Academic Paper

PROmoting Resilience During GRADuate School and Beyond (PRO-GRAD): A Motivational Coaching Intervention

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Abstract

The purpose of this longitudinal, mixed-methods study was two-fold: (1) to investigate the impact of a motivational coaching credit-bearing course on the resilience, mental health, health-related quality of life, compassion, and social support of graduate students in Ontario, Canada; and (2) to qualitatively explore students' overall experience participating in the course, how the course influenced the lives of students, and recommendations for course improvement. Thirty-two students completed five previously validated scales at four timepoints, as well as open-ended questions and end-of-term course reflections. Friedman's test suggested that the motivational coaching course had a statistically significant effect on anxiety and giving emotional support over time. Inductive content analysis was conducted on the open-ended questions and course reflections. Qualitative themes included increased selfdevelopment, relationship building, positive course acknowledgement of self-improvement, the impact and transferability of motivational coaching, and course improvements.

Keywords

graduate students, motivational interviewing, coaching, resilience, mental health

Article history

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Introduction

The mental health and wellbeing of graduate students (i.e., master's and doctoral students) is of growing concern. In 2018, over 60% of graduate students at Canadian universities reported their stress levels to be "more than average" or "tremendous" (American College Health Association, p.16). Additionally, researchers found that a majority of doctoral students reported feeling stressed with the primary source being school- and educational-related challenges (Smith & Brooks, 2015).

Evans and colleagues (2018) surveyed graduate students from 26 countries and 234 institutions from various fields of study; 41% and 39% of graduate students scored as having moderate to severe levels of anxiety and depression, respectively. There are unique stressors associated with being a graduate student; namely research funding, research projects, teaching assistantships, completing course work, and the pressure to publish (Arnold, 2014). Such stressors can lead to negative health consequences including burnout and suppression of the immune system, and might deplete students' resilience (Passer, Smith, Atkinson, Mitchell, & Muirs, 2008; Stoliker & Lafreniere, 2015).

Resilience has been broadly referred to as an individual's ability to overcome adversity (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003; Tugade & Fredrickson, 2004) and includes protective factors that buffer against the negative outcomes associated with mental health challenges (Steinhardt & Dolbier, 2008). Promoting strategies for stress-reduction and resilience-enhancement among graduate students can support their success in many areas of their lives and this is especially important in the current climate (Evans, Bira, Gastelum, Weiss, & Vanderford, 2018). Specifically, Du and colleagues (2020) assessed how resilience might affect the negative relationship that stress and anxiety have with sleep quality, among undergraduate and graduate students globally (*N* = 2254). The authors concluded that resilience weakened this negative relationship (Du et al., 2020). Moreover, university-based mentorship programs have been associated with resilience promotion, career enhancement, personal development, stress reduction, and kindness, to name only a few benefits (e.g., Fried, Atkins, & Irwin, 2019; Fried, Karmali, Irwin, Gable, & Salmoni, 2018; Grima, Paillé, Mejia, & Prud'homme, 2014; Zey, 1984).

In a recent intervention by Fried and colleagues (2019), the researchers implemented a small (N = 11) 8-month peer motivational interviewing via co-active life coaching (hereafter referred to as motivational coaching) pilot program among graduate students from a variety of disciplines to address stress and anxiety, while enhancing student resilience. Participants qualitatively reported improvements in their mental health and resilience and noted kindness experiences as important (Fried et al., 2019). While there is little data on the use of motivational coaching in university mentorship programs, mentorship programs more broadly are known to be beneficial to students (Lombardo, Wong, Sanzone, Filion, & Tsimicalis, 2017). Namely, Lombardo and colleagues (2017) qualitatively explored the experience of undergraduate student mentees who participated in a nurse peer mentorship program (N = 11). Students who participated in the program described social, academic, professional, and mental health benefits, as well as personal growth as a result of participation in the mentorship program (Lombardo et al., 2017). While resilience can act as a protective factor, enhancing graduate students' mental health, less is known about the role that motivational coaching might have on the resilience, mental health, health-related quality of life, compassion, and social support of graduate students.

Motivational coaching combines the tenets of motivational interviewing, Egan's Skilled Helper Model, and co-active life coaching (Newnham-Kanas, Morrow, & Irwin, 2010). Although these three models are similar, they differ in the ways in which they are practiced (Newnham-Kanas et al., 2010). Motivational coaching is a theoretically-grounded peer coaching model that views the coach and the client as equal partners who function as a team to resolve the client's issue of focus (Fried & Irwin, 2016; Newnham-Kanas, Irwin, Morrow, & Battram, 2011). Though coaching lacks consistent training and implementation (Hettema, Steele, & Miller, 2005), there is growing evidence of its effectiveness at modifying health behaviours (Liu, Irwin, & Morrow, 2015). For example, Karmali and colleagues (2020) investigated the impact of a 3-month co-active coaching/health education intervention on the dietary intake and physical activity behaviours of parents with overweight/obesity and their children. Parents in the study described changes in perspective, and an increased awareness of their habits and ability to make positive changes in themselves (Karmali et al., 2020). Further, Mantler and colleagues (2014) assessed the impact of motivational coaching on the smoking behaviours, personal competency, and qualitative changes in perceptions of identity, smoking, quitting, and the intervention itself of young adults (aged 19-25) in Canada (N =40). The authors concluded that smoking behaviours decreased from baseline to post-intervention

and participants felt an increase in personal competency (Mantler, Irwin, & Morrow, 2014). More recently, motivational coaching has been used as an intervention for university students' mental health (Fried & Irwin, 2016; Fried et al., 2019).

Fried and Irwin (2016) investigated the impact of a motivational coaching intervention on the stress, anxiety, and depression of undergraduate students (N = 30; aged 17-24 years). The authors found that the intervention had a statistically significant effect on participants' stress, with it decreasing from pre- to post-intervention (Fried & Irwin, 2016). Participants also attributed decreased stress levels, and increased self-awareness and self-reliance to their participation in the intervention (Fried & Irwin, 2016). Further, and as briefly mentioned above, Fried and colleagues (2019) investigated the impact of a motivational coaching program on the resilience, mental health, and health-related quality of life of graduate students (N = 11). Qualitatively, participants (N = 11) reported that the intervention positively influenced their abilities to cope with stress and anxiety, while also enhancing their resilience (Fried et al., 2019). However, quantitively, the authors reported that there were no statistically significant changes over time and recommended that the intervention be conducted with a larger sample (Fried et al., 2019).

Moreover, the authors suggested that the program be offered to a larger group of students, or to integrate motivational coaching into pre-existing programming (Fried et al., 2019). To determine its feasibility as an independent program, studying its impact on a larger group of students is needed. To compliment this, obtaining a thick, rich understanding of students' experiences with motivational coaching (including how the program meets students' needs) is crucial. Therefore, a larger mixed methods study focusing specifically on this population is warranted.

Study Purpose

Building from and based on the work of Fried and colleagues (2019), the purpose of *PROmoting Resilience During GRADuate School and Beyond (PRO-GRAD)* was two-fold: (1) to investigate the impact of a motivational coaching credit-bearing course on the resilience, mental health, health-related quality of life, compassion, and social support of graduate students in Ontario, Canada; and (2) to qualitatively explore students' overall experience participating in the course, how the course influenced the lives of students, and recommendations for course improvement. Regarding the quantitative data, we hypothesized that upon completion of the *PRO-GRAD* program, students would have: enhanced resilience; improved mental health and health-related quality of life; would demonstrate compassion within the context of care giving for others; and would receive as well as provide instrumental and emotional social support. With respect to qualitative data, we anticipated that, similar to Fried and colleagues (2019), upon program completion students would describe experiences of enhanced resilience, social support, and connection, increased coping skills, and improved mental health.

Methods

PRO-GRAD served as (1) a course developed by the principal investigator and offered in collaboration with leaders in the School of Graduate and Postdoctoral Studies at the host institution; and (2) a longitudinal, mixed-methods research study. This course was credit bearing (0.5, pass/fail) and was offered online via Zoom. It was offered twice (Winter of 2021 and Fall of 2021) and was limited to 30 graduate students in each offering (priority registration was given to PhD students and if there were still spots, registration opened to all graduate students). The pilot study included 11 participants, though Fried and colleagues (2019) suggested that 20 participants would be sufficient to "detect a moderate effect ($r^2 = .12$) of a three-level within-subject independent variable more than 80% of the time, using an alpha of .05" (p. 6).

Recruitment was carried out over email, and students enrolled in the course were invited to participate in the research component of the course. Students indicating an interest in participating were sent two links: (1) the letter of information, eligibility, and consent; and (2) the baseline survey. To be eligible for the study students needed be: (1) a graduate student; (2) enrolled in the PRO-GRAD course; and (3) able to read and write in English. At the beginning of both offerings, all students were provided with an 8-hour, interactive motivational coaching training day facilitated by an experienced motivational coaching trainer with the assistance of two graduate student program assistants. Specifically, one graduate student served as the course teaching assistant, while the other graduate student served as the project research coordinator. As such, the instructor for the course was not aware of the students who opted to participate in the research component of the course.

Following the training days, course participants were paired in dyads, irrespective of study participation, which rotated across the duration of the course. To pair students, the course teaching assistant arbitrarily allocated them to a dyad. This was done manually to avoid duplicating dyads over the duration of the course. Every two weeks, following the 'booster' session (described below), students were allocated to a new dyad. The teaching assistant emailed the individual dyads to connect the students, prior to each rotation. In this email, the teaching assistant requested that students confirm via email that: (1) they connected/shared contact information with one another; and (2) they had arranged their motivational coaching sessions.

Students were asked to engage in four 35–40-minute sessions per month (twice as the provider practicing the motivational coaching tools, and twice as the recipient of the approach). The recipient was responsible for identifying the focus they wished to discuss. Full group ('booster') 2-hour sessions occurred bi-monthly and involved the training team meeting with all class members to provide support, introduce other ways to use the tools, and debrief about how the experience was progressing. Topics/skills covered in the interactive training and 'booster' sessions included: dropping assumptions; getting curious; using open-ended questions; expressing empathy; acknowledging strengths; summarizing; active listening; and reflecting back. Students received a certificate of completion following the course.

Data Collection

The research components of the program focused on measuring students' resilience, mental health, health-related quality of life, compassion, social support, and explored recommendations for program enhancements. There were four data collection timepoints: baseline, immediate, 3-months, and 6-months post-program (for both course offerings), using Qualtrics^{XM} (Qualtrics, Provo, UT), an online survey tool. Baseline consisted of demographic information, and five previously validated scales: (1) the Brief Resilience Scale (BRS; Smith et al., 2008); (2) the Mental Health Inventory (MHI; Meybodi et al., 2011); (3) the RAND 36-Item Health Survey (RAND-36; Hays, Sherbourne, & Mazel, 1993); (4) the Compassion Scale (CS; Martins, Nicholas, Shaheen, Jones, & Norris, 2013); and (5) the 2-Way Social Support Scale (2-Way SSS; Shakespeare-Finch & Obst, 2011). The scales were selected based on those used in the pilot study (Fried et al., 2019), with the addition of the CS and the 2-Way SSS.

At immediate, 3-months, and 6-months post-program participants completed the same assessments administered at baseline (minus demographics) with the addition of an open-ended question to explore participants' views about the course's influence on their lives and recommendations for course improvements. Further, all students in the course were asked to submit an end of term course reflection about their overall experience. Reflections submitted by students who consented to participate in the research component of the course were used as a qualitative data source. Measures are discussed in turn.

Demographics Questionnaire. The demographic questionnaire was administered via Qualtrics^{XM} (Qualtrics, Provo, UT) and include eight items: (1) age; (2) sex; (3) gender; (4) ethnicity; (5) residence; (6) marital status; (7) year of study; and (8) program.

Brief Resilience Scale (BRS). The Brief Resilience Scale (BRS) has been previously validated (Cronbach's = 0.84-0.87) and measures one's resilience (Smith et al., 2008). The BRS includes 6-items; items 1, 3, and 5 are positively worded and items 2, 4, and 6 are negatively worded. Participants were asked the extent to which they agree or disagree with the statements using a 5-point scale; 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The BRS is scored by reverse coding items 2, 4, and 6. The mean of the six items is then determined to score the scale. Higher means represent higher levels of resilience.

Mental Health Inventory (MHI). The Mental Health Inventory (MHI) has been previously validated (Cronbach's α = 0.93) and measures one's mental health status and psychological wellbeing using 18 items (Meybodi et al., 2011). Participants were asked the how much time over the past month they have felt the statement to be true of them on a 6-point scale ranging from 'all of the time' (1) to 'none of the time' (6). The MHI includes a total score as well as four subscales: (1) anxiety; (2) depression; (3) behavioural control; and (4) positive affect. Examples of questions include, 'How much of the time during the last month have you felt downhearted and blue?' and 'During the past month, how much of the time have you been anxious or worried?' To score the MHI, items 1, 3, 5, 7, 8, 10, 13, and 15 are reverse coded and then the scores for each item are summed respective to the subscales. The raw scores are then transformed to a 0-100 point scale, where higher scores indicate better mental health.

RAND 36-Item Health Survey (RAND-36). The RAND 36-Item Health Survey (RAND-36; Hays et al., 1993) has been previously validated (Cronbach's α = 0.78-0.93; Hays et al., 1993; Ware & Sherbourne, 1992) and measures eight health domains: (1) physical functioning; (2) role limitations due to physical health problems; (3) role limitations due to emotional problems; (4) energy/fatigue; (5) emotional wellbeing; (6) social functioning; (7) bodily pain; and (8) general health perceptions. In addition to the eight domains, participants' perceived change in health is determined by an additional single item in the RAND-36. Across the domains there are 36 items and participants were asked to select one option for each question. Examples of questions include: 'During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?', and 'Compared to one year ago, how would you rate your health in general now?'. To score the RAND-36, pre-coded numeric values are re-coded based on the scoring key. A high score indicates better health status.

Compassion Scale. The Compassion Scale (CS) has been previously validated (internal consistency = 0.82) and measures generosity, hospitality, objectivity, sensitivity, and tolerance across social networks and relationships (Martins et al., 2013). The CS includes 10 items using a 7-item Likert scale (1 = none; 7 = all). Examples of questions include, 'How much of your free time would you spend to do work for a friend that needs your skills but cannot afford to pay you?' and 'How many times would you do the right thing if it puts your family at risk?'. Higher scores indicate higher levels of compassion.

2-Way Social Support Scale (2-Way SSS). The 2-Way Social Support Scale (2-Way SSS) has been previously validated (Cronbach's = 0.81-0.92) and measures giving and receiving emotional and instrumental support (Shakespeare-Finch & Obst, 2011). The 2-Way SSS includes 20 items; participants were asked to indicate the degree to which the statement is true to them on a 6-point scale ranging from 0 (not at all) to 5 (always). Examples of statements include, 'I feel that I have a circle of people who value me' and 'I give others a sense of comfort in times of need'. To score the 2-Way SSS there are four factors: (1) receiving emotional support; (2) giving emotional support; (3) receiving instrumental support; and (4) giving instrumental support. For each factor the mean is calculated, yielding four scores. Higher scores indicate higher levels of giving or receiving social support.

Qualitative questions. At follow-up time points participants were asked the following open-ended questions: (1) 'Now that the program has ended, in what ways, if any, did participation in this program influence your life?'; and (2) 'Now that the program has ended, what recommendations, if any, do you suggest we make to enhance the experience for students in future program offerings?'. Additionally, more fully to understand students' key takeaways from their experiences in the course, they were asked to submit an end-of-term reflection about their: (1) specific experiences as a recipient and provider of motivational coaching; or (2) experience, in general, by submitting a 2–4-page paper.

Data Analysis

Quantitative

Multiple imputation was used to handle missing data, using the non-missing values of the measured variables for this imputation. To determine if there were any changes over time in resilience, mental health, health-related quality of life, compassion, and social support, we applied a Friedman's test in which time (baseline, immediate, 3 months, and 6 months post-intervention) was the independent variable. To correct for multiple comparison bias in post-hoc analyses, a Holm-Bonferroni correction was applied within families of comparisons (i.e., within the subscales of each measure). Statistically significant effects identified with the Friedman's test were subsequently evaluated using pairwise Wilcoxon signed ranks tests. Data analyses were completed SPSS (version 28.0.1.1) and R (version 4.1; R Core Team, 2022).

Qualitative

For the open-ended responses and course reflections, inductive content analysis (Patton, 2015) was conducted. To ensure study rigor, the data trustworthiness criteria (credibility, transferability, and confirmability) outlined by Lincoln and Guba (1985) were employed by the research team. Following the completion of the first PRO-GRAD offering, four members of the research team independently and simultaneously reviewed each transcript by reading them once without coding and then a second time to code line-by-line. Individually, each member determined preliminary theme names based on their coding and then the researchers met to discuss and come to consensus about final themes (i.e., in support of data confirm ability). Data from the second PRO-GRAD offering was analyzed independently by two members of the research team who followed the same procedures. Researcher triangulation and team consensus of final themes were used to ensure data credibility and confirmability per the criteria advised by Lincoln and Guba (1985). After reviewing the final themes from both offerings, it was evident to the research team that both course offerings yielded similar themes. As such, the data is presented as common themes from both course offerings. Following the consensus of final themes, quotes were assigned to their respective thematic categories. The strength of each theme was reinforced by quotes of similarity (Lochmiller, 2021). A sample of quotes most illustrative of each theme are presented in the study results. To aid in data transferability, thick and rich descriptions of study findings are presented, in addition to the methods of data collection for reproducibility (per Lincoln & Guba, 1985).

Results

Demographics

A total of 32 graduate students were eligible and consented to participate in the study component of the program (16 students from each offering). The mean age of participants was 33.9 years (SD

= 10.3) and the majority of participants identified as female (n = 23; 71.9%). Almost half of the participants were of European origins (n = 15; 46.9%) and over half of the participants (n = 17; 53.1%) were married, common law, or engaged. Nearly all participants lived off-campus (n = 29; 90.6%) and 9 participants (21.8%) were in the Health and Rehabilitations Sciences program, while the remaining 23 participants were dispersed throughout various programs. There were 30 participants (93.8%) who were completing a doctoral degree and 19 (59.5%) were in years 1-3, while 13 (40.5%) were in years 4-6. Please see Table 1 for full demographic data.

Table 1. Demographic Information of Participants in PRO-GRAD

Participant Characteristics (N = 32)	n	%
Age, M (SD)		
Total	33.9 (10.3)	
Sex		
Female	23	71.9
Male	9	28.1
Gender		
Female	23	71.9
Male	9	28.1
Ethnicity		-
Arab	3	9.4
Black	3	9.4
European	15	46.9
Korean	2	6.3
Latin American	2	6.3
South Asian	1	3.1
West Asian	4	12.5
I prefer not to answer	2	6.3
Residence		
On campus	3	9.4
Off campus	29	90.6
Marital Status	1 20	1 00.0
Single	13	40.6
Married/common law/engaged	17	53.1
Divorced/separated	2	6.3
Program		0.0
Biology	1	3.1
Business	2	6.3
Chemical and Biochemical Engineering	2	6.3
Civil and Environmental Engineering	1	3.1
Education	2	6.3
Electrical and Computer Engineering	1	3.1
English	2	6.3
French Studies	1	3.1
Health and Rehabilitation Sciences	9	28.1
Mathematics	1	_
Media Studies		3.1
	1	3.1
Medical Biophysics		-
Nursing	2	6.3
Philosophy	3	9.4
Psychology	3	9.4
Current Level of Study	10	0.0
Master's	2	6.3
Doctoral	30	93.8
Year of Study		1
1 st Year	6	18.8
2 nd Year	7	21.9
3 rd Year	6	18.8
4 th Year	6	18.8
5 th Year	4	12.5
6 th Year	3	9.4

Quantitative

PRO-GRAD was not associated with a statistically significant change in participants' resilience. While there was also no significant change in the total score of the mental health inventory or the depression, behaviour control, and positive affect subscales, the anxiety subscale demonstrated a statistically significant effect, F(3, 2931.21) = 4.03, p = 0.036. Post-hoc testing suggested that participants' anxiety scores significantly increased from baseline (M_{rank} = 2.06) to 6-months postprogram (M_{rank} = 3.13) indicating that participants' anxiety decreased over time. No other differences were demonstrated within the anxiety scores over time. PRO-GRAD had no statistically significant change in participants' physical functioning, role limitations due to physical health problems, role limitations due to emotional problems, energy/fatique, emotional wellbeing, social functioning, bodily pain, general health perceptions, or perceived change in health. While PRO-GRAD had no statistically significant change in participants' compassion, the receival of emotional and instrumental support, respectively, or the giving of instrumental support, there was a statistically significant effect on participants' giving of emotional support, F(3, 979.28) = 3.89, p =0.03. Participants' giving of emotional support significantly decreased from baseline ($M_{rank} = 3.11$) to all subsequent time periods; immediate post-intervention (M_{rank} = 2.17), 3-months post-program (M_{rank} = 2.43), and 6-months post-program (M_{rank} = 2.29). No differences were demonstrated among the post-baseline time periods. The means, standard deviations (SD), and the F-ratios of Friedman's test for the scales and their respective subscales separated by time can be found in Table 2 at the end of this paper.

Qualitative

Participants reflected on their learnings and overall course experiences, in addition to offering suggestions for future course improvements. The following themes emerged from the data: (1) increased self-reflection and awareness (shift in perspective); (2) development of skills (shift in advice giving, power of active/reflective listening, dropping assumptions, getting curious, acknowledgements); (3) relationship building (empathy, increased social connectivity, fostered trust, safe space); (4) positive course experience; (5) acknowledgement of self-improvement; (6) impact of motivational coaching; (7) transferability of motivational coaching (everyday applications, career applications, interpersonal); and (8) course improvements (duration of the course, tools, sessions).

When describing their overall experiences, participants reported having a positive course experience. Participants emphasized the positive impact that the course had on their mental health and their individual strengths, noting that it challenged them to "step out of their comfort zone(s)" and connect with others. A large majority of participants explained that after learning and engaging with the fundamental components of motivational coaching, they were able to develop new skills that not only enhanced their motivational coaching sessions, but were also transferable to both their personal and professional lives. Notably, participants described a shift away from advice giving, and while many recognized it to be a challenge, participants also emphasized it as a critical skill. Individuals also highlighted the power of active listening, the importance of silence in a conversation, and the value of allowing others to express themselves. Dropping assumptions and getting curious were additional skills that participants highlighted as important in recognizing the biases and judgements they held. Worth noting, the skills described by participants had a significant influence on their lives. Specifically, many individuals found motivational coaching to be transferrable to their everyday lives, their jobs, and their interpersonal relationships. Many described using their developed skills in their interactions with family, friends, and colleagues. Individuals also expressed that participating in the PRO-GRAD course allowed them to build and improve relationships. In fact, some participants highlighted they felt less alone in their experiences as a graduate student after feeling a sense of unity when connecting with fellow peers throughout the course experiences (via dyad and booster sessions). Some participants also spoke to the relationships they were able to cultivate with their peers when practicing motivational coaching, noting that the level of trust shared between partners contributed to both a safe and rewarding

experience. When reflecting back on their experiences, many participants acknowledged their improvements over the duration of the course. Some individuals expressed their confidence in the use of motivational coaching tools and techniques substantially improved when compared to their confidence level at the start of the program. Alternatively, other participants acknowledged the improvements they experienced within themselves, with some highlighting improvements in their ability to be an empathetic listener or recognize and address their personal traumas. Others noted increased self-reflection with respect to their daily life, including recognizing their motivation and desires for behaviour change and an increased awareness of their emotions and thoughts.

While a large majority of participants enjoyed the course and had a positive experience, there were numerous suggestions for future course improvements. Many participants mentioned they would have appreciated more tools and resources provided throughout the course, such as workbooks or additional sample videos that modelled the motivational coaching techniques. Interestingly, the findings were split for course structure with some individuals recommending the course continue in a virtual format, while others suggested an in-person format would make the program more impactful. Illustrative quotations for the above-noted themes are provided in Table 3 at the end of this paper.

Discussion

The purpose of this study was to investigate the impact of a motivational coaching peer mentorship program on the resilience, mental health, health-related quality of life, compassion, and social support of graduate students in Ontario, Canada. Overall, students found the PRO-GRAD program to be a positive experience, as emphasized in the qualitative findings. Specifically, participants revealed post-program that they developed several skills, improved their relationship building, became more aware and increased self-reflection, and discovered the impact and transferability of motivational interviewing techniques. Quantitatively, there were statistically significant differences in participants' anxiety scores and giving of emotional support. A number of these important findings warrant further discussion.

As noted above, there was a significant decrease in participants' anxiety from baseline to 6-months post-program. These results are comparable to the findings of Fried and Irwin (2016) who found a statistically significant difference in undergraduate students' perceived levels of anxiety from preintervention to mid-intervention and pre-intervention to post-intervention after participating in a motivational coaching program. Interestingly, the findings differ from those reported in the pilot study, as the authors noted no statistically significant changes among graduate students' anxiety scores over time (Fried et al., 2019). The fact that graduate students' anxiety decreased over time in the current study is of particular importance, as graduate students are more than six times as likely to experience anxiety compared to the general population (Evans et al., 2018). Further, in a systematic review and meta-analysis investigating depression, anxiety, and suicidal ideation among doctoral students, Satinsky and colleagues (2021) concluded that anxiety was highly prevalent among PhD students. Additionally, PhD students experienced clinically significant anxiety symptoms at rates that were higher than young adults in the general population (Satinsky et al., 2021). Given graduate students' heightened levels of anxiety, findings from the current study position motivational coaching as an approach that could be leveraged to help reduce graduate students' experiences of anxiety.

Despite there being no statistically significant effects on participants' resilience and total score for mental health, participants qualitatively reported that the program positively influenced their lives. Several participants underscored their experiences of self-improvement, with many stating they felt more equipped to care for themselves and cope with their stress and anxiety, in addition to better supporting and caring for those around them. These findings are consistent with the qualitative findings of Fried and colleagues (2019) wherein the participants qualitatively reported

improvements in mental health, resilience, self-awareness, skill development, and decreased anxiety. Further, although a different population (parents with young children), it is noteworthy that similar qualitative results were reported in a 3-month co-active life coaching obesity intervention conducted by Karmali and colleagues (2020). Researchers found that the clients reported perceived improvements in mental wellbeing and increased awareness post-program. It is clear that motivational coaching shows promise in improving the mental health and resilience of graduate students.

Interestingly, participants' giving of emotional support significantly decreased over time. These findings are noteworthy and unexpected; it was hypothesized that participants' giving of emotional support would increase due to them repeatedly providing motivational coaching to peers over the duration of the course. One possible explanation for this unexpected finding comes from researchers who have suggested that experiencing the benefits of giving social support is conditional upon two factors: whether the individual giving the support perceives it as effective and if the giving of support was freely chosen (Inagaki & Orehek, 2017). Perhaps the significant decrease observed in participants' giving of emotional support can be attributed to the participants' perception of whether their giving of support was viewed as effective to their peers, in addition to feeling as though their giving of support was not freely chosen based on it being a course requirement.

Moreover, it is possible that as the course progressed, providing emotional support felt less taxing for participants, lending to the tenets of motivational coaching. That is, participants might have perceived their giving of emotional support to decrease as they practiced the motivational coaching tools during the course, which included supporting their partners' autonomy and reframing rather than working to come up with solutions for their partner by giving unsolicited advice. This is consistent with the qualitative findings, wherein participants expressed feeling more confident in their use of motivational coaching tools. To this end, it is possible that over time, participants' utilization of the tools became easier, leading them to perceive their giving of emotional support to decrease. However, this data is not consistent with the qualitative findings in which participants reported post-program that they cultivated meaningful and trusting relationships with their peers, with many reporting they felt united in their experiences of graduate school. These qualitative findings are consistent with those of Fried and colleagues (2019), where participants reported feeling a sense of connection and support with their peers after engaging in sessions of motivational coaching, as well as expressed interest in learning new skills to help others.

It is worth noting that the PRO-GRAD program took place during the COVID-19 pandemic, which likely impacted students' experiences and the study findings. Specifically, PRO-GRAD was modified to be an online course, as at the time of administration all in-person classes at the host institution were suspended. While some participants described that they appreciated the online format, others noted that they would have preferred the course to be offered in-person. The preference for an in-person course aligns with work conducted by Kee (2021), where the author explored graduate students' emotions and challenges in response to the pandemic's disruption to students' learning. Specifically, Kee (2021) concluded that many students preferred face-to-face interaction over online instruction. Notably, graduate students experienced increased isolation as a result of online learning and not seeing colleagues in-person, which contributed to feelings of fear and anxiety (Kee, 2021). It is important to note that despite the course in the current study being offered online, the positive gains of participants' – in terms of anxiety, empathy, social connectivity, and trust – indicate that motivational coaching might be one way to help combat the negative effects of the pandemic, or other times of isolation, on graduate students' overall wellbeing.

Limitations

While the qualitative results of PRO-GRAD show promise that motivational coaching can provide a supportive experience for graduate students and contribute to the motivational coaching literature, this study is not without limitations. First, the motivational coaching program did not have all the desired quantitative effects that it wished to have and therefore, practitioners should be mindful of the lack of quantitative impact this coaching program had. However, it is possible that this is largely due to the small sample size; despite the recruitment efforts resulting in the course reaching its full enrolment capacity, the total number of students who consented to participate in the research component of the program was 32. Only 16 students out of 29 enrolled in the first course offering completed the research component, which is similar to that in the second course offering as 16 students out of 27 completed the research component. As PRO-GRAD was designed as a graduate course, the research component was not mandatory for students and thus, resulted in poor enrolment. Future studies should consider options such as offering incentives to improve study participation. Secondly, doctoral and master's students were analyzed together. Given the small sample of master's students (n = 2), it is possible that the master's students included in the analysis had different program experiences compared to doctoral students, lending to an imbalance. The decision to include all students (doctoral and masters) in the analysis was based on practices in other work (see Evans et al., 2018; Fried et al., 2019; Shillington et al., 2021; Wasil et al., 2021), as graduate students of various programs tend to be analyzed together. It is recommended that when numbers allow, researchers of future studies including participants of various graduate programs, analyze these groups separately to account for unique participant experiences. Thirdly, the overall sample of the study lacks diversity regarding demographics. The vast majority of study participants identified as female, with over half indicating they were either married, common law, or engaged, and of European origins. As a result of the small sample size and lack of diversity in demographic data, this sample is not representative of the graduate student population and therefore, limits the generalizability of our findings. In the future, it is advised that researchers stratify their sample to increase variation. Although honesty demands (per Bates, 1992) were employed to help reduce social desirability bias, it is possible that because the analysis tools required self-reporting - specifically the end of term course reflections - this could have led to social desirability bias. Another limitation that should be considered is the lack of a comparison/control group. As stated by Kinser and Robins (2013), the inclusion of a control group in study designs allows any observed improvements to be attributed specifically to the intervention, which ultimately strengthens the validity of study findings. If possible, in future research it is recommended that researchers include a control group in study designs. Lastly, it is possible that the benefits described were a result of participants creating a framework of social support, as opposed to being attributed to the motivational coaching course itself. This said, it is difficult to separate the two constructs, as social support is a theoretical underpinning of motivational coaching (Resnicow & McMaster, 2012). Specifically, relatedness - "a fundamental human need relevant for motivating behaviour change" - is a core component of motivational coaching and involves creating meaningful social connection through the relationship established between the provider and the recipient (Resnicow & McMaster, 2012, p. 2).

Conclusion

This motivational coaching, resilience-promoting peer mentorship program was found to have significant effects on graduate students' anxiety and giving of emotional support. Additionally, participants described a positive course experience, inclusive of gaining increased self-reflection, skill development, relationship building, and acknowledgement of self-improvement, as a result of their participation in the program. Therefore, the PRO-GRAD motivational coaching intervention may be valuable for the overall mental health and wellbeing of graduate students and their development of skills to help navigate challenging and stressful situations. Future studies should consider these findings when developing new interventions to advance the literature on the use of

motivational coaching as a method for improving the mental health and wellbeing of graduate students.

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Table 2: Participants' Resilience, Mental Health, Health-Related Quality of Life, Compassion, and Social Support Over Time

Scale	Baseline Mean (SD)	Immediate Post- Program Mean (SD)	3-Months Post- Program Mean (SD)	6-Months Post- Program Mean (SD)	F-ratio
Brief Resilience Scale (BRS	5)	(/	()	(/	
Total Score	3.33 (0.72)	3.48 (0.63)	3.48(0.67)	3.54 (0.81)	F(3, 574.52) = 1.12, p = 0.34
Mental Health Inventory (Ma	HI)			<u> </u>	
Total Score	60.35 (14.42)	66.71 (15.05)	66.36 (15.84)	66.07 (15.85)	F(3, 200.43) = 1.16, p = 0.80
Anxiety Subscale	52.50 (18.50)	58.43 (18.29)	58.47 (19.66)	61.60 (18.15)	F(3, 2931.21) = 4.03, p = 0.036*
Depression Subscale	66.41 (16.37)	72.92 (15.21)	72.00 (16.95)	70.00 (19.85)	F(3, 529231.19) = 0.86, p = 0.80
Behaviour Control Subscale	72.34 (15.60)	78.21 (17.54)	77.00 (17.84)	79.10 (14.93)	F(3, 47520.19) = 2.38, p = 0.27
Positive Affect	50.16 (18.34)	57.14 (19.93)	58.00 (19.28)	55.40 (20.91)	F(3, 484.17) = 1.32, p = 0.80
RAND-36-Item Health Surve	, ,	1			
Physical Functioning	90.64 (15.10)	92.50 (11.67)	92.19 (10.65)	94.18 (8.12)	F(3, 187.99) = 0.66, p = 1.00
Role Limitations due to Physical Health Problems	70.96 (40.36)	85.71 (31.50)	85.00 (26.75)	83.00 (31.22)	F(3, 2574.17) = 1.10, p = 1.00
Role Limitations due to Emotional Health Problems	32.26 (37.99)	47.62 (33.24)	52.22 (38.84)	49.33 (43.16)	F(3, 89614.98) = 3.29, p = 0.17
Energy/Fatigue	44.35 (20.77)	49.11 (24.83)	47.94 (21.11)	46.40 (22.94)	F(3, 959.09) = 0.50, p = 1.00
Emotional Wellbeing	63.84 (17.87)	70.03 (16.38)	68.80 (17.93)	70.08 (16.17)	F(3, 2748.88) = 1.23, p = 1.00
Social Functioning	70.56 (19.51)	76.78 (19.75)	78.75 (20.01)	79.00 (20.95)	F(3, 610.48) = 2.35, p = 0.50
Bodily Pain	72.18 (22.21)	74.82 (20.53)	77.58 (15.94)	78.00 (15.66)	F(3, 436.02) = 0.72, p = 1.00
General Health Perceptions	65.81 (21.76)	70.00 (19.95)	70.12 (20.36)	63.20 (24.15)	F(3, 7825.01) = 3.30, p = 0.17
Perceived Change in Health	57.26 (29.00)	70.53 (26.40)	65.00 (22.36)	61.00 (20.51)	F(3, 656.47) = 1.52, p = 1.00
The Compassion Scale (CS)				
Total Score	3.90 (0.91)	3.83 (1.06)	3.81 (0.80)	3.61 (0.79)	F(3, 3949.95) = 1.30, p = 0.27
The 2-Way Social Support	Scale (2-Way S	SS)			
Receiving Emotional Support	4.39 (0.71)	4.42 (0.67)	4.44 (0.80)	4.42 (0.79)	F(3, 613.1) = 1.27, p = 0.48
Giving Emotional Support	4.39 (0.67)	4.10 (0.76)	4.16 (0.75)	4.12 (0.67)	F(3, 979.28) = 3.89, p = 0.03*
Receiving Instrumental Support	4.18 (0.77)	4.21 (0.84)	4.26 (0.83)	4.36 (0.61)	F(3, 4051.11) = 1.60, p = 0.48
Giving Instrumental Support	4.38 (0.56)	4.08 (0.74)	4.15 (0.69)	4.21 (0.61)	F(3, 92.95) = 1.77, p = 0.48

Table 3: Qualitative Themes

Increased Self-Reflection and Awareness

"It [PRO-GRAD] also made me address some of my biggest interpersonal challenges I struggle with head on. It helped me look at myself as a resource, to put into practice all the skills and experiences I have to be a healthier and happier person."

"I learned quite a lot in this course, not only in terms of the formal curriculum of MI but in terms of understanding myself and others in terms of what drives motivation and desire for change."

"I found the continual reflection on values and ongoing conversations really helpful to enact the knowledge into my daily life. I was able to over a period of time to reflect on how my actions/ability to achieve goals is related to values underpinning them and explore barriers to my performance."

"Thanks to the program, I have gain[ed] more awareness about my own emotions, and my own thoughts."

"I think that shift in self-development was a personal change that I didn't expect from this course but am very appreciative of."

Shift in Perspective

"The program helped me feel valued and worthy. It was a lifeline when I was feeling low and helped me see many issues from a different perspective."

"Practicing motivational interviewing with multiple classmates was also helpful because it opened me up to new perspectives. I was able to see where my blind spots were in my ideas and logic..."

"I found that that participating in this course helped me to define and clarify my own priorities. It provided some tools for creating internal checks and balances against my own priorities and furthermore a good perspective that we all indeed have the answers inside, we just need to listen and trust our own gut."

"I feel like I failed to recognize that similar experiences are different from person to person, and that I needed to be curious about what it was like to experience that, from their perspective."

"Never underestimate the power (to change) within each individual. That power is not always present, and that is fine, but it's important to remember that it's there and that MI can help in bringing it to the surface."

Development of Skills/Tools

Shift in Advice Giving

"...I found myself having to consciously stop myself from offering advice or sharing similar experiences that I have encountered, as I learned this is not part of the MI process. The first interview session humbled me as it drew attention to the fact that I seek to fix problems by offering advice or solutions and can even unintentionally take the focus off the person who is speaking without realising by sharing similar experiences."

"This learning was critical to me because, as many people do, I often found it challenging to hold back well-meaning advice and not steer the conversation towards my perspective."

"The tool that I want to work on going forward is not giving advice. I do often find myself in the position where I want to "fix it" for the person ..."

. "It's been a bit difficult to refrain from providing 'advice' since, often, people seek explicit direction or suggestions from me."

"I often found it challenging to hold back well-meaning advice and not steer the conversation towards my perspective."

"I also found it extremely challenging NOT to offer advice."

Power of Active/Reflective Listening

"Participation in this program helped me to listen better to others and notice my tendency to control the conversation and listen to ask questions instead of truly listening to what they are saying. I am working on changing the way I listen and interact with others and understand the importance of silence in conversation."

"Reflecting back was also a helpful tool in reiterating our discussion and arriving at a set of steps and commitment to achieving her goals."

"I feel more capable of engaging in active and reflective listening."

"By engaging in more active listening and responding with reflective statements about what THEY are saying, I've come to really appreciate the value in letting each person vocalize (both in words and in actions) what it is they think and feel."

Dropping Assumptions

"The lesson of dropping assumptions and preconceived notions of the 'client' was by far one of the most important skills that I've developed during the course of this training. Early on in the process, something I realized was that I was quite shocked by some of the biases that I had completely wrong!"

"Don't judge people. Not because it's the nice thing to do or because they might feel offended, but because it hinders my curiosity and capacity to hear the other person."

"My experience with her was a perfect example of how important it is to drop assumptions. I am ashamed to admit that I created not very positive assumptions about her at the beginning of our first session due to her young age and physical appearance. However, she quickly corrected all my wrong impressions by acting extremely knowledgeable, professional, and yet with the greatest degree of empathy."

Getting Curious

"[...I am] more focused on engaging and showing genuine interest and curiosity in the person. I do find it really amazing how powerful that is and how much more people will share with this approach."

"Genuine curiosity and compassion have helped me improve my relationships with family and friends, and I am more successful at embracing the experience without the constant urge to comment on the issue or solve the problem."

"I was intrigued to learn that through something as – seemingly – easy as listening and genuine curiosity, solutions suddenly emerge that may have been buried in a place that the person could not access"

Acknowledgements

"When faced with the resistance that may arise from such discussions on changing something, I learned that it's better to purposely avoiding advocating either for the desirable goals or against, and just mirroring back the challenging scenario the client seems to be

caught in while acknowledging the feelings may arise of such position..."

"Acknowledgment is another powerful tool I learned in this course. But it has to be genuine!"

"When receiving MI, I felt extremely comfortable sharing my concerns and exploring the reasons for the feelings that I had about that specific issue. My partner seemed genuinely interested in listening to me and acknowledging my feelings."

"My latter "clients" responded well to validation and acknowledgement of their situations, and I believe this made them more receptive to the Powerful Questions."

Relationship Building

Empathy

"The most valuable thing I learned in this course was to be able to hold space for others by learning how to ask powerful questions from a compassionate and curious place."

"Stepping in different shoes as the provider and the receiver helped me develop more patience and empathy towards others and towards myself."

"I now feel that I have a set of tools to channel my empathy and, hopefully, support the people around me in achieving what makes them happy."

"As I became more comfortable bringing in tools of validation, tying goals to values, and acknowledging the strengths of my "clients," I felt that I was better at expressing empathy and building a greater bond with my colleagues."

"I also feel I gained more empathy and compassion for others."

Increased Social Connectivity

"I was also reflecting on how I was facing similar challenges myself. This made me feel and see that I was part of the same group going through a similar journey and facing similar challenges, and that was reassuring to me as I am starting my PhD."

"It felt as though the more natural and quickly personal bonds formed, the better the discussions, the deeper the conversation and the more meaningful the discussions."

"Having an outsider acknowledge the existence of my issue and my true desire to make a change, made me feel connected to the provider and welcomed."

"PRO-GRAD also helped me get out of my loneliness. I found a few good friends who I can go to whenever I feel down or when I want to share my happiness and joy! I know my relationships with my partners were only in a professional environment, but I guess they are now no more partners and more of friends. Covid-time friends are valuable and scarce."

"I think that my first year of graduate school during the pandemic would have felt much more isolated without PRO-GRAD. I will definitely miss connecting with everyone regularly!"

Fostered Trust

"I felt like I could be myself when I talked to them. I felt like I could trust them and tell them everything that was bothering me [...]."

"As the provider, I felt deeply rewarded with the degree of trust that she shared with me."

"I want to highlight how amazed I was about the level of trust that I cultivated with people who had previously been complete strangers to me. Seeing a person open up to me and being able to open up to them was one of the most rewarding things I did all semester."

"I felt secure to share my concerns and weaknesses with my partner, although we knew so little about each other."

"It felt as though the more natural and quickly personal bonds formed, the better the discussions, the deeper the conversation and the more meaningful the discussions. The rapport with your client is important to facilitate trust."

Safe Space

"It felt really good to be trusted in that way and I am glad to have created an environment where my partners felt they were in a safe space to share."

"The program gave me tools to help others, while providing me with a safe environment to seek help and be heard."

"I really appreciate everyone's effort to stay engaged and to offer a safe space for discussion."

"Working with interested and resourceful colleagues, I could express my fears and experiences free of judgement"

Positive Course Experience

"...I want to elaborate on the tremendous positive impact of this course on my life and to mitigate my mental health."

"This program really helped me to see what my strengths are as a leader, friend, and humanitarian. It challenged me to take care of myself better and to connect with other people who share my interests."

"I'm so glad I had the opportunity to participate in this course. It was definitely for me, the right content at the right time in my journey in personal and professional development."

"My experience taking this course has been fantastic."

"Overall, I found this class took me far beyond my expectations of what can be done. I look forward to applying these tools over the next year to help others and to help myself."

"Promoting resilience during graduate school and beyond has been really a great and a fruitful course."

"Overall, I truly did enjoy my experience in this course. I was not sure what to expect in terms of content and partner work; however, I am glad that I stepped out of my comfort zone and did it."

"I am grateful for the opportunity to have had so much time to actually practice in real life and reflect on those experiences – I feel that really solidified the skills for me and made these tools something I felt that I actually learned and internalized, rather than just memorizing the steps."

Acknowledgement of Self-Improvement

"It was one of the hardest things that I have ever done, mostly because even taking those baby steps forced me to confront some of the feelings and deep trauma that I have kept buried for so long. [...] And while things are still really hard, I truly feel that I am walking in the right direction for the first time in so many years."

"I think I did a good job and I feel very proud of myself for overcoming the difficulties I had at the beginning."

"With time, thanks to the amazing support of my MI partners, I gained confidence to apply the skills, and the interaction became more natural and less 'checklist' style. I believe that my listening skills have improved and that even the way I see other people is different."

Impact of Motivational Coaching

"This course helped me to cope with stress and anxiety while enhancing my resilience during graduate studies. In fact, through learning and practicing motivational coaching skills and practicing it during peer interviewing sessions, I gained strategies to address the mental

health crisis that I was dealing with."

"...I feel like the tools that I learnt and practiced in these sessions, helped me be a better person in life."

"Motivational interviewing, even at a macro level, has been effective in one to one and group meeting conversations, empowering my team, peers, funders, and volunteers in the work we collectively do."

"I felt very confident that I had made a positive impact in my partner's life and that was very motivating to me in the giving end."

"Another experience from this course that struck me as extremely powerful was learning that an interview partner can provide surprising insight into someone's personal situation and open their eyes to barriers they did not even notice."

"Over the last several weeks, I have found myself aiming to be more present in conversations (or, at least, determining when to 'take' certain conversations and making sure they were scheduled for times during which I could focus intently)."

Transferability of Motivational Coaching

Everyday Application

"The motivational interview skills that I learned will be used throughout my life and I intend to practice them on people around me who may need them."

"I have already used several "powerful question[s]" in my daily life which has helped me help others help themselves!"

"I'm looking forward to using this tool to support others in their life choices moving forward."

"What I find interesting is that I now find myself using MI techniques in my everyday interactions. Whenever someone in my life is expressing frustration or sounds angry, I find myself reflecting back with, "I'm hearing that you're ______", and they either correct me or tell me "Yes! That's exactly it!" I can't lie, it does makes me feel good about myself when they let me know that they feel heard."

Career Applications

"All the knowledge and skills I gained during the course will be essential for my career moving forward, particularly, the ability to help older adults find solutions on their own, or just listen to them and make them feel seen."

"The MI techniques that I developed have also proven to be useful in the leadership aspect of my career."

"As the president of the [faculty name] society, I deal with many people, including vice presidents, councilors, commissioners, etc. Pro-Grad taught me to ask the right questions and help my teammates find where their deficiencies are and how they can come up with their own solutions. I have seen this firsthand that when teammates implement their own solutions, they act in a more dedicated way and do not feel pushed."

"I think that this program was great. It was very practical and useful on a personal level and as a leader of a team within an organization, I can also use this to support my teams and develop them."

"The commitment to that person by actively listening and importance of acknowledgment are key lessons that can benefit both personal and professional/academic relationships."

Interpersonal

"This can help you become a better partner, colleague, friend, and parent, and I'm eager to see how these soft skills can help me in all of my relationships."

"After this session, we both agreed that this tool is important when times of trouble with friends/family/colleagues appear."

"I feel that I can approach issues more effectively and I am more able to resolve any conflicts with a reasonable discussion either in my workplace, with peers, or with family members."

Course Improvements

Duration of the Course

"I would even suggest that the course could comprise two semesters, giving participants the opportunity to work with even more of the classmates."

"I can't think of any recommendation for future program offerings other than creating a course that could work as a continuation of this first one. I believe that the experience was extremely enjoyable, and I would definitely register from a PRO-GRAD II."

Tools

"It would be a helpful resource to post a couple of the sample interviews on OWL so that students could go back and re-watch them if needed for additional modelling practice."

"Maybe more tools to practice would be introduced to practice during the dyads."

"I did feel the need for more written resources though. Something, students could refer to at later stages of their profession. [...] Though, a few multiple-choice questions on OWL at the beginning of each session could improve the students learning experience."

Sessions

"Since it is based on face-to-face conversations between the interviewer and client, the in-person format would significantly increase this program's level of influence on participants."

"Would be great to have in person - this is not the ability now but group-based sessions where you can watch MI in person live would be great!

"Keep offering the course online. It helps shy people like me."

"As a recommendation, I think offering the course in the online format is better and please continue doing so in the future. Putting Covid aside, I find it easier to get close to people."

"Some more structured booster sessions."

"The fact that the course does not include conventional marked assessments like quizzes and exams helped me come more relaxed to the classes."