

The Relationship Between Sex, Gender, and Workplace Accommodations Among Workers with

Mental Health Disorders

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Chapter 1: Introduction

In 2022, over 5 million Canadians (18%) reported having a mood, anxiety, or substance use disorder over the last 12 months (Stephenson, 2023). These disorders can be attributed to environmental, physiological, genetic, chemical, and social influences. Globally, mental health disorders have been projected to cost the economy \$16.1 trillion USD in lost productivity between 2010 and 2030, while also being a main contributor to noncommunicable disability-adjusted life years lost (Bloom et al., 2011). These economic costs underestimate the full extent of the human suffering experienced by individuals and their families due to mental illness.

Workplace accommodations are essential to support individuals with mental health disorders. Almost 40% of employees aged 25-64 with mental health and/or physical disabilities require workplace accommodations. Of these, women have a higher unmet need for accommodations than men, in addition to requiring more accommodations than men (Morris, 2019). Accommodations for mental health disorders are critical in helping employees cope with transient or temporary mental health issues, resulting in longer job tenure, being able to work more hours, and remain employed (Chow, Cichocki, & Croft, 2014; McDowell & Fossey, 2015; Zafar, Rotenberg, & Rudnick, 2019). These accommodations often include flexible work arrangements, job duty modifications, job coaching, feedback from supervisors, and gradual return to work (Bastien & Corbière, 2019; Corbière, Villotti, Lecomte, Bond, & Goldner, 2014; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019).

While there is a clear need for accommodations for workers with mental health disorders, there is a gap in the literature regarding the helpfulness of workplace accommodations and the association with worker sex and employment characteristics. This study examines this through a

secondary analysis of the cross-sectional study: "Supervisor and Worker Perspectives on Workplace Accommodations for Mental Health Study" (Kristman, 2019).

Chapter 2: Background and Significance

2.1 Mental Health Disorders

According to the DSM-5, a mental health disorder is characterized by disturbances in cognition, emotion regulation, or behaviour due to "dysfunction in the psychological, biological, or developmental processes underlying mental functioning" that results in significant distress (American Psychiatric Association, 2013). The American Psychological Association dictionary of psychology (2018) expands on this, citing that mental health disorders are attributable to environmental, physiological, genetic, chemical, social, and other factors. Examples of mental health disorders include mood disorders such as depression or bipolar disorder; anxiety disorders such as social anxiety disorder or generalized anxiety disorder; and personality disorders such as borderline personality disorder.

Globally, it is projected that between 2010 and 2030, mental health disorders will result in a loss of 16.1 trillion dollars (USD) to the economy due to a loss in productivity of workers with mental health disorders (Bloom et al., 2011). This is in part because mental health disorders account for the highest amount of noncommunicable disability-adjusted life years lost (Bloom et al., 2011). Among the Canadian working population, 21.4% experience mental health problems, which accounts for around 30% of both short and long-term disability claims (Mental Health Commission of Canada, 2013). The proportion of workers with a mental health disability has increased over the past few years; from 6.4% in 2019 to 8.7% in 2021 (Statistics Canada, 2022b). It is estimated that mental health disorders cost the Canadian economy over \$50 billion each year due to factors such as lost productivity, presenteeism, turnover, insurance costs, and lost revenue (Mental Health Commission of Canada, 2017). It is projected that by 2041 the total annual direct costs for mental health disorders will be \$291 billion (Mental Health Commission of Canada,

2013). These economic costs are in addition to the human cost of illness, such as distress and pain borne by those suffering from these illnesses and their families.

2.1.1 Epidemiology of Mental Health Disorders

The estimates of the epidemiology of mental health disorders vary between countries, even between similar populations such as Canada, Europe, and the United States (Stein, Scott, Jonge, & Kessler, 2017). A component of this is due to the methodological differences in surveying these different populations, including various methods of sampling and the use of different surveys. Along with differences in sampling, these estimates can vary by country and within a country due to different cultural perceptions and stigmatization of mental health disorders along with possible true differences in prevalence (Stein et al., 2017). For example, estimates of mental health disorders in both Europe and Canada have been determined by use of the World Health Organization Composite International Diagnostic Interview (WHO-ICD), whereas the United States has used criteria outlined in the DSM-IV to determine estimates of mental illness (Alonso & Lepine, 2007; Statistics Canada, 2013; Substance Abuse and Mental Health Services Administration, 2020). The WHO-CIDI includes criteria from the DSM-IV but also includes information from the WHO International Classification of Disease (Harvard Medical School, 2017). This difference in diagnostic criteria could be responsible for some of the differences in the prevalence of mental health disorders between these countries.

The European Study of the Epidemiology of Mental Disorders surveyed 21,425 individuals in Europe and found that one in four participants reported a mental health disorder over their lifetime, with a 12-month prevalence of one in ten (Alonso & Lepine, 2007). The lifetime prevalence of anxiety disorders in this population is 14.5%, with a 12-month prevalence of 8.4%. For mood disorders, the lifetime prevalence was 14.7%, with a 12-month prevalence of

4.5% (Alonso & Lepine, 2007). It was found that there were differences in prevalence rates of mental health disorders between the six countries that were surveyed in this study (Belgium, France, Italy, Germany, the Netherlands, and Spain), which is theorised to be due to differences in cultural bias and stigmatization which can affect what information participants are willing to disclose to interviewers during the study (Alonso & Lepine, 2007). These cultural differences could also explain part of the differences in prevalence estimates between Europe and Canada.

In 2022, over 5 million Canadians (18%) reported meeting the diagnostic criteria for a mood, anxiety or substance use disorder over the last 12 months (Statistics Canada, 2022a). Rates of mental health disorders have been increasing significantly over the past 10 years for Canadians aged 15 years or older. Both the 12 month prevalence and lifetime rates of major depressive episode, bipolar disorder, and generalized anxiety disorder have increased a statistically significant amount between 2012 and 2022 (Stephenson, 2023). In 2022, over the past 12 months major depressive episodes were experienced by 7.6% of the population (up from 4.7% in 2012), with a lifetime prevalence of 14.0% (up from 11.3%) (Stephenson, 2023). The 12-month prevalence of bipolar disorder was 2.1% in 2022 (up from 1.5% in 2012), with a lifetime prevalence of 3.4% (up from 2.6%). Generalized anxiety disorder was experienced by 5.2% of the population in 2022 (up from 2.6%), with a lifetime prevalence of 13.3% (up from 8.7%) (Stephenson, 2023). During the COVID-19 pandemic, these mental health issues were exacerbated. In a 2021 survey of COVID-19 and Mental Health, 15.3% of adults 18 and older screened positive for generalized anxiety disorder (GAD), 18.8% screened positive for major depressive disorder (MDD), and 23.3% screened positive for GAD and/or MDD (Public Health Agency of Canada, 2022).

2.2 Sex and Gender

Sex refers to the biologically determined categories of male and female, whereas gender is a social and psychological construct that may be associated with sex (Deaux, 1985). According to the Canadian Institutes of Health Research (CIHR), sex is defined as the set of biological attributes which are primarily associated with physical and physiological features such as chromosomes, gene expression, hormones, and anatomy (i.e., males and females), whereas gender is defined as socially constructed roles, behaviours, expressions, and identities which influence how people perceive themselves and others and how they behave and interact with others (e.g., women, men) (CIHR, 2020). Further, gender is a continuous measure that may change over time and is not confined by a male-female binary (CIHR, 2020). As such, gender is not binary but rather a continuum where people identify at different points along that continuum or outside of the continuum altogether. For example, non-binary people may not identify as being exclusively woman or man, but rather as some combination of these, or identify with no gender at all (Richards et al., 2016). Transgender individuals are those who identify as a different gender or sex than they were assigned at birth or raised as (Scheim & Bauer, 2015).

Though there has been a recent effort towards moving away from a sex and gender binary, Statistics Canada currently does not have a good estimate of the proportion of Canadians whose gender identity and sex assigned at birth do not match. There are only three major Canadian surveys that have an option to indicate nonbinary gender or transgender: the Survey of Sexual Misconduct in the Canadian Armed Forces 2016 and 2018, the Public Service Employee Survey 2017 and 2018, and the Survey on Opioid awareness 2017 (Waite & Denier, 2019). In the United States, data from a Center for Disease Control's survey indicates that in 2014, 0.6% of Americans identified as transgender (male-to-female, female-to-male, or gender non-

conforming) (Flores, Brown, & Herman, 2016). This percentage varies greatly across race and geography, even within the United States. For example, 0.3% of white North Dakotans identify as transgender compared to 3.7% of adults in the District of Columbia (Flores et al., 2016).

These disparities can be due to differences in culture and stigma across racial and geographic lines.

2.3 Sex, Gender, and the Workplace

Sex and occupation can be strongly related in certain fields. According to Statistics Canada's 2019 Labour Force Survey, across all industries using the North American Industry Classification System, there was an almost equal proportion of male and female workers. When stratifying by sex, a clear divide between male and female-dominated industries becomes apparent. For example, there were almost five times as many male workers as female in 2019 in forestry, fishing, mining, quarrying, oil, and gas industry (Statistics Canada, 2020b). Conversely, in the fields of health and social care, there were just over four times as many female workers as male workers in 2019 (Statistics Canada, 2020b).

Along the lines of gender, there is also a disparity in the type of work in which men and women are employed. According to the Labour Force Survey, Canadian women are twice as likely to work a part-time job as men, with 26% of women working part-time compared to 13% of men in 2017 (Patterson, 2018). Of these women who work part-time, 27% are primarily working part-time to care for their children; for those aged 35-39 that number increased to 45% (Patterson, 2018). For men in the same group, only 10% cited childcare as their primary reason for working part-time. Over time the nature of part-time work has become increasingly often temporary rather than permanent (Cranford, Vosko, & Zukewich, 2003). Men are more likely than women to work full-time jobs, both temporary and permanent positions, which leads to

women working in more precarious positions than men, and in jobs where benefits and accommodations are less likely to be available (Cranford et al., 2003).

Occupation is not a sex-related variable as the differences in the prevalence of men and women in different industries is rooted in societal gender roles (Campos-Serna, Ronda-Pérez, Artazcoz, Moen, & Benavides, 2013). In a systematic review of 30 studies, Campos-Serna and colleagues (2013) found that the gendered nature of occupation is multifaceted. This is due to women's ties to the family sphere and concomitant unequal distribution of unpaid domestic work, horizontal segregation between male-dominated and female-dominated industries, vertical segregation between men at the higher positions on the decision-making scale and women at the lower ends, and the "glass ceiling" which introduces invisible barriers to women seeking promotion. These gendered aspects in occupation affect the working conditions and hazards men and women encounter at work; the differences in remuneration can result in disparities within socioeconomic factors, all of which can result in health inequalities between men and women (Campos-Serna et al., 2013).

2.3.1 Sex & Gender Differences in Mental Health Disorders

The Mental Health Commission of Canada (2013) estimates that by the age of 90 and older, 65% of women and 70% of men will currently be experiencing a mental illness or will have experienced mental illness over their lifetime. According to the Canadian Community Health Survey in 2012, females experience higher rates of mood and anxiety disorders such as generalized anxiety disorder and depression, while males experience higher rates of substance use disorders (Statistics Canada, 2013). Females reported higher rates of depression over the past year, with 5.8% of the female population self-reporting depression, compared to 3.6% of males over the past year. Generalized anxiety disorder was experienced by 3.2% of females, compared

to 2.0% of males. In substance use disorder, the trend is reversed, with a 12-month prevalence of 6.4% in males and 2.5% in females. When looking specifically at alcohol abuse/dependence, the 12-month prevalence is 4.7% for males and 1.7% for females (Statistics Canada, 2013).

Sex and mental health disorders are associated with more than biological and epidemiological differences alone. For example, gender bias in health care providers can affect health care utilization and treatment of mental health disorders. Even when presenting with the same symptoms or psychometric scores, women are more likely to be diagnosed with depression than men (Afifi, 2007), which can result in lower utilization of mental health services by depressed men. Conversely, girls with symptoms of attention deficit disorder are less likely to be diagnosed than boys (Bruchmüller, Margraf, & Schneider, 2012). This can lead to improper or delayed diagnoses and treatment, as well as reinforce gender stereotypes. Women are twice as likely as men to use outpatient mental health services, with between 6%-10% of all North Americans using outpatient mental health services each year (Rhodes, Goering, To, & Williams, 2002). This is due to multiple factors; substance use and antisocial behaviour disorders are more common in men, and people with those types of disorders are less likely to use outpatient mental health services (Rhodes et al., 2002). Another facet of this relationship is that women may be more likely to seek help for mental health disorders earlier than men, who may not seek help until their disorder becomes severe (Rhodes et al., 2002). This difference has been theorized as being a result of differences in problem recognition between men and women, whereby men are less likely to attribute mental health symptoms to a psychiatric cause (Kessler, Brown, & Broman, 1981).

In addition to biases and differences in the rate at which different mental health disorders are experienced between men and women, there can also be a difference in the symptomology of

the same disorder between men and women. These differences could be due to biological sex-based differences, or psychosocial gender-based differences, or a combination of the two factors. For example, females with attention deficit hyperactivity disorder tend to display less behavioural, conduct, and impulsivity, hyperactivity and aggression issues than males (Bruchmüller et al., 2012). Women with depression have been found to experience lower energy and more somatic (pain) complaints than men, while men were found to experience more psychomotor agitation than women (Marcus et al., 2005). In this case, women may find accommodations that allow for a decrease in hours or less physically demanding tasks more helpful, while a man may find being able to alter his workspace to be able to move around more helpful. For these reasons, differences between men and women need to be taken into account when considering how best to accommodate workers with mental health disorders.

2.3.2 Mental Health Disorders in the Working Population

In the context of COVID-19, it is now more important than ever to consider the effects of mental health in the workplace. COVID-19 has been causing more stress in the workplace and exacerbating existing mental health issues such as anxiety (Canadian Human Rights Commission, 2020). Many jobs have been altered due to the pandemic, whether that be a change in hours, increased demands at work, or a change from working in an office to working at home. Since COVID-19, 24% of Canadians reported "fair or poor" mental health compared to 8% in 2018, while over half of Canadians reported worsening mental health (Canadian Human Rights Commission, 2020).

Canadians with mental health and/or psychological disabilities are less likely to be employed than those with physical or other disabilities (Statistics Canada, 2017b). According to the Canadian Survey on Disability, in 2012 the age-standardized unemployment rate for

working-aged adults with mental and/or psychological disabilities (as determined by the question "Do you have any emotional, psychological or mental health conditions?" (Statistics Canada, 2017a)) was 20.8% for females and 18.5% for males, while the age-standardized unemployment rate for all disability types (includes seeing, hearing, mobility, flexibility, dexterity, pain, learning, memory, developmental, mental and/or psychological, and unknown) was 14.7% for females and 13.8% for males (Statistics Canada, 2017b). Overall in Canada, more people with mental health-related disabilities aged 25 to 64 were unemployed or not in the workforce than were employed: 655,000 were employed compared to 99,000 unemployed and 666,000 who were not in the workforce (Statistics Canada, 2020a). Of those with mental health related disabilities, 52% consider themselves to be disadvantaged in employment because of their mental health condition, and 24% consider themselves to be housebound due to their mental health condition.

In Ontario, the age-standardized unemployment rate for working-aged females with mental and/or psychological disabilities was 26.5% and 14.6% for males, whereas the age-standardized unemployment rate for all disability types as noted above was 20.5% for females and 12.1% for males, though these results should be interpreted with caution as the coefficient of variation for these figures range from 16.6% to 33.3% (Statistics Canada, 2017b). Overall in Ontario, more people with mental health-related disabilities aged 15 to 64 were unemployed or not in the workforce than were employed; 132,440 were employed compared to 38,770 unemployed, and 201,220 who were not in the workforce (Statistics Canada, 2017b).

2.4 Workplace Accommodations

Workplace accommodations are any modifications or adjustments to the physical workplace or work procedures which enable workers with physical or mental barriers to work as

required (Ontario Human Rights Commission, 2014). In Ontario, the Ontario Human Rights Code protects workers from discrimination and harassment due to past, present or perceived disabilities including mental health disorders and addictions (Ontario Human Rights Commission, 2016). According to this code, workplaces have a duty to accommodate people with mental health disorders so that employees who are capable of work can work. This duty to accommodate workers with mental health disorders is treated the same as the duty to accommodate workers with physical disabilities (Ontario Human Rights Commission, 2014). This law protects people from being unfairly excluded from the workplace when accommodations can be provided for them, as long as those accommodations do not cause the employer undue hardship (Ontario Human Rights Commission, 2016).

The duty to accommodate follows three principles, that of the respect for dignity, the respect for individualization, and that of integration and full participation (Ontario Human Rights Commission, 2016). Respect for dignity encompasses the right of workers to be treated with respect and dignity, recognizing the harm that can arise from stigmatization and marginalization and including the need for confidentiality in the workplace. Accommodations are recognized by the code as not being one size fits all; workplaces are encouraged to consider the individual needs of workers and to revisit accommodations over time to ensure they remain suitable. Integration and full participation refer to removing barriers that prevent full participation and designing with inclusivity in mind (Ontario Human Rights Commission, 2014).

2.4.1 Requesting Accommodation

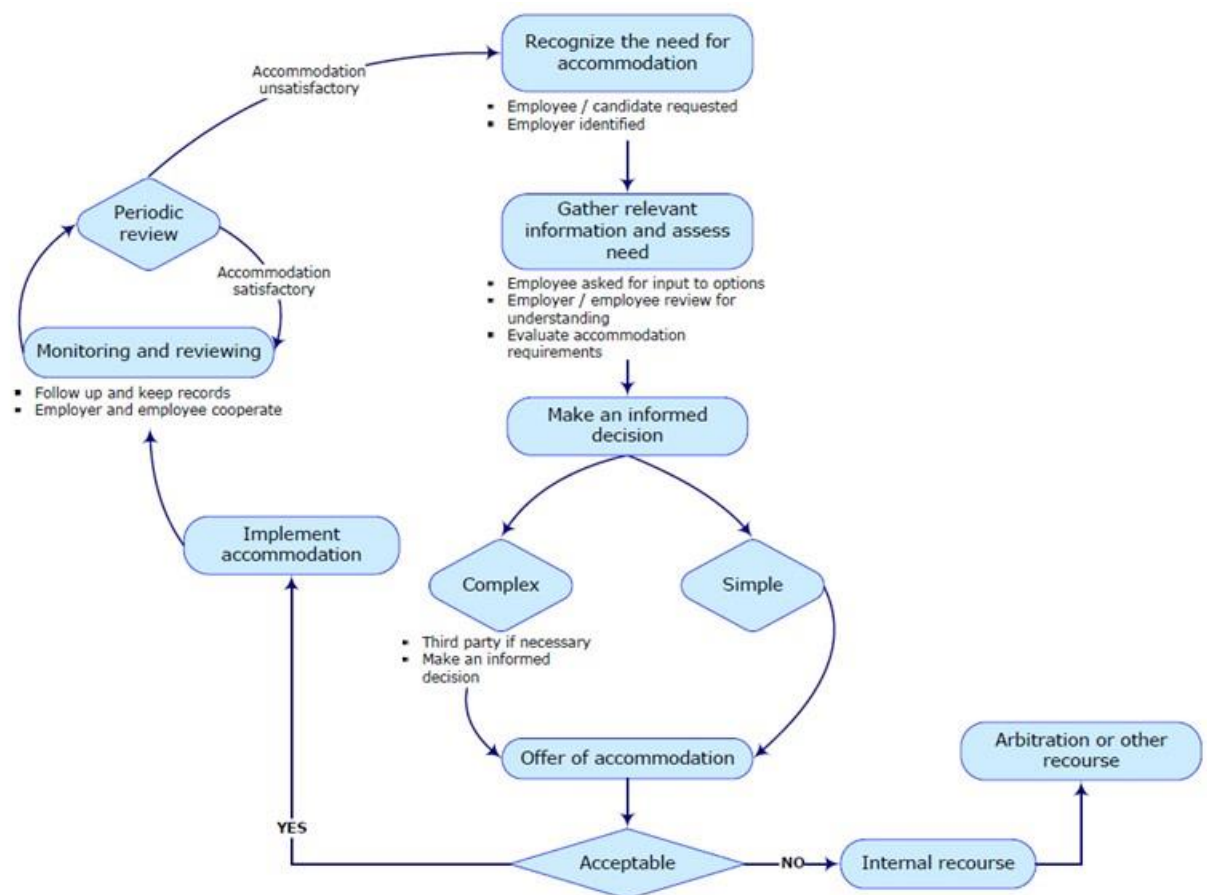
Workplace accommodations often require employers, employees, functional specialists, and employee representatives working together to successfully implement (Government of Canada, 2011b). Employees are expected to communicate their need for accommodation, while

employers can also be expected to notice when accommodations are necessary even when employees have not disclosed a need. The Government of Canada (2011) has a document for managers outlining the process for implementing accommodations. After the need for accommodation has been recognized, either on the part of the employee, employer, or a third party, the employer/manager must then legally accommodate. The manager should ask the employee what type of accommodation they require. Employees are expected to provide information to support their request such as a health assessment if their functional limitation is not a readily evident disability (e.g., paraplegia). In the case of a mental health disorder, supporting documentation in the form of an assessment by a physician or functional specialist may be necessary. Managers will then assess the work environment and determine if the requested accommodation is feasible, and determine the most efficient and cost-effective way to implement the needed accommodations. Once the accommodations have been implemented, the manager should follow up with the employee regularly to determine if the accommodation requires modification. These accommodations and their implementations should be noted so as to be better able to address future accommodation requests (Government of Canada, 2011b). A diagram of this process is outlined in Figure 1 below.

Similarly to the outline above, workplaces with 50 or more employees require organizations to have a developed accommodation plan according to the Accessible Employment Standards Act (Canadian Mental Health Association, 2017). The four steps involved in developing this plan are: 1) Recognize the need for accommodation (initiated either by the employee or employer), 2) Gather relevant information and assess individual needs (functional abilities are documented and support documentation is requested if necessary), 3) Write an individual accommodation plan (detail what accommodations are being provided to address the

workers specific functional limitations), 4) Implement and monitor the plan (check-in and update accommodations accordingly) (Canadian Mental Health Association, 2017). While acknowledging that there is no comprehensive list of accommodations for workers with mental health disorders, the Canadian Mental Health Association (2017) notes that there are commonly provided accommodations for workers and that the workers themselves are the ones who know best what accommodations they require to be able to work.

Figure 1. Accommodation Process (Government of Canada, 2011a)



Within the context of COVID-19, the Canadian Human Rights Commission (2020) has urged employers to increase flexibility around the accommodation process. They recognize that

receiving documentation such as doctors' notes, functional assessments, or health evaluations may be more difficult than normal and as such, employers should ease some of the normal requirements. On a more informal side, they also urge for more flexibility around scheduling, work location and productivity (Canadian Human Rights Commission, 2020).

2.4.3 Sex, Gender, and the Need for Workplace Accommodations

According to the 2017 Canadian Survey on Disability (CSD), 37.3% of employees (772,110) with disabilities aged 25-64 required workplace accommodations (Statistics Canada, 2019b). Employees with disabilities were identified using the Disability Screening Questionnaire and encompass workers with pain-related, flexibility, mobility, mental health-related, seeing, hearing, dexterity, learning, memory, developmental, and unknown disability types. According to this survey, significantly more females than males required workplace accommodations. Thirty-two percent of males required workplace accommodations compared to 42% of females. Females had a statistically significantly higher accommodation need than males, with 30.3% requiring three or more accommodations compared to 22.4% of males, whereas 51.8% of males only required one accommodation compared to 40.4% of females (Morris, 2019). Of the employees who required a workplace accommodation, 59% received all their required accommodation, whereas 40% had at least one unmet need, and 21% had none of their accommodation needs met (Morris, 2019). This trend was not significantly different between males and females.

Other sources with different populations have found similar differences between men and women and accommodation needs. Gignac et al. (2018) found that women with arthritis reported needing more accommodations than men, and contrary to what was found in the CSD, women also reported a higher unmet accommodation need than men (27.4% of women reported unmet

needs compared to 20.0% of men). Zwerling et al. (2003) also found that women with self-reported impairments and functional limitations were more likely to receive accommodations than men.

According to the CSD, the most commonly required work accommodations for workers with disabilities were flexible work arrangements, followed by workstation modifications, then equipment, help or other work arrangements. More females than males reported requiring each of these three accommodation types; twenty-three percent of males required flexible work arrangements compared to 31% of females, 10.3% of males required workstation modifications compared to 18.7% of females, and 9.7% of males required equipment, help or other work arrangements compared to 12.6% of females (Statistics Canada, 2019b). As these three categories are aggregations of many different workplace accommodations, it is currently unknown whether there were differences in specific accommodation requirements between males and females. However, this discrepancy in requirements at the aggregated level does indicate that males and females may have different needs for accommodation. This information was not available at the disability type level, so it is not currently known whether there were differences in accommodation needs between males and females with mental health disorders.

2.4.4 Accommodations for Workers with Mental Health Disorders

When it comes to employees with mental health disorders, accommodations can allow workers to remain employed when experiencing transient or temporary mental health issues (Bolo et al., 2013). These workplace accommodations can be crucial in ensuring an employee can stay at work; without these accommodations, employees may need to take a leave of absence from work or quit. For example, providing accommodations that reduce job strain can in turn reduce the development of stress-related depressive symptoms (Bastien & Corbière, 2019).

Employment can often help improve the mental health of employees; therefore, keeping employees at work is more beneficial to employees' mental health than taking a leave to deal with mental health conditions (Bolo et al., 2013; Secker & Membrey, 2003). Workers with mental health disorders want to be able to continue working and are often able to continue working if accommodations are provided (Secker & Membrey, 2003).

The most commonly provided accommodations for workers with mental health disorders involve scheduling modifications, such as allowing employees to come in at different times or work fewer hours (Bastien & Corbière, 2019; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019). Other commonly provided accommodations are the modification of job duties (e.g. lightening the workload of employees) (Bastien & Corbière, 2019; McDowell & Fossey, 2015), job coaching (Zafar et al., 2019), feedback and assistance from supervisors (Corbière et al., 2014), and implementation of a gradual return to work (Bastien & Corbière, 2019). The least commonly provided accommodations involved physical modifications of the workplace (Corbière et al., 2014; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019). Zafar et al., (2019) noted that sometimes physical accommodations could be useful as some of the symptoms of mental health disorders include physical changes such as psychomotor slowing during depression. However, it is not understood if there is a need for physical modifications that is currently unaddressed as there is a definite gap in the literature concerning the difference between what accommodations are provided and what accommodations would be the most helpful to workers.

Employees with mental health disorders who receive workplace accommodations are more likely to have a longer job tenure and work more hours per month than workers who do not receive accommodations (Chow et al., 2014; McDowell & Fossey, 2015; Zafar et al., 2019).

Workers who received accommodations for mental health disorders were able to work between seven (Chow et al., 2014) and nine and a half months (McDowell & Fossey, 2015) longer than those who did not receive accommodation. Of those who received accommodation, those who received five or more accommodations were able to work significantly longer (median 24 months) compared to those who received less than five accommodations (12 months on average) (McDowell & Fossey, 2015). In addition, for each accommodation received, workers had 13% less risk of losing their job (Chow et al., 2014). When not appropriately accommodated, workers with mental health disorders can be more likely to take an extended sick leave than those with other health conditions such as chronic pain or mobility issues (Treasury Board of Canada Secretariat, 2020).

There is a clear need for accommodations for workers with mental health disorders; however, it is not very well understood how many workers require accommodation. According to the CSD as illustrated above, many workers with disabilities require more than one accommodation, and the number of accommodations needed is different between men and women. It would be reasonable to assume that workers with mental health disorders may also require more than one accommodation and that their accommodation needs may be different between men and women.

In a prospective cohort study of workers with mental health disorders, 16% of workers reported needing at least one accommodation, with the median requiring four accommodations (Bolo et al., 2013). However, in a longitudinal cohort study of employees with depression, 85% of workers reported requiring workplace accommodations (Wang, Patten, Currie, Sareen, & Schmitz, 2011). Of these workers, only 30% of workers interviewed in this study received all the accommodations they required, with 40% receiving less than half the accommodations they

required. These authors concluded that there is an unmet need for accommodations for workers with mental health disorders; they posit this could be partly due to a lack of disclosure and partly to employees not knowing about their right to accommodation (Wang et al., 2011).

Ascertaining the true accommodation need of workers with mental health disorders is difficult due to methodological differences and disparate study populations in the existing literature; however, that there is a need for accommodation is not in question. Bolo and colleagues (2013) found that when workers had their accommodation needs met, they had a decreased risk of having a mood or anxiety disorder one year later (adjusted OR= 0.27, 95% CI=0.11-0.65). Therefore, when workers with mental health disorders had a higher proportion of their accommodation needs met, they were less likely one year later to still have a mood or anxiety disorder. The authors posit that when accommodations are met, workers will be under less job stress, which could result in less conflict in other aspects of their life (Bolo et al., 2013). By allowing workers to continue working, they are then prevented from becoming inactive, being disrupted from social support, and under less financial stress, all of which would result in a decreased risk of being diagnosed with a mental health disorder one year later (Bolo et al., 2013).

It is especially important now, with the additional stress on workers throughout COVID-19; and the exacerbation of mental health disorders that entailed, employees are being provided with the accommodations they need as we return to a new normal. We now better understand the accommodations that tend to be provided to workers with mental health disorders, but we do not know if those accommodations are the ones that are helpful to those workers. The Canadian Mental Health Association (2017) highlights that when developing an accommodation plan, the employee with the accommodation need will know what accommodation they require better than anyone else. In addition, in a scoping review of workplace accommodations for workers with

mental health disorders, McDowell & Fossey (2015) highlight that future studies need to address what workplace accommodations are needed by workers with mental health disorders. This study aims to address this question by contextualizing the perceived helpfulness of workplace accommodations, as well as further recognize the gendered nature of the workplace and the multifaceted needs of workers by determining if sex and gender impact the helpfulness of accommodations.

Chapter 3: Thesis Overview

3.1 Summary of Justification for the Study

Workplace accommodations allow workers with mental health disorders to continue working through transient or temporary mental health issues, helping to prevent workers from needing to take a leave of absence or quitting their jobs (Bolo et al., 2013). Workers that are provided accommodations are able to continue working longer and work more hours overall than those who do not receive accommodations (Chow et al., 2014; McDowell & Fossey, 2015; Zafar et al., 2019). As employment can help improve workers mental health conditions (Bolo et al., 2013; Secker & Membrey, 2003), it is important that accommodations are provided to ensure workers can continue working.

Studies have shown the most commonly provided accommodations for workers with mental health disorders are scheduling modifications, job-duty modifications, job coaching, increased supervisor support, and gradual return to work (Bastien & Corbière, 2019; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019). These studies, however, do not indicate if these are the accommodations that are most helpful to workers with mental health disorders, only that they are the most commonly provided.

Other studies have shown that men and women have different accommodation needs. More women require workplace accommodations than men, have a higher unmet need for accommodations, and women have been shown to require more workplace accommodations than men (Morris, 2019; Gignac et al. 2018; Zwerling et al. 2003). These studies were, however, not specific to mental health disorders. Given that there are sex and gender differences in mental health rates and symptoms, employment characteristics, utilization of mental health services, and

accommodations, it is reasonable to expect that there may be differences in the helpfulness of accommodations between men and women as well.

There is a definite gap in the literature concerning the difference between what accommodations are provided and what accommodations would be the most helpful to workers. There are also gaps in knowledge surrounding sex and gender differences in workplace accommodations. With the added stress of the COVID-19 pandemic and an effort to return to a new normal, it is crucial to ensure that employees with mental health disorders receive the necessary accommodations to return to work, continue working, and maintain or improve their mental health and well-being.

3.2 Objectives

1. The first objective of this thesis is to determine the association between worker sex and the perceived helpfulness of workplace accommodations for workers with mental health disorders.

2. The second objective of this thesis is to explore the association between gender roles and the perceived helpfulness of workplace accommodations.

3.3 Hypotheses

1. We hypothesize that there will be a difference in how helpful males and females find different kinds of accommodations

2. We hypothesize that there will be a difference in the perceived helpfulness of accommodations of workers when the gendered composition of their job is considered.

Chapter 4: The Relationship Between Sex and Perceived Helpfulness of Workplace Accommodations Among Workers with Mental Health Disorders

4.1 Abstract

Background

Mental health disorders (MHDs) are characterized by disturbances in cognition, emotion regulation, or behaviour resulting from various factors. They have significant economic and personal costs and are responsible for the highest non-communicable disability adjusted life years lost. Often workers with MHDs can continue working through a MHD or return to work after an absence with the implementation of workplace accommodations. Understanding factors relating to accommodation helpfulness and understanding how sex can affect workplace outcomes are crucial in promoting mental health and ensuring equitable employment opportunities. The aim of this study is to determine the association between sex and the perceived helpfulness of workplace accommodations for workers with MHDs.

Methods

We examined the results of a cross sectional survey of employees from 31 workplaces across Manitoba and Northwestern Ontario. Perceived accommodation helpfulness was determined from the responses on a 4-point scale of various accommodations found in the Job Accommodation Scale for Mental Health (JASMH), and subsets relating to work schedule, physical environment, on-job duties, and psychosocial factors. Sex was the main exposure of interest, with other demographic variables such as age, race, education, mental health or physical disorders, severity of symptoms, and workplace sector examined for confounding. Analyses were performed using multilevel mixed effects regression using Stata.

Results

Overall, when accounting for various factors such as age, sector, income, ethnicity, and the presence of other health conditions, females rated the helpfulness of workplace accommodations 0.24 points higher than males, indicating that females generally reported accommodations would be more helpful. When examining specific types of accommodations, significant differences were observed between males and females; females reported accommodations related to flexible work schedules would be significantly more helpful, rating them 0.51 points higher than males. They also reported accommodations related to changing the physical workplace environment would be significantly more helpful, with a 0.31-point difference. Accommodations related to on-job duties and accommodations concerning psychosocial adjustments were not rated significantly differently between males and females.

Conclusion

The results from this study indicate that overall, females with MHDs perceive workplace accommodations to be more helpful than males. In addition, there were differences in the strength of association between different types of accommodations. Accommodations related to work scheduling and changes to the physical workplace environment were perceived to be the most helpful to females, whereas perceived helpfulness of changes to on-job duties and psychosocial adjustments were not significantly different between females compared to males.

4.2 Introduction

Mental health disorders are conditions involving disruptions in cognition, emotion regulation, or behaviour resulting from dysfunctional psychological, biological, or developmental processes, which lead to significant distress (American Psychiatric Association, 2013). These disorders can be attributed to various factors such as environmental, physiological, genetic, chemical, and social influences. Some examples include mood disorders like depression and bipolar disorder, anxiety disorders like social anxiety and generalized anxiety, and personality disorders such as borderline personality disorder. These mental health disorders can vary between genders, with women having higher rates of mood and anxiety disorders like depression and generalized anxiety disorder, while men experience higher rates of substance use disorders (Stephenson, 2023). The epidemiology of mental health disorders varies between countries and populations due to differences in survey methods, sampling, cultural perceptions, and stigma. In 2022, over 5 million Canadians (18%) reported fulfilling the diagnostic criteria for a mood anxiety or substance use disorder over the last 12 months (Statistics Canada, 2022a) while rates of mental health disorders have been increasing significantly over the past 10 years (Stephenson, 2023).

Globally, mental health disorders are projected to cost the economy \$16.1 trillion USD in lost productivity between 2010 and 2030, with these disorders contributing significantly to noncommunicable disability-adjusted life years lost (Bloom et al., 2011). In Canada, around 21.4% of the working population experiences mental health problems, resulting in 30% of short and long-term disability claims (Mental Health Commission of Canada, 2013). Mental health disorders are estimated to cost the Canadian economy over \$50 billion each year due to factors such as lost productivity, presenteeism, turnover, insurance costs, and lost revenue (Mental

Health Commission of Canada, 2017). It is projected that by 2041, the total annual direct costs for mental health disorders will be \$291 billion (Mental Health Commission of Canada, 2013). These economic costs, however, do not capture the full extent of the human suffering experienced by individuals and their families due to mental illness.

In the workplace, sex and occupation are often closely related. While overall, there are almost equal proportions of males and female workers, some industries have a significant gender disparity. For example, in the forestry, fishing, mining, quarrying, oil, and gas industry, there are more male workers, while the health care and social assistance industry has more female workers (Statistics Canada, 2020b). Females are also more likely to work part-time jobs, and temporary jobs, making them more vulnerable to job insecurity and reduced benefits (Patterson, 2018; Cranford et al., 2003). These occupational disparities are rooted in societal gender roles and result in inequalities in working conditions, pay, opportunities and health inequalities between men and women (Campos-Serna et al., 2013).

Workplace accommodations are essential to support individuals with mental health disorders (Bastien & Corbière, 2019; Bolo et al., 2013; Secker & Membrey, 2003). The duty to accommodate follows principles of dignity, individualization, and integration and full participation (Ontario Human Rights Commission, 2016). Employees are encouraged to communicate their accommodation needs, and employers must work with employees to determine suitable accommodations, ensuring that they do not cause undue hardship. Accommodation plans should be developed, implemented, and regularly monitored to address specific functional limitations.

Almost 40% of employees aged 25-64 with mental health and/or physical disabilities require workplace accommodations. Of these, more females require workplace accommodations

than males, with females having a higher need for multiple accommodations than males (Morris, 2019). Almost 60% of employees who required workplace accommodations received all of them, while 40% had at least one unmet need, and 21% had no accommodation needs met (Morris, 2019). Accommodations for employees with mental health disorders are critical in helping them remain employed and cope with transient or temporary mental health issues. These accommodations often include flexible work arrangements, job duty modifications, job coaching, feedback from supervisors, and gradual return to work (Bastien & Corbière, 2019; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019 ;Corbière et al., 2014). Employees with mental health disorders who receive accommodations tend to have longer job tenures, work more hours, and are less likely to lose their jobs than those who do not receive accommodations (Chow et al., 2014; McDowell & Fossey, 2015; Zafar et al., 2019).

While there is a clear need for accommodations for workers with mental health disorders, there is a lack of comprehensive data on the helpfulness of workplace accommodations. It is important to understand the unique needs of workers with mental health disorders, considering occupational and sociodemographic characteristics. We aim to elucidate this by determining the association between sex and perceived helpfulness of workplace accommodations for workers with mental health disorders. We hypothesize that there will be a difference in how helpful males and females perceive different workplace accommodations to be for themselves. .

4.3 Methods

4.3.1 Supervisor and Worker Perspectives on Workplace Accommodations for Mental Health Study

This study performed a secondary analysis of data collected from the "Supervisor and Worker Perspectives on Workplace Accommodations for Mental Health Study" (Kristman,

2019). The cross-sectional survey was distributed to 31 workplaces with more than 50 employees across Northwestern Ontario and Manitoba from May 2017 to May 2018. Participating employers were randomly selected from all ten industrial sectors (finance, wholesale, public administration, construction, agriculture, transportation, service, retail, manufacturing, and mining). The survey distributed to workers was designed to determine what factors influence the provision and support of workplace accommodations. Various factors were measured, including work stress, organizational culture, demographics, and mental health prevalence. The Supervisor and Worker Perspectives on Workplace Accommodations for Mental Health Study received ethics approval; as this study used the anonymized data in a secondary analysis, a waiver of ethics was acquired.

4.3.2 Study Population

Participants were employees that were at least 18 years old at the time of the study and were able to speak and read English, as the survey instruments were only validated in English. Both full- and part-time employees were included in the surveys. To achieve the objective of this study, a subset of the total population was used (n=305). We only included workers with mental health disorders, which was determined by including workers who answered the question, "Have you ever been diagnosed with any of the following (check all that apply)" as being diagnosed with any mental health disorder listed, in the current analysis. The mental health disorders included schizophrenia, bipolar disorder, depression, anxiety disorders, organic disorders (delirium, dementia), substance use disorder, personality disorders, childhood/adolescent disorders, unknown, and other disorders. These mental health disorders were chosen as they align with the Canadian Community Health Survey (Statistics Canada, 2012).

4.3.3 Variables Under Study

4.3.3.1 Outcome variables

Helpfulness of Accommodations. The main outcome of interest pertained to the employee's perceived helpfulness of the following accommodations (regardless of if the employee had received the accommodation or not). For each accommodation, the survey asked workers to: "Indicate how helpful you feel it would be for you". The workers responded using Likert scale-like items consisting of 4 options: 1) "very helpful", 2) "somewhat helpful", 3) "somewhat unhelpful", and 4) "not helpful at all". Analyses were performed on the overall JASMH score, as well as the score for each of the subscales described below.

A total of 43 accommodations for workers with mental health disorders were included in the survey. These accommodations were chosen by combining accommodations from 3 existing accommodation scales: The Job Accommodation Scale (Shaw et al, 2014), the Work Accommodation and Natural Support Scale (Corbière et al, 2014), and the Workplace Mental Health Accommodation Scale (Bolo et al, 2013). These accommodations range from altering work schedules (e.g. provide a flexible work schedule, shorten your work days), to changing workload (e.g. Allow you to self-pace your workload, divide your assignments into smaller tasks), to altering the work environment (e.g. rearrange your workspace to be more comfortable, allow you to change the lighting), to providing resources (e.g. provide you with typewritten meeting minutes, provide you with medication-related accommodations such as access to water in the workspace or private space to take medication). Using a concept mapping approach, the Job Accommodation Scale – Mental Health (JAS-MH) was developed (Kristman, 2019). The JAS-MH includes 29 of the original 43 items, and the best fitting model includes a four-factor model (likelihood ratio $p=0.024$; RMSEA 0.068; CFI 0.995) (Kristman, 2019). The predicted

JAS-MH score obtained from the measurement model is highly correlated with a simple arithmetic mean of all included items ($r=0.94$) (Kristman, 2019), so we used a simple arithmetic mean of the JAS-MH items for this study. The four subscales included in the JAS-MH are:

Work schedule subscale

This subscale contains the accommodations: "Shorten the worker's work days", "Change the time the worker came and left work", "Allow the worker to take longer or more frequent breaks", "Allow the worker to make up time", "Arrange a part-time work schedule for the Worker", and "Provide a flexible work schedule". Scores range from 1-4. This scale has high internal consistency, with a Cronbach's alpha of 0.84 (Kristman, 2019).

Physical environment subscale

This subscale contains the accommodations: "Rearrange the workplace to be more comfortable", "Move the worker to a different site or location", "Reduce distractions in the worker's work area", "Allow the worker to change noise levels or wear headphones to play music or white noise" and "Allow worker to change the lighting". Scores range from 1-4. This scale has high internal consistency, with a Cronbach's alpha of 0.80 (Kristman, 2019).

On-job duties subscale

This subscale contains the accommodations: "Modify your expectations of the worker", "Provide additional time for the worker to learn new responsibilities", "Allow the worker to self-pace his/her workload", "Plan for uninterrupted work time for the worker", "Replace the worker's normal job tasks with things that are easier to do", "Rotate the worker between job tasks", "Get the worker assigned to another job temporarily", "Divide the worker's assignments into smaller tasks", and "Gradually introduce tasks to the worker". Scores range from 1-4. This scale has high internal consistency, with a Cronbach's alpha of 0.86 (Kristman, 2019).

Psychosocial Adjustments

This subscale contains the accommodations: "Provide training for coworkers about mental health problems", "Provide the worker with day planners or electronic/software organizers to help organize tasks", "Remind the worker of important deadlines", "Allow the worker to tape record meetings", "Provide the worker with typewritten meeting minutes", "Provide the worker with feedback from yourself", "Provide the worker with emotional support (such as offering time to talk or interaction with colleagues)", "Encourage interaction between coworkers," and "Provide the worker with rewards or recognition from you". Scores range from 1-4. This scale has high internal consistency, with a Cronbach's alpha of 0.91 (Kristman, 2019).

4.3.3.2 Exposure variables

Sex is the main exposure variable of interest, as we were interested in determining whether accommodation helpfulness is dependent on worker sex. Sex was determined based on the responses to the question, "What was your biological sex at birth?"; with possible responses "Male", "Female", "Intersex", or "Choose not to answer". Due to low responses in the intersex and choose not to answer categories, only male and female responses were included.

In this analysis sex was used as the primary exposure variable, with the understanding that gender is the outward expression of biological sex (either the same or different than the sex assigned at birth).

4.3.3.3 Potential confounding variables

There are several variables captured in the survey that were examined for possible confounding between our exposure and outcome within the survey. Many demographic characteristics can impact the prevalence, severity, presentation, or course of mental health disorders, which could affect the perceived helpfulness of accommodations beyond the impact of

sex and gender. Demographic characteristics that were examined for confounding include: age (Centers for Disease Control and Prevention & National Association of Chronic Disease Directors, 2008; R. C. Kessler et al., 2010; Lorem, Schirmer, Wang, & Emaus, 2017), race (Chiu, Amartey, Wang, & Kurdyak, 2018), education (Chiu, Amartey, Wang, Vigod, & Kurdyak, 2020; Steele, Dewa, Lin, & Lee, 2007), and income (Chiu et al., 2020).

Age was captured via the question "What is your month (mm) and year of birth (yyyy)?".

Race was determined based on the response to the question "How would you describe your ethnic/racialized background. Check all that apply."; with possible responses: "Aboriginal/Indigenous (e.g., First Nations, Inuit, Metis, etc.)", "Arab (e.g., West Asia/ Middle East, North Africa, etc.)", "Asian (e.g., Chinese, Japanese, Korean, etc.)", "Black Caribbean (e.g., Jamaican, Bahamian, etc.)", "Black African (e.g., Nigerian, Somalian, Sudanese, etc.)", "Latin American (e.g., Central American, South America, etc.)", "South Asian (e.g., Indian, Pakistani, Sri Lankan, etc.)", "Southeast Asian (e.g., Cambodian, Filipino, Laotian, Malaysian, Thai, Vietnamese, etc.)", "White/Caucasian (e.g., Western European, Eastern European, etc.)", "Other (Please Specify)", "Choose not to answer".

Income was determined based on the response to the question "What is your combined total family unit/household income per year?;" with possible responses: "\$0-\$20,000", "\$20,001-\$40,000", "\$40,001-\$60,000", "\$60,001-\$80,000", "\$80,001-100,000", "Above \$100,000", "Don't know", and "Do not wish to answer".

Education was captured via the question "Highest level of education achieved:;", with possible responses: "High school or less", "Some trade, college, or technical school", or "Completed trade, college, or technical school".

Another potential confounding variable is the type of mental health disorder. Some mental health disorders are more likely to be experienced by either males or females (Statistics

Canada, 2013), and perceived helpfulness of certain accommodations may be different depending on the type of mental health disorder; therefore, the relationship between sex and perceived helpfulness could be confounded by type of disorder. For instance, the ability to reduce distractions in the worker's work area might appeal more to a worker with attention deficit disorder rather than a worker with depression. Only categories with large enough responses were included to ensure there was enough statistical power to detect a difference.

Another potential confounder is the presence of other health problems (Kessler et al., 2010; Lorem et al., 2017), which is examined in the question "Please indicate if you currently have any of the following health problems (responses "yes", and "no"). If you do, to what extent have these problems affected your health in the last six months?" (responses "Not at all", "Mild", "Moderate", and "Severe"). The possible health conditions are: Muscle, bone or joint problems, Allergies, Breathing problems, High blood pressure, Heart and circulation problems, Digestive system problems, Diabetes, Kidney or Genitourinary problems, Neurological problems, Headaches, Cancer, Vision Problems, Hearing Problems, Severe Skin Problems, and Life-Threatening Illness. These comorbidities were measured with the Saskatchewan Comorbidity Scale (Jaroszynski et al 1998). Like mental health disorders, some of these health conditions can be related to both sex and accommodation preference; therefore, they were examined for confounding influences.

The relationship between sex and accommodation helpfulness might be different depending the severity of a workers symptoms (Morris, 2019). There are two questions related to this in the worker survey, one that relates to the severity of symptoms at the time of writing the survey, and the other over the last week "On a scale of 1 to 10, where 1 means "no

symptoms" and 10 means "the most severe symptoms," please rate your overall level of severity of the symptoms related to your mental health problem at this time (today)/over the last week."

4.4 Analysis

Descriptive analyses were run first to determine frequency distributions, means and standard deviations of each of the variables of interest, including potential confounders. Cross tabulations were created, stratified by sex, and Pearson's chi-square tests were used to determine if there were significant differences between males and females for each categorical variable of interest. Secondly, multilevel mixed effect linear regression was performed to test the association between all exposure variables and the outcome, accommodation helpfulness, variables, while accounting for clustering within workplaces. During the model selection stage, variables were selected for consideration in the final model based on the bivariable analysis, using a p value of ≤ 0.2 as a cutoff to ensure no variables were excluded prematurely. To determine which of the selected confounders would be included in the final model, we used the Greenland, Daniel, & Pearce, (2016) methodology for forward selection., Analyses were performed with each variable of interest compared to the base model with only age and sex, and run iteratively until no additional variables yielded a delta mean squared error greater than 0 (Appendix A, C, E, G, I). A final multivariable multilevel mixed effect linear regression model was then developed for the overall accommodation helpfulness score and for each of the accommodation subscales, which included all the identified confounders and the base model. All analyses were performed using Stata version 17.

4.5 Results

4.5.1 Descriptive Analysis

The survey was distributed to 3942 workers and completed by 1062 (27% response rate). Tables 1 and 2 describe the characteristics of the population. There were 305 workers with a mental health disorder or symptoms of a mental health disorder, 154 male (50.5%) and 151 female (49.5%). Of these, 60% had a mental health disorder and 41.6% had no diagnosis but had symptoms (5 respondents indicated both a diagnosis, and no diagnosis but symptoms). Most of the workers were white (88%), had completed some form of post-secondary education (56%), had high salaries (51.2% had salaries of \$80,000 or more), and were on average nearly 40 years old (average 39.8). These workers were mostly employed in the mining (30%), public administration (23%) and finance industries (10%), though there were also employees in agriculture, service, transportation, manufacturing, retail, construction, and wholesale sectors.

Table 1. *Categorical characteristics of male and female workers with mental health disorders or symptoms of a mental health disorder **

Question	Total – N(%)	Male – N(%)	Female – N(%)
Any Mental Health Disorder or Symptoms	305 (100%)	154 (100%)	151 (100%)
No mental health diagnosis, but I have mental health symptoms**	127 (41.64%)	62 (40.26%)	65 (43.05%)
Any Mental Health Disorder	183 (60%)	93 (60.39%)	90 (59.60%)
Anxiety disorder (OCD, panic, PTSD, etc.)	100 (32.79%)	44 (28.57%)	56 (37.09%)
Major depression	62 (20.33%)	28 (18.18%)	34 (22.52%)
Other	40 (13.11%)	15 (9.74%)	25 (16.56%)
Substance related disorder	13 (4.26%)	12 (7.79%)	1 (0.66%)
Unknown	10 (3.28%)	6 (3.9%)	4 (2.65%)
Personality disorder (avoidant, borderline, etc.)	9 (2.95%)	5 (3.25%)	4 (2.65%)
Bipolar disorder	6 (1.97%)	4 (2.6%)	2 (1.32%)
Specific disorder of childhood/adolescence	5 (1.64%)	5 (3.25%)	0
Schizophrenia and other psychotic disorders	1 (0.33%)	0	1 (0.66%)
Impact on job			
Has your mental health condition negatively impacted your job performance in the last week	46 (15.08%)	24 (15.58%)	22 (14.57%)

Has your mental health condition negatively impacted your job performance in the last 6 months?	109 (35.74%)	45 (29.22%)	64 (42.38%)
Physical Health Issues	285 (93.44%)	142(92.20%)	144 (95.36%)
Headaches (such as migraine, tension, stress, sinus, others)	192 (62.95%)	79 (51.3%)	113 (74.83%)
Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	187 (61.31%)	94 (61.04%)	93 (61.59%)
Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	120 (39.34%)	49 (31.82%)	71 (47.02%)
Vision Problems	105 (34.43%)	47 (30.52%)	58 (38.41%)
Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	85 (27.87%)	46 (29.87%)	39 (25.83%)
Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	82 (26.89%)	32 (20.78%)	50 (33.11%)
High blood pressure (hypertension)	52 (17.05%)	29 (18.83%)	23 (15.23%)
Hearing Problems	52 (17.05%)	37 (24.03%)	15 (9.93%)
Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostrate problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)	45 (14.75%)	13 (8.44%)	32 (21.19%)
Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	27 (8.85%)	13 (8.44%)	14 (9.27%)
Severe Skin Problems	18 (5.9%)	11 (7.14%)	7 (4.64%)
Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	17 (5.57%)	7 (4.55%)	10 (6.62%)
Diabetes	13 (4.26%)	10 (6.49%)	3 (1.99%)
Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or spread, lymphoma, leukemia, others)	6 (1.97%)	2 (1.3%)	4 (2.65%)
Life Threatening Illness (i.e. HIV)	1 (0.33%)	0	1 (0.66%)

Ethnicity			
White/Caucasian (e.g., Western European, Eastern European, etc.)	267(87.54%)	126(81.82%)	141 (93.38%)
Non-White (includes multiracial with white)	42 (13.77%)	28 (18.18%)	14 (9.27%)
Aboriginal/Indigenous (e.g., First Nations, Inuit, Metis, etc.)	29 (9.51%)	17 (11.04%)	12 (7.95%)
Asian (e.g., Chinese, Japanese, Korean, etc.)	5 (1.64%)	5 (3.25%)	0
Southeast Asian (e.g., Cambodian, Filipino, Laotian, Malaysian, Thai, Vietnamese, etc.)	3 (0.98%)	1 (0.65%)	2 (1.32%)
Other	3 (0.98%)	1 (0.65%)	2 (1.32%)
Black Caribbean (e.g., Jamaican, Bahamian, etc.)	1 (0.33%)	3 (1.95%)	0
Latin American (e.g., Central American, South America, etc.)	1 (0.33%)	1 (0.65%)	0
South Asian (e.g., Indian, Pakistani, Sri Lankan, etc.)	1 (0.33%)	1 (0.65%)	0
Black African (e.g., Nigerian, Somalian, Sudanese, etc.)	0	0	0
Industry			
Mining	90 (29.51%)	74 (48.05%)	16 (10.60%)
Public Admin	69 (22.62%)	31 (20.13%)	38 (25.17%)
Finance	31 (10.16%)	1 (0.65%)	30 (19.87%)
Agriculture	23 (7.54%)	12 (7.79%)	11 (7.28%)
Service	23 (7.54%)	3 (1.95%)	20 (13.24%)
Transportation	17 (5.57%)	12 (7.79%)	5 (3.31%)
Manufacturing	16 (5.25%)	11 (7.14%)	5 (3.31%)
Retail	14 (4.59%)	2 (1.30%)	12 (7.95%)
Construction	13 (4.26%)	8 (5.19%)	5 (3.31%)
Wholesale	9 (2.95%)	0	9 (5.96%)
Income			
\$0 - \$20,000	4 (1.31%)	2 (1.3%)	2 (1.32%)
\$20,001 - \$40,000	22 (7.21%)	6 (3.9%)	16 (10.60%)
\$40,001 - \$60,000	46 (15.05%)	9 (5.84%)	37 (24.50%)
\$60,001 - \$80,000	42 (13.77%)	22 (14.29%)	20 (13.25%)
\$80,001 - \$100,000	60 (19.67%)	34 (22.08%)	26 (17.22%)
Above \$100,000	96 (31.48%)	64 (41.56%)	32 (21.19%)
Don't know	7 (2.3%)	4 (2.6%)	3 (1.99%)
Do not wish to answer	26 (8.52%)	11 (7.14%)	15 (9.93%)
Missing	2 (0.65%)	2 (1.3%)	0
Education			
High School or less	55 (18.03%)	32 (20.78%)	23 (15.23%)
Some trade, college, university, or technical school	80 (26.23%)	47 (30.52)	33 (21.85%)

Completed trade, college, university, or technical school	169 (55.41%)	74 (48.05)	95 (62.91%)
Missing	1 (0.33%)	1 (0.65%)	0

**(Bold indicates Pearson's chi-square was significant for differences between males and females at $p=.05$)*

Note: Respondents could select multiple mental or physical health disorders.

*** There was overlap where 5 respondents indicated no disorder only symptoms, but also selected a MHD disorder*

Table 2. Continuous characteristics of male and female workers with mental health disorders and symptoms of a mental health disorder

Question	Overall	Male	Female
Age ($p=0.04$)			
N	300	151	149
Mean	39.86	41.23	38.47
SD	11.8	11.44	12.06
Min	19.1	19.75	19.08
Max	69.67	66.92	69.67
Severity of Mental Health Symptoms Today ($p<0.01$)			
N	288	144	144
Mean	3.58	3.19	3.97
SD	2.26	2.02	2.43
Min	0	1	0
Max	10	10	10
Severity of Mental Health Symptoms This Week ($p<0.01$)			
N	290	146	144
Mean	4.06	3.64	4.47
SD	2.30	2.21	2.33
Min	1	1	1
Max	10	10	10
JASMH Overall ($p<0.01$)			
N	214	108	106
Mean	2.58	2.42	2.74
SD	0.69	0.83	0.61
Min	1	1	1.2
Max	4	3.71	4
JASMH Work Schedule Subscale ($p<0.01$)			
N	288	115	113
Mean	2.63	2.38	2.87
SD	0.85	0.81	0.82
Min	1	1	1
Max	4	4	4

JASMH Physical Environment Subscale (p<0.01)			
N	229	115	114
Mean	2.56	2.33	2.79
SD	0.89	0.90	0.81
Min	1	1	1
Max	4	4	4
JASMH On-Job Duties Subscale (p=0.07)			
N	234	120	114
Mean	2.55	2.46	2.64
SD	0.77	0.77	0.75
Min	1	1	1
Max	4	4	4
JASMH Psychosocial Adjustments Subscale (p<0.01)			
N	229	116	113
Mean	2.67	2.52	2.83
SD	0.75	0.81	0.66
Min	1	1	1.33
Max	4	4	4

Note: Bold indicates ttest was significant for differences between males and females at $p=.05$)

Anxiety disorder was the most highly experienced mental health disorder (32.8%), with no statistically significant ($\chi^2=2.51$, $p=0.11$) difference between males and females. Fifteen percent of the population reported that their mental health condition negatively impacted their job performance in the past week, but 35.8% reported an impact in the past 6 months. The difference between males and females was statistically significant for the past 6 months ($\chi^2=9.26$, $p=0.01$), but not at 1 week ($\chi^2=3.68$, $p=0.16$). For physical health issues, headaches were most experienced by females (74.8%), and muscle bone and joint problems were most commonly experienced by males (61.0%). Most participants were Caucasian (87.5%), with the highest percentage of males employed in the mining sector (48.1%), and in public administration for females (25.2%).

When examining differences between males and females, there were statistical differences noted in various mental and physical disorders (Table 1) as well as across ethnicities

(white $x^2=9.34$, $p=0.002$; non-white $x^2=5.10$, $p=0.024$), income, education, and job sector ($x^2=99.77$, $p<0.001$). Within job sector, mining ($x^2=51.4$, $p<0.001$), finance ($x^2=30.84$, $p<0.001$), retail ($x^2=7.70$, $p=0.006$), service ($x^2=13.96$, $p<0.001$), and wholesale ($x^2=9.50$, $p=0.002$) industries had significant differences in the composition of male and female workers. Within education, there were significant differences only when comparing employees who completed college, university, or trade school ($x^2=6.50$, $p=0.01$). Within income, there were differences in only the \$40-60,000 ($x^2=22.4$, $p<0.001$), and above \$100,000 categories ($x^2=15.9$, $p=0.001$). There were significant differences between males and females in the distribution of substance use disorder ($x^2=9.50$, $p=0.002$), specific disorder of childhood/adolescence ($x^2=4.98$, $p=0.026$), allergies, ($x^2=6.47$, $p=0.011$), digestive problems ($x^2=5.74$, $p=0.017$), diabetes ($x^2=3.84$, $p=0.050$), kidney/genitourinary problems ($x^2=9.71$, $p=0.002$), headaches ($x^2=17.05$, $p<0.001$), and hearing problems ($x^2=11.08$, $p=0.001$).

4.5.2 Multilevel Mixed Linear Regression

Being female was significantly associated with a higher helpfulness rating for workplace accommodations compared to the male reference ($p<0.01$). Clustering within workplaces accounted for 3% (ICC: 0.03, SE: 0.03, 95% CI [0.01 – 0.18]) of the variation in JASMH scores at the bivariate level with sex. Age was not statistically significantly associated with perceived helpfulness of workplace accommodations ($p=0.08$) (Table 3). Severity of mental health symptoms today and this week were not associated with the helpfulness score. When mental health disorders were examined, a diagnosis of depression was significantly associated with a higher accommodation helpfulness score compared to no diagnosis of depression ($p=0.03$); no other mental health diagnoses were significantly associated with accommodation helpfulness.

When physical health disorders were examined, a diagnosis of cancer was significantly associated with a lower accommodation helpfulness score compared to no diagnosis of cancer ($p=0.04$); no other physical health diagnoses were significantly associated with helpfulness. Neither negative impact on job performance over the past 6 months or the past week were significantly associated with accommodation helpfulness. When ethnicity was collapsed down to “white” and “non-white” categories, there was no significant difference in accommodation helpfulness score. When compared to the mining sector, employees in the finance, public administration, and service sectors found workplace accommodations significantly more helpful. None of the income levels were significantly associated with accommodation helpfulness compared to the reference (above \$100,000). None of the education levels were significantly associated with accommodation helpfulness compared to the reference (high school). Bivariate analyses for each of the JASMH sub scores are listed in appendices B, D, F, and G.

Table 3. *Bivariate analysis of multilevel mixed linear regression of each variable of interest with accommodation helpfulness score as an outcome, accounting for clustering within workplace **

Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Age		-0.01	0.00	0.08	-0.02	0.00
Severity of Mental Health Symptoms Today		0.02	0.02	0.33	-0.02	0.06
Severity of Mental Health Symptoms This Week		0.01	0.02	0.75	-0.03	0.05
Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Sex	Male (ref)	0.0	-	-	-	-
	Female	0.28	0.10	<0.001	0.09	0.47
Mental Health (ref = no disorder)	Any Diagnosed MH Disorder	0.02	0.10	0.87	-0.18	0.21
	Schizophrenia and other psychotic disorders	0.32	0.68	0.64	-1.01	1.66
	Bipolar disorder	0.38	0.31	0.22	-0.22	0.99
	Major depression	0.23	0.11	0.03	0.02	0.44
	Anxiety disorder (OCD, panic, PTSD, etc.)	0.01	0.10	0.93	-0.18	0.20

	Substance related disorder	-0.05	0.27	0.84	-0.57	0.47
	Personality disorder (avoidant, borderline, etc.)	0.32	0.28	0.24	-0.22	0.87
	Specific disorder of childhood/adolescence	-0.47	0.39	0.20	-1.24	0.31
	Unknown	-0.46	0.30	0.13	-1.05	0.13
	Other (see Q3_1_12_TEXT)	-0.02	0.13	0.91	-0.28	0.24
	No mental health diagnosis, but I have mental health symptoms	-0.02	0.10	0.81	-0.21	0.17
Physical Health (ref = no disorder)	Any Physical Health Disorder	-0.11	0.18	0.55	-0.46	0.25
	Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	-0.06	0.10	0.50	-0.25	0.12
	Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	-0.04	0.09	0.71	-0.22	0.15
	Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	-0.07	0.10	0.51	-0.27	0.13
	High blood pressure (hypertension)	0.09	0.13	0.51	-0.17	0.34
	Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	-0.28	0.21	0.21	-0.68	0.13
	Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	-0.13	0.10	0.23	-0.33	0.08
	Diabetes	-0.06	0.28	0.82	-0.61	0.48
	Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostrate	0.02	0.13	0.85	-0.23	0.28

	problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)					
	Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	0.19	0.17	0.27	-0.15	0.53
	Headaches (such as migraine, tension, stress, sinus, others)	0.14	0.10	0.15	-0.05	0.32
	Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or spread, lymphoma, leukemia, others)	-0.70	0.34	0.04	-1.36	-0.04
	Vision Problems	-0.03	0.10	0.79	-0.22	0.17
	Hearing Problems	0.03	0.12	0.81	-0.21	0.27
	Severe Skin Problems	-0.17	0.23	0.45	-0.62	0.28
	Life Threatening Illness (i.e. HIV)	0.38	0.69	0.58	-0.96	1.73
Impact on Job	Negative Impact Last Week					
	No (ref)	0	-	-	-	-
	Yes	0.08	0.13	0.54	-0.17	0.33
	Don't know/Prefer not to answer	0.16	0.16	0.30	-0.15	0.47
	Negative Impact Last 6 Months					
	No (ref)	0	-	-	-	-
	Yes	0.09	0.10	0.39	-0.11	0.28
	Don't know/Prefer not to answer	0.16	0.15	0.29	-0.13	0.45
Ethnicity	White/Caucasian (e.g., Western European, Eastern European, etc.) (ref)	0	-	-	-	-
	Non-White	0.23	0.13	0.07	-0.02	0.49
Industry	Mining (ref)	0	-	-	-	-
	Finance	0.43	0.19	0.03	0.05	0.80
	Wholesale	0.40	0.26	0.13	-0.12	0.91

	Public Administration	0.40	0.13	0.00	0.15	0.65
	Construction	0.31	0.22	0.17	-0.13	0.75
	Agriculture	0.00	0.18	1.00	-0.35	0.35
	Transportation	0.08	0.20	0.68	-0.31	0.48
	Service	0.42	0.17	0.01	0.09	0.75
	Retail	-0.05	0.24	0.83	-0.51	0.41
	Manufacturing	-0.12	0.21	0.56	-0.53	0.29
Income	Above \$100,000 (ref)	0	-	-	-	-
	\$0 - \$20,000	-0.30	0.40	0.46	-1.09	0.49
	\$20,001 - \$40,000	-0.01	0.20	0.96	-0.40	0.38
	\$40,001 - \$60,000	0.10	0.14	0.50	-0.18	0.38
	\$60,001 - \$80,000	0.21	0.15	0.16	-0.08	0.49
	\$80,001 - \$100,000	0.08	0.13	0.53	-0.18	0.35
	Don't Know	-0.18	0.40	0.65	-0.96	0.60
	Do not Wish to Answer	0.31	0.16	0.06	-0.02	0.63
Education	0. High School or less (ref)	0	-	-	-	-
	1. Some trade, college, university, or technical school	0.16	0.15	0.30	-0.14	0.47
	2. Completed trade, college, university, or technical school	0.11	0.14	0.43	-0.16	0.37

* *Bold indicates linear regression was significant at $p=.05$*

4.5.3 Final Multilevel Mixed Effect Models

There was found to be a significant association between sex and JASMH score when controlling for all confounders selected (Appendix A); the ICC was effectively zero (ICC: $3.28e^{-18}$, SE: 0, 95% CI [$3.28e^{-18}$ – $3.28e^{-18}$]). Compared to males, females rated the helpfulness of workplace accommodations higher by 0.24 points when accounting for the other variables in the final model (Table 4; $\beta = 0.238$, $p=0.03$, CI: 0.02-0.45). The only variables excluded due to lack of confounding influences were depression, cancer, and neurological disorders. The final model contained sex, age, sector, income, ethnicity, headaches, unknown mental health disorder, and disorder of childhood/adolescence. Confounding reduced the strength of the effect of sex on accommodation helpfulness from 0.28 in the bivariable analysis to 0.24 in the final model.

The bivariate and Greenland analyses were repeated for each of the 4 JASMH subscales (Appendix B-I) with the final results shown in Table 4. When examining the accommodation subscales, there were found to be differences in the strength and significance of the association between sex and helpfulness of accommodations. Accommodations relating to work schedule changes and changes to the physical environment were found to be rated as significantly more helpful to females than males with mental health disorders ($\beta = 0.51$ $p < 0.01$, CI: 0.25-0.77 and $\beta = 0.31$, $p = 0.02$, CI: 0.05-0.58). Accommodations relating to on job duties and psychosocial adjustments were not statistically different between males and females ($\beta = 0.15$, $p = 0.12$, CI: -0.09-0.39 and $\beta = 0.22$, $p = 0.6$, CI: -0.01-0.45). Clustering within workplaces for each of the subscales was similar to the overall scale, ranging from 0% to 3.6% at the bivariate level with sex, and reduced to 0% once all confounders were included.

Table 4. Multilevel *Mixed Effects Linear Regression of the variable sex with accommodation helpfulness category as an outcome, accounting for clustering by workplace**

Outcome Variable	Coefficient	Std. Error	P> t	95% Confidence Interval	
JASMH Overall (unadjusted)	0.28	0.10	<0.01	0.07	0.45
JASMH Overall	0.24	0.11	0.03	0.02	0.45
JASMH WS (Work Schedule)	0.51	0.14	<0.01	0.25	0.77
JASMH OD (On-job Duties)	0.15	0.12	0.22	-0.09	0.39
JASMH PS (Psychosocial Adjustments)	0.22	0.12	0.06	-0.01	0.45
JASMH PE (Physical Environment)	0.31	0.13	0.02	0.05	0.58

Bold indicates regression was significant at $p = .05$

Reference = male for all above

Note:

- JASMH Overall (unadjusted) – was the base model containing only sex and age
- JASMH Overall controlled for age, sector, income, ethnicity, headaches, unknown mental health disorder, and disorder of childhood/ adolescence
- JASMH WS controlled for age, sector, ethnicity, education, income, life threatening disorders, headaches, negative symptoms over the last week, and severity of symptoms today

- JASMH OD controlled for age, sector, income, negative symptoms over the last 6 months, severity of symptoms today, heart issues, and negative symptoms over the last week
- JASMH PS controlled for age, sector, skin issues, income, severity of symptoms over the past week, ethnicity, education, and muscle/bone issues
- JASMH PE controlled for age, sector, kidney issues, negative symptoms over the last month, headache, and substance abuse issues

4.6 Discussion

Workplace accommodations for workers with mental health disorders play an essential role in ensuring that workers can remain employed while experiencing MHDs or return to work following an absence for MHDs. Determining the perceived helpfulness of workplace accommodations for men and women and which accommodations they find most helpful can allow for a more streamlined and tailored accommodation process for workers with MHDs.

The primary objective of this study was to determine if there was an association between the sex of workers with mental health disorders and their perceived helpfulness of workplace accommodations. We found that, when accounting for confounders, there was a significant association between sex and helpfulness of accommodations. Females were found to rate the helpfulness of accommodations overall 0.24 points higher than males. When broken down by type of accommodation, the study revealed differences by sex in the perceived helpfulness of varying types of accommodations preferred by workers with MHDs. Females found accommodations relating to changing the physical environment of their workplace and changes to their work schedule to be significantly more helpful than males. However, given that the scale ranges from 1-4, differences of 0.24, 0.31, and 0.51 may not equate to a meaningful difference.

Research on the perceived helpfulness of accommodations for workers with mental health disorders is lacking. Previous research has examined differences in the types of

accommodations required by males or females, or the number of accommodations required, but has not specifically examined whether those accommodations are perceived to be helpful to males and females. However, we can make some assumptions; if females are reporting that they require accommodations more, it is likely that they perceive those accommodations as more helpful. Conversely, if males do not find workplace accommodations as helpful, it goes hand in hand that they may not report requiring accommodations in general, report requiring fewer accommodations, or not ask for accommodations at all. Our findings that females perceive accommodations to be more helpful than males is therefore in line with previous research that suggest that females require accommodations more often than males, and that females require more workplace accommodations than males (Morris, 2019; Gignac et al. 2018; Zwerling et al. 2003).

In addition, previous research has indicated that females have a higher unmet need for workplace accommodations than males. While there may be reasons for this unrelated to helpfulness, such as females working jobs where accommodations are less likely to be provided; we can make assumptions that differences between males and females unmet needs may be due to females finding more accommodations helpful, thereby requiring more accommodations but not receiving them. According to the 2017 Canadian Survey on Disability (CSD), women had higher unmet needs for accommodation, with a higher percent of women reporting needing three or more accommodations than men, and a lower percentage of women report needing only one accommodation compared to men (Morris, 2019). Another study found that women with a nonphysical disability had greater odds of having unmet workplace support needs than men with a nonphysical disability when compared to men with no disability as a reference (Jetha et al., 2021). Women with both physical and nonphysical disabilities also had much higher odds of

having unmet workplace support needs than men in the same category when compared to men with no disability. Similarly, in other study populations, women with arthritis were found both to require more accommodations and report higher unmet needs than men (Gignac et al. 2018).

Results from the CSD indicate the most commonly required work accommodations for workers with disabilities were flexible work arrangements (Statistics Canada, 2019b), which is in line with our finding that changes to work schedule were found to be the most helpful. In addition, in both the CSD and this study there was a difference between male and females. The CSD study found that significantly more females required flexible work arrangements than males, aligning with our findings that females found scheduling accommodations to be significantly more helpful than males (Statistics Canada, 2019b). These results are promising given that the most commonly provided accommodations for workers with mental health disorders are often work schedule related modifications (Bastien & Corbière, 2019; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019). Furthermore, as females are more often gendered to be responsible for tasks in the domestic sphere, outside the workplace, this finding is not surprising. It is possible that women prefer accommodations that allow them scheduling flexibility in order to keep up with demands outside the workplace (e.g., get groceries or other household supplies, catch up on housework, or spend more time with their children) as was noted in a study on return to work after a traumatic brain injury (Hanafy et al., 2022).

The second most commonly required accommodation found in the CSD were changes to employee's workstation (Statistics Canada, 2019b). They reported that more females required these accommodations than males, which aligns with our findings that females found physical workplace accommodations such as those to be significantly more helpful than males. Unfortunately, physical workplace modifications are the least commonly provided

accommodations (Corbière et al., 2014; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019). Zafar et al., (2019) noted that sometimes physical accommodations could be useful for mental health disorders. For example, the ability to reduce distractions in the work area or wear headphones to play music or white noise could be useful for an employee with depression, which can result in psychomotor slowing. Bastien and Corbière, (2019) have also noted that workers with cognitive difficulties may benefit from physical environment accommodations such as reducing noise in the work environment. As males and females may experience different symptoms while diagnosed with the same disorder, it is possible that females with mental health disorders experience more symptoms that would benefit from physical accommodations.

4.7 Strengths & Limitations

4.7.1 Strengths

To our knowledge this study was the first to examine the relationship between sex and the perceived helpfulness of workplace accommodations for workers with mental health disorders. Other research has explored accommodation provision for workers with mental health disorders but has not indicated whether the accommodations provided were the ones that would be most helpful to males or females. These findings highlight that sex and gender related factors should be considered when performing research on workplace accommodations and may be useful to consider when exploring accommodation plans.

4.7.2 Limitations

A limitation of our study was the fact that we studied the perceived helpfulness of accommodations regardless of whether an employee had utilized any accommodations. We did not have adequate sample sizes to examine the differences in helpfulness of each accommodation utilized by employees with mental health disorders. While employees should understand what

accommodations would be helpful for themselves regardless of if they have used them or not, it would have been more rigorous if we only looked at the differences between males and females who had used each accommodation.

A limitation in our study was not including more variables related to mental health as our population was workers with mental health disorders. Knowing if workers were taking any medication for their mental health disorder may have helped clarify whether that impacted the perceived helpfulness of accommodations, either by lessening the perceived need for accommodations when adequately medicated, or by increasing the perceived need if suffering from side effects. For example, a worker taking SSRIs for depression may have insomnia as a side effect and could perceive accommodations that allow for flexible schedule more helpful because of this. Our analysis also would have been more robust if we had examined the effect of comorbidities to determine if there was an additive effect from multiple mental and /or physical health disorders.

As this data was from a workplace survey, our sample excluded those not currently in the workforce, which may have omitted the people who would find workplace accommodations the most helpful. These could be people who are out of the workforce entirely, due to disability, or current employees who may have been off sick or on leave during data collection. To be generalizable to more people with mental health disorders we would need to expand our population to include people outside the workforce who would otherwise be eligible to work.

Another limitation comes from grouping the accommodations by type rather than examining differences for each specific accommodation. It is possible that within an accommodation subscale, some accommodations may be significantly more helpful to females

than males, but more accommodations may not have a difference thereby diluting the overall significance. Further analysis should be performed on specific accommodations.

4.8 Conclusion

This study focused on the perceived helpfulness of workplace accommodations for workers with mental health disorders with a focus on differences between males and females. The results of this study indicate that females with mental health disorders tend to find workplace accommodations more helpful than their male counterparts. Further analysis revealed that females found accommodations related to work schedule changes and changes to the physical work environment to be significantly more helpful than males, while accommodations related to psychosocial adjustments and on job duties were not significantly more helpful to either females or males.

These findings correlate with prior research and indicate that the most commonly provided accommodations are the ones that are perceived as most helpful to female workers; which suggests that accommodation provision is aligned with the needs and preferences of those who benefit from them most. While the difference in helpfulness score was significant between males and females, the difference was not exceptionally large; therefore, while these results could be considered when developing an accommodation plan, we do not recommend developing an intervention or changing policies based on these results alone.

Chapter 5: The Relationship Between Sex, Gendered Occupational Composition, and Perceived Helpfulness of Workplace Accommodations Among Workers with Mental Health Disorders

5.1 Abstract

Background

Mental health disorders (MHDs) are characterized by disturbances in cognition, emotion regulation, or behaviour resulting from various factors. MHDs have significant economic and personal costs and are responsible for the highest non-communicable disability adjusted life years lost. Workers with MHDs are often able to continue working though a MHD or return to work after an absence from a MHD with the provision of workplace accommodations.

In female dominated jobs workers may be more willing to request accommodations related to work scheduling, where part-time work schedules are more common. Conversely, the occupational culture in male dominated workplaces may discourage both men and women from requesting workplace accommodations, especially for mental health disorders which can be particularly stigmatizing to disclose. Occupational disparities rooted in societal gender roles, lead to inequalities in working conditions between men and women. Understanding factors relating to accommodation preference and providing necessary workplace accommodations are crucial in promoting mental health and ensuring equitable employment opportunities. The aim of this study is to determine if the association between sex and accommodation helpfulness is modified by the gendered composition of a worker's job.

Methods

We analyzed data from a cross-sectional survey distributed among employees in 31 workplaces spanning Manitoba and Northwestern Ontario. The outcome, perceived helpfulness

of accommodations, was assessed for workers with mental health disorders, using a 4-point scale based on responses to the Job Accommodation Scale for Mental Health (JASMH). Specific subsets of this scale, including work schedule, physical environment, on-job duties, and psychosocial factors, were compared. Our primary focus was on examining the differences in perceived helpfulness of workplace accommodations by sex, while examining if this relationship was modified by the gendered composition of a worker's occupation. Analytical procedures involved stratified multilevel mixed-effects regression using Stata.

Results

There were 227 workers with mental health disorders in our sample; 102 males in male dominated occupations, 15 males in female dominated occupations, 17 females in male dominated occupations, and 93 females in female dominated occupations. Overall, when stratified by gendered composition of an employee's job, females rated the helpfulness of workplace accommodations higher than males, and higher in male dominated jobs. The significance of the relationship between sex and helpfulness of accommodation changed for various accommodation types, indicating that effect modification was a factor in the association between sex and perceived helpfulness of accommodations. When examining specific types of accommodations, significant differences were observed between males and females; females in male dominated jobs found accommodations related to flexible work schedules to be significantly more helpful, rating them 0.54 points higher than males, while females in female dominated jobs rated them 0.50 points higher than males. Accommodations related to changing the physical workplace environment, on-job duties, or psychosocial adjustments were not significantly different after stratification.

Conclusion

The results from this study indicate that females with MHDs find workplace accommodations related to work scheduling more helpful than males in both male and female dominated jobs. In addition, it appears that the gendered composition of a worker's job may modify the relationship between sex and perceived helpfulness of accommodations. This further clarifies the importance of considering the intersection between occupational and sociodemographic characteristics in accommodation and mental health research.

5.2 Introduction

Mental health disorders encompass conditions characterized by disruptions in cognition, emotion regulation, or behavior, stemming from dysfunctional psychological, biological, or developmental processes, which results in significant distress (American Psychiatric Association, 2013). Disorders such as depression, bipolar disorder, and others can be attributed to a variety of factors, including environmental, physiological, genetic, chemical, and social factors. The prevalence of these mental health disorders varies between genders, with women exhibiting higher rates of mood and anxiety disorders, while men tend to exhibit higher rates of substance use disorders (Stephenson, 2023). The epidemiology of mental health disorders exhibits differences across countries and populations due to varying methodologies, cultural perceptions, and the influence of stigma. In 2022, over 5 million Canadians (18%) fulfilled the diagnostic criteria for a mood, anxiety, or substance use disorder over the last 12 months (Statistics Canada, 2022a). In addition, over the past 10 years rates of mental health disorders have been increasing significantly (Stephenson, 2023).

Mental health disorders are projected to cost the global economy over sixteen trillion US dollars in lost productivity between 2010 and 2030, with MHDs contributing significantly to noncommunicable disability-adjusted life years lost (Bloom et al., 2011). In Canada, over 20% of the working population experiences mental health problems, which results in 30% of short and long-term disability claims (Mental Health Commission of Canada, 2013). In 2011, this led to a \$6 billion loss in productivity due to absenteeism, presenteeism, and turnover, and costs the Canadian economy at least \$50 billion annually (Mental Health Commission of Canada, 2013).

Workplace accommodations play an essential role in supporting workers with mental health disorders. Nearly 40% of employees aged 25-64 with mental health and/or physical

disabilities require workplace accommodations (Morris, 2019). Compared to males, more females require these workplace accommodations in general, and females report having a higher need for multiple accommodations (Morris, 2019). Of workers who required workplace accommodations, 40% had at least one unmet need, and 21% had none of their accommodation needs met (Morris, 2019). Frequently provided accommodations include flexible work arrangements, job duty modifications, job coaching, feedback from supervisors, and gradual return to work (Bastien & Corbière, 2019; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019; Corbière et al., 2014). Employees with mental health disorders who receive accommodations appear to have longer job tenures, are able to work more hours, and are less likely to lose their jobs than those who do not receive accommodations (Chow et al., 2014; McDowell & Fossey, 2015; Zafar et al., 2019).

In the workplace, sex and occupation are often closely related. Overall, there is near parity in the amount of male and female workers; however, some industries and some occupations have a significant gender disparity. For example, nearly all plumbers, pipefitters and gas fitters are male, while nearly all dental assistants are female (Statistics Canada, 2019a). Females are also more likely than males to work part-time or temporary jobs, resulting in higher job insecurity and reduced benefits, including access to workplace accommodations (Patterson, 2018; Glauber, 2011; Cranford et al., 2003). These occupational disparities are embedded culturally prescribed gender roles which lead working conditions, pay, and health inequalities between men and women (Campos-Serna et al., 2013).

The gendered composition of a worker's job can also have an effect on how helpful men and women find accommodations. Masculine norms highlight eschewing weakness or vulnerability; in male dominated workplaces, men may find it is emasculating to ask for

workplace accommodations, as they may lose perceived dominance; while women may be less inclined to request accommodations and give up perceived elevated status as one of the guys (Berdahl, Cooper, Glick, Livingston, & Williams, 2018). Mental health conditions especially can be stigmatising to disclose (Dewa, van Weeghel, Joosen, Gronholm, & Brouwers, 2021; Stratton et al., 2018), which could effect the willingness to disclose, request accommodation, or report finding accommodations helpful, especially in male dominated environments. Conversely, workers in female dominated jobs may be more willing to request accommodations related to work scheduling, where part-time work schedules are more common.

While there is a clear need for accommodations for workers with mental health disorders, the literature is lacking evidence of the helpfulness of workplace accommodations. Due to these above differences in the types of jobs that men and women work, the precariousness of their positions, disparities in requirement for and access to workplace accommodations, it is important to consider the effect of occupational segregation and how it may intersect with sex and the helpfulness of accommodations. This study explores whether the gendered composition of an employee's job modifies the association between sex and perceived helpfulness of workplace accommodations for workers with mental health disorders. We hypothesize that there will be a difference in the perceived helpfulness of accommodations of workers when the gendered composition of their job is considered.

5.3 Methods

5.3.1 Supervisor and Worker Perspectives on Workplace Accommodations for Mental Health Study

A secondary analysis of data collected from the "Supervisor and Worker Perspectives on Workplace Accommodations for Mental Health Study" (Kristman, 2019) was performed. A

waiver of ethical review was received from the Lakehead University Research Ethics Board as this study involved a secondary analysis of anonymized data which is exempt from ethical review (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, 2022).

5.3.2 Study Population

The study population was composed of both full-time and part-time English-speaking employees who were at least 18 years old at the time of the study. The subset that had mental health disorders or symptoms was used in the current study. This was determined by including workers who answered affirmatively to the question, "Have you ever been diagnosed with any of the following (check all that apply)" as being diagnosed with any mental health disorder listed. The mental health disorders that were chosen to align with the Canadian Community Health Survey (Statistics Canada, 2012) and include schizophrenia, bipolar disorder, depression, anxiety disorders, organic disorders (delirium, dementia), substance use disorder, personality disorders, childhood/adolescent disorders, unknown, and other disorders.

5.3.3 Variables Under Study

5.3.3.1 Outcome variable

Helpfulness of Accommodations.

The perceived helpfulness of workplace accommodations was the outcome of interest in this study. Employees did not need to have utilized any accommodations, only rate how helpful they felt the accommodation would be to them on a 4-point scale from very unhelpful to very helpful. Analyses were performed on the overall helpfulness score, as well as the score for each of the accommodation subscales described below.

Forty-three accommodations for workers with mental health disorders were included in the survey; chosen by combining accommodations from 3 existing accommodation scales: The Job Accommodation Scale (Shaw et al, 2014), the Work Accommodation and Natural Support Scale (Corbière et al, 2014), and the Workplace Mental Health Accommodation Scale (Bolo et al, 2013). The Job Accommodation Scale – Mental Health (JAS-MH) (Kristman, 2019) was developed using a concept mapping approach, which winnowed the 43 accommodations down to 29. As the predicted JAS-MH score was highly correlated with a simple arithmetic mean of all included items ($r=0.94$) (Kristman, 2019), a simple arithmetic mean of the JAS-MH items was used for this study. The four subscales had high internal consistency with Cronbach's alpha scores ranging from 0.80 to 0.91 (Kristman, 2019).

Work schedule subscale

The accommodations in this subscale include accommodations related to scheduling modifications. Some examples include shortening the workday, changing hours, lengthening breaks, and moving to a part-time or flexible work schedule.

Physical environment subscale

The accommodations in this subscale include accommodations related to changes to an employee's physical workplace. Some examples include making the workplace more comfortable, moving locations, reducing distractions, allowing headphone use, and allowing changes to lighting.

On-job duties subscale

The accommodations in this subscale include accommodations related to changes to an employee's work duties. Some examples include lightening the workload, allowing for more time, and changing job tasks.

Psychosocial Adjustments

The accommodations in this subscale changes to social factors within the workplace. Some examples include training coworkers on mental health problems, encouraging interaction with coworkers, and providing employees with extra feedback or emotional support, or recognition.

5.3.3.2 Exposure variables

The main exposure variable of interest in this study was sex, as we were interested in determining whether accommodation helpfulness is dependent on worker sex. Sex was determined based on the responses to the question, "What was your biological sex at birth?"; with possible responses "Male", "Female", "Intersex", or "Choose not to answer". For this research question we were interested in determining if the effect of sex is modified by the gendered composition of an employee's job. To investigate this, an interaction between sex and occupational gender distribution was explored based on an employee's job title. Job title was captured by an open text field question: "What is your specific job title or position?". Some jobs tend to have a predominantly male workforce, whereas others have a predominantly female workforce; there may be differences in accommodation preference between men and women in male-dominated jobs, and between men and women in female-dominated jobs. A female worker may be more comfortable rating accommodations related to scheduling modifications more helpful in a female dominated job, where part-time schedules are more common.

To construct this "gender role" index, the job titles were broken down into four groups based on the percentage of female workers: 0 = occupations with less than 26% women workers; 1 = occupations with 26 to 50% women workers; 2 = occupations with 51 to 74% women workers; and 3 = occupations with 75% or more women workers (Smith & Koehoorn, 2016).

The percentage of women workers was determined by examining the sex breakdown of the labour force using the National Occupational Classification (Statistics Canada, 2019a). Due to sparse data in some categories and for ease of interpretation, analyses were performed by collapsing categories down to Male Dominated (0-49% Female) and Female Dominated (50-100% Female). During analysis, these groups were then combined with sex in an interaction and stratified to distinguish between males and females in male dominated industries and males and females in female dominated industries.

5.3.3.3 Potential confounding variables

Several variables were explored for confounding between sex and perceived accommodation helpfulness. The perceived helpfulness of accommodations could be impacted by demographic characteristics such as age (Centers for Disease Control and Prevention & National Association of Chronic Disease Directors, 2008; R. C. Kessler et al., 2010; Lorem et al., 2017), race (Chiu et al., 2018), education (Chiu et al., 2020; Steele et al., 2007), and income (Chiu et al., 2020), which could impact the prevalence, severity, presentation, or course of mental health disorders.

Age was recorded “mm,yy”. Race/ethnicity was a select all that apply field with options: "Aboriginal/Indigenous (e.g., First Nations, Inuit, Metis, etc.)", "Arab (e.g., West Asia/ Middle East, North Africa, etc.)", "Asian (e.g., Chinese, Japanese, Korean, etc.)", "Black Caribbean (e.g., Jamaican, Bahamian, etc.)", "Black African (e.g., Nigerian, Somalian, Sudanese, etc.)", "Latin American (e.g., Central American, South America, etc.)", "South Asian (e.g., Indian, Pakistani, Sri Lankan, etc.)", "Southeast Asian (e.g., Cambodian, Filipino, Laotian, Malaysian, Thai, Vietnamese, etc.)", "White/Caucasian (e.g., Western European, Eastern European, etc.)", "Other (Please Specify)", "Choose not to answer". Income was recorded as total household

income, with options: "\$0-\$20,000", "\$20,001-\$40,000", "\$40,001-\$60,000", "\$60,001-\$80,000", "\$80,001-100,000", "Above \$100,000", "Don't know", and "Do not wish to answer". Highest level of education had responses: "High school or less", "Some trade, college, or technical school", or "Completed trade, college, or technical school".

Type of mental health disorder was also examined for confounding as some mental health disorders are more likely to be experienced by either males or females (Statistics Canada, 2013). This may affect the perceived helpfulness of certain accommodations depending on the type of mental health disorder experienced; therefore, confounding the relationship between gender role and perceived helpfulness of workplace accommodations. As an example, the ability to reduce distractions in the worker's work area might appeal more to a worker with attention deficit disorder rather than a worker with depression.

The presence of other health problems could also confound the relationship between gender role and perceived helpfulness of accommodations (Kessler et al., 2010; Lorem et al., 2017). Other health problems were captured in the question "Please indicate if you currently have any of the following health problems (responses "yes", and "no". The possible health conditions were: Muscle, bone or joint problems, Allergies, Breathing problems, High blood pressure, Heart and circulation problems, Digestive system problems, Diabetes, Kidney or Genitourinary problems, Neurological problems, Headaches, Cancer, Vision Problems, Hearing Problems, Severe Skin Problems, and Life-Threatening Illness. These comorbidities were measured with the Saskatchewan Comorbidity Scale (Jaroszynski et al 1998).

The relationship between gender role and accommodation helpfulness may be different depending on currently experiencing symptoms and the severity of symptoms (Morris, 2019). Two questions related to this in the worker survey were examined, one that relates to the severity

of symptoms at the time of writing the survey, and the other over the last week "On a scale of 1 to 10, where 1 means "no symptoms" and 10 means "the most severe symptoms," please rate your overall level of severity of the symptoms related to your mental health problem at this time (today)/over the last week."

5.4 Descriptive Analysis

The first step of the analysis involved running univariate descriptive analyses to determine frequency distributions, means and standard deviations of each of the variables of interest, including potential confounders and effect modifiers. Next, Pearson's chi-square tests were used to determine if there were significant differences between males in male dominated, male in female dominated, female in male dominated and female in female dominated jobs. Next, bivariable analyses were performed using multilevel mixed effect linear regression to examine the association between all exposure variables and the outcome JASMH variable while accounting for clustering within workplaces. During the model selection stage, variables were selected for consideration in the Greenland analysis based on the bivariable analysis, using a p value of ≤ 0.2 as a cutoff. Using the Greenland et. al (2016) MSE forward selection methodology, analyses were run with each variable with $p \leq 0.2$ and was compared to the base model with only age and sex. To test for the effect of the gendered composition of the workplace, "% female worker" was added in as an interaction with sex to each of the final models. Results were then stratified by "% female worker". All analyses were performed using Stata version 17.

5.5 Results

5.5.1 Descriptive Analysis

Tables 5 and 6 describe the characteristics of the population for the "gender role" analysis. There were 227 workers with a mental health disorder or symptoms of a mental health

disorder; 93 males in a job with 0-25% females, 9 in jobs with 26-50% females, 11 in 51-75% female jobs and 4 in 75+% female jobs; there were 7 females in a job with 0-25% females, 10 in jobs with 26-50% females, 32 in 51-75% female jobs and 61 in 75+% female jobs. Due to sparse data in some categories and for ease of interpretation, analyses were performed by collapsing categories down to Male in Male Dominated (0-49% Female), Male in Female Dominated (50-100% Female), Female in Male Dominated (0-49% Female), and Female in Female Dominated (50-100% Female).

After collapsing the categories, 102 were male in male dominated occupations (44.9%), 15 were male in female dominated occupations (6.2%), 17 were female in male dominated occupations (7.5%), and 93 were female in female dominated occupations (41.0%). Sixty three percent of these workers had a diagnosed mental health disorder and 38.8% had no diagnosis but had symptoms. Most of the workers were white (88.5%), had completed some form of post-secondary education (84.5%), had high salaries (31.7% had salaries of \$100,000 or more), and were on average nearly 40 years old (average 39.9). These workers were mostly employed in the mining (27.7%), and public administration (23.8%) industries, though there were also employees in finance, agriculture, service, transportation, manufacturing, retail, construction, and wholesale sectors.

There was a statistically significant difference in the prevalence of anxiety disorders between the different gendered breakdowns with 52.9% of females in male dominated occupations diagnosed compared to only 9.8% of females in female dominated occupations ($\chi^2=8.31$, $p=0.04$). For physical health issues, headaches were most experienced overall, though statistically significant ($\chi^2=9.64$, $p=0.02$) differences were noted more when looking at the sex of the worker rather than the proportion of female workers (55.5% and 46.7% for males in male and

female dominated occupations, compared to 70.6% and 74.2% for females in male and female dominated occupations).

When examining differences between the gendered composition of occupations, there were statistical differences noted in various mental and physical disorders (Table 5) as well as across ethnicities (white $x^2=7.97$, $p=0.047$; Asian $x^2=13.60$, $p=0.004$), income ($x^2= 51.9$, $p<0.001$), and job sector ($x^2=132.04$, $p<0.001$). Within job sector, mining ($x^2=47.93$, $p<0.001$) finance ($x^2=25.56$, $p<0.001$, public administration ($x^2=15.83$, $p=0.001$), transportation ($x^2=10.92$, $p=0.012$), retail ($x^2=10.25$, $p=0.017$, service ($x^2=25.50$, $p<0.001$), and wholesale ($x^2=10.41$, $p=0.015$) industries had significant differences in the gendered composition of the workforce. There were significant differences in the distribution of kidney/genitourinary problems ($x^2=8.26$, $p=0.04$), headaches ($x^2=9.64$, $p<0.02$), and hearing problems ($x^2=11.10$, $p=0.01$) amongst the gender role categories.

Table 5. *Categorical characteristics of 227 workers with mental health disorders or symptoms of a mental health disorder by gender role*

Question	Male in Male Dominated Occupations	Male in Female Dominated Occupations	Female in Male Dominated Occupations	Female in Female Dominated Occupations
Mental Health Disorder or Symptoms (N=227)	102	15	17	93
No mental health diagnosis, but I have mental health symptoms	47 (46.08)	1 (6.67%)	3 (17.65%)	37 (39.78%)
Mental Health Disorder	55 (53.92%)	14 (93.33%)	14 (82.35%)	59 (63.44%)
Anxiety disorder (OCD, panic, PTSD, etc.)	26 (25.49%)	7 (46.67%)	9 (52.94%)	37 (9.78%)
Major depression	19 (18.63%)	5 (33.33%)	4 (23.53%)	25 (26.88%)
Other	10 (9.90%)	3 (20.0%)	2 (11.76%)	16 (17.2%)
Substance related disorder	7 (6.86%)	0 (0%)	0 (0%)	1 (1.08%)
Unknown	3 (2.94%)	1 (6.67%)	2 (11.76%)	1 (1.08%)
Personality disorder (avoidant, borderline, etc.)	1 (0.98%)	1 (6.67%)	1 (5.88%)	3 (3.23%)
Bipolar disorder	3 (2.94%)	0 (0%)	0 (0%)	2 (2.15%)
Specific disorder of childhood/adolescence	3 (2.94%)	0 (0%)	0 (0%)	0
Schizophrenia and other psychotic disorders	0 (0%)	0 (0%)	0 (0%)	1 (1.08%)

Impact on job				
Has your mental health condition negatively impacted your job performance in the last week	17 (17.71%)	2 (13.33%)	3 (17.65%)	14 (15.05%)
Has your mental health condition negatively impacted your job performance in the last 6 months?	37 (38.54%)	3 (20%)	8 (47.06%)	41 (44.09%)
Physical Health Issues	92 (90.20%)	14 (93.33%)	17 (100%)	88 (94.62%)
Headaches (such as migraine, tension, stress, sinus, others)	56 (55.45%)	7 (46.67%)	12 (70.59%)	69 (74.19%)
Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	63 (63%)	9 (60%)	9 (52.94%)	53 (56.99%)
Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	33 (33.33%)	7 (46.67%)	8 (47.06%)	45 (48.39%)
Vision Problems	27 (26.73%)	5 (33.33%)	8 (47.06%)	34 (36.56%)
Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	27 (26.73%)	4 (26.67%)	4 (23.53%)	26 (27.96%)
Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	23 (22.77%)	4 (26.67%)	4 (23.53%)	29 (31.18%)
High blood pressure (hypertension)	18 (17.82%)	2 (13.33%)	2 (12.5%)	11 (11.83%)
Hearing Problems	22 (22%)	6 (40%)	1 (5.88%)	10 (10.87%)
Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostate problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)	11 (10.89%)	1 (6.67%)	2 (11.76%)	23 (24.73%)
Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	5 (4.95%)	2 (13.33%)	0 (0%)	9 (9.68%)
Severe Skin Problems	6 (6%)	0 (0%)	0 (0%)	4 (4.3%)
Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	5 (4.95%)	0 (0%)	0 (0%)	6 (6.52%)
Diabetes	3 (2.97%)	1 (6.67%)	1 (5.88%)	2 (2.15%)
Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or	2 (1.98%)	0 (0%)	0 (0%)	1 (1.08%)

spread, lymphoma, leukemia, others)				
Life Threatening Illness (i.e. HIV)	0 (0%)	0 (0%)	0 (0%)	1 (1.08%)
Ethnicity				
White/Caucasian (e.g., Western European, Eastern European, etc.)	88 (86.27%)	11 (73.33%)	14 (82.35%)	88 (94.62%)
Non-White	17 (16.67%)	3 (20.0%)	3 (17.65%)	9 (9.68%)
Aboriginal/Indigenous (e.g., First Nations, Inuit, Metis, etc.)	13 (12.75%)	1 (6.67%)	2 (11.76%)	8 (8.6%)
Asian (e.g., Chinese, Japanese, Korean, etc.)	2 (1.96%)	2 (13.33%)	0 (0%)	0 (0%)
Southeast Asian (e.g., Cambodian, Filipino, Laotian, Malaysian, Thai, Vietnamese, etc.)	0 (0%)	1 (6.67%)	1 (5.88%)	1 (1.08%)
Other	1 (0.98%)	0 (0%)	0 (0%)	0 (0%)
Latin American (e.g., Central American, South America, etc.)	1 (0.98%)	0 (0%)	0 (0%)	0 (0%)
Industry				
Mining	51 (50%)	2 (13.33%)	4 (23.53%)	6 (6.45%)
Public Admin	16 (15.69%)	9 (60%)	6 (35.29%)	23 (24.73%)
Finance	0 (0%)	1 (6.67%)	0 (0%)	18 (19.35%)
Agriculture	12 (11.76%)	0 (0%)	2 (11.76%)	5 (5.38%)
Service	0 (0%)	3 (20%)	0 (0%)	18 (19.35%)
Transportation	9 (8.82%)	0 (0%)	3 (17.65%)	1 (1.08%)
Manufacturing	8 (7.84%)	0 (0%)	0 (0%)	4 (4.3%)
Retail	0 (0%)	0 (0%)	1 (5.88%)	8 (8.6%)
Construction	6 (5.88%)	0 (0%)	1 (5.88%)	3 (3.23%)
Wholesale	0 (0%)	0 (0%)	0 (0%)	7 (7.53%)
Income				
\$0 - \$20,000	2 (1.98%)	0 (0%)	1 (5.88%)	0 (0%)
\$20,001 - \$40,000	4 (3.96%)	0 (0%)	0 (0%)	11 (11.83%)
\$40,001 - \$60,000	5 (4.95%)	3 (20%)	1 (5.88%)	28 (30.11%)
\$60,001 - \$80,000	14 (13.86%)	2 (13.33%)	1 (5.88%)	15 (16.13%)
\$80,001 - \$100,000	21 (20.79%)	3 (20%)	4 (23.53%)	15 (16.13%)
Above \$100,000	46 (45.54%)	4 (26.67%)	7 (41.18%)	15 (16.13%)
Don't know	2 (1.98%)	0 (0%)	0 (0%)	2 (2.15%)
Do not wish to answer	7 (6.93%)	3 (20%)	3 (17.65%)	7 (7.53%)
Education				

0. High School or less	20 (19.6%)	0	3 (17.65%)	12 (12.9%)
1. Some trade, college, university, or technical school	32 (31.37%)	4 (26.67%)	2 (11.76%)	20 (21.51%)
2. Completed trade, college, university, or technical school	50 (49.02%)	11 (73.33%)	12 (70.59%)	61 (65.59%)

(Bold indicates Pearson's chi-square was significant for differences between groups at $p=.05$)

Note: Respondents could select multiple mental or physical health disorders

Table 6. Continuous characteristics of 227 workers with mental health disorders and symptoms of a mental health disorder by sex and percent composition of occupation

Question	Male in Male Dominated Occupations	Male in Female Dominated Occupations	Female in Male Dominated Occupations	Female in Female Dominated Occupations
Age ($p=0.29$)				
N	101	15	17	92
Mean	39.9	39.9	35.1	37.7
SD	11.13	9.27	13.31	11.29
Min	19.75	28.08	19.08	20.25
Max	64.5	56	64.17	69.67
Severity of Mental Health Symptoms Today ($p=0.18$)				
N	96	15	16	91
Mean	3.04	2.67	4.25	3.88
SD	2.10	1.68	2.74	2.38
Min	1	1	1	0
Max	10	6	10	10
Severity of Mental Health Symptoms This Week ($p=0.10$)				
N	98	15	16	91
Mean	3.97	3.27	4.63	4.63
SD	2.29	2.22	2.55	2.29
Min	1	1	1	1
Max	10	7	10	10
JASMH Overall ($p<0.01$)				
N	93	14	17	86
Mean	2.36	2.74	2.70	2.76
SD	0.69	0.82	0.72	0.59
Min	1	1.23	1.31	1.20
Max	3.66	3.71	4	4
JASMH WS ($p<0.01$)				
N	93	14	17	86

Mean	2.32	2.64	2.81	2.90
SD	0.82	0.71	0.89	0.82
Min	1	1	1	1
Max	4	3.4	4	4
JASMH PS (p<0.01)				
N	93	14	17	86
Mean	2.45	2.83	2.69	2.83
SD	0.77	0.92	0.67	0.64
Min	1	1	1.33	1.56
Max	4	3.89	4	4
JASMH PE (p<0.01)				
N	93	14	17	86
Mean	2.21	2.71	2.58	2.81
SD	0.87	0.91	0.82	0.82
Min	1	1	1	1
Max	4	3.8	4	4
JASMH OD (p=0.13)				
N	93	14	17	86
Mean	2.39	2.73	2.71	2.59
SD	0.73	1.05	0.88	0.71
Min	1	1	1.22	1
Max	3.67	4	4	4

5.5.2 Bivariable Analysis

At the bivariable level, the variance attributed to the workplace accounted for 2.4% for the interaction between sex and percent female workers and JASMH. When all confounders were added, the variance due to the company an employee was employed in was reduced to zero. Table 3 shows that being female was significantly associated with a higher helpfulness rating for workplace accommodations compared to the male reference, and that age was not statistically significantly associated with perceived helpfulness of workplace accommodations. The severity of mental health symptoms today and this week were not associated with the helpfulness score. Females in female dominated occupations were significantly associated with a higher JASMH score at the bivariable level compared to the reference of males in male dominated occupations.

When mental health disorders were examined, a diagnosis of depression was significantly associated with a higher accommodation helpfulness score compared to no diagnosis of depression; no other mental health diagnoses were significantly associated with accommodation helpfulness.

When physical health disorders were examined, a diagnosis of cancer was significantly associated with a lower accommodation helpfulness score compared to no diagnosis of cancer ($p=0.04$); no other physical health diagnoses were significantly associated with helpfulness. Neither negative impact on job performance over the past 6 months or the past week were significantly associated with accommodation helpfulness. When ethnicity was collapsed down to “white” and “non-white” categories, there was no significant difference in accommodation helpfulness score. When compared to the mining sector, employees in the finance, public administration, and service sectors found workplace accommodations significantly more helpful. None of the income levels were significantly associated with accommodation helpfulness compared to the reference (Above \$100,000). None of the education levels were significantly associated with accommodation helpfulness compared to the reference (High School). Bivariable analyses for each of the JASMH sub scores are listed in appendices B, D, F, and G.

Table 7. *Bivariable analysis of multilevel mixed linear regression of each variable of interest with accommodation helpfulness score as an outcome, accounting for clustering within workplace **

Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Age		-0.01	0.00	0.08	-0.02	0.00
Severity of Mental Health Symptoms Today		0.02	0.02	0.33	-0.02	0.06
Severity of Mental Health Symptoms This Week		0.01	0.02	0.75	-0.03	0.05
Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Sex	Male (ref)	0.0	-	-	-	-
	Female	0.28	0.10	<0.001	0.09	0.47

“Gender Role” Interaction	Male in Male Dominated Occupations (ref)	0.0	-	-	-	-
	Male in Female Dominated Occupations	0.30	0.19	0.12	-0.08	0.68
	Female in Male Dominated Occupations	0.30	0.18	0.09	-0.04	0.64
	Female in Female Dominated Occupations	0.37	0.11	0.00	0.17	0.57
Mental Health (ref = no disorder)	Any Diagnosed MH Disorder	0.02	0.10	0.87	-0.18	0.21
	Schizophrenia and other psychotic disorders	0.32	0.68	0.64	-1.01	1.66
	Bipolar disorder	0.38	0.31	0.22	-0.22	0.99
	Major depression	0.23	0.11	0.03	0.02	0.44
	Anxiety disorder (OCD, panic, PTSD, etc.)	0.01	0.10	0.93	-0.18	0.20
	Substance related disorder	-0.05	0.27	0.84	-0.57	0.47
	Personality disorder (avoidant, borderline, etc.)	0.32	0.28	0.24	-0.22	0.87
	Specific disorder of childhood/adolescence	-0.47	0.39	0.20	-1.24	0.31
	Unknown	-0.46	0.30	0.13	-1.05	0.13
	Other (see Q3_1_12_TEXT)	-0.02	0.13	0.91	-0.28	0.24
	No mental health diagnosis, but I have mental health symptoms	-0.02	0.10	0.81	-0.21	0.17
Physical Health (ref = no disorder)	Any Physical Health Disorder	-0.11	0.18	0.55	-0.46	0.25
	Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	-0.06	0.10	0.50	-0.25	0.12
	Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	-0.04	0.09	0.71	-0.22	0.15
	Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	-0.07	0.10	0.51	-0.27	0.13
	High blood pressure (hypertension)	0.09	0.13	0.51	-0.17	0.34

	Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	-0.28	0.21	0.21	-0.68	0.13
	Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	-0.13	0.10	0.23	-0.33	0.08
	Diabetes	-0.06	0.28	0.82	-0.61	0.48
	Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostrate problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)	0.02	0.13	0.85	-0.23	0.28
	Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	0.19	0.17	0.27	-0.15	0.53
	Headaches (such as migraine, tension, stress, sinus, others)	0.14	0.10	0.15	-0.05	0.32
	Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or spread, lymphoma, leukemia, others)	-0.70	0.34	0.04	-1.36	-0.04
	Vision Problems	-0.03	0.10	0.79	-0.22	0.17
	Hearing Problems	0.03	0.12	0.81	-0.21	0.27
	Severe Skin Problems	-0.17	0.23	0.45	-0.62	0.28
	Life Threatening Illness (i.e. HIV)	0.38	0.69	0.58	-0.96	1.73
Impact on Job	Negative Impact Last Week					
	No (ref)	0	-	-	-	-
	Yes	0.08	0.13	0.54	-0.17	0.33
	Don't know/Prefer not to	0.16	0.16	0.30	-0.15	0.47

	answer					
	Negative Impact Last 6 Months					
	No (ref)	0	-	-	-	-
	Yes	0.09	0.10	0.39	-0.11	0.28
	Don't know/Prefer not to answer	0.16	0.15	0.29	-0.13	0.45
Ethnicity	White/Caucasian (e.g., Western European, Eastern European, etc.) (ref)	0	-	-	-	-
	Non-White	0.23	0.13	0.07	-0.02	0.49
Industry	Mining (ref)	0	-	-	-	-
	Finance	0.43	0.19	0.03	0.05	0.80
	Wholesale	0.40	0.26	0.13	-0.12	0.91
	Public Administration	0.40	0.13	0.00	0.15	0.65
	Construction	0.31	0.22	0.17	-0.13	0.75
	Agriculture	0.00	0.18	1.00	-0.35	0.35
	Transportation	0.08	0.20	0.68	-0.31	0.48
	Service	0.42	0.17	0.01	0.09	0.75
	Retail	-0.05	0.24	0.83	-0.51	0.41
	Manufacturing	-0.12	0.21	0.56	-0.53	0.29
Income	Above \$100,000 (ref)	0	-	-	-	-
	\$0 - \$20,000	-0.30	0.40	0.46	-1.09	0.49
	\$20,001 - \$40,000	-0.01	0.20	0.96	-0.40	0.38
	\$40,001 - \$60,000	0.10	0.14	0.50	-0.18	0.38
	\$60,001 - \$80,000	0.21	0.15	0.16	-0.08	0.49
	\$80,001 - \$100,000	0.08	0.13	0.53	-0.18	0.35
	Don't Know	-0.18	0.40	0.65	-0.96	0.60
	Do not Wish to Answer	0.31	0.16	0.06	-0.02	0.63
Education	0. High School or less (ref)	0	-	-	-	-
	1. Some trade, college, university, or technical school	0.16	0.15	0.30	-0.14	0.47
	2. Completed trade, college, university, or technical school	0.11	0.14	0.43	-0.16	0.37

* *Bold indicates linear regression was significant at p=.05*

5.5.3 Final Model

To identify appropriate variables for control and to account for clustering by workplace, multilevel mixed effect linear regression was performed iteratively using a forward selection strategy by Greenland et al. (2016) for the JASMH overall, and each of the subscales (Appendix A, C, E, G, I). As per this method, all variables were added iteratively to the model until the addition of further variables produced no results with delta MSE greater than 0, indicating a lack of confounding influence. To account for the gender role analysis, the interaction with sex and percent female workers was added to each of the previous final models. Due to collinearity and lack of adequate sample size, the effect of percent female workers was unable to be ascertained, therefore each model was run stratified by percent female workers. The results are listed in Table 8 below, with comparisons to the un-stratified model.

Overall and in each of the subscales (except psychosocial adjustments), females in male dominated jobs found accommodations to be more helpful than females in female dominated jobs. When examining the stratifications, there were found to be differences in the strength and significance of the association between sex and helpfulness of accommodations. Prior to stratification, JASMH overall, the work schedule subscale, and physical environment subscale were significantly different between males and females. After stratification, JASMH overall was only significant between females and males in male dominated jobs ($\beta = 0.38$ $p=0.05$, CI: 0.1-0.45), while there was no significant difference between males and females for physical environment accommodations in male dominated ($\beta = 0.24$ $p=0.29$, CI: -0.20-0.69) or female dominated jobs ($\beta = 0.18$ $p=0.43$, CI: -0.28-0.65). For work scheduling related accommodations, there was still a significant difference between males and females in both male dominated ($\beta = 0.54$ $p=0.02$, CI: 0.10-0.98) and female dominated jobs ($\beta = 0.50$ $p=0.03$, CI: 0.05-0.95).

Table 8. Stratification of multilevel mixed effects linear regression of the variable sex with accommodation helpfulness category as an outcome, accounting for clustering by workplace

Outcome Variable	Coefficient	Std. Error	P> t	95% Confidence Interval	
JASMH Overall	0.24	0.11	0.03	0.02	0.45
Male Dominated Job	0.38	0.19	0.05	0.01	0.75
Female Dominated Job	0.21	0.18	0.24	-0.14	0.55
JASMH WS (Work Schedule)	0.51	0.14	<0.01	0.25	0.77
Male Dominated Job	0.54	0.23	0.02	0.10	0.98
Female Dominated Job	0.50	0.23	0.03	0.05	0.95
JASMH OD (On-job Duties)	0.15	0.12	0.22	-0.09	0.39
Male Dominated Job	0.29	0.21	0.17	-0.12	0.69
Female Dominated Job	0.14	0.21	0.52	-0.28	0.55
JASMH PS (Psychosocial Adjustments)	0.22	0.12	0.06	-0.01	0.45
Male Dominated Job	0.18	0.21	0.41	-0.24	0.59
Female Dominated Job	0.24	0.19	0.20	-0.13	0.62
JASMH PE (Physical Environment)	0.31	0.13	0.02	0.05	0.58
Male Dominated Job	0.24	0.23	0.29	-0.20	0.69
Female Dominated Job	0.18	0.24	0.43	-0.28	0.65

Bold indicates regression was significant at $p=.05$

In all analyses, male was used as the reference category

Note:

- JASMH Overall (unadjusted) – was the base model containing only sex and age
- JASMH Overall controlled for age, sector, income, ethnicity, headaches, unknown mental health disorder, and disorder of childhood/ adolescence
- JASMH WS controlled for age, sector, ethnicity, education, income, life threatening disorders, headaches, negative symptoms over the last week, and severity of symptoms today
- JASMH OD controlled for age, sector, income, negative symptoms over the last 6 months, severity of symptoms today, heart issues, and negative symptoms over the last week
- JASMH PS controlled for age, sector, skin issues, income, severity of symptoms over the past week, ethnicity, education, and muscle/bone issues
- JASMH PE controlled for age, sector, kidney issues, negative symptoms over the last month, headache, and substance abuse issues

5.6 Discussion

The primary objective of this study was to determine if the gendered composition of an employee's job modified the relationship between the sex of workers with mental health disorders and their perceived helpfulness of workplace accommodations. There were issues with

sample size which resulted in multicollinearity as there were fewer than 20 males in female dominated jobs or females in male dominated jobs in our sample. This resulted in an inability to determine the effect of the interaction term. Analyses were stratified; however, these results should be interpreted with caution due to the low sample sizes and large confidence intervals. While coefficients changed when analyses were stratified by upwards of 60% in some cases, it is unclear whether these differences are due to true effect modification.

These results indicate that, when controlling for confounders, female workers with mental health disorders find work scheduling accommodations to be more helpful than males in both male dominated and female dominated jobs. In addition, the gendered composition of an employee's job appears to modify the relationship between sex and perceived helpfulness of accommodations. Accommodations related to physical changes to the work environment no longer appear to be associated with sex when stratified by the percentage of female workers.

Previous research has focused on sex and gender differences in required accommodations, and the different types of accommodations needed, however, research on the perceived helpfulness of these accommodations has been lacking. If we assume females are reporting that they require accommodations more at least in part because they perceive those accommodations would be more helpful, then our findings are in line with previous research that suggest that females require accommodations more often than males, and that females require more workplace accommodations than males (Morris, 2019; Gignac et al. 2018; Zwerling et al. 2003). Even after stratification, in all cases the coefficient was positive, indicating that females found accommodations more helpful than males, though not always significantly so. In all cases (except psychosocial adjustment accommodations), the coefficient was higher in male dominated

jobs, suggesting there is a larger difference in how helpful males and females perceive accommodations to be in male dominated jobs compared to female dominated jobs.

Effect modification may have played more of a role in the physical environment accommodation subscale, as occupational gendered stratification resulted in the association between sex and accommodation helpfulness being reduced to non-significance. It is possible that these types of accommodations are impacted more by the types of jobs, and therefore gendered nature of the job, than the sex of the worker themselves. For instance, reducing distractions in a workers work area may be as applicable for a worker in a factory as it would be for a worker in a hospital; both busy environments with a lot of noise and distraction.

The highest relative strength of association being found in the work schedule subscale, and the preference in previous literature is not very surprising given that women are more often gendered to be responsible for tasks in the domestic sphere, outside the workplace. It is possible that women prefer accommodations that allow them scheduling flexibility in order to keep up with demands outside the workplace. Having a flexible schedule or part time schedule could allow more time for females to get groceries or other household supplies, catch up on housework, or spend more time with their children. This may explain why there was still a significant difference between sex and accommodation helpfulness for both females in male dominated jobs as well as females in female dominated jobs; and why the strength of association was almost identical between the 2 occupational stratifications (0.54 points higher in male dominated jobs compared to 0.50 points higher in female dominated jobs). Work scheduling accommodations are more helpful to females regardless of what type of work environment they are working within.

5.7 Strengths & Limitations

5.7.1 Strengths

To our knowledge this study was the first to examine the intersection between sex, gendered occupational composition, and the perceived helpfulness of workplace accommodations for workers with mental health disorders. Other research has explored accommodation provision for workers with mental health disorders but has not indicated whether the accommodations provided were the ones that would be most helpful to males or females. These findings highlight that sex and gender related factors should be considered when performing research on workplace accommodations.

5.7.2 Limitations

Due to the nature of secondary data analysis, some confounders that should be included in the analysis cannot be as they were not included in the original survey. For a sex and gender-based analysis, it would be helpful to be able to determine if the workers are full-time or part-time, and if they are married or have dependents, as these are all strongly related to gender and could also be related to the helpfulness of accommodation. As we had issues with collinearity with the gendered composition of the occupation and sex, having a more robust gender field as an exposure would have been more helpful; such as a “Labour Force Gender Index” variable . This variable included the gendered composition of occupation along with responsibility for childcare, hours worked, and education level. Considering the workplace, it may have been useful to consider further workplace factors such as the type of job workers were employed in (physical, desk job, etc.), rather than just the gendered composition. Measures of stigma would have also been useful to identify if that influenced a lack of reported accommodation helpfulness.

Another limitation of our study was that our respondents did not need to have utilized an accommodation in order to rate its helpfulness. With larger sample sizes this would have been more feasible to have as inclusionary criteria, which would have improved the rigour of our study. However, employees should have self knowledge enough to know what would be helpful for themselves, regardless of if they have used them or not.

From the mental health side, it would be helpful to know if workers are taking any medication for their mental health disorder. Workers could believe some accommodations would not be as helpful if they were being treated with medication that would eliminate the need. For example, a worker with ADHD might find it helpful to reduce distraction in their workspace, but not find distractions as much of a hinderance if properly medicated. Similarly, they might also find they have different accommodation needs due to the side effects of medication. It would have also been useful to look at the number of mental and physical health disorders workers were experiencing, as this could have had an additive effect.

As this data was from a workplace survey, our sample excluded those not currently in the workforce, which may have omitted the people who would find workplace accommodations the most helpful. These could be people who are out of the workforce entirely, due to disability, or current employees who may have been off sick or on leave during data collection. To be generalizable to more people with mental health disorders we would need to expand our population to include people outside the workforce who would otherwise be eligible to work.

Another limitation comes from grouping the accommodations by type rather than examining differences for each specific accommodation. It is possible that within an accommodation subscale, some accommodations may be significantly more helpful to females

than males, but more accommodations may not have a difference thereby diluting the overall significance. Further analysis should be performed on specific accommodations.

5.8 Conclusion

This study focused on the perceived helpfulness of workplace accommodations for workers with mental health disorders exploring the differences between males and females and gendered occupational contribution. The results of this study indicate that females with mental health disorders tend to find workplace scheduling accommodations more helpful than their male counterparts in both male dominated and female dominated jobs. Further analysis revealed that the relationship between sex and accommodation helpfulness may have been modified by the percent of female workers, though sample sizes were too small to draw a firm conclusion.

These results indicate that the most provided accommodations relating to work schedule modifications are the ones that are perceived as most helpful to female workers regardless of the gendered nature of their job; suggesting that accommodations are aligned with the needs and preferences of those who benefit from them most. While the difference in helpfulness score was significant between males and females for work scheduling accommodations in both male and female dominated occupations, the difference was not exceptionally large, and we had issues with lack of sample size. It is therefore recommended that further research examining gendered workplace characteristics and accommodation helpfulness be undertaken to determine if there is a true effect or not.

Chapter 6: Discussion

6.1 Overview

The first objective of this study was to determine the association between worker sex and the perceived helpfulness of workplace accommodations for workers with mental health disorders. The results indicated that overall, females with MHDs perceive workplace accommodations to be more helpful than males, though the strength of association between different types of accommodations differed. Accommodations related to work scheduling and changes to the physical workplace environment were the most helpful to females, whereas on-job duties and psychosocial adjustment accommodations were not significantly different between females compared to males. When these analyses were stratified by the occupational gendered distribution of workers for our second objective, we found that the gendered composition of a worker's job may modify the relationship between sex and perceived helpfulness of accommodations. When stratified, there was no longer a significant difference between males and females perceived helpfulness of physical environment accommodations. However, females with MHDs find workplace accommodations related to work scheduling more helpful than males in both male and female dominated jobs.

Initially our second objective was going to examine a gender role index as an exposure, inspired by Smith & Koehoorn's (2016) methodology; however, we did not have key variables such as responsibility for childcare, and hours of work in our survey. We decided to go forward with a sex*gendered occupational segregation exposure, unfortunately due to small sample sizes resulting in multicollinearity, we could not identify differences between males and females in male or female dominated jobs as an exposure. From this we decided to examine sex as our exposure and treat gendered occupational distribution as an effect modifier; hence the

stratification to explore the differences between males and females in male dominated or female dominated jobs. As we did find potential effect modification, when we go forward with publishing, the results from Chapter 4 will be incorporated in Chapter 5, and only Chapter 5 will be published as once effect modification is detected, presenting the crude association is inappropriate.

6.2 Main Findings

Workplace accommodations for workers with mental health disorders play an essential role in ensuring that workers can remain employed while experiencing MHDs or return to work following an absence for MHDs. Determining the perceived helpfulness of workplace accommodations for men and women and which types of accommodations they find most helpful can allow for a more streamlined and tailored accommodation process for workers with MHDs. By further exploring the interaction with workplace gendered composition and sex we continue to contextualize the intersectionality of workers with mental health disorders and how that impacts accommodation helpfulness.

The objectives of this study were to determine if there was an association between the sex of workers with mental health disorders and their perceived helpfulness of workplace accommodations, and to explore whether this relationship was modified by the gendered nature of an employee's job. We found that there was a significant association between sex and helpfulness of accommodations. Females were found to rate the helpfulness of accommodations overall 0.24 points higher than males ($p=0.03$) when accounting for age, sector, income, ethnicity, headaches, unknown MHDs, and disorders of childhood/adolescence. Females found accommodations allowing alterations to a worker's physical environment and changes to their work schedule to be significantly more helpful than males. Females rated the helpfulness of work

scheduling accommodations 0.51 points higher than males ($p < 0.01$) and accommodations allowing for physical changes to the work environment 0.31 points higher than males ($p = 0.02$).

Physical accommodations can sometimes be useful for mental health disorders; workers with cognitive difficulties or psychomotor slowing from depression may benefit from physical environment accommodations such as reducing noise or distractions in the work environment (Bastien & Corbière, 2019; Zafar et al., 2019). Prior to stratification we noted that females found accommodations for changes to the work environment more helpful than males ($\beta = 0.31$, $p = 0.02$). We rationalized that as men and women may experience different symptoms while diagnosed with the same disorder, it was possible that women with mental health disorders experience more symptoms that would benefit from physical accommodations. After stratification; however, we found that the relationship between sex and helpfulness of physical environment accommodation was no longer significantly different between males and females in either male dominated ($\beta = 0.24$, $p = 0.29$) or female dominated jobs ($\beta = 0.18$, $p = 0.43$). Though we did not have the sample size to conclusively answer if the effect modification was significant, it is possible that the gendered nature of the job has more of an impact on the relationship than the sex of the worker themselves, as evidenced by the relationship between sex and accommodation helpfulness being reduced to non-significance.

It has been shown that the most commonly required workplace accommodations for workers with disabilities were flexible work arrangements, and that these types of workplace accommodations are required more by females than males (Bastien & Corbière, 2019; McDowell & Fossey, 2015; Villotti et al., 2017; Zafar et al., 2019; Statistics Canada, 2019b). This aligns with our finding that changes to work schedule were found to be the most helpful and that females found scheduling accommodations to be significantly more helpful than males. Once we

stratified the analysis by gendered occupational category, we found that this association was still significant in both male dominated ($\beta=0.54$, $p=0.02$) and female dominated jobs ($\beta=0.50$, $p=0.03$). Due to women's responsibilities for tasks in the domestic sphere in addition to the workplace, it is unsurprising that females find work scheduling modification so much more helpful than males. Having a flexible schedule or part time schedule could allow more time to do household errands, catch up on housework, or spend more time with their dependants (Hanafy et al., (2023)). If our society continues to have expectations that women are responsible for the majority of tasks in the domestic sphere, work scheduling will continue to be an important consideration when considering the provision of workplace accommodations for women.

6.3 Epidemiological Implications

6.3.1 Internal Validity

Self-Selection Bias

Self-selection bias refers to differences in who chooses to participate or not participate in a survey. Our sample consisted of employees who were given paid time to complete the survey; however, only 27% of available workers participated. While we only looked at employees who had a diagnosed mental health disorder or symptoms of a disorder, it is possible that the employees who were more willing to participate in the survey were employees who were experiencing the fewest or least severe symptoms. Employees who were experiencing the worst symptoms may not have had the capacity or desire to fill out a survey in addition to continuing to perform their daily work duties. It is therefore possible that the healthiest employees were mostly the ones to fill out the surveys, and were therefore less likely to perceive accommodations as helpful, rendering our findings as conservative estimates.

Confounding

We based our possible confounders on the literature and conceptual framework and tested for inclusion at the bivariable level using p-value ≤ 0.2 as a cutoff, which was a strong methodological approach. We used the Greenland et al. (2016) method to select confounders in our final models; however, we could only control for what we had asked in the survey. It is possible that other unmeasured or untested factors could reduce the significance of sex on accommodation helpfulness. Factors related to sex and gender, mental health, or some occupational factors that were not tested for all could have affected the results.

Type II Errors

While overall, we had enough power to detect differences with our sample size, when we examined our second research question, we had very few males in female dominated jobs and few females in male dominated jobs. Due to this we had to use two categories (0-49% female and 50+% female) instead of 4 (0-25% female, 26-50% female, 51-75% female, 75+% female) in analyses. It is possible that with a greater sample size we may have seen different results, especially between the two ends of the spectrum.

6.3.2 External Validity

Sampling Bias

Our sample for this study was workers with mental health disorders who were employed in Northwestern Ontario or Manitoba. As our outcome was the perceived helpfulness of workplace accommodations, it is possible that by using this sample, we left out the people who would find workplace accommodations the most helpful, people who are not currently working due to mental health disorders. These could be people who are out of the workforce entirely, due to disability, or current employees who may have been off sick or on leave during data

collection. For a truly representative sample of the population, we would need to survey any adults regardless of current employment status, who are otherwise eligible to be included in the workforce. A truly representative sample such as this would require much more time, resources and effort, more in line with a country wide Statistics Canada survey.

In addition, while we did receive participants across all 10 industrial sectors, the distribution of responses received is not generalizable to the overall working populations of Northwestern Ontario, Manitoba, or the rest of Canada. Almost 30% of our sample were employed in the mining industry, whereas mining accounts for less than 1% of Ontario's total employed population. While the proportion of mining workers in Northwestern Ontario is higher than in some other parts of Ontario due to the ring of fire, these workers were still highly overrepresented in our sample.

6.3.3 Causation

As this study relied on a cross sectional survey causal inferences cannot be drawn. We cannot definitively say that sex is the cause for finding workplace accommodations more helpful, other untested factors could be contributing to or responsible for this association. We cannot concretely state that being a female is responsible for finding workplace accommodations more helpful than being a male; we can only state that being a female is associated with finding workplace accommodations more helpful.

Chapter 7: Ethics

The data used in this study were secondary data from the "Supervisor and Worker Perspectives on Workplace Accommodations for Mental Health Study" (Kristman, 2019). Due to this an ethics waiver was received (Appendix J) as secondary data analyses are exempt from Research Ethics Board review.

Chapter 8: Conclusion

The first objective for this thesis was to determine the association between worker sex and the perceived helpfulness of workplace accommodations for workers with mental health disorders. To our knowledge, while the literature contains research on commonly provided accommodations, and the gap between provided and required accommodations, this study was the first to explore sex as a determinant of the helpfulness of workplace accommodations for workers with mental health disorders. Our second objective was to explore an interaction between sex and the gendered composition of an employee's job and the helpfulness of workplace accommodations, which was also a novel area to explore.

Our findings demonstrate that there was a significant association between sex and accommodation helpfulness for workers with mental health disorders, though this varies by both type of accommodation and the gendered composition of the workforce. Workplace accommodations relating to work scheduling modifications appear to be more helpful to females with mental health disorders, compared to males in both male dominated and female dominated jobs. Though our sample size was too small to have the power needed to definitively address the interaction between sex and gendered occupational distribution, these findings suggest that gendered employment characteristics may modify the relationship between sex and the helpfulness of workplace accommodations. By contextualizing the gendered aspects of the workplace and how this interacts with the relationship between sex and workplace accommodations, we have been able to deepen our understanding of the intersectionality between gender and work.

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Appendix A: Greenland et. al. 2016 Forward Selection Strategy

Model	Variable	Coefficient	Standard Error	Mean Square Error (MSE)
Base	Sex & Age	0.263	0.098	-
Forward Selection – Base	Base	0.263	0.098	-
	Depression	0.253	0.096	-0.0001
	Disorder of Childhood/Adolescence	0.259	0.097	-0.0001
	Unknown MHD	0.268	0.098	0.0000
	Headaches	0.246	0.099	0.0005
	Cancer	0.272	0.097	-0.0001
	Neurological Disorders	0.258	0.097	0.0000
	Income	0.265	0.100	0.0005
	Ethnicity	0.278	0.098	0.0003
	Sector	0.224	0.106	0.0031
Forward Selection – Base Sector	Base	0.224	0.106	-
	Depression	0.220	0.104	-0.0002
	Disorder of Childhood/Adolescence	0.219	0.105	0.0000
	Unknown MHD	0.232	0.105	0.0000
	Headaches	0.211	0.106	0.0003
	Cancer	0.229	0.104	-0.0002
	Neurological Disorders	0.222	0.105	0.0000
	Income	0.219	0.107	0.0004
	Ethnicity	0.249	0.105	0.0005
Forward Selection – Base Sector Ethnicity	Base	0.249	0.105	-
	Depression	0.245	0.104	-0.0002
	Disorder of Childhood/Adolescence	0.243	0.105	0.0000
	Unknown MHD	0.257	0.105	0.0000
	Headaches	0.236	0.106	0.0003
	Cancer	0.251	0.104	-0.0002
	Neurological Disorders	0.247	0.105	0.0000
	Income	0.244	0.107	0.0005
Forward Selection – Base Sector Ethnicity Income	Base	0.244	0.107	-
	Depression	0.240	0.106	-0.0003
	Disorder of Childhood/Adolescence	0.241	0.107	0.0000
	Unknown MHD	0.254	0.107	0.0000
	Headaches	0.231	0.109	0.0005
	Cancer	0.246	0.106	-0.0002
	Neurological Disorders	0.243	0.107	0.0000

Forward Selection – Base Sector Income Ethnicity Headaches	Base	0.231	0.109	
	Depression	0.230	0.107	-0.0003
	Disorder of Childhood/Adolescence	0.225	0.109	0.0000
	Unknown MHD	0.243	0.109	0.0001
	Cancer	0.232	0.108	-0.0002
	Neurological Disorders	0.231	0.109	0.0000
Forward Selection – Base Sector Income Ethnicity Headaches Unknown MHD	Base	0.243	0.109	
	Depression	0.240	0.107	-0.0003
	Disorder of Childhood/Adolescence	0.238	0.109	0.0001
	Cancer			
	Neurological Disorders	0.245	0.107	-0.0002
Forward Selection – Base Sector Income Ethnicity Headaches Unknown MHD Disorder of Childhood/Adolescence	Base	0.238	0.109	-
	Depression	0.234	0.108	-0.0003
	Cancer	0.239	0.108	-0.0003
	Neurological Disorders			
		0.238	0.109	-0.00003

Appendix B. Bivariate analysis of multilevel mixed linear regression of each variable of interest with Accommodation Helpfulness – Work Schedule subscale as an outcome

Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Age		-0.01	0.00	0.16	-0.02	0.00
Severity of Mental Health Symptoms Today		0.03	0.02	0.20	-0.02	0.08
Severity of Mental Health Symptoms This Week		0.00	0.02	0.85	-0.04	0.05
Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Sex	Male (ref)					
	Female	0.45	0.11	0.00	0.22	0.67
Mental Health (ref = no disorder)	Any Diagnosed MH Disorder	0.07	0.12	0.56	-0.16	0.30
	Schizophrenia and other psychotic disorders	0.74	0.84	0.38	-0.90	2.38
	Bipolar disorder	0.28	0.35	0.41	-0.39	0.96
	Major depression	0.27	0.13	0.03	0.02	0.52
	Anxiety disorder (OCD, panic, PTSD, etc.)	0.07	0.11	0.56	-0.15	0.29
	Substance related disorder	-0.28	0.31	0.36	-0.88	0.32
	Personality disorder (avoidant, borderline, etc.)	-0.11	0.34	0.76	-0.78	0.56
	Specific disorder of childhood/adolescence	-0.58	0.42	0.17	-1.41	0.24
	Unknown	-0.34	0.34	0.32	-1.00	0.33
	Other (see Q3_1_12_TEXT)	0.07	0.16	0.66	-0.25	0.39
	No mental health diagnosis, but I have mental health symptoms	-0.08	0.12	0.52	-0.30	0.15
Physical Health (ref = no disorder)	Any Physical Health Disorder	-0.03	0.21	0.89	-0.44	0.38
	Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	0.04	0.11	0.73	-0.18	0.26
	Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	-0.05	0.11	0.64	-0.27	0.17

Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	-0.04	0.12	0.72	-0.28	0.20
High blood pressure (hypertension)	0.12	0.16	0.44	-0.19	0.43
Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	0.02	0.24	0.95	-0.45	0.48
Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	-0.09	0.12	0.48	-0.33	0.15
Diabetes	-0.32	0.28	0.26	-0.87	0.23
Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostrate problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)	0.04	0.15	0.80	-0.26	0.34
Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	0.41	0.21	0.05	0.01	0.82
Headaches (such as migraine, tension, stress, sinus, others)	0.17	0.11	0.15	-0.06	0.39
Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or spread, lymphoma, leukemia, others)	-0.35	0.42	0.39	-1.17	0.46
Vision Problems	0.00	0.12	0.98	-0.23	0.23
Hearing Problems	0.01	0.14	0.95	-0.27	0.29
Severe Skin Problems	0.04	0.27	0.89	-0.49	0.56

	Life Threatening Illness (i.e. HIV)	1.19	0.84	0.16	-0.46	2.84
Impact on Job	Negative Impact Last Week					
	No (ref)					
	Yes	0.27	0.15	0.09	-0.04	0.57
	Don't know/Prefer not to answer	0.17	0.19	0.38	-0.20	0.53
	Negative Impact Last 6 Months					
	No (ref)					
	Yes	0.23	0.12	0.06	-0.01	0.46
	Don't know/Prefer not to answer	0.21	0.17	0.23	-0.13	0.54
Ethnicity	White/Caucasian (e.g., Western European, Eastern European, etc.) (ref)					
	Non-White	0.27	0.16	0.09	-0.04	0.58
Industry	Mining (ref)					
	Finance	0.62	0.24	0.01	0.15	1.10
	Wholesale	0.72	0.32	0.03	0.09	1.35
	Public Administration	0.40	0.18	0.03	0.05	0.75
	Construction	0.20	0.28	0.47	-0.35	0.76
	Agriculture	0.04	0.23	0.86	-0.41	0.49
	Transportation	0.10	0.26	0.71	-0.41	0.60
	Service	0.34	0.22	0.12	-0.09	0.77
	Retail	0.04	0.29	0.90	-0.53	0.60
		Manufacturing	0.02	0.26	0.93	-0.49
Income	Above \$100,000 (ref)					
	\$0 - \$20,000	-0.56	0.43	0.19	-1.41	0.29
	\$20,001 - \$40,000	0.00	0.23	0.98	-0.45	0.46
	\$40,001 - \$60,000	0.08	0.17	0.66	-0.26	0.41
	\$60,001 - \$80,000	0.29	0.18	0.10	-0.06	0.64
	\$80,001 - \$100,000	0.13	0.16	0.42	-0.18	0.44
	Don't Know	0.21	0.49	0.66	-0.74	1.17
	Do not Wish to Answer	0.27	0.20	0.17	-0.11	0.66
Education	0. High School or less (ref)					

	1. Some trade, college, university, or technical school	0.41	0.17	0.02	0.07	0.75
	2. Completed trade, college, university, or technical school	0.23	0.16	0.14	-0.08	0.55

(Bold indicates linear regression was significant at $p=.05$)

Appendix C: Greenland et. al. 2016 Forward Selection Strategy – Work Schedule Subscale

Model	Variable	Coefficient	Standard Error	Mean Square Error (MSE)
Base	Sex & Age	0.43	0.12	
Forward Selection – Base	Base	0.43	0.12	
	Severity Today	0.45	0.12	0.0001
	Depression	0.42	0.11	-0.0001
	Disorder of Childhood/Adolescence	0.43	0.12	-0.0002
	Diabetes	0.43	0.12	-0.0001
	Headaches	0.41	0.12	0.0005
	Neurological Disorders	0.43	0.11	-0.0003
	Life Threatening Diseases	0.43	0.12	0.0002
	Income	0.45	0.12	0.0016
	Education	0.45	0.12	0.0001
	Ethnicity	0.45	0.12	0.0005
	Sector	0.40	0.13	0.0039
	Neg 1 Week	0.44	0.12	0.0001
	Neg 6 Months	0.42	0.12	0.0005
Forward Selection – Base Sector	Base			
	Severity Today	0.39	0.13	0.0001
	Depression	0.40	0.13	-0.0003
	Disorder of Childhood/Adolescence	0.39	0.13	0.0000
	Diabetes	0.40	0.13	-0.0001
	Headaches	0.39	0.13	0.0005
	Neurological Disorders	0.40	0.13	-0.0002
	Life Threatening Diseases	0.41	0.13	0.0003
	Income	0.41	0.13	0.0008
	Education	0.43	0.13	0.0008
	Ethnicity	0.43	0.13	0.0008
	Neg 1 Week	0.40	0.13	0.0001
	Neg 6 Months	0.38	0.13	0.0006
	Forward Selection – Base Sector Ethnicity	Base		
Severity Today		0.42	0.13	0.0002
Depression		0.43	0.13	-0.0004
Disorder of Childhood/Adolescence		0.42	0.13	0.0000
Diabetes		0.44	0.13	-0.0001
Headaches		0.42	0.13	0.0004

	Neurological Disorders	0.43	0.13	-0.0003
	Life Threatening Diseases	0.45	0.13	0.0005
	Income	0.45	0.13	0.0010
	Education	0.47	0.13	0.0011
	Neg 1 Week	0.43	0.13	0.0001
	Neg 6 Months	0.42	0.13	0.0005
Forward Selection – Base Sector Ethnicity Education	Base			
	Severity Today	0.45	0.13	0.0004
	Depression	0.46	0.13	-0.0004
	Disorder of Childhood/Adolescence	0.46	0.13	0.0000
	Diabetes	0.47	0.13	0.0000
	Headaches	0.46	0.13	0.0004
	Neurological Disorders	0.47	0.13	-0.0004
	Life Threatening Diseases	0.49	0.13	0.0006
	Income	0.48	0.13	0.0011
	Neg 1 Week	0.47	0.13	0.0001
	Neg 6 Months	0.45	0.13	0.0004
Forward Selection – Base Sector Ethnicity Education Income	Base			
	Severity Today	0.48	0.13	0.0002
	Depression	0.48	0.13	-0.0004
	Disorder of Childhood/Adolescence	0.48	0.13	-0.0001
	Diabetes	0.49	0.13	-0.0001
	Headaches	0.47	0.13	0.0005
	Neurological Disorders	0.49	0.13	-0.0004
	Life Threatening Diseases	0.50	0.13	0.0008
	Neg 1 Week	0.49	0.13	0.0002
	Neg 6 Months	0.47	0.13	0.0003
	Forward Selection – Base Sector Ethnicity Education Income Life Threatening Diseases	Base		
Severity Today		0.50	0.13	0.0003
Depression		0.50	0.13	-0.0004
Disorder of Childhood/Adolescence		0.50	0.13	-0.0001
Diabetes		0.51	0.13	-0.0001
Headaches		0.49	0.13	0.0006
Neurological Disorders		0.51	0.13	-0.0003
Neg 1 Week		0.51	0.13	0.0002
Neg 6 Months		0.49	0.13	0.0004
Forward Selection – Base Sector		Base		
	Severity Today	0.49	0.14	0.0003
	Depression	0.49	0.13	-0.0004

Ethnicity	Disorder of			
Education	Childhood/Adolescence	0.49	0.13	0.0000
Income	Diabetes	0.50	0.13	-0.0001
Life Threatening	Neurological Disorders	0.50	0.13	-0.0003
Diseases	Neg 1 Week	0.50	0.14	0.0003
Headaches	Neg 6 Months	0.49	0.14	0.0003
Forward Selection –	Base			
Base	Severity Today	0.51	0.14	0.0003
Sector	Depression	0.50	0.13	-0.0004
Ethnicity	Disorder of			
Education	Childhood/Adolescence	0.50	0.13	0.0000
Income	Diabetes	0.51	0.13	-0.0001
Life Threatening	Neurological Disorders	0.51	0.13	-0.0003
Diseases	Neg 6 Months			
Headaches				
Neg1Week		0.50	0.14	0.0001
Forward Selection –	Base			
Base	Depression	0.52	0.13	-0.0005
Sector	Disorder of			
Ethnicity	Childhood/Adolescence	0.50	0.14	0.0000
Education	Diabetes	0.52	0.14	0.0000
Income	Neurological Disorders	0.52	0.13	-0.0004
Life Threatening	Neg 6 Months			
Diseases				
Headaches				
Neg1Week				
Severity Today		0.51	0.14	0.0000

Appendix D. Bivariate analysis of simple linear regression of each variable of interest with Accommodation Helpfulness – Physical Environment subscale as an outcome

Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Age		-0.01	0.01	0.21	-0.02	0.00
Severity of Mental Health Symptoms Today		0.03	0.03	0.24	-0.02	0.08
Severity of Mental Health Symptoms This Week		0.02	0.02	0.40	-0.03	0.07
Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Sex	Male (ref)					
	Female	0.42	0.12	0.00	0.18	0.66
Mental Health (ref = no disorder)	Any Diagnosed MH Disorder	-0.09	0.12	0.47	-0.33	0.15
	Schizophrenia and other psychotic disorders	-0.24	0.88	0.78	-1.96	1.48
	Bipolar disorder	0.34	0.40	0.39	-0.44	1.12
	Major depression	0.26	0.13	0.05	0.00	0.53
	Anxiety disorder (OCD, panic, PTSD, etc.)	0.04	0.12	0.72	-0.19	0.27
	Substance related disorder	-0.22	0.32	0.49	-0.85	0.41
	Personality disorder (avoidant, borderline, etc.)	0.56	0.33	0.09	-0.08	1.21
	Specific disorder of childhood/adolescence	-0.55	0.51	0.28	-1.54	0.44
	Unknown	-0.55	0.39	0.16	-1.31	0.21
	Other (see Q3_1_12_TEXT)	-0.18	0.17	0.30	-0.51	0.15
	No mental health diagnosis, but I have mental health symptoms	0.08	0.12	0.49	-0.15	0.32
Physical Health (ref = no disorder)	Any Physical Health Disorder	-0.03	0.22	0.88	-0.47	0.41
	Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	-0.06	0.12	0.59	-0.29	0.17
	Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	0.05	0.12	0.67	-0.18	0.28

Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	0.12	0.13	0.33	-0.12	0.37
High blood pressure (hypertension)	-0.01	0.16	0.97	-0.33	0.32
Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	-0.40	0.25	0.10	-0.88	0.08
Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	-0.02	0.13	0.90	-0.27	0.24
Diabetes	-0.02	0.30	0.94	-0.60	0.56
Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostrate problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)	0.24	0.15	0.12	-0.06	0.54
Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	0.19	0.21	0.37	-0.22	0.59
Headaches (such as migraine, tension, stress, sinus, others)	0.20	0.12	0.10	-0.03	0.43
Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or spread, lymphoma, leukemia, others)	-0.60	0.39	0.12	-1.37	0.16
Vision Problems	0.06	0.12	0.65	-0.19	0.30
Hearing Problems	0.05	0.15	0.75	-0.25	0.35
Severe Skin Problems	-0.48	0.27	0.07	-1.01	0.04

	Life Threatening Illness (i.e. HIV)	0.24	0.88	0.79	-1.50	1.97
Impact on Job	Negative Impact Last Week					
	No (ref)					
	Yes	0.07	0.16	0.67	-0.25	0.38
	Don't know/Prefer not to answer	0.03	0.20	0.86	-0.36	0.43
	Negative Impact Last 6 Months					
	No (ref)					
	Yes	0.12	0.12	0.31	-0.12	0.36
	Don't know/Prefer not to answer	0.21	0.19	0.26	-0.16	0.58
Ethnicity	White/Caucasian (e.g., Western European, Eastern European, etc.) (ref)					
	Non-White	0.17	0.17	0.29	-0.15	0.50
Industry	Mining (ref)					
	Finance	0.48	0.27	0.07	-0.04	1.00
	Wholesale	0.53	0.36	0.14	-0.18	1.25
	Public Administration	0.29	0.20	0.14	-0.10	0.68
	Construction	0.28	0.29	0.34	-0.30	0.86
	Agriculture	0.01	0.25	0.98	-0.48	0.50
	Transportation	0.12	0.28	0.68	-0.43	0.66
	Service	0.36	0.24	0.13	-0.10	0.82
	Retail	-0.29	0.31	0.35	-0.90	0.31
	Manufacturing	-0.19	0.29	0.51	-0.75	0.37
Income	Above \$100,000 (ref)					
	\$0 - \$20,000	-0.29	0.46	0.53	-1.18	0.61
	\$20,001 - \$40,000	-0.07	0.26	0.80	-0.57	0.44
	\$40,001 - \$60,000	0.11	0.18	0.56	-0.25	0.46
	\$60,001 - \$80,000	0.03	0.19	0.89	-0.34	0.39
	\$80,001 - \$100,000	0.10	0.17	0.56	-0.23	0.43
	Don't Know	-0.01	0.52	0.98	-1.02	1.00
	Do not Wish to Answer	0.17	0.21	0.40	-0.23	0.58
Education	0. High School or less (ref)					

	1. Some trade, college, university, or technical school	-0.08	0.19	0.65	-0.45	0.28
	2. Completed trade, college, university, or technical school	0.03	0.17	0.88	-0.30	0.35

(Bold indicates linear regression was significant at $p=.05$)

Appendix E: Greenland et. al. 2016 Forward Selection Strategy – Physical Environment**Subscale**

Model	Variable	Coefficient	Standard Error	Mean Square Error (MSE)
Base	Sex & Age	0.39	0.12	
Forward Selection – Base	Base	0.39	0.12	
	Depression	0.38	0.12	-0.0002
	Substance Abuse	0.39	0.12	-0.0001
	Personality Disorder	0.39	0.12	-0.0002
	Heart Issues	0.39	0.12	0.0000
	Kidney Issues	0.36	0.12	0.0013
	Headaches	0.37	0.12	0.0008
	Cancer	0.41	0.12	0.0002
	Skin	0.39	0.12	-0.0002
	Sector	0.40	0.13	0.0027
	Neg 6 Months	0.36	0.12	0.0011
Forward Selection – Base Sector	Base			
	Depression	0.40	0.13	-0.0004
	Substance Abuse	0.40	0.13	0.0000
	Personality Disorder	0.40	0.13	0.0000
	Heart Issues	0.41	0.13	0.0002
	Kidney Issues	0.36	0.13	0.0021
	Headaches	0.38	0.13	0.0006
	Cancer	0.41	0.13	0.0000
	Skin	0.40	0.13	-0.0005
	Neg 6 Months	0.37	0.13	0.0008
Forward Selection – Base Sector Kidney Issues	Base			
	Depression	0.36	0.13	-0.0004
	Substance Abuse	0.36	0.13	0.0000
	Personality Disorder	0.36	0.13	0.0000
	Heart Issues	0.37	0.13	0.0000
	Headaches	0.34	0.14	0.0005
	Cancer	0.37	0.13	-0.0001
	Skin	0.35	0.13	-0.0005
	Neg 6 Months	0.34	0.13	0.0006
Forward Selection – Base Sector Kidney Issues Neg 6 Months	Base			
	Depression	0.34	0.13	-0.0003
	Substance Abuse	0.33	0.13	0.0001
	Personality Disorder	0.34	0.13	0.0001
	Heart Issues	0.34	0.13	0.0001
	Headaches	0.32	0.14	0.0005

	Cancer	0.35	0.13	-0.0001
	Skin	0.33	0.13	-0.0004
Forward Selection – Base	Base			
Sector	Depression	0.33	0.13	-0.0003
Kidney Issues	Substance Abuse	0.31	0.14	0.0001
Neg 6 Months	Personality Disorder	0.32	0.14	0.0001
Headaches	Heart Issues	0.33	0.14	0.0000
	Cancer	0.33	0.13	-0.0001
	Skin	0.32	0.13	-0.0004
Forward Selection – Base	Base			
Sector	Depression	0.31	0.13	-0.0002
Kidney Issues	Personality Disorder	0.32	0.14	-0.0001
Neg 6 Months	Heart Issues	0.32	0.14	0.0000
Headaches	Cancer	0.32	0.13	-0.0003
Substance Abuse	Skin	0.31	0.13	-0.0004

Appendix F. Bivariate analysis of multilevel mixed linear regression of each variable of interest with Accommodation Helpfulness – On-Job Duties subscale as an outcome

Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Age		0.00	0.00	0.83	-0.01	0.01
Severity of Mental Health Symptoms Today		0.03	0.02	0.18	-0.01	0.07
Severity of Mental Health Symptoms This Week		0.01	0.02	0.51	-0.03	0.06
Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Sex	Male (ref)					
	Female	0.17	0.11	0.11	-0.04	0.38
Mental Health (ref = no disorder)	Any Diagnosed MH Disorder	0.06	0.10	0.55	-0.14	0.27
	Schizophrenia and other psychotic disorders	0.40	0.76	0.60	-1.10	1.89
	Bipolar disorder	0.29	0.32	0.36	-0.33	0.91
	Major depression	0.23	0.11	0.04	0.01	0.46
	Anxiety disorder (OCD, panic, PTSD, etc.)	0.02	0.10	0.87	-0.18	0.22
	Substance related disorder	0.16	0.28	0.56	-0.39	0.71
	Personality disorder (avoidant, borderline, etc.)	0.25	0.29	0.38	-0.31	0.82
	Specific disorder of childhood/adolescence	-0.49	0.44	0.26	-1.36	0.37
	Unknown	-0.25	0.31	0.43	-0.86	0.36
	Other (see Q3_1_12_TEXT)	-0.11	0.15	0.46	-0.39	0.18
	No mental health diagnosis, but I have mental health symptoms	-0.07	0.10	0.49	-0.27	0.13
Physical Health (ref = no disorder)	Any Physical Health Disorder	-0.16	0.19	0.41	-0.53	0.22
	Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	-0.05	0.10	0.61	-0.25	0.15
	Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	-0.09	0.10	0.37	-0.29	0.11

Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	-0.13	0.11	0.23	-0.34	0.08
High blood pressure (hypertension)	0.18	0.14	0.21	-0.09	0.46
Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	-0.31	0.21	0.14	-0.72	0.10
Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	-0.15	0.11	0.17	-0.37	0.07
Diabetes	0.02	0.24	0.94	-0.44	0.48
Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostrate problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)	-0.10	0.13	0.44	-0.37	0.16
Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	0.10	0.18	0.58	-0.25	0.45
Headaches (such as migraine, tension, stress, sinus, others)	0.13	0.10	0.22	-0.08	0.33
Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or spread, lymphoma, leukemia, others)	-0.86	0.38	0.02	-1.60	-0.12
Vision Problems	-0.11	0.11	0.31	-0.32	0.10
Hearing Problems	0.03	0.13	0.79	-0.22	0.28
Severe Skin Problems	-0.22	0.23	0.33	-0.66	0.22

	Life Threatening Illness (i.e. HIV)	-0.21	0.77	0.79	-1.71	1.30
Impact on Job	Negative Impact Last Week					
	No (ref)					
	Yes	0.19	0.14	0.17	-0.08	0.46
	Don't know/Prefer not to answer	0.36	0.17	0.03	0.03	0.68
	Negative Impact Last 6 Months					
	No (ref)					
	Yes	0.13	0.11	0.22	-0.08	0.34
	Don't know/Prefer not to answer	0.25	0.16	0.11	-0.05	0.56
Ethnicity						
	White/Caucasian (e.g., Western European, Eastern European, etc.) (ref)					
	Non-White	0.12	0.14	0.38	-0.15	0.40
Industry						
	Mining (ref)					
	Finance	0.35	0.20	0.08	-0.04	0.73
	Wholesale	-0.15	0.29	0.60	-0.72	0.42
	Public Administration	0.40	0.14	0.00	0.14	0.67
	Construction	0.30	0.24	0.21	-0.17	0.77
	Agriculture	-0.01	0.18	0.97	-0.37	0.35
	Transportation	0.00	0.21	0.99	-0.41	0.41
	Service	0.23	0.18	0.20	-0.12	0.59
	Retail	-0.21	0.26	0.41	-0.72	0.30
	Manufacturing	-0.30	0.22	0.18	-0.73	0.14
Income						
	Above \$100,000 (ref)					
	\$0 - \$20,000	-0.08	0.45	0.86	-0.96	0.81
	\$20,001 - \$40,000	-0.03	0.22	0.89	-0.46	0.40
	\$40,001 - \$60,000	0.13	0.16	0.40	-0.18	0.43
	\$60,001 - \$80,000	0.07	0.16	0.66	-0.24	0.38
	\$80,001 - \$100,000	0.10	0.14	0.47	-0.18	0.38
	Don't Know	-0.05	0.45	0.91	-0.93	0.82
Do not Wish to Answer	0.34	0.18	0.06	-0.02	0.70	
Education	0. High School or less (ref)					

	1. Some trade, college, university, or technical school	0.14	0.16	0.38	-0.17	0.45
	2. Completed trade, college, university, or technical school	-0.06	0.14	0.66	-0.34	0.22

(Bold indicates linear regression was significant at $p=.05$)

Appendix G: Greenland et. al. 2016 Forward Selection Strategy – On-Job Duties Subscale

Model	Variable	Coefficient	Standard Error	Mean Square Error (MSE)
Base	Sex & Age	0.17	0.11	
Forward Selection – Base	Base	0.17	0.11	
	Severity Today	0.17	0.11	0.0002
	Depression	0.16	0.11	0.0000
	Heart Issues	0.18	0.11	0.0001
	Digestion Issues	0.19	0.11	0.0003
	Cancer	0.18	0.11	0.0000
	Income	0.16	0.11	0.0012
	Sector	0.16	0.12	0.0022
	Neg 6 Months	0.15	0.11	0.0008
	Neg 1 Week	0.16	0.11	0.0001
Forward Selection – Base Sector	Base			
	Severity Today	0.16	0.12	0.0002
	Depression	0.15	0.12	-0.0001
	Heart Issues	0.18	0.12	0.0003
	Digestion Issues	0.18	0.12	0.0006
	Cancer	0.17	0.12	-0.0002
	Income	0.14	0.12	0.0014
	Neg 6 Months	0.14	0.12	0.0009
	Neg 1 Week	0.14	0.12	0.0003
Forward Selection – Base Sector Income	Base			
	Severity Today	0.14	0.12	0.0002
	Depression	0.13	0.12	-0.0001
	Heart Issues	0.15	0.12	0.0002
	Digestion Issues	0.16	0.12	0.0004
	Cancer	0.14	0.12	-0.0003
	Neg 6 Months	0.12	0.12	0.0007
	Neg 1 Week	0.13	0.12	0.0002
Forward Selection – Base Sector Income Neg 6 Months	Base			
	Severity Today	0.13	0.12	0.0003
	Depression	0.11	0.12	-0.0002
	Heart Issues	0.13	0.12	0.0002
	Digestion Issues	0.14	0.12	0.0002
	Cancer	0.12	0.12	-0.0003
	Neg 1 Week	0.12	0.12	-0.0001
Forward Selection – Base Sector Income	Base			
	Depression	0.13	0.12	-0.0002
	Heart Issues	0.14	0.12	0.0002
	Digestion Issues	0.15	0.12	0.0002

Neg 6 Months Severity Today	Cancer	0.13	0.12	-0.0003
	Neg 1 Week	0.13	0.12	0.0000
Forward Selection – Base Sector Income Neg 6 Months Severity Today Heart Issues	Base			
	Depression	0.14	0.12	-0.0002
	Digestion Issues	0.16	0.12	0.0000
	Cancer	0.14	0.12	-0.0002
	Neg 1 Week			
		0.15	0.12	0.0001
Forward Selection – Base Sector Income Neg 6 Months Severity Today Heart Issues Neg 1 Week	Base			
	Depression	0.15	0.12	-0.0002
	Digestion Issues	0.16	0.12	0.0000
	Cancer			
			0.15	0.12

Appendix H. Bivariate analysis of multilevel mixed linear regression of each variable of interest with Accommodation Helpfulness – Psychosocial Adjustments subscale as an outcome

Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Age		-0.01	0.00	0.13	-0.02	0.00
Severity of Mental Health Symptoms Today		0.00	0.02	0.85	-0.05	0.04
Severity of Mental Health Symptoms This Week		-0.03	0.02	0.12	-0.08	0.01
Variable		Coefficient	Std. Error	P> t	95% Confidence Interval	
Sex	Male (ref)					
	Female	0.30	0.10	0.00	0.11	0.50
Mental Health (ref = no disorder)	Any Diagnosed MH Disorder	-0.01	0.10	0.91	-0.22	0.19
	Schizophrenia and other psychotic disorders	0.13	0.75	0.86	-1.34	1.61
	Bipolar disorder	0.16	0.34	0.65	-0.51	0.83
	Major depression	0.12	0.12	0.29	-0.10	0.35
	Anxiety disorder (OCD, panic, PTSD, etc.)	-0.06	0.10	0.53	-0.27	0.14
	Substance related disorder	0.14	0.26	0.59	-0.37	0.66
	Personality disorder (avoidant, borderline, etc.)	0.15	0.29	0.59	-0.41	0.72
	Specific disorder of childhood/adolescence	-0.44	0.44	0.32	-1.29	0.42
	Unknown	-0.38	0.34	0.26	-1.04	0.28
	Other (see Q3_1_12_TEXT)	0.04	0.15	0.77	-0.25	0.33
	No mental health diagnosis, but I have mental health symptoms	0.01	0.10	0.90	-0.19	0.22
Physical Health (ref = no disorder)	Any Physical Health Disorder	-0.03	0.20	0.90	-0.42	0.37
	Muscle, bone or joint problems (such as rheumatoid arthritis, osteoarthritis, back, neck, arm, hand, leg, or ankle pain, fibromyalgia, thin bones or osteoporosis, fracture, infection, others)	-0.12	0.10	0.25	-0.32	0.08
	Allergies (such as hay fever, dermatitis, eczema, allergies to medication, food allergy, others)	0.00	0.10	0.98	-0.19	0.20

Breathing problems (such as asthma, emphysema, bronchitis, fibrosis, lung scarring, TB, pneumonia, infection, common cold, others)	-0.12	0.11	0.26	-0.34	0.09
High blood pressure (hypertension)	-0.12	0.14	0.39	-0.40	0.16
Heart and circulation problems (such as angina, heart attack, heart failure, heart valve problem, hardening of arteries, varicose veins, claudication, foot or leg ulcers, others)	-0.43	0.22	0.05	-0.86	0.00
Digestive system problems (such as ulcer, gastritis, inflammatory or irritable bowel disease, colitis, Crohn's disease, hiatus hernia, gall stones, pancreatitis, others)	-0.20	0.11	0.08	-0.41	0.02
Diabetes	0.03	0.27	0.91	-0.50	0.56
Kidney or Genitourinary problems (such as kidney failure, nephritis, kidney stones, gynecological or prostrate problems, endometriosis, dysmenorrhea or menstrual problems, fibroids, urinary tract infection, prostate problems, bladder control problems, others)	0.03	0.13	0.84	-0.23	0.29
Neurological problems (such as stroke, seizures, multiple sclerosis, Parkinson's, paraplegia, quadriplegia, paralysis, Alzheimer's, dizziness, epilepsy, others)	-0.04	0.18	0.81	-0.40	0.32
Headaches (such as migraine, tension, stress, sinus, others)	0.07	0.10	0.49	-0.13	0.27
Cancer (such as breast, lung, prostate, cervix, stomach, colon, kidney, bone, metastasis or spread, lymphoma, leukemia, others)	-0.52	0.34	0.12	-1.18	0.14
Vision Problems	0.00	0.11	0.98	-0.20	0.21
Hearing Problems	0.02	0.13	0.87	-0.23	0.28
Severe Skin Problems	-0.34	0.22	0.12	-0.78	0.09

	Life Threatening Illness (i.e. HIV)	0.42	0.75	0.58	-1.06	1.90
Impact on Job	Negative Impact Last Week					
	No (ref)					
	Yes	-0.09	0.14	0.52	-0.36	0.18
	Don't know/Prefer not to answer	0.10	0.17	0.57	-0.24	0.44
	Negative Impact Last 6 Months					
	No (ref)					
	Yes	-0.02	0.11	0.83	-0.23	0.19
	Don't know/Prefer not to answer	0.03	0.16	0.86	-0.29	0.35
Ethnicity	White/Caucasian (e.g., Western European, Eastern European, etc.) (ref)					
	Non-White	0.27	0.14	0.05	0.00	0.55
Industry	Mining (ref)					
	Finance	0.36	0.20	0.08	-0.04	0.75
	Wholesale	0.46	0.29	0.11	-0.10	1.02
	Public Administration	0.24	0.13	0.08	-0.02	0.50
	Construction	0.46	0.23	0.05	0.01	0.92
	Agriculture	-0.10	0.19	0.61	-0.46	0.27
	Transportation	0.05	0.21	0.83	-0.37	0.46
	Service	0.63	0.18	0.00	0.29	0.98
	Retail	-0.01	0.24	0.97	-0.49	0.47
		Manufacturing	-0.13	0.23	0.57	-0.57
Income	Above \$100,000 (ref)					
	\$0 - \$20,000	-0.28	0.38	0.47	-1.02	0.46
	\$20,001 - \$40,000	0.14	0.22	0.50	-0.28	0.57
	\$40,001 - \$60,000	0.24	0.15	0.11	-0.05	0.54
	\$60,001 - \$80,000	0.28	0.15	0.07	-0.03	0.58
	\$80,001 - \$100,000	0.22	0.14	0.12	-0.06	0.50
	Don't Know	-0.68	0.43	0.11	-1.53	0.16
	Do not Wish to Answer	0.31	0.18	0.08	-0.04	0.65
Education	0. High School or less (ref)					

	1. Some trade, college, university, or technical school	0.21	0.16	0.19	-0.10	0.53
	2. Completed trade, college, university, or technical school	0.19	0.14	0.18	-0.09	0.47

(Bold indicates linear regression was significant at $p=.05$)

Appendix I: Greenland et. al. 2016 Forward Selection Strategy – Psychosocial Adjustments

Subscale

Model	Variable	Coefficient	Standard Error	Mean Square Error (MSE)
Base	Sex & Age	0.29	0.10	
Forward Selection – Base	Base	0.29	0.10	
	Severity Week	0.31	0.10	0.0011
	Disorder of Childhood/Adolescence	0.28	0.10	0.0002
	Muscle/Bone Issues	0.29	0.10	0.0001
	Heart Issues	0.30	0.10	0.0000
	Digestion Issues	0.31	0.10	0.0002
	Cancer	0.30	0.10	0.0000
	Skin Issues	0.39	0.12	0.0157
	Income	0.24	0.10	0.0029
	Education	0.29	0.10	0.0001
	Ethnicity	0.31	0.10	0.0004
	Sector	0.17	0.11	0.0185
Forward Selection – Base Sector	Base			
	Severity Week	0.20	0.12	0.0015
	Disorder of Childhood/Adolescence	0.16	0.11	0.0000
	Muscle/Bone Issues	0.18	0.11	0.0002
	Heart Issues	0.18	0.11	0.0002
	Digestion Issues	0.19	0.11	0.0006
	Cancer	0.18	0.11	0.0000
	Skin Issues	0.40	0.13	0.0599
	Income	0.13	0.12	0.0016
	Education	0.18	0.11	0.0004
Ethnicity	0.20	0.11	0.0008	
Forward Selection – Base Sector Skin Issues	Base			
	Severity Week	0.19	0.12	0.0396
	Disorder of Childhood/Adolescence	0.16	0.11	0.0561
	Muscle/Bone Issues	0.17	0.11	0.0487
	Heart Issues	0.17	0.11	0.0496
	Digestion Issues	0.18	0.11	0.0429
	Cancer	0.17	0.11	0.0500
	Income	0.13	0.12	0.0725
	Education	0.17	0.11	0.0475
	Ethnicity	0.19	0.11	0.0405

Forward Selection – Base Sector Skin Issues Income	Base			
	Severity Week	0.16	0.12	0.0018
	Disorder of Childhood/Adolescence	0.12	0.12	0.0000
	Muscle/Bone Issues	0.14	0.12	0.0003
	Heart Issues	0.14	0.12	0.0002
	Digestion Issues	0.15	0.12	0.0006
	Cancer	0.14	0.11	0.0000
	Education	0.14	0.12	0.0004
	Ethnicity	0.16	0.12	0.0010
Forward Selection – Base Sector Skin Issues Income Severity Week	Base			
	Disorder of Childhood/Adolescence	0.16	0.12	0.0000
	Muscle/Bone Issues	0.17	0.12	0.0001
	Heart Issues	0.17	0.12	0.0000
	Digestion Issues	0.18	0.12	0.0002
	Cancer	0.18	0.12	0.0001
	Education	0.18	0.12	0.0005
	Ethnicity	0.20	0.12	0.0010
Forward Selection – Base Sector Skin Issues Income Severity Week Ethnicity	Base			
	Disorder of Childhood/Adolescence	0.19	0.12	0.0000
	Muscle/Bone Issues	0.21	0.12	0.0003
	Heart Issues	0.20	0.12	0.0000
	Digestion Issues	0.21	0.12	0.0001
	Cancer	0.21	0.12	0.0000
	Education	0.21	0.12	0.0004
Forward Selection – Base Sector Skin Issues Income Severity Week Ethnicity Education	Base			
	Disorder of Childhood/Adolescence	0.21	0.12	0.0000
	Muscle/Bone Issues	0.22	0.12	0.0002
	Heart Issues	0.22	0.12	0.0001
	Digestion Issues	0.22	0.12	0.0000
	Cancer			
Forward Selection – Base Sector Skin Issues Income Severity Week Ethnicity Education Muscle/Bone Issues	Base			
	Disorder of Childhood/Adolescence	0.22	0.12	0.0000
	Heart Issues	0.23	0.12	0.0000
	Digestion Issues	0.23	0.12	0.0000
	Cancer			
		0.23	0.12	-0.0001

Appendix J: Waiver of Ethics



Research Ethics Board
t: (807) 343-8283
research@lakeheadu.ca

May 14, 2021

Dr. Vicki Kristman
Ms. Helen Otterman
Department of Health Sciences
Lakehead University

VIA Email: vkristma@lakeheadu.ca, hotterma@lakeheadu.ca

RE: Secondary use of non-identifiable data – Research Ethics Board exemption

Dear Dr. Kristman and Helen:

Thank you for providing the Lakehead University Research Ethics Board information regarding your project titled, "*The relationship between sex, gender, and workplace accommodations among workers with mental health disorders*". The first objective of your study is to determine the association between worker sex and the helpfulness of workplace accommodations for workers with mental health disorders. The second objective is to explore the association between gender role and the helpfulness of workplace accommodations.

Your use of this anonymous data meets the criteria of the Tri-Council Policy Statement 2 (TCPS 2), Chapter 2, Article 2.4, exemption from Research Ethics Board review as it involves secondary use of anonymous data and there is no opportunity of re-identification of this data through your analysis.

"REB review is not required for research that relies exclusively on secondary use of anonymous information, or anonymous human biological materials, so long as the process of data linkage or recording or dissemination of results does not generate identifiable information."

~TCPS 2, Chapter 2, Article 2.4

If the above process related to your project changes, please contact the Research Ethics Board. On behalf of the Lakehead University Research Ethics Board, I wish you success with your research study.

Sincerely,

A handwritten signature in black ink, appearing to read "Kristin Bumett".

Dr. Kristin Bumett
Chair, Research Ethics Board

/sw