

An Examination of Faculty Well-being in Canadian Research Universities

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Table of Contents

Acknowledgements	iv
Abstract.....	v
Résumé.....	vi
Preface and Contributions of Authors.....	viii
Chapter 1. Introduction	1
Overview of Chapters	4
References	7
Chapter 2. Antecedents, Correlates and Consequences of Faculty Burnout	10
Abstract	11
Theoretical Frameworks	15
Sample Characteristics.....	19
Study Methodologies	19
Findings.....	20
General Discussion	33
Limitations and Directions for Future Research.....	37
Conclusion	40
References	42
Appendix A.....	50
Bridging Manuscript (Chapters 2-3).....	58
Reference	61
Chapter 3. Occupational Factors and Faculty Well-being:	
Investigating the Mediating Role of Need Frustration	64

Abstract	65
Theoretical Frameworks	67
The Present Study	73
Methods.....	78
Results.....	83
Discussion	94
Study Limitations and Future Directions.....	98
References	101
Chapter 4. General Discussion.....	116
General Study Findings.....	117
Implications and Directions for Future Research	121
Reference	127
Bibliography	132
Appendix B	152

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Abstract

What do we know about the determinants and outcomes of faculty well-being and how comprehensive is this knowledge? The literature suggests that the existing empirical research on faculty well-being is not extensive, and is scattered and fragmented. A systematic review of the literature was conducted to synthesize existing empirical findings on faculty burnout. Findings across 36 studies highlighted multiple themes including a) the mixed and inconclusive effects of demographic variables on faculty burnout, b) clear detrimental effects of job demands (e.g., workload, role ambiguity, role conflict, value conflict) and insufficient resources (e.g., social support, rewards, control), c) direct or indirect effects of psychological variables (e.g., motivation, optimism) on the level of experienced burnout, and d) adverse consequences of burnout for faculty health and performance (e.g., satisfaction, ill health, depression). The review also indicated a lack of research examining how teaching, research, service, supervision, and promotion impact faculty well-being and on the processes through which job characteristics hinder or foster faculty well-being. To address the gaps, online survey data were collected online from 592 faculty members employed in 13 English-speaking, research-intensive universities across Canada. Structural equation modeling showed that work-home conflict and low academic resources positively predicted burnout and health problems but negatively predicted engagement. Moreover, work-home conflict, academic pressure and insufficient support hindered satisfaction of faculty members' basic psychological needs that, in turn, negatively influenced their well-being. Findings are discussed in the context of improving academic work settings to optimize social, organizational, emotional, or physical aspects of faculty employment that sustain their basic psychological needs and consequently their well-being.

Résumé

Que savons-nous des déterminants du bien-être du corps enseignant et à quel point sont ces connaissances avérées? Les revues de la littérature montrent que les recherches empiriques existantes ne sont pas exhaustives, mais plutôt dispersées et fragmentées. Une revue systématique de la littérature a été réalisée pour synthétiser les résultats sur l'épuisement professionnel des professeurs. Les résultats de 36 études ont mis en évidence plusieurs thèmes, notamment: a) les effets mitigés et non-concluants des variables démographiques sur l'épuisement du corps professoral, b) les effets néfastes évidents des exigences du travail (par exemple, le charge de travail, l'ambiguïté du rôle, les conflits des rôles, les conflits des valeurs) et des ressources insuffisantes (soutien social, récompenses, contrôle, etc.), c) les effets directs ou indirects de variables psychologiques (par exemple, la motivation et l'optimisme) sur le niveau d'épuisement professionnel, et d) les conséquences néfastes de l'épuisement professionnel sur la santé et le rendement du corps professoral (la satisfaction, la mauvaise santé et la dépression). L'examen a également révélé un manque de recherche sur les effets de l'enseignement, de la recherche, des services, de la supervision et de la promotion sur le bien-être des enseignants et sur les processus par lesquels les caractéristiques des emplois nuisent ou favorisent le bien-être des enseignants. Pour combler les lacunes, des données de sondage ont été recueillies en ligne auprès de 592 membres du corps professoral employés dans 13 universités anglophones à forte intensité de recherche au Canada. La modélisation par équation structurelle a montré que les conflits travail-maison et le manque de ressources académiques prédisaient positivement l'épuisement professionnel et les problèmes de santé, mais prédisaient négativement l'engagement. De plus, les conflits travail-maison, la pression scolaire et l'insuffisance d'appui ont nui à la satisfaction des besoins psychologiques de base des membres du corps professoral.

Celui-ci a eu une influence négative sur leur bien-être. Les résultats sont discutés dans le contexte de l'amélioration des cadres de travail académique afin d'optimiser les aspects sociaux, organisationnels, émotionnels ou physiques de l'emploi du corps professoral qui répondent à leurs besoins psychologiques de base et, partant, à leur bien-être.

Preface and Contributions of Authors

I am the primary author of the two manuscripts comprising this dissertation. I was also mainly responsible for generating ideas, writing a proposal, preparing and submitting the ethics application, collecting and analyzing data, and writing the manuscripts. I wrote each manuscript and chapter independently and received feedback from my advisor, Dr. Alenoush Saroyan, and my co-advisor, Dr. Nathan C. Hall. Additionally, my committee member, Dr. Sarah-Geneviève Trépanier, provided me with her feedback on the second manuscript (Chapter 3). Overall, my advisor, co-advisor, and committee member provided substantive feedback throughout the writing of my dissertation. The specific contributions made by myself and other co-authors for each manuscript are described below.

Chapter 2 Contributions

This first manuscript is a systematic literature review based on my comprehensive examination. The whole process of literature search, the analysis of empirical findings of the retrieved articles, and writing of the review were conducted entirely by myself. Dr. Saroyan and Dr. Hall (the co-authors) provided me with insightful feedback to revise the comprehensive examination paper and to turn it into a manuscript suitable for publication. I also received feedback from my co-authors once I was invited to revise and resubmit the manuscript. The manuscript was published in May 2018 in the *Educational Research* journal.

Chapter 3 Contributions

I was entirely responsible for the entire process of developing this manuscript; from idea generation and questionnaire design to data collection, analysis, and writing. I received feedback from Dr. Saroyan with respect to rationale, logic, and coherence of the manuscript as well as feedback from Dr. Hall and Dr. Trépanier regarding statistical analysis and manuscript

composition. This manuscript will be submitted to a journal in the field of higher education or organizational psychology and will include my supervisor and all my committee members (Drs. Saroyan, Hall, and Trépanier) as co-authors.

Chapter 1

Introduction

Historically, academia was considered to be a relatively well-resourced, stress-free, and satisfying working context (Willie & Stecklein, 1982). However, over the past two decades, the university sector has undergone extensive and widespread changes such as restructuring and massification, greater pressure for accountability, and reduction in funding. These and other change have made academia a highly stressful occupational setting (Biron, Brun, & Ivers, 2008; Kinman, 2014; Tytherleigh, Webb, Cooper, & Ricketts, 2005). For example, the trend of massifying higher education has made academic work more demanding due to the rise in student enrollment and diversity in terms of social, cultural, and educational background of students entering the system. Furthermore, increased pressure on faculty to demonstrate greater technical expertise in teaching larger groups and using diverse modes of delivery (Kinman, 2014) has added a layer of complexity to the academic task. Budget cuts and lack of appropriate increase in resources have made the situation even more challenging for all university sector employees including academics (Biron et al., 2008). Added to these changes is the continuous pressure on academics for demonstrating excellence in different aspects of professorial work such as teaching, conducting research, disseminating and publishing research outcomes, as well as providing service and administration tasks (Kinman, 2014; Záborská et al., 2017). The present stressful climate of academia has resulted in greater vulnerability of faculty members to the extent that their level of experienced stress is now comparable to that of other service sector employees such as school teachers and health care professionals (Watts & Robertson, 2011).

Research evidence shows that the present challenging employment climate of academia has the potential to impair faculty personal and professional competencies, reduce their productivity, and increase the experience of burnout (Blix, Cruise, Mitchell, & Blix, 1994; Byrne, Chughtai, Flood, Murphy, & Willis, 2013; Demerouti, Bakker, Nachreiner, & Schaufeli,

2001; Maslach, Schaufeli, & Leiter, 2001; Schaufeli & Bakker, 2004; Watts & Robertson, 2011). Burnout is defined as a state of physical, emotional, and mental exhaustion resulting from long-term exposure to demanding situations. This psychological syndrome has been characterized by emotional exhaustion, depersonalization or cynicism, and perceptions of reduced personal accomplishment or professional efficacy (Maslach, Jackson, & Leiter, 1996; Pines & Aronson, 1988). Despite the importance of burnout and its potential consequences on faculty well-being and performance, students' learning, and institutional productivity (Byrne et al., 2013; Maslach & Leiter, 1999), there still isn't a clear picture emerging from research on faculty burnout. One useful reference is the systematic literature review conducted by Watts and Robertson (2011) on burnout among academic teaching staff based on a total of 13 empirical studies. The review highlighted some correlates and predictors of burnout among higher education teaching staff (e.g., work pressure, number of students, satisfaction, and personality) and assessed gender and age effects on experience of faculty burnout. Although this review is a good starting point for summarizing the empirical findings on faculty burnout, the synthesis of the findings is not based on a particular theoretical framework, making it more challenging to interpret findings and to advance the field through further empirical work.

The first manuscript of the present dissertation addressed this gap by synthesizing the existing research on antecedents, correlates, and outcomes of faculty burnout based on the well-established theoretical model of Job Demands-Resources (Bakker & Demerouti, 2007; Demerouti et al., 2001). The results of this review highlighted some gaps and directions for future research on faculty burnout, some of which have been addressed in the second manuscript of the present dissertation. The present dissertation has thus aimed to contribute to the existing research on faculty well-being in two ways. First, it has provided a clear picture of existing

empirical findings on one aspect of faculty well-being, namely burnout, by synthesizing the examined correlates, antecedents, and outcomes of burnout among faculty members in academia. Second, informed by the results of the review, this dissertation has focused on positive and negative indicators of faculty well-being, engagement, and burnout. Specifically, the analyses have a) investigated the impact of stressors that are specific to the professorial context of faculty work, and the impact of work-home conflict on faculty burnout, engagement, health, and commitment, as well as b) explored the underlying psychological mechanism through which the stressors lead to faculty burnout and engagement by examining the mediating role of basic psychological need.

The investigations were framed by three research questions: 1) What are the key antecedents, correlates, and outcomes of faculty burnout highlighted in empirical studies, investigating the role of demographic characteristics, job characteristics (job demands and job resources), personal characteristics, and health and performance indicators? 2) How do academic job characteristics and work-home conflict impact faculty well-being and functioning? 3) To what extent does the frustration of basic psychological needs serve as a key underlying psychological mechanism through which job stressors lead to well-being and functioning outcomes?

Overview of Chapters

Chapter 2 represents the first manuscript of the present dissertation and includes a systematic review of the antecedents, correlates, and outcomes of faculty burnout in higher education. The Job Demands-Resources model was chosen as the guiding framework to synthesize research findings in this chapter. Antecedents were categorized into job demands, job resources, and personal factors. Correlates were grouped into demographic variables (e.g., age,

gender, experience), occupational factors (e.g., job demands, resources), other personal factors (i.e., individual differences in psychological variables), and well-being and performance indicators. Outcomes of burnout were discussed as those that relate to faculty well-being or performance. The review ends with a comprehensive discussion of findings, shortcomings of research on faculty burnout, and recommendations for future research on faculty burnout.

Chapter 3 represents the second manuscript of the present dissertation. The systematic review of the literature in Chapter 2 highlighted four gaps which are addressed in this chapter. The study reported in this chapter used structural equation modeling and multi-group analysis to a) examine both positive and negative aspects of faculty well-being, b) evaluate the influence of job characteristics specific to the professorial context of faculty work in the prediction of faculty well-being, c) investigate the impact of basic psychological needs (Ryan & Deci, 2000; 2008) to explain the underlying mechanisms for the relationship between stressors and well-being outcomes, and d) verify the extent to which the hypothesized model is equivalent for female and male faculty members.

Finally, Chapter 4 represents a summary and a general discussion of the findings as well as considerations for practical implications and directions for future research on faculty well-being. In sum, the present dissertation contributes substantially to the faculty well-being literature by providing a synthesis of empirical findings on antecedents, correlates, and outcomes of faculty burnout; examining the impacts of certain job characteristics specific to the context of faculty work, and evaluating the psychological mechanisms underlying the relationship between job characteristics and faculty well-being and functioning. The findings have important theoretical implications for future research on faculty well-being as well as practical implications

for various stakeholders such as policymakers, senior academic leaders, and department heads in better understanding the present culture of academia.

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Chapter 2

Antecedents, Correlates and Consequences of Faculty Burnout

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Abstract

Over the past few decades, higher education institutions worldwide have experienced substantial changes, including: massification, internationalisation and increasing demands for exceptional instructional quality and research quantity in environments that have also seen heightened competition for students, faculty and resources. Accordingly, these changes have contributed to a highly demanding academic employment climate that pose challenges for personal and professional development in post-secondary faculty (i.e. university or college research and teaching academics), as well as potential negative impacts on student learning and, ultimately, institutional productivity. Given the emergent nature of scattered existing research on faculty burnout, the present paper attempts to synthesise and critically examine published empirical findings concerning the various correlates, antecedents and outcomes of faculty burnout as informed by the Job Demands–Resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Existing empirical research on faculty burnout was identified through a rigorous search of English language, peer-reviewed articles across relevant databases (e.g. ERIC, Psycinfo, Scopus) resulting in 36 quantitative, cross-sectional studies, satisfying detailed a priori inclusion criteria. The review revealed multiple themes across studies with respect to mixed effects of demographic background factors on burnout levels, as well as clear detrimental effects of adverse job demands (e.g. workload, task characteristics, value conflict) and lack of resources (e.g. social support, rewards, control) on faculty burnout. Additionally, both personal characteristics (e.g. motivation, optimism) and stressors outside the workplace (e.g. family stressors and lack of support) were found to contribute significantly to faculty burnout, with greater burnout, in turn, having consistent adverse consequences for performance and commitment (e.g. reduced work

activities, turnover intentions) as well as psychological and physical health (e.g. ill health, depression) in faculty. The findings presented underscore the importance of faculty burnout and the challenges it presents in terms of faculty well-being as well as student development and institutional performance. Findings also provide further insight into the ways in which intervention efforts and resources targeting faculty burnout may prove effective.

Antecedents, Correlates and Consequences of Faculty Burnout

The landscape of higher education has changed remarkably in the last few decades. Changes encountered by higher education institutions, including massification, greater demands for research productivity and for providing quality education have brought about new challenges to institutions as well as academics, especially when there has not been a corresponding increase in resources (Biron, Brun, & Ivers, 2008; Byrne, Chughtai, Flood, Murphy, & Willis, 2013; Li, Li, & Sun, 2013; McAlpine & Åkerlind, 2010; Rothmann & Barkhuizen, 2008). Concurrent with these substantial changes, expectations of academic performance and productivity have risen, resulting in both psychological and physical health challenges that threaten the well-being of academics (Barkhuizen, Rothmann, & Vijver, 2014; Rothmann, Barkhuizen, & Tytherleigh, 2008; Zhong et al., 2009).

Surveys of academics in the UK, Australia, and Canada have found increased stress to be a growing concern. Increase in workload and the often conflicting demands that teaching, research, and service place on academics have been found to contribute to faculty distress and burnout (Catano et al., 2010; Rothmann & Barkhuizen, 2008; Tytherleigh, Webb, Cooper, & Ricketts, 2005; Watts & Robertson, 2011; Winefield et al., 2003). Cuts in tenure and tenure track positions and increase in contract positions have been found to place even greater demands on core faculty (Biron et al., 2008; Byrne et al., 2013). This challenging employment climate has the potential to impair personal and professional competencies of faculty, reduce their productivity, and lead to burnout experiences involving cynicism as well as mental and physical exhaustion (Blix, Cruise, Mitchell, & Blix, 1994; Byrne et al., 2013; Demerouti et al., 2001; Maslach, Schaufeli, & Leiter, 2001; Schaufeli & Bakker, 2004; Watts & Robertson, 2011).

Empirical evidence clearly demonstrates that many faculty (i.e., university or college research and teaching academics holding different ranks and tenure status) in today's academic climate have experienced high levels of burnout (e.g., Blix et al., 1994; Byrne et al., 2013; Ghorpade, Lackritz, & Singh, 2011; Lackritz, 2004; Teven, 2007). Burnout levels in academia have been reported as comparable to those observed amongst school and health care professionals (Watts & Robertson, 2011). Implications of this include potentially detrimental impacts on faculty members' well-being and performance, student learning and, ultimately, institutional productivity (Byrne et al., 2013; Maslach & Leiter, 1999b).

Given the increasingly problematic nature of burnout in post-secondary faculty, a comprehensive review of the exiting empirical literature on burnout among academics is thus required to better identify critical antecedents, correlates and consequences of this salient yet underexplored issue. The present paper aims to provide a comprehensive and descriptive review of published empirical research on the various correlates, antecedents, and outcomes of faculty burnout. This review, thus, does not represent a meta-analysis, due in part to the highly varied nature of the relations and constructs examined in scattered existing research as well as disparity across the measures used in the studies. Rather, it aims principally to highlight findings, gaps and directions for future research on the critical topic of faculty burnout. Further, it is hoped that this thematic, descriptive review can be used to inform the design and implementation of interventions and policy changes that may be able to redress the situation by reducing stress, maintaining well-being, and promoting engagement in faculty (Maslach & Leiter, 1999b).

Theoretical Frameworks

Burnout is a state of physical, emotional, and mental exhaustion resulting from a long-term exposure to demanding situations. This psychological syndrome has three dimensions: emotional exhaustion, depersonalization or cynicism, and perception of reduced personal accomplishment or professional efficacy (Maslach and Jackson 1981; Maslach, Jackson, and Leiter 1996; Pines and Aronson 1988). Emotional exhaustion, the critical component of burnout (Maslach & Jackson, 1981), is a direct outcome of chronic stress and excessive job demands. It refers to feelings of fatigue and the depletion of emotional resources (Maslach et al. 2001). Depersonalization or cynicism involves the development of uncaring or cynical attitudes towards others or one's work, whereby employees protect themselves from stress by emotionally disengaging from other people or their work (Fernet, Guay, & Senécal, 2004; Maslach, Jackson, & Leiter, 1996). The third dimension involves a reduced perception of personal accomplishment and efficacy; employees negatively self-assess their competence and performance and have lowered satisfaction with personal achievement (Maslach & Jackson, 1981).

Researchers have attempted to understand burnout predictors and consequences. The Job Demands-Resources model (The JD-R; Demerouti et al., 2001) is one of the leading models that predicts burnout antecedents and outcomes. Demerouti et al. (2001) define job demands as those social, organizational and physical features of the occupation that entail continuous mental or physical efforts and, therefore, are associated with potential psychological or physical costs such as exhaustion and fatigue. In contrast, job resources refer to aspects of the occupation that a) buffer or reduce job demands or their corresponding detrimental impacts, b) facilitate the employee's growth and development, and c) assist in achieving work-related goals (Demerouti et al., 2001, p. 501). The Job Demands-Resources model posits that excessive job demands lead to

strain and burnout that, in turn, lead to poor performance and health problems. Burnout is, therefore, expected to fully or partially mediate the relationship between job demands and maladaptive outcomes. This mediation process is referred to as the energetic or health impairment process in the JD-R model. Whereas lack of resources is proposed to lead to higher level of exhaustion and burnout, abundance of job resources is assumed to diminish the negative impact of job demands on burnout levels (Demerouti et al., 2001; Schaufeli & Taris, 2014; Schaufeli & Bakker, 2004).

Empirical evidence strongly supports the role of job demands (e.g., work overload, work-home conflict) and job resources (e.g., job control, support) in predicting burnout (Schaufeli & Taris, 2014). Moreover, an extensive review of burnout antecedents by Maslach and Leiter (1997) identified six workplace demands and resources (workload, control, value, fairness, reward and community) as salient predictors of occupational burnout. In addition to demands and resources, personal characteristics (e.g., motivation, optimism) can influence the experience of burnout directly, and moderate or mediate the relationship between occupational factors and burnout (Schaufeli & Taris, 2014). In the present review, the Job Demands-Resources model is used as the guiding framework to synthesize the themes and empirical evidence examined in relation to faculty burnout. Antecedents of burnout are, thus, categorised primarily according to job demands, job resources, and personal characteristics, with the outcomes of burnout organized according to health and performance in post-secondary faculty.

Search Strategies

The empirical published research included in this review was identified through a comprehensive search of English language, peer-reviewed studies via the ERIC, Psycinfo, and Scopus electronic databases. Considering that different terms are used internationally to refer to post-secondary faculty members, we employed variety of search terms to capture higher education academics internationally. The search terms used were: *burnout*, *university*, *college*, *faculty*, *professors*, *academics*, *teaching staff*, *lecturers*, and *research staff*, with “*teacher burnout*” additionally included as a subject heading in the ERIC database. Occupational stress was not included as a search term because it is theoretically different from burnout (Maslach, 1993; Maslach et al., 2001; Rudow, 1999). The most important difference between the two constructs concerns the multidimensionality of burnout compared to the uni-dimensional nature of occupational stress. Depersonalization and cynicism as burnout components offer an interpersonal lens concerning perceptions of others and work responsibilities. Occupational stress, however, does not necessarily entail cynical attitudes and can be conceptually differentiated as a precursor to burnout (Maslach & Leiter, 1999b). Finally, burnout is a chronic state that takes time to evolve, whereas occupational stress can occur as a result of short-lived episodes of exceptional workload (Maslach et al., 2001; Rudow, 1999). The search terms and the number of retrieved articles are presented in Table 1.

Table 1

Summary of Search Strategies and the Number of Retrieved Articles

Database	Search terms	N retrieved articles
Scopus	Burnout AND (university OR college OR academic* OR teaching staff OR lecturer* OR research staff OR faculty OR professor*)	466
Psycinfo	Burnout AND (university OR college OR academic* OR teaching staff OR lecturer* OR research staff OR faculty OR professor*)	352
ERIC	SU.EXACT.EXPLODE("Teacher Burnout")	478

Two inclusion/exclusion criteria were defined to address the review objectives. First, only studies that investigated burnout in post-secondary *faculty* were included, thus excluding studies that focused on administrators, staff or students. Given that the term “post-secondary” commonly refers to educational contexts following the completion of secondary education, studies examining faculty employed at more traditional post-secondary institutions (e.g., institutes, colleges, universities) were included in the present review. Second, studies that examined burnout exclusively among medical academics (e.g., physicians, nurses) were excluded from this review. The clinical responsibilities and the unique demands and pressures associated to medical faculty positions were reasons for this exclusion (Watts & Robertson, 2011). In addition to the data base searches, a manual search was conducted to identify seminal and frequently cited references in the retrieved articles. In sum, the search process resulted in 36 empirical studies investigating burnout in post-secondary faculty.

Sample Characteristics

The 36 studies reviewed had examined a total of 9,110 faculty members, with sample sizes ranging from 45 to 1,067 ($Mdn = 261.5$, $M = 284.7$, $SD = 224.3$). With respect to gender distribution, one sample included only females, while the remainder included a percentage of males ranging from 22.6% to 88% ($Mdn = 55.4\%$, $M = 56\%$, $SD = 18.8$). A total of 32 independent samples were examined in the retrieved articles. Studies were conducted in various countries, including Canada (3), China (3), India (2), Iran (1), Ireland (1), the Netherlands (1), Pakistan (1), Portugal (1), South Africa (3), Spain (3), Turkey (2), the UK (2), and the US (9). It should be noted that one sample from Canada, one from Pakistan, one from South Africa, and one from the US were analysed in more than one paper. All studies were conducted among faculty members in a post-secondary context as defined in the previous section.

Study Methodologies

All of the reviewed studies employed a cross-sectional survey design and evaluated burnout as study variable, with all studies except one (Singh, Mishra, & Kim, 1998 ; used the research-related burnout measure developed by authors) having evaluated burnout using a variant of the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981, 1986; Maslach et al., 1996). The majority of studies included in the review examined all three dimensions of burnout; however, two studies analysed the exhaustion dimension exclusively (Frisby, Goodboy, & Buckner, 2015 (the other two dimensions were not included due to poor reliability); Van Emmerik, 2002), and three studies additionally included the cynicism dimension (Barkhuizen et al., 2014; McClenahan, Giles, & Mallett, 2007; Rothmann et al., 2008).

Using the Job Demands-Resources model (JD-R) as the guiding framework, the variables that were examined in relation to burnout were categorized as: job demands, job resources,

personal characteristics, and indicators of well-being and performance. Demographic characteristics and selected stressors outside the workplace were also examined in relation to burnout. A detailed discussion of study findings is presented, first with respect to demographic variables, followed by results concerning the antecedents, correlates, and consequences of burnout in faculty members. Magnitude of the relationships and ranges of standardized coefficients are provided for antecedents, correlates and consequences of burnout for studies that reported these results. As the majority of studies employed mean difference tests to examine the relationship between demographic characteristics and burnout, only the results of significance testing are provided concerning relations between burnout and demographic variables. A detailed overview of each study included in the current review is presented in the Appendix.

Findings

Demographic Variables and Faculty Burnout

More than half of the reviewed studies examined the effect of demographic characteristics on faculty burnout. These characteristics mainly included age, gender, years of experience, and academic rank or status. The generally mixed findings concerning the influence of each of the background variables are detailed below.

Age. Age as a demographic characteristic has shown a consistent pattern of relationship with burnout in general (Schaufeli & Enzmann, 1998). In the articles included in this review, a significant negative relationship was found between age and emotional exhaustion, indicating that older faculty members reported lower level of exhaustion (Byrne, 1991; Fernet et al., 2004; Ghorpade, Lackritz, & Singh, 2007; Ghorpade et al., 2011; Lackritz, 2004; Rothmann & Barkhuizen, 2008; Singh & Bush, 1998; Tümkaya, 2007). In contrast, no significant relationship was reported in other studies (Bilge, 2006; Blix et al., 1994; Gonzalez & Bernard, 2006; Li et al.,

2013; McClenahan et al., 2007). Two studies reported age to be negatively correlated with depersonalization (Gonzalez & Bernard, 2006; Tümkaya, 2007) but the majority did not observe any such relationship (Bilge, 2006; Blix et al., 1994; Byrne, 1991; Fernet et al., 2004; Ghorpade et al., 2007, 2011; Lackritz, 2004; McClenahan et al., 2007; Rothmann & Barkhuizen, 2008; Singh & Bush, 1998). The relationship between age and personal accomplishment was not typically significant; however, studies by Byrne (1991), Li et al. (2013), and Rothmann and Barkhuizen (2008) did find older academics to report higher perceptions of accomplishment.

Gender. Although there have been assertions that burnout tends to be more prevalent among females, this review found inconsistent and contradictory differences between males and females with respect to their burnout levels. Some studies showed that females had higher levels of experienced exhaustion (Byrne, 1991; Ghorpade et al., 2007, 2011; Lackritz, 2004; Tümkaya, 2007), while others showed depersonalization levels to be lower among female academics (Bilge, 2006; Doyle & Hind, 1998; Ghorpade et al., 2007, 2011; Lackritz, 2004). With respect to the relationship between gender and perceived accomplishment, only one study (Byrne, 1991) reported gender differences, with females having lower perceptions of personal accomplishment. However, most of the studies that examined gender differences found no significant relationship between gender and burnout (Blix et al., 1994; Byrne et al., 2013; Gonzalez & Bernard, 2006; Jamal, 1999b; Jamal & Baba, 2001; Li et al., 2013; McClenahan et al., 2007; Rothmann & Barkhuizen, 2008).

Years of experience. There is limited empirical evidence concerning the impact of years of experience on faculty burnout. In a sample of 158 US faculty, Blix et al. (1994) found that faculty members with less than 10 years of experience were more at risk of emotional exhaustion. Gonzalez and Bernard's (2006) study of 193 US academics found the same

relationship. Of the remaining studies that have examined this relationship, no correlation between years of experience and burnout was observed (Bilge, 2006; Byrne, 1991; Rothmann & Barkhuizen, 2008).

Academic rank and employment status. Empirical evidence on the role of rank, the hierarchical nature of faculty positions (e.g., assistant vs. associate professor in North America), and employment status (e.g., tenure-track, tenured, or contract-based) in relation to faculty burnout is limited as well as mixed. Azeem and Nazir (2008) measured burnout in a sample of 300 Indian academics and found lecturers (equivalent to assistant professors in North America) to experience a higher level of exhaustion than either professors or readers (equivalent to associate professor). Somewhat consistent results were revealed in a sample of 283 Turkish faculty members, with results showing exhaustion levels to be the lowest among full professors in contrast to assistant professors and lecturers (Tümkeya, 2007). With respect to the role of employment status in relation to burnout, a study of 263 US academics (analysed across three empirical articles) showed that adjunct full-time lecturers who had exclusively teaching responsibilities experienced lower levels of exhaustion and depersonalization, and perceived a higher level of accomplishment as compared to tenured or tenure-track academics (Ghorpade et al., 2007, 2011; Lackritz, 2004). Singh et al. (1998) found that tenure status moderates the negative relationship between burnout and job satisfaction (stronger for non-tenured faculty) as well as between burnout and perceived lack of reward (stronger for tenured faculty). Finally, some of the studies observed no significant influence of rank and status on burnout (Blix et al., 1994; Fernet et al., 2004; Gonzalez & Bernard, 2006; Li et al., 2013; McClenahan et al., 2007; Van Emmerik, 2002).

Antecedents of Faculty Burnout

More than half of the studies that were reviewed examined burnout in relation to its predictors. Explored antecedents of burnout were grouped into three categories according to the JD-R model: job demands, job resources, and personal characteristics. The job demands assessed in the studies included role ambiguity, role conflict, workload, quantitative demands, total number of students taught in one professor's classes, over-qualification, and pressure for productivity. Moreover, support from colleagues, superiors, and organizations, as well as job control, decision-making, role clarity, reward and abundance of growth opportunity were evaluated as job resources. Optimism, work self-determination, personality, perceived competence, humour and emotional labour were included as personal factors.

Job demands. Job demands were consistently found to predict higher levels of faculty burnout (e.g., Fernet et al., 2004; Zhong et al., 2009). More specifically, reported workload represents the most frequently examined aspect of academic job demands as a predictor of burnout (β s = .19-.51). High workload and quantitative demands (demands related to the amount of assigned work) were shown to be positive predictors of faculty burnout in studies conducted in South Africa and Spain (Barkhuizen et al., 2014; Navarro, Mas, & Jiménez, 2010; Rothmann et al., 2008). Moreover, work overload and pressure were consistently significant predictors of greater burnout (McClenahan et al., 2007) or emotional exhaustion levels (Gonzalez & Bernard, 2006; Van Emmerik, 2002). Role conflict and role ambiguity were also reported to predict faculty burnout positively. The results of a study with 263 US faculty by Ghorpade et al. (2011) showed role conflict to impact emotional exhaustion and depersonalization positively, with role ambiguity leading to lower perceived accomplishment. In a sample of 94 South African faculty,

Pretorius (1994) also found role conflict to predict more exhaustion, and role ambiguity to predict greater depersonalization, with neither factor predicting personal accomplishment. Finally, lack of role clarity was shown to predict greater emotional exhaustion in a large-scale study of 1,067 Dutch academics (Van Emmerik, 2002).

Other job demands have also been shown to predict burnout in post-secondary faculty, with the standardised coefficients reported for job demands predicting burnout ranging from .18 (Navarro et al., 2010) to .52 (Gomes, Faria, & Gonçalves, 2013) across studies. For instance, over-qualification – the perception that an individual is more qualified than is needed to perform the assigned tasks – was a significant predictor of emotional exhaustion in a study of 193 Spanish academics (Navarro et al., 2010). Gomes et al. (2013) further showed a latent factor including greater pressure to increase scientific productivity, work-overload, work-home conflict, and working conditions to predict higher burnout in a sample of 333 Portuguese faculty. Pretorius (1994) found that the higher number of students taught is a significant antecedent of exhaustion and depersonalization among South African academics. A more context-specific professorial demand, namely the work typologies, was shown to be a significant predictor of emotional exhaustion in a sample of U.S. faculty members (Gonzalez & Bernard, 2006). The work typologies represent the relative amount of time devoted to teaching, research, service, and professional development of faculty members. The results of the study revealed that faculty who had a more balanced typology, as represented by lighter teaching loads which, in turn, allowed for greater time for research and service, reported significantly lower levels of emotional exhaustion compared to those classified as having heavy teaching loads.

Two studies further examined job demands as an aggregate variable in relation to burnout, with standardised coefficients reported ranging from .24 to .45. In a study of 398

Canadian faculty (Fernet et al., 2004), a composite measure of workplace demands summing across workload, role clarity, role ambiguity, and research-related pressure was found to predict higher levels of emotional exhaustion and depersonalization. Similarly, in a study of 300 Chinese academics (Zhong et al., 2009), a job demand variable comprised of factors such as management role, relationships with others, career and achievement pressure, organizational structure and climate, and work-home conflict, predicted total burnout scores.

Job resources. The extent of job resources available to academics has also been explored in relation to burnout, with the magnitude of standardized coefficients reported across studies ranging from small ($\beta = .11$; Van Emmerik, 2002) to large ($\beta = .79$; Barkhuizen et al., 2014). Social support was the most frequently examined antecedent of burnout. Findings indicated higher levels of support from one's organization or superiors (Rothmann et al., 2008; Van Emmerik 2002), one's colleagues (Rothmann et al., 2008; Van Emmerik, 2002), and social support in general (McClenahan et al., 2007) to predict lower levels of reported burnout. Interestingly, among Dutch academics, social support in the workplace was more influential for females than males in predicting lower emotional exhaustion (Van Emmerik, 2002). Job control predicted burnout in Canadian faculty, with greater control predicting lower exhaustion and depersonalization, and higher levels of perceived accomplishment (Fernet et al., 2004). Additionally, participation in decision-making was found to predict greater perceived accomplishment in South African academics (Pretorius, 1994). Concerning findings observed using omnibus measures, the largest positive relations between burnout and job resources have been found in research utilizing a composite measure of job resources including task characteristics, role clarity, and relationships (Barkhuizen et al., 2014). Nevertheless, other

research analysing a composite latent variable including support, workplace rewards, and opportunities for growth found higher resource levels to correspond with moderately lower levels of burnout (Rothmann et al., 2008). Moreover, a perceived lack of performance-contingent rewards similarly predicted higher research burnout among US tenured faculty (Singh et al., 1998).

Personal factors. The reviewed studies examined several personal factors in relation to burnout, with standardised coefficients ranging from .14 (Tümekaya, 2007) to .75 (Singh et al., 1998) in magnitude. For instance, Barkhuizen et al. (2014) found that dispositional optimism indirectly predicted burnout by influencing academics' perceptions of work demands. Other studies showed optimism to lead directly to lower burnout levels (Otero-López, Mariño, & Bolaño, 2008; Rothmann et al., 2008). Ghorpade et al. (2007), further, found the 'Big Five' personality characteristics to impact faculty burnout. Their results showed higher levels of extroversion and emotional stability (reverse coding of neuroticism), and lower levels of openness to experience to predict lower emotional exhaustion. Agreeableness and emotional stability negatively predicted depersonalization, whereas each personality dimension, except for openness, positively impacted perceived accomplishment. Zhang and Zhu (2008) compared the effects of deep acting - an attempt to feel the displayed emotions - with surface acting - faking emotions to meet occupation norms - as emotional labour strategies in a sample of 164 Chinese faculty members. The findings revealed that deep acting predicted lower burnout levels, whereas surface acting predicted greater depersonalization. Moreover, Singh et al. (1998) showed that intrinsic motivation was a negative predictor of research burnout among US faculty members ($\beta = -.75$) with motivational variables having the largest coefficients among the personal factors

reviewed. Finally, self-defeating humour (putting oneself down to make others laugh) was found to be detrimental to burnout and predicted higher levels of exhaustion and depersonalization as well as lower perceived accomplishment among Turkish faculty (Tümekaya, 2007).

Only seven studies examined mediation and moderation with respect to both occupational and personal factors in relation to burnout, with two studies showing no interactive effects (Barkhuizen et al., 2014; Rothmann et al., 2008). In contrast, Navarro et al. (2010) found that perceived competence mediated the effects of role ambiguity and overload on depersonalization and accomplishment. Role ambiguity and overload predicted lower faculty perceived competence that, in turn, predicted higher depersonalization and lower perceived accomplishment. Secondary cognitive appraisal, represented by coping potential and control perception, was shown to partially mediate the relationship between demands (stressors) and burnout in a sample of Portuguese academics (Gomes et al., 2013). Higher demands predicted lower coping potential and control perceptions that predicted higher faculty burnout. A three way interaction between job demands, job resources, and self-determination was also found in the study by Fernet et al. (2004), showing higher levels of job control to reduce the impact of job demands on burnout specifically for highly self-determined Canadian faculty. Similarly, personality characteristics were found to reduce the negative effects of role ambiguity and role conflict on burnout in a study of US faculty (Ghorpade et al., 2011).

Other antecedents. Burnout has additionally been examined in relation to satisfaction and stressors outside the workplace. In a study of 100 Irish academics, Byrne et al. (2013) showed that satisfaction with promotion and one's work predicted lower burnout levels. Similar findings were observed in 194 Turkish academics (Bilge, 2006), with coefficients reported ranging from .23 to .49 in magnitude for the two studies. Finally, Otero-López et al. (2008)

showed that demands and resources outside the workplace also explained small proportions of variance (0.5-11%) of the experience of burnout; daily hassles and life events led to greater burnout, while support from family and friends predicted lower burnout levels.

Correlates of Faculty Burnout

Researchers have primarily examined the correlates of burnout in relation to personal factors, occupational factors including job demands and resources, and indicators of personal and occupational well-being. Empirical evidence about correlates of burnout is limited to variables not examined as antecedents or outcomes of burnout.

Personal factors. Intrinsic motivation, Type-A behaviour (i.e., high achievement ambitions, impatience, and heightened pace of life), caring, coping humour, coping abilities, and personality represent the critical psychosocial variables that have been examined in relation to faculty burnout. Intrinsic motivation was the most frequently explored of these variables and was highlighted in four articles (Jamal, 1999a; Li et al., 2013; Singh & Bush, 1998; Teven, 2007). Findings consistently showed a negative relationship between motivation and exhaustion as well as depersonalization, and a positive relationship between motivation and personal accomplishment. Correlations of moderate magnitude between motivation and burnout are reported in samples of Canadian ($N = 420$) and Pakistani ($N = 335$) college faculty (Jamal, 1999a), and in a sample of 268 new faculty members in China (Li et al., 2013). Moreover, Singh and Bush (1998) found a small negative relationship between intrinsic motivation, and emotional exhaustion and depersonalization, in a sample of 258 US faculty. Finally, Teven (2007) showed US college faculty who experienced burnout also reported lower levels of intrinsic motivation ($N = 48$), with the correlation being strong in magnitude.

With respect to the remaining psychosocial variables, Type-A behaviour patterns were found to be positively and moderately correlated with overall burnout levels in Canadian and Pakistani college faculty (Jamal, 1999b; Jamal & Baba, 2001). Caring, as represented by empathy, understanding, and responsiveness, was found by Teven (2007) to be negatively and moderately correlated with exhaustion, strongly correlated with depersonalization, and weakly correlated with loss of accomplishment in college faculty. Moreover, hardiness, represented by commitment, control and challenge as abilities necessary to endure stressful conditions, was reported to correlate negatively, albeit weakly, with faculty burnout (Otero-López et al., 2008). In terms of coping behaviour, Blix et al. (1994) found that burnout was moderately correlated with lower coping abilities among US faculty, with finding from Tümkaya (2007) showing a small, negative correlation between humour-related coping and burnout among Turkish academics.

Occupational factors. Existing research on faculty burnout has mainly examined occupational factors as critical antecedents, with multiple studies exploring the correlation between burnout and workplace characteristics (Jamal, 1999a; Jamal & Baba, 2001; Lackritz, 2004; Siegall & McDonald, 2004; Singh & Bush, 1998). Social support as a resource, and existing workplace demands or lack of resources (e.g., lack of performance-contingent rewards, person-organization value mismatch, high numbers of students taught, work-related stressors) have each been found to correlate with burnout in the studies reviewed. For instance, Singh and Bush (1998) and Jamal and Baba (2001) found a small negative correlation between burnout and social support among US tenured professors and Canadian college faculty, respectively. Siegall and McDonald (2004) also found person-organization value congruence to be negatively correlated with multiple burnout dimensions among US faculty ($N = 135$; coefficients were

medium to large in magnitude), with lack of performance-contingent rewards found to be moderately associated with greater emotional exhaustion and depersonalization among US faculty members (Singh & Bush, 1998).

Similarly, findings revealed that perceived job stress is correlated with greater experienced burnout among US faculty (Blix et al., 1994) as well as Canadian and Pakistani college faculty (Jamal, 1999a), with the correlations observed being medium to large in magnitude. In contrast, Lackritz (2004) examined 13 job-related stressors in the context of higher education in a sample of US faculty and found low positive relationships between burnout dimensions and various professorial demands (e.g., teaching load, number of service activities, total number of students taught, time at work). In contrast, higher total number of students taught and negative student evaluations were found to be the only significant predictors of depersonalization (Lackritz, 2004). Finally, an examination of the relationship between instructional dissent, defined as students' complaints and disagreements about instructional issues (as a transactional demand), and burnout among 113 US faculty showed a small, positive correlation between emotional exhaustion and dissent (Frisby et al., 2015).

Well-being. Faculty burnout was consistently found to be correlated with various indicators of occupational well-being, including: job satisfaction, quitting intentions, job involvement, engagement, organizational commitment, and organizational citizenship behaviours as well as stress, health problems, anxiety, and psychological complaints. Job satisfaction was negatively and consistently correlated with burnout, with the correlation being medium to high in magnitude (Blix et al., 1994; Jamal, 1999b; Jamal & Baba, 2001; Li et al., 2013; McClenahan et al., 2007; Siegall & McDonald, 2004; Teven, 2007; Vera, Salanova, & Martín, 2010; Zhang & Zhu, 2008). It is perhaps not surprising that burnout has also been found to correlate positively,

and of moderate to large magnitude, with expressed intentions by post-secondary faculty to leave their current position (Blix et al., 1994; Jamal, 1999a, 1999b; Li et al., 2013; Siegall & McDonald, 2004). The reviewed studies, however, explored academics' perceived intentions to leave rather than the actual quitting behaviour.

Engagement, defined as an energetic and effective connection with one's work (Schaufeli, Bakker, & Salanova, 2006), and job involvement, defined as the psychological identification with one's job (Kanungo, 1982), have also been typically associated with burnout in occupational settings (Barkhuizen et al., 2014; Jamal, 1999a; Vera et al., 2010). In two samples of 595 South African academics (Barkhuizen et al., 2014) and 170 Spanish faculty members (Vera et al., 2010), engagement was found to be negatively correlated with burnout. A small, negative correlation between job involvement and burnout was also found in a sample of 335 Pakistani college faculty (Jamal, 1999a). Barkhuizen et al. (2014) further showed greater burnout to be moderately associated with lower commitment among South African faculty members. Similar findings were reported by Abdi et al. (2012). They found that burnout was correlated negatively with organizational citizenship behaviours such as conscientiousness, courtesy, and sportsmanship in a sample of 45 physical education faculty members from Iran (correlations were medium to large in magnitude).

Research evidence also indicates a negative correlation between burnout and psychological as well as physical well-being, family-related stressors, and work-home conflict. For instance, findings from a sample of 320 US faculty showed burnout to be strongly correlated with depression (Meier, 1984). Moreover, a higher level of experienced burnout strongly corresponded to more perceived physical health problems in a study of US faculty members (Blix et al., 1994). Finally, two studies included in this review additionally investigated the

relationships between burnout and family-related stressors as well as work-home conflict. In their study of female college faculty, Sahu and Misra (1995) observed a small positive correlation between family-related stress and burnout, with findings with US faculty similarly showing correlation of small magnitude between work-home conflict and burnout (Singh & Bush, 1998).

Consequences of Faculty Burnout

Although the empirical evidence examining the consequences of burnout for academics is limited, results generally show that burnout can directly predict, or mediate the effects of more global predictors, across multiple indicators of well-being and performance - such as ill health, stress, depression, low satisfaction, and reduced work activities (Barkhuizen et al., 2014; Navarro et al., 2010; Rothmann et al., 2008; Siegall & McDonald, 2004; Zhong et al., 2009). Employing structural equation modelling, the reported results show burnout to mediate the relationship between work stressors and health problems in South African academics as indicated by large coefficients ($\beta = .72-.74$) for burnout as a predictor of health problems (Barkhuizen et al., 2014; Rothmann et al., 2008). A much smaller path coefficient ($\beta = .28$) was observed for burnout as a predictor of poor health in a sample of Chinese faculty (Zhong et al., 2009), with findings further showing high burnout levels to correspond with not only greater depression ($\beta = .44$; Zhong et al., 2009) but also lower job satisfaction levels among U.S. non-tenured academics (i.e., research burnout, $\beta = -.49$; Singh et al., 1998). Moreover, Navarro et al. (2010) found that emotional exhaustion mediated the effects of work overload, role conflict, and over-qualification on stress symptoms, personal fulfilment, and depersonalization in Spanish faculty members. Finally, Siegall and McDonald (2004) found burnout to significantly mediate the relationship

between person-organization value mismatch as a stressor and job satisfaction, as well as time spent on work activities as outcomes.

General Discussion

As informed by the Job Demands-Resources model, which served as the guiding framework for classifying and proposing expected relationships between the various personal and contextual variables associated with burnout experiences, this review sought to examine and synthesize findings reported in the published literature on the antecedents, correlates, and outcomes of burnout in post-secondary faculty. Overall, the review shows that the job demands, job resources, and personal characteristics significantly contribute to the experiences of burnout among faculty members. No definitive patterns were evident in the review articles with respect to the role of demographic variables in relation to burnout, however. These aspects are elaborated upon further below.

Demographic Characteristics

Consistent with the existing research showing the largely inconclusive and contradictory influence of demographic variables on burnout (Maslach et al., 2001; Schaufeli & Enzmann, 1998), this review did not find background variables to play a major contributing role in faculty burnout levels. No consistent gender differences were found in relation to the level of experienced burnout, as some studies reported more exhaustion in females (e.g., Bilge, 2006; Ghorpade et al., 2011) while others suggested greater depersonalization in males (e.g., Bilge, 2006; Doyle & Hind, 1998). Most findings showed no relationship with gender. The failure to find consistent gender differences in relation to burnout may, however, be partly attributed to variables such as academic rank and status that are often confounded with gender (Maslach, 1998; Rothmann & Barkhuizen, 2008).

Additionally, the role of academic rank or status in relation to burnout was inconclusive, as the majority of studies that examined this demographic variable reported no significant relationship between rank and status and faculty burnout (e.g., Blix et al., 1994; Fernet et al., 2004; Gonzalez & Bernard, 2006; Li et al., 2013). Nonetheless, the potential confound between rank/status and years of experience may partly explain these contradictory findings. It is worth mentioning that a lack of international consistency with respect to faculty rank designation also makes comparisons based on rank difficult to interpret. Finally, although age and years of experience are also often confounded with each other, a consistent pattern of results emerged for these variables, showing faculty who are younger or new to the profession to be more vulnerable to burnout (e.g., Bilge, 2006; Byrne, 1991; Ghorpade et al., 2011; Li et al., 2013). This pattern of relationship might be a result of selection bias, meaning that faculty with high levels of burnout may already have quit their positions, whereas those who have held on to their employment are those who have been able to cope with the high demands and stressors successfully. In contrast, it can be assumed that older, or more experienced academics, have likely developed more efficient coping strategies to deal with job demands and lack of resources, thereby contributing to lower burnout levels (Watts & Robertson, 2011). In sum, the contribution of demographic characteristics to burnout levels was neither consistent nor substantial, warranting a greater focus on occupational factors and individual differences in personal characteristics that yielded more consistent results.

Contributors to Burnout

Following from the Job Demands-Resources model, the antecedents of burnout examined in the reviewed articles were categorised into job demands, job resources, and personal characteristics. Personal characteristics, as well as perceived occupational demands and

resources, were found to be consistently correlated with or predictive of faculty burnout. Overall, these types of antecedents most significantly contributed to emotional exhaustion levels, and had the least substantial influence on perceived personal accomplishment. As suggested in the general literature on occupational burnout, personal characteristics can influence employees' adjustment to occupational demands, moderate the relationship between job demands and burnout levels, and buffer negative aspects of the work environment (Fernet et al., 2004). This review yielded similar findings, showing that personal characteristics such as optimism, hardiness, coping abilities, and intrinsic motivation can be of great importance in off-setting burnout. These attributes either corresponded directly with lower levels of burnout (Blix et al., 1994; Otero-López et al., 2008; Singh & Bush, 1998) or indirectly predicted lower burnout by impacting the academics' perceptions of job demands or resources (Barkhuizen et al., 2014). On the other hand, characteristics such as Type-A behaviours were found to predict higher burnout levels (Jamal, 1999b; Otero-López et al., 2008). The results of the few studies that have examined the interaction between personal factors and occupational factors (e.g., Gomes et al., 2013; Navarro et al., 2010) indicate that academics can draw on their personal resources to reduce the negative impact of work demands (Ghorpade et al., 2011).

Consistent with the Job Demands-Resources model (JD-R) and the reported findings in various occupational settings showing job demands to adversely affect burnout levels (Maslach et al., 1996; Maslach & Leiter, 1997; Schaufeli & Bakker, 2004), this review also found job demands to be significant predictors of faculty burnout. The reviewed studies confirmed the negative contribution of workload and value incongruence on reported burnout among academics (e.g., Barkhuizen et al., 2014; Siegall & McDonald, 2004), thus supporting the Maslach and Leiter (1997) model with respect to the negative influence of workload and value conflict. The

reviewed studies also identified other occupational demands that predicted faculty burnout: namely, negative and demanding task characteristics, higher total numbers of students taught, and over-qualification (e.g., Navarro et al., 2010; Pretorius, 1994). Moreover, the role of resources in contributing to lower burnout resonates with the JD-R model in general, and Maslach and Leiter's (1997) model in particular, concerning the potential benefits of social support, rewards, and control (e.g., Fernet et al., 2004; Rothmann et al., 2008). However, although having more opportunities for professional growth was found to be a significant occupational resource that predicted lower levels of faculty burnout, this factor is not addressed in the model by Maslach and Leiter (1997).

This review also showed that, although burnout is an occupational syndrome, factors outside the workplace can exacerbate the situation and lead to either greater burnout (e.g., daily hassles, negative life events, family-related stressors) or lower burnout levels (e.g., friends and family support; Otero-López et al., 2008; Sahu & Misra, 1995). Moreover, work-home conflict was found to be a significant predictor of faculty burnout that surprisingly has been examined in only a few studies to date (Gomes et al., 2013; Singh & Bush, 1998; Zhong et al., 2009). Future research is recommended to more closely examine these variables, given that family-related stressors may, to some extent, be confounded with occupational demands and resources.

Consequences of Burnout

Consistent with the JD-R model and empirical findings demonstrating the adverse effects of burnout on employee well-being and performance (Maslach et al., 1996; Schaufeli & Enzmann, 1998), this review also confirmed that higher burnout levels may lead to lower psychological and physical well-being as well as occupational satisfaction in post-secondary faculty. In sum, higher levels of burnout have been found to correspond with greater anxiety,

depression, psychological complaints, poor health, disengagement, dissatisfaction, as well as turnover intentions in faculty members (e.g., Barkhuizen et al., 2014; Zhong et al., 2009). This underscores the importance of faculty burnout with respect to more global measures of well-being and psychological adjustment.

Limitations and Directions for Future Research

This review highlights three main theoretical and methodological limitations of the existing research on faculty burnout. First, in approximately half of the reviewed studies, a theoretical framework for examining burnout was not apparent, with only the Maslach definition of burnout being provided or a more general reference to theories of stress. Given the prevalence of theories specific to burnout, future research on faculty burnout informed by well-developed theoretical frameworks, such as the Job Demands-Resources model (JD-R), is recommended. The JD-R is a well-known model that accounts for both critical antecedents (job demands and resources) and outcomes (health and performance) of burnout experiences; it is generalizable across occupational settings due to not imposing limitations as to specific job demands or resources (Schaufeli & Taris, 2014).

The second limitation is primarily methodological in nature and pertains to each of the studies reviewed having used self-report instruments, quantitative methods, and correlation or regression analysis for examining burnout. Evaluating more objective measures of work quality and quantity, such as the number of working hours, teaching load, or observer ratings of the working conditions (Demerouti et al., 2001), could help to reduce self-report bias. Additionally, there exists a paucity of research on the developmental aspect of burnout (Maslach et al., 2001) with research lacking, at the time of writing, on the progression of burnout over time in post-secondary faculty. Accordingly, qualitative or mixed method designs could provide a deeper

understanding of mechanisms and processes on how burnout develops, how different antecedents contribute to experiencing burnout, and how burnout leads to negative outcomes.

Additionally, as the majority of studies were cross-sectional in nature, there exists limited empirical evidence as to development of burnout over time in post-secondary faculty. The results of the review, moreover, did not shed light on the directionality of the relationships between burnout and related constructs due to mainly reporting correlational analyses that do not provide evidence of causality. To address this research gap, longitudinal data are also needed to examine more effectively possible reciprocal causality, how academics' burnout changes over time, as well as the mechanisms that underlie observed changes, with such methods also affording more powerful statistical techniques (e.g., latent growth analysis). Although there is a general complexity involved in researching these interconnected and multifaceted human factors in different populations, longitudinal research with faculty member also presents limitations. Given that recruitment and high attrition represent critical potential drawbacks of longitudinal research with faculty, this developmental focus may, thus, be more immediately and efficiently addressed by way of the qualitative analysis of in-depth interviews and text mining of detailed responses provided by post-secondary faculty. Finally, the results of the review are limited by the size and scope of the scattered existing research. Thus, future larger-scale research is needed to examine the generalizability of the findings observed. Whereas some of the identified themes (e.g., overload, role conflict, motivation) are consistently related to burnout across countries and educational contexts, other findings concerning other variables examined in single studies (e.g., productivity pressure, work typology) are in need of replication across samples.

The present review suggests potentially valuable directions for future research on faculty burnout. Concerning the antecedents of burnout in faculty, the job demands and resources

explored in the studies that were reviewed are largely general in nature and common across occupational settings, and do not adequately capture the multifaceted nature of academic responsibilities and employment. Future studies should, thus, examine factors specific to the academic profession, such as pressure for publications or positive teaching evaluations (e.g., among pre-tenure faculty), as well as institutional policies, and teaching- and service-related demands. Given limited research on the relationship between burnout and interpersonal factors in post-secondary faculty (i.e., instructional dissent; Frisby et al., 2015), there exists a clear need for further study of the influence of interpersonal factors on burnout experiences in academics with respect to both student- and colleague-related demands and resources. Similarly, the influence of factors outside the workplace on faculty burnout, such as work-home conflict (e.g., Singh & Bush, 1998; Zhong et al., 2009) and familial obligations, warrant further investigation. Moreover, an important corollary of conducting larger-scale research on this topic is the much-needed use of more advanced statistical techniques in future studies to provide a more nuanced perspective on the specific nature of observed relations between faculty burnout and salient correlates (e.g., structural equation modelling, multi-level methods).

The literature that has been reviewed additionally provides evidence concerning the consequences of faculty burnout at the individual level, such as negative effects on well-being and performance. Researchers are, therefore, encouraged to explore other outcomes, such as those of an interpersonal or organizational nature, to understand better the effects of professorial burnout on students, colleagues, and institutions. The present review further indicated that the interaction between personal and external factors was under-examined in existing research, with only seven studies at the time of writing having explored both occupational and personal factors as predictors of faculty burnout. Further research is thus needed to examine how various personal

as well as structural and workplace factors interact and combine to influence faculty members' experiences of burnout in academia.

As afforded by an anticipated continued increase in research on faculty burnout, comprehensive meta-analytic analyses of the nature and relative magnitude of emerging relations between predictors of burnout in post-secondary faculty internationally are needed to understand more clearly which factors are most critical to address, so as to develop effective interventions and policy initiatives. Once a substantive and consistent corpus of research on burnout antecedents is available, intensive meta-analysis should prove particularly informative for evaluating the relative strength of presently under-examined predictors (e.g., publication pressure, tenure status) thus serving to better inform the focus of faculty development efforts. Finally, future research on faculty who have successfully avoided burnout and maintained their academic engagement and well-being is warranted (Maslach et al., 1996), to provide a more in-depth examination of the coping strategies used by faculty to avoid experiences of burnout. For example, a recent review of emerging research on critical antecedents of subjective well-being in post-secondary faculty by Salimzadeh, Saroyan, and Hall (2017) represents a useful complementary approach to examining faculty development, in terms of predictors of positive outcomes. Similarly, research with post-secondary adult learners suggests that conceptual frameworks examining salient predictors of resilience (e.g., individual differences in traits and coping styles) may also prove beneficial for informing future research with faculty on how to prevent burnout experiences (Dunn, Iglewicz, & Moutier; 2008).

Conclusion

As outlined in the reviewed studies, burnout is experienced by many academics in post-secondary institutions internationally. Findings show various occupational factors, personal

characteristics, and stressors both within and outside the workplace to contribute to burnout levels, with adverse consequences of burnout observed for individual academics but also bearing potential concern and consequences for students, colleagues, and the institution. Although individual-level interventions are, of course, strongly recommended to help academics deal with workplace demands (e.g., effective coping, work management or relaxation techniques), we believe that there is also a need for more fundamental, institutional efforts to deal with faculty burnout. Considering the substantial contribution of occupational factors to burnout levels, interventions that target both individuals as well as the work demands and resources are recommended (Maslach et al., 2001). The six types of workplace dimensions (workload, control, value, fairness, reward, and community) as proposed by Maslach and Leiter (1997) and highlighted in this review may also represent a useful starting point for improving work environments. Finally, a more detailed examination of the effects of context-specific factors in higher education can further inform institutional reform.

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Appendix A

Table 2

Results of the Review of Faculty Burnout

Study	Context / sample	Measure of burnout / analysis	Demographic variables	Correlates of burnout	Antecedents of burnout	Outcomes of burnout
Abdi et al. (2012)	Iran / 45 faculty members	22-item MBI / correlation		Organizational citizenship behaviours (-): - Conscientiousness - Courtesy - Sportsmanship		
Azeem & Nazir (2008)	India / 300 faculty members	MBI-HSS (frequency) / Mann-Whitney test for difference	Academic status (EE)			
Barkhuizen et al. (2014)	South Africa** / 595 academic staff, 49.9% male	MBI-GS (frequency; exhaustion and cynicism) / SEM		- Work engagement (-) - Organizational commitment (-)	- Job demands (workload and quantitative demands, +) - Job resources (supervisor support, role clarity, and task characteristics, -) - Dispositional optimism (indirect effect)	- Health problems (+)
Bilge (2006)	Turkey / 194 academic staff, 39.7% male	22-item MBI / stepwise regression	Academic status (EE, PA), gender (DP)		- Intrinsic satisfaction (-) - Extrinsic satisfaction (PA+)	

Blix et al. (1994)	USA / 158 tenure-track faculty, 79% male	MBI-ES (frequency) / correlation, ANOVA, and chi- square	Years of experience (EE-, DP-)	EE: - Work stress (+) - Health problems (+) - Job change (+) - Coping ability (-) - Satisfaction (-)	
Byrne (1991)	Canada / 219 faculty members, 47.5% male	MBI-ES (frequency) / setwise regression	Gender (EE, PA), age (EE-, PA+), level of students (PA+)		
Byrne (2013)	Ireland / 100 faculty members, 55% male	MBI-ES (frequency) / stepwise regression			Satisfaction with: - Hours of work (EE-) - Promotion prospects (EE-, DP-) - Work undertaken (DP-, PA+)
Doyle & Hind (1998)	UK / 582 Psychology faculty members, 55.7% male	MBI-ES (frequency) / stepwise regression	Gender (DP)		
Fernet et al. (2004)	Canada / 398 faculty members, 70.3% male	22-item MBI (frequency) / hierarchical moderated regression	Age (EE-) gender (EE), rank (EE)		- Job demands (EE+, DP+) - Job control (EE- DP-, PA+) - Self-determination (EE-, DP-, PA+) - Job control* self-determination (for high self-determined)
Frisby et al. (2015)	USA / 113 faculty members, 34.5%	EE from a Modified MBI (frequency) / correlation		- Instructional dissent (+)	
Ghorpade et al. (2007)	USA** / 263 faculty members, 54% male	MBI-ES (frequency) / hierarchical regression	Gender (EE, DP), academic status (EE, DP, PA), age (EE-)		- The Big-Five personality characteristics (-)

Ghorpade et al. (2011)	USA** / 263 faculty members, 54% male	MBI-ES (frequency) / stepwise regression	Gender (EE, DP), academic status (EE, DP, PA), age (EE-)	- Role conflict (EE+, DP+) - Role ambiguity (PA-) - The Big-Five personality traits: Extraversion (EE-) Emotional stability (EE-, PA+) Agreeableness (DP-, PA+) - Role ambiguity*openness to experience (EE) - Role ambiguity*openness to experience (DP) - Extraversion*role conflict - Conscientiousness*role ambiguity (PA)
Gomes et al. (2013)	Portugal / 333 faculty members, 38.7% male	MBI-ES (frequency) / SEM		- Stress (work overload, the need to increase scientific productivity, and the home-work interface, work conditions) - Cognitive appraisals (mediator)
Gonzalez & Bernard (2006)	USA / 37 department chairs and 156 full time undergraduate faculty, 71.2% male	MBI-ES / categorical regression	Age (DP-), years experience (EE-)	EE: - Workload intensity (+) - Academic workload typology (-) - Years in service (-)
Jamal (1999a)	Canada and Pakistan Canada** / 420 college faculty, 57% male Pakistan** / 335 college faculty, 65% male	22-item MBI (Likert) / correlation		Canada and Pakistan: - Stress (+) - Intrinsic motivation (-) - Turnover intention (+) Pakistan: - Job involvement (-)

Jamal (1999b)	Canada and Pakistan Canada** / 420 college faculty, 57% male Pakistan** / 335 college faculty, 65% male	22-item MBI (Likert) / correlation, moderated regression for Type A		Canada and Pakistan: - Turnover intention (+) - Type-A behaviour (+) - Job satisfaction with pay, work, and supervisor (-) Pakistan: - Job satisfaction with co-workers (-)	- Stress*Type-A behaviours
Jamal & Baba (2001)	Canada** / 420 college faculty, 57% male	22-item MBI (Likert) / correlation		- Type-A behaviour (+) - Social support (-) - Job satisfaction (-)	
Lackritz (2004)	USA** / 265 faculty members, 54% male	MBI-ES (frequency) / correlation, <i>t</i> -test	Gender (EE, DP), academic status (EE, DP, PA), age (EE-)	- Total number of students (EE+, DP+) - Number of graduate students (EE+, DP+) - Teaching load (EE+) - Time grading (EE+) - Service time (EE+) - Time in work (EE+, PA+) - Student evaluation (DP-, PA+) - Office hours (PA+)	
Li et al. (2013)	China / 268 faculty in humanities and social sciences, 51.5% male	MBI-GS / correlation	Teaching experience (E), professional area (E, CY), level of education (E), age (CY, PA)	- Turnover (+) - Satisfaction (-) - Motivation (-)	

McClenahan et al. (2007)	UK / 166 faculty members, 63.2 % male	MBI-GS (frequency; exhaustion and cynicism) / hierarchical linear regression	Job contract	- Psychological distress and anxiety (+) - Satisfaction (-)	- Demands (+) - Support (-)	
Meier (1984)	USA / 320 faculty members, 43.4% male	MBI-HSS (frequency and intensity) / correlation		- Depression (+) - Order (-)		
Navarro et al. (2010)	Spain / 193 research faculty, 65.8% male	22 item MBI Spanish version / maximum likelihood estimation			EE: - Overload (+) - Role conflict (+) - Over qualification	- Stress symptoms (+)
					DP: - EE (+)	
					PA: - DP (-)	
Otero-López, et al. (2008)	Spain / 813 faculty members, 55% male	MBI-ES (frequency) / stepwise regression			- Friend support (EE-, DP-) - Family support (DP-, PA+) - Daily hassles (EE+, PA-) - Optimism (EE-, DP-, PA+) - Work hours (EE+, DP+) - Type-A behaviours (EE+) - Hardiness (EE+, PA-) - Life events (EE+)	
Pretorius (1994)	South Africa / 94 faculty members, 69% male	22-item MBI / regression			- Role conflict (EE+) - Number of students (EE+, DP+) - Role ambiguity (DP+) - Decision making (PA+)	

Rothmann & Barkhuizen (2008)	South Africa** / 595 academic staff, 49.9% male	MBI-GS and DP from MBI-ES / MANOVA	Age (E-, PA+)		
Rothmann et al. (2008)	South Africa / 270 academic staff, 48.9% male	MBI-GS (frequency; exhaustion and cynicism) / SEM, MANOVA		- Job demands (+) - Resources (-) - Optimism (-)	- Ill health (+)
Sahu & Misra (1995)	India / 120 female college faculty	MBI-HSS / correlation		- Family related stress (EE+, DP+, PA-) - Total life stress (EE+, DP+) - Society related stress (DP+)	
Siegal & McDonald (2004)	USA / 135 faculty members, 61% male	22-item MBI (intensity) / correlation, mediation		- Job satisfaction (EE-, DP-, PA+) - Person-organization value congruence (EE-, DP-, PA+) - Intention to leave (EE+, DP+, PA-) - Less non-work activities (EE+, DP+, PA-)	- Satisfaction (-) - Less time on teaching and professional development (+)

Singh & Bush (1998)	USA / 258 tenured marketing faculty, 88% male	22-item MBI / correlation, polar extreme approach	Age (EE-), number of children at home (EE+)	- Research burnout (EE+, DP+) - Intrinsic motivation (EE-, DP-) - Lack of performance contingent rewards (EE+, DP+) - Work-home conflict (EE+, DP+) - Social support (EE-, DP-, PA+)	
Singh et al. (1998)	USA/ 328 Faculty members, 80% male	Research-related burnout measure (by authors) / SEM	Tenure status	- Intrinsic motivation (-) - Lack of perceived rewards (+, only for tenured)	- Job satisfaction (-, only for non-tenured)
Teven (2007)	USA / 48 college faculty, 56% male	21-item MBI (Likert) / correlation		- Teacher motivation (EE-, DP-) - Job satisfaction (EE-, DP-) - Caring (EE-, DP- PA+) - The Big-Five personality traits (-)	
Tümekaya (2007)	Turkey / 283 faculty members, 65.7% male	22-item MBI (intensity) / <i>t</i> -test, stepwise regression	Gender (EE), age (EE-, DP-), rank (EE)	- Adaptive humour (EE-, DP-, PA+),	- Maladaptive humour (EE+, DP+, PA-) - Coping humour (PA+)
van Emmerik (2002)	Netherland / 1067 academic staff, 62.2% male	EE from the Dutch MBI / moderated regression	Gender (interaction effect)	- Role clarity (+) - Work pressure (+) - Support of work superior and colleagues (-) - Gender*supportive departmental culture - Gender*practical assistance in department	

Vera et al. (2010)	Spain / 170 faculty members, 60% male	MBI-GS and DP from MBI-ES / ANOVA	- Intrinsic satisfaction (-) - Engagement (-)	
Zhang & Zhu (2008)	China / 164 college faculty, 22.6% male	22-item MBI (Likert) / correlation, multiple regression	- Job satisfaction (-)	- Deep acting (EE-, DP-, PA+) - Surface acting (DP+)
Zhong et al. (2009)	China / 300 faculty members, 51.7% male	MBI-GS / path analysis	- Stress (factors intrinsic to the job, management role, relationships with others, career and achievement, organizational structure and climate, work-home interference, +)	- Depression (+) - Poor Health (+)

**These samples have been analysed in more than one study.

Note. MBI = Maslach Burnout Inventory, MBI-ES = Maslach Burnout Inventory-Educational Survey, MBI-GS = Maslach Burnout Inventory-General Survey, MBI-HSS = Maslach Burnout Inventory-Human Services Survey, EE = Emotional Exhaustion, DP = Depersonalization, PA = Personal Accomplishment, E = Exhaustion, CY = Cynicism, SEM = Structural Equation Modelling, + = Positive relationship, - = Negative relationship

Bridging Manuscript (Chapters 2-3)

In the previous chapter, a systematic review of factors related to faculty burnout was presented. Predictors, correlates, and outcomes of faculty burnout were examined in the 36 empirical studies identified by a rigorous search of the published empirical literature. The Job Demands-Resources model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) was used as a guiding framework for synthesizing the scattered existing empirical findings related to faculty burnout. Accordingly, the themes related to faculty burnout were categorized into demographic characteristics, job demands, job resources, personal factors, well-being outcomes, and performance-related outcomes.

Overall, the results of the present review showed that most existing studies, with the exception of a few (e.g., Barkhuizen, Rothmann, & Vijver, 2014; Fernet, Guay, & Senécal, 2004; Gomes, Faria, & Gonçalves, 2013), have been descriptive in nature, have not been informed by well-developed theoretical frameworks pertaining to occupational burnout, and have been limited to quantitative analyses including correlation, regression, or tests of mean differences. More specifically, the results show that job demands such as workload (Barkhuizen et al., 2014), lack of perceived rewards (Teven, 2007), as well as role conflict and ambiguity (Ghorpade, Lackritz, & Singh, 2011; Navarro, Mas, & Jiménez, 2010; Pretorius, 1994) predict higher levels of faculty burnout. Additionally, job resources such as social support (McClenahan, Giles, & Mallett, 2007; Van Emmerik, 2002) and perceived opportunities for control (Fernet et al., 2004) predicted lower levels of faculty burnout. Moreover, a few personal characteristics and psychological variables such as optimism (Rothmann, Barkhuizen, & Tytherleigh, 2008), Type-A behavior (Jamal & Baba, 2001), self-determination (Fernet et al., 2004), and the Big Five

personality characteristics (Ghorpade, Lackritz, & Singh, 2007) were examined in relation to faculty burnout. Findings indicated that these variables were correlated with burnout, have direct effects on faculty burnout, mediate the relationship between job characteristics and burnout (e.g., coping potential as a mediator; Gomes et al., 2013), or moderate the relationship between job characteristics and burnout (e.g., the Big Five personality characteristics as a moderator; Ghorpade et al., 2011). Finally, the role of demographic characteristics in relation to burnout was contradictory and inconclusive, with some studies finding significant relationship between demographic variables and experienced burnout (e.g., Fernet et al., 2004; Ghorpade et al., 2007; 2011; McClenahan et al., 2007), and others showing no relationship at all.

In sum, the review manuscript highlighted several research gaps and called for studies on faculty burnout that are grounded on well-established theoretical frameworks (Zábrowská et al., 2017), and it encourages the use of more advanced statistical analysis. The next chapter outlines findings from a study guided by the Job Demands-Resources model that focused on both positive and negative indicators of faculty occupational well-being, namely engagement and burnout, respectively. Two of the main identified gaps were addressed in the second manuscript presented in the next chapter. The first is related to the nature of examined job characteristics. Most of the job demands and resources examined to date in relation to burnout have been general to all occupational settings and have not specifically tapped into the context of faculty work in academia. In addition to the examined general features of occupations, faculty working in academia face different expectations such as publishing novel research, high-quality teaching, supervising and mentoring students, engaging in service and administration, and dealing with tenure and promotion processes (Kinman, 2014; Zábrowská et al., 2017). It is therefore important to consider these aspects of the academic profession when examining occupational

characteristics of faculty work. With respect to personal and psychological variables, evidence concerning the variables that can account for the psychological mechanisms underlying the relationship between job characteristics and burnout is scarce (Fernet et al., 2013), especially among faculty members. In the present study, the mediating impact of frustration of basic psychological needs between job characteristics and indicators of well-being was investigated to shed light on the abovementioned psychological mechanisms.

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Chapter 3

Occupational Factors and Faculty Occupational Well-being:

Investigating the Mediating Role of Need Frustration

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Abstract

Literature on predictors and outcomes of faculty well-being is scattered and not extensive. The Job Demands-Resources model offers an insightful lens to examine predictors and outcomes of burnout and engagement. This model, however, does not account for the psychological mechanisms underlying the experience of burnout and engagement nor their respective consequences. We addressed this gap and investigated the mediating impact of frustration of basic psychological needs on the relationship between academic job characteristics and faculty well-being. Online survey data were collected from 592 faculty employed in 13 English-speaking, research-intensive universities across Canada. The questionnaire measured faculty perceptions of a) pressure and support in relation to research, teaching, service, supervision, tenure, and promotion, b) work-home conflict, c) workplace frustration of psychological needs, as well as d) varied well-being outcomes (engagement, commitment, burnout, psychological and physical health). Structural equation modeling showed that work-home conflict and low academic resources positively predicted burnout and health problems but negatively predicted engagement. Work-home conflict, academic pressure and insufficient support were further observed to correspond with greater frustration of basic psychological needs in faculty that, in turn, negatively influenced their well-being. Study findings highlight the need for future research to better identify aspects of academic work that obstruct or sustain faculty basic psychological needs in order to provide need supportive academic culture to bolster faculty well-being.

Occupational Factors and Faculty Occupational Well-being:

Investigating the Mediating Role of Need Frustration

The university sector has undergone extensive and widespread changes such as restructuring and massification, greater pressure for accountability, and reduction in funding. These and other factors have contributed to a stressful academic employment climate (Biron, Brun, & Ivers, 2008; Kinman, 2014; Tytherleigh, Webb, Cooper, & Ricketts, 2005), resulting in adverse effects on faculty competence, productivity, and well-being (Blix, Cruise, Mitchell, & Blix, 1994; Ford, Cerasoli, Higgins, & Decesare, 2011; Kinman, 2001). Empirical evidence suggests that faculty well-being is a serious concern in academia, with the primary cited threats to well-being being excessive job demands and lack of adequate resources (e.g., Sabagh, Hall, & Saroyan, 2018; Salimzadeh, Saroyan, & Hall, 2017; Watts & Robertson, 2011). Faculty well-being plays a critical role for faculty optimal functioning and productivity (Ford et al., 2011), with diminished well-being levels detrimentally impacting both faculty and institutional productivity as well as student learning and performance (Byrne, Chughtai, Flood, Murphy, & Willis, 2013). The costs of faculty performing at suboptimal levels thus extend beyond individual faculty to multiple stakeholders including taxpayers and governments who directly and indirectly support higher education efforts.

What do we know about the determinants of well-being and optimal functioning of faculty, and how comprehensive is this knowledge? Reviews of the literature on faculty well-being show that the existing empirical research is not extensive, but rather scattered and fragmented (Sabagh et al., 2018; Salimzadeh et al., 2017). The Job Demands-Resources model (the JD-R) offers an insightful lens to examine faculty well-being and functioning. The model has been consistently used to understand predictors and outcomes of occupational well-being and

functioning (e.g., burnout, work engagement, performance; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli & Taris, 2014). While this model accounts for occupational predictors of well-being, it does not adequately account for the psychological mechanisms underlying the experience of burnout and engagement nor their respective consequences. Empirical findings that have used the JD-R framework highlight that personal and psychological variables need to be considered along with occupational factors (Doménech-Betoret, Lloret-Segura, & Gómez-Artiga, 2015; Maslach & Leiter, 2016). However, the psychological mechanisms underlying the experience of burnout and engagement have been underexamined (Fernet, Austin, Trépanier, & Dussault, 2013), especially among post-secondary faculty (Sabagh et al., 2018). In the present study, we addressed this gap and investigated the mediating impact of frustration of basic psychological needs on the relationship between job characteristics and faculty well-being and functioning.

Theoretical Frameworks

Job Demands-Resources Model (JD-R)

The Job Demands-Resources model highlights two distinct variables as antecedents of well-being and functioning in occupational settings: job demands and resources. *Job demands* (e.g., workload, time pressure, role conflict) are features of an occupation that require continuous physical or mental effort and have potential physical and psychological costs (e.g., exhaustion, fatigue). Certain types of demands, referred to as challenge demands (e.g., job complexity, problem solving), can motivate employees and lead to positive affective states such as engagement (Albrecht, 2015; Crawford, LePine, & Rich, 2010; Podsakoff, LePine, & LePine, 2007). Conversely, hindrance demands (e.g., role conflict, emotional demands, administrative hassles) thwart growth and achievement, activate negative emotions, and lead to greater burnout

and reduced performance (Crawford et al., 2010). In contrast, *job resources* (e.g., autonomy, social support, job security) are aspects of an occupation that buffer the negative aspects of job demands, facilitate an employee's growth and development, and help them achieve their performance goals (Demerouti et al., 2001). Resources are important because they enable individuals to deal with job demands and facilitate goal attainment (extrinsic factors), while also satisfying the individual's basic needs for autonomy, competence, and relatedness (intrinsic factors; Ryan & Deci, 2000; Schaufeli & Bakker, 2004).

According to the Job Demands-Resources model and empirical findings, the imbalance between job demands and job resources predicts greater burnout and reduced engagement, and negatively influences health and performance (Bakker & Demerouti, 2007; Demerouti et al., 2001; Schaufeli & Taris, 2014). Burnout is a psychological syndrome characterized by emotional exhaustion, depersonalization, and perceived reduced personal accomplishment (with exhaustion and depersonalization being the core dimensions) caused by long-term exposure to demanding situations (Maslach & Jackson, 1981; Maslach, Jackson, & Leiter, 1996). In contrast, engagement is characterized by vigour and dedication and conceptualized as a state of positive, energetic, and affective connection with work activities (e.g., feelings of productivity and fulfilment; Maslach & Leiter, 2016; Schaufeli, Bakker, & Salanova, 2006).

The JD-R model posits that high job demands and lack of job resources are predictors of strain and specifically burnout that, in turn, predicts negative outcomes and especially health problems (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). This pathway is referred to as the "health impairment process." Conversely, the availability of job resources is assumed in this model to be the primary antecedent of occupational engagement that, in turn, predicts positive outcomes and better performance (the "motivational process"; Schaufeli & Bakker, 2004). The

existence of both the health impairment and motivational processes has been supported by empirical evidence in various occupational contexts (for a review see Schaufeli & Taris, 2014). There are studies, however, showing that motivational and health impairment processes, rather than being independent are interrelated. For instance, findings have revealed that job demands and job resources are linked to both burnout and engagement through the intervening variable of need satisfaction (Fernet et al., 2013). Additionally, job demands and resources have been found to predict both health and performance outcomes through psychological needs and motivation (Trépanier, Forest, Fernet, & Austin, 2015). These findings illustrate the relevance of examining burnout and engagement simultaneously to determine potential crosslinks in the JD-R model (Schaufeli & Taris, 2014).

Although job demands and resources are considered as primary predictors of well-being in the workplace, there is also a need to consider potential moderating and mediating variables to further understand the relationship of job characteristics with health and occupational outcomes (Schaufeli & Taris, 2014). In other words, individuals do not always react the same way to similar working environments (Parkes, 1994), with demographic and certain psychological characteristics potentially playing moderating roles in how individuals experience their work settings (Bakker, Demerouti, & Sanz-Vergel, 2014; Fernet, Guay, & Senécal, 2004). For instance, existing research shows that the effect of a supportive departmental culture on emotional exhaustion to be moderated by faculty gender, with female faculty being especially likely to benefit from available supports (Van Emmerik, 2002). Additionally, research findings revealed a three way interaction between job demands, control, and self-determined motivation such that job control reduced the impact of job demands for highly self-determined faculty (Fernet et al., 2004).

The examination of potential mediating variables can also shed light on the underlying mechanisms or processes through which job characteristics translate into health and occupational outcomes. Accordingly, Self-determination Theory posits that basic psychological needs for autonomy, competence, and relatedness depend largely on the social context (e.g., work environment) and are vital for individual's psychological well-being (Ryan & Deci, 2000). Findings from studies conducted with K-12 teachers support this assertion by showing that psychological needs explain the relationship between job demands/resources and well-being outcomes (Aldrup, Klusmann, & Lüdtke, 2017; Doménech-Betoret et al., 2015). Although the mediating role of basic needs in the relationship between job characteristics and well-being has not been examined among post-secondary faculty, related findings do show satisfaction of basic needs and intrinsic motivation explain the relationship between collegiality/balance and perceived success in research and teaching in faculty members (Stupnisky, Hall, Daniels, & Mensah, 2017). Considered together, these findings suggest that basic psychological needs may in fact mediate the effects of employment characteristics on well-being outcomes beyond teaching or research success, such as vocational engagement, burnout, and health among post-secondary faculty members.

Self-determination Theory: Basic Psychological Needs

In Self-determination Theory, needs are defined as innate necessities for individuals' psychological growth, well-being, and motivation. Autonomy, competence, and relatedness are proposed as the three basic needs identified in this theory, with each being largely dependent on social contexts. In other words, these needs must be satisfied by one's social environment in order for an individual to maintain their motivation and well-being (Ryan & Deci, 2000). The need for autonomy highlights the importance of self-organization and being afforded the ability

to act with a sense of ownership and volition. The need for competence refers to feelings of effectiveness with respect to one's actions. Finally, the need for belonging or relatedness pertains to feeling connected with others and belonging to a community (Ryan & Deci, 2000, 2008).

From this theoretical perspective, satisfying or thwarting these three needs will have critical consequences on individuals' psychological health, growth, and motivation. Researchers have also asserted that each need incrementally predicts psychological growth, internalization, and well-being (Gagné & Deci, 2005). In summary, various job stressors such as job insecurity, role stressors, and work-home conflict negatively predict satisfaction of psychological needs (e.g., De Cooman, Stynen, Van den Broeck, Sels, & De Witte, 2013; Van den Broeck, Ferris, Chang, & Rosen, 2016), whereas job resources such as job autonomy, social support, and feedback positively influence employees' need satisfaction (e.g., Fernet et al., 2013; Olafsen & Halvari, 2017; Van den Broeck et al., 2016). In terms of outcome variables, satisfaction of each need is positively related to occupational outcomes such as job satisfaction, affective commitment, engagement, and performance, as well as well-being more generally (e.g., Trépanier, Fernet, & Austin, 2013, 2016; Van den Broeck et al., 2016), and negatively related to outcomes such as turnover intentions and burnout (e.g., Fernet et al., 2013; Trépanier et al., 2013; Van den Broeck et al., 2016).

Empirical evidence also suggests that satisfaction of psychological needs has a mediating relationship between job characteristics and different outcome variables. For instance, need satisfaction was found to mediate the effects of job demands on burnout, exhaustion, engagement, life satisfaction, and work enthusiasm (Aldrup et al., 2017; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008; Van den Broeck et al., 2016). Similarly, need satisfaction has also been observed to mediate the effects of job resources on burnout and

engagement (e.g., Doménech-Betoret et al., 2015; Fernet et al., 2013). However, these mediational pathways have not to date been demonstrated in non-academic occupational settings and the role of need satisfaction in the JD-R model has remained underexplored in post-secondary faculty. Even less explored is the mediating role of need frustration in the JD-R model (Van den Broeck et al., 2016).

It is important to highlight that some researchers suggest that need frustration or thwarting is not simply equivalent to low need satisfaction, but instead reflects the active obstruction of the basic psychological needs (Bartholomew, Ntoumanis, Cuevas, & Lonsdale, 2014). In contrast, other researchers suggest that frustration and satisfaction of basic psychological needs are not distinct dimensions but rather two opposing ends of a continuum of psychological functioning (Alp et al., 2018; Bidee, Vantilborgh, Pepermans, Griep, & Hofmans, 2016; Tóth-Király, Morin, Bőthe, Orosz, & Rigó, 2018). Research findings consistently show psychological need frustration to mediate the detrimental effects of bullying, job insecurity, work-home conflict, job pressure, as well as cognitive, physical, and emotional demands on workers' occupational engagement and burnout, as well as their physical and psychological health (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Stebbings, Taylor, Spray, & Ntoumanis, 2012; Trépanier, Fernet, & Austin, 2015, 2016; Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012). However, there is notably limited empirical research examining the well-being implications of working contexts that thwart individuals' basic psychological needs (Vallerand, Pelletier, & Koestner, 2008), particularly in academic employment settings.

Emerging research on faculty motivation and development, nevertheless, suggests a significant, positive association between satisfaction of basic psychological needs and

engagement (Silman, 2014) as well as teaching practices and research success among faculty members (Stupnisky, BrckaLorenz, Yuhas, & Guay, 2018; Stupnisky et al., 2017). Institutional efforts to support basic psychological needs in faculty further predict better job satisfaction over time (Smith et al., 2018). Need satisfaction has also been found to predict lower level of strain due to goal conflict and greater teaching motivation among German junior academics (i.e. doctoral and post-doctoral researchers; Esdar, Gorges, & Wild, 2016). Concerning the contextual predictors of basic psychological need satisfaction in faculty members, Stupnisky et al. (2017) additionally found perceptions of collegiality and balance between academic tasks (e.g., teaching vs. research) to predict greater need satisfaction among pretenure faculty. However, to date, there exists limited research examining well-being and job characteristics in relation to basic psychological needs in faculty members, with research having focused exclusively on satisfaction aspect (vs. frustration) of need satisfaction. This points to the need for research that examines the implications of academic work contexts (e.g., research, teaching, service) for frustrating faculty members' basic psychological needs and their well-being.

The Present Study

Recent research on faculty members' well-being highlights that academia has become an increasingly stressful environment for faculty members such that levels of burnout and strain in this profession are now comparable to those of other professionals such as teachers and physicians (Watts & Robertson, 2011; Winefield et al., 2003). These findings accentuate the importance of researching factors that impact faculty members' functioning and burnout. With the exception of a few (Barkhuizen, Rothmann, & Vijver, 2014; Fernet et al., 2004), most reported studies are descriptive or do not rely on coherent and well-established theoretical frameworks (Sabagh et al., 2018; Zábrodská et al., 2017). Although specific job demands (e.g.,

workload, task characteristics) and resources (e.g., social support, rewards, control) have been examined cross-sectionally in relation to faculty burnout (e.g., Barkhuizen et al., 2014; Fernet et al., 2004; Singh & Bush, 1998), the majority of these job characteristics are general across occupations and do not specifically assess the unique composition of faculty work requirements (e.g., research, teaching, service duties).

The review of the theoretical frameworks and the empirical research above has highlighted five main gaps that are addressed in the present study. First, concerning the predictors of well-being, there is a paucity of research examining job demands and resources that are specific to the professorial context and faculty work. To address this gap, in the present study, perceived academic pressure and academic support in relation to main compositions of faculty work (i.e., research, teaching, service, supervision, as well as process of applying for tenure and promotion) were examined as predictors of well-being. Further, a more general construct of work-home conflict was also examined due to it having been previously demonstrated to correspond with faculty burnout and engagement (Sabagh et al., 2018; Záborská et al., 2017), and more generally with faculty physical and psychological health (Kinman & Jones, 2003, 2008).

Second, little attention has been paid to investigating the psychological mechanisms underlying the relationship between job characteristics, and employees' health and functioning (Fernet et al., 2013), especially among academics (Sabagh et al., 2018). The potential mediating role of frustration of needs for autonomy, competence, and belonging was thus explored in the present study. Although existing research on basic psychological needs has suggested that need satisfaction and need frustration are distinct and should be examined simultaneously (e.g., Costa, Ntoumanis, & Bartholomew, 2015; Vansteenkiste & Ryan, 2013), there is emerging evidence

showing these constructs to represent two poles of a continuum (Alp et al., 2018; Bidee et al., 2016; Tóth-Király et al., 2018) and thus can pose potential analytical difficulties when assessed simultaneously due to multicollinearity. For this reason, in the present study we relied on one of the need constructs, namely frustration of basic psychological needs, due to this construct to date having been underexamined compared to need satisfaction.

Third, there is a lack of research examining the full JD-R model in academic employment contexts to investigate the influence of contextual antecedents (academic demands and resources) on faculty occupational well-being. Occupational well-being is considered as a positive evaluation of different aspects (affective, social, motivational, cognitive, and psychosomatic) of one's occupation. Although the affective aspect is the most central part, it is also important to consider other aspects (Van Horn, Taris, Schaufeli, Schreurs, 2004). We considered four important dimensions of occupational well-being in the present study, namely burnout, engagement, commitment, psychosomatic complaints and psychological health (Buitendach & Abed Moola, 2011; Van Horn et al., 2004; Zacher & Schmitt, 2016). Fourth, this study further addressed a paucity of research on the extent to which relations between these variables were moderated by gender in post-secondary faculty (i.e., measurement and structural invariance). Whereas some research indicates that female faculty experience greater emotional exhaustion than their male colleagues (e.g., Bilge, 2006; Doyle & Hind, 1998; Ghorpade, Lackritz, & Singh, 2011), other studies show no gender differences in burnout (e.g., Li, Li, & Sun, 2013; McClenahan, Giles, & Mallett, 2007; Rothmann & Barkhuizen, 2008). The inconsistency points to the necessity of further research on the moderating effects of faculty gender. Finally, this study was conducted in the Canadian context, making it among the first that examines faculty well-being and functioning in research-intensive universities across Canada.

Research Questions and Hypotheses

The present study set out to explore the following three research questions: 1) Do work-home conflict, academic pressure, and academic support predict faculty members' well-being? 2) Does need frustration mediate the relationship between job characteristics and faculty well-being?; and 3) Is the hypothesized model invariant across female and male participants? Five research hypotheses were formulated to guide the investigation.

Hypothesis 1: Higher need frustration is predicted by more work-home conflict and academic pressure, and fewer academic resources. According to the Self-determination Theory, basic psychological needs largely depend on social context (e.g., work environment; Ryan & Deci, 2000). More specifically, demanding and supporting aspects of work environment have implications for basic psychological needs in employees, with empirical studies showing job demands and resources impact employees' perceived need satisfaction and need frustration (e.g., Aldrup et al., 2017; De Cooman et al., 2013; Stupnisky et al., 2017; Van den Broeck et al., 2016).

Hypothesis 2: Higher need frustration predicts greater burnout and lower engagement. As proposed by Self-determination Theory, satisfaction or frustration of the three basic psychological needs have consequences for individuals' well-being, growth, and motivation (Ryan & Deci, 2000). Studies conducted in work settings also show that employees' basic needs have implications for their burnout and engagement (e.g., Bartholomew et al., 2014; Silman, 2014; Stebbings et al., 2012; Trépanier et al., 2016). We, therefore, expected to observe need frustration to correspond with poorer levels of faculty burnout and engagement.

Hypothesis 3: Need frustration mediates the relationship of job demands and resources with burnout in the “health impairment process” and the relationship between

job resources and engagement in the “motivational process” as outlined in the JD-R model.

Selected findings based on the JD-R framework have suggested that need frustration is a mediator for the relationship of job characteristics and occupational outcomes (e.g., Bartholomew et al., 2014; Trépanier et al., 2016; Vander Elst et al., 2012). This hypothesis is also in line with Self-determination Theory which proposes that when psychological needs are not satisfied by a given social context (i.e., work environment) it can negatively impact well-being levels (Ryan & Deci, 2000). We therefore expected to see need frustration mediate the relationship between job demands and resources on one hand, and burnout and engagement on the other. More specifically, need frustration was expected to mediate the relationship of work-home conflict, academic pressure, and academic resources with burnout (health impairment process), as well as the relationship between academic resources and engagement (motivational process).

Hypothesis 4: Greater burnout predicts poorer health and commitment. According to the job demands-resources model and empirical evidence (e.g., Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014), greater burnout should lead to negative health consequences and lowered performance as part of the health impairment process.

Hypothesis 5. Greater engagement predicts greater commitment. The job demands-resources model and empirical evidence further suggest that work engagement should predict better performance outcomes (i.e., occupational commitment) as part of the motivational process (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014).

Gender invariance. With respect to the question of invariance as a function of gender, the present study is among the first to test the measurement and structural invariance across female and male faculty members. Existing findings concerning the impact of gender on faculty

burnout is inconclusive (Sabagh et al., 2018) with some studies showing higher emotional exhaustion among females (e.g., Bilge, 2006; Ghorpade et al., 2011), others indicating higher depersonalization among males (e.g., Doyle & Hind, 1998), and yet others revealing no gender differences (e.g., Li et al., 2013; McClenahan et al., 2007). We did not, therefore, formulate a specific moderation hypothesis for the third research question but instead examined model invariance by gender in an exploratory manner.

Methods

Participants and Procedure

Participants included 592 tenure-track faculty members (10.04% response rate) from 13 Canadian English research-intensive universities¹. Whereas emerging findings highlight the specific psychological challenges faced by non-tenure-track (e.g., contract) faculty in Canada (e.g., CAUT, 2018), the present study examined tenure-track faculty specifically to evaluate tenure and promotion demands/resources along with teaching, research, service and supervision demands/resources as specific under-examined aspects of the JD-R model with post-secondary faculty. Slightly more than half of participants were male (51.6%), had a mean age of 48.21 years ($SD = 8.77$), and had a mean of 16.92 years of experience ($SD = 11.29$) as a faculty member. The distribution of study participants by rank was as follows: assistant professors (21.6%), associate professors (38.5%), full professors (38.6%), and tenure-track instructors (1.3%). Ethics

¹ Participants' university affiliations included University of Alberta, University of British Columbia, University of Calgary, Dalhousie University, University of Manitoba, McGill University, McMaster University, University of Ottawa, Queen's University, University of Saskatchewan, University of Toronto, University of Waterloo, and University of Western Ontario. These universities belong to a larger subset of research-intensive Canadian university collectively referred to as the U15.

approval was obtained from McGill University Research Ethics Board prior to data collection. Faculty members were contacted using email addresses that were extracted from university websites. Data collection took place in Summer and Fall 2016. Faculty affiliated with universities in Central Canada (Quebec and Ontario) were contacted in Summer 2016, whereas the data from the remaining universities were collected in December 2016. In the invitation to participate, participants were provided a description of the study and a link directing them to the study consent form and the questionnaire. For ethics approval documentation and the study questionnaire, see Appendix B.

Study Measures

The survey was administered in English and measured faculty members' perceptions of job demands, job resources, frustration of basic psychological needs, burnout, engagement, commitment, and physical and psychological health. Tables 3 and 4 present the means, standard deviations, reliability statistics (Cronbach's alpha), and latent correlations and covariance between the variables.

Job demands. Measures of work-home conflict and academic pressure were used to assess job demands in the present study. Five items ($\alpha = .92$) rated on a five-point Likert scale ranging from 1 (*never*) to 5 (*very often*) were used to measure faculty members' perceived work-home conflict (Frone & Yardley, 1996; Gutek, Searle, & Klepa, 1991). A sample item in this category was: "After work, I come home too tired to do some of the things I'd like to do." To measure academic pressure as perceived by faculty participants, a five-item, six-point scale ($\alpha = .74$) ranging from 0 (*none*) to 5 (*to a very large extent*) was developed for this study. The items measured faculty experiences of pressure in the following domains: teaching, research, service,

mentorship and supervision, as well as tenure and promotion. For each of the job demands, the items were parceled into two indicators by averaging unweighted scores in each parcel. The items loaded on two latent factors: work-home conflict and academic pressure.

Job resources. Faculty perceived job resources were measured using a five-item scale developed for this study ($\alpha = .81$). Faculty participants indicated how much support they felt in the following domains: teaching, research, service, mentoring and supervision, and tenure and promotion. Items were rated on a six-point Likert scale ranging from 0 (*none*) to 5 (*to a very large extent*). The five scale items were parceled into two indicators by averaging unweighted scores in each parcel, with the two manifest indicators loaded into the latent factor of job resources.

Frustration of basic psychological needs. Faculty members' perceptions of need frustration were assessed using an adapted version of the Psychological Need Thwarting Scale (PNTS; Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2011). The scale comprises 12 items with three subscales, each including four items that measure the need for autonomy ($\alpha = .85$), sense of relatedness ($\alpha = .79$), and competence ($\alpha = .85$). All items are scored on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include: "I feel prevented from making choices with respect to my academic work" (autonomy), "I feel I am rejected by those around me" (relatedness), and "Situations occur in which I am made to feel incapable" (competence). This scale has shown acceptable internal consistency and reliability in multiple prior studies (Bartholomew et al., 2014; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). Three means were calculated for the three subscales and used as indicators of the latent factor of need frustration.

Burnout. Faculty burnout was assessed using 14 items from the Maslach Burnout Inventory-Education Survey (MBI-ES; Schwab, Maslach, & Jackson, 1996) measuring both emotional exhaustion (nine items; $\alpha = .92$) and depersonalization (five items; $\alpha = .74$) on a seven-point Likert scale ranging from 0 (*never*) to 6 (*every day*). Some scale items were slightly modified to refer to the context of higher education (e.g., the word “student” was replaced by “people (students, colleagues, or administrative staff)”). Sample items are as follows: “I feel fatigued when I get up in the morning and have to face another day at work” (emotional exhaustion) and “I don’t really care what happens to some people I interact with at work” (depersonalization). The MBI is the most widely used measure of burnout internationally (Schaufeli, Leiter, & Maslach, 2009) with most studies on faculty burnout having employed this measure (for a review, see Sabagh et al., 2018). The MBI has adequate psychometric properties with respect to reliability, convergent validity, and factorial structure (Maslach et al., 1996; Schaufeli & Enzmann, 1998). The mean score for emotional exhaustion and depersonalization were modelled as manifest indicators of the latent burnout variable.

Engagement. Five items from the shortened version of the Utrecht Work Engagement Survey (UWES; Schaufeli & Bakker, 2003) were used to measure faculty members’ occupational vigour (three items; $\alpha = .86$) and dedication (two items; $\alpha = .83$) on a 7-point Likert scale ranging from 0 (*never*) to 6 (*every day*). Sample items included: “When I get up in the morning, I feel like going to work” (vigour) and “I am enthusiastic about my job” (dedication). Prior studies consistently confirm the validity, reliability, and the factor structure of this engagement measure (Barkhuizen et al., 2014; Schaufeli & Bakker, 2003; Schaufeli, Bakker, &

Salanova, 2006). The mean scores for vigour and dedication were modelled as manifest indicators of the latent occupational engagement variable.

Commitment. The strength of faculty members' commitment to and identification with their institution, as well as their occupation, was measured using nine items adapted from the Affective Commitment Scale developed by Meyer, Allen, and Smith (1993). The scale measures perceived organizational commitment (six items; $\alpha = .85$) and occupational commitment (three items; $\alpha = .80$) on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items for organizational and occupational commitment are: "This institution has a great deal of personal meaning for me" and "I dislike being an academic" (reverse coded). Empirical studies have shown this commitment measure to demonstrate acceptable internal reliability (e.g., Allen & Meyer, 1996). The mean scores for organizational and occupational commitment were calculated and used as manifest indicators of the latent commitment variable.

Physical and psychological health problems. Two scales were included in the questionnaire to measure physical health problems (Cohen & Hoberman, 1983) and psychological health (Goldberg & Williams, 1988). A six-item checklist ($\alpha = .78$) adapted from the Cohen-Hoberman Inventory of Physical Symptoms (CHIPS; Cohen & Hoberman, 1983) was used to measure physical illness symptoms (e.g., sleep problems, headaches, and poor appetite). The scale uses a five-point scale ranging from 1 (*not at all*) to 5 (*5 or more times a month*). A higher mean score for this scale is equivalent to more frequently experienced illness symptoms. With respect to psychological health, the 12-item General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988) was used to measure faculty members' mental health ($\alpha = .90$). It includes two sets of six-item questions measuring positive and negative mental health indicators

on a four-point Likert scale. A sample item for the positive subscale is: “In the past few weeks, have you been feeling reasonably happy, all things considered?” rated from 0 (*more so than usual*) to 3 (*much less than usual*). A sample item for the negative subscale is: “In the past few weeks, have you been thinking of yourself as a worthless person?” rated from 0 (*not at all*) to 3 (*much more than usual*). The scale has shown acceptable psychometric properties in prior studies (e.g., Jackson, 2007; Sánchez-López & Dresch, 2008). The mean scores for physical health (illness symptoms) and psychological health problems (higher scores on both subscales reflect more problems) were modelled as manifest indicators of an overall health problems latent variable.

Results

Rationale for Analysis

The hypothesized model was tested using structural equation modeling (SEM) with *Mplus* version 7.4 (Muthén & Muthén, 2012). Since the data set contained variables that did not have a normal distribution as well as a small percentage of missing data for some variables, the MLR estimator was used. The MLR is a maximum likelihood estimator that is robust to non-normality and accounts for missing data by using all the available data (Muthén & Muthén, 2012). The results of the analysis were checked for Heywood cases as indicated by negative variance, correlations greater than one, and non-positive definitive parameter matrix (Kline, 2011). Additionally, the following were examined as goodness of fit indicators: chi-square test of model fit with degrees of freedom, Bentler Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA) with 90% confidence intervals, and Standardized Root Mean Square Residuals (SRMR). Values greater than 0.9 for the incremental fit indices, CFI and TLI, represent acceptable fit (Hoyle, 1995). Values lower than 0.08 for

RMSEA with the upper bound confidence interval lower than 0.1 indicate a reasonable error of approximation (Browne & Cudeck, 1992). Values lower than 0.08 for SRMR suggest acceptable fit (Hu & Bentler, 1999).

Table 3

Descriptive Statistics

Latent variable	<i>n</i> per scale	<i>Number</i> <i>of items</i>	Actual range	Observed Range	<i>M</i>	<i>SD</i>	α
Work-home conflict	582	5	1-5	1.0-5.0	3.41	1.02	.92
Academic Pressure	575	5	0-5	0.0-5.0	3.37	0.91	.74
Academic Support	565	5	0-5	0.0-5.0	2.33	1.05	.81
Autonomy frustration	576	4	1-7	1.0-7.0	3.58	1.47	.85
Relatedness frustration	579	4	1-7	1.0-7.0	3.02	1.31	.79
Competence frustration	575	4	1-7	1.0-7.0	3.00	1.46	.85
Emotional exhaustion	554	9	0-6	0.0-6.0	2.46	1.39	.92
Depersonalization	576	5	0-6	0.0-4.8	0.97	0.98	.74
Vigour	570	3	1-7	1.0-7.0	4.71	1.52	.86
Dedication	570	2	1-7	1.0-7.0	5.54	1.41	.83
Physical health problems	568	6	1-5	1.0-4.5	1.77	0.70	.78
Psychological health problems	564	12	0-3	0.0-2.8	0.94	0.46	.90
Organizational commitment	578	6	1-5	1.0-5.0	3.07	0.89	.85
Occupational commitment	592	3	1-5	1.3-5.0	4.29	0.75	.80

Table 4

Estimated Latent Correlation and Covariance Values

Latent Variable	1	2	3	4	5	6	7	8
1. Work-home conflict	-	0.49	-0.44	0.80	1.05	-0.39	0.43	-0.29
2. Academic pressure	.59	-	-0.15*	0.56	0.55	-0.21*	0.24	-0.15
3. Academic support	-.43	-.17*	-	-0.71	-0.59	0.36	-0.24	0.31
4. Need frustration	.64	.51	-.54	-	1.21	-0.83	0.48	-0.53
5. Burnout	.78	.47	-.41	.70	-	-0.88	0.62	-0.51
6. Engagement	-.30	-.19*	.26	-.50	-.49	-	-0.34	0.58
7. Health problems	.77	.50	-.41	.67	.80	-.46	-	-0.17
8. Commitment	-.53	-.33	.54	-.76	-.69	.80	-.55	-

Estimates above the diagonal are latent covariance values. Estimates below the diagonal are latent correlations.

All correlations and covariance significant at $p < .001$ except * = $p < .05$.

Preliminary Analyses

Multivariate analysis of variance (MANOVA) was performed on the indicators of the examined constructs to check whether they differed significantly according to the categorical demographic variables (gender and rank). Box's M test was not significant for gender, indicating equal variance-covariance matrices of the examined dependent variables across the variable levels, allowing for the Wilk's Lambda to be interpreted (Meyers, Gamst, & Guarino, 2016). Results showed the dependent variables to be significantly affected by faculty gender (Wilk's $\Lambda = .84$, $F(17, 439) = 4.99$, $p < .001$) with post-hoc contrasts (Bonferroni correction, $\alpha = .0029$) showing most dependent variables to differ by gender. More specifically, female faculty reported higher levels of emotional exhaustion, frustration of autonomy and competence needs, physical health problems, academic pressure, and work-home conflict, as well as lower levels of occupational commitment, relative to their male counterparts.

With respect to differences as a function of faculty rank, the result on the Box's M test was significant ($p < .001$), indicating unequal variance-covariance matrices of the examined dependent variables across the variable levels, necessitating the use of Pillai's trace for interpreting the effect of rank (Meyers, Gamst, & Guarino, 2016). The results showed most dependent variables to be significantly affected by faculty rank (Pillai's trace = .42, $F(68, 1784) = 3.08$, $p < .001$). Post-hoc contrasts ($\alpha = .0001$ for variables violating the assumption of homogeneity of variance; Bonferroni correction with $\alpha = .0029$ for the remaining variables) indicated that, compared to assistant and associate professors, full professors reported higher levels of emotional exhaustion, frustration of competence needs, physical and psychological health, academic pressure, work-home conflict, and lower levels of occupational commitment.

With respect to differences in study variables as a function of age, zero-order correlations showed significant relations between age and the dependent variables (i.e., emotional exhaustion, engagement, academic pressure and support, work-home conflict, health problems) to be notably small in magnitude with the average correlation being .11 in magnitude.

Main SEM Analysis

A two-step modeling approach using fully latent structural equation models was adopted to analyze the hypothesized model (Anderson & Gerbing, 1988; Byrne, 2013). In the first step, the full measurement model was re-specified as a confirmatory factor analysis (CFA) to determine data fit. Once satisfactory fit was achieved (e.g., following necessary modifications), the proposed structural model with directional relations was subsequently assessed (Kline, 2011). The initial measurement model fit the data well ($\chi^2(90) = 380.38$ CFI = .943, TLI = .914, RMSEA = .074 [.066, .082], SRMR = .048), with all factor loadings exceeding 0.5. Similarly, results showed adequate fit indices for our final structural model ($\chi^2(90) = 380.38$, CFI = .943, TLI = .914, RMSEA = .074 [.066, .082], SRMR = .048). Parameter estimates for direct effects are presented in Table 5 with model parameters presented in Figure 1.

Findings showed work-home conflict ($\beta = .35, p < .001$) and academic pressure ($\beta = .25, p < .001$) to predict greater need frustration, whereas academic support predicted lower need frustration ($\beta = -.34, p < .001$). Higher need frustration also predicted greater burnout ($\beta = .36, p < .001$) and especially lower levels of engagement ($\beta = -.54, p < .001$). Greater burnout, in turn, predicted more health problems ($\beta = .38, p < .001$) and marginally lower affective commitment ($\beta = -.15, p = .099$). Stronger engagement, in turn, predicted greater affective commitment ($\beta = .53, p < .001$). In addition to the hypothesized paths, greater health problems were predicted by

higher levels of work-home conflict ($\beta = .35, p < .001$). Greater commitment was also directly predicted by higher academic support ($\beta = .17, p < .05$) and lower need frustration ($\beta = -.32, p < .001$). Finally, this hypothesized model explained substantial variance in need frustration (53.5%), burnout (67.5%), engagement (25.3%), health (71.5%), and affective commitment (85.7%).

To examine the mediating role of need frustration in the relationship between demands and resources, on the one hand, and burnout and engagement on the other, bootstrapping analysis was conducted (1000 samples) and the 95% confidence interval was calculated (see Table 6 for indirect effects and confidence intervals). Results showed need frustration to mediate the effects of both work-home conflict (indirect $\beta = .12, p < .001$) and academic pressure (indirect $\beta = .09, p < .001$) on burnout levels. Accordingly, whereas need frustration was a partial mediator of the relationship between work-home conflict and burnout (direct effect remained significant and large; $\beta = .59$), need frustration fully mediated the relationship between academic pressure and burnout. Additionally, need frustration fully mediated the relationship between academic support and burnout (indirect $\beta = -.12, p < .001$) as well as the relationship between academic support and engagement (indirect $\beta = .19, p < .001$). Finally, need frustration also fully mediated the effects of both work-home conflict (indirect $\beta = -.19, p < .001$) and academic pressure (indirect $\beta = -.13, p < .001$) on engagement.

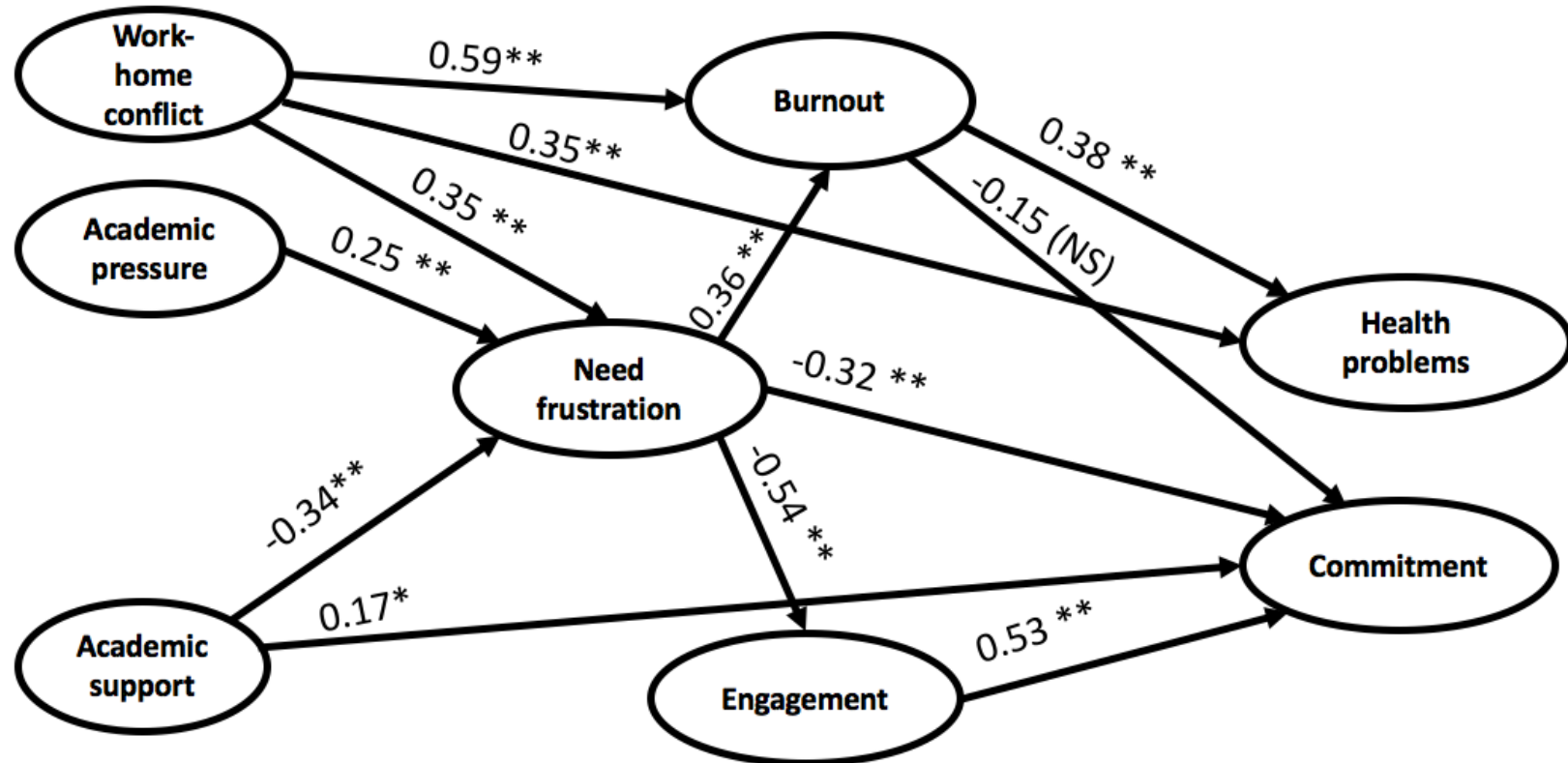


Figure 1. The final model, * $p < .05$, ** $p < .001$.

Table 5

Maximum Likelihood Estimates of the Direct Effects for the Hypothesized Model

Parameter	B	SE_B	β
Work-home conflict→need frustration	0.45**	0.08	.35**
Work-home conflict→burnout	0.82**	0.07	.59**
Work-home conflict→engagement	-0.02	0.09	-.02
Work-home conflict→health problems	0.20**	0.05	.35**
Work-home conflict→commitment	0.00	0.05	.00
Pressure→need frustration	0.37**	0.08	.25**
Pressure→burnout	-0.08	0.07	-.05
Pressure→engagement	0.15	0.10	.10
Pressure→health problems	0.03	0.03	.04
Pressure→commitment	0.02	0.04	.04
Support→need frustration	-0.42**	0.06	-.34**
Support→burnout	0.03	0.05	.03
Support→engagement	-0.02	0.07	-.01
Support→health problems	-0.00	0.02	-.01
Support→commitment	0.09*	0.04	.17*
Frustration→burnout	0.38**	0.06	.36**
Frustration→engagement	-0.56**	0.08	-.54**
Frustration→health problems	0.05	0.04	.10
Frustration→commitment	-0.14**	0.04	-.32**
Burnout→health problems	0.16**	0.04	.38**
Burnout→commitment	-0.06	0.03	-.15
Engagement→health problems	-0.04	0.02	-.10
Engagement→commitment	0.22**	0.03	.53**

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

Table 6

Maximum Likelihood Estimates of the Indirect Effects and Bootstrap 95% Confidence Interval of the Standardized Indirect Effects

Parameter	B	SE_B	β	Lower	Upper	Mediation
Work-home conflict→frustration→burnout	0.17	0.04	.12	.07	.18	Partial
Academic pressure→frustration→burnout	0.14*	0.04	.09*	.04	.15	Full
Academic support→frustration→burnout	-0.16	0.04	-.12	-.19	-.07	Full
Work-home conflict→frustration→engagement	-0.25	0.06	-.19	-.28	-.11	Full
Academic pressure→frustration→engagement	-0.21	0.06	-.13	-.21	-.06	Full
Academic support→frustration→engagement	0.24	0.04	.19	.12	.26	Full

All paths are significant at $p < .001$ except * = $p < .05$.

Supplemental SEM Analysis: Gender Invariance

Multi-group SEM further assessed measurement then structural invariance of our main hypothesized model between female and male faculty members (see Kline, 2011; Sass & Schmitt, 2013). First, a configural model (Byrne, 2013; Kline, 2016) without parameter constraints provided a baseline χ^2 against which the first comparison (model constrained to equal factor loadings) was made. An increasingly restrictive and logically ordered set of parameter constraints was then imposed to assess invariance across groups (e.g., constraints on factor loadings, structural regression paths, error variances-covariance).

The *configural model* showed adequate data fit ($\chi^2(180) = 454.86$, CFI = .944, TLI = .916, RMSEA = .073 [.064, .081], SRMR = .050) and revealed no differences in residual covariance, cross-loadings, or structural paths. A follow-up model examining *weak measurement invariance* also fit the data well ($\chi^2(190) = 469.44$, CFI = .943, TLI = .919, RMSEA = .071 [.063, .079], SRMR = .053) and did not differ significantly from the configural model ($\Delta\chi^2(10) = 12.56$, $p = .249$) suggesting that factor loadings and the residual covariance were invariant across gender. Our model for *strong measurement invariance* also showed adequate data fit ($\chi^2(207) = 584.23$, CFI = .923, TLI = .899, RMSEA = .079 [.072, .087], SRMR = .075), but significantly differed from the previous model ($\Delta\chi^2(17) = 114.94$, $p < .001$) suggesting that intercepts did differ between male and female participants. Finally, a model of *weak structural invariance* fit the data well ($\chi^2(215) = 498.18$, CFI = .942, TLI = .927, RMSEA = .067 [.060, .075], SRMR = .059) and did not significantly differ from the weak measurement invariant model ($\Delta\chi^2(25) = 27.50$, $p = .331$), suggesting that path coefficients were equivalent for male and female faculty. Finally, the test of *strong structural invariance* additionally imposing equality on

intercepts did not support strong structural invariance ($\Delta\chi^2(17) = 114.37, p < .001$). In sum, test of measurement and structural invariance showed that the models for male and female faculty to be equivalent with respect to factor loadings, residual covariance, and path coefficients, but not intercepts. Thus, although the tests of model invariance showed no evidence of weak measurement and structural model differences as a function of gender, it did suggest mean level differences between male and female faculty on the study variables (see Preliminary Analyses section for directions of gender differences).

Discussion

The main goal of the present study was to further understand the psychological mechanisms underlying the relationships between job characteristics and well-being among Canadian faculty members. More specifically, we linked the Job Demands-Resources model with Self-determination Theory and investigated whether frustration of faculty members' psychological needs for autonomy, sense of relatedness, and competence can explain the relationship between work-home conflict, academic pressure, and academic support on the one hand and burnout, engagement, health, and commitment on the other. Overall, our results supported the hypothesized model in showing novel empirical evidence that need frustration significantly mediates the relationship between job characteristics and well-being among faculty. The extent to which the present findings support each study hypothesis, as well as practical implications for academics and higher education stakeholders, is outlined below.

Hypothesis 1: Job Characteristics and Need Frustration

With respect to the anticipated relationship between job characteristics and need frustration, the results supported Hypothesis 1 and revealed that job demands, work-home conflict, and academic pressure positively predict need frustration. In contrast, academic support

as a job resource negatively predicted need frustration among faculty members. Accordingly, we can expect that faculty who perceive higher job demands or lower job resources to also perceive greater frustration due to their psychological needs not being satisfied. These findings are in line with the existing Self-determination Theory research showing psychological needs to be more likely frustrated in achievement contexts that lack social support (e.g., bullying among nurses, Trépanier et al., 2016) or where work-home conflict and job insecurity are prevalent (e.g., Bartholomew et al., 2011; Stebbings et al., 2012; Vander Elst et al., 2012). Additionally, these findings are consistent with recent studies showing greater collegiality and balance between academic tasks to predict greater need satisfaction among pretenure faculty (Stupnisky et al., 2017), as well as intervention results showing programs that support need satisfaction in STEM faculty to enhance their satisfaction of basic psychological needs (Smith et al., 2018). Overall, the findings of the present study are in line with existing empirical evidence and underscore the dependence of basic psychological needs on an academic employment context.

Hypothesis 2: Need Frustration, Engagement, and Burnout

In line with the existing research (e.g., Bartholomew et al., 2014; Trépanier et al., 2016; Vander Elst et al., 2012), the results of the present study also supported Hypothesis 2 in showing greater need frustration in post-secondary faculty to predict more problematic levels of burnout and, to a greater extent, lower vocational engagement. This finding is consistent with existing research on basic need satisfaction with faculty showing need satisfaction to directly predict occupational engagement (Silman, 2014) and job satisfaction (Smith et al., 2018), and indirectly (through intrinsic or autonomous motivation) predict better faculty teaching and research outcomes (Stupnisky et al., 2017, 2018). Moreover, the results support existing findings showing need satisfaction and need frustration to correspond with burnout and engagement in other

occupational contexts (e.g., Aldrup et al., 2017; Fernet et al., 2013; Stebbing et al., 2012; Trépanier et al., 2013). Overall, these results are in line with Self-determination Theory in showing that basic psychological needs are important for individual well-being specifically in the context of tenure-track academic employment.

Hypothesis 3: The Mediating Role of Need Frustration

The results of mediation analysis additionally provided support for Hypothesis 3 in showing need frustration to indeed be a mediator of the effects of multiple variables on faculty burnout including work-home conflict (partial mediation), academic pressure (full mediation), and academic support (full mediation). Similarly, the present findings showed need frustration to mediate the effects of work-home conflict (full mediation), academic pressure (full mediation), and academic support (full mediation) on faculty engagement. The substantial mediating role of needs frustration thus sheds much-needed light on the psychological mechanisms underlying the relationship between specific job characteristics and well-being in academic employment settings. However, although most results showed full mediation (direct effect no longer significant), the partial mediation observed for the relationship between work-home conflict and burnout (direct effect remained significant and large) clearly suggests that other potential mediators of this relationship should be considered. For example, cognitive appraisals (Gomes, Faria, & Gonçalves, 2013), intrinsic motivation and self-efficacy (Karatepe, 2015), as well as work-related passion (Trépanier, Fernet, Austin, Forest, & Vallerand, 2014) have each been found to act as mediators of the relationship between job characteristics and burnout and engagement and could similarly be examined as mediators in academic employment contexts.

Nevertheless, the results of the mediation analysis overall are in line with our hypotheses and similar research with other occupations (e.g., Bartholomew et al., 2014; Trépanier et al.,

2015, 2016; Vander Elst et al., 2012) showing need frustration to mediate the relationship between job characteristics (e.g., bullying, job insecurity) and occupational well-being (e.g., burnout, engagement). The results are also in congruence with a finding by Stupnisky et al. (2017) that highlight the mediating role of need satisfaction when examining the relationships between academic employment characteristics (collegiality, task balance) with teaching and research success. Moreover, additional non-hypothesized mediational paths from the job demands to engagement further support the assertion that the motivational and health impairment processes in the JD-R model are not entirely independent but rather interrelated in nature (Fernet et al., 2013).

Hypotheses 4 and 5: Affective Commitment and Health Problems

Whereas study findings revealed that burnout did predict further health problems in tenure-track faculty as hypothesized, contrary to our expectations it did not significantly predict commitment, thus Hypothesis 4 is only partially supported. This finding is inconsistent with the Job Demands-Resources model in which it is proposed that burnout should lead to not only lower physical and psychological health but also poorer performance. However, given that two other strong predictors (engagement and need frustration) accounted for a large amount of variance in the commitment variable, it may have not been possible for burnout to explain additional variance in these models. Need frustration seems to act as a rival variables for burnout in predicting commitment. Nevertheless, the hypothesized health impairment processes were partly supported in this model. Moreover, Hypothesis 5 was also supported as engagement was found to positively predict affective commitment thus supporting the motivational processes in the JD-R model proposing work engagement to be the primary predictor of performance-related outcomes.

Supplemental Findings: Gender Differences

Preliminary findings showed female faculty to report lower well-being than male faculty; a set of results that is consistent with existing studies on gender differences in faculty well-being (for reviews, see Sabagh et al., 2018; Salimzadeh et al., 2017). These findings were further supported by supplemental analyses showing strong measurement invariance to not be assumed in our faculty sample; in other words, that intercepts for multiple study variables were indeed different for female as compared to male faculty members. However, the results of supplemental tests of both weak measurement and structural invariance showed the overall structure of the hypothesized model with respect to factor loadings and path coefficients was nevertheless equivalent for female and male faculty members. Taken together, this set of results suggests that although there are clear mean-level differences in occupational variables and well-being among tenure-track faculty in the present study, these differences did not translate into different patterns and magnitude of relations between the study variables as a function of gender.

Study Limitations and Future Directions

The present study findings are qualified by specific limitations which in turn point to directions for future research. The first limitation is that the study relied only on self-reported data that can increase risk of common method bias. While the target interpersonal and psychological experiences of interest in this study were efficiently assessed using self-reported measures, future studies using more objective measures of job demands, resources, health problems, well-being, and performance are encouraged to complement the present findings. For example, objective records of actual publications and grants submitted by tenure-track faculty would constitute an ecologically valid measure of academic productivity (Christensen, Dyrstad, & Innstrand, 2018; Woo, Park, & Kim, 2017). Similarly, number of working hours, courses

taught, time spent on service activities could also be used as indicators of academic job demands. A second study limitation is the cross-sectional design that does not allow for examining the directionality of relationships between variables. Future research applying a longitudinal design or diary studies are thus recommended to capture changes in study variables over time.

It is recommended that future studies examine broader range of academic work tasks (e.g., publication pressure, service obligations, teaching loads, grantsmanship, decision making, autonomy) and job characteristics (e.g., balance between academic tasks, collegiality, clear expectation for tenure and promotion; Stupnisky et al., 2017). This recommendation is supported by only a small amount of variance being explained in occupational engagement by the job resources variables examined in this study, despite job resources being proposed as the main predictors of engagement in the JD-R model. Relatedly, it is suggested that researchers distinguish between challenge and hindrance demands in future research given the potential for differential outcomes (Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010).

It is also recommended that researchers examine other psychological and motivational variables that could mediate the relationship between job characteristics and well-being such as emotion regulation or passion (Trépanier et al., 2014), particularly given partial mediation findings showing need frustration to explain limited variance in this relationship. Finally, although the results of the test of invariance for the present sample showed that the proposed mediational model to be equivalent for female and male faculty, the generalizability of the present findings to other faculty populations remains unknown. Accordingly, future studies are encouraged to evaluate both measurement and structural invariance as a function of additional faculty demographics (e.g., ethnicity), position type (e.g., non-tenure-track vs. tenure-track faculty), institution type (e.g., Carnegie classifications), or country (e.g., Western vs. Asian post-

secondary contexts) to determine to the extent to which the present findings are applicable to particularly vulnerable or international faculty populations.

In summary, the current research represents an original and initial attempt to understand the psychological mechanisms underlying the relationship between academic job characteristics and faculty well-being from the perspective of the Job Demands-Resources Model and Self-determination Theory. Study findings acknowledge the importance of faculty having their basic psychological needs thwarted with respect to well-being outcomes, with their perceptions of their work environment with respect to academic pressure and support significantly impacting their psychological experiences as an academic. Considering that social-environmental factors have clear relationships with need frustration and well-being in the context of academic employment, it is important to revisit academic work settings to minimize faculty exposure to social, organizational, emotional, or physical aspects of faculty work setting that threaten their basic psychological needs (Bartholomew et al., 2011; Stebbings et al., 2012). Following from emerging research showing support programs targeting faculty basic needs to improve job satisfaction (Smith et al., 2018), larger-scale institutional efforts to support the psychological needs of faculty with respect to competence (e.g., skill training, workshops), relatedness (e.g., social activities, collaboration, peer mentorship), and autonomy (e.g., greater input and flexibility in departmental and tenure-related decision-making) are also needed to help faculty better manage the highly demanding nature of modern academic employment.

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Chapter 4

General Discussion

The existing empirical literature on faculty well-being is both fragmented and scattered (Salimzadeh, Saroyan, & Hall, 2017). Faculty burnout, as one aspect of faculty well-being, was chosen for further exploration in the present dissertation. A rigorous search of the literature brought to light the absence of a systematic review grounded on a well-established theory. Although one published review of burnout among university teaching staff (Watts & Robertson, 2011) was a starting point that called attention to this problem in academia, the review did not synthesize predictors, correlates, and outcomes of burnout based on a particular theoretical framework. To address this notable gap, a systematic literature search was conducted, resulting in a synthesis of empirical studies that have examined antecedents, correlates, and outcomes of burnout (Chapter 2). The results of this review highlighted the need to move beyond descriptive studies, to conduct research grounded on well-established theories, and to employ more advanced statistical analysis beyond regression and correlation analysis. Additionally, the results of the review revealed some directions for future research, some of which were addressed in the second manuscript in the present dissertation (Chapter 3). The second manuscript thus examined faculty occupational well-being in Canadian research-intensive universities, focusing on the impact of academic job demands and resources as well as the implications of frustration of basic psychological needs for the well-being of Canadian faculty. The present dissertation, therefore, provides a meaningful contribution to the literature on faculty well-being and presents some empirically informed implications to enhance faculty occupational well-being.

General Study Findings

In Chapter 2, results from the systematic review on faculty burnout shed light on antecedents, correlates, and outcomes of burnout. Informed by the Job Demands-Resources model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) as the

guiding framework for the review, antecedents of burnout were grouped into job demands, job resources, and personal or psychological factors. Overall, the results revealed that job demands, job resources, and personal characteristics are consistently correlated with or predictive of burnout. These antecedents make the most contribution to emotional exhaustion and have the least influence on the perceived personal accomplishment dimension of burnout. Consistent with the general literature on burnout (Maslach, Jackson, & Leiter, 1996; Schaufeli & Bakker, 2004), the review underscores that job characteristics contribute to faculty burnout, with high job demands or insufficient job resources leading to a greater level of experienced burnout among faculty members. More specifically, the review confirmed that job demands such as workload, value incongruence, and role conflict (e.g., Barkhuizen, Rothmann, & Vijver, 2014; Siegall & McDonald, 2004) predict greater level of burnout among faculty members. Social support, control, and opportunities for professional growth (e.g., Fernet, Guay, & Senécal, 2004; Rothmann, Barkhuizen, & Tytherleigh, 2008) are examples of job resources that negatively predict burnout.

The review also highlighted the importance of personal and psychological variables in experiencing burnout. For instance, characteristics such as optimism, hardiness, and coping abilities are of great importance in offsetting faculty burnout (e.g., Gomes, Faria, & Gonçalves, 2013; Rothmann et al., 2008). In contrast, characteristics such as Type-A behaviors are related to higher level of experienced burnout (Jamal & Baba, 2001). The review also concluded that personal and psychological variables either directly predict the experience of burnout (Blix, Cruise, Mitchell, & Blix, 1994; Otero-López, Mariño, & Bolaño, 2008; Singh & Bush, 1998) or indirectly predict burnout by impacting faculty perceptions of job demands and resources (Barkhuizen et al., 2014). Among the studies included in the review that examined personal

variables, only two attempted to shed light on the processes through which job stressors lead to burnout. They concluded that job demands and stressors negatively influence faculty perceived competence or coping potential, which in turn lead to the experience of burnout (Gomes et al., 2013; Navarro, Mas, & Jiménez, 2010). Finally, with respect to the role of demographic variables, the results of the review were largely inconclusive and, in some cases, showed contradictory impact.

Informed by the Job Demands-Resources model, the outcomes of burnout were categorized into health and performance. Only five studies had examined burnout as a predictor of certain indicators of health and performance. The results revealed that higher burnout can lead to lower physical and psychological well-being and satisfaction as well as higher risk of anxiety, depression, disengagement, and health complaints. The review also highlighted several gaps and directions for future research. For instance, the review recommended that there is a need to focus on predictors that account for academic and professorial aspects of faculty work (e.g., teaching, research, service, supervision, promotion). Additionally, examining psychological variables that shed light on the mechanisms underlying the relationship between academic job characteristics and indicators of faculty well-being was found to be scarce in the literature. Moreover, the mixed and inconclusive findings regarding the role of demographic characteristics suggested that there is a need for future research in this area.

The second manuscript of the dissertation (Chapter 3) addressed some of the gaps identified in the review. Specifically, it a) examined the academic job characteristics that predict faculty well-being, namely burnout and engagement, and b) investigated the mediating role of basic psychological needs for the relationship between occupational characteristics and faculty well-being. Additionally, it examined the extent to which the hypothesized model could be

generalized to female and male faculty members. To address these questions, data were collected from 592 faculty members employed in 13 English-speaking research universities across Canada. The study linked the Job Demands-Resources model (Demerouti et al., 2001) with the Self-determination Theory (Ryan & Deci, 2000) and investigated whether frustration of needs for autonomy, relatedness, and competence can explain the relationship between work-home conflict, academic pressure and academic support on the one hand, and burnout, engagement, health, and commitment on the other. Overall, the results of the structural model supported the mediating role of need frustration for the relationship of academic job pressure, academic support, and work-home conflict with faculty burnout and engagement.

The results also revealed that academic support predicts lower need frustration among participating academics. In contrast, academic pressure and work-home conflict were found to be predictive of higher frustration of basic needs. In line with the existing research (e.g., Bartholomew, Ntoumanis, Cuevas, & Lonsdale, 2014; Trépanier, Fernet, & Austin, 2016; Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012), the results of this study showed that greater need frustration predicts higher levels of burnout and lower levels of engagement. These results underscore the importance of the social context and work setting for satisfying academic employees' basic psychological needs and consequently their well-being. Based on the results of the mediation analysis, we asserted that need frustration fully or partially mediates the relationship between the examined job demands and resources on the one hand, and burnout and engagement on the other. This mediation sheds light on the underlying mechanism through which job characteristics hinder faculty well-being. More specifically, demanding characteristics and lack of sufficient resources can frustrate faculty members' basic psychological needs, which in turn, can lead to lower occupational well-being—represented by burnout and engagement in

the present study. The structural model also confirmed the implications of burnout for faculty members' health: those who experienced higher burnout also reported higher physical and psychological health problems. Additionally, faculty members' level of engagement appears to have a significant influence on their affective commitment: those experiencing higher engagement are more likely to experience higher affective commitment in the workplace.

The results of the multivariate analysis of variance showed that among the background variables, gender and rank have significant impacts on a majority of the examined variables. Overall, the results revealed that female faculty members are more vulnerable to the present challenging climate of academia. Additionally, full professors have a more favourable perception of occupational settings and are less vulnerable to well-being problems when compared to assistant and associate professors. However, the results of the multi-group structural equation analysis testing for invariance between female and male participants revealed that the proposed structural model is equal for female and male faculty members. This finding implies that although gender has some significant impact on the level of examined constructs and variable intercepts in the model are different, these differences do not influence structural representation, factor loadings, and path coefficients in the structural model. Thus, the two models for male and female faculty members can be considered equal.

Implications and Directions for Future Research

The significance and contribution of the present study to the literature is twofold. First, the review provides a systematic review and a structured synthesis of antecedents, correlates, and outcomes of burnout in academia. Moreover, it highlights the limitations and shortcomings of the existing empirical studies on this important topic and presents several directions for future research. Second, guided by the identified gaps and directions for future research, the empirical

study conducted on predictors and outcomes of faculty burnout and engagement in the Canadian context adds a new dimension to the existing empirical research on faculty well-being and basic psychological needs. Specifically, findings highlight the significant implications of work-home conflict as well as faculty perceived pressure and support in relation to five key aspects of professorial work (namely teaching, research, service, and supervision, as well as tenure and promotion) for faculty well-being. Additionally, by assessing the mediating role of basic need frustration, the results of the study inform the literature about the psychological processes of how elements of professorial work influence faculty well-being. Perceived pressure or demands as well as insufficient support have significant, negative impacts on faculty members' state of basic psychological needs, which in turn hinder their well-being and performance. This study complemented the literature on faculty basic psychological needs by examining frustration of basic needs in relation to job characteristics and well-being indicators. Existing research has mainly focused on satisfaction of the basic needs (e.g., Smith et al., 2018; Stupnisky, Hall, Daniels, & Mensah, 2017) and paid less attention to the mechanism underlying the relationship between job characteristics and well-being. This finding itself has two implications. First, it highlights the importance of paying attention to basic psychological needs and supporting faculty needs for autonomy, relatedness, and competence. Second, and more importantly, it underscores the critical role that social context and working environment play in frustrating or sustaining faculty needs and their well-being. A working culture that supports faculty basic needs can have significant impact on faculty motivation, well-being, and performance as suggested by the Self-determination Theory and empirical literature (Ryan & Deci, 2000; 2008; Smith et al., 2018).

It is, therefore, required to revisit academic culture to identify aspects of faculty work that can obstruct or sustain faculty basic psychological needs and consequently impact their well-

being (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011). It is important to determine demanding and supporting occupational factors by listening to faculty members and considering their lived experiences in academia. According to their insights, the goal would be to change the academic climate in order to redress potentially deteriorating factors, reinforce the positive aspects, and eventually provide an adaptive work environment that stimulate the three basic needs. Changing academic culture can be considered a time intensive target and institutional in nature, and necessarily involves multiple stakeholders in the higher education sector. The reason is that faculty well-being has repercussions not only for their own performance, but for students' learning and institutional productivity (Byrne, Chughtai, Flood, Murphy, & Willis, 2013). Additionally, it is relevant to target individuals (Maslach & Leiter, 2016) and empower faculty members with time management skills, emotion regulation, and self-regulation strategies to cope with demanding situations. Another suggestion is to support faculty who are more vulnerable and at risk of well-being problems such as female faculty and junior faculty members and to provide them with further support services that target their needs. For instance, creating social groups and communities that foster collegiality (Stupnisky et al., 2017) among faculty can further satisfy faculty needs for relatedness.

The present dissertation represents an attempt to synthesize predictors, correlates, and outcomes of burnout among post-secondary faculty members. It represent the first attempt to examine implications of basic psychological needs for faculty members' well-being and optimal functioning. The results of the study also highlight some directions for future research. The first concerns the scope of faculty well-being. Literature on faculty well-being (Kinman, 2014; Salimzadeh et al., 2017) and more specifically faculty burnout (Watts & Robertson, 2011) calls attention to the problematic and challenging nature of academia for faculty members' health and

performance. It is recommended that researchers conduct a meta-analysis on the scope of well-being among faculty members, to elicit the extent to which faculty well-being is a serious concern in academia. It is worth mentioning that in the review presented in Chapter 2, the focus was on identifying and synthesizing predictors, correlates, and outcomes of faculty burnout but this review was not a meta-analysis. The main reason was that the pool of relevant retrieved articles was small and the nature of examined constructs in relation to burnout was broad. In many cases, the examined constructs were only considered in one study, thus it was not possible to conduct a meta-analysis. Future research can target multiple indicators of faculty well-being and investigate the possibility of running a meta-analytic review on predictors and outcomes of faculty well-being.

The second direction for future research is mainly methodological. To date, almost all studies examining faculty burnout were cross-sectional, used self-report instruments and employed quantitative design. Some of the variables addressed in the second manuscript of the present dissertation (Chapter 3) could be addressed more efficiently by means of self-report measures; because relying on colleagues or other peoples could not provide adequate representation of individual's personal and psychological experience (Trépanier et al., 2016). However, there are some predictors and outcomes of burnout that can be examined using objective measures (e.g., academic pressure indicators as measured by number of course taught, service obligation). It is therefore recommended that future research move beyond self-reporting measures and include objective measures of occupational characteristics such as the number of working hours, number of courses taught per semester, number of students in classrooms, and number of students supervised. Additionally, results of student course ratings, number of publications, and department-head evaluations of performance can also be considered as

measures of performance and productivity. Considering that the majority of research on faculty well-being used cross-sectional design, there is little evidence regarding the directionality and reciprocal relationships between variables. To address this notable gap, longitudinal data and the use of more advanced statistical techniques (e.g., latent growth analysis) are needed to assess more effectively possible reciprocal relationships, how academics' well-being changes over time, and the mechanisms that underlie observed changes. Use of diary studies could also be informing to capture the daily variations in faculty well-being and their perceived work environment.

The third direction for future research is related to the target academic contexts and populations. Considering that the type of higher education institutions has implications for job demands and resources imposed on faculty members, it is suggested that researchers assess antecedents and determinants of faculty well-being in different academic contexts ranging from research-intensive universities to teaching-focused colleges. It is also worth paying attention to different pools of post-secondary faculty members such as adjunct faculty, lecturers, newly hired faculty, or pretenure faculty (Stupnisky et al., 2017), examining aspects of their occupations and work settings that hinder or foster their well-being. Although the reviewed studies were conducted in some different countries; there is a need to also examine faculty well-being in other international academic contexts such as South American, Scandinavian, European, and Asian higher education institutions. It is recommended to run larger scale, multi-sample, international studies comparing the academic culture of different countries. Multiple sample analysis should be used to test whether hypothesized models are invariant across samples of faculty employed in different counties or institutions.

The fourth direction for future research concerns the constructs examined in relation to indicators of faculty well-being. The present study was an attempt to examine academic and

professorial job characteristics; it is suggested that researchers continue assessing academic job demands and resources (e.g., balance between academic tasks, administration duties).

Additionally, as mentioned in Chapter 3, not all demands are harmful for employees' health and performance. Challenge demands (e.g., optimal complexity, problem solving) can motivate individuals and lead to positive outcomes such as engagement. In contrast, hindrance demands (e.g., role conflict, emotional demands) hinder achievement and lead to negative outcomes. It is insightful that researchers distinguish between these two types of demands since each has different theoretical and practical implications for faculty well-being (Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). Moreover, an examination of other personal and psychological variables (e.g., coping, passion, emotion regulation) is suggested to shed light on the psychological mechanisms underlying the relationship between characteristics of work context and faculty well-being. Finally, it is recommended that researchers consider predictors and outcomes that are interpersonal in nature—for instance, examining how faculty-student (Frisby, Goodboy, & Buckner, 2015) or faculty-faculty interactions can hinder or foster faculty well-being and how faculty impaired well-being or functioning can impact students' learning, collegiality, and institutional productivity.

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Appendix B

Questionnaire Items

Demographics

- What is your gender?
 - a. Female
 - b. Male
 - c. Other
- What is your age in years?
 - a. 18-25
 - b. 26-30
 - c. 31-35
 - d. 36-40
 - e. 41-45
 - f. 46-50
 - g. >50
- How many years of experience do you have
 - a. In your current institution?
 - b. As a faculty member?
- What is your discipline?
- What is your tenure status?
 - a. Non-tenure track position
 - b. Tenure track
 - c. Tenured
- What is your rank?
 - a. Assistant professor
 - b. Associate professor
 - c. Full professors
 - d. Other (Please specify)
- How many children and dependents do you have in your care?
 - a. Number of children
 - b. Number of dependents

Academic Pressure (Developed by Author)

- 0 None
- 1 To a very small extent
- 2 To a small extent
- 3 To a moderate extent
- 4 To a large extent
- 5 To a very large extent

Please indicate how much pressure you feel in the following domains:

- _____ Teaching-related activities (e.g., course development, grading, teaching improvement, etc.)
- _____ Research-related activities (e.g., getting published, obtaining grants, going to conferences, etc.)
- _____ Service activities (e.g., internal /external committees, community works, etc.)
- _____ Obtaining tenured/being promoted
- _____ Student mentoring/supervision

Academic Support (Developed by Author)

- 0 None
- 1 To a very small extent
- 2 To a small extent
- 3 To a moderate extent
- 4 To a large extent
- 5 To a very large extent

Please indicate how much support you feel to perform in the following domains:

- _____ Teaching-related activities (e.g., TA, freedom to choose the course)
- _____ Research-related activities (e.g., getting published, obtaining grants, going to conferences, etc.)
- _____ Service activities
- _____ Obtaining tenured/being promoted
- _____ Student mentoring/supervision

Work-home Conflict (Frone & Yardley, 1995)

- 1 Never
- 2 Seldom
- 3 Sometimes
- 4 Often
- 5 Very often

Based on your experiences in your current position in this academic year, please indicate how frequent you feel this way about your job:

- _____ After work, I come home too tired to do some of the things I'd like to do
- _____ On the job I have so much work to do that it takes away from my personal interests.
- _____ My significant others dislike how often I am preoccupied with my work while I am at home.
- _____ My work takes up time that I'd like to spend with family/friends.
- _____ My job or career interferes with my responsibilities at home.

Basic Psychological Need Frustration (PNTS; Bartholomew et al., 2011)

- 1 Strongly disagree
- 7 Strongly agree

The following statements aim to tap into your personal experiences at work, please indicate the extent to which you agree with the following statements:

- _____ I feel prevented from making choices with regard to my academic work.
- _____ I feel pushed to behave in certain ways.
- _____ I feel forced to follow decisions made for me.
- _____ I feel under pressure to agree with the academic work requirements I am provided with.

- _____ I feel I am rejected by those around me.
- _____ I feel others in academic settings can be dismissive of me.
- _____ I feel other people at work dislike me.
- _____ I feel other people are envious when I achieve academic success.

- _____ Situations occur in which I am made to feel incapable.
- _____ Sometimes I am told things that make me feel incompetent.
- _____ There are situations where I am made to feel inadequate.
- _____ I feel inadequate because I am not given opportunities to fulfill my potential.

Burnout (MBI-ES; Schwab, Maslach, & Jackson, 1996)

0 Never

1 A few times a year

2 Once a month

3 A few times a month

4 Once a week

5 A few times a week

6 Everyday

The following statements are about how you feel at work. Please read each statement carefully and decide how often you feel this way about your job (Please think about this academic year).

_____ I feel emotionally drained from my work.

_____ I feel used up at the end of the workday.

_____ I feel fatigued when I get up in the morning and have to face another day at work.

_____ Working with people all day is really a strain for me.

_____ I feel burned out from my work.

_____ I feel frustrated by my job.

_____ I feel I'm working too hard on my job.

_____ Working with people directly puts too much stress on me.

_____ I feel like I am at the end of my rope.

_____ I feel I treat some students, colleagues, or administrative staff as if they were impersonal objects.

_____ I've become more callous toward people since I took this job.

_____ I worry that this job is hardening me emotionally.

_____ I don't really care what happens to some people I interact with at work.

_____ I feel people at work blame me for some other problems.

Work Engagement (UWES; Schaufeli & Bakker, 2003)

- 1 Never
- 2 A few times a year
- 3 Once a month
- 4 A few times a month
- 5 Once a week
- 6 A few times a week
- 7 Everyday

The following statements are about how you feel at work. Please read each statement carefully and decide how often you feel this way about your job (Please think about this academic year).

- _____ At my work, I feel bursting with energy.
- _____ At my job, I feel strong and vigorous.
- _____ When I get up in the morning, I feel like going to work.
- _____ I am proud of the work that I do.
- _____ I am proud of the work that I do.

Physical Health (CHIPS; Cohen & Hoberman, 1983)

- 1 Not at all
- 2 About once a week
- 3 About twice a week
- 4 About four times a week

Please specify how often you have experienced these sensations or physical problems as a result of your work conditions during the past five weeks.

- _____ Sleep problems
- _____ Headaches
- _____ Muscle tension
- _____ Stomach pain (e.g., cramps)
- _____ Heart pounding or racing
- _____ Poor appetite

Psychological Health (GHQ-12; Goldberg & Williams, 1988)

- 0 More so than usual
 1 Same as usual
 2 Less than usual
 3 Much less than usual

Please specify how frequently over the past year you:

- _____ Been able to concentrate on what you are doing?
 _____ Been feeling reasonably happy, all things considered?
 _____ Felt that you are playing a useful part in things?
 _____ Felt capable of making decisions about things?
 _____ Been able to enjoy your normal day to day activities?
 _____ Been able to face up to your problems?

- 0 Not at all
 1 No more than usual
 2 Rather more than usual
 3 Much more than usual

Please specify how frequently over the past year you:

- _____ Lost much sleep over worry?
 _____ Felt constantly under strain?
 _____ Been feeling unhappy and depressed?
 _____ Been losing confidence in yourself?
 _____ Felt you could not overcome your difficulties?
 _____ Been thinking of yourself as a worthless person?

Affective Commitment (Meyer, Allen, & Smith, 1993)

- 1 Strongly disagree
 5 Strongly agree

With respect to your own feelings about your position or the particular institution for which you are now working, please indicate the degree to which you agree with each statement.

- _____ I would be very happy to spend the rest of my career in this institution.
 _____ I really feel as if this institution's problems are my own.
 _____ I think that I could easily become as attached to another institution as I am to this one (R).
 _____ I do not feel 'emotionally attached' to this institution (R).
 _____ This institution has a great deal of personal meaning for me.
 _____ I do not feel a strong sense of belonging to my institution (R).
 _____ I regret having entered academia (R).
 _____ I dislike being an academic (R).
 _____ I am enthusiastic about my academic position.



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Research Ethics Board II
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 377-0316

Project Title: Faculty Occupational Well-being in Canadian Research Universities: Investigating Job Characteristics, and the Role of Motivation and Basic Psychological Needs

Principal Investigator: Zaynab Sabagh

Status: Ph.D. Student

Department: Educational & Counselling Psychology

Supervisor: Prof. Alenoush Saroyan

Approval Period: March 10, 2016 to March 9, 2017

The REB-II reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

Deanna Collin
Ethics Review Administrator, REB I & II

-
- * All research involving human participants requires review on at least an annual basis. A Request for Renewal form should be submitted 2-3 weeks before the above expiry date. Research cannot be conducted without a current ethics approval.
 - * When a project has been completed or terminated, a Study Closure form must be submitted.
 - * Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay.
 - * Modifications must be reviewed and approved by the REB before they can be implemented.
 - * The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
 - * The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this project.
 - * The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.