19(15), 9724. doi: 10.3390/ijerph19159724
- Sarsons, H. (2017). Recognition for group work: Gender differences in academia. *American Economic Review*, 107(5), 141-145. doi: 10.1257/aer.p20171126
- Sarsons, H., Gërkhani, K., Reuben, E., & Schram, A. (2021). Gender differences in recognition for group work. *Journal of Political Economy*, 129(1), 101–147. doi: 0.1086/711401
- Schafer W. (1987). *Stress management for wellness*. New York: Holt, Rinehart, and Winston, Inc.
- Schlossberg N. K. (1989). Marginality and mattering: Key issues in building community. *New Directions for Student Services*, 1989(48), 5–15. doi: 10.1002/ss.37119894803
- Schneider, H. A. (2015). *Perceptions of mattering in the doctoral student and advisor selected midwestern private faith-based institution*. University of Nevada.
- Shin, J. C., & Jung, J. (2014). Academics job satisfaction and job stress across countries in the changing academic environments. *Higher Education*, 67(5), 603-620. doi: 10.1007/s10734-013-9668-y

- Shine, K. (2023, March 9). *College students' anxiety, depression higher than ever, but so are efforts to receive care*. University of Michigan News. Retrieved June 20, 2024, from <https://news.umich.edu/college-students-anxiety-depression-higher-than-ever-but-so-are-efforts-to-receive-care/>
- Simoens, S., Scott, A., & Sibbald, B. (2002). Job satisfaction, work-related stress and intentions to quit of Scottish GPs. *Scottish medical journal*, 47(4), 80-86. doi: 10.1177/003693300204700403
- Siu, O. L., & Cooper, C. L. (1998). A study of occupational stress, job satisfaction and quitting intention in Hong Kong firms: The role of locus of control and organizational commitment. *Stress medicine*, 14(1), 55-66. doi: 10.1002/(SICI)1099-1700(199801)14:1<55::AID-SMI764>3.0.CO;2-X
- Smith J.M., Smith J., McLuckie A., Szeto A.C.H., Choate P., Birks L.K., Burns V.F., Bright K.S. (2022). Exploring Mental Health and Well-Being Among University Faculty Members: A Qualitative Study. *J. Psychosoc. Nurs. Ment. Health Serv*, 60(11), 17–25. doi: 10.3928/02793695-20220523-01
- Some College, No Credential*. (2022, May 10). National Student Clearinghouse Research Center. Retrieved June 20, 2024, from <https://nscresearchcenter.org/some-college-no-credential/>
- Sotardi, V. A. (2022). On institutional belongingness and academic performance: mediating effects of social self-efficacy and metacognitive strategies. *Studies in Higher Education*, 1–16. doi: 10.1080/03075079.2022.2081678

- Spaulding, L. S., & Rockinson-Szapkiw, A. (2012). Hearing their voices: Factors doctoral candidates attribute to their persistence. *International Journal of Doctoral Studies*, 7, 199-219. doi: 10.28945/1589
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53(1), 80–93. doi:10.1037/0022-0167.53.1.80
- Sumner, K. J. (2012). *A phenomenological study of students' perceptions of mattering at a selected Midwestern private faith-based institution*. University of South Dakota.
- Swanson, E., & Cole, D. (2022). The Role of Academic Validation in Developing Mattering and Academic Success. *Research in Higher Education*, 63, 1368-1393. doi: 10.1007/s11162-022-09686-8
- Taylor, J., & Turner, R. J. (2001). A longitudinal study of the role and significance of mattering to others for depressive symptoms. *Journal of Health and Social Behavior*, 42(3), 310-325. doi: 10.2307/3090217
- Thomas, J. O., Joseph, N., Williams, A., Crum, C., & Burge, J. (2018). Speaking truth to power: Exploring the intersectional experiences of Black women in computing. *Research on Equity and Sustained Participation in Engineering, Computing, and Technology*, 1–8. doi: 10.1109/RESPECT.2018.8491718
- Tovar, E., Simon, M. A., & Lee, H. B. (2009). Development and validation of the college mattering inventory with diverse urban college students. *Measurement and Evaluation in Counseling and Development*, 42(3), 154-178. doi: 10.1177/0748175609344091

- UC Berkeley Graduate Assembly. (2014) *Graduate Student Happiness and Well-being Report*. Retrieved June 20, 2024, from <http://ga.berkeley.edu/wellbeingreport>
- Uddin, S., Imam, T. & Mozumdar, M. (2021). Research interdisciplinarity: STEM versus non-STEM. *Scientometrics* 126, 603–618. doi: 10.1007/s11192-020-03750-9
- Ueno K. (2010). Mental health differences between young adults with and without same-sex contact: A simultaneous examination of underlying mechanisms. *Journal of Health and Social Behavior*, 51(4), 391–407. doi: 10.1177/0022146510386793
- van de Mortel, T. F. (2008). Faking It: Social Desirability Response Bias in Self-report Research. *The Australian Journal of Advanced Nursing*, 25(4), 40–48. doi:10.3316/informit.210155003844269
- Wao, H. O. (2010). Time to the doctorate: Multilevel discrete-time hazard analysis. *Educational Assessment, Evaluation and Accountability*, 22, 227-247. doi: 10.1007/s11092-010-9099-6
- White, J., & Nonnamaker, J. (2008). Belonging and mattering: How doctoral students experience community. *Journal of Student Affairs Research and Practice*, 45(3), 676-698. doi: 10.2202/1949-6605.1860
- Wilfong, R. (2021). *The mattering model: The foundational elements of mattering for K-12 educators*. ProQuest Dissertations & Theses Global.
- Woolston, C. (2020). Signs of depression and anxiety soar among US graduate students during pandemic. *Nature*, 585(7823), 147-148. doi: 10.1038/d41586-020-02439-6
- Xu, Y., & Wang, Y. (2023). Job stress and university faculty members' life satisfaction: The mediating role of emotional burnout. *Frontiers in Psychology*, 14, 1111434. doi: 10.3389/fpsyg.2023.1111434

Appendix A.

Materials

Study 1 Materials

General Mattering Scale (Rosenberg & McCullough, 1981)

Below are a series of statements that represent feelings toward TCU. When you respond to these statements, do not think of specific others at your university; rather, try to focus on TCU in general as an entity or whole community. Answer as honestly as possible based on being a graduate student at TCU. Not all graduate students feel the same way or are expected to feel the same way – we are interested in your gut-level responses to these items.

1. How important are you to TCU?
1 = not at all important; 9 = very important
2. How much does TCU pay attention to you?
1 = does not pay attention; 9 = very much pays attention
3. Would you be missed by TCU if you went away?
1 = would not be missed at all; 9 = would be missed very much
4. How interested is TCU in what you have to say?
1 = not at all interested; 9 = very interested
5. How much does TCU depend on you?
1 = does not depend at all; 9 = depends very much
6. How much does TCU value you as a graduate student?
1 = not at all; 9 = very much

Mental Health Measures (Burnout, Kristensen, et al., 2007; CES-D, Melchior et al., 1993; Job Satisfaction, Judge et al., 1998; Work Stress Scale, Marlin Company & the American Institute of Stress, 1978; Frustration, Peters et al., 1980)

Please indicate the degree to which you agree with the following statements:

1 = Strongly disagree; 9 = strongly agree

1. Do you feel worn out at the end of the school day?
2. Are you exhausted by the thought of another day at school?
3. Do you feel that every hour at school is tiring for you?
4. Do you feel burnt out because of school?
5. Is school emotionally exhausting?
6. Does your schooling frustrate you?

7. I feel depressed.
8. I feel sad.
9. I feel lonely.

10. I am well satisfied with my graduate studies.
11. Most days I am enthusiastic about my graduate schooling.
12. Each day at school seems like it will never end.
13. I find real enjoyment in my graduate schooling.
14. I consider graduate school rather unpleasant.

15. Graduate school is negatively affecting my physical or emotional well-being.
16. As a graduate student, I have too much work to do and/or too many unreasonable deadlines.
17. Graduate school pressures interfere with my family or personal life.
18. As a graduate student, I receive inadequate recognition or rewards for good performance.

19. Being frustrated comes with being a graduate student.
20. Overall, I experience very little frustration with graduate school.

Reactions and Demographics

How important is it for you to graduate from TCU with your degree?

1 = Not at all important; 9 = Very important

Have you thought about completing your graduate degree at another institution?

1 = Not at all; 9 = Very much

I often think about quitting graduate school.

1 = strongly disagree; 9 = strongly agree

How long have you been a graduate student at TCU (in months)? _____

What graduate degree are you pursuing at TCU?

1. Master's degree
2. Doctoral Degree
3. Graduate Certificate
4. Other: _____

What college are you in?

1. College of Liberal Arts
2. School of Medicine
3. College of Communication
4. College of Education
5. College of Fine Arts
6. College of Science and Engineering

7. College of Nursing & Health Sciences
8. School of Business

What is your current state of enrollment?

1. Full-time
2. Part-time

Are you a domestic (i.e., U.S. citizen) or international student?

1. Domestic
2. International

What is your marital status?

1. Single
2. In a Partnership
3. Engaged
4. Married
5. Separated
6. Divorced
7. Widowed
8. Other: _____

Gender/Gendered Identity

1. Female
2. Male
3. Transgender or non-binary
4. Other: _____
5. Do not wish to disclose.

How would you describe yourself (select all that apply)

1. American Indian or Alaska Native
2. Asian
3. Black or African American
4. Hispanic or Latino
5. Native Hawaiian or Other Pacific Islander
6. White
7. Other: _____
8. Do not wish to disclose.

Age (in years)? _____

Study 2 Materials

General Mattering Scale (Rosenberg & McCullough, 1981)

Below are a series of statements that represent feelings toward TCU. When you respond to these statements, do not think of specific others at your university; rather, try to focus on TCU in general as an entity or whole community. Answer as honestly as possible based on your role as a faculty member at TCU. Not all faculty feel the same way or are expected to feel the same way – we are interested in your gut-level responses to these items.

1. How important are you to TCU?
1 = not at all important; 9 = very important
2. How much does TCU pay attention to you?
1 = does not pay attention; 9 = very much pays attention
3. Would you be missed by TCU if you went away?
1 = would not be missed at all; 9 = would be missed very much
4. How interested is TCU in what you have to say?
1 = not at all interested; 9 = very interested
5. How much does TCU depend on you?
1 = does not depend at all; 9 = depends very much
6. How much does TCU value you as an employee?
1 = not at all; 9 = very much

Mental Health Measures (Burnout, Kristensen, et al., 2007; CES-D, Melchior et al., 1993; Job Satisfaction, Judge et al., 1998; Work Stress Scale, Marlin Company & the American Institute of Stress, 1978; Frustration, Peters et al., 1980)

Please indicate the degree to which you agree with the following statements:
1 = Strongly disagree; 9 = strongly agree

1. Do you feel worn out at the end of the workday?
 2. Are you exhausted by the thought of another day at work?
 3. Do you feel that every hour at work is tiring for you?
 4. Do you feel burnt out because of your job?
 5. Is your job emotionally exhausting?
 6. Does your job frustrate you?
-
1. I feel depressed.
 2. I feel sad.
 3. I feel lonely.
-
1. I am well satisfied with my job.
 2. Most days I am enthusiastic about my job.
 3. Each day at work seems like it will never end.
 4. I find real enjoyment in my job.
 5. I consider my job rather unpleasant.
-
1. My job is negatively affecting my physical or emotional well-being.
 2. I have too much work to do and/or too many unreasonable deadlines.
 3. Job pressures interfere with my family or personal life.

4. I receive inadequate recognition or rewards for good performance.
5. Being frustrated comes with this job.
6. Overall, I experience very little frustration with this job.

Reactions and Demographics

Taking it all into consideration, I am happy with the career I am making for myself at TCU.
1 = strongly disagree; 9 = strongly agree

I often think about quitting my current job.
1 = strongly disagree; 9 = strongly agree

In the next 3 years, how likely are you to leave your job at TCU for another career?

1 = strongly disagree; 9 = strongly agree

How long have you worked at TCU (in years)? _____

What classification best describes your profession?

1. Postdoctoral Fellow/Researcher
2. Adjunct Faculty
3. Instructor
4. PPP (Professor of Professional Practice)
5. Tenure Track Faculty
6. Other (please specify): _____

What college are you in?

1. College of Liberal Arts
2. School of Medicine
3. College of Communication
4. College of Education
5. College of Fine Arts
6. College of Science and Engineering
7. College of Nursing & Health Sciences
8. School of Business

What is your current state of employment?

7. Full-time
8. Part-time

What is your marital status?

1. Single
2. In a Partnership
3. Engaged
4. Married

5. Separated
6. Divorced
7. Widowed
8. Other: _____

Gender/Gendered Identity

1. Female
2. Male
3. Transgender or non-binary
4. Other: _____
5. Do not wish to disclose

How would you describe yourself (select all that apply)

1. American Indian or Alaska Native
2. Asian
3. Black or African American
4. Hispanic or Latino
5. Native Hawaiian or Other Pacific Islander
6. White
7. Other: _____
8. Do not wish to disclose

Age (in years)? _____

VITA

Jieming Xiao was born April 9, 1998, in Changsha, Hunan, China. She is the daughter of Bing Zhang and Xuanlin Xiao. She graduated from Yali High School in 2016, Changsha, Hunan, China. She received a Bachelor of Arts degree with majors in Psychology and Studio Arts from Saint Louis University, Saint Louis, Missouri, in 2019. After joining the experimental social psychology lab with Dr. Cathy Cox in 2020, she received her Master of Science degree in Experimental Psychology from the Texas Christian University, Fort Worth, Texas, in 2022. She continued her study and received her Doctor of Philosophy degree in 2024.

ABSTRACT

THE ASSOCIATION BETWEEN MATTERING AND MENTAL HEALTH IN GRADUATE STUDENTS AND FACULTY

by Jieming Xiao, 2024
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Research has found that a sense of mattering, the perception that one is recognized and valued by other people and/or society, contributes to mental health and well-being (e.g., reduced burnout & stress). Although research has been done in undergraduate samples, little work has explored the psychological benefits of mattering in graduate students and faculty. Two studies examined the relation between mattering and mental health outcomes (e.g., satisfaction, stress, burnout) among graduate students (Study 1) and faculty (Study 2) at Texas Christian University (TCU). Results found that a sense of mattering was positively related to school/job satisfaction and negatively related to stress, burnout, depression, and quitting intentions in both samples. Additionally, research has shown that there may be some demographic differences on mattering. For example, women in male-dominated fields such as STEM (i.e., Science, Technology, Engineering, & Math) receive less recognition and

credit for their work, which may contribute to a lower sense of mattering. The current research thus explored whether there was (a) a gender difference in the level of mattering between women and men for graduate students and faculty (separately), and (b) how area focus (i.e., STEM vs. non-STEM-related majors/careers) moderated potential gender differences. No significant effects emerged across the two studies. Implications of the current research is discussed in terms of the mental health and well-being of TCU graduate students and faculty.