

**Examining the Contribution of Demands and Resources in the Development of Burnout
Among Post-Secondary Students Training for Careers in Health Care**

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Abstract

Post-secondary students who are exposed to chronic stress, emotional exhaustion, and academic demands, and who do not have enough resources to help them cope with and recover from stress can develop symptoms of burnout. Burnout is a serious problem for students because it can increase drop out intentions and can negatively impact their physical and mental health. Students training to work in health care may experience practicum-related burnout or academic burnout, due to their multiple demands. Certain types of resources, however, can moderate the relationship between the demands these students face and the progression of burnout. A gap exists in the literature examining the academic and placement related resources and demands and their relationship to burnout in students training for health care careers. Using the Job Demands and Resources theory, the present study examined which combination of demands and resources predicted academic and placement-related burnout. Through moderation regression analyses we found that compassion satisfaction and university resources moderated the relationship between university demands, secondary traumatic stress, effort and reward imbalance and placement related burnout, rather than academic burnout. This study could help future studies in the development of programs working to provide support to health care students to help reduce their levels of burnout before they enter the workforce.

Keywords: health care students, burnout, vicarious trauma, secondary traumatic stress, Job Demands and Resources Theory

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Examining the Contribution of Demands and Resources in the Development of Burnout Among Post-Secondary Students Training for Careers in Health Care

It is very common for workers in health care to become physically and emotionally exhausted, but unless these symptoms are appropriately addressed, these feelings can lead to more serious issues, such as burnout, secondary traumatic stress, and even job turnover (Gong et al., 2022). On the other hand, the action of helping patients and clients through their circumstances or traumatic pasts can be gratifying, leading to feelings of satisfaction in the value of one's work and effort (Stamm, 2010). These feelings are called compassion satisfaction. Professional quality of life can be conceptualized as the balance between feelings of burnout and secondary traumatic stress and compassion satisfaction (Stamm, 2010). Students who are training for careers in health care, such as university or college students, are particularly vulnerable to experiencing problems, such as academic burnout and secondary traumatic stress. Not only must they effectively adapt to the academic demands of their programs, but they must also learn how to effectively interact with and treat patients (Cushway, 1992). While students are learning these skills, they may not possess sufficient skills to adequately cope with these stressful situations. As a result, they may feel overwhelmed and burnt out from the combined demands of their program. This may cause them to experience reduced motivation for continuing their studies, reduced academic performance, and may lead to an increase in dropout intention (Chang et al., 2016; Jagodics & Szabó, 2022).

Few studies have examined burnout in university students. The Job Demands and Resources model has been shown to be effective for predicting burnout in multiple workplace settings, including health care and educational settings (Jagodics & Szabó, 2022; Xanthopoulou et al., 2007). A study by Jagodics & Szabó (2022), developed the University Demand-Resource

Questionnaire (UDRQ), which was found to be an effective model for measuring the demands that may contribute to the development of burnout and the types of resources that could be a protective factor for the development of burnout in university students. This model does not appear to have been used for predicting burnout in students training to work in particular career fields, such as health care and mental health care. Since students training to work in careers like health care and mental health care may be more vulnerable to developing burnout, compassion fatigue, and secondary traumatic stress than students training for other career fields, it is essential that the factors that contribute to the development of burnout for this particular group of students be examined. Although the University Demand-Resource Questionnaire measures demands and resources of general university students, this questionnaire as well as other measures of demands and resources in university students, such as the DECORE-Student questionnaire (DECORE-S) (Luceño-Moreno et al., 2025) are not sufficient for students who are training to work in health care because these students also face unique demands and may utilize unique resources as a result of their programs. Therefore, the aim of the present study was to measure the demands and resources that students who are training to work in health care face and utilize in the academic environment and the health care environment. A secondary aim was to test the moderating relationship of resources on the relationship between demands and burnout.

This paper begins with a review of the literature on workplace burnout, followed by the literature on concepts related to burnout, such as secondary traumatic stress, compassion fatigue, compassion satisfaction, and vicarious trauma. Literature regarding burnout in health care workers will then be discussed followed by burnout in post-secondary students and health care trainees.

Workplace Burnout

During the 1970s, many different types of services opened up, such as halfway houses, sexual assault counselling, women's counselling, day care, retirement counselling, and many more (Gartner & Riessman, 1974). These services not only attracted the sick and needy, but they also attracted working professionals who had been feeling distressed from helping others (Hoffarth, 2017). Herbert Freudenberger was a psychoanalyst who noted the similarity in the symptoms of these working professionals and was the first to describe and define burnout in print (Hoffarth, 2017). Freudenberger had also experienced burnout himself while working as a volunteer in a free clinic (Freudenberger, 1975). Human service workers are vulnerable to burnout because they face several challenges, such as their own personal problems, the problems of those who come to them for help, and the ills of society (Freudenberger, 1975). He stated that burnout symptoms can manifest themselves in various ways depending on the person (Freudenberger, 1975). Burnout, as he described it, is a work-related syndrome that is characterized by both emotional and physical exhaustion, cynicism directed toward clients, inflexibility related to the job, and decreased job efficacy.

Christina Maslach is a social psychologist who is interested in burnout and how professional workers who work in the human services field deal with their mental health after working with clients (Hoffarth, 2017). Maslach believes that burnout is a psychological syndrome that occurs with chronic and prolonged work-related stress (Maslach & Goldberg, 1998). This definition suggests that burnout develops gradually in response to high levels of stress in the workplace (Demerouti et al., 2001). Burnout is a syndrome that is an occupational phenomenon rather than a medical condition (World Health Organization, 2019). A syndrome is a collection of symptoms that occur together and tend to change with time (Dellwo, 2023). A syndrome generally has no known course, cause, or underlying process, which can make

treatment difficult. A disorder on the other hand also consists of a cluster of signs and symptoms but the associated features of the disorder are assumed to be related. A disorder causes impairment and significant psychological distress that interferes with an individual's behaviour and/or daily functioning (American Psychological Association, 2018). Burnout has not been classified as a mental disorder because clear diagnostic criteria have not yet been developed, and prevalence estimates are unclear (Nadon et al., 2022). Burnout is commonly characterized in the literature by three key dimensions, which are emotional exhaustion, reduced personal accomplishment, and depersonalization (Maslach & Leiter, 2016).

Emotional exhaustion refers to feelings of fatigue and being overworked from the emotional demands of one's job (Maslach et al., 1997). It is a state of being drained of one's emotional resources (Awa et al., 2010). This dimension resembles and overlaps with traditional stress reactions, such as anxiety, fatigue, job-related depression, and psychosomatic complaints (Schaufeli & Enzmann, 1998). It has also been found to be correlated with headaches, muscle tension, sleep disturbances, gastrointestinal disorders, and cold/flu symptoms (Maslach & Leiter, 2007).

Depersonalization can occur after the development of emotional exhaustion (Maslach & Goldberg, 1998). It involves the cynical and negative approach to people under one's care (Awa et al., 2010). Individuals can excessively detach themselves from others. Although this detachment is often done as a form of self-protection, it can also lead to dehumanization. The workers may treat the clients more as objects rather than people (Cordes & Dougherty, 1993). The symptoms of depersonalization can involve an emotional detachment from their work and possibly cynicism toward co-workers, clients, or even the organization they work for (Cordes & Dougherty, 1993).

Reduced personal accomplishment represents the self-evaluation dimension of burnout (Maslach & Goldberg, 1998). Low morale is associated with this dimension (Maslach & Leiter, 2000). A decrease in a sense of personal accomplishment can occur when individuals do not feel competent or productive at work. They may experience low self-esteem, low self-efficacy, and negative feelings toward themselves (Awa et al., 2010). A reduction in self efficacy has been linked to symptoms of depression, which can also impede an individual's ability to cope with challenges in the workplace. Workers may also feel that there is a lack of progress in their work and even a loss in the progress that they have made (Cordes & Dougherty, 1993).

There is controversy in the literature related to the order of the development of emotional exhaustion, depersonalization, and reduced personal accomplishment. Generally, these dimensions have a causal order, rather than developing simultaneously. Three main theories exist in the literature regarding the phases of development (Houkes et al., 2011). The theory by Golembiewski, Munzenrider, and Stevenson (1986), is based on the idea that a sense of detachment develops which then turns into depersonalization (Houkes et al., 2011). This then leads to a reduction in personal accomplishment which then causes emotional exhaustion. Leiter and Maslach (1988) proposed that emotional exhaustion develops first in response to stress from work-related demands. This is followed by depersonalization as a form of coping with these stressors, and if these two dimensions continue without abating, then this could negatively impact work performance, leading to feelings of reduced personal accomplishment. Lee and Ashforth (1996) propose that emotional exhaustion develops first followed by depersonalization. However, unlike Leiter and Maslach, they proposed that reduced personal accomplishment develops independently from depersonalization (Houkes et al., 2011). Instead, reduced personal accomplishment may develop from emotional exhaustion (Lee & Ashforth, 1996). In a meta-

analysis study by Lee and Ashforth (1996), emotional exhaustion and depersonalization were more strongly correlated with each other than with reduced personal accomplishment. A systematic review study of applied psychologists by McCormack et al. (2018) revealed that emotional exhaustion was the most commonly reported dimension of burnout. Different treatment strategies may be required to treat the different dimensions because they may not be equal in their progression (Cordes & Dougherty, 1993).

Theories of Burnout

There are several different theories in the literature that have been used to conceptualize the development of burnout. The theories often cited are the Areas of Worklife (AW) theory, the Job Demands and Resources theory (JD-R), and the Conservation of Resources (COR) theory. The COR theory is based on the idea that when there is a persistent threat to an individual's valued resources that either prevents the individual from obtaining those resources or they no longer possess the ability to obtain those resources, then this can result in burnout (Prapanjaroensin et al., 2017). This theory focusses on four types of resources, which are conditions (e.g., social relationships, marital status, health), personal characteristics (e.g., social support, coping skills), objects (e.g., food, clothing, housing), and energy (e.g., skills or abilities that can be exchanged for money or knowledge). The COR theory is also related to emotional exhaustion. People who work in the human services field often need to interact with clients on a regular basis. The workers are expected to be positive, upbeat, friendly, cheerful, and to suppress negative emotions (Lam et al., 2010). Understandably, having to keep up these positive emotions all day can be emotionally taxing. These types of workers are susceptible to emotional exhaustion because their emotional resources have become drained, and they no longer have the emotional resources or the energy to keep up with positive emotions. This may lead to the

workers withdrawing from their work (Cropanzano et al., 2003). There is some evidence to suggest that the degree to which workers reduce their effort and job performance in response to a depletion of their resources is dependent on the degree to which workers perceive the availability of additional resources to replenish the ones that have been depleted (Hobfoll, 1989; Kay et al., 2008).

The Areas of Worklife (AW) theory states that burnout is the result of an imbalance between a person and their job-related stressors that occur in six areas: workload, control, reward, community, fairness, and values (Maslach & Leiter, 2016). Having a mismatch between a person and their job can lead to burnout, affecting job performance, personal well-being, and social behaviours. If employees are feeling consistently overworked and their workload is preventing them from meeting the demands of the job, then this can lead to burnout (Maslach & Leiter, 2016). The employees may be unable to get enough rest to restore balance and destress on their days off or time at home before returning to work. This may leave them feeling already emotionally and physically exhausted even before their workday begins. A high workload means that employees have difficulty or are unable to perform their job duties within their working hours (Maslach & Leiter, 2022). This may cause work to pile up, or they may feel pressured to work overtime to accomplish their job. Some employees may even be forced to complete tasks that lie outside of their capability levels and job descriptions (Maslach & Leiter, 2022). Some employees may even feel pressured to devote extra time to their work, even if it is unpaid, because they may feel that they will miss out on a promotion or an opportunity, or they may fear losing their jobs (Maslach & Leiter, 2022). This devotion to the workplace places a strain on the balance between work and life and can even impact relationships.

The COR and the AW are not the only theories used to conceptualize the development of burnout. In the literature, a theory for conceptualizing burnout in occupational and academic settings is the Job Demands and Resources (JD-R) theory. The JD-R theory has been used in multiple organizations and has been cited by many articles (Bakker & Demerouti, 2017). This theory is based on the idea that burnout occurs when individuals experience constant job-related demands and do not possess adequate resources to overcome these demands (Bakker & Demerouti, 2007). Job demands may occur when physical, psychological, social or organizational qualities of a job require prolonged cognitive or emotional attention and skills which become physical or psychological burdens (Bakker & Demerouti, 2007). Job resources are physical, psychological, social, or organizational aspects of a job that help to reduce job demands and foster a sense of learning, development, and personal growth, enabling the workers to overcome the physical or psychological problems that may occur as a result of these demands.

Some strategies to combat job demands and improve well-being can involve taking rest, relaxing, exercising, and taking vacations (Rokach & Boulazreg, 2022). It is important that strategies like these are practiced early in a person's career, preferably in university because students should learn what strategies work best for them and should practice managing early symptoms of burnout before entering their careers (Coster & Schwebel, 1997). However, this task is often difficult because university programs are demanding, which can cause students to become too wrapped up in their placement/work or courses, as opposed to having more of a balance between work and their lives (Coster & Schwebel, 1997). Some examples of job-related resources are performance feedback, opportunities for growth, autonomy, and skill variety (Bakker & Demerouti, 2017).

Having access to enough resources enables people to cope with demands and can protect against symptoms of burnout. In other words, various resources can play the role of a buffer against certain job-related demands (Bakker & Demerouti, 2007). In a study by Xanthopoulou et al. (2007), that examined how the interaction between job demands (e.g., workload, physical demands, patient harassment, and emotional demands) and job resources (e.g., social support, performance feedback, autonomy, and opportunities for professional development) affected the exhaustion and cynicism dimensions of burnout in home care employees, they found that the workers who had access to job resources did not experience high levels of exhaustion and cynicism after experiencing demanding client interactions. This provides support for the theory that sufficient resources can help buffer against symptoms of burnout even when experiencing job demands that could otherwise be stressful.

Based on the JD-R theory, the types of resources and demands associated with working for a particular organization are dependent on that organization and the nature of the job (Bakker & Demerouti, 2007). Therefore, in order to measure burnout in students training for health care, the present study was guided by the Job Demands and Resources theory, as this theory captures certain types of demands and resources related to certain jobs. Therefore, in the present study, academic and placement-related resources and demands that pertain to health care students were measured to examine the development of burnout.

Burnout and Related Concepts

Secondary Traumatic Stress and Compassion Fatigue

Throughout the literature, there are many different terms that are used to describe the impact that working with clients who have a history of trauma has on health professionals, and some of these terms include secondary traumatic stress, secondary stress, vicarious trauma,

compassion fatigue, and burnout (Elwood et al., 2011). There is a great deal of overlap within these terms with very slight differences. The terms secondary traumatic stress (STS) and compassion fatigue (CF) especially overlap and are frequently used interchangeably in the literature (Elwood et al., 2011). This has generated some controversy in the literature, making these constructs difficult to define. Situations in which these terms are used differently are when referring to the impact that working with traumatized clients can have on workers in a variety of careers. In cases like this, secondary traumatic stress is used, but when referring to exclusively helping professionals in health-related professions or police officers and first responders, then CF seems to be used (Elwood et al., 2011). Advocates of the term CF suggest that it is more favoured by professionals (Figley, 1995).

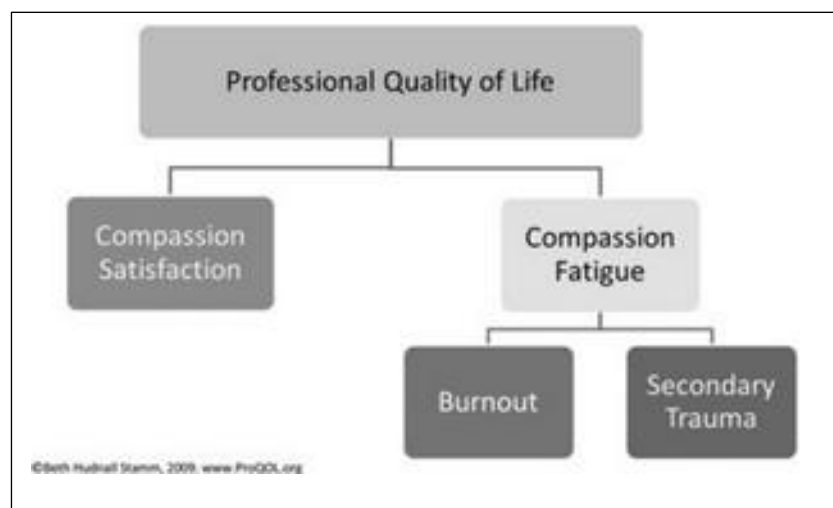
Charles Figley was one of the first people to coin the term secondary traumatic stress (STS) (Tend Academy, 2024). STS is a syndrome that can occur when a person cares for another person who has experienced a traumatic event firsthand (Figley, 1995). The person providing the care experiences stress from helping a suffering person, and the resulting behaviours and emotions experienced after knowing about someone's trauma is called secondary traumatic stress (STS) (Figley, 1995). The symptoms of STS include avoidance of reminders, persistent arousal, and intrusion or a re-experiencing of the client's traumatic event, and these symptoms closely resemble the symptoms experienced by those with post traumatic stress disorder (PTSD) (Figley, 1995). The main difference between STS and PTSD is that in STS, the person is experiencing secondary trauma because he or she is hearing about the trauma. With PTSD, the person is experiencing primary trauma firsthand. Some strategies can be potential protective factors against the development of STS, which include increased training for interacting and helping

traumatized clients, increased supervision, and more supportive resources for trauma workers (Pearlman, & Mac Ian, 1995).

Evidence supports the idea that compassion fatigue (CF) is a product of both burnout and STS. If a person is experiencing emotional and/or physical exhaustion and this is combined with prolonged exposure to individuals who have STS or PTSD, then this can lead to the development of CF (Cocker & Joss, 2016). Since emotional and/or physical exhaustion is a main symptom of burnout, there is a connection between burnout and the development of CF (Butcher et al., 2023). In the literature, several predictors of burnout and compassion fatigue have been identified. Factors that can lead to burnout may include some of or a combination of several factors, such as a high workload, over-time work hours, face-to-face interactions with community members, lack of support from supervisors, poor worker relationships, financial problems, poor health, perceptions of low self-worth, inexperience in the profession, as well as several others (Begic et al., 2019; İlhan et al., 2008; Lee et al., 2013; Li et al., 2014; Newell & MacNeil, 2010). Some predictors of compassion fatigue have been found to include a non-supportive environment, a high caseload, working long hours, and experiencing emotional drain (Figley, 2002; Hunsaker et al., 2015; Simon et al., 2005).

The Professional Quality of Life (ProQOL) Concise Manual (2nd ed.) provides a model to help explain an overlap between STS, CF, and burnout (Stamm, 2010). According to this model, CF consists of burnout and STS. The relationships of these variables can be visualized in the image below from the ProQOL manual (Stamm, 2010).

Figure 1
Diagram of Professional Quality of Life



In the present study, rather than using the ProQOL model, the relationship between secondary traumatic stress and burnout was conceptualized using the JD-R theory. A variety of stressors have been shown to lead to exhaustion, and if resources are depleted to such a degree that these stressors or demands become overwhelming for individuals, then this may lead to the development of burnout symptoms (Shoji et al., 2015). We argue that STS is a type of work-related stress that contributes to the demands faced by health care workers and social workers. In a study by Sodeke-Gregson et al. (2013), that investigated secondary traumatic stress, compassion fatigue, and burnout in therapists, burnout and STS were significantly positively correlated, and 70% of the therapists had scores that suggested they were at a high risk for developing STS. This indicates that being exposed to clients with trauma may place demands on professionals working with these individuals, making them more susceptible to developing STS and eventually symptoms of burnout. Interestingly, the number of trauma clients that the therapists had on their caseloads was not predictive of the development of STS (Sodeke-Gregson

et al., 2013). The present study examined STS as a demand using the JD-R theory to study burnout in students who were training to work in health care.

Compassion Satisfaction

Compassion satisfaction (CS) is another concept that has been investigated in the literature in conjunction with STS and burnout. It is defined as the feelings of pleasure that result from helping others (Huggard et al., 2013). CS can be experienced by a person who makes a perceived valuable contribution to another person, to their work, or even to society (Huggard et al., 2013). It can be described as the positive sense of fulfillment one can have after observing a reduction in the suffering of others. Research has shown that there is a relationship between CS, burnout, and CF. CF, STS, and burnout have been found to be inversely related to CS (Simon et al., 2005; Sodeke-Gregson et al., 2013).

In a study by Cummings et al. (2021), it was found that CS was negatively associated with burnout. Burnout was also a strong predictor for the development of STS. CS also seemed to decrease the development of VT and STS (Cummings et al., 2021). This indicates that CS could be a protective factor in preventing these problems from developing. A study that investigated STS, burnout, well-being, and CS in workers who investigated Internet crimes against children found that although the majority of participants ranged from low to moderate in their risk for developing STS and burnout, they ranged from moderate to high on CS (Brady, 2017). The results also revealed that having higher levels of support outside of the workplace and engaging in positive coping strategies was significantly positively related to higher levels of CS and significantly negatively related to STS and burnout (Brady, 2017). These results suggest that social support is important for increasing CS and decreasing burnout symptoms.

A study by Mathias and Wentzel (2017) investigated the prevalence of burnout, CF, and CS in 67 third- and fourth-year undergraduate nursing students. The results revealed that almost all of the participants ($N = 63$) experienced levels of burnout that the authors classified as average or moderate (a score between 23 and 41), and almost half of the ($N = 30$) participants experienced average or moderate levels of levels of CF (a score between 23 and 41). Interestingly, 64 participants had an average or moderate level of CS (a score between 23 and 41). A different study that investigated levels of CF in social work students found that compared to working professionals in the social work field, the social work students experienced lower levels of CF than the working professionals, and the students with higher levels of CS had lower levels of CF in comparison to students with lower levels of CS (Harr et al., 2014). This suggests that CS could be a resource that acts as a protective factor against CF.

In the literature, predictors of CS have been found to include social support, low work stress, use of self-care strategies, experience, clear communication, and working with traumatized clients after being given trauma training (Butler et al., 2017; Figley, 2002, Rahman et al., 2023). In the present study, we analyzed CS, co-worker support, supervisor support, and support from lecturers as resources that health care students may have in their program, which may protect against symptoms of burnout.

Vicarious Trauma

As previously mentioned, another term that closely overlaps with secondary traumatic stress and has been used interchangeably in the literature is vicarious trauma (VT). The literature is also inconsistent regarding the definition of VT. Therefore, this term was defined for the present study based on the research by McCann and Pearlman (1990). Helping someone through a traumatic experience can cause the helper to experience disruptive and possibly painful

psychological effects that can persist for months and even years after working with the traumatized individual (McCann & Pearlman, 1990). This phenomenon is called VT. Experiencing VT alters basic schemas that the workers possess about themselves and the world, such as schemas about trust, personal control, attachment, and esteem for others (McCann & Pearlman, 1990). These changes can affect the worker's feelings, relationships, and life in general (McCann & Pearlman, 1990). VT can be debilitating because it can change the worker's memory systems by causing painful images and emotions associated with the client's traumatic experience (Jenkins & Baird, 2002). For example, after working with many people who have experienced domestic violence, the worker may find it difficult to trust or believe that relationships can be healthy. This belief can then have an impact on the personal relationships in that person's life. STS and VT are similar, but STS involves a sudden adverse reaction to someone who has experienced trauma. VT, on the other hand, tends to develop more slowly over time (Jenkins & Baird, 2002).

Mental health care providers are considered to be at a high risk for developing VT due to providing care to clients who have experienced emotional, physical, psychological, or sexual trauma (Jimenez et al., 2021). In a study that examined VT in a broad range of mental health care providers, including psychologists, mental health nurse practitioners, therapists, and counselors, the authors found that the participants had a moderate level of VT, regardless of their professional role (Jimenez et al., 2021). This study demonstrates that workers in various health care positions may be vulnerable to experiencing symptoms of VT.

There is also a relationship between burnout and VT. In a study by Kounenou et al. (2023) that examined how VT and empathy contributed to burnout in mental health practitioners, it was found that a strong positive correlation existed between burnout and VT. A positive

relationship was also found between burnout and empathy, but this correlation was weak (Kounenou et al., 2023). Being empathetic is an important skill when working with people, but it can also make the worker vulnerable and sensitive to the problems of others. Experiencing chronic stress and symptoms of VT without sufficient resources to cope, may increase the risk of experiencing symptoms of burnout. This would help explain the positive correlation between empathy and burnout in the study by Kounenou et al. (2023).

Both STS and VT can lead to burnout. Experiencing work overload, chronic stressors, limited support, and role conflict, can lead to burnout (Devilly et al., 2009). Burnout can occur in people who work in careers that are within or outside the human services sector. However, people who work in the human services sector with trauma survivors on a regular basis are more likely to experience VT and/or STS than those who work outside of this sector because these outcomes will only occur when the worker is exposed to trauma reported or demonstrated by clients (Leung et al., 2022). This suggests that a person can have burnout without having STS or VT, and a person can have STS and/or VT without experiencing burnout. The current study measured VT in post-secondary students who were training for careers in health care along with STS, as these may be demands that these students have faced during their placements/practicums. Since research has shown that there is a positive relationship between STS and burnout as well as VT and burnout, experiencing demands that could exacerbate symptoms of STS or VT could make students vulnerable to developing burnout symptoms.

Burnout in Health Care Professionals

In the literature, burnout has mostly been investigated in people who work in the human services sector, but this problem can also be experienced in many professions if there are chronic workplace stressors that are not being successfully managed or if there is an imbalance between

work demands and available resources (Maslach & Leiter, 2016). However, burnout can also be experienced in other aspects of individuals' lives, such as couple burnout, parental burnout, or academic burnout (Wang et al., 2022). The present study focussed on academic burnout and burnout experienced in the health care field.

In health care professions, professionals may feel the need to work long hours and selflessly put the needs of others ahead of their own to do whatever they can to help their clients, even if it comes at a personal sacrifice (Maslach & Goldberg, 1998). Health care workers have demanding and sometimes dangerous jobs. Exposure to infectious diseases, experiencing violence from patients and families, having to work long hours, experiencing staffing shortages, having to work with protective equipment, and supply shortages may be aspects of their working environment which can contribute to feelings of fatigue, emotional exhaustion, and can decrease their mental health (CDC, 2023). According to the CDC (2023), 46% of health care workers in 2022 reported that they were burnt out, which is a 14% increase in burnout reports from 2018. Job turnover intention in health care workers was 44% in 2022 compared to 33% in 2018 (CDC, 2023). In a systematic review that examined physician burnout in 182 studies involving 109, 628 individuals in 45 countries published between 1991 and 2018, 67.0% of these studies reported that the physicians were burnt out (Rotenstein et al., 2018). These results suggest that the mental health levels of health care workers has become worse with time, indicating the need for more support. Similarly, in a meta-analysis examining a sample of 9, 409 mental health professionals, the prevalence for the core areas of burnout including emotional exhaustion, depersonalization, and reduced personal accomplishment was 40%, 22%, and 19%, respectively (O'Connor et al., 2018). Burnout among health care professionals can lead to serious problems not only for the workers themselves but also for their clients or patients.

Burnout in physicians can lead to a decrease in the accuracy of their diagnoses; reduced ability to effectively communicate with patients, family members, and staff; as well as an increase in the number of unnecessary medical procedures (West et al., 2016). In a study by Winwood and Lushington (2006), high workload significantly exacerbated psychological strain, which reduced sleep quality in a large sample of Australian nurses. This led to an increase in fatigue and a decrease in the nurses' abilities to recover from overall work strain between shifts (Winwood & Lushington, 2006). Being unable to recover from daily physical and emotional exhaustion can lead to chronic stress, which can be a risk factor for the development of burnout. Research indicates that physician burnout can begin as early as medical school (Chunming et al., 2017; IsHak et al., 2013). This highlights the importance of developing tools that are able to measure the particular demands placed on students training for health care careers and the particular resources these students utilize to cope with these demands. This knowledge may assist programs to support the development of these resources in students. It is important that these demands are addressed before students are experiencing burnout symptoms, and it is important that students are taught skills to effectively identify and manage these symptoms while they are still training for these careers. That way, they will be equipped with the knowledge to effectively manage these symptoms before they enter the workplace.

Caring for people with mental health problems and disabilities can be very stressful for caregivers and supporting family members (Schulz et al., 1997). In a study that examined symptoms of burnout and compassion fatigue in staff members who worked in community based mental health services, the psychologists and social workers had the highest levels of burnout and compassion fatigue symptoms in comparison to psychiatrists, psychiatric nurses, rehabilitation therapists, and health care support workers (Rossi et al., 2012). Social workers who

worked with clients with mental illnesses had high levels of emotional exhaustion and feelings of depersonalization (Acker, 2010). Social workers who were younger and with less experience also experienced higher levels of depersonalization and reduced levels of personal accomplishment, compared to older and more experienced social workers (Acker, 2010). The influence of experience on levels of burnout was also echoed in the results of a study that examined burnout, stress, and job satisfaction in play therapists. Young and less experienced play therapists were more likely to have higher levels of burnout than older and more experienced play therapists (Winburn et al., 2023). This study also found a strong correlation between stress and burnout in play therapists. The findings from these studies suggest that experience has an important role in protecting against symptoms of burnout, and this raises the question of whether academic programs are preparing young and inexperienced trainees well enough before they enter the workforce. Since health care professionals often work with many people who have experienced trauma and/or have mental health issues, these types of careers can place workers at a particular risk for developing burnout.

Some resources can help protect against the development of burnout symptoms in health care workers. Support from managers has been found to be a protective factor in the development of burnout in therapists (Sodeke et al., 2013). Therefore, support from managers and supervisors as well as co-workers can be conceptualized as resources that can be utilized to cope with work-related demands and mitigate the development of burnout. A sense of fairness and compensation with rewards (financial, social, or institutional rewards) in the workplace has also been found to be connected to symptoms of burnout (Maslach & Leiter, 2016). Unfair and disrespectful treatment of employees by co-workers or management can lead to increasing feelings of hostility, which may develop into symptoms of burnout and job disengagement.

Being treated in this manner can make employees feel devalued and unimportant (Maslach & Leiter, 2016). A sense of community in the workplace is important (Maslach & Leiter, 2016). Community refers to the relationships and support between co-workers in the workplace environment. If there are tensions, conflicts, and a lack of support between co-workers, then this continuing stress can lead to burnout (Maslach & Leiter, 2016).

Additionally, values (defined as the personal values and ideals employees have that attracted them to work in that job capacity) are also related to symptoms of burnout (Maslach & Leiter, 2016). If the values of the company or employers are not in line with the values of the employees, the workers may be faced with the decision of staying in a job they dislike or finding an alternative job. This imbalance between organizational values and personal values can lead to symptoms of burnout. Feelings of a lack of control in the workplace have also been found to be related to symptoms of burnout (Maslach & Leiter, 2016). Employees who do not feel that they have an influence on decisions that affect their work and do not have access to resources that enable them to effectively complete their job are more likely to disengage from their job. In the present study, perceived control was evaluated as a potential resource health care students may utilize, which may protect against symptoms of burnout.

Burnout in Post-Secondary Students and Health Care Trainees

Although burnout has mostly been investigated in the human services sector, it can also be experienced by students (Jagodics et al., 2023; Schaufeli et al., 2002). Academic burnout is very similar to burnout experienced in the workplace because students are faced with mentally challenging tasks within an institution and emotionally demanding social interactions are often required (Jagodics et al., 2023). Academic burnout in students develops because of study demands and school-related stress and can result in three main symptoms that closely resemble

the symptoms of the Maslach Burnout Inventory: exhaustion, cynicism, and reduced professional efficacy (Schaufeli et al., 2002). Reduced professional efficacy is defined as the feeling of inadequacy one might experience as a student, and cynicism pertains to a cynical attitude toward school (Salmela-Aro et al., 2008).

Academic burnout is a significant problem for university students. It can cause students to experience a decrease in engagement and in their intrinsic motivation for continuing their studies (Chang et al., 2016). It can also affect academic performance and lead to an increase in dropout rates (Jagodics & Szabó, 2022). In a study by Kaeding et al. (2017) that investigated reported physical symptoms of burnout in clinical and counselling postgraduate psychology trainees, they found that tiredness, back pain, and neck pain were the symptoms that were most commonly reported in the groups of participants that scored high on the burnout scale. The researchers theorized that the fatigue participants experienced was most likely due to their postgraduate training demands as well as the challenge of balancing job, family, and interpersonal demands.

Factors that contribute to burnout in university students have been shown to include low social support, lack of opportunities to engage with peers, and dissatisfaction with the course material (Wei et al., 2021). Feeling emotionally exhausted may motivate students to drop out of their programs (Park et al., 2021). All of these factors can lead to high stress levels, which can increase the probability of developing symptoms of burnout. Given that burnout can cause many negative outcomes, further research that examines the demands and resources that may predict burnout in university students is essential so that the use and availability of these resources can be encouraged within educational institutions, especially for programs in which students are preparing to enter the workforce.

Protecting Against Burnout in Students

The process of creating supportive services for burnout prevention within the academic environment is a challenge for educational organizations because burnout prevention is somewhat of a paradox in the sense that the students who most need burnout supportive services are the students who often have the least time to access these needed services (Benner & Curl, 2018). Nevertheless, there are several different types of academic-related resources that can help protect against the development of burnout in post-secondary students. Michalec et al. (2013) investigated the prevalence of burnout in undergraduate nursing students and found that 4th year students had significantly higher levels of feelings of personal accomplishment than the 1st and 2nd year students. This suggests that more years of experience and clinical exposure helped promote role actualization and helped the students feel more accomplished and capable than earlier year students (Michalec et al., 2013). Therefore, feelings of personal accomplishment, which is one of the three core dimensions of burnout, might be a protective factor against the progression of burnout symptoms.

Jue and Kim (2023) found that academic support from professors played an important role in reducing burnout symptoms in master's and doctoral students enrolled in art therapy graduate schools in Korea. Similarly, social support from parents and peers has also been found to have a significant negative relationship with student burnout (Kim et al., 2018). Personal growth and development are important components of the JD-R theory of burnout development (Bakker & Demerouti, 2007). Having the opportunity to become more skilled and competent can make hard work worth the effort. Therefore, personal development can be conceptualized as a resource.

To help support individuals through the process of personal development, providing appropriate information about tasks, training programs, and course requirements is essential (Demerouti et al., 2001). Performance-related feedback is another important component of the JD-R theory (Bakker & Demerouti, 2007; Demerouti et al., 2001). Feedback fosters learning, helps improve efficiency, and helps increase the chance for success, which is important for both students and workers. It is important that students receive constructive feedback from their lecturers and supervisors on a regular basis to help them cope with the demands of their programs and placements/practicums. In the present study, we analyzed support from lecturers, support from supervisors, peer support, information, feedback, and possibility for personal development as resources using the JD-R theory for measuring burnout in health care students.

Burnout in Health Care Trainees

Some research has shown that students with placements in health care fields, such as nursing and psychology are vulnerable to developing burnout, secondary traumatic stress, and compassion fatigue (Park et al., 2021; Michalec et al., 2013). In a study by Park et al. (2021) that investigated rates of psychological distress in psychology master's and doctoral students, it was found that more than half of the students (60%) met criteria for burnout, and one in three students had problematic levels of stress, depression, and anxiety. Not only do university students in these programs have to meet the demands of coursework, placements, and financial stress, but they may also have feelings of self-doubt and high expectations in their ability to effect change and help others (Cushway, 1992).

Academic demands and stress experienced during placement or practicum can make health care programs overwhelming for students. Although the experience of a practicum is important for health care students to learn how to interact with and help real clients, there are a

number of challenges students may have to overcome, such as difficulties with understanding clients, work overload, conflicts with staff, and the emotional burden of helping others (Jue & Kim, 2023). As a result of these and other factors, practicum stress is a risk factor for burnout that can decrease mental health (Jue & Kim, 2023). Students may experience feelings of being overworked, having excessive demands, having a lack of resources, and not having enough support during practicum (Jue & Kim, 2023). In a study that examined practicum stress in art therapy graduate students, it was found that practicum stress increased symptoms of burnout, while social support helped reduce symptoms of burnout. It was also found that social support from professors rather than colleagues or family members significantly reduced burnout symptoms (Jue & Kim, 2023).

Employed social work students reported that finding a balance between work and school was having a negative impact on their mental health and their academic performance (Benner & Curl, 2018). Work is often needed to offset increasing costs of living and tuition for post-secondary students, but this can come at a personal sacrifice, causing reductions in sleep, time to devote to studies, and time to devote to needed extracurricular activities, which can lead to symptoms of burnout (Benner & Curl, 2018). Tobin and Carson (1994) found that 34% of social work students ($N = 152$) had high psychological distress levels. Social work students might be under more stress than professional social workers because they need to prioritize their academic demands on top of their work responsibilities (Benner & Curl, 2018; Tobin & Carson, 1994).

Trying to balance academic and practicum/placement work can also be stressful for health care students. Emel (2016) found that Turkish nursing students most frequently reported that preparing for exams (67.9%) was the most significant academic stressor. Among the clinical stressors these students experienced, the most frequently reported stressors were being criticized

by teachers in clinical environments (56.0%), encountering a dying patient (52.3%), and the fear of making practice errors (51.4%) (Emel, 2016). Unfortunately, academic and clinical stress are also commonly experienced in psychology students. In a recent study, Lyon and Wright (2024) found that mindfulness, self-compassion, and gratitude had a negative effect on burnout in psychology trainees. Graduate training in psychology is stressful, and many of the academic and clinical-related stressors can lead to burnout (Lyon & Wright, 2024). However, mindfulness training could be incorporated into the training curricula of psychology programs, and since the effect of mindfulness on burnout was found to be partially mediated by self-compassion and gratitude, this provides the opportunity for programs to incorporate variations within mindfulness training programs (Lyon & Wright, 2024). This may better serve the needs of diverse individuals throughout their training programs.

Since students training to work in health care are vulnerable to experiencing burnout, we decided to focus on this population of students in the present study. Specifically, this study recruited students enrolled in health care programs, such as nursing, clinical psychology, social work, and allied health professions.

Present Study

Academic burnout is a serious issue for university students. Not only can academic burnout negatively impact students both emotionally and physically as they juggle stressors in life, academic demands, and financial problems, but it can also negatively impact student motivation and performance, and can increase dropout rates (Jagodics & Szabó, 2022). Post-secondary students training to work in health care professions are particularly at risk of experiencing burnout, STS, and VT, as they not only have academic demands, but they often

have the additional pressure of learning how to effectively communicate with and possibly treat clients or patients as well as learning how to effectively engage with patients who have a history of trauma (Park et al., 2021). There is a lack of health human resources across professions and across Canada (Government of Canada, 2022). It is important that health professionals are trained to identify and properly manage symptoms of burnout when they are students so that they are not already burnt out before starting their careers. This may help to prevent burnout and increase the probability that they will stay in their chosen professions.

There is extensive literature investigating burnout and stress in people who are already established in their careers, such as social workers and psychologists (Eriksson et al., 2018; García et al., 2020; McCormack et al., 2018; Tang & Li, 2021; Travis et al., 2016). However, the literature examining burnout symptoms in students training to work in these careers, especially psychology is more limited. Few studies examine a combination of academic and placement-related resources and demands and how these relate to the development of burnout in health care students. The present study aims to address several of these important gaps in the literature. Health care students were the focus of the present study, and we aimed to incorporate unique academic and placement-related demands and resources that post-secondary students may experience as they trained for careers in various health professions. Additionally, studies investigating burnout using Canadian samples are underrepresented, and few studies have looked at burnout in students training for health care careers using the Job Demands and Resources (JD-R) theory. We decided to base our study on the JD-R theory to conceptualize and measure burnout in this particular population of students. Using this theory is important, as it provides researchers insight into which demands and resources are most predictive of burnout, and this

information can be used to develop/improve programs to help maximize those resources and reduce certain demands.

The Job Demands and Resources (JD-R) theory has also been used to assess how study demands and resources are related to burnout within the educational setting. Unfortunately, these studies widely vary in methodology and operationalization of the demands and resources of students. The School Demand-Resource Questionnaire was developed to help operationalize these variables and build a model that would resemble the occupational Job Demands-Resource model (Jagodics et al., 2023).

A study by Jagodics & Szabó (2022), developed the University Demand-Resource Questionnaire (UDRQ) to be used for post-secondary students rather than elementary or high school students. This questionnaire was also developed to closely resemble the occupational framework of the JD-R theory. In this questionnaire, the authors attempted to incorporate the demands and resources university students may experience during their academic careers. This study examined five types of demands related to academia, which were work style, mental demands, emotional demands, conflict with lecturers, and career choice anxiety (Jagodics & Szabó, 2022). It also examined five resources, which were, possibility of personal development, feedback, information, perceived control, and support from lecturers. To examine how these variables were related to burnout, the authors used structural equation modelling (Jagodics & Szabó, 2022). The results from this analysis revealed that the five demands and two resource subscales (possibility of personal development and feedback) could be used to build a model predicting student burnout scores (Jagodics & Szabó, 2022). Since no other study, to our knowledge, has used the newly developed UDRQ on post-secondary students who are training for particular careers, the present study used this questionnaire to measure the academic demands

and resources of students who are training to work in health care to help contribute to the literature. Because it does not sufficiently capture the unique demands faced and resources utilized by students training for health care careers, additional demand and resource measures were examined in this study.

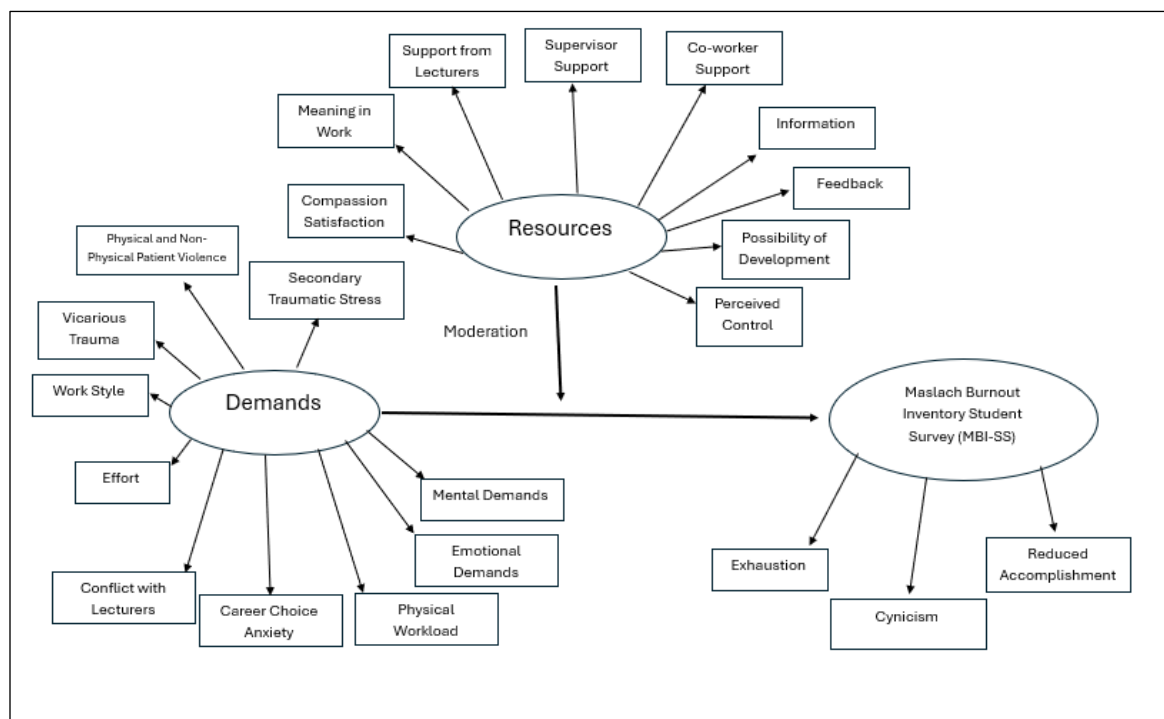
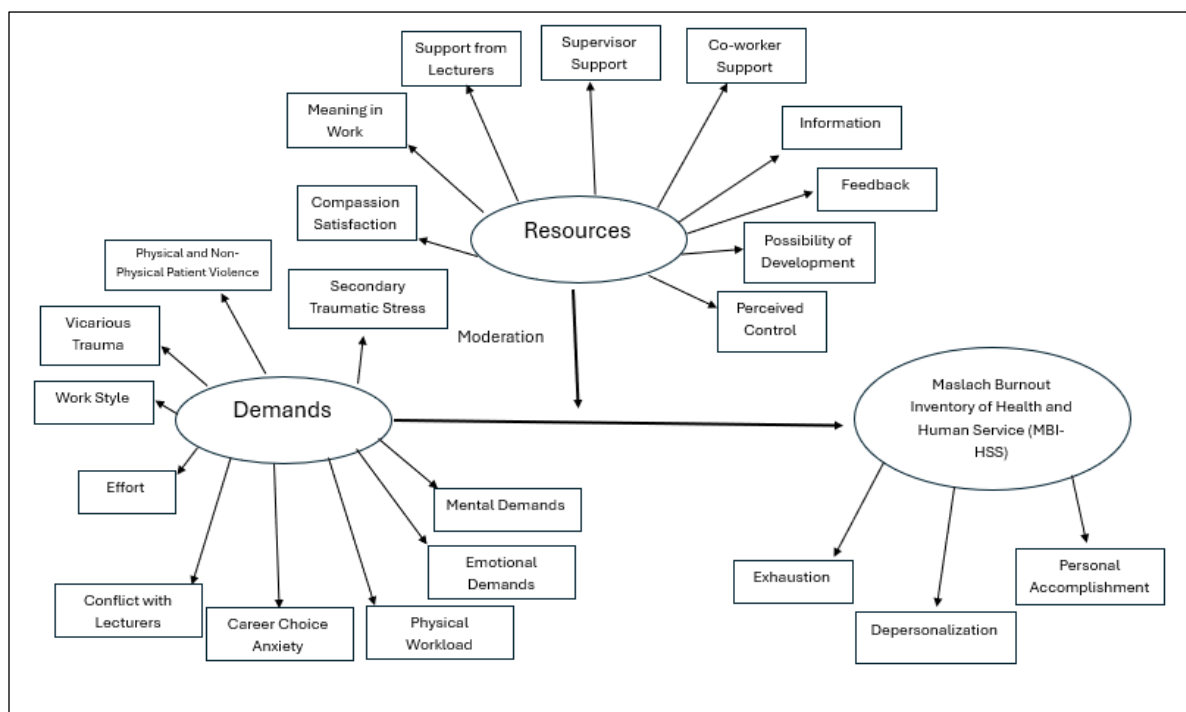
Several resources and demands have been found to influence the development of burnout. The academic-related resources that were measured in the present study were those identified in the UDRQ framework mentioned above (support from lecturers, perceived control, perceived access to course related information, feedback from lecturers, and the possibility of development). The present study also examined unique resources that post-secondary students may utilize as students training to work in health care, and these include levels of compassion satisfaction, perceived meaning in work with patients, support from supervisors, and support from co-workers. These unique resources have been found to also be protective factors against the development of burnout for workers in health care.

The academic demands that were measured in this study, identified in the UDRQ framework, were conflict with lecturers, emotional demands, mental demands, career choice anxiety, and academic work style. These academic demands have been found to be positively related to the development of burnout in students. The unique demands these students may additionally face that were also measured in this study were secondary traumatic stress, vicarious trauma, perceived effort, emotional demands, physical workload, and physical and non-physical patient violence. Similarly, these demands have been found to be positively related to burnout, especially in individuals working in health care.

In the present study, we used two measures of burnout: the Maslach Burnout Inventory Student Survey (MBI-SS) to measure academic burnout and the Maslach Burnout Inventory of

Health and Human Service Questionnaire (MBI-HSS) to measure burnout experienced from working in a health care setting. Two measures of burnout were used because we wanted to better understand whether health care students are experiencing academic burnout or more of a workplace burnout. Since health care students are unique in the sense that they must work and study in two different environments, it is unclear in the literature as to which type of burnout measure is optimal to use with this population of students, as studies have only used one type of measure or the other, never both.

The purpose of the present study was to examine the unique demands and resources post-secondary students may experience from working in a health care setting as well as the demands they face and the resources they utilize as students in their programs and investigate how these demands and resources are related to the two types of burnout previously mentioned. The following figures (Figure 2 and Figure 3), show the variables we investigated in the present study and the proposed moderating relationship of resources on the relationship between academic and placement demands and burnout. The results of this study may help future studies investigating the types of demands these students face and the types of resources that should be maximized to help reduce the possibility of the development of burnout.

Figure 2*Health Care Student Model of Burnout With MBI-SS***Figure 3***Health Care Student Model of Burnout With MBI-HSS*

Hypotheses

H₁: It was hypothesized that the pattern of correlational relationships between the measures of resources, demands, and burnout would be consistent with the literature. Positive correlations were expected between the demands and both the MBI-SS and MBI-HSS measures of burnout, as well as between the demands and each of the three subscales contained in these measures of burnout. Negative correlations were also expected between the demands and resources being tested in the present study (Jagodics & Szabó, 2023; Xanthopoulou et al., 2007). Resources were also expected to negatively correlate with the measures of burnout and the three subscales contained in the burnout measures (Jagodics & Szabó, 2023; Rahman et al., 2023; Xanthopoulou et al., 2007). This was investigated using a correlational matrix. To further examine which combinations of demands and resources explained the most variance in the model, multiple regression analyses were completed. This analysis was completed for the two measures of burnout. Since the resources and demands included in the present study have not been examined together in a regression analysis in previous studies, these analyses were to be more exploratory in nature.

H₂: It was hypothesized that health care student resources would moderate the relationship between health care student demands and burnout measured with the Maslach Burnout Student Survey and the Maslach Burnout Inventory of Health and Human Service (Jagodics & Szabó, 2022; Xanthopoulou et al., 2007). Research has found that when job demands are low and when job resources are low, low levels of burnout will be experienced (Bakker & Demerouti, 2007). Similarly, in conditions in which job demands are high and job resources are also high, low levels of burnout will be experienced. It is situations in which there are high demands and low resources that will produce the highest levels of burnout (Bakker et

al., 2005). Therefore, this suggests that even if demands are high, burnout levels will be low as long as resources remain high, which means that high levels of resources can prevent burnout. The demands and resources that were examined in the present study were specifically chosen to capture unique demands and resources health care students may experience as both post-secondary students and students training to work in health care. Therefore, the present study was unique and exploratory in nature. To examine the moderating relationship of resources on the relationship between demands and burnout in these models, we were originally planning on conducting two latent moderated structural equation models, but we had to alter our analysis plan due to our small sample size. Therefore, several ordinary least squares regressions and several moderated multiple linear regression models were conducted for each burnout measure using a computed resource variable, a computed demands variable, and an interaction variable of resources and demands. Based on the literature, some findings that we expected to see from these analyses are further hypothesized below.

H_{2(a)}: It was hypothesized that health care student resources, such as support from supervisors and co-worker support would be strong moderators of the relationship between emotional demands and mental demands on the exhaustion dimensions of burnout in both models (Xanthopoulou et al., 2007). Individuals who find their jobs or work emotionally demanding tend to use resources like social support to help them cope more effectively with their situations and protect themselves from the development of burnout (Xanthopoulou et al., 2007).

Methods

Participants

This thesis project received approval from the Lakehead University Research Ethics Board. Data collection began November 14, 2024 and was closed March 21, 2025. Participants were recruited through posters, which were hung at Lakehead University (the Thunder Bay campus), through a Facebook post on social media, and through email communication with student clubs and various faculties of universities and colleges in Ontario. The researcher contacted the following universities and colleges in Ontario as part of the recruitment strategy for the study: Confederation College, Fanshawe College, Cambrian College, Lakehead University, McMaster University, Queen's University, University of Toronto, University of Ottawa, Brock University, and the University of Guelph. The researcher did not receive any replies from the student clubs that she had contacted. The Nursing department at Lakehead University replied to the researcher and stated that they would forward information about the study and the recruitment poster the researcher had sent to the Lakehead University nursing students. The only other university that had replied to the researcher was Queen's School of Nursing. They requested further information from the researcher for their research committee, which was provided by the researcher. Information about the present study was then distributed by their department to their nursing students in clinical placements. The survey for the current study specifically asked participants to only state whether they were college or university students and to not state which institution they were currently enrolled at. Given that some participants could be enrolled in programs that had small class sizes, we wanted to protect the participants' anonymity. Therefore, statistics were not able to be generated to describe how many participants were sampled from the previously listed institutions.

Initially, participants were recruited from nursing, clinical psychology, and social work programs. However, since we were not getting enough participants, we expanded our participant recruitment pool to include allied health professions, such as personal support, paramedic,

kinesiology, and health sciences programs. This was done by emailing other departments of the above-mentioned colleges and universities.

A total of 587 participants signed up for the study. From the 587 participants, 28 participants withdrew from the study without completing the consent form. The data were also analyzed to ensure that participants met the inclusion criteria for the study. The inclusion criteria were that the participants must be 18 years old and currently enrolled in a health-care program in which they have a practicum or placement requirement, and they must have started logging hours in a practicum or placement. The purpose of these inclusion criteria was to ensure that the participants were in academic and also health care environments where they might experience the demands and resources being measured in the present study. In the Qualtrics survey, we required participants to answer whether or not they were currently enrolled in a practicum/placement. If participants indicated that their program did not have a practicum or placement requirement, they were automatically taken to a separate screen that exited them from the survey. Therefore, 252 participants did not continue with the study and were removed because they stated that their current program did not have a practicum or placement requirement. An additional 130 participants were removed from the study because they either stated that they had completed 0 hours of practicum or placement work in their current program, or they stated that they had not yet started their practicum/placement.

The data was also analyzed for missing data. Missing data is problematic because it can reduce the statistical power of a study, leading to biased estimates and potentially invalid conclusions (Kang, 2013). It was decided that participants who did not fill out either the MBI-SS or the MBI-HSS (which are the dependent variables in the present study) would be removed from the present study. There were 7 participants who were removed from the study because

they either did not complete one or both of the questionnaires for these dependent variables. It was also decided that participants should be removed if they had missing items for an entire measure. Therefore, 20 participants were also removed. There are several reasons why some participants might have left certain questions blank. For some of the participants, some of the questions may not have applied to their specific program, so they might have chosen to leave those questions blank. The resulting data set included $N = 150$ participants.

More than half of the participants were nursing students (66.9%), and the remaining participants were enrolled in psychology (16.2%), social work (7.4%), kinesiology (2.7%), personal support work (0.7%), as well as other health care related and general degrees. The descriptives for program of study can be seen below in Table 1.

Table 1

Descriptives and Percentages for Program of Study

Program	Frequency	Percentage
Nursing	99	66.9
Psychology	24	16.2
Social Work	11	7.4
BSc/BA/BEEd	6	4.1
Kinesiology	4	2.7
Public Health	2	1.4
PSW	1	0.7
Health Sciences	1	0.7
Total	148	100

Almost half (46.7%) of the participants were in their first year of college or university. The remaining participants were in their second year (25.3%), their third year (13.3%), their fourth year (11.3%), and their Master's (2.0%). Most of the participants in the present study were enrolled in full-time studies (93.9%). The mean age of the participants was 23.04 ($SD = 7.21$) and a range of 16-59 years old. Two percent ($n = 3$) of the participants were college students and ninety eight percent ($n = 147$) of the participants were university students. There were 78.7% ($n = 118$) participants who identified themselves as being women, 20% ($n = 30$) who identified themselves as being men, and 1.3% ($n = 3$) who identified themselves as being non-binary.

For ethnicity, participants were allowed to check multiple ethnicities if they applied, and they were also given the opportunity to write in other ethnicities not specified. Some of the main ethnicities identified are as follows: 57.3% ($n = 86$) identified as White/Caucasian; 16.0% ($n = 24$) identified as Black/African American; 10.7% ($n = 16$) identified as South Asian origins; 8.0% ($n = 12$) identified as East and Southeast Asians; 5.3% ($n = 8$) identified as First Nation or North American Indian; 2.0% ($n = 3$) identified as Metis; 2.7% ($n = 4$) identified as Latin, Central and South American origins; 2.7% ($n = 4$) identified as West Central Asian and Middle Eastern Origins; and 3.3% ($n = 5$) identified as other, which included ethnicities such as Afro-Indo-Caribbean, European, Filipino/Australian, Italian/Greek, and multi-ethnic.

Frequency statistics were generated for the number of hours the participants were required to complete in their current program. On average, the participants in the nursing program had the highest range of required practicum hours, followed by psychology and social work. These statistics can be seen in Table 2 below. Frequency statistics were generated for the settings in which participants logged practicum or placement hours, which can be seen in Table 3.

Table 2*Frequency of Required Practicum Hours Per Range for Each Program*

Program	Frequency of Required Practicum Hours/Range							
	1-50	51-100	101-200	201-300	301-400	401-500	501-600	>601
Nursing (<i>N</i> = 77)	28	4	7	4	7	5	2	20
Psychology (<i>N</i> = 17)	11	1	1	1	2	0	0	1
Social Work (<i>N</i> = 11)	1	1	0	0	2	1	2	4
Health Sciences (<i>N</i> = 1)	1	0	0	0	0	0	0	0
PSW (<i>N</i> = 1)	0	0	0	0	0	1	0	0
Public Health (<i>N</i> = 2)	0	0	0	0	1	0	0	1
Kinesiology (<i>N</i> = 4)	3	0	0	0	0	0	0	0
BSc/BA/Bed (<i>N</i> = 5)	4	0	0	0	0	0	0	1

Table 3*Frequency of Practicum Hours Per Range Per Practicum Site*

Practicum Site	Frequency of Practicum Hours/Range									
	Range (hours)									
	1-50	51-150	151-250	251-350	351-450	451-550	551-650	>650	Total	Percentage of Total per Site
Hospital	12	13	6	1	2	0	3	7	44	21.1
Clinic	14	3	1	0	0	0	0	0	18	8.6
Health Unit	3	1	0	0	0	0	0	0	4	1.9
Social Service	5	0	2	3	1	1	1	0	13	6.2
University	20	2	0	0	0	0	0	0	22	10.5
College	1	0	0	0	1	0	0	0	2	1.0
Schools	14	1	2	0	0	1	0	0	18	8.6
Long-Term Care	51	12	4	0	0	0	0	0	67	32.1
Assisted Living	2	2	1	0	0	1	0	0	6	2.9
Home Care	3	2	1	0	0	0	1	0	7	3.3
Other	1	3	2	1	1	0	0	0	8	3.8
All Sites	126	39	19	5	5	3	5	7	209	
Percentage per Range for all Sites	60.3	18.7	9.1	2.4	2.4	1.4	2.4	3.3		

Note. There were 59 participants who completed practicums at more than one practicum site.

Procedure

Participants who were interested in the study could access the information screen for the study either by using a link or scanning a QR code. After clicking “Next” on the information screen, participants were directed to complete a consent form. Participants had the option of selecting “Yes, I consent to participating in the study” or “No, I do not consent to participating in the study.” Participants who did not consent to participate were automatically exited out of the survey, and the participants who did consent were directed to complete the questionnaire on Qualtrics, which was approximately 40-45 minutes long. After the study was complete, the participants had the option of entering their name and email into a separate survey as part of a draw for a chance to win one of three gift cards for \$50. First year undergraduate students who were enrolled at Lakehead University were able to sign up for the study on the Sona system, which allowed them to have the option of being compensated for their time with one bonus point toward psychology courses accepting extra credit.

Materials

Demographic Questionnaire

Several demographic questions were asked at the beginning of the questionnaire (shown in Appendix B). These questions asked participants to report their age, ethnicity, gender, and education status. They were also asked to describe which program they were currently enrolled in, whether they were university or college students, their year of study, and their education status (part-time or full-time). Participants were asked to indicate whether their current program had a placement/practicum requirement. Then they were asked to indicate the number of hours they had completed so far in their current placement/practicum from a list of settings, such as the hospital, clinic, health unit, social service organization, university, college, schools, long-term

care home, assisted living home, home care, or other. They were asked to provide the total number of practicum/placement hours that they were required to complete. They were asked whether they worked directly with clients in distress or with clients who had physical and/or mental health difficulties and how often they worked with these types of clients. These questions were asked to gain a better understanding about the programs these students were in and their placement/practicum experience so that we could better interpret the degree of their demands and the level of exposure they might have had to clients with traumatic pasts. These demographic items can be found in Appendix B.

Secondary Traumatic Stress Scale (STSS)

The Secondary Traumatic Stress Scale (STSS) is a 17-item instrument that is scored on a 5-point Likert-type scale (1 = Never, 5 = Very often) that is frequently cited in the literature. This instrument is meant to measure symptoms, such as intrusion, avoidance, and arousal in individuals who were indirectly exposed to trauma from helping people who were directly exposed to trauma (Bride et al., 2004). This scale was found to be reliable and valid for use on social workers who were exposed to trauma (Bride et al., 2004). Previous research has shown that this scale has a Cronbach's alpha level of 0.93 (Bride et al., 2004). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. Participants were asked to indicate how frequently the statements in the instrument were true for them during their most recent placement/practicum. To ensure participants were aware that the present study was asking about their practicum/placement experience, "practicum/placement work" was added to items where appropriate to improve the clarity of the items. An example of a sample item is, "It seemed as if I was reliving the trauma(s) experienced by my client(s)."

Vicarious Trauma Scale

The Vicarious Trauma Scale is an eight-item measure that is scored on a 7-point Likert type scale (1=Strongly disagree, 2=Disagree, 3=Slightly disagree, 4=Neither agree nor disagree, 5=Slightly agree, 6=Agree, 7=Strongly agree) (Jimenez et al., 2021). Previous research has shown that this scale has a Cronbach's alpha level of 0.88 (Jimenez et al., 2021). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. This scale has been used to measure vicarious exposure to trauma in various professions, such as social work, protective service work, child welfare professions, as well as other professions (Aguiar-Fernández et al., 2022; Cummings et al., 2020; Hazen et al., 2020). Therefore, we determined that this scale would be suitable for measuring vicarious trauma as a potential demand in health care students. Specifically, this scale was included in the present study to assess how respondents had been impacted from working with traumatized clients in their practicum/placements. Participants were asked to indicate how strongly they agreed with the statements in the instrument during their practicum/placement. To ensure participants were aware that the present study was asking about their practicum/placement experience, the phrase "practicum/placement work" was added to items where appropriate to improve the clarity of the items. An example of a sample item is, "My practicum/placement work involves exposure to traumatized or distressed clients."

Physical Patient Violence

The Physical Patient Violence scale is a 12-item measure that measures the frequency of violent events in the workplace from patients and patients' relatives/friends toward hospital staff (Zhan et al., 2019). The items are scored on a 5-point Likert scale (1 = Less than once a month or never happened, 2 = Once or twice per month, 3 = Once or twice per week, 4 = Once or twice per day, and 5 = More than twice per day). Previous research has shown that this scale has a Cronbach's alpha level of 0.88 (Rogers & Kelloway, 1997). The Cronbach's alpha level for this

scale in the present study can be seen in Table 4. This questionnaire was included in the present study to measure the frequency that health care students experienced physical violence from patients and/or their family members. Since the participants in the present study might have practicums that differ in duration, we changed the Likert scale anchors to be as follows: 1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Often, 5 = Very often). An example of a sample item is, “Patient/client and/or their family/friend hit me.”

Non-Physical Patient Violence

The Non-Physical Patient Violence scale is an 18-item scale that was originally designed to measure the frequency sales representatives had experienced mistreatment from customers. This scale has been adapted to measure non-physical patient violence toward health professionals (Zhan et al., 2019). Previous research has shown that this scale has a Cronbach’s alpha level of 0.93 (Baranik et al., 2017). The Cronbach’s alpha level for this scale in the present study can be seen in Table 4. The items have been scored on a 5-point Likert scale (1 = Less than once a month or never happened, 2 = Once or twice per month, 3 = Once or twice per week, 4 = Once or twice per day, and 5 = More than twice per day) (Zhan et al., 2019). This questionnaire was included in the present study to measure the frequency that health care students experience non-physical violence from patients and/or their family members. Since the participants in the present study might have practicums that differ in duration, we changed the Likert scale anchors to be as follows: 1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Often, 5 = Very often). An example of a sample item is, “Patient/client and/or their family/friend demanded special treatment.”

The Professional Quality of Life Scale – 5 (ProQOL) (Secondary Traumatic Stress and Compassion Satisfaction Subscales)

The Professional Quality of Life Scale – 5 (ProQOL) is a 30-item measure that is scored on a 5-point Likert-type scale (1 = Never, 5 = Very often). This instrument was developed to

measure the positive and negative effects of working with clients who have had very stressful or traumatic experiences (Stamm, 2010). Specifically, this instrument measures compassion fatigue, burnout, and secondary traumatic stress, which represent the negative aspects of these roles, and it also measures compassion satisfaction, which represents the positive aspect of working with these types of clients. Since the ProQOL has been shown to effectively measure these three variables in health care and social service workers who provide care and emotional support to individuals, including those who have had traumatic pasts, we determined that this measure would be ideal to use in the present study (Stamm, 2010). It is important to note that in this scale, burnout and secondary traumatic stress are both considered to be components of compassion fatigue. In the present study, only the secondary traumatic stress subscale and the compassion satisfaction subscale were used, which consist of ten items each. The burnout subscale was not used because there was overlap between the items in the PROQOL burnout subscale and the two measures of burnout being used for this study (the MBI-SS and the MBI-HSS). According to the PROQOL manual, the Cronbach's alpha levels for the compassion satisfaction scale and the secondary traumatic stress scale were $\alpha = .88$ and $\alpha = .85$, respectively (Stamm, 2010). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. Participants rate how frequently they experienced the statements in the instrument during their program and/or their practicum/placement. An example of a sample item is, "I feel worn out because of my work as a [helper]."

Maslach Burnout Inventory Student Survey (MBI-SS)

The Maslach Burnout Inventory Student Survey (MBI-SS) is a 15-item survey that is scored on a seven-point Likert scale (0 = Never, 6 = Always). It consists of three subscales that measure emotional exhaustion (EX; five items), cynicism (CY; four items), and reduced

professional efficacy (PE; six items), which are all symptoms of student burnout (Portoghese et al., 2018). The Cronbach alpha values have been found to be $\alpha = 0.86$, $\alpha = 0.82$, and $\alpha = 0.77$ for the EX, CY, and PE subscales, respectively (Portoghese et al., 2018). These values indicate that the three subscales have good internal consistency. The Cronbach's alpha level for this scale in the present study can be seen in Table 4. Unlike the emotional exhaustion and the depersonalization subscales, lower mean scores on the professional efficacy subscale indicate higher levels of burnout. Therefore, the six items for the professional efficacy subscale were reverse coded. The Likert scale was changed from a seven-point scale to a six-point scale (0=Never, 1=Rarely, 2=Sometimes, 3=Often, 4=Very Often, 5=Always) to maintain consistency with the other questionnaires included in the present study.

This measure was included in the present study to measure burnout in post-secondary students. Since the present study is not restricted to only university students, any item that said “university” was changed to read “college/university.” An example of a sample item is, “I feel emotionally drained by my studies.”

Maslach Burnout Inventory Human Services Survey (MBI-HSS)

The Maslach Burnout Inventory Human Services Survey (MBI-HSS) is comprised of 22 items that are grouped into 3 subscales: emotional exhaustion (EE; nine items), depersonalization (DP; five items), and personal accomplishment (PA; eight items) (García et al., 2019). Each item is scored on a 7-point Likert scale (0=Never, 6=Every Day). Unlike the emotional exhaustion and the depersonalization subscales, lower mean scores on the personal accomplishment subscale indicate higher levels of burnout (Maslach et al., 1997). Therefore, the eight items for the personal accomplishment subscale were reverse coded. The Likert scale was changed from a seven-point scale to a six-point scale (0=Never, 1=Rarely, 2=Sometimes, 3=Often, 4=Very

Often, 5=Always) to maintain consistency with the other questionnaires included in the present study and to match the Likert scale anchors from the MBI-SS.

This measure was designed to measure burnout specifically among professionals in the human services sector (García et al., 2019). The Cronbach alpha values have been found to be $\alpha = .89$, $\alpha = .75$, and $\alpha = .76$ for the EE, PA, and DP subscales, respectively, indicating acceptable to good internal consistency (García et al., 2019). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. The MBI-HSS has been used in studies that have measured burnout in health care professionals (García et al., 2019; Le et al., 2023; Silistraru et al., 2023; Silistraru et al., 2024). Therefore, this measure was determined to be an appropriate measure of burnout in the present study investigating burnout in post-secondary students who are training to work in health care, which included nursing students, psychology students, social work students, and students from allied health professions. In the present study, we used the items in this survey to measure symptoms of burnout that students may have experienced during their practicum/placement. Therefore, any item that included the word “work” or “job” was changed to “placement/practicum work.” An example of a sample item is, “Working with people directly puts too much stress on me.”

University Demands and Resources Questionnaire (UDRQ)

The University Demands and Resources Questionnaire (UDRQ) is comprised of 34 items. Each item is scored on a 6-point Likert-type scale (1=Completely disagree, 6=Strongly agree). This measure was designed to measure the demands and resources of students in higher education (Jagodics & Szabó, 2023). The resources consist of support from lecturers (three items), possibility of personal development (four items), information (four items), feedback (three items), and perceived control (three items). The demands consist of mental demands (three

items), work style (four items), emotional demands (four items), conflict with lecturers (three items), and career choice anxiety (three items). Previous research found the Cronbach alpha levels ranged from acceptable to good (0.741 to 0.875) (Jagodics & Szabó, 2023). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. Since this study is not restricted to only university students, any item that contained the word "university" was changed to be "college/university" and any item that said the word "graduate" was changed to "graduate/earn my diploma". An example of a sample item is "Exams completely exhaust me mentally."

The Effort–Reward Imbalance (ERI) Questionnaire (Effort Subscale)

The Effort Subscale is from the Effort–Reward Imbalance (ERI) Questionnaire. This is a five-item subscale that is designed to measure the level of respondents' stress in response to demanding aspects of respondents' work environments (Siegrist et al., 2004). The items are scored on a 5-point Likert-type scale (1=Does not apply, 2=Does apply but no distress experienced, 3=Does apply and some distress experienced, 4=Does apply and distress was experienced distressed, 5=Does apply and significant distress was experienced). The Likert scale was changed from a seven-point scale to a six-point scale (1=Never, 2=Rarely, 3=Occasionally, 4=Often, 5=Very often) to maintain consistency with the other questionnaires included in the present study. Previous research has shown that the internal consistency Cronbach alpha values of the scale ranged from 0.68 to 0.79 in the study by Siegrist et al. (2004). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. To ensure participants were aware that the present study was asking about their practicum/placement, "practicum/placement work" was added to the appropriate items. Item 5 was also changed from "Over the past few years, my job has become more and more demanding" to read "My job in my practicum/placement has

become more and more demanding.” This revision was completed because some placements may not last for years, and we wanted this item to be as applicable as possible to the participants who have a fair amount of experience in their placements as well as the participants who have recently started their placements. An example of a sample item is “I am often pressured to work overtime in my practicum/placement.”

Job Requirements and Physical Demands Questionnaire (JRPD)

The Job Requirements and Physical Demands Questionnaire (JRPD) is a 38-item scale that measures physical demands placed on workers. The items are scored on a 5-point Likert-type scale (1= Never, 2=less than or equal to five h/week, 3=less than or equal to two h/day, 4=two to four h/day, and 5= greater than or equal to four h/day) (Ramezani et al., 2022). Previous research has shown that the internal consistency Cronbach’s alpha value was 0.80, indicating good internal consistency (Ramezani et al., 2022). The Cronbach’s alpha level for this scale in the present study can be seen in Table 4. This measure was included in the present study to measure the physical demands health care students could be experiencing in their practicums and placements. Research has found that there is a positive association between physical demands and burnout (Nahrgang et al., 2011; Sorour & Abd El-Maksoud, 2012). Since the participants in the present study may have practicums that vary in their duration per day and per week, the Likert scale anchors were changed to be as follows: 1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Often, 5 = Very often. Since this scale was originally designed to measure physical demands of general workers, items that likely would not pertain to general health care workers, such as items related to operating heavy machinery, tossing heavy objects, holding power tools for long periods of time, wearing bulky clothing, working in a cold environment, as well as several other items were removed. An informant known to the researcher, who is a health care professional,

was consulted to help us determine which items should be removed. Therefore, the 38-item scale was reduced to 17 items. An example of a sample item is “I lift materials that weigh more than 25 pounds.”

Emotional Job Demands Scale

The Emotional Job Demands Scale is a five-item questionnaire that measures the degree workers can regulate their emotions in a variety of situations (Taris & Schreurs, 2009). The items are scored on a 4-point Likert scale (1 = Never, 2 = Sometimes, 3 = Often, 4 = Always). Previous research has shown that the internal consistency Cronbach’s alpha value was 0.71, indicating good internal consistency. The Cronbach’s alpha level for this scale in the present study can be seen in Table 4. To ensure participants were aware that the present study was asking about their practicum/placement, “practicum/placement work” was added to the appropriate items. This questionnaire was included in the present study to measure the amount of emotionally distressing events that the students may experience in their practicums. An example of a sample item is “Are you in your practicum work confronted with things that really upset you emotionally?”

Social Support from Immediate Supervisor Questionnaire

The Social Support from Immediate Supervisor Questionnaire is a four-item questionnaire that measures the degree of perceived support one receives from supervisors (Van Der Heijden, 2003). In previous research, the first item was scored using a six-point rating scale ranging from 1=Not at all to 6=Very much. The second and fourth items were scored on a six-point rating scale ranging from 1=Never to 6=Very often. The third item was scored on a six-point rating scale ranging from 1=In my opinion, (s)he shows little willingness to help me to 6=In my opinion, (s)he is very willing to help me’. However, to help improve clarity and consistency for the participants, the present study will score all items on a 6-point Likert-type

scale ranging from 1=Never to 6=Very often. Previous research has found that the Cronbach's alpha for the total item-set was 0.78 (Van Der Heijden, 2003). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. This measure was included in the present study to measure the degree of perceived support participants received from their supervisor during their practicum/placement, as this type of support has been found to be negatively correlated with burnout. To ensure participants were aware that the present study was asking about the degree of supervision during their practicum/placement, "practicum/placement work" was added to the appropriate items that only specify "work" in general. An example of a research item is "Is your immediate supervisor able to evaluate the value of your work and its results?"

Social Support from Near Colleagues Questionnaire

The Social Support from Near Colleagues Questionnaire is a four-item questionnaire that measures the degree of perceived support one receives from their colleagues (Van Der Heijden, 2003). In previous research the first item was scored using a six-point rating scale ranging from 1=Not at all to 6=Very much. The second and fourth items were scored on a six-point rating scale ranging from 1=Never to 6=Very often. The third item was scored on a six-point rating scale ranging from 1=In my opinion, (s)he shows little willingness to help me to 6=In my opinion, (s)he is very willing to help me'. However, to help improve clarity and consistency for the participants, the present study scored all items on a 6-point Likert-type scale ranging from 1=Never to 6=Very often. Previous research has found that the Cronbach's alpha for the total item-set was 0.74 (Van Der Heijden, 2003). The Cronbach's alpha level for this scale in the present study can be seen in Table 4. This measure was included in the present study to measure the degree of perceived support participants receive from their colleagues or co-workers during their practicum/placement, as this type of support is a potential resource, which has been found

to be negatively correlated with burnout. To ensure participants were aware that the present study was asking about the degree of co-worker support during their practicum/placement, “practicum/placement work” was added to the appropriate items that only specify “work” in general. An example of a sample item is “Are your near colleagues in general ready to help you with the performance of your tasks?”

Copenhagen Psychological Questionnaire (COPSOQ) (Meaning of Work Subscale)

The Meaning of Work subscale is from the COPSOQ. It is a five-item subscale that is scored on a 5-point Likert type scale (1=To a very small extent, 2=To a small extent, 3=To somewhat of an extent, 4=To a large extent, 5=To a very large extent) (Van der Heijden et al., 2019). Previous research has found the internal reliability estimate of the scale to be 0.81 (Van der Heijden et al., 2019). The Cronbach’s alpha level for this scale in the present study can be seen in Table 4. This scale was included in the present study to assess the perceived value of the work and the level of motivation participants had to complete the work they do during their practicum/placement. To help avoid confusion and improve item clarity, the primary supervisor and the student researcher collaboratively agreed that the Likert anchors should be changed to read as follows: 1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Often, 5 = Very often. To ensure participants were aware that the present study was asking about their work during their practicum/placement, “practicum/placement work” was added to the appropriate items that only specify “work” in general. An example of a sample item is “Is your work meaningful?”

Power and Sample Size Estimation

Prior to data collection we had planned to use structural equation modelling to analyze our data since our study included four latent variables (demands, resources, and two measures of burnout) and 28 indicator variables. Therefore, an a-priori sample size calculator (Daniel Soper)

for structural equation modelling that accounted for the inclusion of latent variables was used. We used an anticipated effect size of .3, which corresponds to a medium effect size. The minimum estimated power of .80 was estimated with alpha at a .05 level. Therefore, using these calculations, a minimum sample size was estimated to be 400 participants. We also wanted to take into consideration a 10% non-response rate and attrition, so the estimated target sample size was 445 participants.

Results

Preliminary Analyses

The raw data from Qualtrics was exported into a .sav file and was analyzed using SPSS (Version: 29.0.1.0 (171)). Variable and value labels were created. The personal accomplishment subscale of the Maslach Burnout Inventory of Health and Human Service Questionnaire and the professional efficacy subscale of the Maslach Burnout Inventory Student Survey were reverse coded. Means and standard deviations were calculated for each scale, and the Cronbach's alpha reliability statistic was calculated for every scale. The Cronbach's alpha values for each variable in addition to the means and standard deviations are shown in Table 4. All Cronbach's alpha values were in an acceptable range.

Table 4

Descriptive Statistics for Each Scale (N = 150)

Scale	Likert Scale	M	SD	Cronbach's α
Professional Quality of Life (Secondary Traumatic Stress)	5-point	2.41	.736	.869
Professional Quality of Life (Compassion Satisfaction)	5-point	3.83	.712	.910
Student Burnout	6-point	2.35	.668	.823

Emotional Exhaustion		3.02	1.033	.904
Cynicism		1.97	1.215	.901
Professional Efficacy		2.04	.736	.749
Health and Human Service Burnout	6-point	1.94	.595	.864
Emotional Exhaustion		2.04	.920	.904
Depersonalization		1.28	.987	.882
Personal Accomplishment		2.25	.700	.833
University Resources	6-point	4.28	.785	.926
University Demands	6-point	3.66	.856	.894
Social Support from Near Co-workers	6-point	3.80	.929	.826
Social Support from Immediate Supervisor	6-point	4.18	1.012	.906
Meaning in Work	5-point	4.02	.772	.898
Effort–Reward Imbalance	5-point	3.11	.817	.820
Job Requirements and Physical Demands	5-point	3.05	.712	.904
Emotional Job Demands	4-point	2.22	.632	.822
Secondary Traumatic Stress	7-point	2.35	.812	.944
Vicarious Trauma	7-point	3.94	1.275	.900
Non-Physical Patient Violence	5-point	2.87	1.055	.978
Physical Patient Violence	5-point	1.65	.822	.956

To determine whether the students in this sample were experiencing a higher degree of student burnout or if they were experiencing a higher degree of health and human service burnout, a paired t-test was conducted. The measures of burnout (Student Survey burnout and Health and Human Service burnout) included in the present study were slightly different in terms of the constructs they measured and the number of items. For example, the Student Survey burnout measure (15 items) consisted of three subscales that measured emotional exhaustion, cynicism, and reduced professional efficacy, and the Health and Human Service burnout measure (22 items) consisted of 3 subscales that measured emotional exhaustion, depersonalization, and personal accomplishment. However, since the participants in this sample completed both measures of burnout, the measures were both scored on a 6-point scale, and the means of the burnout measures were being compared, it was decided that the paired t-test would be a suitable method for statistically comparing the difference in the average scores of the two burnout measures.

As part of the results from the paired t-test, the correlation table showed that the levels of Student Survey burnout and Health and Human Service burnout were moderately and positively correlated $r(148) = .55, p < .001$. This indicates that there is a moderately strong association between these paired variables, which is reasonable since the burnout measures are relatively similar. The results from the paired t-test showed that there was a significant average difference between Student Survey burnout ($M = 2.35, SD = 0.67$) and Health and Human Service burnout ($M = 1.94, SD = 0.59$) scores $t(149) = 8.28, p < .001$. On average, the Student Survey burnout scores were 0.41 points higher than Health and Human Service burnout scores (95% CI [0.31, 0.50]). This indicates that this sample of students experienced higher levels of academic related burnout in comparison to practicum/placement related burnout. We also generated descriptives to

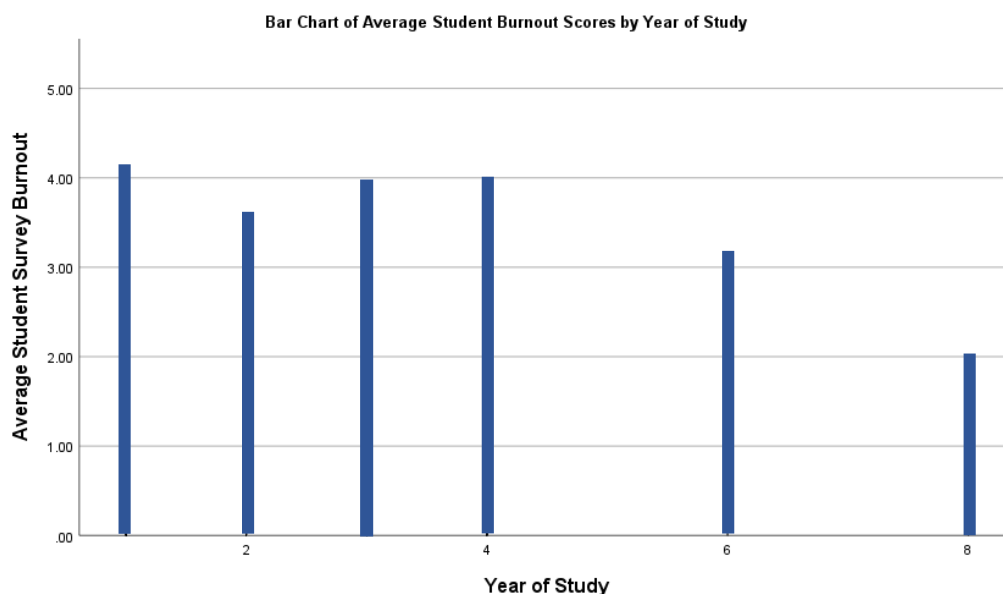
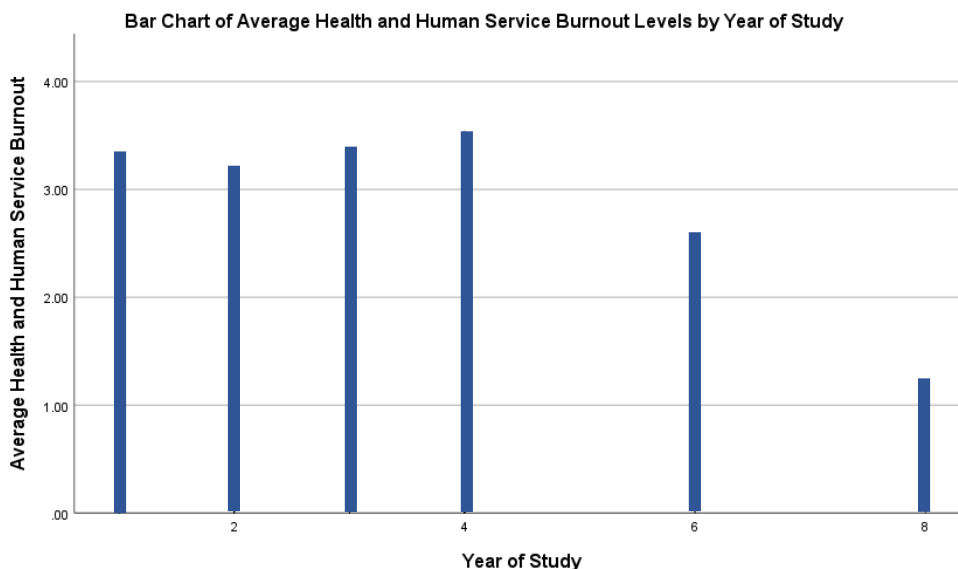
compare the means of the scores on the two burnout measures across program, and it was found that on average, the participants had higher levels of Student Survey burnout across all programs. The programs with the highest mean scores for Student Survey burnout were Public Health ($M = 3.03$, $N = 1$), Psychology ($M = 2.42$, $N = 24$), Nursing ($M = 2.36$, $N = 99$), and PSW ($M = 2.40$, $N = 1$). The programs with the highest means scores for Health and Human Services burnout were PSW ($M = 2.14$, $N = 1$), Psychology ($M = 2.03$, $N = 24$), and Nursing ($M = 2.00$, $N = 99$).

We also wanted to examine the level of burnout students experienced across each dimension of the burnout measure. To do this, we used the summation method to calculate the sum of the burnout dimensions for each burnout measure (Obregon et al., 2020). Then we calculated the average for each burnout dimension. According to the article by Puranitee et al. (2019), emotional exhaustion scores over 14 are considered a high level, cynicism scores over 6 are considered a high level, and professional efficacy scores lower than 23 is considered a low level for the MBI_SS burnout measure. In the present study, the mean scores for the exhaustion, cynicism, and professional efficacy dimensions of the MBI_SS burnout measure were $M = 15.1$, $M = 7.85$, and $M = 12.24$, respectively. These scores indicate that on average, the participants had high levels of emotional exhaustion, high levels of cynicism, and low levels of professional efficacy for the Student Survey burnout. According to an article by Abu zied et al. (2020), emotional exhaustion scores greater than or equal to 27 are considered high, depersonalization scores greater than or equal to 10 are considered high, and personal accomplishment scores less than or equal to 33 are considered low for the MBI_HSS measure. In the present study, the mean scores for the exhaustion, depersonalization, and personal accomplishment dimensions of the MBI_HSS burnout measure were $M = 18.35$, $M = 6.38$, and $M = 17.95$, respectively. These results suggest that on average, the participants had moderate levels of emotional exhaustion,

moderate levels of depersonalization, and low levels of personal accomplishment for health and human service burnout.

We generated descriptive statistics to determine how the means of the burnout dimensions compared to one another. For the Student Survey burnout measure, the participants experienced a higher degree of emotional exhaustion in comparison to professional efficacy and cynicism. For the Health and Human Service burnout measure, the participants experienced a higher level of reduced personal accomplishment in comparison to depersonalization and emotional exhaustion. The means for these burnout dimensions are shown above in Table 4.

We also generated graphs to examine how average burnout levels were related to the years of education of the participants. These graphs can be seen below in Graph 1 and Graph 2. On average, it seemed that higher years of education were associated with lower levels of both types of burnout. However, it is important to note that that these graphs are including data from participants in all programs, so it is possible that certain programs may be having more of an influence on these trends than others.

Graph 1**Graph 2**

Descriptive statistics were run to further examine how many of the participants worked with clients who were in distress in their practicum setting, and how frequently they worked with clients or patients in distress. From the 150 participants in the sample, 123 participants stated that

they worked with clients who were in distress or who had physical or mental health difficulties, and 27 participants stated that they did not work with clients who had those challenges. With regard to the frequency with which the participants worked with these types of clients, 26% of participants stated that they sometimes worked with clients who were in distress, 30% stated that they often worked with clients in distress, and 35% stated that they very often worked with clients in distress.

To calculate the participants' levels of STS, the 17 items of the STSS subscale were summed together. Higher scores indicated higher levels of STS. A score that is below 28 corresponds to "little or no STS," between 28 and 37 indicates "mild STS," between 38 and 43 indicates "moderate STS," between 44 and 48 corresponds to "high STS," and beyond 49 indicates "severe STS" (Jacobs et al., 2019). On average, the participants' level of STS was $M = 39.97$ ($SD = 13.77$, $N = 148$), which corresponds to a moderate level of STS. We also analyzed the participants' levels of STS by program type, which can be seen below in Table 5.

Table 5

Participants' Average STS Levels by Type of Program ($N = 150$)

Program	<i>N</i>	STS Level
Health Science	1	$M = 59.00$ (Severe)
PSW	1	$M = 53.00$ (Severe)
Nursing	99	$M = 41.41$ (Moderate)
Psychology	23	$M = 37.34$ (Mild-Moderate)
Public Health	1	$M = 31.00$ (Mild)
Social Work	11	$M = 31.18$ (Mild)
Kinesiology	4	$M = 27.50$ (Very Little)
BA/BSc/BEd	6	$M = 45.00$ (High)

To calculate the participants' levels of VT, the eight items of the VT subscale were summed together. Higher scores indicated higher levels of VT. A score between 8 and 28 indicates low VT, between 29 and 42 indicates moderate VT, between 43 and 56 indicates high VT (Aparicio et al., 2013). On average, the participants' level of VT was $M = 31.44$ ($SD = 10.24$, $N = 146$), which corresponds to a moderate level of VT. We also analyzed the participants' levels of VT by program type, which can be seen below in Table 6.

Table 6

Participants' Average VT Levels by Type of Program (N = 150)

Program	N	VT Level
Health Science	1	$M = 14.00$ (Low)
PSW	1	$M = 32.00$ (Moderate)
Nursing	98	$M = 33.76$ (Moderate)
Psychology	22	$M = 25.41$ (Low)
Public Health	1	$M = 39.00$ (Moderate)
Social Work	11	$M = 27.91$ (Low)
Kinesiology	4	$M = 21.00$ (Low)
BA/BSc/BEd	6	$M = 32.33$ (Moderate)

Frequency statistics were run on the VT scale to gain a deeper understanding about the level of vicarious trauma participants endorsed. Out of 150 participants, $N = 90$ participants endorsed that they worked with clients who had experienced trauma or who were distressed, compared with $N = 55$ participants who indicated that they did not work with clients with trauma. Additionally, $N = 106$ participants indicated that they were not distressed by their work, even though $N = 77$ participants indicated feeling overwhelmed by the workload from their placement. A detailed table of frequency statistics of the participants' responses to the VT questions by program can be seen in Appendix A. These results indicate that even though a majority of these participants were exposed to patients who had traumatic experiences, they were generally not distressed by these encounters. Frequency statistics also revealed that participants

felt a constant time pressure due to their practicum workload ($N = 124$), felt that their practicum had become more demanding ($N = 105$), and felt that they had a lot of responsibility ($N = 131$). Interestingly, only 67 participants stated that they felt pressured to work overtime in their practicums.

Analyses to Test Hypothesis 1

We hypothesized that the pattern of correlational relationships between the measures of resources, demands, and burnout would be consistent with the literature. We had expected that demands would be positively correlated with the MBI-SS and the MBI-HSS measures of burnout as well as the burnout subscales for both measures. Based on the research, we were also expecting negative correlations between demands and resources and between resources and the dimensions of burnout for both types of burnout (Jagodics & Szabó, 2023; Rahman et al., 2023; Xanthopoulou et al., 2007).

To test this hypothesis, correlational matrices were generated using Pearson's correlation coefficient. The results from these correlations can be seen in Tables (5-9). As shown in Table 7, university resources was the only resources variable that negatively correlated with all of the demands (with significant negative correlations with secondary traumatic stress and university demands). Interestingly, compassion satisfaction was significantly positively correlated with job requirements and physical demands $r(147) = .24, p = .003$ as well as non-physical patient violence $r(146) = .19, p = .024$ and emotional job demands $r(145) = .16, p = .047$. Social support from supervisors was significantly positively correlated with non-physical patient violence $r(146) = .19, p = .020$; vicarious trauma $r(144) = .20, p = .017$; and emotional job demands $r(145) = .18, p = .030$. Social support from co-workers was significantly positively correlated with non-physical patient violence $r(145) = .22, p = .008$; vicarious trauma $r(143) = .17, p =$

.039; and job requirements and physical demands $r(146) = .18, p = .027$. These results suggested that as some of the demands of practicum work became more challenging, compassion satisfaction increased. Similarly, as practicum demands and stress increased, social support from co-workers and supervisors was utilized by the participants.

Table 7

Hypothesis 1 – Pearson Correlations of Demands and Resources (N = 150)

Scale	University Resources	Compassion Satisfaction	Meaning in Work	Social Support from Supervisor	Social Support from Co-Worker
Non-Physical Patient Violence	-.092	.186*	.177*	.192*	.219**
Physical Patient Violence	-.098	-.054	.014	.031	.097
Vicarious Trauma	-.101	.092	.105	.198*	.172*
Secondary Traumatic Stress	-.288**	-.134	-.176*	-.078	.066
Emotional Job Demands	-.031	.164*	.152	.179*	.154
Effort and Reward Imbalance	-.051	.135	.183*	.032	.123
Job Requirements and Physical Demands	-.005	.239**	.146	.096	.182*
University Demands	-.327**	-.105	-.162*	-.130	.066

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

Analysis of the correlations between demands and the Health and Human Service Burnout Measure (shown in Table 8) partially supported our hypothesis. Significant positive correlations were found between the emotional exhaustion dimension as well as the depersonalization dimension and all of the demand measures. Since the third dimension (personal accomplishment) was reverse coded, it is shown in the table as reduced personal accomplishment because higher scores on this scale would indicate lower levels of personal accomplishment. The correlations for the reduced personal accomplishment dimension with the demand measures were all negative. This result was contrary to our hypothesis. Significant negative correlations were found between reduced personal accomplishment and non-physical patient violence $r(146) = -.24, p = .004$; effort and reward imbalance $r(148) = -.22, p = .008$; emotional job demands $r(145) = -.19, p = .023$; and job requirements and physical demands $r(147) = -.21, p = .012$.

Table 8

Hypothesis 1 – Pearson Correlations of Demands and the Health and Human Service Burnout Dimensions (N = 150)

Scale	Emotional Exhaustion	Depersonalization	Reduced Personal Accomplishment	Health and Human Service Burnout (Combined Dimensions)
Non-Physical Patient Violence	.496**	.386**	-.236**	.358**
Physical Patient Violence	.394**	.492**	-.111	.365**
Vicarious Trauma	.493**	.388**	-.080	.425**
Secondary Traumatic Stress	.634**	.651**	-.018	.640**

Emotional Job Demands	.497**	.395**	-.187*	.384**
Effort and Reward Imbalance	.484**	.422**	-.217**	.376**
Job Requirements and Physical Demands	.295**	.278**	-.205*	.203*
University Demands	.345**	.315**	.010	.344**

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

Analysis of correlations between demands and the Student Survey burnout measure (shown in Table 9) partially supported our hypothesis. Almost all of the correlations with the exhaustion and the cynicism dimensions and the demands measures were significant and in the positive direction. Contrary to our hypotheses, the reduced professional efficacy dimension was not significantly correlated with the demands.

Table 9

Hypothesis 1 – Pearson Correlations of Demands and the Student Burnout Dimensions (N = 150)

Scale	Exhaustion	Cynicism	Reduced Professional Efficacy	Student Survey Burnout (Combined Dimensions)
Non-Physical Patient Violence	.303**	.250**	-.145	.212**
Physical Patient Violence	.087	.191*	-.036	.120
Vicarious Trauma	.304**	.298**	-.056	.278**

Secondary Traumatic Stress	.371**	.515**	.132	.501**
Emotional Job Demands	.249**	.189*	-.059	.194*
Effort and Reward Imbalance	.257**	.295**	-.073	.242**
Job Requirements and Physical Demands	.195*	.211**	-.065	.171*
University Demands	.512**	.598**	.108	.601**

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

We ran a correlation of the resources with the Health and Human Service Burnout dimensions (shown in Table 10), and these results supported our hypotheses. Significant negative correlations were found between emotional exhaustion and university resources $r(148) = -.21, p = .009$; emotional exhaustion and compassion satisfaction $r(148) = -.16, p = .047$; depersonalization and university resources $r(148) = -.24, p = .004$; and depersonalization and compassion satisfaction $r(148) = -.23, p = .005$. Almost all of the correlations between reduced personal accomplishment and the resources were negative and significant with the exception of the correlation between reduced personal accomplishment and university resources.

Table 10

Hypothesis 1 – Pearson Correlations of Resources and the Health and Human Service Burnout Dimensions (N = 150)

Scale	Emotional Exhaustion	Depersonalization	Reduced Personal Accomplishment	Health and Human Service Burnout
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				(Combined Dimensions)
University Resources	-.214**	-.236**	-.108	-.269**
Compassion Satisfaction	-.162*	-.227**	-.508**	-.403**
Meaning in Work	-.072	-.151	-.507**	-.319**
Social Support from Supervisor	-.011	-.062	-.304**	-.158
Social Support from Co-Workers	.119	.038	-.392**	-.076

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

The resources were also correlated with the Student Burnout dimensions (shown in Table 11), and these results also supported our hypotheses. Significant negative correlations were found between cynicism and university resources $r(148) = -.40, p < .001$; cynicism and meaning in work $r(147) = -.16, p = .046$; and exhaustion was significantly negatively correlated with university resources $r(148) = -.18, p = .025$. Significant negative correlations were found between professional efficacy and university resources, compassion satisfaction, and meaning in work. Social support from co-workers or supervisors was not significantly correlated with any of the burnout dimensions.

Table 11

Hypothesis 1 – Pearson Correlations of Resources and the Student Burnout Dimensions (N = 150)

Scale	Exhaustion	Cynicism	Reduced Professional Efficacy	Student Survey Burnout (Combined Dimensions)
University Resources	-.183*	-.393**	-.397**	-.459**
Compassion Satisfaction	.026	-.154	-.319**	-.202*
Meaning in Work	-.079	-.163*	-.215**	-.216**
Social Support from Supervisor	-.048	-.077	-.143	-.125
Social Support from Co-Workers	.055	.053	-.125	-.002

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

In summary, Hypothesis 1 was partially supported with significant positive correlations between the demands and both burnout measures. Significant positive correlations were also found between the first two dimensions of Health and Human Service burnout (emotional exhaustion and depersonalization) and Student Survey burnout (emotional exhaustion and cynicism). Contrary to our hypothesis, almost all of the correlations of demands with reduced personal accomplishment, which is a burnout dimension for Health and Human Service burnout, were negative (with significant negative correlations between reduced personal accomplishment and non-physical patient violence, job requirements and physical demands, emotional job demands, and effort and reward imbalance). Similarly, many of the correlations of demands with reduced professional efficacy (a burnout dimension of Student Survey burnout) were negative, but these correlations were not significant. With regard to resources, the direction of all but five of the correlations with the burnout dimensions for both types of burnout supported our hypothesis.

Analyses to Test Hypotheses 2

For the second hypothesis, we predicted that resources would moderate the relationship between demands and burnout measured with the Maslach Burnout Student Survey and the Maslach Burnout Inventory of Health and Human Service (Jagodies & Szabó, 2022; Xanthopoulou et al., 2007). To analyze our second hypothesis, we had originally planned to use latent moderated structural equation modelling (SEM). Unfortunately, we were not able to reach the target sample size needed to complete the SEM. The target sample size was 400, and although we were able to recruit 587 participants, many participants had to be removed because they did not meet inclusion criteria, which resulted in a total of 150 participants. To continue with the original plan of analyzing the moderating role of resources on the relationship between demands and burnout, several moderated linear regressions were performed.

Ordinary Least Squares Regressions (OLS)

Before completing the moderated linear regressions, however, we wanted to further examine which combinations of demands and resources explained the most variance in the model predicting burnout so that we could narrow down which variables would be the most suitable variables to include in the moderated regression. Several ordinary least squares regressions (OLS) were carried out.

An important consideration to keep in mind when performing regressions is the problem of overfitting the data. This problem occurs when there are too many parameters to estimate the data in comparison to the sample size, which could exaggerate the results (Harrell, 2001). Therefore, future observed results with a different sample size may not agree with the predicted results. To avoid overfitting the data, it is recommended that 20 subjects per predictor variable is used to estimate a linear model (Harrell, 2001).

Since all of the demands and resources were significant in the correlations that were completed, we wanted to include them in the OLS regressions, but we wanted to avoid overfitting the data. Therefore, we decided to perform multiple OLS regressions, rather than including all of the demands and resources together in the same regression analysis. In the first regression, we included university demands, effort and reward imbalance, and job requirements and physical demands as predictors of Health and Human Service burnout. These variables were grouped together because the items in these measures were semantically similar. The items from these questionnaires measured general physical and mental demands from working in practicum or the physical and mental demands from completing the program the participants were enrolled in. This resulted in a significant model, $F(3, 145) = 12.607, p < .001, R^2 = .207$. The individual predictors were examined, and it was found that university demands $t(145) = 3.43, p < .001$ and effort and reward imbalance $t(145) = 3.40, p < .001$ were significant predictors. Together, these independent variables explained 20.7% of the variance in the model predicting Health and Human Service burnout. The results can be seen in Table 12.

Table 12

OLS Regression of University Demands, Effort and Reward Imbalance, and Job Requirements and Physical Demands as predictors of Health and Human Service Burnout

Scale	Standardized β	SE
University Demands	.262**	.053
Effort and Reward Imbalance	.281**	.061
Job Requirements and Physical Demands	.060	.068

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

In the next regression, secondary traumatic stress, vicarious trauma, non-physical patient violence, physical patient violence, and emotional job demands were run together as predictors

of Health and Human Service burnout. These variables were chosen to be run together because the items in the measures are semantically similar to each other. Many of the items measure various symptoms that can be experienced after engaging with patients. This resulted in a significant model, $F(6, 137) = 19.210, p < .001, R^2 = .457$. Therefore, these independent variables explained 45.7% of the variance in the model predicting Health and Human Service burnout. Secondary traumatic stress $t(137) = 5.29, p < .001$ was found to be the only significant predictor of Health and Human Service burnout. The results can be seen in Table 13.

Table 13

OLS Regression of Secondary Traumatic Stress, Vicarious Trauma, Non-Physical Patient Violence, Physical Patient Violence, and Emotional Job Demands as predictors of Health and Human Service Burnout

Scale	Standardized β	SE
Secondary Traumatic Stress	.476**	.066
Vicarious Trauma	.039	.043
Non-Physical Patient Violence	-.029	.054
Physical Patient Violence	.095	.062
Emotional Job Demands	-.054	.090

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

In the third and fourth regressions shown in Tables 14 and 15, respectively, the same grouping of demand variables were run as predictors of Student Survey burnout. The third regression resulted in a significant model, $F(3, 145) = 28.494, p < .001, R^2 = .371$. Therefore, these independent variables explained 37.1% of the variance in the model predicting Student Survey burnout. University demands $t(144) = 8.46, p < .001$ was the only significant predictor of Student Survey burnout in this regression. The fourth regression also resulted in a significant

model, $F(6, 137) = 8.195, p < .001, R^2 = .264$. Therefore, these independent variables explained 26.4% of the variance in the model predicting Student Survey burnout. Secondary traumatic stress $t(137) = 5.64, p < .001$ was the only significant predictor of Student Survey burnout in this regression.

Table 14

OLS Regression of University Demands, Effort and Reward Imbalance, and Job Requirements and Physical Demands as predictors of Student Survey Burnout

Scale	Standardized β	SE
University Demands	.577**	.053
Effort and Reward Imbalance	.640	.061
Job Requirements and Physical Demands	.085	.067

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

Table 15

OLS Regression of Secondary Traumatic Stress, Vicarious Trauma, Non-Physical Patient Violence, Physical Patient Violence, and Emotional Job Demands as predictors of Student Survey Burnout

Scale	Standardized β	SE
Secondary Traumatic Stress	.591**	.084
Vicarious Trauma	.010	.054
Non-Physical Patient Violence	.052	.069
Physical Patient Violence	-.082	.079
Emotional Job Demands	-.055	.115

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

In the fifth regression that was run, university resources, near co-worker support, immediate supervisor support, compassion satisfaction, and meaning in work were run as predictors of Health and Human Service burnout. Since these variables were not semantically similar and there were only five resources, which was lower than the recommended value of predictors in a regression given our sample size, they were included in the same regression analysis. This resulted in a significant model, $F(5, 142) = 7.210, p < .001, R^2 = .202$. The results can be seen in Table 16. Compassion satisfaction was the only significant predictor of Health and Human Service burnout, $t(142) = -3.65, p < .001$.

Table 16

OLS Regression of University Resources, Meaning in Work, Compassion Satisfaction, Near Co-Worker Support, and Immediate Supervisor Support as predictors of Health and Human Service Burnout

Scale	Standardized β	SE
University Resources	-.158	.061
Compassion Satisfaction	-.331**	.076
Meaning in Work	-.072	.082
Near Co-Worker Support	.059	.059
Immediate Supervisor Support	-.051	.062

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

For the sixth regression, the same resources were included as predictors of Student Survey burnout. This resulted in a significant model, $F(5, 142) = 8.771, p < .001, R^2 = .236$. The results can be seen in Table 17. University resources was the only significant predictor of Student Survey burnout, $t(142) = -5.60, p < .001$.

Table 17

OLS Regression of University Resources, Meaning in Work, Compassion Satisfaction, Near Co-Worker Support, and Immediate Supervisor Support as predictors of Student Survey Burnout

Scale	Standardized β	SE
University Resources	-.444**	.067
Compassion Satisfaction	-.128	.084
Meaning in Work	.026	.090
Near Co-Worker Support	.146	.065
Immediate Supervisor Support	-.082	.068

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

Finally, two last OLS regressions were completed that combined the demands and resources that were significant in the previous regressions into one regression model to predict Health and Human Service burnout and Student Survey burnout. Therefore, the variables that were included in these regressions were university demands, secondary traumatic stress, effort and reward imbalance, compassion satisfaction, and university resources. In the seventh regression predicting Health and Human Service burnout, this resulted in a significant model, $F(5, 142) = 35.050, p < .001, R^2 = .552$, indicating that this combination of independent variables explained 55.2% of the variance in the model predicting Health and Human Service burnout. The results can be seen in Table 18.

Table 18

OLS Regression of University Resources, Meaning in Work, Compassion Satisfaction, Near Co-Worker Support, and Immediate Supervisor Support as predictors of Health and Human Service Burnout

Scale	Standardized β	SE
University Resources	-.017	.048

Compassion Satisfaction	-.362**	.050
University Demands	.037	.082
Secondary Traumatic Stress	.487**	.050
Effort and Reward Imbalance	.199**	.047

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

The same predictor variables were run in a regression predicting Student Survey burnout, and the results showed a significant model, $F(5, 142) = 26.343, p < .001, R^2 = .481$, indicating that this combination of independent variables explained 48.1% of the variance in the model predicting Student Survey burnout. The results can be seen in Table 19.

Table 19

OLS Regression of University Resources, Compassion Satisfaction, University Demands, Secondary Traumatic Stress, Effort and Reward Imbalance as predictors of Student Survey Burnout

Scale	Standardized β	SE
University Resources	-.228**	.057
Compassion Satisfaction	-.083	.059
University Demands	.398**	.053
Secondary Traumatic Stress	.251**	.059
Effort and Reward Imbalance	.018	.056

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

Moderated Linear Regression

The results from the OLS regressions revealed that both types of social support (near co-worker and immediate supervisor), meaning in work, vicarious trauma, physical patient violence, non-physical patient violence, job requirements and physical demands, and emotional job demands were not significant predictors of Student Survey burnout or Health and Human Service Burnout. Therefore, these variables were not included in the moderated linear regressions.

To complete the moderated regression, a regression was first completed using Health and Human Service burnout as the dependent variable. To complete this regression, a new resources variable was generated that was created using the mean of the questionnaire items of compassion satisfaction and university resources. A new demands variable was also generated using the mean of the questionnaire items for effort and reward imbalance, university demands, and secondary traumatic stress. Next, an interaction variable was generated by multiplying the two new resources and demands variables together. These variables were then inputted as predictors of Health and Human Service burnout into the PROCESS macro within SPSS (Hayes, 2013) and a moderated linear regression was produced. An option was selected when running this analysis to mean centre the two independent (demands and resources) variables to help prevent problems related to multicollinearity.

The results revealed that almost 41% of the variability in Health and Human Service burnout was predicted by demands (secondary traumatic stress, university demands, and effort and reward imbalance), resources (compassion satisfaction and university resources), and the interaction between demands and resources, $R^2 = 0.410$, $F(3, 146) = 33.838$, $p < .001$. Table 20 displays the unstandardized regression coefficients. The interaction term was statistically significant $t(146) = 2.64$, $p = .009$, which indicates that the relationship between demands and Health and Human Service burnout was moderated by resources.

An advantage of this type of analysis is that it can be used to determine the effect of demands on Health and Human Services burnout at different levels of the moderator. These results can be seen in Table 21. Graph 3, which is shown below, shows that as demands increased, burnout levels increased across all levels of resources. With higher levels of resources, there were lower levels of burnout at all levels of demands. At low levels of resources, the association between demands and burnout is weaker, and at high levels of resources, the association between demands and burnout is stronger. However, as demands increased, resources had less of an effect on burnout levels after the demands mean. These results show that although resources were having a moderating effect on demands and burnout, which supports our hypothesis and is supported by the literature (Xanthopoulou et al., 2007), higher resources may only be beneficial in reducing Health and Human service burnout to a certain degree, after which point the effects of burnout are experienced as demands increase regardless of the number of resources health care students have access to.

Table 20

Summary of Moderated Regression Analysis Predicting Health and Human Service Burnout Using the Hayes PROCESS Macro

	Unstandardized β	t	p	95% CI Low	95% CI High
Constant	1.969	52.643	< .001	1.892	2.046
Demands (A)	.444	7.462	< .001	.326	.562
Resources (B)	-.219	-3.336	.001	-.348	-.089
AxB	.171	2.639	.009	.043	.300

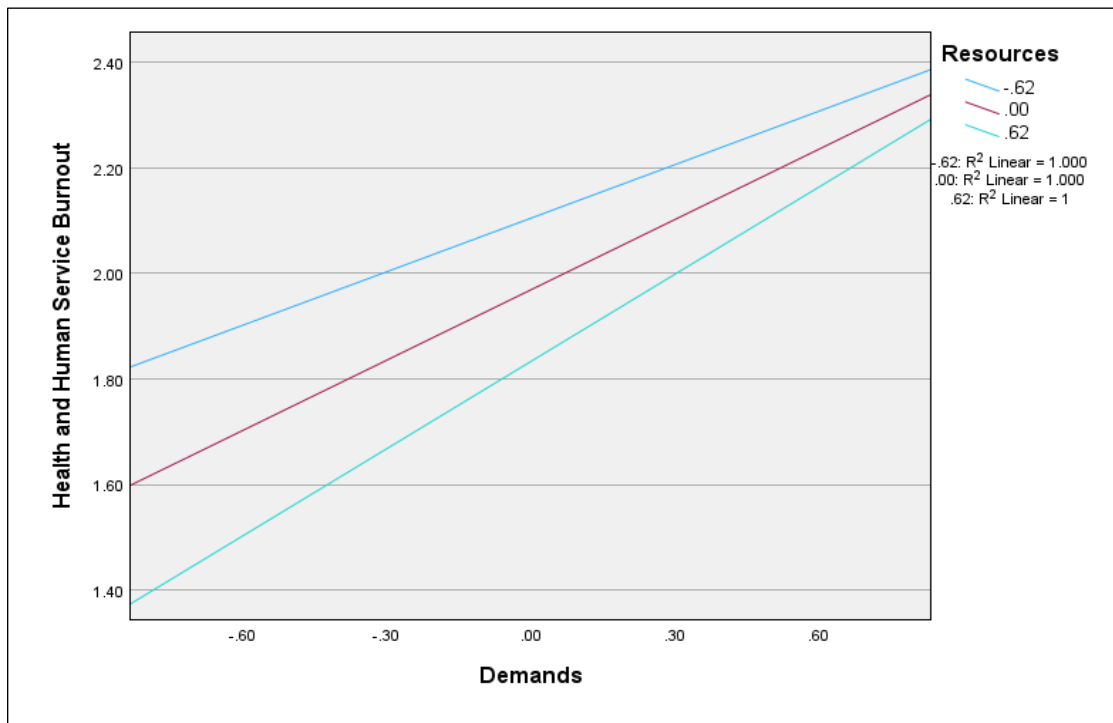
Table 21

Conditional Effects of Demands on Health and Human Service Burnout Using the Hayes PROCESS Macro

Resources	Effect	SE	<i>t</i>	<i>p</i>	95% CI Low	95% CI High
-1 SD	.338	.073	4.617	< .001	.193	.482
Mean	.444	.060	7.462	< .001	.326	.562
+1 SD	.550	.071	7.802	< .001	.411	.690

Graph 3

Output Graph of the Moderating Effect of Resources on Demands and Health and Human Service Burnout Using the Hayes PROCESS Macro Procedure



Another moderated linear regression using the PROCESS SPSS macro was completed using the same variables to predict Student Survey burnout. The results revealed that 50% of the variability in Student Survey burnout was predicted by demands (secondary traumatic stress, university demands, and effort and reward imbalance), resources (compassion satisfaction and

university resources), and the interaction between demands and resources, $R^2 = 0.501$, $F(3, 146) = 48.907$, $p < .001$. Table 22 displays the unstandardized regression coefficients. However, the interaction term was not statistically significant $t(146) = 1.56$, $p = .121$, which indicates that the relationship between demands and Student Survey burnout was not moderated by these resources. Since the interaction term was not significant, a graph displaying the effect of resources on demands and Student Survey burnout was not generated.

Table 22

Summary of Moderated Regression Analysis Predicting Student Survey Burnout Using the Hayes PROCESS Macro

	Unstandardized β	t	p	95% CI Low	95% CI High
Constant	2.366	58.946	< .001	2.287	2.446
Demands (A)	.553	8.994	< .001	.431	.674
Resources (B)	-.294	-4.350	< .001	-.429	-.161
AxB	.105	1.561	.121	-.028	.237

Discussion

The purpose of the present study was to examine which combination of unique demands and resources post-secondary students may experience from working in a health care setting and within their academic environments and how these relate to the development of academic or health care-related burnout. We also wanted to examine whether resources moderated the relationship between demands and both types of burnout. Although we were not able to analyze our data in the way that we had originally planned and although some of our results were not what we expected, this study contributes to the gap in the literature, adding to our understanding

of how various demands may contribute to the development of burnout in this potentially vulnerable population of students.

Interpretations of Preliminary Analyses

The results of the paired t-test revealed that students reported significantly higher levels of academic burnout than health care burnout. Given that most of the students in the present study were first year nursing students, it is possible that these students are devoting more time to courses and are therefore experiencing more burnout from their courses and program rather than their practicum environments. For example, at Lakehead University, first year nursing students are required to spend one morning in clinical practice at a long-term care home (Lakehead University, 2025). In their fourth year, however, they are expected to complete three six-week clinical placements in a variety of health care settings. The reason for this is so that they can spend more time in their first two years learning about how to effectively care for patients, and then they can later apply that knowledge to patients in a clinical setting. Although other universities and colleges in Ontario may vary from Lakehead University in terms of their program requirements, it is possible that they have similar expectations. Therefore, it is reasonable that health care students would experience a higher level of academic burnout in which their demands have more of an academic focus, and in later years, it is possible that their level of burnout could switch into more of a placement-related burnout. This was not the focus in the present study, but future research could conduct a longitudinal study to investigate whether burnout types change over the years as health care students move through their programs.

We also found that on average, students who experienced academic burnout had higher levels of emotional exhaustion than the other dimensions of academic burnout. This result is consistent with the literature. A systematic review that examined burnout in university students

found that the pooled prevalence of emotional exhaustion, cynicism, and reduced professional efficacy were 55.4%, 31.6%, and 30.9%, respectively (Rosales-Ricardo et al., 2021). In the present study, students who experienced Health and Human Services burnout, experienced higher levels of reduced personal accomplishment in comparison to the other burnout dimensions (which can be seen in Table 1). These results may help future studies that are developing intervention strategies designed to target certain burnout dimensions and help to foster a sense of personal accomplishment in one's work. In the present study we did not specifically ask participants what type of burnout prevention strategies they typically used. However, future studies could use a mixed methods design in which they collect qualitative information regarding what types of strategies students use to help prevent symptoms of burnout.

Intervention strategies can generally be divided into two categories: those used to address problems in the individual and those used to address problems in the organization or institution (McFarland & Hlubocky, 2021). Some intervention strategies that target the individual, include spiritual practices, physical exercise, mindfulness-based stress reduction techniques, and cognitive behavioural therapy (CBT) (McFarland & Hlubocky, 2021). Self-care activities can also help reduce burnout. A meta-analysis study found that the benefits gained from participating in self-care activities did not differ depending on the type of activity engaged in by psychology graduate students (Colman et al., 2016). In a study that examined self-care strategies in professional psychology trainees, professional support (which relates to developing close relations with peers, avoiding isolation, sharing the workload, and using close friends and others for sources of support) and selecting training activities that are of personal interest were strategies that were most frequently utilized by psychology trainees (Harder et al., 2024). This

article also found that the frequency of self-care strategies was associated with lower stress and a greater sense of well being.

An example of an organizational intervention strategy is a reduction in working hours (West et al., 2016). Organizational interventions tend to produce longer lasting change with regard to burnout (McFarland & Hlubocky, 2021). A metaanalysis was conducted that examined the effectiveness of interventions aimed at reducing burnout in university students. The authors identified several effective strategies for reducing burnout in university students, such as mindfulness, physical activity, rational emotive behaviour therapy (which helps individuals identify, challenge, and restructure their negative beliefs), CBT, and psychoeducation (Madigan, Kim, & Glandorf, 2024). Some additional interventions could be aimed at increasing workshops, seminars, and courses related to the importance of self-care and having a work-life balance and how these practices can promote wellness in post-secondary institutions. Professional psychology training programs, for example, do not place enough emphasis on the importance of self-care (Maranzan et al., 2018). Advisors could also work with students to help them develop a plan for self-care and monitor their engagement in that plan throughout the school year (Colman et al., 2016).

A systematic review investigating interventions to prevent burnout among undergraduate and graduate medical trainees found that the majority of studies examined individual-level interventions, and a smaller percentage of studies examined assessed organizational-level change to prevent burnout (Walsh et al., 2019). This suggests a gap in the literature. Since organizational-level interventions can have a longer lasting effect on reducing burnout, future studies should focus on organizational-level interventions for reducing burnout among health care trainees. These types of studies could examine interventions that target some factors that

may be contributing to chronic stress in students, such as exam structure, long working hours, and social expectations (Madigan, Kim, & Glandorf, 2024).

The First Aim: Which Combinations of Demands and Resources Account for the Most Variance in Burnout?

Demands

In the regressions predicting Health and Human Service burnout, only STS, effort and reward imbalance, and university demands were significant. University demands, which is composed of demands encountered in the university setting, such as mental demands, work style, emotional demands, conflict with lecturers, and career choice anxiety, significantly predicted an increase in Health and Human Service Burnout and Student Survey Burnout. This indicates that the academic demands students have in their program can cause them to feel burnt out both in the academic environment and within the health care environment.

VT, non-physical patient violence, physical patient violence, job requirements and physical demand, and emotional job demands were not significant predictors of Health and Human Service burnout or Student Survey burnout. With regard to physical and non-physical patient violence, students in some programs may be more likely to experience these types of interactions with patients and family members than others. For example, psychology students might be less likely to experience these types of interactions than nurses. It is possible that the students in the present study have not yet had enough time in their practicum settings to have these types of interactions with patients. Interestingly, research supports that nurses who have less experience and those working in emergency rooms and intensive care units are more likely than experienced nurses to receive abuse from patients (Ahmed, 2012). Similarly, a study found that psychologists who have more years of work experience had lower levels of overall burnout

(Di Benedetto & Swadling, 2014). Years of experience was not a variable measured in the current study, but future studies should examine this variable, as it could also have an influence on how effectively students are able to mitigate symptoms of burnout over time.

Vicarious trauma is a type of trauma that can develop when someone has learned about trauma experienced by someone else (Guitar & Molinaro, 2017). This type of trauma develops over time as a person continuously engages with the person who has endured trauma. Repeated exposure to someone with trauma can change the belief systems of the people who are helping as those systems relate to themselves, others, and the world around them (Guitar & Molinaro, 2017). Although VT can affect anyone who works with trauma survivors, people who work in health care are at risk of developing this type of trauma because of their repeated exposure to those types of clients or patients (Kim et al., 2022). Although most of the participants in the present study endorsed that they were often exposed to patients who were in mental or physical distress, the exposure time may not be long enough for them to begin experiencing VT.

Unlike VT, STS can develop at a faster rate, and the presentation of this emotional distress is similar to PTSD (Guitar & Molinaro, 2017). With STS, individuals who are helping other individuals through a trauma can begin to develop secondary post-traumatic stress from another's trauma, leading to the helper becoming more hypervigilant and even avoidant of certain situations (Guitar & Molinaro, 2017). In the literature, STS has not been included as a demand in studies that use the JD-R theory for predicting burnout in students. However, we believe that STS can act as a type of work-related stress that contributes to the demands faced by health care students. Indeed, the results of our study revealed that STS significantly predicted an increase in Health and Human Service burnout and Student Survey burnout, which supports the idea that STS is a demand that contributes to both types of burnout. Since, STS does not take as

long as VT to develop, this might indicate that these participants have had enough exposure to traumatized clients to experience STS, but not long enough exposure to experience VT. Since STS was a significant predictor of Student Survey Burnout, this indicates that the stress experienced from helping individuals who have been through traumatic experiences can cause students to feel burnt out both in the academic environment and within the health care environment.

Job requirements and physical demands was also not a significant predictor of either type of burnout. One reason for this could be because the items for this measure may not be applicable for all types of health care workers. Most of the items in this scale measured physical effort from working in the health care environment, such as lifting heavy weights, working in a noisy environment, having to focus on screens for long periods of time, standing on hard surfaces for many hours, as well as other types of physically challenging tasks. Not all health care workers may experience these physically demanding tasks. For example, clinical psychology students likely would not have to lift heavy items or stand for several hours at a time, but a nurse might be expected to complete these tasks. Clinical psychology students as well as students in similar programs may experience their own set of physically demanding tasks that may not have been captured by this measure. On the other hand, effort and reward imbalance, which consisted of items that measured general effort and workload related to working in a practicum was a significant predictor of Health and Human Service burnout (but not Student Survey burnout). This variable might have been a significant predictor because the items may be more generalizable to a variety of health care professions.

Emotional job demands was not found to be a significant predictor of either type of burnout. Although most participants stated that they were sometimes confronted with situations

that upset them emotionally during their practicum and they sometimes found their placement work emotionally demanding, it is possible that these situations were not experienced frequently enough to have a negative impact on their levels of burnout.

Resources

Based on the literature, we had hypothesized that social support from supervisors and co-workers would be strong moderators of the relationship between demands and both types of burnout, but when we conducted ordinary least squares regressions using social support from supervisors and co-workers as predictors of burnout, it was found that both types of social support did not significantly predict a change in either Student Survey burnout or Health and Human Service burnout.

Research has shown that social support has a buffering effect on burnout and stress (Blanch & Aluja, 2012; Etzion, 1984; Liu et al., 2021). However, research also shows that not all types of social support play an equal role in reducing feelings of stress and burnout. A study involving nursing participants found that social support from co-workers had positive effects on burnout, stress, sleep problems, and emotional demands, but social support from supervisors had the opposite effect on these health outcomes (Chang & Cho, 2021). It is possible that co-workers can provide immediate relief related to emotional support and workload by helping to take on extra work from their struggling co-worker. Struggling nurses may not want to ask for help from their supervisors because they might be wary of being seen as inadequate (Chang & Cho, 2021).

Different types of social support (colleagues, supervisor, and family) have a moderating relationship on job demands and the different dimensions of burnout. A study found that family support moderated the relationship between demands and depersonalization and colleague social support moderated the relationship between demands and emotional demands and

depersonalization (Peeters & Le Blanc, 2001). It is important to note that in the present study, family support was not measured. Future studies could analyze the moderating relationship of different types of social support on demands and the different dimensions of burnout.

In the present study, the participants in general seemed to report that their supervisors and co-workers provided them with support. However, these types of social support did not have a significant effect at reducing their levels of burnout. Given that most of the participants in the present study were in their first year of post-secondary education, it is possible that the participants may not have been in their practicum settings long enough to experience a reduction in their burnout symptoms, despite having access to these forms of support. Research has shown that even when health care students, such as nurses, are in their 3rd and 4th years of their programs and are spending more time in their practicum settings, this is still not enough time for them to establish long-term collaborative relationships with nursing managers, nursing co-workers, and nursing students (Cao et al., 2021). These short-term relationships could lead to a decrease in perceived support, which may have a negative impact on their levels of stress and may contribute to the development of burnout symptoms.

Compassion satisfaction can be defined as the positive feelings we experience from helping others through a traumatic experience and the feeling that one's work is contributing to society (Roney & Acri, 2018; Ruiz-Fernández et al., 2020). Research has shown that compassion satisfaction is related to burnout levels. In a study that investigated compassion satisfaction, compassion fatigue, and burnout in emergency worker nurses, it was found that years of experience, shorter shifts, and support from managers predicted higher levels of compassion satisfaction and lower levels of burnout (Hunsaker et al., 2015). Similarly, clinical competence

has been found to be significantly positively correlated with compassion satisfaction (Zakeri et al., 2021).

In the present study, compassion satisfaction significantly predicted lower levels of health and human service burnout, but it was not a significant predictor of lower levels of student burnout. This is reasonable because if compassion satisfaction is the value and positive feelings people have from helping others through their work, it is unlikely that students would have the opportunity to help others in this capacity through their academic courses. Therefore, the health care environment is likely where students would be able to help others using what they have learned in their coursework.

In the present study, university resources predicted lower levels of Student Survey burnout but not Health and Human Service burnout. The university resources variable is composed of support from lecturers, possibility of personal development, information, feedback, and perceived control. This finding is reasonable because it is unlikely that health care students would rely on these types of resources to cope with their stress in their practicums.

Meaning in work was negatively correlated with both types of burnout, which is supported by the research (Maunz & Glaser, 2024; Passmore et al., 2020), but when it was included in the OLS regression analyses with the other resources, it was not a significant predictor for either type of burnout, which is contrary to what we had anticipated. Frequency statistics of the questionnaire items revealed that the majority of participants found their practicum work to be meaningful, important, and helpful to clients, and they were motivated to complete their practicum work. However, the regression results revealed that these feelings and motivations did not significantly predict lower levels of either type of burnout, over and above

the other variables included. Perhaps with a larger sample size this variable might have had a larger effect.

The Second Aim: Using Resources as a Moderator

The sample size for the present study was much smaller than expected. Most of the students were first year nursing students, and many of the participants who had filled out the study had not started their practicum yet, so they had to be removed because they did not meet inclusion criteria. Since we had used the Lakehead University Sona platform as one of our recruitment strategies, it is possible that many of the participants were first year undergraduate students who were motivated to participate in the present study to receive course credit. Since many first-year students may have not yet begun a practicum or a placement, this could explain the large number of students who did not meet inclusion criteria and had to be removed. As a result, we were unable to conduct our latent moderated structural equations. However, we were able to continue investigating our second hypothesis by conducting moderated linear regressions. We had used the results of our ordinary least squares regressions and research from the literature to help us determine which variables to include in our moderated regressions. We then conducted moderated Hayes PROCESS macro regression using the variables that produced a significant interaction to further examine the moderating relationship of resources on demands and Health and Human Service burnout and Student Survey burnout.

The results from this regression showed that compassion satisfaction and university resources significantly moderated the relationship between demands (secondary traumatic stress, effort and reward imbalance, university demands) and Health and Human Service Burnout. With increasing demands, Health and Human Service burnout was higher at low levels of resources than at higher levels of resources. However, the effect resources had on lowering symptoms of

Health and Human Service burnout also decreased as demands increased. This indicates that having access to certain resources can lower symptoms of burnout even as demands increase, but there is a limit to the degree in which these resources can help with symptoms of burnout. Eventually, too many demands may lead to burnout symptoms despite high levels of resources.

Research supports that meaning in work, compassion satisfaction, and academic resources, can buffer the effect of demands on levels of burnout (Krok, 2016; Liu et al., 2023; Samios, 2018). Research has shown that health professionals who have high job demands and workloads and low job resources are more likely to feel burnt out and are less likely to be able to effectively perform their job-related tasks (Debets et al., 2022). Resources can help individuals cope with their demands, which can help mitigate the effect of burnout on their performance and motivation.

Although these results partially supported our hypothesis, resources were not found to have a moderating relationship between demands and Student Survey burnout. One reason for this could be that the resources that were chosen to be analyzed in this study were not as applicable to students in the present study as we had anticipated, or perhaps not enough academic-related resources were selected. The participants in this study were from a range of health care programs and varied with regard to their year of study and program requirements. It is possible that the participants were not exposed to the same practicum or academic experiences, and this might have affected the results.

Coping with stress and symptoms of burnout requires utilizing a certain degree of personal resources. In the present study, we decided not to measure personal resources because we were already trying to capture placement-related and academic-related resources and adding another set of resources would have been beyond the scope and time constraints of the present

study. There are a number of resources that have been found to have an effect on academic burnout that were not chosen for the present study. For example, career adaptability and career competencies have been found to be positively related to students' academic performance and motivation (Akkermans et al., 2018). Meditation is another resource that has been found to reduce burnout in medical students (Jammes et al., 2025). Additional resources that students might rely on to help reduce burnout symptoms could be physical activity, family support, extracurricular activities, and counselling services (Chang et al., 2012). Although there are many resources that could have been selected for the present study, it was not possible to capture all resources, and we had tried to select the ones that would be most relevant for health care students who would be training in academic and health care environments. Selecting alternative resources may have led to a significant moderating effect of resources on demands and student burnout.

Another possibility for why a moderation relationship for resources on the relationship of demands and Student Survey burnout was not found could be that the relationships among demands, resources, and burnout are more complex than we had originally realized. In our correlational matrix for Student Survey burnout, compassion satisfaction and meaning in work were significantly negatively correlated with reduced professional efficacy, and meaning in work was also significantly negatively correlated with cynicism. Perhaps these variables are beneficial for reducing burnout even if their mechanism of action is not reducing the effects of certain demands.

Limitations

There are some limitations associated with the present study. The participants in the present study were university and college students in Ontario. Therefore, the findings for this study may not be generalizable to students sampled from other programs in universities and

colleges in other provinces. The present study also specifically asked participants to not state which university or college they were currently enrolled at, which was done to preserve participant anonymity. We also did not ask participants to share information about their specific course and program requirements in terms of which types of courses they needed to take and how many courses they were expected to take. We chose not to ask participants this information because we did not want them to reveal potentially identifying information. However, this also limited our understanding about certain demands or resources the students may have experienced and the aspects in which these demands or resources might have varied across programs.

The time of year in which the participants completed the present study may have influenced their perceived levels of stress, which could have affected their scores for both types of burnout. For example, some participants may have completed this survey close to their exams, which could have increased their academic burnout scores. Although time of year for study completion was not used as a control variable in the present study, future research studies could consider controlling for this variable.

The demographic information from the present study revealed that the majority of participants were studying nursing, and a smaller percentage of students were studying social work, psychology, and other related health care programs. Unfortunately, a large enough sample of participants who were from various programs was not able to be obtained, which prevented us from analyzing the participants' levels of burnout and demands associated with particular programs. Information about how many students were from certain colleges and universities in Ontario and information about their specific program expectations would help us to better understand the level of academic demands placed on these students and their associated levels of

burnout. Knowing which programs have the greatest number of demands would help identify particular groups of students who are in need of more support.

We chose to analyze the participants together, rather than analyzing the nursing participants (which was our largest subgroup) separately. There are differences in program requirements and expectations within and between universities and colleges in Ontario. Similarly, the experiences the participants had in their practicums and exposure to clients might have varied across the programs and across the various institutions where the participants were currently enrolled. Therefore, some health care students may have faced more demands or had more program or practicum requirements than others. These differences may have affected the results in the present study, and caution was used in making interpretations from these results.

In the present study, the number of hours of clinical placement and the placement sites were not analyzed as control variables. We decided not to include them as control variables because we believed that including them may have taken away from the amount of variance in the outcomes that could have been attributed to the main predictors (Memon et al., 2024). However, since these variables were not controlled for, they may have biased our results and may have decreased the internal validity of our data (Frost, 2025).

The demands and resources that were chosen to be examined in this study were selected based on previous research, but this study may not be capturing all relevant demands health care students face or all of the resources health care students may utilize. Future studies will be needed to investigate if other demands and resources are a better fit for health care students.

The methodology that was chosen for this study may also be a limitation. A quantitative online survey methodology was chosen based on similar research studies. Additionally, since one of the main research aims for the present study was to examine which combination of academic

and placement related demands and resources that health care students may experience were related to the development of student burnout and health care related burnout, a study that involved survey data was a reasonable choice. Similarly, to analyze these relationships, a large number of participants needed to be recruited, which can be efficiently done with online surveys. However, future studies could use a mixed methods design which would help researchers gain valuable information regarding the types of resources and demands students particularly experience that may not be captured through questionnaires. Qualitative research studies related to the topic of burnout experienced by health care students seems to be a gap in the literature.

Lastly, this study did not examine whether students were trained to use self-care as a method for managing burnout in their particular programs. Future studies should examine the methods health care students use for self-care and which programs teach self-care as a component in their programs because knowledge and the practice of self-care strategies can help prevent burnout (Madigan, Kim, & Glandorf, 2024; Salerno, 2016). However, it is important to note that the general demands and program requirements placed on post-secondary students greatly limits the time students have to participate in self-care activities, making the task of completing self-care to help prevent burnout caused by their programs to be virtually impossible (Hunt et al., 2025).

Implications and Future Directions

Burnout in post-secondary students is a serious problem because it can lead to physical and mental health problems, but it can also decrease the intrinsic motivation students have when pursuing their studies. This can, in effect, lead to an increase in attrition rates (Sinval et al., 2024). Students in health care programs are particularly vulnerable to burnout due to their

demanding workloads, rigorous program expectations, as well as emotional and potentially ethical challenges that may arise in their practicums and chosen work environments.

In 2022, the Canadian Federation of Nurses Union conducted a survey involving 4, 467 nurses, and it was found that 94% of nurses were experiencing symptoms of burnout (Ahmed & Bourgeault, 2022). There is a lack of health human resources across professions within the country (Government of Canada, 2022). Health professionals need to be trained to properly manage symptoms of burnout when they are students so that they are not already burnt out before starting their careers. This will help increase the probability that they will stay in their chosen professions.

Most of the literature investigating burnout experienced by health care students focuses on nursing students or medical students. In fact, a scoping review that analyzed the prevalence of burnout in graduate health care students found that 85% of the articles that they found focused on medical students, and only 15% of the remaining articles focused on students from other health care professions (Bullock et al., 2017). This study demonstrates a clear gap in the literature. With the present study, we aimed to address this gap in the literature by initially recruiting students from nursing, clinical psychology, and social work, and later extending our study to include students from allied health professions, such as personal support work, kinesiology, paramedics, as well as others. Although we were not able to recruit enough students from each program to perform analyses to compare the demands faced and resources used by students across the programs, this study highlighted the fact that burnout exists across a range of health professions. Future studies should look into the prevalence of burnout in some of the underrepresented health care programs in the literature so that other studies can work toward developing supports for these students.

A unique aspect of the present study that helped contribute to the literature was that we focused on integrating a combination of academic-related and health care-related demands and resources to examine how these variables contribute to both student burnout and health care-related burnout. Health care students do not only have academic demands and resources. They are also required to have practicum experience, and placements within the health care environment have their own set of demands and resources that may contribute to the burnout faced by these students. Very few studies have examined a combination of demands and resources, and this study might help encourage future studies to also investigate both academic and health care-related demands and resources, so that we can work toward a solution of reducing burnout in students before they enter the workforce.

Another unique aspect of the present study was that we measured two types of burnout: Student Survey burnout and Health and Human Service burnout. The reason for this was because we wanted to investigate whether health care students experienced higher levels of academic burnout or higher levels of burnout from working in their practicums. Although the types of burnout we measured were similar, they were also slightly different. By using these measures of burnout in our study, we found that these two measures of burnout had different predictors. We also found that the participants had higher levels of Student Survey burnout in comparison to the Health and Human Service burnout. However, it is also important to interpret the results from this study with caution due to the different types of programs the participants were enrolled in and the variety in the type of practicum experiences they might have had. From the research we have conducted, we have not come across any studies that have used two measures of burnout, so our study may help researchers who are investigating burnout to gain a better understanding about how burnout is experienced by health care students. This may help in the development of

an appropriate measure in the future that can effectively capture burnout in these health care students who frequently work in two different environments.

This study also used a number of variables that have not been widely used in studies with health care students, such as CS, VT, STS, and patient violence. Using these variables has helped us learn that CS might be an important resource that plays a role in moderating the relationship between demands and Health and Human Service burnout in health care students. Similarly, we have also learned that STS may be predictive of an increase in Health and Human Service burnout and Student Survey burnout. On the other hand, VT and patient violence do not seem to be predictive of Health and Human service burnout or Student Survey burnout. This new information might be helpful for the development of post-secondary programs that can help mitigate against STS and help foster a sense of purpose and satisfaction in one's work.

Conclusion

There is considerable research on workplace burnout in comparison to burnout in post-secondary students. However, it is important to view university as a type of workplace in which students must complete mentally demanding coursework (Jagodics et al., 2022). Additionally, students may also experience peer pressure, competition for grades and spots in other academic programs, socioeconomic stress, and stress from living away from their homes and families (Liu et al., 2023). Some students such as health care students often have a clinical placement, which has its own set of mental, emotional, and social challenges. In the present study, we helped to add to the literature investigating burnout in health care students.

The present study found that health care students, who were primarily in their first year of their programs and mostly in nursing, reported higher levels of academic burnout in comparison to placement-related burnout. These students also reported higher levels of emotional exhaustion

rather than cynicism or low professional efficacy. The predictor of academic burnout was academic demands, such as mental demands, work style, emotional demands, conflict with lecturers, and career choice anxiety. Some predictors of placement-related burnout included STS and effort and reward imbalance. Interestingly, university demands was also a significant predictor of placement-related burnout, indicating that these students' academic demands played a role in their experience of placement related burnout.

Results from this study also showed that social support may not play as important of a role in reducing academic or placement-related burnout in health care students as CS or specific university resources, such as support from lecturers, possibility of personal development, information, feedback, or perceived control. CS and university resources together had a moderating effect on demands and placement-related burnout.

The present study was unique from previous research studies in multiple ways, and although we found support for several of our hypotheses, some of our findings were also unexpected. The topic of burnout, whether it is academic burnout or placement-related burnout, is a difficult area of research because there are so many different types of demands and resources that could contribute to burnout development. These demands and resources can be unique to each person, and they may vary depending on the institution and program requirements, the work environment, the types of patients that the health care students care for, and the experience levels of the health care students (Madigan, Kim, & Glandorf, 2024). These demands and resources may also change over time. It is almost impossible to capture all the possible demands and resources health care students may experience in one study and predict how they lead to different types of burnout development. Although we completed thorough literature reviews and selectively chose certain demands and resources to analyze in the present study based on

previous literature, there may be other demands or resources that are stronger predictors of academic and placement-related burnout that were not investigated in the present study.

Similarly, because of the mentioned factors, it is too difficult to state for certain which burnout measures (either academic or health care) are optimal to use with health care students because students may experience both types, or they may experience one type and potentially a different type of burnout as they progress through their programs. Future research needs to be completed with health care students to examine how burnout changes over time and whether different types of burnout are experienced during these years. Since compassion satisfaction is also underrepresented in the literature, research using this variable as a moderator should also be completed in the future with health care students.

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Appendix A

Frequency Tables:

Table 23

Frequency of Responses to the VT Questions by Program

Survey Question	Program	Frequencies Per Likert Response		
		Slightly Agree	Agree	Strongly Agree
1. My practicum/placement work involves exposure to distressing material and experiences.	Nursing ($N = 98$)	25	25	13
	Psychology ($N = 21$)	5	0	1
	Public Health ($N = 1$)	0	0	1
	Social Work ($N = 11$)	2	3	1
2. My practicum/placement work involves exposure to traumatized or distressed clients.	Nursing ($N = 98$)	21	34	13
	Psychology ($N = 21$)	4	5	1
	Public Health ($N = 1$)	0	0	1
	Social Work ($N = 11$)	1	3	2
	Kinesiology ($N = 4$)	2	0	0
3. I find myself distressed by listening to my clients' stories and situations.	Nursing ($N = 98$)	23	11	7
	Psychology ($N = 21$)	3	2	0

	Social Work ($N = 11$)	1	1	0
	Kinesiology ($N = 4$)	2	0	0
4. I find it difficult to deal with the content of my practicum/placement work.	Nursing ($N = 98$)	14	8	3
	Psychology ($N = 21$)	2	0	0
	Social Work ($N = 11$)	1	0	0
	Kinesiology ($N = 4$)	1	0	0
5. I find myself thinking about distressing material at home.	Nursing ($N = 97$)	20	8	4
	Psychology ($N = 22$)	1	1	0
	Social Work ($N = 11$)	2	0	0
	Kinesiology ($N = 4$)	1	0	0
6. Sometimes I feel helpless to assist my clients in the way I would like.	Nursing ($N = 98$)	21	21	2
	Psychology ($N = 22$)	6	1	0
	Social Work ($N = 11$)	5	0	0
7. Sometimes I feel overwhelmed by the workload involved in my practicum/placement.	Nursing ($N = 98$)	24	19	11
	Psychology ($N = 22$)	9	4	0
	Social Work ($N = 11$)	3	1	0

	BSc/BA/BEd ($N = 6$)	3	1	1
8. It's hard to stay positive and optimistic given some of the things I encounter in my practicum/placement work	Nursing ($N = 98$)	21	13	4
	Psychology ($N = 22$)	2	2	1
	Social Work ($N = 11$)	3	0	0
	Kinesiology ($N = 4$)	1	0	0

Note. Only the frequencies of participants who selected either Slightly Agree, Agree, or Strongly Agree are included in the table, as these responses would indicate higher levels of vicarious trauma.

Appendix B

Demographics Questionnaire:

Instructions: Please indicate your demographic information below. These demographic questions will remain confidential and will not be used to identify you as a participant.

Age. *What is your age?* ____

Ethnicity. *Please specify the ethnicity/ethnicities you most identify with (check all that apply).*

White/Caucasian

First Nation or North American Indian

Inuit

Métis

Other Aboriginal or Indigenous

Black/African American/African Canadian

African origins

Latin, Central and South American origins

West Central Asian and Middle Eastern origins (e.g., Turkish, Iranian)

South Asian origins (e.g., Indian, Sri Lankan)

East and Southeast Asian origins (e.g., Chinese, Filipino) Other Asian origins

Prefer not to answer

Other (please specify): _____

Gender. *Please select the option that best represents you (check all that apply).*

Woman

Man

Non-binary

Transgender

Prefer not to answer

Prefer to self-identify (please specify): _____

Education Status. *What is your current year of study?*

First year college/university (undergraduate level)

Second year college/university (undergraduate level)

Third year college/university (undergraduate level)

Fourth year college/university (undergraduate level)

College/university fifth year or higher (undergraduate level): _____

Master's Student (please specify your graduate level): _____

PhD Student (please specify your graduate level): _____

Graduated (please specify the year you graduated): _____

Education Status.

Enrolled in full-time studies

Enrolled in part-time studies

Graduated

Education. *What is your current program of study (e.g., PSW, nursing, social work, psychology)?*

Education. *Is your program of study with a university or a college?* _____

Practicum/Placement Information. *This study is interested in students in health programs who are required to complete a practical training component as part of their program (e.g., practicums or placements (or internship or co-op) in health care settings. Please fill out the following table and answer the following questions in the appropriate spaces so that we can better understand the placement experiences you are having. If you have had more than one placement, please list the most current ones up to three placements.*

Does Your Program require you to complete one or more practicum or placements? (*Specify Yes or No in the Space Below*). If yes see next question or skip to next.

Number	In What Setting Did You Complete this Practicum/Placements? (e.g., Hospital, Clinic, University, health unit) (please specify)	How Many Hours of Work Have You Completed in this Practicum/Placements So Far?	How Many Total Hours of Work Are You Required to Complete in this Practicum/Placements?
1.			
2.			
3.			

Appendix C

The Professional Quality of Life Scale – 5 (ProQOL) (Compassion Satisfaction and Secondary Traumatic Stress Scale)

Instructions: When you [help] people you have direct contact with their lives. As you may have found, your compassion for those you [help] can affect you in positive and negative ways. Below are some questions about your experiences, both positive and negative, as a [helper]. Consider each of the following questions about you and your current program and/or practicum/placement experience. Select the answer that honestly reflects how frequently you experienced these during your program and/or practicum/placement. When answering feel free to replace the word "help" with another word that better reflects your work in your practicum/placement. (1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Very Often)

Secondary Traumatic Stress Items:

1. I am preoccupied with more than one person I [help].
2. I jump or am startled by unexpected sounds.
3. I find it difficult to separate my personal life from my life as a [helper].
4. I think that I might have been affected by the traumatic stress of those I [help].
5. I feel as though I am experiencing the trauma of someone I have [helped].
6. I avoid certain activities or situations because they remind me of frightening experiences of the people I [help].
7. As a result of my [helping], I have intrusive, frightening thoughts.
8. I can't recall important parts of my work with trauma victims.
9. Because of my [helping], I have felt "on edge" about various things.
10. I feel depressed because of the traumatic experiences of the people I [help].

Compassion Satisfaction Items:

1. I get satisfaction from being able to [help] people.
2. I feel invigorated after working with those I [help].
3. I like my practicum/placement work as a [helper].
4. I am pleased with how I am able to keep up with [helping] techniques and protocols.
5. My practicum/placement work makes me feel satisfied.

6. I have happy thoughts and feelings about those I [help] and how I could help them.
7. I believe I can make a difference through my practicum/placement work.
8. I am proud of what I can do to [help].
9. I have thoughts that I am a "success" as a [helper].
10. I am happy that I chose to do this practicum/placement work.

Maslach Burnout Inventory Student Survey (MBI-SS)

Instructions: Consider each of the following questions about you and your experiences with your program or placement/practicum. Select the answer that honestly reflects how frequently you experienced these during your program and/or placement/practicum. (0=Never, 1=Rarely, 2=Sometimes, 3=Often, 4=Very Often, 5=Always).

Exhaustion

1. I feel emotionally drained by my studies.
2. I feel used up at the end of a day at college/university.
3. I feel tired when I get up in the morning and I have to face another day at the college/university.
4. Studying or attending a class is really a strain for me.
5. I feel burned out from my studies.

Cynicism

1. I have become less interested in my studies since my enrollment at the college/university.
2. I have become less enthusiastic about my studies.
3. I have become more cynical about the potential usefulness of my studies.
4. I doubt the significance of my studies.

Professional Efficacy

1. I can effectively solve the problems that arise in my studies.
2. I believe that I make an effective contribution to the classes that I attend.
3. In my opinion, I am a good student.
4. I feel stimulated when I achieve my study goals.
5. I have learned many interesting things during the course of my studies.
6. During class I feel confident that I am effective in getting things done.

Maslach Burnout Inventory of Health and Human Service Questionnaire (MBI-HSS)

Instructions: Consider each of the following statements and how they might relate to you and your experiences with your program or placement/practicum. Select the answer that honestly reflects how frequently you may have experienced these during your program and/or placement/practicum. (0=Never, 1=Rarely, 2=Sometimes, 3=Often, 4=Very Often, 5=Always).

Emotional Exhaustion

1. I feel emotionally drained from my practicum/placement work.
2. I feel used up at the end of the practicum/placement workday.
3. I feel fatigued when I get up in the morning and have to face another day in my practicum/placement work.
4. Working with people all day is really a strain for me.
5. I feel burned out from my practicum/placement work.
6. I feel I'm working too hard in my practicum/placement work.
7. Working with people directly puts too much stress on me.
8. I feel like I'm at the end of my rope.
9. I feel recipients blame me for some of their problems.

Depersonalization

1. I don't really care what happens to some recipients.
2. I feel frustrated by my practicum/placement work.
3. I've become more callous toward people since I took this practicum/placement work.
4. I worry that this practicum/placement work is hardening me emotionally.
5. I feel I treat some recipients as if they were impersonal objects.

Personal Accomplishment

1. I can easily understand how my recipients feel about things.
2. I deal very effectively with the problems of my recipients.
3. I feel I'm positively influencing other people's lives through my work.
4. I feel very energetic.
5. I can easily create a relaxed atmosphere with my recipients.
6. I feel exhilarated after working closely with my recipients.
7. I have accomplished many worthwhile things in this practicum/placement.

8. In my work, I deal with emotional problems very calmly.

University Demands and Resources Questionnaire

Instructions: Please read each statement below and rate the degree in which you agree with each statement regarding your program and your experiences so far. (1=Completely disagree, 2=Disagree, 3=Somewhat disagree, 4=Somewhat agree, 5=Agree, 6=Strongly agree)

Resources

Support from Lecturers:

1. When I struggle with studying, I can rely on my teachers' help and support.
2. When I ask them, my lecturers usually make an effort to help me.
3. I can ask questions during classes when I don't understand something.

Possibility of Personal Development:

1. I can learn new and interesting things in the college/university.
2. I have possibilities to improve in the college/university.
3. My college/university education helps me reach my goals.
4. Learning the college/university curriculum prepares me well to my future profession.

Information:

1. My teachers give me all the necessary information for me to perform well.
2. My lecturers express clearly what they expect from me
3. My lecturers describe course requirements clearly.
4. I have access to all information which is necessary to graduate/earn my diploma.

Feedback:

1. My teachers give me other feedback on my performance than grades.
2. I can always rate my own performance in college/university.
3. The feedback that my lecturers gives me helps my development.

Perceived Control:

1. When I study for my exams, I can make my own schedule.
2. I can decide how much I study for each college/university classes.
3. I am my own person in the college/university.

Demands

Mental Demands:

1. It is hard for me to meet the expectations of the college/university.
2. Exams completely exhaust me mentally.
3. It takes too much effort to prepare for all of my exams.

Work Style:

4. I think that I have too many classes every week.
5. I don't have enough time because of my tasks related to the college/university.
6. Sometimes I can't decide which subject should I learn.
7. I have to finish lots of different college/university related tasks at once.

Emotional Demands:

8. During classes I often feel anxious.
9. I worry a lot about my grades.
10. Sometimes I am unsure that college/university is really for me.
11. I am afraid that I would be incapable of finishing college/university.

Conflict with Lecturers:

12. There are lecturers who treat me unfairly.
13. I am really afraid of some of my lecturers.
14. There are some lecturers who I would avoid by choice.

Career Choice Anxiety:

15. It is difficult to decide what to do after I finish college/university.
16. It is really annoying when others ask about my future plans.
17. I am worried when I think about what I should do after finishing college/university.

Social Support from Near Colleagues Questionnaire

Instructions: Consider each of the following statements and how they might relate to you and your experiences with your program or practicum/placement. Select the answer that honestly reflects the degree in which you have experienced social support from your colleagues or student peers in your program or practicum/placement. (1=Never, 2=Rarely, 3=Sometimes, 4=Frequently, 5=Often, 6=Very often)

1. Are your near colleagues/co-workers able to evaluate the value of your practicum/placement work and its results?
2. Do your near colleagues/co-workers regularly express an opinion on your practicum/placement work?
3. Are your near colleagues/co-workers in general ready to help you with the performance of your tasks?
4. Do your near colleagues/co-workers regularly give you supportive advice?

Social Support from Immediate Supervisor Questionnaire

Instructions: Consider each of the following statements and how they might relate to you and your experiences with your program or practicum/placement. Select the answer that honestly reflects the degree in which you have experienced social support from your colleagues or student peers in your program or practicum/placement. (1=Never, 2=Rarely, 3=Sometimes, 4=Frequently, 5=Often, 6=Very often)

1. Is your immediate supervisor able to evaluate the value of your practicum/placement work and its results?
2. Does your immediate supervisor regularly express an opinion on your practicum/placement work?
3. Is your immediate supervisor in general ready to help you with the performance of your tasks?
4. Does your immediate supervisor regularly give you supportive advice?

Copenhagen Psychological Questionnaire (Meaning in Work Subscale)

Instructions: Consider each of the following statements and how they might relate to you and your experiences with your program or placement/practicum. Select the response that you think applies to you and your program or placement/practicum experiences. (1=Never, 2=Rarely, 3=Occasionally, 4=Often, 5=Very often).

1. Is your practicum/placement work meaningful?
2. Do you feel that the practicum/placement work you do is important?
3. Do you feel motivated and involved in your practicum/placement work?
4. Is your practicum/placement work useful to the recipients?

The Effort–Reward Imbalance (ERI) Questionnaire (Effort Subscale)

Instructions: Consider each of the following statements and rate the degree in which you believe the statements apply to you in your practicum/placement. (1=Never, 2=Rarely, 3=Occasionally, 4=Often, 5=Very often).

1. I have constant time pressure due to a heavy workload in my practicum/placement.
2. I have many interruptions and disturbances in my job in my practicum/placement.
3. I have a lot of responsibility in my job in my practicum/placement.
4. I am often pressured to work overtime in my practicum/placement.
5. My job in my practicum/placement has become more and more demanding.

Job Requirements and Physical Demands Questionnaire (JRPD)

Instructions: Consider each of the following statements and rate the degree in which you believe the statements apply to you and the corresponding level of physical demands you have experienced in your practicum/placement. (1=Never, 2=Rarely, 3=Occasionally, 4=Often, 5=Very often).

1. I must hold or carry materials (or large stacks of files) during the course of my work.
2. I force or yank components of work objects in order to complete a task.
3. I reach/hold my arms in front of or behind my body (e.g. Using keyboard, filing, handling parts, perform inspection tasks, pushing/pulling carts, etc.).
4. I grip work objects or tools as if I am gripping tightly onto a pencil.
5. When I lift, move components, or do other aspects of my work, my hands are lower than my knees.
6. I lean forward continually when I work (e.g., when sitting, when standing, when pushing carts, etc.).
7. The personal protective equipment or clothing that I wear limits or restricts my movement.
8. I repeatedly bend my back (e.g., forward, backward, to the side, or twist) in the course of my work.
9. When I lift, my body is twisted and/or I lift quickly.
10. I lift and/or carry items with my hand.
11. I lift or handle bulky items.
12. I lift more than 25 pounds.
13. My work requires that I kneel or squat.

14. I stand on a hard surface.
15. I can see glare on my computer screen or work surface.
16. It is difficult to hear a person on the phone or to concentrate because of other activity, voices, or noise in/near my work area.
17. I must look at the monitor screen constantly so that I do not miss important information (e.g. radar scope).

Emotional Job Demands Scale

Instructions: Consider each of the following statements and rate the degree in which you believe the statements apply to you and the corresponding level of emotional demands you have experienced in your practicum/placement. (1=Never, 2=Sometimes, 3=Often, 4=Always).

1. Are you in your practicum/placement work confronted with things that really upset you emotionally?
2. Is your practicum/placement work emotionally demanding?
3. In your practicum/placement work, do you feel personally threatened by clients?
4. In your practicum/placement work, do you have to deal with difficult (relatives of) clients?
5. Does your practicum/placement work require you to deal with emotionally laden situations?

Secondary Traumatic Stress Scale

Instructions: The following is a list of statements made by persons who have been impacted from working with traumatized clients in practicum/placements. Read each statement, then indicate how frequently the statement was true for you during your practicum/placement by circling the corresponding number next to the statement. (1=Never, 2=Rarely, 3=Occasionally, 4=Often, 5=Very often).

1. I felt emotionally numb.
2. My heart started pounding when I thought about my practicum/placement work with clients.
3. It seemed as if I was reliving the trauma(s) experienced by my client(s).
4. I had trouble sleeping.
5. I felt discouraged about the future.
6. Reminders of my practicum/placement work with clients upset me.
7. I had little interest in being around others.

8. I felt jumpy.
9. I was less active than usual.
10. I thought about my practicum/placement work with clients when I didn't intend to.
11. I had trouble concentrating.
12. I avoided people, places, or things that reminded me of my practicum/placement work with clients.
13. I had disturbing dreams about my practicum/placement work with clients.
14. I wanted to avoid working with some clients.
15. I was easily annoyed.
16. I expected something bad to happen.
17. I noticed gaps in my memory about client sessions.

Vicarious Trauma Scale

Instructions: The following is a list of statements made by persons who have been impacted from working with traumatized clients in practicum/placements. Read each statement, then indicate your level of agreement with the following statements in relation to your practicum/placement. (1=Strongly disagree, 2=Disagree, 3=Slightly disagree, 4=Neither agree nor disagree, 5=Slightly agree, 6=Agree, 7=Strongly agree).

1. My practicum/placement work involves exposure to distressing material and experiences.
2. My practicum/placement work involves exposure to traumatized or distressed clients.
3. I find myself distressed by listening to my clients' stories and situations.
4. I find it difficult to deal with the content of my practicum/placement work.
5. I find myself thinking about distressing material at home.
6. Sometimes I feel helpless to assist my clients in the way I would like.
7. Sometimes I feel overwhelmed by the workload involved in my practicum/placement.
8. It's hard to stay positive and optimistic given some of the things I encounter in my practicum/placement work.

Non-Physical Patient Violence

Instructions: Based on your interactions with client/patients and patients' relatives/friends, please rate how often you have experienced the following situations during your practicum/placement.

(1=Never, 2=Rarely, 3=Occasionally, 4=Often, 5=Very often). “Patient/client and/or their family/friend . . .”

1. . . . demanded special treatment.
2. . . . thought they were more important than others.
3. . . . asked me to do things they could do by themselves.
4. . . . vented their bad mood out on me.
5. . . . did not understand that I had to comply with certain rules.
6. . . . complained without reason.
7. . . . made exorbitant demands.
8. . . . were impatient.
9. . . . yelled at me.
10. . . . spoke aggressively to me.
11. . . . got angry at me even over minor matters.
12. . . . argued with me the whole time throughout the visit.
13. . . . refused to listen to me.
14. . . . cut me off mid-sentence.
15. . . . made demands that I could not deliver.
16. . . . insisted on demands that were irrelevant to my service.
17. . . . doubted my ability.
18. . . . used condescending language to me.

Physical Patient violence

Instructions: Based on your interactions with clients/patients and patients’ relatives/friends, please rate how often you have experienced the following situations during your practicum/placement. (1=Never, 2=Rarely, 3=Occasionally, 4=Often, 5=Very often).

“Patient/client and/or their family/friend . . .”

1. . . . hit me.
2. . . . kicked me.
3. . . . grabbed me.
4. . . . shoved me.

5. . . . pushed me.
6. . . . spat or bit me.
7. . . . swore at me.
8. . . . damaged my personal property.
9. . . . threatened me with physical violence.
10. . . . threatened me with a weapon.
11. . . . threatened me with property damage.
12. . . . used a weapon (e.g., a knife, stick) to cause me physical harm.

Appendix D



Department of
Psychology

Email to College and University Student Clubs:

Hello,

My name is Erin Wilson, and I am a Master's student in the Clinical Psychology Program at Lakehead University in Thunder Bay. I am reaching out to you because I am conducting an interesting research study, and I am recruiting students enrolled in health care programs (e.g., nursing, social work, clinical psychology, personal support work, etc.) from universities and colleges in Ontario to participate in my study. Students who participate will be entered into a draw for a chance to win one of three \$50 gift cards as compensation for their time.

As we know, burnout in health care workers can strain their physical, emotional, and psychological well-being, and can cause them to leave the workforce early, putting even more strain on the remaining health care workers. My study is meant to investigate the demands and resources used by students who are training to work in health care and how these variables contribute to the development of burnout. Please see the attached documents for further information about this study.

We would really appreciate it if you could forward the information attached in this email to the students enrolled in health care clubs to help us recruit students who are interested in volunteering to participate in our study.

I have attached documents containing the study information and a recruitment poster to this email. Thanks so much for taking the time to make this valuable contribution to our research. If you have any questions, please feel free to contact myself or Dr. Stroink below.

Take care,
Erin Wilson

Mirella Stroink, Ph.D. Psychology
Dean, Faculty of Health and Behavioural Sciences,
Lakehead University Email: mstroink@lakeheadu.ca
Phone: 807-343-8010 x7874

Erin Wilson, BSc Psychology
M.A. Student
Clinical Psychology Program,
Student Contact Info:



Department of
Psychology

Email to Universities and Colleges:

Hello,

My name is Erin Wilson, and I am a Master's student in the Clinical Psychology Program at Lakehead University in Thunder Bay. I am reaching out to you because I am conducting an interesting research study, and I am recruiting students enrolled in health care programs (e.g., nursing, social work, clinical psychology, personal support work, etc.) from universities and colleges in Ontario to participate in my study. Students who participate will be entered into a draw for a chance to win one of three \$50 gift cards as compensation for their time.

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I have attached documents containing the study information and a recruitment poster to this email. Thanks so much for taking the time to make this valuable contribution to our research. If you have any questions, please feel free to contact myself or Dr. Stroink below.

Take care,
Erin Wilson

Mirella Stroink, Ph.D. Psychology
Dean, Faculty of Health and Behavioural Sciences,
Lakehead University Email: mstroink@lakeheadu.ca
Phone: 807-343-8010 x7874

Erin Wilson, BSc Psychology
M.A. Student
Clinical Psychology Program,
Student Contact Info:



Department of
Psychology

Description of Study for SONA Website:

If you are a post-secondary student and currently enrolled in a program in which you are training to work in health care (e.g., nursing, clinical psychology, social work) and you have a practicum/placement within the health care setting, we would really appreciate your participation in this research study being conducted by Dr. Mirella Stroink and master's student researcher Erin Wilson.

The aim of this study is to effectively capture the demands post-secondary students face as they train to work in health care and the resources that they utilize during this process. We are also looking to analyze how these demands and resources are related to symptoms of burnout in these students. Interested participants must be currently enrolled in a health care program, such as nursing, social work, or clinical psychology, in which they are required to complete a practicum, placement, co-op, or internship within the health care setting to participate in this study. The participants also must have already started logging hours for their practicum, placement, co-op, or internship. This is an anonymous study, which will be conducted online. Once you complete the study, you can choose to either be entered into a draw for a chance to win one of three \$50 gift cards or receive one bonus mark toward psychology courses accepting extra credit.

If you would like to participate in this study, please sign up for the study on the SONA website. We look forward to your participation, and if you have any questions, please contact the researchers using the information below. Thank you.

Mirella Stroink, Ph.D. Psychology
Dean, Faculty of Health and Behavioural Sciences,
Lakehead University Email: mstroink@lakeheadu.ca
Phone: 807-343-8010 x7874

Erin Wilson, BSc Psychology
M.A. Student
Clinical Psychology Program,
Student Contact Info:



Department of
Psychology

Information Letter and Consent Form

Examining the Contribution of Demands and Resources in the Development of Burnout Among Post-Secondary Students Training for Careers in Health Care

Introduction

Dear Potential Participant:

Thank you for your interest in this study. If you are a post-secondary student and you are currently enrolled in a program in which you are training to work in health care, such as nursing, social work, or clinical psychology and you are required to complete a practicum, placement, co-op, or internship, we invite you to participate in this online research study being conducted by Dr. Mirella Stroink and master's student researcher Erin Wilson.

Purpose of the Study

The purpose of this study is to gain a better understanding of the unique demands and resources faced by students who are pursuing careers in health care and how this is related to the development of burnout in health care students.

Nature and Duration of Participation

After signing a consent form, you will begin this study by completing some demographic questions (e.g. age, year of study, gender, program information, and practicum information). You will then be asked to complete a table about your practicum/placement. You can list information for up to three practicum/placement experiences you have had. You will then be asked to reflect on your experience in your program and your practicum/placement so far. The duration of the study is approximately 40-45 min long. Participants will be entered into a draw for a chance to win one of three gift cards for \$50. Undergraduate students from Lakehead University who have signed up for the study through the Sona website will be given the option to be entered into the draw for a chance to win one of three gift cards for \$50 or receive one bonus mark toward psychology courses at Lakehead University that are accepting extra credit.

Benefits Arising from Participation

Students will benefit from this study by being entered into a draw for a chance to win one of three \$50 gift cards or one bonus mark toward psychology courses accepting extra credit as compensation for their time. Students will benefit by gaining experience participating in a research study, which will help them to understand what a psychology experiment is like. This may be beneficial for them if they go on to perform their own research studies in the future. Participants will also gain insight into the types of demands that can contribute to symptoms of burnout and how resources can help foster against the development of these symptoms.

Risks Associated with Participation

There are no physical or psychological risks associated with participation in this study. However, there is a chance that answering some of the questions in the study may cause you distress. If you are distressed during or after your participation in this study, please use one of the resources provided in the list at the end of this letter or another appropriate support.

What the Data Will Be Used For

The data for this study will be analyzed by the principal investigator and the student researcher for the purpose of developing a master's thesis paper. It is also our intention to eventually publish the results of this study in a peer-reviewed scientific journal and to present our results at a scientific conference. Doing so will enable us to share our findings with the scientific community and the general population. No identifying information will be presented to the public.

How to Receive Information About the Results of the Study

If you would like to receive a summary of the results, please use the contact information for Dr. Mirella Stroink or Erin Wilson provided on the next page of this document. By letting the researchers know that you would like to receive a copy of the results, the researchers will know that you were a participant in the study, but they will not be able to identify which participant you were within the data. This is done to preserve your anonymity.

Withdrawal

Participation in this study is entirely voluntary. You have the right to decline answering any questions you are not comfortable with, and you may withdraw from the study at any moment with no consequences up until you click "Done" at the end of the survey, indicating you have submitted your responses. Due to the anonymous nature of the data, withdrawal from the study post-submission is not possible because the researchers will not know which responses are your own.

Confidentiality

Data obtained from this study will be kept anonymous and confidential. Once responses are submitted, your data is anonymous, and we are unable to differentiate your responses from those of other participants. The only individuals who will have access to the data from this study are the student researcher and the principal investigator. The data will be stored on password protected computers in

the principal investigator's lab for a minimum of 7 years, which will only be accessed by the two investigators of this study.

The survey tool used in the study, Qualtrics, is an online data collection tool hosted by a server located in Canada. Due to collection and storage of data via an online tool, we cannot absolutely guarantee the full confidentiality and anonymity of your data. With your consent to participate, you acknowledge this.

Research Ethics Approval

This research study has been reviewed and approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team, please contact Sue Wright at the Research Ethics Board at 807-343-8283 or research@lakeheadu.ca

Your voluntary participation is greatly appreciated, and if you have any questions or would like to receive a summary of the results of the study, please contact the researchers using the information below. Thank you.

Mirella Stroink, Ph.D. Psychology
Dean, Faculty of Health and Behavioural Sciences,
Lakehead University Email: mstroink@lakeheadu.ca
Phone: 807-343-8010 x7874

Erin Wilson, BSc Psychology
M.A. Student
Clinical Psychology Program,
Student Contact Info:

Information and potential resources to contact if you experience mental distress after participating in this study:

Student Health and Wellness Centre at Lakehead University: 1-807-343-8361

Lakehead University Student Health and Counselling: (807) 343-8361

Thunder Bay Counselling Centre Walk-in Counselling: (807) 684-1880

Good2Talk 24-hr Student Helpline: 1-866-925-5454

Guide to living with worry and anxiety amidst global uncertainty (several languages):
<https://www.psychologytools.com/articles/free-guide-to-living-with-worry-and-anxiety-amidst-global-uncertainty/>

The Centre for Addiction and Mental Health (Canada): <https://www.camh.ca/en/health-info>



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Psychology

Examining the Contribution of Demands and Resources to the Development of Burnout Among Post-Secondary Students Training for Careers in Health Care

Consent Form

By clicking to begin the survey I am indicating that:

1. I have read and understand the information contained in the information letter.
2. I agree to participate.
3. I understand the risks and benefits to the study.
4. I understand that I am a volunteer and can withdraw from the study up until I click "Done" at the end of the survey and may choose not to answer any question.
5. I understand that the information I provide will be securely stored at Lakehead University for a minimum period of 7 years, accessible only by the two investigators.
6. I understand that the research findings will be made available to me upon request.
7. I understand that I will remain anonymous.
8. I understand that the survey tool used in the study, Qualtrics, is an online tool. Due to collection and storage of data via an online tool, we cannot absolutely guarantee the full confidentiality and anonymity of your data. With your consent to participate, you acknowledge this.
9. All of my questions have been answered.

By consenting to participate, I have not waived any rights to legal recourse in the event of research-related harm.

I have read and agree to the above information and consent to proceed to the online survey.



Department of
Psychology

Examining the Contribution of Demands and Resources in the Development of Burnout Among Post-Secondary Students Training for Careers in Health Care

Debriefing Screen

Dear Participant,

Thank you for participating in the study “Examining the Contribution of Demands and Resources in the Development of Burnout Among Post-Secondary Students Training for Careers in Health Care”. As compensation for your time, you can enter into a draw for a chance to win one of three \$50 gift cards. Students from Lakehead University who have signed up for the study through Sona have the option of receiving one bonus mark toward psychology courses accepting extra credit or being entered into a draw for a chance to win one of three \$50 gift cards.

If you would like a summary of the research findings after the data has been analyzed, or if you have any questions or concerns about the present study, please feel free to contact the researchers using the contact information below. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team, please contact Sue Wright at the Research Ethics Board at (807) 343-8283 or research@lakeheadu.ca.

If you have experienced any mental distress after participating in this study, we have provided some resources below.

We thank you for your time and participation. It is greatly appreciated.

Mirella Stroink, Ph.D. Psychology
Dean, Faculty of Health and Behavioural Sciences,
Lakehead University Email: mstroink@lakeheadu.ca
Phone: 807-343-8010 x7874

Erin Wilson, BSc Psychology
M.A. Student
Clinical Psychology Program,
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Good2Talk 24-hr Student Helpline: 1-866-925-5454

Guide to living with worry and anxiety amidst global uncertainty (several languages):

<https://www.psychologytools.com/articles/free-guide-to-living-with-worry-and-anxiety-amidst-global-uncertainty/>

The Centre for Addiction and Mental Health (Canada): <https://www.camh.ca/en/health-info>



Department of
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Examining the Contribution of Demands and Resources in the Development of Burnout Among Post-Secondary Students Training for Careers in Health Care

Description of the study subject:

Some post-secondary students may experience symptoms of burnout. Academic burnout is characterized by feelings of emotional exhaustion, feelings of inadequacy, and cynicism toward school. Burnout can be a very serious problem for students because it may lead to a decrease in their mental health, an increase in fatigue, and can lead to an increase in dropout rates. When students have many demands (e.g., emotional demands, mental demands, workload, as well as others), students may utilize resources (e.g., social support, supervisor support, meaning in work, as well as others) to help themselves cope with these demands. However, sometimes the demands are either too great, or the students do not have enough resources at their disposal, and in situations like this, students may begin to experience symptoms of burnout.

Students who are training to work in health care are particularly at risk of experiencing burnout. Not only must health care trainees balance the demands of their programs with the responsibilities they have throughout their daily lives, but they must also learn how to effectively work in the health care environment through their practicums/placements. At present, there are no studies to our knowledge that have investigated the unique academic and placement-related demands and resources in students who are training for health care careers and how these may influence the development of burnout symptoms.

Your participation in this study will help us to understand how the demands and resources of health care students are related to burnout, which will help us to fill this gap in the literature and contribute to future programs striving to increase particular resources that can act as protective factors against burnout symptoms.

Participant Recruitment Poster:

Are You a Post-Secondary Student Pursuing a Career in Health Care?

We would appreciate your participation in our research study investigating how the unique demands and resources of students training to work in health care are related to the development of burnout.

Are you eligible:

- Must be enrolled in a health care program.
- Your program must have a practicum, placement, or similar requirement
- Must have already started logging hours for the practicum/placement

Study Info:

- Online study
- Time commitment: 40-45 min
- As compensation for your time, you will be entered into a draw for a chance to win one of three \$50 gift cards.

Who We Are:

This study is being conducted by Dr. Mirella Stroink and MA student researcher Erin Wilson at Lakehead University.

To participate in the study, please visit the following link or scan the QR code below:

https://lakeheadhbs.qualtrics.com/jfe/form/SV_8eUNdDvBDcm0UQ



For more information or if you have any questions, please contact:

MA Student Researcher:
Erin Wilson at
[redacted]
[redacted]

Or

Principal Investigator:
Dr. Mirella Stroink at
mstroink@lakeheadu.ca
Phone: 807-343-8010 x7874

This study has been approved by the Lakehead University Research Ethics Board. If you have any questions about the ethics of the research, please contact Sue Wright at the Research Ethics Board at 807-343-8283



Department of Psychology

