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# Examining stress regulation impacts from integrating mindfulness and self-compassion interventions into doctoral-level leadership courses

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## Abstract

**Purpose** – The aim of this paper is to explore mindfulness and self-compassion teachings and practices embedded in a leadership course and their outcome on stress regulation of doctoral-level students.

**Design/methodology/approach** – Eight valid and reliable pre-and post-assessment inventories were administered prior to the first week of class and following the completion of the doctoral-level class. The test scores were measured for improvement and for differences between various demographic groups.

**Findings** – The results suggest significant improvement on almost every mindfulness subscale with approximately 5–22% of the variance in subscale scores attributed to participation. Doctoral students over 40 indicated more score improvement than students under 40, and doctoral students of color indicated more significant score increases than White students.

**Research limitations/implications** – The research involves doctoral-level students which limits generalizability to other levels of education. Based on the findings, scaling analysis should be conducted on other types of students for generalization purposes.

**Practical implications** – Institutions looking to incorporate wellness practices into curriculum can embed these types of practices into their course design.

**Social implications** – Faculty can become more intentional in how they engage students in mindful compassion skills within their academic programs.

**Originality/value** – The paper adds a quantitative study into the literature surrounding efficacy of wellness practices in structured curriculum. Institutions looking to provide more resources to students to improve their wellness may find the model useful on their campuses, particularly for students over 40 and students of color.

**Keywords** Self-compassion, Integrative inquiry, Stress-regulation, Educational leadership, Graduate student success, Equity, Persistence, Wellness

**Paper type** Research paper

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## Introduction

Educational institutions seek to provide students with an environment that is full of diverse opportunities for growth and learning using an array of delivery modes and activities. Advances in the use of technology and the prevalence of technology use via the pandemic have provided students with ease of information access and ease of online social networking. In an effort to be informed and connected via social media, students may become overwhelmed (Vilchez *et al.*, 2021). Such situations often pose a stress-induced environment which hinders the decision-making and attentiveness skills in students (Bucher *et al.*, 2013; Bresciani Ludvik, 2016). In addition to this already high level of stress, graduate students often need to balance work, family and community responsibilities while adapting to institutional doctorate cultural dynamics. As such, the stress may readily become compounded (Karyotaki *et al.*, 2020). Student distress can be a result of stress, anxiety, burnout and depression which can potentially contribute to poor academic performance, substance abuse and suicide (Dyrbye *et al.*, 2005). In a national survey, more than 50% of college students reported feeling so stressed that it impeded their functioning (Kadison and DiGeronimo, 2004). Marshall *et al.* (2016) reported that 50–60% student affairs professionals (one of the roles in which these doctoral students are preparing to assume) leave the field within five years citing stress and burnout as the most frequent reason for leaving which contribute to increased personnel costs, lost efficiency, consistency and quality in delivery of services. All of this stress has been exacerbated by the pandemic and the growing need to repair systemic racial injustice more rapidly (Duckworth *et al.*, 2021; Singh *et al.*, 2020).

To mitigate such stressors and increase self-efficacy in students, many campuses are offering stress regulation or stress management programming. However, students often report that enrolling in one more program or course creates even more stress (Bresciani Ludvik, 2016). As such, the 16-week, 2 h/week, hybrid or online integrative inquiry training program was embedded into a required first-semester leadership course for doctoral students to prevent additional time requirements from students. The integrative inquiry program portion of the leadership course focuses on the practice of mindfulness and self-compassion along with other intrapersonal competency cultivation strategies intended to expand students' capacity to learn better and improve one's adaptive coping mechanisms. Assessment of this program is built in, using a pre- and post-assessment survey packet, several weekly assignments of skill application, and an email follow-up to ascertain whether students are still engaged with the micro mindfulness and self-compassion practices and if so, to inquire into how they are using them (Bresciani Ludvik, 2016).

### *Mindfulness*

Mindfulness, as implemented in the course, is defined as "paying attention in a particular way; on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994, p. 4). The course is designed to encourage students to pay attention through 2–4-min course embedded practices which keep students' minds active and empower them to make sound decisions. Indeed, LaBerge showered that, "psychological tasks evoke attentional processing and can demonstrate its adaptive advantage in performing behavioral and cognitive tasks, while analyses of information input and output show what problems attention needs to solve to achieve these adaptive advantages" (1995, p. 6).

Furthermore, effects of adapting to emotional changes with better attentiveness can be achieved from mindfulness training (Keng *et al.*, 2011). Mindfulness training enables individuals to perform better in tasks that require extensive concentration (Jha *et al.*, 2007). Mindfulness-based training has shown a decrease in emotional regulation difficulties (Roemer *et al.*, 2015). In individuals with executive functioning disorders such as ADHD (an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development), mindfulness training can lead to increases in conflict attention, more self-directedness and

increased self-transcendence; all of which are associated with improvements in self-regulation (Smalley *et al.*, 2009). Especially for individuals living with diagnoses such as ADHD, mindfulness training has shown positive academic improvement (Docksai, 2013). It appears that mindfulness practices enhance working memory capacity (Chambers *et al.*, 2008). "Freeing up availability in short- and long-term memory stores could allow students to more efficiently retain information from class to class: a necessity for all students, but of primary importance to those already suffering from attentional deficits" (McCloskey, 2015, p. 224).

Mindfulness training also improves students' ability to test well while reducing mind-wandering (Docksai, 2013). "Mindfulness practices have proven implications for both academic and personal functioning: in fact; the two realms seem inextricably intertwined in both research and practice" (McCloskey, 2015, p. 225). Due to the nature of doctoral programs, students can experience a significant time gap between their last high-stakes testing session and comprehensive examinations, which create new stressors for students who have been able to properly manage test anxiety in the past. Open lines of communication about test-taking concerns and allowing students to become unfamiliar with methods of proctoring prior to testing have been found to reduce anxiety and better exam-taking experiences (Kolski and Weible, 2018).

In all, mindfulness, when taught with integrity, appears to be associated with educational benefits (Bresciani Ludvik, 2016). In addition, mindfulness practices help students maintain emotional regulation and exhibit healthier responses in stressful situations. Mindfulness guides an increase in time between impulse and action for students. This, in turn, provides control over behavior and improved health (Broderick and Jennings, 2012). However, for those who have suffered greatly in the classroom, mindfulness practices can add benefits alongside other practices such as self-compassion (Neff *et al.*, 2005).

*Self-compassion*

Self-compassion training has demonstrated tremendous effects on students' well-being (Fong and Loi, 2016). Self-compassionate students reported less fear of failure and adopted mastery-oriented learning goals versus performance-oriented learning goals. Moreover, self-compassionate students facilitated emotion-focused rather than avoidance-focused coping strategies in situations of academic failure (Neff *et al.*, 2005). According to self-compassion theory, self-compassion is a healthy form of self-acceptance that includes three components: self-kindness versus self-judgment, common humanity versus isolation and mindfulness versus overidentification (Neff, 2003a). To practice self-kindness, one needs to understand themselves without being judgmental in circumstances of defeat or disaster. When a person is kind to themselves, they become more confident of their actions and take decisions without the fear of failure. When they do fail, they are trained to view failure as a teaching, rather than a feeling of rejection. The main aspect of self-compassion, similar to mindfulness, is acknowledgment of the lived experience, and to be able to accept rather than avoid negative feelings towards that experience. Self-compassion can take this acknowledgement a step farther by inviting in the awareness of how to alleviate oneself from the immobilizing emotional consequence of a negative experience; empowering movement toward action that is not harmful to self or to others.

An individual who practices self-compassion intuitively makes other people turn toward their own thoughts and actions with graceful awareness. Self-compassion allows the practitioner to connect with common humanity; an acceptance that we are not alone in our suffering but connected with others (Germer and Neff, 2013). It can be described as "seeing one's experiences as part of the larger human experience rather than seeing them as separating and isolating" (Neff, 2003b, p. 89). This aspect of self-compassion keeps individuals from isolating themselves which often enhances feelings of loneliness. "Results indicated that individuals who were higher in self-compassion demonstrated fewer extreme reactions, less negative emotions, more accepting thoughts, and a greater tendency to put their problems into

perspective while at the same time acknowledging their own responsibility" with problem resolution or the restoration of justice (Germer and Neff, 2013).

With so much on doctoral students' plates, it is important to note that there is a clear distinction between self-compassion and self-pity (Goldstein and Kornfield, 1987). To engage in self-pity is not to account for our feelings in a rightful manner, this is opposite of the practices of self-compassion. Self-pity often leads to ignorance of others' feelings. For example, when we are so engrossed in pitying ourselves, we tend to disconnect our pain from that of others. This can also increase isolation. Self-compassion does not disregard negative feelings; it helps individuals to embrace those feelings as perceived or real and to do so with warmth and grace. This can fuel a negative thought or feeling into a positive action.

Given all we know of the causes of stress for graduate students, particularly graduate students of color, there is no immediate permanent resolution to that stress. Students are feeling this stress now more than ever due to the evolving social conditions and technological developments, as well as the isolation and worry about the future caused by the ongoing global pandemic (Duckworth *et al.*, 2021). In such conditions, one is often not able to find a way to regulate stress simply through cognitive reframing. The increasing stress and anxiety we see in every sector of our lives is not going to evaporate; most likely, it will only expand. If institutional transformation is not brought now, it will be difficult to aid future generations of students to be more compassionate and understanding of their feelings and to support their skillful response to those feelings. For those studying to become educational leaders, practitioners and scholars, this kind of skill building is necessary to systematically implement the needed transformations within the educational system.

Commitment and implementation of institutional practices that increase the success of underrepresented racial, ethnic and low socioeconomic graduate students are needed. Recent data suggest despite continued effort to recruit underrepresented individuals, career choice and opportunities are influenced at all levels of education (Thompson and Campbell, 2013) suggesting the need for additional institutional transformation related to managing systemic barriers, including the graduate level. While mindful compassion cultivation practices may be one solution, there are other intrapersonal competencies at play.

*Other intrapersonal competencies*

The National Academies of Sciences (2017, 2018) has compiled evidence to show that when educators spend time cultivating intrapersonal competencies, such as active listening, emotion regulation, grit, prosocial behaviors (e.g. compassion) and other such employer-desired skill sets, then students will be more likely to persist toward degree attainment. However, these same scholars (NAS, 2017, 2018) also stress that since context and culture influence students' abilities to cultivate these competencies, it is difficult to know how to cultivate the competencies consistently without sound formative assessment measures. While evidence indicates that the presence of such intrapersonal competencies significantly predicts student success, more intentionality is needed to better know how to systematically cultivate such skill sets among various identities and at various levels of education.

Mindfulness, self-compassion and other intrapersonal competency training have interestingly shown significant contributions to student success (NAS, 2017, 2018; Bresciani Ludvik, 2016, 2019, 2020). But how can that kind of training be introduced without the stress of one more class to take or the addition of one more "thing-to-do"? If we can embed mindful compassion practices within required coursework, would these strategies taught in the context of a required leadership course have desired benefits, particularly for doctoral students focused on educational leadership?

The purpose of this intervention-based study was to examine the effectiveness of some brief mindfulness and self-compassion teachings and practices, along with other intrapersonal competency cultivation practices, that were embedded into a required first-

semester leadership doctoral course. The study aimed to explore whether any benefits derived from rigorous mindfulness and self-compassion cultivation training can be realized in a required first-semester leadership course that embeds very brief mindful and self-compassion practices to promote overall well-being in the lives of doctoral students who are also working as educational leaders full time.

## Method

### *Research questions*

In order to understand whether the introduction of brief mindfulness and self-compassion practices into a required leadership course could make a difference for doctoral level students, we posited the following research questions:

(1) To what extent do the scales reliably measure underlying constructs of mindfulness and self-compassion questionnaires for doctoral graduate students?

(2) Do doctoral students' mindfulness skills improve by participating in an integrative inquiry course?

(3) What doctoral student demographics and characteristics correlate with greater mindfulness skills gains for course participants?

### *Research design*

The research was conducted using an intervention development study (Hoddinott, 2015). "An intervention development study reports the rationale, decision-making processes, methods and findings which occur between the idea or inception of an intervention until it is ready for formal feasibility, pilot or efficacy testing prior to a full trial or evaluation" (p. 1). The study gathered information on the significance of basic mindfulness and self-compassion training methodology that was embedded into a required leadership course on 3 sets of diverse individuals in 3 different years. The demographics of the participants by the cohort year are summarized in Table 1. A pre- and post-assessment was administered twice, the first being the initial enrollment in the course and finally at the end of the course. The pre- and post-assessment was designed with the help of inventories in the form of questionnaires that covered psychometric, self-report questions and self-report demographic properties. In addition, an email was sent to students the following fall asking whether the practices had been implemented and how they had been implemented. Prior to the fall, several participants contacted the instructor of record to request additional practice materials.

The use of intervention development study made the most sense as the study sought to obtain significant distinction in the pre- and post-assessments to ascertain whether the inclusion of mini-mindfulness and self-compassion skills cultivation methodology warrants consideration for implementation into other courses. Individuals included in the study were doctoral students who enrolled in a required hybrid first semester, first year doctoral leadership course, with a mindful compassion component to it.

### *Instrumentation*

The pre- and post-assessment was designed using valid and reliable questionnaires that covered psychometric and demographic properties. These questionnaires varied in focus from determining the students' self-attainment of the course learning outcomes to measures of mindful compassion gains related to increased stress regulation. The inventories used to determine the factors that influence an individual's mindfulness and self-compassion were the Five Facet Mindfulness Questionnaire (FFMQ) and NEFF self-compassion scale. The FFMQ scale provides quantitative measurement on five aspects on mindfulness, namely

| | 2017 | | 2018 | | 2019 | | Total | |
|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % |
| *Age* | | | | | | | | |
| 20–29 | 4 | 33.33 | 4 | 33.33 | 4 | 33.33 | 12 | 100 |
| 30–39 | 8 | 25.00 | 11 | 34.38 | 13 | 40.63 | 32 | 100 |
| 40–49 | 14 | 41.18 | 9 | 26.47 | 11 | 32.35 | 34 | 100 |
| 50–59 | 4 | 50.00 | 0 | 0.00 | 4 | 50.00 | 8 | 100 |
| *Ethnicity* | | | | | | | | |
| Asian/Pacific Islander | 1 | 16.67 | 2 | 33.33 | 3 | 50.00 | 6 | 100 |
| Caucasian/White | 0 | 0.00 | 3 | 8.11 | 34 | 91.89 | 37 | 100 |
| Hispanic | 7 | 29.17 | 10 | 41.67 | 7 | 29.17 | 24 | 100 |
| Multi-racial | 6 | 60.00 | 3 | 30.00 | 1 | 10.00 | 10 | 100 |
| Other | 0 | 0.00 | 1 | 100.00 | 0 | 0.00 | 1 | 100 |
| *English as a second language* | | | | | | | | |
| Yes | 6 | 28.57 | 8 | 38.10 | 7 | 33.33 | 21 | 100 |
| No | 26 | 31.33 | 19 | 22.89 | 38 | 45.78 | 83 | 100 |
| *Current meditative practice* | | | | | | | | |
| Yes | 16 | 47.06 | 6 | 17.65 | 12 | 35.29 | 34 | 100 |
| No | 16 | 22.54 | 21 | 29.58 | 34 | 47.89 | 71 | 100 |
| *Current movement practice* | | | | | | | | |
| Yes | 16 | 66.67 | 6 | 25.00 | 2 | 8.33 | 24 | 100 |
| No | 16 | 22.54 | 21 | 29.58 | 34 | 47.89 | 71 | 100 |
| *Gender* | | | | | | | | |
| Female | 26 | 36.62 | 14 | 19.72 | 31 | 43.66 | 71 | 100 |
| Male | 6 | 20.00 | 13 | 43.33 | 11 | 36.67 | 30 | 100 |

**Table 1.**
Demographic characteristics of participants

observation, description, aware actions, non-judgmental inner experience and non-reactivity. On the other hand, NEFF scale is a 12-item measurement scale that is often used by adults to characterize their capacity for self-compassion. This scale relies on six core principles of self-compassion, namely self-kindness, self-judgment, common humanity, isolation, mindfulness and over-identified. For both, analysis was conducted on their subscales which will be discussed in the findings section of this report. To measure perseverance and passion, the 12-item Grit Scale was employed. Following this, the Beck Anxiety Inventory (BAI) was used as a self-measure of clinical anxiety. To understand compassion levels, the Multidimensional Compassion Scale (MCS), based on its subscales that measured physical events, psychological events, interpersonal events or external events, was used. To assess the attitude of Active Listening with subscales labeled as "Conservative Opportunity", "Listening Skill" and "Listening Attitude", the 47-item Active Listening questionnaire was administered to students. Lastly, to measure motivation of students with mindset coaching, the 20-item Mindset Quiz with subscales of "Fixed Mindset" and "Growth Mindset" was used.

## Methodology

To assess the reliability that all scales measured the intended constructs, the pre- and post-survey scores were both used when measuring Cronbach's alpha. To test the hypothesis of the efficacy of participation in the integrative inquiry course, a *t*-test was computed between the pre- and post-scores for all completed participants for each scale. All statistical tests were tested at the 0.05 alpha level.

*Limitations*

As an introductory study where pre- and post-measurements are inherent in the research design and the use of graduate doctoral students that have typically smaller class sizes, the sample has inherent limitations even though being adequate in size for confident hypothesis conclusions for the nature of research. To mitigate this limitation, observation of effect sizes will be considered in addition to the sampling of graduate doctoral students when making general conclusions to all student populations.

From the Methods section, we can gather that since Cronbach's alpha performed poorly for BRS, PSS and Conservative Opportunity, we dropped those inventories from our analysis. This poor performance is justified given our small sample in each of the three years and is a realization that these items are not effective in measuring the change in mindfulness and self-compassion at baseline and after intervention.

Even though the study is designed to control the observed benefits in students who have previous meditation and movement practices, the study did not assess external factors in their lives that can also positively affect their response to the survey during administration. Due to the small sample, size observation of overall effects size will mitigate overestimating the impact of significant statistical results.

## Results

The subscales measured 21 to 7 items. Reliability analysis (Table 2) of the established scales and subscales demonstrated high reliability and consistent measuring to the intended constructs with medium to high reliability in the range of Cronbach alpha ($a$) *values of 0.92–0.72* except for the Perceived Stress Scale (10 items, $a = -0.06$) (Table 2). Preliminary

| | Subscale no. items | Alpha | *M* | *SD* |
|---|---|---|---|---|
| *Five facet mindfulness questionnaire* | | | | |
| Acting with awareness | 8 | 0.85 | 20.40 | 4.78 |
| Nonjudging of inner experience | 8 | 0.89 | 21.80 | 5.81 |
| Nonreactivity to inner experience | 8 | 0.86 | 23.61 | 4.05 |
| Observing | 8 | 0.90 | 24.77 | 4.87 |
| Describing | 8 | 0.85 | 26.35 | 5.45 |
| *NEFF Self-compassion scale* | | | | |
| Common humanity | 4 | 0.78 | 15.31 | 3.44 |
| Self-kindness | 5 | 0.90 | 16.60 | 4.68 |
| Self-judgment | 5 | 0.90 | 15.30 | 5.67 |
| Isolation | 4 | 0.92 | 12.77 | 5.14 |
| Over-identified | 4 | 0.90 | 12.55 | 4.76 |
| Mindfulness | 4 | 0.72 | 14.43 | 3.09 |
| Brief Resilience Scale (BRS) | 6 | −0.44 | 17.63 | 1.88 |
| Perceived Stress Scale (PSS) | 10 | 0.06 | 21.26 | 2.89 |
| Grit | 12 | 0.89 | 37.72 | 11.07 |
| Beck Anxiety Inventory (BAI) | 21 | 0.92 | 29.18 | 8.28 |
| *Active Listening* | | | | |
| Conservative opportunity | 7 | 0.64 | 22.03 | 5.04 |
| Listening skill | 11 | 0.92 | 28.75 | 8.86 |
| *Mindset* | | | | |
| Fixed mindset | 10 | 0.57 | 24.20 | 5.17 |
| Growth mindset | 10 | 0.74 | 23.59 | 4.40 |

**Table 2.** Subscales reliability analysis Cronbach's

analysis of the interactive effects of the demographic variables did not demonstrate significant differences in score differentials based on multiple demographic variables.

*Pre- and post-scores results*

A paired samples *t*-test was conducted to test the pre- and post-score differences for each of the scales. All the *t*-tests were significant at *p,* which is equal to or less than 0.001 or less than 0.04, except for the Brief Resilience, Perceived Stress, Grit, and Beck Anxiety Inventory scales (Table 3). For the significant results, higher level of participation in the course-embedded skill building activities improved performance on the scales.

The eta square indexes indicated a wide variation of effect sizes and that approximately 1–29% of the variance of scale and subscale increases in scores was due to participation in the course. The summaries of approximated shared variances for scales that show significant improvement are shown in Table 4. The large amount of shared variance on the NEFF Common Humanity subscale is likely due to the low number of subjects with complete records for analysis ($n = 15$).

*Group comparisons results*

For each of the scales and subscales, a differential score between the post- and pre-scores was calculated for each subject. The differential score was used to analyze group mean differences between the demographic variables.

*Student age.* A one-way between subjects ANOVA was conducted to compare the effect of age categories on the scale and subscale differential scores. There was no significant effect on differential scores based on age categories.

| | *t* | df | *p* | Mean Δ | SE Δ | Cohen's d |
|---|---|---|---|---|---|---|
| *Five facet mindfulness questionnaire* | | | | | | |
| Acting with awareness | 2.23 | 39.00 | 0.03 | 1.75 | 0.79 | 4.95 |
| Nonjudging of inner experience | 3.19 | 40.00 | 0.00 | 2.63 | 0.83 | 5.29 |
| Nonreactivity to inner experience | 4.67 | 39.00 | 0.00 | 2.75 | 0.59 | 3.71 |
| Observing | 5.60 | 39.00 | 0.00 | 3.48 | 0.62 | 3.93 |
| Describing | 3.24 | 40.00 | 0.00 | 2.02 | 0.61 | 3.85 |
| *NEFF Self-compassion scale* | | | | | | |
| Common humanity | 4.80 | 37.00 | 0.00 | 2.88 | 0.60 | 3.69 |
| Self-kindness | 4.80 | 38.00 | 0.00 | 2.88 | 0.60 | 3.69 |
| Self-judgment | 3.40 | 37.00 | 0.00 | 2.05 | 0.60 | 3.78 |
| Isolation | 2.47 | 39.00 | 0.02 | 1.26 | 0.51 | 3.15 |
| Over-identified | 2.10 | 35.00 | 0.04 | 1.00 | 0.48 | 3.01 |
| Mindfulness | 3.58 | 35.00 | 0.00 | 1.47 | 0.41 | 2.47 |
| BRS | 0.42 | 29.00 | 0.67 | 0.17 | 0.39 | 2.15 |
| Perceived Stress Scale (PSS) | 1.26 | 38.00 | 0.22 | 0.59 | 0.47 | 2.92 |
| Grit | 0.69 | 16.00 | 0.07 | 0.80 | 1.16 | 4.49 |
| Beck Anxiety Inventory (BAI) | 1.93 | 14.00 | 0.50 | 1.71 | 0.88 | 3.63 |
| *Active Listening* | | | | | | |
| Conservative opportunity | 4.29 | 39.00 | 0.00 | 3.95 | 0.92 | 5.83 |
| Listening skill | 2.64 | 38.00 | 0.01 | 3.07 | 1.16 | 7.27 |
| *Mindset* | | | | | | |
| Fixed mindset | 2.43 | 37.00 | 0.02 | 0.62 | 0.56 | 3.47 |
| Growth mindset | 3.43 | 38.00 | 0.00 | 2.13 | 0.62 | 3.88 |

**Table 3.**
Subscales paired samples *t*-tests

| Scales and subscales | % Variance | n1 | n2 |
|---|---|---|---|
| NEFF-Common humanity | 44.27 | 15 | 15 |
| FFMQ-Observing | 28.42 | 40 | 40 |
| NEFF-Self-kindness | 22.58 | 40 | 40 |
| MQ-Nonreactivity to inner experience | 21.63 | 40 | 40 |
| AL-Conservative opportunity | 18.89 | 40 | 40 |
| NEFF-Mindfulness | 14.59 | 38 | 38 |
| Mindset-Growth mindset | 13.53 | 38 | 38 |
| NEFF-Self-judgment | 12.77 | 40 | 40 |
| Describing | 11.73 | 40 | 40 |
| FMQ-Nonjudging of inner experience | 11.16 | 41 | 41 |
| AL-Listening skill | 8.50 | 38 | 38 |
| Mindset-Fixed mindset | 7.14 | 39 | 39 |
| NEFF-Isolation | 7.00 | 41 | 41 |
| FFMQ-Acting with awareness | 5.92 | 40 | 40 |
| NEFF-Over-identified | 5.16 | 41 | 41 |
| Grit | 0.86 | 28 | 28 |

**Table 4.** Approximate shared variance percentages for significant scales and subscales in ascending

Due to small sample sizes in the age categories, a new demographic variable was created for subjects under 40 years old and over 40 years old. An independent samples *t*-test was conducted based on the condensed age category on the scale and subscale differential scores. There was no significant effect on all differential scores of the age category variable for the majority of scales.

There was a significant effect of the NEFF self-judgment based on the condensed age categories suggesting that subjects 40 and over exhibited a larger improvement at the $p < 0.05$ level than subjects under 40 [$t(36) = 1.91$, $p = 0.032$]. Partial eta squared estimates indicate that approximately 4.89% of the variation in NEFF self-judgment differential scores can be attributed to being over and under the age of 40 (Figure 1).

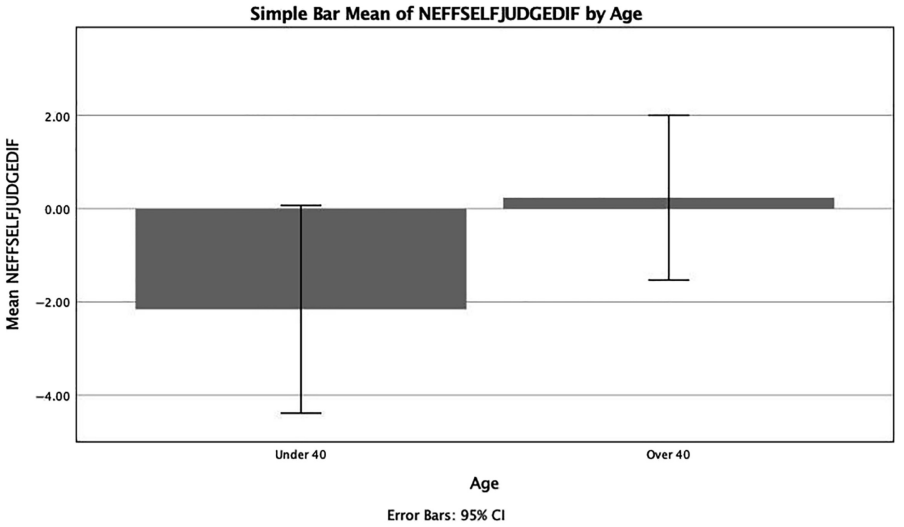


**Figure 1.** Mean NEFF self-judgment differential scores by age categories

There was a significant effect of the NEFF over identification subscale based on the condensed age categories suggesting that subjects 40 and over exhibited a larger improvement at the $p < 0.05$ level than do subjects under the age of 40 [$t(27.5) = 2.07$, $p = 0.024$]. Partial eta squared estimates indicate that approximately 5.46% of the variation in NEFF over identification differential scores can be attributed to being over and under the age of 40 (Figure 2).

*Ethnicity*. Due to inadequate sample sizes of individual ethnicity categories, the sample was categorized into two ethnicity categories (White and *Black, Indigenous and People of Color (*BIPOC)). An independent samples *t*-test was conducted based on the condensed ethnicity category on the scale and subscale differential scores. There was no significant effect on all differential scores for the majority of scales. There was a significant effect of the FFMQ observation differential subscale based on the condensed ethnicity categories suggesting that BIPOC subjects exhibited a larger effect at the $p < 0.05$ level than White subjects [$t(38) = 5.21$, $p = 0.03$]. Partial eta squared estimates indicate that approximately 26.78% of the variation in FFMQ observation differential scores can be attributed to being White or BIPOC (Figure 3).

*English as second language*. An independent sample *t*-test was conducted based on English as a second language status category on the scale and subscale differential scores. There was no significant effect on all differential scores for the majority of scales.

There was a significant effect of the NEFF self-kindness differential subscale based on the ESL categories suggesting that non-ESL subjects exhibited a larger effect at the $p < 0.05$ level than ESL subjects [$t(38) = 4.31$, $p = 0.04$]. Partial eta squared estimates indicate that approximately 19.85% of the variation in NEFF self-differential scores can be attributed to ESL status (Figure 4).

There was a significant effect of the NEFF mindfulness differential subscale based on the ESL categories suggesting that non-ESL subjects exhibited a larger effect at the $p < 0.05$ level than ESL subjects [$t(36) = 7.63$, $p = 0.01$]. Partial eta squared estimates indicate that approximately 45.05% of the variation in NEFF self-differential scores can be attributed to ESL status (Figure 5).

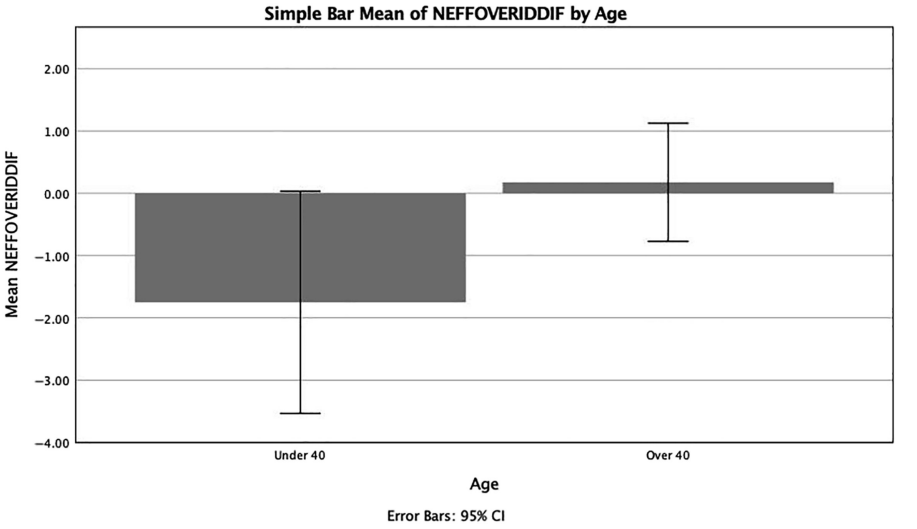


**Figure 2.**
Mean NEFF over identification differential scores by age categories

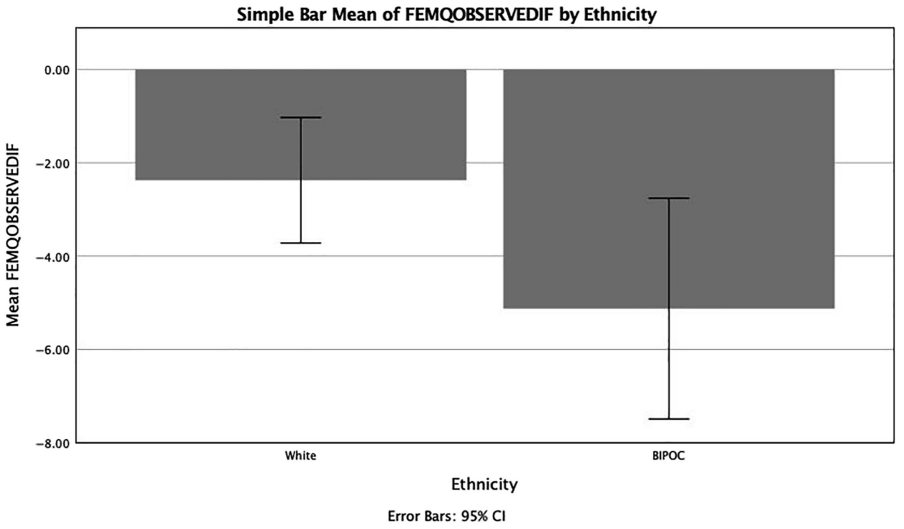


**Figure 3.**
Mean FEMQ observation differential scores by ethnicity categories

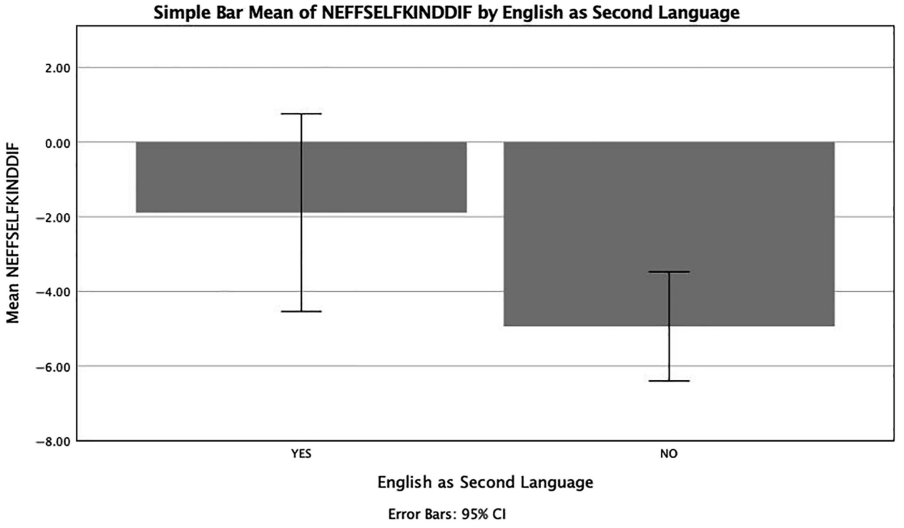


**Figure 4.**
Mean NEFF self-kindness differential scores by English as second language status

*Previous use of meditative and movement practices.* An independent samples *t*-test was conducted based on a current meditative practice category on the scale and subscale differential scores. There was no significant effect on all differential scores for the majority of scales.

There was a significant effect of the FFMQ Observing differential subscale based current meditative practice categories suggesting that subjects without a current meditative practice exhibited a larger effect at the $p < 0.05$ level than subjects that had a current practice [$t(38) = 3.26, p = 0.07$]. Partial eta squared estimates indicate that approximately 17.26% of

the variation in FFMQ Observing differential scores can be attributed to current meditative practice (Figure 6).

There was a significant effect of the NEFF Over identification differential subscale based current meditative practice categories suggesting that subjects without a current meditative practice exhibited a larger effect at the $p < 0.05$ level than subjects that had a current practice [$t(39) = 3.93, p = 0.005$]. Partial eta squared estimates indicate that approximately 16.71% of the variation in NEFF over identification scores can be attributed to current meditative practice (Figure 7).

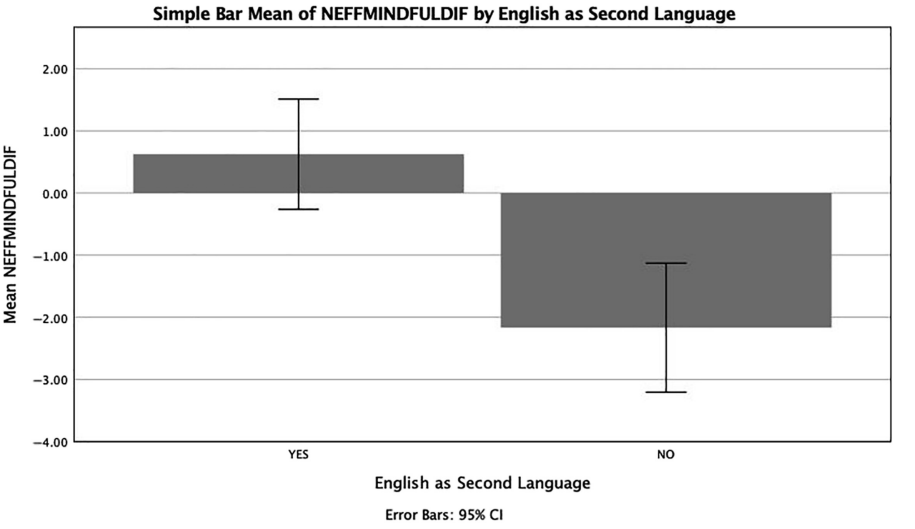


**Figure 5.**
Mean NEFF mindfulness differential scores by English as second language status

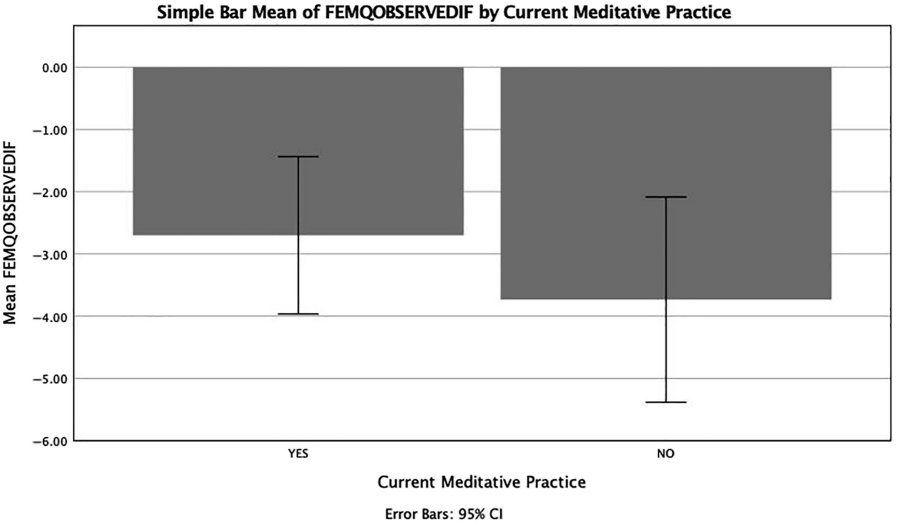


**Figure 6.**
Mean NEFF observation differential scores by current meditative practice status

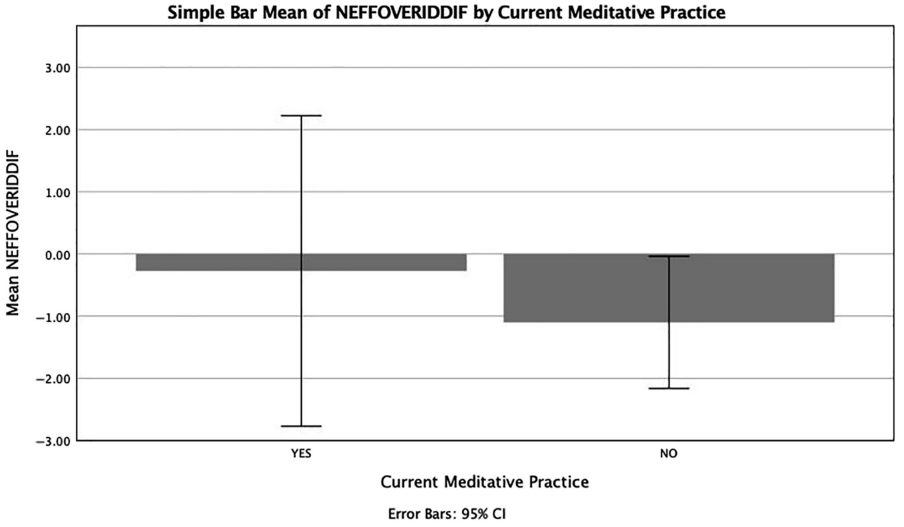


**Figure 7.**
Mean NEFF observation over identification scores by current meditative practice status

There was a significant effect of the GRIT differential scale based on current meditative practice categories suggesting that subjects with a current meditative practice exhibited a larger effect at the $p < 0.05$ level than subjects that did not have a current practice [$t(26) = 7.98, p < 0.00$]. Partial eta squared estimates indicate that approximately 45.29% of the variation in GRIT scores can be attributed to current meditative practice (Figure 8).

An independent samples *t*-test was conducted based on a current movement practice category on the scale and subscale differential scores. There was no significant effect on all differential scores for the majority of scales.

There was a significant effect of the NEFF Self-Kindness subscale based on current movement practice categories suggesting that subjects without a current meditative practice

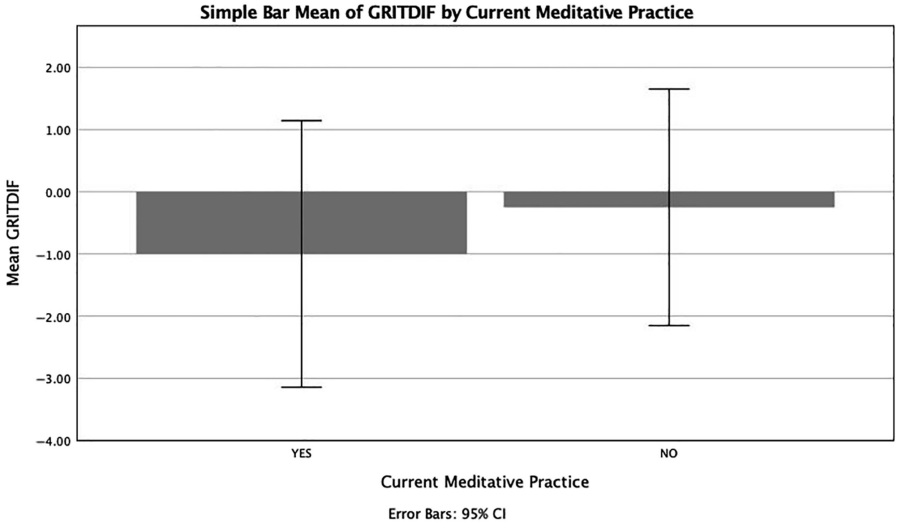


**Figure 8.**
Mean NEFF grit scores by current meditative practice status

exhibited a larger effect at the $p < 0.05$ level than subjects that did not have a current practice [$t(38) = 4.76$, $p = 0.04$]. Partial eta squared estimates indicate that approximately 23.20% of the variation in NEFF Self-Kindness differential scores can be attributed to current movement practice (Figure 9).

There was a significant effect of the NEFF mindfulness subscale based on current movement practice categories suggesting that subjects without a current meditative practice exhibited a larger effect at the $p < 0.05$ level than subjects that did not have a current practice [$t(36) = 3.19$, $p = 0.08$]. Partial eta squared estimates indicate that approximately 12.54% of the variation in NEFF mindfulness differential scores can be attributed to current movement practice (Figure 10).

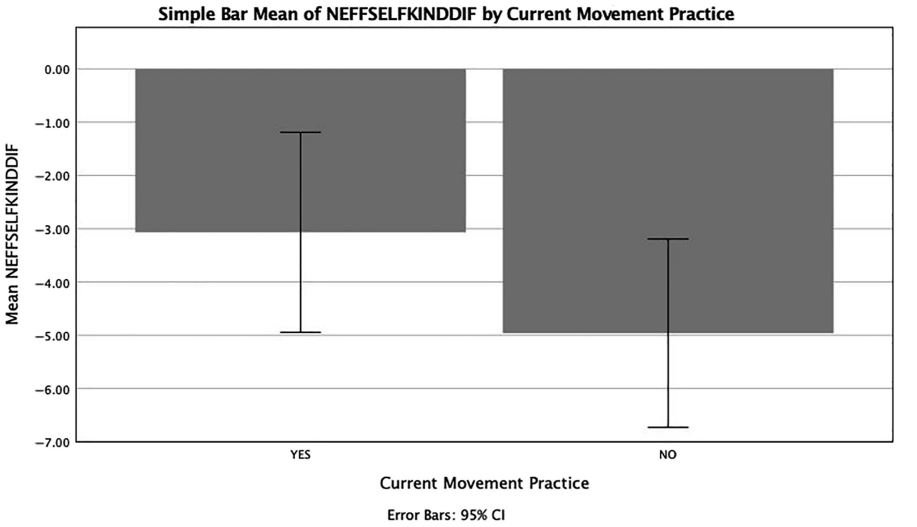


**Figure 9.**
Mean NEFF self-kindness differential scores by current movement practice status

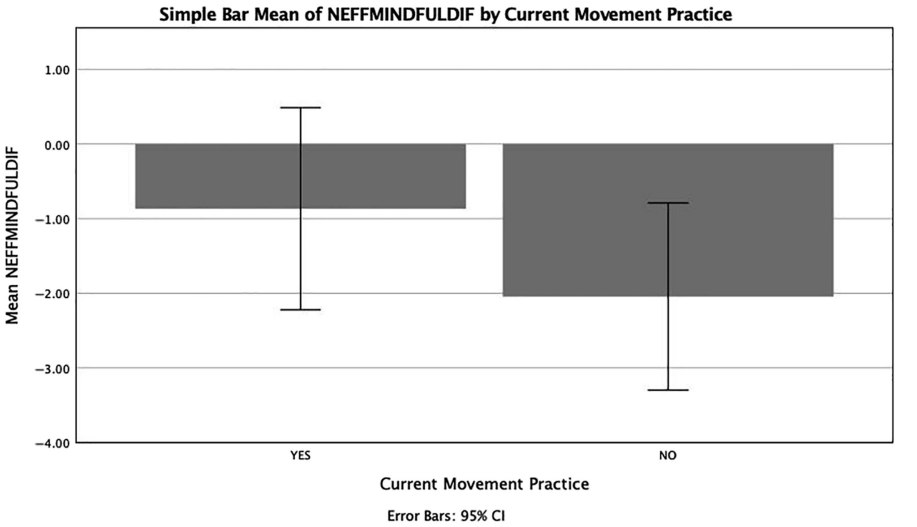


**Figure 10.**
Mean NEFF mindfulness differential scores by current meditative practice status

*Gender*. An independent samples *t*-test was conducted based on gender on the scale and subscale differential scores. There was no significant effect on all differential scores (Table 1).

## Discussion

To summarize the research questions, the mindfulness and self-compassion scales used in the study reliably measured the underlying constructs of mindfulness and self-compassion taught to doctoral students. Overall, participation in the course also improved mindfulness, self-compassion and other intrapersonal competency scores for doctoral students for the scores on the Five-Facet Mindfulness, NEFF, Grit, Active Listening and Mindset instruments. The Perceived Stress Scale and Beck Anxiety Instrument scores did not suggest improvement based on participation in the course. Many of the scales exhibited large amounts of shared variance suggesting that the approximately 1–44% of the change in mindfulness and self-compassion scores is due to participation in the course. Differences in age, ethnicity, English as a second language, and past meditative and movement practices exhibited significant differences mostly in the NEFF and FFMQ subscales and further discussed below.

Group comparisons do suggest validity in the efficacy of the course on mindfulness skills. For example, individuals who currently do not have a meditative or movement practice exhibited a larger differential increase in several of the NEFF subscales (observation, over identification, self-kindness and mindfulness) which would be expected over individuals who currently had practices (Keng *et al.*, 2011; Anderson *et al.*, 2007). The result that students over the age of 40 exhibited a greater increase in mindfulness from the scores substantiates previous research where older adults have seen greater positive improvement through intervention (Shook *et al.*, 2017).

Stress related to academics, intersections with family, work and financial concerns have been demonstrated to have significant impacts on student persistence towards their degree (Bray *et al.*, 1999; Johnson *et al.*, 2014; Joo *et al.*, 2008/2009). Students have also experienced increased levels of concern about their family and own health, difficulty in concentrating disruption in sleeping patterns and concerns on academic performance (Son *et al.*, 2020). Due to the languishing impact, teaching mindfulness practices gives students more resources for adopting positive coping strategies.

The intent to increase mindfulness and self-compassion practices was somewhat achieved for the students within this course. However, it is evident that if mindfulness and self-compassion are the goals of education, a course focused fully on cultivating those outcomes would likely be much more beneficial. Given the degree to which students self-reported continuing these practices in some form bears further investigation to ascertain whether the benefits of the course resulted in long-term and increased mindfulness and self-compassion benefits as well.

Although, the outcomes of the analysis do not report the lifetime benefits of taking up the training only once in a student's life. Furthermore, it does not rule out the influences of other variables such as occurrences of positive scenarios in the student's life in terms of professional and/or personal setting. This study utilized self-report measures, which are more prone to bias. Additionally, given the small sample size, additional collection of data will improve the reliability of measuring the intended construct of stress self-management capacity.

Largely, our findings are coherent with mindfulness and self-compassion theory. Individuals experience stress when they perceive that a stressor taxes or exceeds their coping capacity (Cohen *et al.*, 1995). Individuals who cannot effectively regulate their emotional responses to daily stressors experience more severe and persistent periods of distress that could develop into depression (Nolen-Hoeksema *et al.*, 2008). Students who can process their feelings positively tend to engage more in class, take turns, play fair and share (Rodgers, 2014). This interpretation is consistent with findings of the facet of "observing" under mindfulness practice. When students pause and reflect on their thoughts and emotions, they are more likely to consider their options and are more likely to discuss problems than react

physically (Rodgers, 2014). This research is in support of our findings on "non-reactivity" facets of mindfulness. Self-compassion facilitates psychological health by replacing maladaptive emotion-regulation strategies (i.e. self-judgment, isolation, rumination, and avoidance of painful thoughts, experiences and emotions) with more adaptive strategies (i.e. self-kindness, common humanity and mindfulness; Neff, 2003a). Consistent with self-compassion theory, these studies suggest that self-compassion may facilitate resilience by regulating emotional responses to distressing situations (Leary *et al.*, 2007). This ropes with our findings on "common humanity". Having lower self-compassion can lead to self-critical thoughts that undermine perceived competence (Neff *et al.*, 2005). In comparison, highly self-compassionate students were less affected by social difficulties (Terry *et al.*, 2013).

In addition to the mindfulness and self-compassion theory and their advantages highlighted through our research, other factors such as active listening and growth mindset also play an optimistic role in student success. Active Listening, a feature that closely correlates with mindfulness training works to assist individuals to pay attention to conversations (Jones *et al.*, 2016). This technique allows for a mindful listening practice. The concept of mindfulness to be present in a moment follows through in Active Listening. The two subscales that significantly increased from pre-to post-assessment were levels of conservative listening and listening skills. Our results suggest that targeting mindfulness and self-compassion through interventions could lead to increases in emotion regulation and in turn, enhance well-being of students in higher education.

## Implications for research and practice

Our aim in this research was to address the benefits for including brief mindfulness and self-compassion teachings and practices in required leadership courses outcome on diverse doctoral-seeking students for three consecutive years. We have done so by directly observing and reporting the significance of the outcomes of such practices in student's well-being. Of the many benefits, the greatest benefit is that graduate students will continue these practices beyond the course, which will likely support their stress regulation in the variety of contexts in which they will continue to work. In light of this research, universities could consider introducing mini mindfulness and self-compassion practices in other required coursework for their student populations with an invitation for students to utilize them in their daily personal and professional lives. Such interventions may benefit individuals to cultivate a healthy self-attitude and work on regulating their emotions during times of distress (Gilbert and Procter, 2006). This may be of particular importance to graduate students of color and graduate students over the age of 40. Although the long-term benefit to their mitigation of stress in this manner is unknown.

Additional research might explore the inclusion of more brief practices to ascertain whether there is any influence on perceived stress, anxiety, resilience, grit, and prosocial goals and behaviors to other student populations. For example, measuring undergraduate student populations using the techniques with similar results could provide effective resources at scale that can be used in first-year experience course and other methods of delivery to address well-bring and improve the student ability to persist towards a degree and educational goals. Furthermore, effects of self-compassion can help mediate the relationship between chronic academic stress and emotional health among undergraduates. It negatively mediated the relationship between learning stress and negative affect. It functions as a protective factor of an individual's emotional response to chronic stress. Undergraduate students with high self-compassion do not experience considerable negative affect as those with low self-compassion do (Zhang *et al.*, 2016). Hence, self-compassion-centered tools should be developed to help assist the students dealing with chronic academic stress.

In addition, it may be useful to ascertain how much mindfulness and self-compassion cultivation has influenced growth mindset and active listening results.

## Conclusion

The inclusion of brief mindfulness and self-compassion practices embedded into an already existing leadership course has shown tremendous beneficial results to a diverse doctoral student population. Though students display promising results by continuing the practices beyond the course, future research could expand to explore its long-term benefits.

## Resources

To access the free online Integrative Inquiry Curriculum, please visit https://rushingtoyoga.org/access-compassionate-leadership-course/

To access the free assessments used in this study, please visit https://competencycultivation.uta.edu/

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