An Achievement Goal Theory Perspective on Medical Student and Pre-Service Teacher Burnout

by

Lindsey Rose Nadon

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Department of Educational Psychology
University of Alberta

Abstract

Students training for people-oriented careers, such as medicine and teaching, experience disproportionately high levels of burnout before entering the workforce. This is problematic because burnout is associated with negative outcomes such as unprofessionalism, low self-efficacy, and early career departure. Previous research has shown that adaptive achievement goals (i.e., motivational beliefs) may protect students from burnout, while maladaptive achievement goals may contribute to burnout. The purpose of this study was to compare medical students' and pre-service teachers' achievement goals (using the 2x2 model of Achievement Goal Theory) and examine the extent to which achievement goals contribute to or protect students from academic burnout. Using a cross-sectional survey design, I collected data from 281 medical students and pre-service teachers enrolled at a Western Canadian university. To answer my research questions, I used descriptive data, correlational analyses, and multiple linear regression. Results of this study suggest that: medical students and pre-service teachers primarily endorse adaptive achievement goals, that they endorse achievement goals similarly, although medical students experience higher burnout, and that students who endorse adaptive goals experience lower levels of burnout compared to students who endorse maladaptive achievement goals. Limitations and directions for future research are discussed, as well as implications of these findings for researchers, educators, and students training for people-oriented professions.

Preface

This thesis is an original work by Lindsey Nadon. The research project, of which this thesis is a part, received ethics approval from the University of Alberta Research Ethics Board, No. Pro00081791, May 15th, 2018

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Students in professional education programs are experiencing high levels of burnout before entering the workforce (e.g., Dyrbye et al., 2014; Kokkinos & Stavropoulos, 2016; Maslach & Leiter, 2016). This is especially problematic in preparation for people-oriented careers, such as medicine and teaching, where burnout rates are significantly higher than in other professions (The Alberta Teachers' Association, 2013; Dyrbye et al., 2014; Goddard, O'Brien, & Goddard, 2006; Shanafelt et al., 2012). Moreover, for people-oriented professionals and students alike, burnout is associated with a variety of maladaptive outcomes. For example, medical students who experience burnout are more likely to engage in unprofessional behaviours such as cheating, lying, and plagiarism (Dyrbye, Massie, et al., 2010), provide suboptimal patient care (Shanafelt, Bradley, Wipf, & Back, 2002), and consider dropping out of their program (Dyrbye, Thomas, et al., 2010). Conversely, teacher burnout is associated with lower teaching self-efficacy (i.e., the belief that one can overcome challenging situations, based on their performance in past situations; Bandura, 1982; Betoret, 2006), early career departure (Jalongo & Heider, 2006), and lower student achievement (Klusmann, Richter, & Lüdtke, 2016).

As such, it is crucial to understand the factors that contribute to and protect against burnout in students training for people-oriented careers, so they enter their careers as mentally healthy professionals and make a positive impact on the individuals in their care. Turning to well-established theories of motivation is one way to understand the burnout experience of such students. Theory allows researchers to form systematic hypotheses and make sense of complex relationships between variables. Following from this logic, my research is guided by Achievement Goal Theory (AGT); a leading motivational theory that describes the relationship between motivational beliefs and important outcomes (Kaplan & Maehr, 2007). Broadly,

adaptive goals involve aiming for competence and maladaptive goals involve avoiding incompetence (Elliot, 1999; Elliot & McGregor, 2001; Elliot & Murayama, 2008).

AGT has been used widely in educational research (e.g., Daniels, 2013; Jury, Darnon, Dompnier, & Butera, 2017; Wang, Hall, Goetz, & Frenzel, 2017). Researchers applying AGT to populations of medical students and practicing teachers have demonstrated that adaptive goals protect individuals from burnout, whereas maladaptive goals are associated with higher levels of burnout (Madjar, Bachner, & Kushnir, 2012; Retelsdorf, Butler, Streblow, & Schiefele, 2010). Similar research with pre-service teachers, however, remains sparse. Additionally, there is no information comparing achievement goals of students in professional programs. Therefore, the purpose of the current research was to compare medical students and pre-service teachers' achievement goals and examine the extent to which achievement goals contribute to or protect students from academic burnout.

Literature Review

Burnout

Burnout is a psychological state of exhaustion that emerges from the prolonged exposure to work-related stressors (i.e., within a career or academic program; Demerouti & Bakker, 2008; Maslach, Schaufeli, & Leiter, 2001). Christina Maslach and colleagues (2001) describe how, in burnout, meaningful and challenging work becomes unfulfilling over time. Engagement, on the other hand, is often conceptualized as the positive counterpart of burnout, where individuals feel energized by and self-efficacious in their work (Maslach & Leiter, 2016). In the literature, burnout is understood as a multi-faceted experience, above and beyond mental exhaustion, and has been conceptualized along three dimensions: exhaustion, disengagement/depersonalization,

and inefficacy/reduced personal accomplishment (Maslach & Jackson, 1981; Maslach et al., 2001).

According to Maslach and colleagues' conceptualization (Maslach & Jackson, 1981; Maslach et al., 2001), exhaustion reflects the core element of burnout: stress. Exhaustion occurs when one's mental resources are depleted (Maslach et al., 2001) in response to high job demands and limited capacity to cope with them (Demerouti & Bakker, 2008). When conceptualizing burnout, it is important to distinguish between burnout and stress because, although stress represents one dimension of burnout, they are not synonymous. Burnout is not solely an emotional state of stress, but rather a psychological state of *prolonged* stress accompanied by disengagement from work and difficulty effectively meeting job demands (Maslach & Jackson, 1981).

Maslach posits that exhaustion prompts professionals to disengage emotionally from their work which, in turn, contributes to a disconnect between the professional, their work, and the recipients of their care (Maslach et al., 2001; Schaufeli, Salanova, Gon Alez-ro, & Bakker, 2002). As such, the disengagement/depersonalization dimension of burnout is often viewed as resulting from mental exhaustion. Lastly, inefficacy/reduced personal accomplishment refers to the reduced productivity and the negative evaluation of one's work associated with feelings of exhaustion and disengagement (Maslach & Leiter, 2016; Maslach et al., 2001; Schaufeli et al., 2002).

The concept of burnout first received research attention in the 1970s, when Maslach and colleagues began studying the workplace emotions of human service employees. As such, our current understanding of burnout is largely rooted in people-oriented professions (i.e., careers in human-services, healthcare, and education that involve a provider-recipient relationship). In

recent years, researchers have begun exploring the burnout experience outside of such professions, demonstrating that burnout takes on a similar form across various career fields (Demerouti & Bakker, 2008; Maslach et al., 2001). The Maslach Burnout Inventory (MBI) is currently the most widely used self-report measure of burnout (Maslach & Jackson, 1981). However, researchers have begun proposing alternative measures of burnout. For example, the Oldenburg Burnout Inventory (OLBI) was developed and validated as a burnout measure for professionals in and outside of people-oriented professions (Demerouti & Bakker, 2008).

Occupational burnout. Although burnout can occur in any profession, it is particularly salient and problematic in people-oriented careers, wherein professionals maintain consistent and direct contact with patients, students, and other service recipients (Maslach & Jackson, 1981). Medicine and teaching represent two careers in which stress and burnout rates are disproportionately high, compared to other professions (Dyrbye et al., 2014; Shanafelt et al., 2012). Physician burnout is also associated with a number of maladaptive social-emotional and occupational consequences, such as suboptimal patient care (e.g., not fully discussing treatment options with patients; Shanafelt et a., 2002), major medical errors, suicidal ideation (Shanafelt et al., 2010, 2011) impaired clinical reasoning (Durning et al., 2013), and career attrition (Doan–Wiggins et al., 1995).

Teachers are also disproportionately susceptible to occupational burnout, compared to most other professions (Johnson et al., 2005). Although teachers perceive teaching as a rewarding and satisfying profession (Shim, 2017; Skaalvik & Skaalvik, 2015), it is often associated with high levels of stress (Skaalvik & Skaalvik, 2015). As such, early career departure is common (Jalongo & Heider, 2006), placing a burden on both students and schools (Hong, 2010). According to Ingersoll (2002), approximately 46% of new American teachers will leave

their career within the first five years of practice. Similar statistics have been reported in Alberta, where approximately 30-40% of new teachers will leave the profession (Klingbeil, 2013). Additionally, teacher stress and burnout is associated with negative personal and professional outcomes such as lower teaching self-efficacy (Betoret, 2006), lower student achievement (Klusmann et al., 2016), lower student motivation (Shen et al., 2015), and higher levels of student stress (Oberle & Schonert-Reichl, 2016).

In summary, much of the research on burnout has emphasized people-oriented professionals - those in human services (e.g., social work), health fields (e.g., physicians and nurses), and education (e.g., teachers). Occupational burnout has well-established relationships with a variety of negative outcomes, both personally and professionally. There is a growing emphasis on mental health awareness/literacy, and the importance of understanding and preventing mental illness (Jorm, 2012). Therefore, it is crucial to understand and alleviate burnout among professionals working in these emotionally and psychologically taxing careers before they reach the point of mental exhaustion and career departure. One way to accomplish this, perhaps, is to start at the beginning of the career trajectory, by evaluating the burnout experience of students training for people-oriented professions. In the current study, I used a sample of medical students and pre-service because they represent two distinct fields of study (i.e., health and education) which transition into careers with high rates of occupational burnout and attrition.

Academic burnout. Physician burnout, along with its personal and professional consequences, may originate during medical school (e.g., Dahlin, Joneborg, & Runeson, 2007; Dyrbye et al., 2014; Dyrbye, Massie, et al., 2010). For example, in a study of 2566 American medical students (Dyrbye, Massie, et al., 2010) 52.8% of students reported feeling burned out.

Furthermore, researchers studying distress throughout the medical career trajectory have found that depression and burnout peak during training (Dyrbye et al., 2014). Burnout among medical students has also been associated with poor health (Dahlin et al., 2007), alcohol dependence (Jackson, Shanafelt, Hasan, Satele, & Dyrbye, 2016), disordered sleep (Pagnin et al., 2014), and school dropout. In one study, researchers surveyed 2,222 medical students across five American medical schools, and found that students experiencing burnout seriously considered dropping out of their program (Dyrbye, Thomas, et al., 2010). Medical student burnout also has professional consequences, such as unprofessional behaviours and a less altruistic view of patients (Dyrbye, Massie, et al., 2010).

Like physicians, teachers' experience of burnout may originate during training (e.g., Schorn & Buchwald, 2007). Pre-service teachers who feel burned out are more likely to drop out of the profession than pre-service teachers who do not feel burned out (Hong, 2010). Although research on additional outcomes in pre-service teachers is lacking, it is possible, given the findings in populations of practicing teachers, that pre-service teacher burnout would also be associated with negative personal and professional outcomes (e.g., lower self-efficacy and lower student motivation and achievement). It is also possible that pre-service and practicing teachers face different challenges within their respective teaching contexts. For example, pre-service teachers likely experience high pressure to excel in their program and find employment within a climate of limited job opportunities (Daniels, 2013; Ontario College of Teachers, 2017), whereas practicing teachers likely face pressure to be positively evaluated, motivate their students long term, and manage compounding workloads (Kyriacou, 2001).

In summary, burnout is problematic for people-oriented professionals and students alike. Not only is burnout a negative outcome in and of itself, but it is associated with a variety of

social-emotional and professional consequences. Medical students experiencing burnout are more likely to abuse alcohol, drop out of school, and engage in unprofessional behaviours. Pre-service teachers who experience burnout are more likely to depart from their career, particularly within the first five years. Although researchers have demonstrated that practicing teachers experiencing burnout are likely to have low-achieving, de-motivated, and anxious students, less is known about the specific outcomes associated with pre-service teacher burnout. Considering that both occupational and academic burnout have adverse consequences, it is important to understand the factors that protect against and contribute to burnout *before* individuals step into their careers. This is especially important for individuals training for people-oriented careers, like medicine and teaching, who are entrusted with the care, education, and wellbeing of others. One approach is to build on theories of motivation, which suggest that adaptive motivational beliefs may protect students from burning out.

Theoretical Framework: Achievement Goal Theory

Achievement Goal Theory (AGT) is a highly influential theory of motivation that has been used across achievement contexts to study the relationship between motivational beliefs (i.e., achievement goals) and important outcomes, like burnout (Kaplan & Maehr, 2007). As the literature on AGT is widespread, there are various ways to operationalize achievement goals. For example, Ruth Butler (2007) posits that school is an achievement context both for students and for teachers who, led by their own personal achievement goals and definitions of success, strive to succeed at their jobs. Butler (2012) proposed that there are five categories of teachers achievement goals: *mastery* orientation involves striving to be a competent teacher; *ability-approach* involves striving to prove that one is a competent teacher relative to others; *ability-avoidance* involves avoiding looking like an incompetent teacher relative to others; *work-*

avoidance involves avoiding doing more work than necessary; and *relational goals* involve striving for personal connections with students.

Because the current study assessed the achievement goals of both pre-service teachers and medical students, I utilized a broader model of AGT. Elliot and McGregor (1999, 2001) proposed a 2x2 framework that divides achievement goals into 4 categories: *mastery-approach* (MAP) goals involve striving for competence, *mastery-avoidance* (MAV) goals involve avoiding tasks that might elicit feelings of incompetence, *performance-approach* (PAP) goals involve demonstrating competence to others, and *performance-avoidance* (PAV) goals involve avoiding situations where incompetence might be apparent to others (Elliot, 1999; Elliot & McGregor, 2001; Elliot & Murayama, 2008). From this perspective, achievement goals can also be conceptualized as competency-based goals. That is, they are centered around the notion that individuals tend to *strive for* competence (i.e., approach goals) or *avoid* incompetence (i.e., avoidance goals) within achievement contexts (Elliot & Murayama, 2008). Achievement goals can also be differentiated based on whether they center around the *demonstration* of competence (i.e., performance goals) or around the *development* of competence (i.e., mastery goals; Elliot, 1999; Elliot & Murayama, 2008; Kool, Mainhard, Brekelmans, Van Beukelen, & Jaarsma, 2016). Individuals who strive for mastery goals tend to focus on their competence relative to their own past performance, whereas individuals who strive for performance goals tend to monitor their competence based on the performance of others (Poortvliet & Darnon, 2010). Furthermore, specific goals within this framework can generally be considered adaptive or maladaptive, while the impact of other goals remains less clear.

Performance-approach goals. PAP goals appear to be beneficial in certain achievement contexts. For example, in a study of university students, PAP goals positively predicted grades

for upper-class students, whereas MAP goals positively predicted grades for lower-class students (Darnon, Jury, & Aelenei, 2017). Additionally, the university system often indirectly values PAP goals, which serve a social utility for high achieving students seeking acceptance into competitive programs (Jury et al., 2017). Essentially, high-achieving students learn that the best students are awarded higher degrees and stand out in relation to their peers. In another study, the researchers found that when selection criterion were highlighted, students' PAP goals increased (Jury et al., 2017). Overall, though, the outcomes associated with PAP goals are mixed. For example, while some researchers have found PAP goals to be associated with higher grades, others have found them to be associated with maladaptive outcomes such as self-handicapping, lack of help-seeking behaviours, low cooperation with peers, and cheating (Midgley, Kaplan, & Middleton, 2001). Taken together, PAP goals may be adaptive in competitive educational contexts, which medicine and education may be.

Mastery-approach goals. Ongoing research supports the adaptive nature of MAP goals. Not only this, but post-secondary students tend to endorse MAP goals most strongly, compared to other goal orientations (e.g., Daniels, 2013; Madjar et al., 2012). This is an encouraging finding, as researchers have associated students' endorsement of MAP goals with many adaptive outcomes, such as positive social skills (e.g., relationship building; Poortvliet & Darnon, 2010), task persistence (Gardner, 2006), academic achievement (Dompnier et al., 2015), and self-compassion (Babenko & Oswald, 2018). Pertinent to the current study, recent research on populations of medical students and teachers (both pre-service and practicing) also highlight the notion that MAP goals are adaptive. For example, Kool and colleagues (2016) surveyed 2402 students in medical, pharmaceutical, and veterinary sciences, and found a strong positive relationship between self-efficacy and the endorsement of mastery-approach goals. Wang and

colleagues (2017) surveyed 495 Canadian teachers and found that teachers who were mastery-oriented in their motivation to teach not only utilized more mastery-oriented teaching techniques in the classroom than those who were performance-oriented, but they also enjoyed teaching more. Lastly, Daniels and Poth (2017) surveyed 344 Canadian pre-service teachers and found that those who had a mastery-approach to instruction supported the use of mastery-oriented assessments (i.e., tasks that emphasize competence, rather than grades).

Performance-avoidance goals. Conversely, researchers have consistently associated maladaptive outcomes with PAV goals, which post-secondary students tend to endorse least strongly of the goal orientations (e.g., Daniels, 2013; Madjar et al., 2012). Compared to mastery-oriented students, those who endorse PAV goals tend to lack task persistence (Gardner, 2006), struggle with anxiety, avoid seeking help, and receive lower grades (Eum & Rice, 2011; Kaplan & Maehr, 2007; Urdan, Ryan, Anderman, & Gheen, 2002). Relevant to the current study, research on medical students and teachers outlines similar results. For example, Kim, Hur, and Park (2014) surveyed 270 medical students and found that, compared to students with high MAP and PAP goals, students with high PAV goals had lower self-efficacy, used surface-level learning strategies, were extrinsically motivated, and had lower grades. Additionally, in a recent study of 182 pre-service teachers enrolled in elementary education math courses, the researchers found that students who endorsed avoidance goals (i.e., PAV and MAV goals) had higher levels of math anxiety compared to those who endorsed approach goals (i.e., MAP and PAP goals; Gonzalez-DeHass, Furner, Vásquez-Colina, & Morris, 2017).

Although the AGT literature highlights the adaptive nature of MAP goals and the maladaptive nature of PAV goals, discrepancies do exist. Interestingly, in a recent study, researchers revealed that MAP goals may only be effective for university students' academic

performance when such goals are presented as useful, rather than as socially desirable (Dompnier et al., 2015). Additionally, PAV goals may not be maladaptive in all contexts. In a study of 1147 Filipino secondary school students, King (2016) found that, for students high in collectivism, PAV goals were associated with a greater use of positive learning strategies and intrinsic motivation than for students low in collectivism. These studies shed light on the fact that achievement goals are nuanced, and that they may not always manifest in the same way across contexts and populations.

Mastery-avoidance goals. Relative to the other three goal orientations, MAV goals are in their infancy (Elliot, 1999). As such, researchers understand less about the outcomes associated with these goals. Generally, it seems as though MAV goals are associated with more adaptive outcomes than PAV goals, with fewer benefits than MAP goals. (Baranik, Barron, & Finney; Elliot & McGregor, 2001). For example, MAV goals have been associated with negative outcomes such as job detachment and fatigue (Poortvliet, Anseel, & Theuwis, 2015), test anxiety, and maladaptive perfectionism (Eum & Rice, 2011). In an experimental study by Van Yperen, Elliot, and Anseel (2009), one hundred and fifteen undergraduate students from various disciplines (e.g., education, medicine, and economics) completed a verbal skills test. Upon completing the test, they were assigned to either a MAV condition (i.e., “do not do worse than your previous score”), a MAP condition (i.e., “do better than your previous score”), a PAP condition (“do better than the average score in your norm group”), or a PAV group (i.e., “do not do worse than the average score in your norm group”). Participants were then asked to complete a second verbal skills test of the same difficulty. Results from this experiment revealed that MAV goals negatively impacted performance improvement, compared to all other goals. Thus, although MAV goals are relatively underexplored, they generally appear to be associated with

maladaptive outcomes.

Achievement Goals and Burnout

Achievement goals have been widely explored across populations, in the context of both positive and negative social-emotional and occupational outcomes. Considering the vast applicability of AGT, it is a logical framework to examine burnout among people-oriented professionals. In the current study, I utilized AGT to shed light on the burnout experience of medical students and pre-service teachers; not only because they are susceptible to academic burnout within their programs, but also because they ultimately transition into careers with high rates of occupational burnout and attrition.

There is currently a dearth of research examining the relationship between achievement goals and burnout in populations of students training for people-oriented careers. However, previous research on university students and professionals suggests that MAP goals are associated with lower levels of burnout, whereas PAV goals (or performance/avoidance goals more generally) are associated with higher levels of burnout. For example, Salmela-Aro, Tolvanen, and Nurmi, (2009) conducted a longitudinal study assessing the relationship between achievement strategies used in university and subsequent occupational burnout and engagement. Two hundred and 92 Finnish undergraduates completed questionnaires while attending university, as well as 10, 14, and 17 years into their career. The researchers found that success expectation during university (i.e., the expectation of task mastery) positively predicted work engagement and negatively predicted work burnout, while task avoidance (i.e., behaviours that prevent individuals from carrying out a task) negatively predicted work engagement and positively predicted work burnout. Although success expectation and task avoidance are not analogous to MAP and PAV goals, they do represent approach and avoidance methods of

learning. These findings shed light on how the approach and avoidance goals individuals endorse during post-secondary school may have long-term impacts on their level of occupational burnout and engagement.

In a more recent study, Poortvliet and colleagues (2015) surveyed 258 Dutch employees in various careers. Looking specifically at MAP and MAV goals from Elliot & McGregor's (2001) 2x2 framework, the researchers found that MAV goals were positively related to exhaustion and job disengagement. Conversely, MAP goals were negatively related to exhaustion and positively related to work engagement. This study sampled employees from various career fields and not people-oriented professionals, specifically. However, the findings provide evidence for the adaptive nature of MAP goals, and the maladaptive nature of MAV goals with respect to occupational burnout. Additionally, Tuominen-soini, Salmela-aro, and Niemivirta (2008) surveyed 1321 Finnish secondary school students and found that mastery-oriented students (i.e., MAP goals) reported lower levels of academic burnout, as defined by exhaustion, cynicism, and inadequacy. In comparison, performance-oriented students (i.e., PAP and PAV goals) reported higher levels of academic burnout. Although this population of students is outside the realm of university students and professionals, the results provide additional support for maladaptive relationship between PAV goals and burnout, and the adaptive relationship between MAP goals and burnout.

More pertinent to the current study, Dahlin and colleagues (2007) surveyed 342 Swedish medical students in years one, three, and six of their program. The researchers were interested in the relationship between performance-based self-esteem and academic burnout (measured using the OLBI) among medical students. Participants responded to performance-based self-esteem items such as “I sometimes try to prove my self-worth by being competent”, which were

conceptually similar to PAP goals within Elliot's 2x2 framework. Upon completion of the study, the researchers found that performance-based self-esteem was positively and significantly associated with burnout. Although endorsing PAP goals may sometimes benefit the grades of high-achieving students (e.g., Darnon et al., 2017), such goals may be detrimental for their mental health.

Madjar and colleagues (2012) surveyed 143 first year Israeli medical students to examine the relationship between achievement goals, psychosocial competence (i.e., interest, confidence, and sensitivity in patient care), and frustration tolerance (i.e., the inability to cope with program demands and stress). Although technically different from burnout, frustration tolerance can be considered conceptually similar. The researchers revealed that mastery goals (i.e., MAP) were negatively associated with psychosocial competence and performance goals (i.e., PAP and PAV) were positively associated with low frustration tolerance. These results suggest that mastery-oriented medical students are more engaged in their work with patients, while performance-oriented students are less equipped to handle the stressors of their program. Additionally, Lyndon and colleagues (2017) surveyed 670 medical students in New Zealand and found that, compared to medical students with lower burnout and higher quality of life, students with higher burnout and lower quality of life experienced more test anxiety and were less intrinsically motivated.

Finally, Retelsdorf and colleagues (2010) utilized Butler's model of teacher's goal orientations and the Maslach Burnout Inventory to examine the relationship between achievement goals and occupational burnout among 281 German teachers. The researchers revealed that mastery (i.e., MAP) goals were negatively associated with burnout, while work avoidance and ability-avoidance (i.e. PAV) goals were positively associated with burnout.

Although this study sampled practicing teachers instead of pre-service teachers and used Butler's model instead of Elliot's model, these results highlight the adaptive relationship between MAP goals and burnout, and the maladaptive relationship between PAV goals and burnout for teachers.

In summary, there is a dearth of research examining the relationship between achievement goals and burnout in populations of students training for people-oriented careers. Generally speaking, past studies have shown that mastery goals protect against burnout, while performance goals contribute to burnout. However, the reviewed literature has a number of shortcomings that I aimed to address in the current study: 1) Research examining these relationships among medical students is sparse 2) To date, there are no studies examining these relationships among pre-service teachers, 3) These relationships have never been studied in a North American, let alone Canadian, sample, and 4) Of the relevant studies that do exist, few have utilized Elliot's full 2x2 model of achievement goals. As such, my goal was to fill these gaps in the literature.

Research Questions and Hypotheses

To guide the current project, I asked the following three research questions:

1. How strongly do medical students and pre-service teachers endorse each of the four achievement goals?

H1: Consistent with previous findings in similar populations, I expected medical students and pre-service teacher to endorse MAP goals most strongly and PAV goals least strongly.

2. What is the association between program and achievement goals and academic burnout? In other words, are medical students and pre-service teachers fundamentally similar or different in

the achievement goals that guide them through training and their experience of academic burnout?

H2: This research question was explorative in nature because no studies to date have explicitly compared the achievement goals and burnout of medical students and pre-service teachers. However, given my conceptualization that they represent two populations of students training for people-oriented professions with high rates of burnout and attrition, I predicted that they would be largely similar.

3. Are the achievement goals of medical students and pre-service teachers related to academic burnout?

H3: I predicted that a negative relationship would emerge between MAP goals and burnout and that positive relationships would emerge between PAV and PAP goals and burnout. Otherwise stated, I hypothesized that for students training for people-oriented professions, MAP goals would protect against academic burnout, while PAV and PAP goals would contribute to academic burnout.

Method

Participants and Procedures

The present study had a total sample of 281 University of Alberta students recruited separately from two professional faculties: The Faculty of Medicine and Dentistry and the Faculty of Education. This total sample contained more females (63%) than males, and the majority of participants (94%) ranged in age from 20-29. Participants were recruited separately as part of individual studies, both of which adopted cross-sectional survey designs and included the same items measuring achievement goals and burnout.

Medical students. Medical students were recruited for a larger research project on motivation in medical school that received ethical approval from the University of Alberta Research Ethics Board (Pro00066510). All medical students were originally contacted by the office of Undergraduate Medical Education to participate in a short-term longitudinal self-report study. In the Winter 2017 term, we sent an email containing a link to and explanation of our survey to two hundred and 54 students. These students had indicated, on a previous questionnaire (Time 1; October 2016), that they wished to be contacted for a follow-up study and provided their emails to the researchers. In March/April of 2017 (Time 2), one hundred and 95 medical students ultimately completed the online questionnaire from which my data is extracted. I excluded three participants from the analysis because they did not identify their gender as being "male" or female". Therefore, the final medical student sample contained 192 participants from all four years of their program. The sample contained more females (60%) than males and the majority of the total sample (95%) ranged in age from 20-29. As remuneration for their time, all students who completed the survey received a $5 Starbucks gift card. Participation was voluntary and had no impact on students' academic standing.

Pre-service teachers. Pre-service teachers were recruited for a larger project on the attitudes, emotions, and motivational beliefs of undergraduate student teachers through the Educational Psychology Participant Pool. This study received ethical approval (Pro00070175) from The University of Alberta Research Ethics Board. Students in three specific third and fourth year education courses were assigned to the participant pool. They received 5% credit towards their course mark for participating in 2 credit hours of educational psychology research, and our study was one opportunity for attaining this credit. Students who chose to participate were able to sign up online and were provided with the study link. They completed

the questionnaire in the winter 2017 term, between the months of January and April. At any point in the survey, participants had the option to cease participation and still receive credit. Ninety students completed the questionnaire, the majority of which were female (69%) and ranged in age from 18-29 (91%). We excluded one participant from the analysis because they did not identify their gender as being "male" or "female". Therefore, the total pre-service teacher sample included 89 participants.

Measures

I sought additional ethical approval to compare medical students and pre-service teachers (Pro00081791). Under this approval, I extracted items consistent between the two groups (i.e., gender, age, ethnicity, achievement goals and burnout) for data analysis. Both individual questionnaires assessed constructs not relevant to the current study. For example, the full medical student questionnaire included scales measuring resilience and lifelong learning, as well as demographic information for year in program. The full pre-service teacher questionnaire included scales measuring emotions and responsibility, as well as demographic information for teaching stream (i.e., elementary or secondary).

Achievement goals. Achievement goals were assessed using a 24-item scale by Baranik, Barron, and Finney (2007). It was originally developed to provide validity evidence for Elliot and McGregor's (1999, 2001) 2x2 model and has since been widely used in educational research. The scale includes four items each to measure PAP (α = .78), MAP (α = .78), and PAV (α = .84) goals, and eleven items (of which we used four for manageability purposes) to measure MAV goals (α = .53). Across the literature, PAP, MAP, and PAV scales have shown strong evidence of reliability, while MAV goals have been inconsistent (e.g., Madjar, Kaplan, & Weinstock, 2011). Participants responded to items such as, "I like to show that I can perform better than others in

my program", on a Likert scale ranging from 1 (*not at all true of me*) to 7 (*very true of me*). Total scale scores for each type of achievement goal could range from 4 to 28, with higher scores representing high endorsement of goals, and low scores representing low endorsement of goals. Based on the typical alpha cut off of .70 for reliability indices (Christmann & Van Aelst, 2006), the MAV scale was omitted from further analyses.

Burnout. Burnout was assessed using the Oldenburg Burnout Inventory (OLBI; Demerouti & Bakker, 2008). The OLBI contains both burnout and engagement items, although only the eight burnout items were included in the surveys. Participants responded to items such as, "When I am studying or doing school work, I often feel emotionally drained", on a Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Four scale items were typically scored, and four were reverse scored. Total scale scores could range from 8 to 32, with higher scores representing higher levels of academic burnout, and lower scores representing lower levels of burnout. The OLBI has been shown to have high scale reliability, around $\alpha = .85$ (Demerouti & Bakker, 2008). By calculating coefficient alpha for my full sample in SPSS, I determined this scale to indeed have adequate evidence of internal reliability ($\alpha = .81$).

Results

Rationale for Analyses

I conducted all analyses in SPSS following three steps. First, I merged the medical student and pre-service teacher data sets to ensure that the variables matched and were appropriate for conducting combined analyses. This included ensuring that all variables of interest were measured and coded in the same way when possible. Because pre-service teacher data was collected in the winter 2017 term, I used medical student data that corresponded with this timeline, such that both populations responded to items in the same semester. Next, I

calculated descriptive statistics to observe any trends in the data. This included means, standard deviations, frequencies, skew, and kurtosis for all relevant variables and allowed me to address my first research question about level of endorsement. I then ran correlations to look for associations between status as a medical student or pre-service teacher and achievement goals and burnout. This allowed me to address my second research question. Finally, my main inferential question was answered through a multiple linear regression in which students' achievement goals were included as the predictor variable and burnout as the criterion variable. The regression analyses controlled for program (i.e., medicine or education), gender, and age. Based on descriptive statistics and evaluation of the P-P plot and scatterplot of residuals, data did not violate assumptions of normality or homoscedasticity. Additionally, I examined my results for multicollinearity and found no serious violations according to Field (2009). Although the average VIFs ranged from -1.21 to -1.59, which slightly exceeds the recommended 1.0, all correlation coefficients between predictor variables were far below .80 and all tolerance statistics exceeded .20 thereby collectively suggesting multicollinearity was not problematic.

Descriptive Statistics

All descriptive information about the variables is presented combined for the full sample in Table 1, and separately for medical students and pre-service teachers in Table 2. When calculated separately, medical students and pre-service teachers most strongly endorsed MAP goals ($M = 21.97$; $M = 20.93$) and least strongly endorsed PAV goals ($M = 13.65$; $M = 14.52$). When calculated combined for the full sample, results were similar - students most strongly endorsed MAP goals ($M = 21.64$) and least strongly endorsed PAV goals ($M = 13.93$). Overall, both populations of students were identical in rank-order, with respect to the achievement goals they endorsed.

Table 1. *Descriptive Statistics for Combined Sample*

Variable	# Items	Scales	A	Range	*N*	*M*	*SD*	Skew	Kurtosis
PAP	4	1 = Not at all true of me; 7 = Very true of me	.78	4-27	281	16.36	4.82	-.23	-.35
MAP	4	1 = Not at all true of me; 7 = Very true of me	.78	8-28	281	21.64	3.40	-.46	.62
PAV	4	1 = Not at all true of me; 7 = Very true of me	.84	4-28	281	13.93	4.54	.10	-.39
Burnout	8	1 = Strongly disagree; 4 = Strongly agree	.81	12-31	281	20.21	3.65	.44	.36

Table 2. *Descriptive Statistics for Separate Samples*

	Medical Students							Pre-service teachers						
Variable	α	Range	*N*	*M*	*SD*	Skew	Kurtosis	A	Range	*N*	*M*	*SD*	Skew	Kurtosis
PAP	.73	5-27	192	16.40	4.47	.00	-.40	.85	4-25	89	16.29	5.52	-.47	-.51
MAP	.72	11-28	192	21.97	3.01	-.35	.38	.85	8-28	89	20.93	4.03	-.33	.23
PAV	.83	4-24	192	13.65	4.35	.01	-.56	.87	4-28	89	14.52	4.90	.15	-.29
Burnout	.82	12-31	192	20.54	3.64	.33	.19	.79	12-31	89	19.51	3.60	.71	1.19

Correlations

With respect to my second research question, only two significant and negative correlations emerged between program (i.e., medical students vs. pre-service teachers) and burnout (r = -.14, p = .015), and between program and MAP goals (r = -.13, p = .029). This provided support for retaining program as a control variable in the regression analyses. However, with regards to achievement goals, the two groups were more similar than they were different.

In terms of other associations, significant correlations emerged between the students' achievement goals and academic burnout. Specifically, MAP goals were significantly and negatively correlated with burnout (r = -.27, p = .000) and PAV goals were significantly and positively correlated with burnout (r = .21, p = .001). Finally, there was a significant and negative correlation between age and PAV goals (r = -.18, p = .003), suggesting that younger students endorsed PAV goals more highly than older students. All other correlations between study variables are represented in Table 3.

Table 3. *Correlations Matrix of Study Variables*

Variables	1	2	3	4	5	6	7
1. Program[a]	-						
2. Gender[b]	.09	-					
3. Age[c]	-.05	-.14*	-				
4. PAP Goals	.02	-.05	-.11	-			
5. MAP Goals	-.13*	-.04	.10	.07	-		
6. PAV Goals	.08	.07	-.18**	.32**	-.50**	-	
7. Burnout	-.14*	.03	-.06	-.11	-.27**	.21**	-

Note. * p < .05, ** p < .01; Relationships involving program, gender, and age show Spearman's rho correlations. All others are Pearson correlations.
[a]Program 1 = medical student, 2 = education student; [b]Gender 1 = male, 2 = female, [c]Age 1 = Less than 24, 2 = 25-29, 3 = 30-34, 4 = 35-39, 5 = more than 40.

Regression Analyses

To address my third research question, I ran a multiple linear regression with the combined sample of students. Step 1 of the regression included program (medical students = 1; pre-service teachers = 2), gender (male = 1; female = 2), and age (1 = Less than 24; 2 = 25-29; 3 = 30-34; 4 = 35-39; 5 = more than 40) as predictors. Although age was technically coded as a categorical variable, it functioned continuously within my analyses. In this step, only program was significantly related to burnout (β = -.14, p = .023). In step 2, I added PAP, MAP, and PAV goals to the model. Consistent with previous research, MAP goals were significantly and negatively related to burnout (β = -.21, p = .003) and PAV goals were significantly and positively related to burnout (β = .16, p = .024). A significantly negative relationship also emerged between PAP goals and burnout (β = -.16, p = .013). Additionally, from Step 1 to Step 2, program became more significant (β = -.18, p = .002), suggesting a suppression effect. Overall, this model explained 11% of the variance, F (6, 273) = 6.95, p = .000.

Table 4. *Standardized Beta Weights from Regression Analyses Predicting Burnout*

Predictor Variable	Burnout	
	Step 1	Step 2
1. Program	-.14*	-.18**
2. Gender	.02	.00
3. Age	-.05	-.03
4. PAP Goals		-.16*
5. MAP Goals		-.21**
6. PAV Goals		.16*
Adjusted R^2	.01	.11***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

The purpose of this study was to compare the achievement goals of medical students and pre-service teachers and examine the extent to which achievement goals contribute to or protect students from academic burnout. In this section, I will address my three main findings, the limitations of my work, and directions for future research. Finally, I will discuss the implications of my findings for people-oriented students as well as for the researchers and educators who seek to better understand and support them. Overall, the results of my study suggest that: students training for people-oriented professions (e.g., medical students and pre-service teachers) primarily endorse adaptive achievement goals (research question 1), medical students and pre-service teachers endorse achievement goals in similar ways, but medical students experience higher burnout (research question 2), and students who endorse MAP and PAP goals experience lower levels of burnout, while students who endorse PAV goals experience higher levels of burnout (research question 3).

Three main findings emerged from my analyses. Consistent with my first hypothesis, medical students and pre-service teachers both endorsed MAP goals most strongly and PAV goals least strongly. In other words, students generally held adaptive motivational beliefs. This was the case when I calculated separate means for both groups of students, and when I calculated means for the overall sample. This finding is consistent with AGT research across populations of people-oriented students and professionals such as pre-service and practicing teachers (Daniels 2013), medical students (Madjar et al., 2012), pharmacy students (Kool et al., 2016) and psychology students (Darnon, Dompnier, Delmas, Pulfrey, & Butera, 2009).

Furthermore, this finding provides additional support for the pattern of achievement goal endorsement generally observed among students training for people-oriented professions. It is

encouraging that students training for such careers tend to be most motivated by MAP goals, considering the abundance of positive personal and professional outcomes associated with being mastery-oriented. It is also important, however, to consider the role of social desirability when students respond to AGT questionnaire items. Students may *want* to strongly score items related to MAP goals, even if they are still operating from a performance-oriented space. The university system often indirectly values PAP goals (Jury et al., 2017), and students learn that the "best" students stand out in relation to their peers and are often rewarded as such (e.g., scholarships). It is possible that the high endorsement of MAP items is partly due to students' desire to appear (to themselves and to others) motivated for the "right" reasons, rather than acknowledging a fear of failure or a desire to outperform their peers. Although it is probable that these goals are a combination of reality and aspiration, it is positive that medical students and pre-service teachers report endorsing MAP goals most strongly and reaping the benefits associated with this type of motivational striving.

Partially consistent with my second hypothesis, medical students and pre-service teachers were more similar than different with respect to the achievement goals they endorsed, but not with respect to their experience of burnout. This research question was explorative in nature because no previous studies have assessed these two populations of students in conjunction with each other. Descriptive statistics provided preliminary support for the notion that medical students and pre-service teachers endorse achievement goals similarly, which was further supported by correlational results. Only two significant and negative relationships emerged between program and the other variables. Specifically, medical students endorsed MAP goals more strongly and reported higher levels of burnout than pre-service teachers. It is important to note, however, that these correlations were small, and all remaining correlations involving

program were non-significant. Thus, although medical students and pre-service teachers differed on burnout and MAP goals, they were more similar than different in terms of their overall endorsement of achievement goals.

These results suggest that medical students and pre-service teachers have different programs, faculties, and career trajectories that may have different implications for their burnout but similar implications for their achievement goals. It is conceivable, given the highly competitive and fast-paced nature of medical school, that medical students would report feeling more burned out than pre-service teachers. At our institution, for example, the Faculty of Medicine and Dentistry is poignantly aware of the risks facing medical students and thus created the position of Associate Dean, Learner Advocacy and Wellness, to manage these types of issues. There is no such equivalent position in the Faculty of Education. Despite differences in burnout, it seems that the students' motivational beliefs hold similar relationships with burnout across the two programs.

Consistent with my third hypothesis, correlation and regression analyses showed that MAP goals were negatively related to burnout and PAV goals were positively related to burnout. In other words, students who were motivated by a desire to learn and gain competence experienced less burnout than those who were motivated by a fear of failure. This finding is consistent with previous research on the relationship between achievement goals and burnout/stress among students and professionals alike (Dahlin et al., 2007; Poortvliet et al., 2015; Retelsdorf et al., 2010; Tuominen-soini et al., 2008). Furthermore, these results provide support for the notion that MAP goals may protect against burnout, while PAV goals may contribute to burnout among students training for people-oriented careers.

However, contrary to this hypothesis and much of the AGT literature, PAP goals were also negatively related to burnout. This suggests that, for medical students and pre-service teachers, it may be less important whether students strive to *develop* (i.e., mastery) or *demonstrate* (i.e., performance) competence than originally conceived, provided that they are striving for competence and not fearing failure (e.g., Gonzalez-DeHass et al., 2017). There has been debate among researchers as to whether PAP goals can be adaptive, with some researchers suggesting that the combined endorsement of MAP and PAP goals is beneficial for academic achievement, particularly in higher education contexts (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Jury et al., 2017). However, other researchers suggest that although performance goals may be adaptive alongside mastery goals, they may overshadow mastery goals altogether and contribute to negative outcomes like boredom, anxiety, lower perceptions of success (Daniels et al., 2008), cheating, and helplessness in response to failure (Midgley et al., 2001). Nevertheless, it is surprising that PAP goals were negatively associated with burnout in the current study. Perhaps it is the case that students in higher education programs who use either PAP or MAP goals both tend to succeed academically, and that students who do well in school tend to experience less burnout. Overall, more research is needed to understand the utility of PAP goals for students training to work in people-oriented fields.

Limitations and Directions for Future Research

The results of the current study should be interpreted in light of the following four limitations. First, participants in this study represent a convenience sample of medical students and pre-service teachers attending the University of Alberta, and they represent only two populations of students training for people-oriented professions. As such, the results of this study cannot necessarily be generalized to other academic institutions, programs, or geographical

locations. Additionally, preservice teachers (n = 89) were underrepresented in the sample, compared to medical students (n = 189). To remedy these limitations, future research should replicate this study in additional Canadian universities, using large and equal samples of students from other people-oriented programs, such as clinical psychology, social work, and nursing.

Second, students were sampled through two separate studies, with different recruitment and remuneration procedures. In particular, medical students had previous exposure to questionnaire items because they were part of a longitudinal study. Due to their familiarity with the items, medical students may have responded differently than pre-service teachers, and this is a threat to internal validity. Additionally, because I combined two datasets, unique control variables from each study were not included in the analyses. For example, year in program from the medical student dataset was not utilized, nor was teaching stream from the pre-service teacher dataset. As such, important variables that may have uniquely impacted student burnout were not controlled for. In the future, researchers could remedy this limitation by measuring important control variables in a non-program-specific way (e.g., year in program).

Third, the MAV scale had low evidence of internal reliability and was thus omitted from subsequent statistical analyses. Consequently, I was unable to utilize Elliot's full 2x2 model of achievement goals (Elliot, 1999; Elliot & McGregor, 2001). It is possible that the four MAV items chosen were not sufficient to adequately measure this construct. This is unfortunate because MAV goals are underexplored, relative to the other three goal orientations. This is also problematic because it limits our understanding of how the entire 2x2 model functions in Canadian populations of post-secondary students, and it reduces evidence of validity in support of Baranik and colleagues' (2007) 24-item measure of achievement goals and the MAV construct more generally. Thankfully, researchers are working to further conceptualize,

understand, and reliably measure MAV goals (Cook, Castillo, Gas, & Artino, 2017; Cook, Gas, & Artino, 2018; Madjar et al., 2011). In the future, researchers may wish to use all eleven MAV items or a different selection of items to increase internal reliability of this scale. For example, Baranik and colleagues (2007) found that an 18-item version of the questionnaire best supported the 2x2 framework (i.e., dropping five problematic MAV items and retaining six strong MAV items). Researchers may also consider using a different framework of AGT altogether. For example, Ruth Butler's model of teachers' goal orientations (Butler, 2012) includes relational goals, which involve striving to build connections with students. Although Butler's model is specific to teachers, it is likely adaptable to other people-oriented professions and may be ideal for understanding the achievement goals of students and professionals whose work is highly relational.

Finally, there were limitations associated with conceptualizing and measuring burnout. Notably, I did not include OLBI engagement items in the questionnaires, and the OLBI did not measure the dimensions of disengagement and inefficacy outlined in Maslach's conceptualization of burnout. As such I likely did not capture the full construct of academic burnout. Although items were designed to measure burnout, it is possible that they mostly measured stress/exhaustion. Burnout is understood as a psychological state that emerges from the *prolonged* exposure to work-related stressors (Demerouti & Bakker, 2008; Maslach, Schaufeli, & Leiter, 2001). Therefore, students early in their respective programs may not yet be in the realm of true academic burnout, compared to students further along on the career trajectory. For example, Kokkinos and Stravropoulos (2016) found that Greek student teachers did not experience elevated symptoms of burnout during practicum, suggesting that burnout may not be fully developed during training. Conversely, Dyrbye and colleagues (2014) found that for U.S.

medical students and physicians, burnout was highest during training. Overall, more longitudinal research is needed to understand the burnout experience of post-secondary students. In particular, further research with Canadian populations is required to refine our understanding of burnout in students training for people-oriented professions, as well as how burnout evolves throughout the career trajectory.

Implications

The results of this study have implications both for researchers and educators, as well as for post-secondary students themselves. First, this study partially supports the use of the 2x2 AGT framework (Elliot, 1999; Elliot & McGregor, 2001) and, more specifically, the use of the framework in populations of Canadian medical students and pre-service teachers. This is the first study, to date, that has evaluated the relationship between achievement goals and academic burnout among pre-service teachers, and the first to evaluate these relationships generally in a Canadian sample, thus filling gaps in the literature. In the current study, MAP goals were most strongly endorsed by students and associated with lower academic burnout, and that PAV goals were least strongly endorsed by students and associated with higher academic burnout. These findings are consistent with a breadth of AGT research in populations of post-secondary students and professionals (e.g., Dahlin et al., 2007; Daniels, 2013; Madjar et al., 2012; Poortvliet et al., 2015; Retelsdorf et al., 2010) and provide evidence of validity for three domains of Baranik and colleagues' (2007) achievement goal scale. Overall, AGT appears to be a suitable theory for future researchers who seek to understand the motivational beliefs and burnout experiences of students, like medical students and pre-service teachers, who are training for people-oriented professions with high rates of burnout (Cook & Artino, 2016). Researchers should be mindful,

however, that to reliably measure MAV goals, different or additional scale items may be required.

Despite these limitations, this is the first study to explicitly study medical students and pre-service teachers together, and while they differed in terms of burnout, results supported my hypothesis that their endorsement of achievement goals would be fundamentally similar. Although medicine and education programs are quite different in terms of structure and content, students in these programs may have one overriding commonality: they are training for people-oriented professions with high rates of burnout and attrition. As such, when researchers seek to understand the burnout experience of students and professionals in human services, health, and education fields, individual differences, such as the achievement goals people hold, may be equally as important as the specific program or career they find themselves in. It seems that, although medical students experience significantly more burnout than pre-service teachers, achievement goals have the same impact on mitigating or exacerbating student burnout, regardless of program. Kokkinos (2007) has offered support for the notion that burnout is a transactional process that should be understood in terms of both environmental and individual factors. Future researchers should look more deeply into the environmental factors within medicine and education contexts, as well as other people-oriented professions, that may interact with achievement goals to protect against or contribute to burnout.

Next, understanding that MAP goals may protect students against burnout is valuable insight for educators and program committees, who presumably want their students to succeed academically, complete their training, and become competent, engaged, and mentally healthy professionals. Educators and program committees have the power to set up learning environments that encourage students to be more mastery-oriented. For example, course

instructors may emphasize formative assessment instead of summative assessment, focus on individual growth and improvement instead of grades, and avoid facilitating comparison amongst students (Cauley & McMillan, 2010). Although no interventions exist that explicitly target maladaptive achievement goals, recent research has pointed to the effectiveness of Attributional Retraining (AR; Perry, Hall, & Ruthig, 2005) for increasing students' mastery goals. AR teaches students to make more adaptive attributions for poor academic performance (e.g., attributing a low grade to something internal, unstable, and controllable, such as lack of effort or poor time management, rather than something internal, stable, and uncontrollable, such as low ability). Researchers have shown that students with adaptive attributional schemas tend to be more mastery-oriented and have higher grades than those with maladaptive attributional schemas, and that mastery goals are a key component of AR (Haynes, Daniels, Stupnisky, Perry, & Hladkyj, 2008; Perry et al., 2005). Similar to AR, interventions which aim to change mindsets from fixed (i.e., abilities cannot be improved) to growth (i.e., abilities can be improved) may be effective for increasing students' mastery goals and reducing their performance goals (e.g., Blackwell, Trzesniewski, & Dweck, 2007). In a recent study, DeBacker and colleagues (2018) found that, by implementing a one-time mindset intervention, high school students developed more adaptive views about their intelligence and reduced their use of PAV goals. Taken together, relatively short and simple interventions exist that have been useful in enhancing adaptive achievement goals and reducing maladaptive achievement goals, among other positive outcomes. Given the findings of the current study, it is logical that such interventions would also have a positive impact on academic burnout.

Finally, the results of this study are important for students, who are most directly and profoundly impacted by their own experience of academic burnout. Academic burnout is

undoubtedly a salient and problematic phenomenon affecting students training for people-oriented professions. One avenue to understand the burnout experience, as highlighted in this study, is to turn to theories of motivation. Often, motivational beliefs exist outside of consciousness, despite their impact on our mental wellbeing. Awareness is an important first step in changing attitudes, emotions, and behaviours, and the present findings can offer medical students and pre-service teachers this awareness. This research offers a motivational perspective on the burnout experience of individuals training for people-oriented careers, before they enter the workforce, and serves as an informative building block from which to support the development of successful and psychologically healthy professionals.

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Appendix A

Statement of Ethics Approval

Notification of Approval

Date: May 15, 2018

Study ID: Pro00081791

Principal Investigator:

Lindsey Nadon

Study Supervisor: Lia Daniels

Study Title: A Motivational Perspective on Medical Student and Pre-Service Teacher Burnout

Approval Expiry Date: Tuesday, May 14, 2019

Sponsor/Funding Agency: Agriculture and Food Council 6501

Thank you for submitting the above study to the Research Ethics Board 2. Your application has been reviewed and approved on behalf of the committee.

A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Sincerely,

Stanley Varnhagen, PhD

Chair, Research Ethics Board 2

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix B

Study Questionnaire Items

Burnout Items:

Strongly Disagree (1)*, Disagree* (2), *Agree* (3), *Strongly Agree* (4) **Reverse Coded (RC):** *Strongly Disagree* (4)*, Disagree* (3), *Agree* (2), *Strongly Agree* (1)
I can tolerate the pressure of my classes very well. **RC**
When I engage in school work, I usually feel energized. **RC**
When I am studying or doing school work, I often feel emotionally drained.
Usually I can manage the amount of my school work well. **RC**
After class/school work, I usually feel worn out and weary.
After my class/school work, I have enough energy for my leisure activities. **RC**
There are days when I feel tired before arriving at school.
After class, I tend to need more time than in the past to relax and feel better.

Achievement Goal Theory Items:

No, not at all true of me (1), Mostly untrue of me(2), Somewhat untrue of me(3), Neutral(4), Somewhat true of me(5), Mostly true of me(6), Yes, very true of me (7)
I prefer to work on tasks where I can show my competence to others (PAP)
I enjoy when others in my program are aware of how well I am doing (PAP)
I like to show that I can perform better than others in my program (PAP)
I try to figure out what it takes to prove my ability to others in my program (PAP)
When given a choice, I am willing to select challenging assignments from which I can learn a lot (MAP)
I am willing to step out of my comfort zone if it will help develop my competence (MAP)
I often look for opportunities to develop new skills and knowledge (MAP)
I enjoy difficult tasks in my program where I will learn new skills (MAP)
I prefer to avoid situations in my program where I might perform poorly (PAV)
I am concerned about taking on a task if my performance would reveal that I had low ability (PAV)
Avoiding a show of low ability is more important to me than learning a new skill (PAV)
I would avoid taking on a new task if there was a chance that I would appear incompetent to others (PAV)
I just hope I am able to master enough skills so I am competent in my work (MAV)
In my program, I focus on not doing worse than I have done in the past (MAV)
In my program, I often feel that I am unable to master what is necessary to do my work (MAV)
I avoid taking on new tasks when I am not sure I will be able to master them (MAV)

Appendix C

Information Letter (Medical Students)

INFORMATION SHEET

Project Title

Exploring goal orientations of learners in professional education and of practicing professionals

Principal Investigator: Dr. Oksana Babenko, 780-248-1729, obabenko@ualberta.ca

Co-Investigators: Dr. Lia Daniels, 780-492-4761, lia1@ualberta.ca; Dr. Shelley Ross, 780-248-1264, sross@ualberta.ca; Dr. Anna Oswald, 780-492-7500, oswald@ualberta.ca; and Dr. Jonathan White, 780-735-5147, jswhite1@ualberta.ca

Background

Debates are emerging around goal orientations of young people as they transition through education to becoming practicing professionals. These goal orientations may have lasting effects beyond the academic context, as they contribute to personal and professional development, satisfaction, career success, and quality of life of graduates of professional education programs.

Purpose

We wish to examine (a) goal orientations of learners in professional education programs and practicing professionals; and (b) relationships between learners' and professionals' goal orientations and personal and professional outcomes.

Procedures

You will be asked to complete a 5-10 minute on-line questionnaire with measures of goal orientations and personal and professional outcomes. As a token of our appreciation for your time, the first 50 students in each year of training (Years 1-4) will receive a $5 Starbucks card upon completing this initial survey. The remaining participants will be entered in a draw for one of the four $5 Starbucks cards, with approximate odds of winning a gift card being 1 in 25.

Following the initial participation, you will be contacted by e-mail and asked to complete the same questionnaire in a month and then in a year, should you choose to participate in these surveys. We also intend to conduct follow-up surveys in five and then ten years. You will be contacted by e-mail to complete the questionnaire if you choose to participate in surveys over time.

Benefits and Risks

There are no potential risks involved with participation in this study. No personal information will be attached to your answers. Participation or non-participation will not impact your training at the University of Alberta and/or your employment. Your participation in this study will contribute to our understanding of the relationships of goal orientations and personal and

professional outcomes of learners and graduates of professional education programs. The direct benefit to you as a participant is the potential for greater personal and professional self-awareness.

Confidentiality

Your participation and responses will be kept confidential and will not have any bearing on your academic standing. The research assistant(s) will sign a confidentiality agreement. All the data will be stored on a password protected drive of the University of Alberta computer server. Data will be stored for a minimum of 5 years. If you choose to provide your email address for follow up surveys and distribution of gift cards, your e-mail address will be kept separately from your answers to survey questions. The access to the list with e-mails will be granted to the principal investigator and the research assistant only. All study findings will be reported as grouped data, such that no one or small group of individuals can be readily identified. Should you wish to withdraw your responses to the survey, please contact the research assistant within 5 business days of your participation in the survey at 204-294-9998 or by email lnadon@ualberta.ca. Your survey responses can be withdrawn only if you have provided your e-mail address at the time of completing the survey.

Consent

By completing the questionnaire and submitting it, you are consenting to taking part in this study. Taking part in this study is voluntary. Should you wish not to participate, do not complete the survey.

The plan for this study has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615.This office has no direct involvement with this project.

Please contact any of the individuals below if you have any questions or concerns:

Dr. Oksana Babenko, 780-248-1729
Dr. Lia Daniels, 780-492-4761
Dr. Shelley Ross, 780-248-1264
Dr. Anna Oswald, 780-492-7500
Dr. Jonathan White, 780-735-5147

Thank you very much for your time and participation.

Appendix D

Information Letter (Pre-service Teachers)

Information Letter for Pre-Service Teachers Winter 2017

Study Title: Pre-Service Teachers' Beliefs and Perspectives on Current Topics in Education
Principal Investigator: Jona Frohlich, frohlich@ualberta.ca
Research Supervisor: Dr. Lia Daniels, lia.daniels@ualberta.ca, 780-492-4761

Background, Questions, & Purposes: It is important to consider the beliefs, emotions, and motivational practices of pre-service teachers, as they relate to both teacher and student outcomes. We are interested in your thoughts and beliefs when working with diverse groups of students. We are also interested in your emotions, responsibility, and motivation for learning, as well as the motivation you expect to feel in the future working as a teacher. This data is being collected for scholarly purposes including theses, conference presentations, and publications. We may use the data we get from this study in future research, but if we do it will have to be approved by a Research Ethics Board.

Procedure: At the beginning of your class in Winter 2017, you will be provided with the option to participate in this survey for 2 research credits towards your course grade (5%). The questionnaire will be available through the Educational Psychology Participant Pool for the duration of the term. The one time questionnaire will take no longer than 60 minutes to complete. You will have the option to participate in the survey until the end of the academic term.

Confidentiality & Anonymity: Participation is voluntary and your consent is implied by completion of the questionnaire. We are asking for your CCID and e-mail address in order to ensure that you are awarded the 2 research credits after participation should you experience any technical difficulties. Data will be completely anonymous at all times. The data will be stored on password-protected computers at the University of Alberta. All research assistants have signed confidentiality agreements. Your consent is implied by completion of the questionnaire. *NOTE: You should know that while we will keep the information you give us confidential, in the United States under US privacy laws, the government has the right to access all information held in electronic databases.

Withdrawal: You can stop answering at any time. Data may not be withdrawn once the questionnaire has been completed. All data will be made anonymous and your CCID will no longer be linked to your responses by April 2017.

What are the Benefits/Risks: There are no risks associated with this research and you may benefit by having an opportunity to reflect on your experience in education. You will also be contributing to ongoing research in the Alberta Consortium for Motivation Emotions (ACME). To see a Research Brief on our results visit: https://sites.google.com/a/ualberta.ca/acme/
The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the University of Alberta Research Ethics Board (REB2 - Pro00070175).
For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at 780-492-2615.