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Mental Health in the Workplace

Alain Marchand, Pierre Durand, Katherine Lippel, Jennifer A. Veitch, Mahée Gilbert-Ouimet, Chantal Brisson, Michel Vézina, Louis Trudel, Renée Bourbonnais, Benoît Masse, Geneviève Baril-Gingras, Clermont E. Dionne, Peter Smith, Amber Bielecky, John Frank, Erica Di Ruggiero, Zena Sharman, Sari Sairanen, Deanna Matzanke, Doug Smeall, Ian M.F. Arnold, Gillian Mulvale, Kathy GermAnn, MaryAnn Baynton and Rick Green

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Notes from the Guest Editor

In 2009, four institutes of the Canadian Institutes of Health Research (Gender and Health; Health Services and Policy Research; Neurosciences, Mental Health and Addiction; and Population and Public Health) sponsored the Fourth Annual Canadian Research Congress on Mental Health and Addictions in the Workplace, in Toronto, Ontario. Hosted by the Work and Well-Being Research and Evaluation Program at the Centre for Addiction and Mental Health, the theme of the congress was We Can Do It! Evidence and Interventions for Transforming Mental Health in the Workplace (see http://kewa.camh.net/researchers/areas/work_wellbeing/Pages/default.aspx for more details). Coincidentally, in the same year, an idealistic presidential hopeful named Barack Obama adopted a similar slogan for his White House run. Obama recognized that change that challenges established barriers can only come about through co-operation and a collective investment.

As with the previous congresses, the 2009 congress focused on the latest research and evidence-based interventions in five main areas: (1) workplace prevention and promotion, (2) disability management and return to work, (3) diagnosis and treatment, (4) stigma/discrimination and (5) workplace mental health and addiction policies.

In addition, we sought to create a forum for dialogues that would lead to co-operation. Research alone cannot bring about change. It certainly can inform the direction of transformation; but for change to occur, all stakeholder groups need to be present. Thus, the organizing committee members represented a variety of stakeholders, including employers, unions, clinicians, disability management specialists, researchers, human resources professionals and workers who had lived disability experience. Effective interventions and workplace transformations require diverse perspectives.

We also recognized that promoting mental health in the workplace requires a broad public health perspective that reaches beyond treatment to consider the roles of the physical environment, policy, law and biological and psychosocial risk factors. This means that researchers must venture beyond customary disciplinary silos and nurture dialogues with other disciplines. There must also be meaningful exchanges and collaborations with labour unions, employers, research funders and policy makers. These groups must understand the research findings because they are the ones who will implement them and with whom partnerships must be made to continue to build the knowledge base.

The papers in this special issue were written by the congress plenary speakers. The research papers summarize the state of knowledge in three research areas as they relate to workers and workplaces: (1) linking the psychosocial and biological, (2) policy and law and (3) physical environment. Gilbert-Ouimet and colleagues (2011) describe a method of recording and examining the effects of workplace change on workers. Their contribution is an excellent example of how to describe interventions and their effectiveness so that they can be reproduced by others in the field. Marchand and Durand (2011) draw the links between biological and psychological distress, mental disorders and burnout. Results from this line of research will be critical to informing the development of standards of workplace stress. Lippel (2011) offers an instructive overview of the impact of the law and public policy on workplaces and

workers; these considerations are crucial to using these mechanisms to effect large-scale change. With her overview of the role of the physical environment and its contribution to mental health, Veitch (2011) calls attention to another dimension where intervention should occur. The commentary by Smith et al. (2011) offers a summary of these papers and recommendations for future research directions.

The paper by Sairanen, Matzanke and Smeall (2011) provides a reminder that the business community also offers leadership in developing workplace mental health strategies and is not a passive bystander but, rather, a key player. These authors also note that the business community is composed of a diversity of stakeholders including unions, employers and insurers. The commentaries by the Mental Health Commission of Canada (Arnold et al. 2011) and the Canadian Institutes of Health Research (Di Ruggiero and Sharman 2011) reflect the contribution of policy makers and research funders to shaping the direction for improving mental health in the workplace.

Last, but not least, Green's (2011) essay about his experiences with adult attention deficit hyperactivity disorder and his focus on the ability rather than the disability underscore the importance of understanding and education.

The congress fostered exchange and networking. Participants were encouraged to raise questions about how the research findings could be applied, and to share their observations and experiences related to the findings. We hope that the papers in this special issue resonate with the stakeholder community and continue the discussions and ideas that will lead to research and interventions promoting and improving mental health in the workplace. Together, we can do it!

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MENTAL HEALTH IN THE WORKPLACE:
WHAT THE RESEARCH TELLS US

Healthcare*Papers*

Psychosocial and Biological Indicators in the Evaluation of and Intervention in Mental Health Problems at Work

INVITED ESSAY

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ABSTRACT

This article discusses how biological and psychosocial perspectives might integrate into a unified framework – the bio-psychosocial model – that can be used to explain how mental health problems at work are generated and that can be subsequently employed in workplace intervention. It concludes with a brief review of the advantages and ethical pitfalls that arise with this approach.

Mental health problems at work, such as psychological distress, depression and burnout, are among the leading and most costly causes of absenteeism in the workplace. A report in 2000 from the International Labour Office stated that psychological distress affected between 15 and 20% of workers in Europe and North America; and it has been reported that 19% of Canadian workers experienced repeated episodes of psychological distress between 1994–1995 and 2000–2001 (Marchand et al. 2005a, 2005c). Costs associated with mental illness (in terms of absenteeism, productivity, indemnities and healthcare) were estimated at $51 billion in Canada in 2003 (Lim et al. 2008).

Significant in size and consequences, problems related to psychological distress, depression and burnout are difficult to diagnose and are sometimes intermittent. Researchers use many tools to identify and measure these mental health problems, but they lack objective tools that would provide a clear picture of the problems, as well as their causes. While most psychosocial oriented studies focus on stressors (e.g., work, family, socio-economic status etc.) and outcomes (e.g., psychological distress, depression, burnout etc.), the stress response itself is rarely or poorly measured. One main reason for this is that the psychological self-reported questionnaires used to assess the stress process do not adequately measure how stressors affect the body to produce detrimental outcomes for mental health. Stress is often assumed to be a "black box" hiding the mechanisms promoting mental health problems in workers. Hence, there is a need to incorporate into the research design physiological measures that can identify states of chronic stress at an earlier point in the stress process.

In this article, we discuss how biological and psychosocial perspectives might integrate into a unified framework that can explain how mental health problems at work are generated and subsequently how we can intervene. The bio-psychosocial approach adopted by the Équipe de Recherche sur le Travail et la Santé Mentale (ERTSM [Research Team on Work and Mental Health]) at the University of Montreal relies on a theory that puts forward the role of environmental stressors leading to biological dysfunction (stress) and finally conducing individual strains and diseases. ERTSM uses both psychosocial (questionnaire) and biological (cortisol and alpha-amylase in saliva samples) measurements to capture how stressors in the environment produce a stress reaction in the individual body (stress response) and influence disease production, in particular symptoms of psychological distress, depression and burnout. With such an approach, the biological stress response could be evaluated and linked to symptoms of mental health reported in questionnaires; and the stressors evaluated by the questionnaire could be linked to the biological stress response as well as to reported symptoms of mental health. Therefore, subjective and objective evaluations are jointly integrated and are expected to produce a better evaluation of both symptoms and determinants of workers' mental health, as well as better intervention results.

We will now examine the bio-psychosocial model explaining workers' mental health, discuss the use of this model for workplace intervention and briefly review advantages and ethical pitfalls that arise with this approach.

Bio-psychosocial Model of Workers' Mental Health

Psychosocial Factors

There is growing evidence that psychosocial factors at work relate to mental health outcomes. A large array of work characteristics (skill utilization, decision authority, psychological and physical demands, work hours and schedule, harassment and aggression, social support, job security, rewards and recognition etc.) are stressors contributing to psychological distress, depression and burnout (Bonde 2008; Marchand and Blanc 2010; Marchand et al. 2005a, 2005b, 2006; Netterstrøm et al 2008; Stansfeld and Candy 2006), and workers at the mid- to lower levels of the occupational hierarchy (white-/blue-collar workers, unskilled workers) experience a higher frequency of psychological disorders (Marchand et al. 2005c; Niedhammer et al. 1998; Sanne et al. 2003; Stansfeld et al. 2003; Wieclaw et al. 2005). Two main theoretical models have sought to explain the relationship between work and mental health: the Demand-Control-

Support model (Karasek and Theorell 1990), which extends the Job Demand–Control model (Karasek 1979) and the Effort-Reward Imbalance model (Siegrist 1996). Because these models are well known, we do not describe them in detail here. It is important to note, however, that while the components of Karasek and Siegrist models are well supported empirically, recent reviews of longitudinal studies concluded that the interactive hypotheses of these models are inconclusive (Bonde 2008; Netterstrøm et al. 2008; Stansfeld and Candy 2006). These inconsistencies and the failure to demonstrate support some of the major hypotheses of these models indicate that other factors are at play in the explanation of mental health status in the workplace.

To begin, one must recognize factors outside of work (Bonde 2008; Marchand and Blanc 2010; Marchand et al. 2005a, 2005b; Virtanen et al. 2008). Studies have stressed the role of non-work factors – such as marital status and parental responsibilities, strained relationships (e.g., with spouses, children, friends and neighbours), the economic situation of the household, the conciliation of work and family and a variety of sources of social support and participation in social networks – as important to mental health problems. When it comes to demographics, mental health problems have been shown to be more prevalent among women and to decrease with age. Educational level, physical health status, personality traits and lifestyle habits such as alcohol consumption, smoking and physical exercise patterns introduce further sources of variations. Finally, inadequate coping strategies and stressful life events are also considered to be important. All of these factors have been reviewed elsewhere (Marchand et al. 2005b; Stansfeld 2002) and are consistent with the multi-level theoretical model of mental health determinants in the workforce (Marchand et al. 2005a, 2005b, 2006). Surprisingly, however, with the exception of a few reports, most studies linking work and mental health fail to integrate or control for these other aspects of an individual's life. This may explain why work in this area leads to results that tend to be gender biased: more gender-specific factors such as balancing work and family demands in women or men with no or low spousal support, and discrimination barriers to financial and career development in women can induce significant stress in today's workforce. The transportation of stress from family to work and from work to family (negative spillover effects) might also have a significant impact on today's workers' mental health.

Biological Factors

On the biological side, we now know that enduring stressors may produce states of chronic stress that can lead to mental health problems because of the activation of a physiological stress system in the body called the hypothalamic-pituitary-adrenal (HPA) axis. This axis controls the secretion of the two major stress hormones in the body: glucocorticoids (called cortisol in humans) and catecholamines (adrenaline and noradrenaline). The catecholamines are the first hormones to be produced in response to stress, and their acute secretion has been shown to be associated with an emotional enhancement of memory of fearful and stressful events. Cortisol is secreted after the catecholamines and is involved in the energy mobilization needed to respond to the stressor. Various studies have shown that exposure to high levels of cortisol lead to impairments in attention (Lupien et al. 1999), emotional processing (Maheu et al. 2004) and learning and memory (Lupien et al. 1994, 1998, 2002a, 2002b) as cortisol easily and rapidly crosses the blood-brain barrier and accesses three brain regions known to be involved in emotion, learning and memory (Anderson and Phelps 2001; Connolly et al. 2002; Owen et al. 1996; Tulving 2002). Other

studies have shown that cortisol secretion is dysregulated in depressed individuals (higher than normal level) (Pruessner et al. 2003; Sachar et al. 1973), in individuals suffering from burnout (lower than normal level) (Pruessner et al. 1999) and also in chronic alcohol intake and acute alcohol withdrawal (Junghanns et al. 2003; Kiefer et al. 2006; Olive et al. 2003; Sillaber et al. 2002).

In the mid-1990s, non-invasive methods were developed allowing the measurement of cortisol in human saliva (Kirschbaum and Hellhammer 1994). Since then, a growing number of studies have demonstrated the validity and reliability of these physiological measures in assessing cortisol levels and at predicting stress-related disorders (Kirschbaum and Hellhammer 1994). More recently, salivary proxy measures (salivary amylase, salivary alpha-amylase) of catecholamines have also been developed and used in many studies regarding physiological stress (Chatterton et al. 1996, 1997; Kirschbaum et al. 1993; Li and Gleeson 2004; Nater et al. 2005, 2006; Rohleder et al. 2004; Takai et al. 2004; Walsh et al. 1999). Some studies have assessed salivary stress hormone levels as a function of workplace stress. For example, awakening cortisol response has been shown to be more pronounced on weekdays than on the weekend (Kunz-Ebrecht et al. 2004; Schlotz et al. 2004), particularly for individuals reporting higher levels of chronic work overload and worrying. The catecholaminergic system has also been shown to be sensitive to work stress, with heart rate and blood pressure being higher during workdays than in the evening or on leisure days (Evans and Steptoe 2001). Another study has measured a model of effort-reward imbalance and over-commitment to work using cortisol measurements during workdays, with results showing that the awakening cortisol level is positively associated with over-commitment in men only (Steptoe et al. 2004). Some studies using salivary stress hormones have also been conducted to assess work-family related stress.

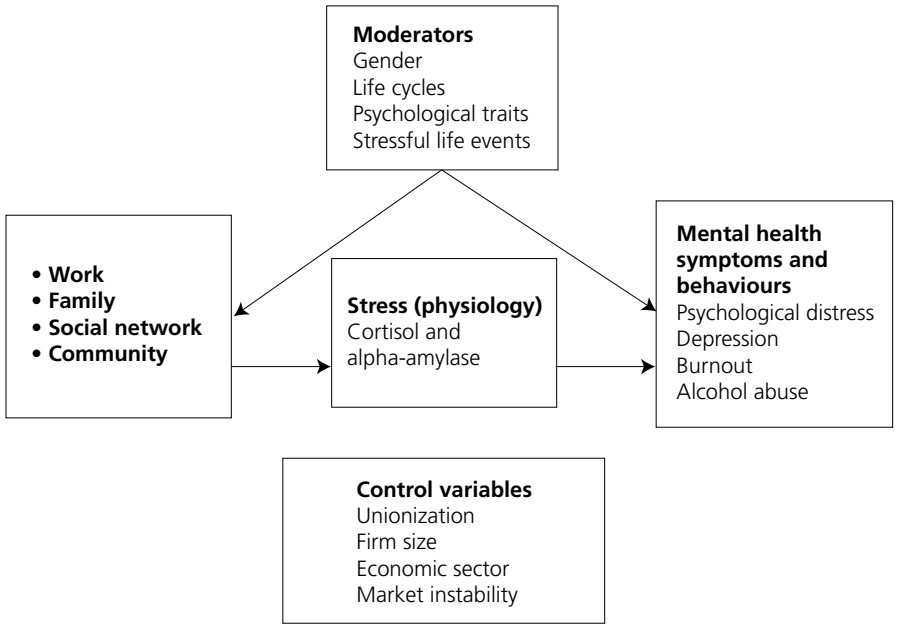
Difficulties in harmonizing work and family duties for women with children at home are associated with higher catecholamine levels after work than for women without children and for men with or without children (Lundberg and Frankenhaeuser 1999). Another study (Barnett et al. 2005) showed that men and women with more marital concerns reported greater stress throughout the day and flatter cortisol slopes during the day (due to blunted cortisol levels in the morning) when compared with individuals with low marital concerns. Another study (Sudo et al. 1995) found that urinary noradrenaline and salivary cortisol levels in women with children showed a tendency to be higher in the afternoons and evenings on workdays than on days off, while no difference between workdays and days off was observed in working men or working women without children, suggesting carryover effects from family to work stress. Finally, a study performed in white-collar workers showed that both psychological distress and stressful daily events at work and/or at home were associated with higher cortisol levels (van Eck et al. 1996).

In summary, and assuming that mental health disorders are stressor-related disorders that develop over time, these biomarkers of stress (cortisol and alpha-amylase levels) may be very important items to measure, early in the process, states of chronic stress that could potentially lead to mental health disorders such as depression and burnout.

Integrating Psychosocial and Biological Factors

Figure 1 illustrates the ERTSM bio-psychosocial model, which is based upon the assumption that mental health problems result from chronic stress, which itself occurs from

Figure 1. ERTSM bio-psychosocial model of workers' mental health



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exposure to enduring work and non-work stressors, a process modulated by individual factors. Multiple levels of stressors (work, family, community) are considered in order to further capture the complexities involved in the stressor-strain process that has been theorized and partially tested in psychosocial studies (Marchand and Blanc 2010; Marchand et al. 2005a, 2005b).

The model hypothesizes, first, an association between perceived stressors and stress measured physiologically (cortisol, alpha-amylase) and, second, an association between the latter and mental health outcomes. From the work domain, stressors are located at (1) the individual level (occupation, skill utilization and decision authority, physical and psychological demands, working hours and schedule, social support from colleagues/supervisor, job insecurity, harassment/aggression, abusive supervision, efforts and rewards, non-work to work conflicts); and at (2) the workplace level (organizational culture and politics, work-family culture, industrial relations climate, risk tolerance, organizational learning climate, organizational stress interventions, individually targeted interventions, occupational health and safety structures and resources). Non-work stressors originate from the family (marital, parental and economic statuses, marital and parental strains, household chores, work to non-work conflict), the social network (social support) and the community (economic status, access to daycare). The model postulates that individual characteristics of gender, life cycles, psychological traits and stressful life events relate to mental health, while moderating the relationship between work and non-work stressors and the stress states, and the relationship between the latter and mental health outcomes. Finally, because the model integrates workplace-level factors, there is a need to control for unionization, firm size, economic sector and market instability.

By combining subjective and objective evaluations of stressors and strain, ERTSM is able to identify how stressors get into the body to produce detrimental outcomes for mental health. It is also possible for us to examine cut points for self-reported mental health measurement as a function of cortisol and alpha-amylase levels; this will help in the earlier detection of psychological distress, depression

and burnout symptoms. Subsequently, the questionnaire can be better calibrated for improved reliability in detecting cases versus non-cases of mental health problems.

Let's now look at how such an approach is expected to produce better intervention results.

Bio-psychosocial Model in Intervention

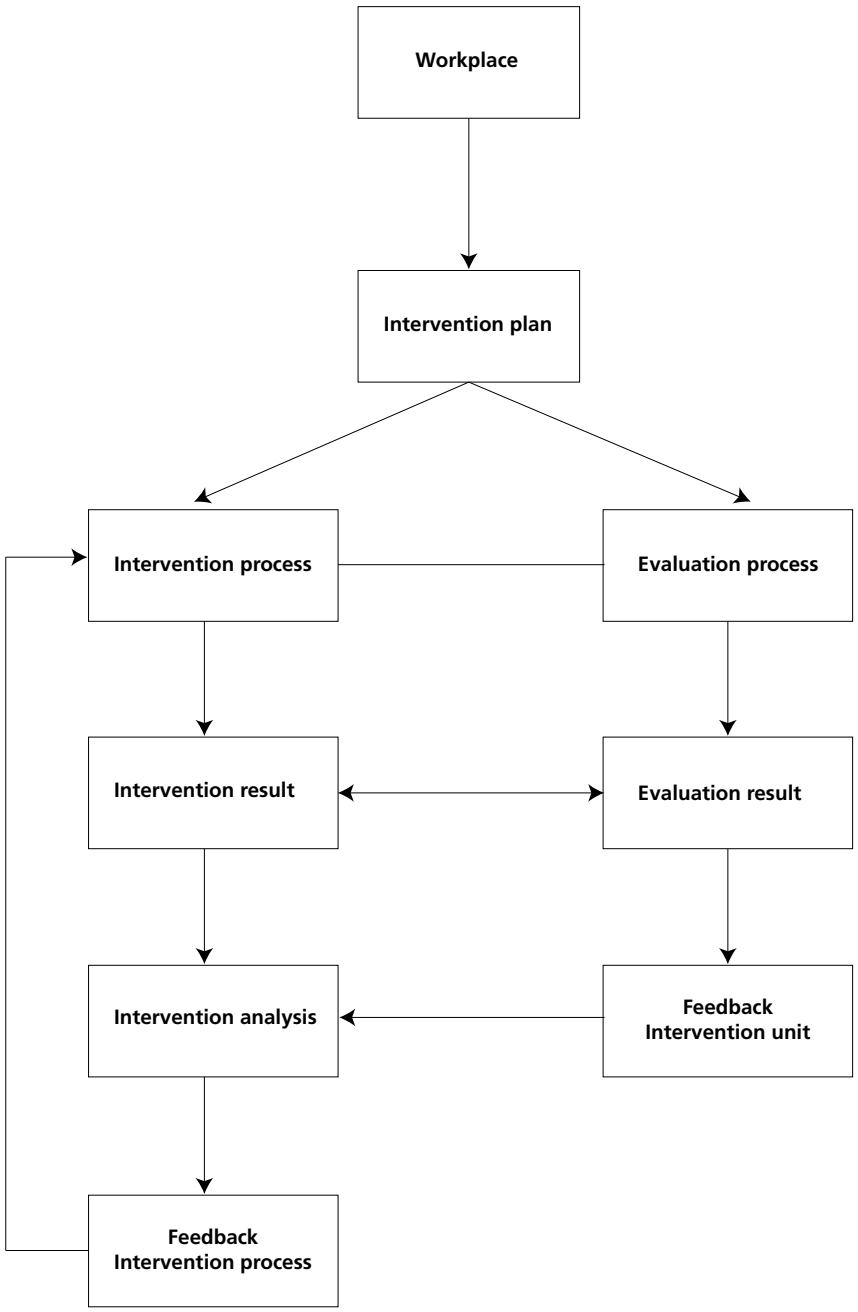
Occupational Stress Intervention

Comprehensive reviews of research on interventions for occupational stress (Caulfield et al. 2004; Giga et al. 2003; Harvey et al. 2006; Parkes and Sparkes 1998; Rick et al. 2002) show that we have a good level of knowledge about organizational interventions but are lacking adequate evaluations for their effectiveness. So far, the strongest evidence on effective interventions aimed at stress reduction comes from socio-technical interventions that focus on the structural/objective elements of work (e.g., work scheduling, job design [Parkes and Sparkes 1998]). A high degree of agreement in perceptions regarding these sources of stress is likely an important factor explaining the success of these types of interventions. It also underscores the importance of primary interventions that are focused on removing the major, agreed-upon sources of stress from particular work environments. However, many psychosocial stressors are more linked to subjective perceptions (e.g., role conflict and ambiguity, hostilities at work, skills under-/overused etc.), and changes to these risk factors at work are more challenging and difficult to evaluate. This is a likely reason why studies have so far been mixed in their findings (Harvey et al. 2006).

Nevertheless, these difficulties are surmountable when various elements of intervention success and evaluation are considered. The first critical element is that stress intervention is an ongoing process (Kompier et al. 2000) that will hopefully lead to technical and normative changes on matters of mental health. These changes might involve modifications in workloads and work schedules and even impose minimal resting time between work shifts. Hence, the conceptualization and evaluation of these programs must be oriented for the mid- to long term and be focused on both the process (how) and the content (what) of the intervention (Harvey al. 2006; Kompier et al. 2000), given that it may need to bring change to a range of elements related to work and non-work factors. From an evaluation standpoint, this necessitates, among other things, flexibility in measurement approaches (qualitative and quantitative) and a multiplicity of outcomes to be measured over time (Hurrell 2005; Parkes and Sparkes 1998) to capture the complexity of the process and content dynamics. Another important element is to ensure that a true fit is established between the problem and the solution through an effective risk assessment (Hurrell 2005; Kompier et al. 2000; Rick et al. 2002); a realistic intervention that is evidence-based should be used whenever possible (Briner 1997; Harvey et al. 2006; Rick et al. 2002). An examination of case studies of interventions suggests that successfully accomplishing these elements is largely based on using a systematic risk management approach to the problem, with genuine involvement from all groups within the organization (Cox et al. 2000; Kompier et al. 2000).

Cox et al. 2000 provide interventionists with an excellent framework, with details for accomplishing all of these intervention strategies. Drawing on risk management knowledge in applied psychology and management science, authors in these fields have put forth a risk management process that is tailored to the reality of occupational stress. It also parallels nicely the intervention research agenda and framework put forth by the National Occupational Research Agenda research team (Goldenhar et al. 2001).

Figure 2. ERTSM intervention model



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Integrating Psychosocial and Biological Factors in the Intervention

Figure 2 describes the intervention model of ERTSM, a five-step model of risk management for work stress. The first critical step involves workplace risk assessment wherein an analysis of the current and ongoing situation provides an details of stressors, levels of physiological stress (cortisol, alpha-amylase) and associated mental health problems by using data collected by the research team; these are further enriched with additional data gathered through on-site interviews of executives. This workplace assessment takes into account the observed factors related to individual, family and community considerations.

The second step is critical to implementation success and involves translating assessment data into information that the organization can understand, accept and use in the risk reduction step to follow. The goal is to ensure that organizational members understand and take ownership of the information so that the data truly become actionable information for them. The risk reduction step then follows, with concern for the design and implementation of the intervention plan. Careful contemplation on the intervention is necessary, including consideration of existing evidence supporting the proposed intervention and whether it truly fits the problem.

The intervention plan is then subdivided in a two-pronged evaluation step. On one side, the intervention is implemented by a first section of the research team, and results are obtained. The intervention results are then analyzed. Several evaluative tools can be used, but it remains important that the intervention process remains open to ongoing modifications. The other side of the intervention proceeds in a concurrent fashion. While the intervention is processing, another section of the research team collects data about it in an independent manner. As soon as the intervention results are obtained, these are evaluated by the second research section of the team.

In the subsequent step, this latter research section provides its evaluation to the first section once the intervention is completed, and also provides some feedback on the intervention process. The purpose of this double-sided approach is, first, to be able to provide an independent evaluation of the intervention and, second, to provide, with the help of an independent observer, another form of evaluation, which is concerned more about the nature of the intervention and how it is implemented. The learning and training step is then also part of the process of risk management.

The process is thus completed by an exchange between the evaluation and intervention teams so that learning from the evaluation can occur and also be transferred back to the participating company.

This intervention model focuses more on the intervention and evaluation process than on the content. Hence, it should be completed by two additional remarks resulting from the research design. First, this model is used for designing, implementing and/or evaluating preventive interventions or practices addressing the following three sets of stressors: (1) work-family conflict and imbalance; (2) downgraded work climate, lack of social support, and harassment at work; and (3) psychological demands and decision authority imbalance related to work organization/job assignment or design. These problems have been targeted for best practices development and testing because existing research suggests that they are important sources of stress relevant for occupational mental health and provides indications or documentation about pathways for solutions (Artazcoz et al. 2004; Frone 2000; Haines et al. 2006; Marchand and Blanc 2010; Marchand et al. 2005a, 2005b, 2006; Schat and Kelloway 2005). Second, the intervention model is used for conducting before-after evaluation studies, and it will also be used in a modified version to perform ex post evaluative studies.

Ethics and the Workplace

Conducting this type of research in the workplace brings both advantages and ethical pitfalls. First of all, as mentioned previously, quantitative research including both a systematic evaluation composed of a questionnaire and a biological measurement should provide a more solid diagnosis of the workplace situation. Moreover, this evaluation follows a strict stratified and randomized design. Secondly, interventions are administered following a stratified and randomized design, and this is rather rare given the difficulties it entails. However, using this type of design provides a non-biased estimate of the true effects of interventions by taking into account external factors to the workplace such as social support from the family and the community or negative events occurring in one's life. Many ethical pitfalls stem from this type of research, and some of them are presented in Table 1.

The first type concerns the use of questionnaires aimed at gathering workplace information but also personal and family information. To ensure a high level of participation, we must therefore guarantee responder

anonymity and confidentiality of collected data. Another concern is the responsibility of any research team that is implicated in a health intervention process. We cannot blind ourselves in the face of a situation that might be significant in the preservation of someone's physical or mental integrity. Hence, we have set up some criteria triggering action when a participant shows, for example, a high score on the Beck Depression Inventory. In such a case, the participant is urged to consult a specialist at the nearest possible time.

The second type of ethical pitfall concerns the information provided by the human resources executives when interviewed by our research team. We have to take precautions in order to prevent any leak that could put them in a difficult position. The interviewed people are well known by employees, and identifying their company would automatically identify them in return.

A third ethical concern involves the saliva sampling. Even though we measure only two parameters, the perception is that we could measure many more things. These parameters, which would have necessitated blood sampling only a few years ago, can now be measured in the saliva, but so can many more substances, such as some illicit or licit drugs (cocaine, etc.). So we need to be quite clear by stating our engagement to limit measurements to the two explicitly named components (cortisol and alpha-amylase) in the informed consent. Moreover, even if researchers want in the distant future to measure different parameters in the same samples, they will have to go back for approval to the participants, if identities are available (which is not the case in our study). Subsequent to the sampling, results should not be analyzed on an individual basis

We cannot blind ourselves in the face of a situation that might be significant in the preservation of someone's physicial or mental integrity.

Table 1. Ethical pitfalls

Pitfall	Importance, Legal Constraints, Ethics
Questionnaires:	
• Anonymity of responders	High importance, legal
• Confidentiality of data	Ethics
• Informed consent	Ethics
• Responders with a score >29 on the Beck Depression Inventory are advised to consult a specialist	Legal
Interviews with human resources executives: informed consent	Ethics, in some cases legal
Saliva sampling (cortisol and alpha-amylase):	
• Anonymity of participants and confidentiality of data	High importance, legal
• Specific informed consent	Ethics
• Limited number of parameters	Ethics
• Confidentiality of results (not transmitted to a third party or to the employer on an individual basis	Legal and ethics
• Interpretation of results (screening vs. diagnosis)	Ethics
Interventions in companies:	
• Commitment toward confidentiality of all data obtained from companies	Ethics and legal
• Commitment toward confidentiality in company operations (commercial base protection)	Ethics and legal
• Company consent to make company insurance data available at the insurer	Ethics and legal

since cortisol and alpha-amylase are not diagnostic tests in this instance and are to be used as screening tests. Hence, since they cannot be used to refer workers to physicians, analyses provide aggregate results that are used to compare groups. Furthermore, individual results cannot be transferred to a third party, such as an insurance company, and used as part of an individual's medical claim file.

Finally, a fourth type of concern regards interventions in workplace settings. First, on the company side, there is an overwhelming question about the confidentiality of information provided by the company. Every company is worried that data collected by a research team could end up with third parties and have some negative effect on the risk analysis of its portfolio or on workers' compensation board records, which, in turn, could engender an increase in fees. Second, the company may fear that the welcoming of a research team within the confines of an industrial setting may result in a transfer of delicate information to competitors. This would endanger the competitive commercial base of the company under study. The same could be said about company data transferred from a third party to the research team. In all these instances, we have to provide guarantees regarding the confidentially of information.

Finally, direct interventions in six followed-up companies impose constraints with regards to the types of interventions and their specific results. Consequently, the results will be reported in order to protect sensitive outcomes regarding individuals involved in the interventions. The last aspect concerns the limits of the research team role. Considering the nature of scientific research, it was stated that the research team would not act in replacement for clinical work that should be done in a professional context and that the team would not act as a replacement for a management consultant.

Conclusion

The identification and evaluation of mental health problems at work comprise a crucial problem to be solved if we are to make progress in reigning in the damage to workers' health and the subsequent costs to all parties involved in the workplace. Numerous studies have used mainly questionnaires to evaluate mental health problems. Many of those questionnaires had gone through rigorous validation studies (Ilfeld 1976; Karasek and Theorell 1990; Kessler et al. 1998); but in some cases, validation studies were not so extensive (Viviers et al. 2008) or were confined to specific work settings or occupations (Hayasaka et al. 2007). These questionnaires enabled researchers to evaluate the magnitude of the problem (e.g., through measurement of frequencies or relative scoring systems) or to follow the frequency of problems in populations on a periodic basis (Stansfeld et al. 2003). Even though questionnaires offer valuable information, they are often the subject of criticism because they are based on individual perceptions and therefore do not offer any reference to a possible gold standard. Biological measurements are often thought to be more objective since they usually offer quantitative measurements with a higher reproducibility. However, many biological parameters provide non-specific information and are thus of no use in the detection of health problems. Cortisol and alpha-amylase measurements are not specific with regards to mental health problems since their values can vary in many types of health situations, even favourable ones. Nevertheless, it might be possible to obtain a more solid confirmation of an ongoing negative mental health situation when both the questionnaire results and the biological values concur. This has to be tested thoroughly taking into consideration the ethical aspects engendered by the testing process.

A second problem to be addressed

concerns the identification and evaluation of meaningful interventions in the workplace. Once mental health problems have been identified in a target workplace, specific and efficient interventions must be implemented and evaluated in terms of efficacy. All kinds of interventions have been reported in the literature, but comparative studies have shown that results are often contradictory. In some cases, even positive results are so short lived that the interventions are not worth doing. In other cases, intervention evaluations do not take into account the Hawthorne effect (Gillespie 1991; Sonnenfeld 1985) that inevitably accompanies human interventions in the workplace. It is possible, though, to draw a list of the most credible interventions and try them in a controlled setting. To do this we have to compare two groups of companies, a high-performance organization with successful interventions and a low-performance company in need of interventions. The companies are followed up with the same tools (e.g., questionnaire and biological measurements). A research team observes the effect of interventions at different times in order to evaluate their true effect.

Biological measurements are often thought to be more objective since they usually offer quantitative measurements with a higher reproducibility.

Finally, intervention evaluation is both objective and subjective in nature, and both the result and the process are important. Employee reactions to interventions are modulated not only by the content or type of intervention but also by how we intervene and administer features of the intervention, thus influencing employee perceptions. This is why an independent observation team can provide needed and useful information about the quality of the intervention and possible modifications that could improve efficacy and effectiveness.

Group mental health interventions in the workplace are still in need of development and validation studies. Nonetheless, they must be pursued if we are to make some progress toward both the prevention of mental health problems in the workplace and their resolution when they manifest themselves.

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Law, Public Policy and Mental Health in the Workplace

INVITED ESSAY

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ABSTRACT

The first part of this article describes regulatory interventions, drawn from different Canadian jurisdictions, designed to reduce worker exposure to psychosocial hazards, including occupational violence, and to protect workers' mental health. It also addresses legislative provisions providing workers' compensation for mental health problems and regulatory provisions supporting the return to work of those who have been absent from work because of work-related mental health problems. The second part of the article, relying on illustrations from case law in which workers' compensation claims for mental health problems have been accepted, examines ways in which law and policy can actually contribute directly or indirectly to behaviours that may lead to increasing illness and disability associated with mental health problems.

Internationally, occupational psychosocial risk factors have become the focus of increasing attention in recent years. The World Health Organization's *Plan of Action*, endorsed by the World Health Assembly in May 2007, included the following as its 11th recommendation: "The assessment and management of health risks at the workplace should be improved by defining essential interventions for prevention and control of mechanical, physical, chemical, biological and psychosocial risks in the working environment. Such measures include also integrated management of … health-impact assessment of new technologies, work processes…."

The European union has, for some time,

acknowledged the importance of addressing psychosocial hazards in the workplace and it has taken a variety of initiatives in this regard, in terms of both research on policy (European Agency for Safety and Health at Work 2007) and policy initiatives to encourage member states to address stressful working conditions, their prevention and their consequences for the health of workers (Leka et al. 2010). The European Agency for Safety and Health at Work, in a Delphi study involving experts on occupational health hazards, identified the following as the top 10 emerging psychosocial hazards: precarious contracts in the context of unstable labour markets; increased workers' vulnerability in the context of globalization; new forms of employment contracts; feelings of job insecurity; an aging workforce; long working hours; work intensification; lean production and outsourcing; high emotional demands at work; and a poor work-life balance (European Agency for Safety and Health at Work 2007: 26). The same report suggests action plans, including ideas for policy recommendations designed to address not only the 10 emerging hazards but other psychosocial hazards, such as occupational violence, that are known to lead to adverse health outcomes.

Canadian studies have looked at the role of some of these hazards in the development of adverse health effects. Precarious employment, including insecure employment in the context of restructuring (Quinlan, 2007) and non-standard work contracts (Quinlan et al. 2001) are known to undermine the cohesion of work teams, reducing social support while increasing both workload and work demands of those on the same shift who are not employed under a precarious contract (Seifert et al. 2007). *Employment strain*, a concept developed by Lewchuk, Clarke and colleagues (Clarke et al. 2007), is a structured framework that examines together the effects of the uncertainty of the employment relationship, the effort associated with finding and keeping employment and the support obtained by being employed. The authors examined the health outcomes associated with high employment strain. There is, as well, significant Canadian research on organizational factors contributing to adverse mental health outcomes of workers (Vézina et al. 2004), and on organizational interventions to effectively reduce exposure to these hazards (Harvey et al. 2006; Kling et al. 2009; Vézina 2008).

Nonetheless, while scientific research in Canada on the identification of organizational factors constituting psychosocial hazards is advanced, there is much less research on policy, and few policy makers have addressed these issues by enacting regulatory instruments designed to take up the challenges raised by mental health issues in the workplace with regard to primary prevention, workers' compensation or disability prevention and return to work. Both the prevention and compensation of work-related illness, including mental illness, fall under the exclusive jurisdiction of the provinces, with the exception of the federal government's jurisdiction on the approximately 10% of the workforce working for federally regulated industries. As such, an understanding of the situation in Canada with regard to regulatory issues requires an analysis of 14 jurisdictions, including the provinces and territories as well as the federal jurisdiction.

This paper reviews legal and policy initiatives in Canada with regard to the protection of workers' mental health, and it examines ways in which law and public policy can indirectly affect workers' mental health, either positively or negatively. The concept of legal initiatives refers to legally binding laws and regulations adopted by the competent regulatory authorities. Policies include both the messages codified in the legislative frameworks and also public policy documents

and discourse that affect working conditions in Canada. This paper does not purport to address private (management) policies, nor does it aim to provide evaluative research results with regard to public policies.

Legal and Policy Initiatives Designed to Address Psychosocial Hazards

In the study of regulatory frameworks designed to address occupational health and safety issues, three types of legislation require attention: occupational health and safety laws, workers' compensation and legislation addressing return to work. Occupational health and safety laws, and related statutes, define mechanisms to encourage employers to prevent or reduce exposure to hazards, and set penalties for failure to comply with those requirements. These statutes are usually enforced by labour inspectors. Workers' compensation legislation is designed to provide remedies for workers who are injured or become ill because of exposure to occupational hazards. These same statutes, as well as human rights legislation, address hiring and return-to-work issues for people with disabilities, including non-temporary health problems.

Legal Initiatives to Reduce Psychosocial Hazards in the Workplace

In Canada, most legislative initiatives explicitly designed to prevent or reduce psychosocial hazards in the workplace are confined to issues of violence and harassment. In some jurisdictions, general requirements in occupational health and safety legislation also apply to the protection of both the physical health and mental health of workers.

Prevention of Occupational Violence

The International Labour Organization and the World Health Organization both define *occupational violence* as including, among other things, physical violence, psychological violence and harassment, both discriminatory and psychological (Chappell and Di Martino 2006). Canadian policy makers have used the term in a variety of ways, and workers' protection from these different forms of violence is uneven.

Under common law, or civil law in Quebec, employers may be held vicariously liable for verbal, physical and sexual violence by an employee against another employee (*Boothman v. Canada* 1993 [harassment]) or a third party (*Bazley v. Curry* 1999 [sexual assault]), and damages can be claimed against the employer by victims of employee violence under the law of tort, or under human rights legislation, although in some circumstances, such claims by employees against employers and co-workers may be barred by workers' compensation statutes (*Béliveau St. Jacques v. Fédération des employées et employés de services publics inc.* 1996; *University of Saskatchewan v. Workers' Compensation Board of Saskatchewan* 2009). The policy considerations behind employers' liability for acts of their employees' violent behaviour include the fair allocation of loss to the risk-creating enterprises and deterrence objectives, as it is posited that economic liability will act as an incentive to employers to prevent the risk of violent behaviour, or at least to minimize and manage it (*Bazley v. Curry* 1999). These economic incentives may be neutralized if the aggressive behaviour engendered by work organization characteristics that are conducive to workplace bullying and violence are subtracted from the domain of tort liability by exclusive remedy provisions of workers' compensation schemes.

Aside from the incentives provided by tort law, the first legislation (other than criminal law) targeting workplace violence was human rights legislation; this has existed in some form or other in every Canadian province for decades and it prohibits discriminatory harassment in the workplace, including sexual harassment.

Discriminatory harassment is just a small part of occupational violence, and more recently several Canadian jurisdictions have adopted legal frameworks designed to include occupational violence as a hazard needing to be addressed by employers under either occupational health and safety legislation or minimum standards legislation. Some legislative approaches require employers to perform systematic risk assessments to be integrated into prevention programs, while others provide for complaint-based mechanisms. The nature of these initiatives varies significantly from one jurisdiction to the next in terms of the nature of the violence being targeted, the remedies proposed and the types of mandates being delegated to administrative agencies. Development of these legislative requirements has been slow (Pizzino 2002), although more recently most jurisdictions have acknowledged the importance of a regulatory response.

Saskatchewan legislation was the first to address the prevention of occupational violence. In force since 1997, *Occupational Health and Safety Regulations* (1996) identifies priority sectors in which mandatory violence-prevention policies need to be adopted and prescribes that training should be provided to workers.

Discriminatory harassment is just a small part of occupational violence.

British Columbia was also one of the first jurisdictions to explicitly target occupational violence in its occupational health and safety regulations (WorkSafeBC 1998), perhaps because occupational violence was early on the subject of scientific attention in that province (Boyd 1995). While acknowledging significant under-reporting of violent incidents, Boyd (1995), in a study based on workers' compensation data, showed an increase in violent incidents targeting workers, particularly in healthcare and community organizations.

The BC occupational health and safety regulation (WorkSafeBC 1998: sections 4.24–4.31) provides a restrictive definition of *violence*, limiting the term to "the attempted or actual exercise of physical force so as to cause injury to a worker" and excluding from the definition acts of physical violence perpetrated by a worker. The regulation labels the following as "improper activity or behaviour": "the attempted or actual exercise by a worker towards another worker of any physical force so as to cause injury, and includes any threatening statement or behaviour which gives the worker reasonable cause to believe he or she is at risk of injury; and, horseplay, practical jokes, unnecessary running or jumping or similar conduct" (WorkSafeBC 1998). While this behaviour is prohibited, it is nonetheless trivialized both by its name and by the lack of requirements with regard to risk assessment to protect workers from internal violence (from within an organization), be it horizontal or vertical. Employers are required to undertake risk assessments with regard to violence but not with regard to "improper activity or behaviour." The risk assessment, which should involve the organization's joint health and safety committee, can lead to a variety of requirements, both in terms of policy and work arrangements designed to either eliminate or minimize the risk to workers, and to ensure that workers report incidents of violence to the Workers' Compensation Board, now WorkSafe BC. No such requirements appear to exist if the violence comes from internal sources.

Manitoba's occupational health and safety regulations of 2006 include provisions that require risk assessments related to physical violence or threats of physical violence (*Workplace Health and Safety Regulation*

2006, Part 11) and discriminatory harassment (*Workplace Health and Safety Regulation* 2006, Part 10). Newfoundland has similar requirements (*Occupational Health and Safety Regulations* 2009, Part 22).

Recently, in 2008, the federal jurisdiction adopted more detailed and broader provisions in regulations designed to prevent violence that is defined as follows: "work place violence constitutes any action, conduct, threat or gesture of a person towards an employee in their work place that can reasonably be expected to cause harm, injury or illness to that employee" (*Canada Occupational Health and Safety Regulations* 2007: s. 20.2; "Regulations Amending the Canada Occupational Health and Safety Regulations" 2007, December 15).

> *Bullying is not explicitly included in the definition of violence but it is explicitly identified as a factor in workplace violence.*

The federal regulation neither restricts the concept of violence to physical violence nor eliminates internal violence from the purview of the prevention process. Although bullying is not explicitly included in the definition of violence, it is explicitly identified in s. 20.3(b) as a factor that contributes to workplace violence; as such, the employer is obliged to "dedicate sufficient attention, resources and time to address" the prevention of bullying and the protection of workers against bullying. Employers are also required, among other things, to assist employees who have been exposed to workplace violence. Detailed provisions circumscribe the nature of the risk assessment required and the nature of the controls that ensue from the assessment. The employer is also required to regularly review the effectiveness of the prevention measures, according to detailed parameters defined in the regulation. The federal regulation does provide for differential treatment of the violent incident depending on whether or not the workplace violence was caused by an employee; the intervention of a "competent person" to investigate the situation is reserved for those cases involving employee aggressors or cases where the aggression from non-employees is not deemed to be a normal condition of employment, as long as the employer already has effective prevention procedures and controls in place. Finally, the regulation requires the training of employees with regard to workplace violence and stipulates the nature of the training and the necessity of regular revision of the training procedures. Prior to the adoption of this legislation, courts and tribunals have upheld workers' rights to refuse to work when doing so would expose them to situations of physical violence (*Verville v. Canada [Service Correctionnel]* 2004), although it is less clear that the protection of their mental health was an acknowledged justification for refusing to work (*Boivin v. Canada [Customs and Revenue Agency]* 2003).

In December 2009, Ontario introduced provisions on violence and harassment to the Occupational Health and Safety Act, which came into force on June 15, 2010. The act addresses both workplace violence and *workplace harassment*, defined broadly to mean "engaging in a course of vexatious comment or conduct against a worker in a workplace that is known or ought reasonably to be known to be unwelcome" (Occupational Health and Safety Amendment Act [Violence and Harassment in the Workplace] 2009: s. 1). *Workplace violence* is also defined in that section, and means "the exercise of physical force by a person against a worker, in a workplace, that causes or could cause physical injury to the worker" and also includes a "statement or

behaviour that it is reasonable for a worker to interpret as a threat to exercise physical force against the worker, in a workplace, that could cause physical injury to the worker." It is of note that the provisions requiring action on behalf of the employer are more exacting with regard to workplace violence.

Requirements pertaining to harassment are more limited than those regarding violence. Harassment prevention is prescribed in s. 32.01, which obliges the employer to prepare and post a written policy (in workplaces with more than five workers regularly employed, unless an inspector orders otherwise); S. 32.0.6 states that the employer must maintain a program to implement the policy, a program that must include measures for reporting incidents of harassment to the supervisor or employer, and sets out how the employer will investigate complaints. Further provisions may be prescribed.

The more exacting requirements regarding risk assessments are restricted to physical workplace violence. Bill 168 does introduce innovative legal language regarding domestic violence, requiring that "if an employer becomes aware, or ought reasonably to be aware, that domestic violence that would likely expose a worker to physical injury may occur in the workplace, the employer shall take every precaution reasonable in the circumstances for the protection of the worker" (Occupational Health and Safety Amendment Act [Violence and Harassment in the Workplace] 2009: s. 32.0.4). The introduction of the issue of domestic violence is particularly important for women: an American review of the literature has shown that many cases of physical violence involving women workers, and up to 10% of homicides in the workplace, have been attributed to intimate partners and relatives (Santana and Fisher 2002).

Provisions governing the prevention of violence include the obligation to provide information regarding the policy and program and regarding the potential danger of violence, although personal information is limited to that which "is reasonably necessary to protect the worker from physical injury" (Occupational Health and Safety Amendment Act [Violence and Harassment in the Workplace] 2009: s. 32.0.5 [4]). Incidents of violence that lead to the need for medical attention must be reported by the employer within four days of the occurrence; Bill 168, by amending s. 43 of the Occupational Health and Safety Act, allows for a worker's right to refuse to work, or to do particular work, if the worker has reason to believe that "workplace violence is likely to endanger himself or herself" (Occupational Health and Safety Amendment Act [Violence and Harassment in the Workplace] 2009: s. 52). This right is not provided for in cases of harassment that do not give reason to believe there will be physical violence; nor does this right appear to apply in other circumstances that could jeopardize workers' mental health without endangering their physical health (see by analogy *Vogan v. Ten Star Financial Services* 2009).

Quebec has no explicit legislation governing physical violence in the workplace, although it does have fairly elaborate legislation on psychological harassment, provided for in amendments to minimum standards legislation, introduced in 2002 and in force since 2004 (Act Modifying an Act Respecting Labour Standards 2002). This legislation, the first of its kind in North America, acknowledges the workers' right to a workplace free of psychological harassment and makes employers responsible for preventing workplace harassment. They are obliged to use reasonable means to prevent harassment, and failure to do so can give rise to a complaint to the Commission des normes du travail, or, in the case of unionized workers, a grievance. The definition of *psychological harassment* is,

by law, written into all collective agreements and reads as follows, by virtue of s. 81.18 of Labour Standards Act: "any vexatious behaviour in the form of repeated and hostile or unwanted conduct, verbal comments, actions or gestures, that affects an employee's dignity or psychological or physical integrity and that results in a harmful work environment for the employee. A single serious incidence of such behaviour that has a lasting harmful effect on an employee may also constitute psychological harassment". It thus goes beyond the classic definition of psychological harassment in social psychology (Chappell and Di Martino 2006; Einarsen et al, 2011) by including a single serious incident, and parliamentary debates show that this addition sought to cover situations such as those in which a worker immediately withdraws from the workplace because of the severity of the incident (Lippel 2005). Remedies include orders providing for reinstatement of the harassed worker, requiring the employer to undertake reasonable action to put a stop to harassment, and providing for the modification of disciplinary orders and indemnities for loss of employment. The exclusive remedy provisions of workers' compensation legislation apply; so, for those workers who do not suffer health problems because of the harassment, monetary damages can be granted for lost wages, punitive and moral damages and payment for psychological support. Between June 1, 2004, and March 31, 2008, the Commission des normes du travail received 8,631 complaints from non-unionized workers (Dupéré 2009), and although figures for unionized workers are unavailable (because unions themselves are the first respondents to those complaints), there is reason to believe that the number of complaints in unionized workplaces is also very important. As a result of the dual recourse, there is a significant amount of litigation as cases involving the same parties proceed both with regard to workers' compensation claims and under arbitration or adjudication by the Quebec Labour Relations Board (CRT) (Lippel et al. 2009; Cox 2010).

> *Employers are obliged to use reasonable means to prevent harassment.*

Saskatchewan also enacted legislation specific to psychological harassment, introducing new mechanisms to govern complaints under its occupational health and safety legislation (Occupational Health and Safety Amendment Act [Harassment Prevention] 2007). Several years earlier, Saskatchewan had also included discriminatory harassment as an occupational hazard in its health and safety legislation, thus recognizing harassment as a hazard to health and not simply a violation of human rights. *Harassment* is defined as follows: "Harassment means any inappropriate conduct, comment, display action or gesture by a person that … adversely affects the worker's psychological or physical well-being and that the person knows or ought reasonably to know would cause a worker to be humiliated or intimidated; and that constitutes a threat to the health of the worker … To constitute harassment … repeated conduct, comments, displays, actions or gestures must be established; or a single serious occurrence of conduct, or a single, serious comment, display, action or gesture, that has a lasting, harmful effect on the worker must be established" (Occupational Health and Safety Amendment Act [Harassment Prevention] 2007: s. 2). Again, this definition differs from those used in Quebec and Ontario, notably by requiring evidence of a clearer intention of the author of the harassment to harm the worker. Unlike the definition used in Quebec, it appears to

exclude situations that affect the dignity but not the health of the worker.

Even in those provinces that do not have explicit legal language on violence and harassment, remedies may be available under occupational health and safety legislation or by virtue of the implicit integration, in collective agreements, of protections drawn from a variety of legislative provisions and other sources. (In Alberta, see for example, with regard to use of physical force against a worker, *United Food and Commercial Workers Union, Local 401, v. Canada Safeway* [2009]. In Ontario, with regard to harassment, see *Amalgamated Transit Union v. Toronto Transit Commission* [2004].) Other protective provisions include legislation governing protections for workers who work alone (see, for example, in Prince Edward Island: *Occupational Health and Safety Act*, General Regulations 1987, Part 53; in Newfoundland: *Occupational Health and Safety Regulations* 2009, Part 15; in Manitoba: *Workplace Health and Safety Regulation* 2006, Part 9). Working alone is known as a risk factor for some forms of occupational violence, notably physical (Di Martino et al. 2003) and sexual assault (Santana and Fisher 2002).

The existence of legal requirements to prevent violence and harassment does not guarantee the disappearance of these acts. Nonetheless, legislative interventions in many provinces have been accompanied by publications of prevention manuals and increased interest in the issues targeted by the legislature (Cantin and Cantin 2004; Kreissl et al. 2010; Cox 2010; Lafond and Provencher 2004).

Protection of Workers' Mental Health

Do occupational health and safety acts protect workers' mental health? While the answer to this question is clearly yes in European countries (Leka et al. 2010), including Great Britain (Cousins et al. 2004), Germany (Paridon et al. 2007), Spain (Moncada et al. 2010) and France (droit.org 2009; Lerouge 2005), as well as in Australia (Guthrie et al. 2010) and New Zealand (Scott-Howman and Walls 2003), in Canada, surprisingly, the answer to this question varies from one jurisdiction to the next. As we have seen in the previous section, the answer is often no – notably in Ontario, where the right to refuse work dangerous to a worker's mental health still does not appear to exist.

Saskatchewan explicitly includes mental health in the purview of its Occupational Health and Safety Act and regulations: "For the purposes of the Act and in these regulations and all other regulations made pursuant to the Act, 'injury' includes any disease and any impairment of the physical or mental condition of a person" (*Occupational Health and Safety Regulations* 1996: s. 2[2]). In Quebec, after years of hesitation, the issue was decided in a significant decision of the Commission des lésions professionnelles (CLP) regarding the right to refuse work because of psychological harassment (*Chagnon et Marché Bél-Air inc* 2000), a decision that influenced the subsequent hiring and training of labour inspectors employed by the Commission de la santé et de la sécurité du travail (CSST) (Lippel et al. 2010). Employers are still questioning, thus far unsuccessfully, the jurisdiction of labour inspectors with regard to the prevention of mental health problems (*Sobey's Québec inc. et Délég. SST & Co-pres. CSS-Sobeys et C.S.S.T.*). In those jurisdictions where mental health falls within the mandate of labour inspectors, there have been several interventions designed to address not only issues of violence but also organizational factors such as electronic monitoring, using headsets, of workers' productivity (Davezies 2008; Lippel et al. 2010) and the effects of downsizing and restructuring (Quinlan 2007).

Research as to strategies to support the labour inspectorate in its mandate to ensure the protection of workers from psychosocial

hazards is ongoing in Australia and in several Scandinavian countries (Fooks et al. 2007; Saksvik et al. 2007; Johnstone et al. 2010; Rasmussen et al. 2010).

Summary

In summary, some Canadian legislators have slowly come to accept the need for legal mechanisms to promote the prevention of occupational violence, although political will to legislate is more prevalent with regard to physical violence than psychological violence. Several countries have also regulated psychological harassment as an occupational hazard in recent years (Lippel 2010).

Broader prevention issues with regard to workers' mental health are rarely discussed in the context of occupational health and safety law, a situation described with some concern by specialists in the field (Laflamme 2008).

Legal Frameworks Governing Compensation for Work-Related Mental Health Problems

One possible explanation for the slowness with which Canadian legislators have addressed mental health problems in the workplace is that the costs of these problems are often invisible to the workers' compensation system, and the need for occupational health and safety legislation is often measured by the costs of compensated injury (Cox and Lippel 2008). Access to workers' compensation for mental health problems related to physical injury caused by work or to acutely stressful situations is, at least theoretically, available in every Canadian province, although there are variations between policy approaches (Lippel and Sikka 2010).

When mental health problems arise from chronically stressful working conditions (e.g. harassment, or work reorganization and resulting work intensification), many provinces, including British Columbia, Ontario, New Brunswick, Newfoundland, Nova Scotia and Manitoba, explicitly exclude these claims (Lippel and Sikka 2010), although recent case law has questioned the constitutional validity of differential treatment that provides fewer protections for the mentally ill (*Plesner v. British Columbia [Hydro and Power Authority]* 2009). In those provinces where such claims are covered under the law, access to compensation remains difficult (Lippel and Sikka 2010). It is not surprising that occupational health and safety legislation, as we have just seen, includes the protection of workers' mental health in Saskatchewan and Quebec, the first two provinces to accept workers' compensation claims for mental health problems related to chronic stress (Lippel 1990).

Although the costs to workers' compensation systems are relatively minor – accepted claims represent approximately 1% of claims in Quebec (Commission de la santé et de la sécurité au travail 2008), which has the broadest scope of coverage – costs related to absence associated with mental health problems are of great concern for private insurance companies, and researchers have shed light on the significant cost to both workplaces and individuals of mental health–related absences (Brun and Lamarche 2006; Dewa et al. 2004; Lim et al. 2008) and presenteeism (Biron et al. 2006).

Given that incentives for the prevention of occupational injury are often woven into the financing mechanisms of workers' compensation legislation, by way of experience rating systems, failure to acknowledge the work-relatedness of mental health problems makes these problems invisible to the mechanisms designed to provide economic incentives to drive prevention. This leaves such initiatives to those private insurers who provide (non-mandatory) coverage to workplaces, thus privatizing prevention mechanisms. In the Canadian context, where employment insurance provides for a maximum of 15 weeks of

support, at 55% of gross insurable earnings, Canada compares poorly with other countries with regard to social security protections for those unable to work because of illness (Chaussard et al. 2008). In this context, access to workers' compensation benefits for disability related to mental health problems becomes all the more important.

Legal Frameworks and the Promotion of Support for the Return to Work of People with Mental Health Problems

Two challenges specific to workers with mental health problems are of particular import. First, given the exclusion of the majority of work-related mental health problems from the purview of most workers' compensation legislation in Canada, as we have seen in the previous section, the return-to-work programs integrated into the workers' compensation legislation fail to apply to these workers, leaving them with less protection than workers suffering from physical disability caused by work. Even in those jurisdictions where mental health problems are recognized as occupational injuries or illnesses, as in Quebec, return-to-work mechanisms apply with difficulty when the functional limitations associated with the compensated illness require that the worker no longer be exposed to the authors of harassment (*Blouin et AFG Industries ltée* 2007) or to even moderately stressful working conditions (*Bouchard et Breakwater-Mine Bouchard Hébert* 2009; Lippel and Cox 2010).

Secondly, there is some discussion as to the effect of legislation aimed at preventing violence and harassment on the equality rights of those seeking employment or seeking to remain in employment or return to employment when they have suffered from a mental illness. Increasingly, we hear of screening techniques designed to remove potentially violent workers (Courcy et al. 2004) but also potentially vulnerable targets from the workplace, a practice that could easily lead to discrimination based on disability under human rights legislation. Employers may find themselves limited in their ability to order a worker to undergo a psychiatric assessment, a recourse that may be deemed to be a violation of the worker's human rights, and they may even be ordered to pay damages to the worker (*Greater Vancouver Regional District Employees' Union v. Greater Vancouver Regional District* 2007a, 2007b). Similar preoccupations may arise with regard to the obligations of employers, for instance those introduced in Ontario Bill 168, to inform workers of people who may be potentially violent. Privacy protection is addressed in the bill, but the first years of application will determine to what extent the rights to privacy of workers and also patients, welfare recipients and students may be compromised by the obligation of the employer to identify to employees the potentially violent.

> *Return-to-work mechanisms apply with difficulty when the functional limitations require the worker no longer be exposed to the authors of harassment.*

Indirect Consequences of Law and Policy: How Policy Drives Working Conditions That Affect Mental Health

Regulation of violence and harassment cannot in itself eliminate psychosocial hazards, and a first step to improving prevention is to ensure that the protection of workers' mental health is part of the occupational health and safety mandate (Lippel et al. 2010). Yet even the most far-reaching prevention provisions will not reduce psychosocial hazards if there is no implementation and, worse, if there are actu-

ally policy incentives to increase exposure to psychosocial hazards. In this section, I illustrate ways in which public policy in Canada has contributed to an increase in the exposure of workers to psychosocial hazards. I look first at cost-saving strategies in the healthcare sector (private and public) and then at cutbacks in the public sector.

Cost-Saving Strategies in the Healthcare Sector

When provincial or federal governments choose to reduce spending, this has an impact both on the working conditions of those affected and on the quality of care and services provided to the public. This is known to occur not only in Canada but in most countries in the Organisation for Economic Co-operation and Development (OECD), and the link between occupational violence and reductions in quality of public services has been documented internationally (Di Martino et al. 2003).

Mechanisms by which workers are exposed to increased violence in this context were explored in a recent study by Armstrong and colleagues (Armstrong et al. 2009). The survey study examined the working conditions of unionized "direct care" workers, including personal support workers, in long-term care facilities in three Canadian provinces and compared the results with studies from four Nordic countries. The authors compared the prevalence of various conditions of work and several health measures. The survey data were complemented by qualitative data drawn from a variety of sources. The investigators' findings with regard to exposure to violent incidents show that 38% of Canadian direct care workers (and 43% of personal support workers) were exposed to actual physical violence on a daily basis. In the Scandinavian countries, only 7% of comparable workers reported threatened or actual violence on a daily basis. Qualitative data provided information as to the types of conditions that the workers identify as potential causes of the violence. They point to understaffing and the obligation to care for too many residents with insufficient time. They also described a technological change that was introduced to cut costs and that goes far in explaining why normally passive residents may develop aggressive behaviour targeting staff.

In an effort to reduce expenses, institutions have developed policy restricting the use of diapers for incontinent patients. In the words of the authors: "After discussing 'diaper police' and efforts to hide unused diapers, and concluding that they 'don't feel good' about being forced to keep residents in wet diapers, [focus group participants] drew attention to a technological innovation that may serve cost conscious employers in the short run, but certainly does not serve incontinent residents nor those caring for them. In these new diapers, 'there's a line at the top. Once that line changes colour, they're 75 percent.' The technology, not the worker or the resident decides" (Armstrong et al. 2009: 131).

It would be difficult to imagine a clearer illustration of working conditions requiring high demand and providing low control, the category of conditions most risky for workers' mental health in the job strain model. While scientists have documented implications of these hazardous conditions for decades (Karasek 1979), the Armstrong study provides telling evidence that technology can and is being used to make things worse, not better, for both workers and residents. The authors found that 43% of direct care workers reported finishing the day "almost always" feeling mentally exhausted, compared with 16% of Swedes, 8% of Norwegians, 12% of Finns and 8% of Danes working in comparable jobs (Armstrong et al. 2009). Not surprisingly, workers in the Nordic countries are far more likely to be employed in conditions associated

with the "active work organization" category, the most protective category in Karasek's stress-management model of job strain (Karasek 1979; Parent-Thirion et al. 2007).

Other authors have noted the effect of cost-cutting in the healthcare sector on the behaviour of patients and the vulnerability of workers to client-generated violence, both in Canada (Pizzino 2002) and internationally (Chappell and Di Martino 2006).

Cutbacks in the Public Sector

Restructuring (Quinlan and Bohle 2009) and privatization (Virtanen et al. 2010) have been shown to increase the ill health of workers affected by the changes, and bullying is known to increase in the context of job insecurity (Baillen and De Witte 2009). Case law from workers' compensation appeals in Quebec, one of the few Canadian provinces to provide compensation for mental health problems related to non-acute psychosocial hazards (Lippel and Sikka 2010), provides illustrations of mechanisms by which cutbacks in the federal and provincial public sectors directly contributed to exposing workers to unusually stressful working conditions. These examples illustrate different dimensions of exposure to psychosocial hazards.

Between 1995 and 1998, the federal government restructured the public service, drastically reducing the number of employees. Restructuring was implemented over a 15-month period in employment insurance offices. As a result, workers became ill. Three workers successfully claimed workers' compensation benefits after being diagnosed with work disability due to adaptation disorders and depression (*Boivin, Sansfaçon et Blackburn et D.R.H.C. Direction Travail* 2001). The appeal tribunal, the CLP, accepted the claims, stipulating that they were covered under both the occupational disease and the work accident provisions of the Government Employees Compensation Act and the relevant Quebec legislative provisions (R.S.C. 1985, c. G-5; this act refers to Quebec legislation on workers' compensation when claimants work in Quebec, thus incorporating provisions of the Act Respecting Industrial Accidents and Occupational Diseases). The evidence showed how the team of workers was reduced from 60 to 11 over 15 months. Workload was described as untenable because the number of clients was not reduced, and the clients became impatient and aggressive because of the inadequacy of the service provided. Among the positions to be abolished was that of the receptionist, so no buffer existed between clients and employees doing the interviews, waiting times were important and caseloads (between 25 and 40 employment insurance claimants were interviewed each day by the workers who fell ill) were excessive.

Similar increases in workloads of federal public sector workers led to the acceptance of other claims. That of a front-line worker in payroll was accepted both because of the reduction in staff that led to the increase in workload and also because of the job description, which was found to be telling with regard to the employer's expectations:

> "15. The job holder must constantly deal with employees, colleagues and supervisors who are stressed, insecure, discouraged, depressed, angry or hostile and also deal with conflicting priorities from supervisors, employees, and HR professionals, while continuing to fulfil a large variety of urgent tasks requiring concentration. This task becomes more and more demanding as work demands and related problems, as well as interruptions, increase. On average, the payroll counsellor spends half her time doing calculations and half her time dealing with clients.

> 16. Stress resulting from the need to balance conflicting priorities, with difficult employees and clients and with heavy work load and short and non-negotiable deadlines may lead to burn out, which may require medical care and lead to work absence" (*Laflamme et DRHC travail* 2000: paragraphs 61 and 62 [our translation]).

A claim by a food inspection professional was accepted despite the fact that her hours of work were not actually increased. Her workload and responsibilities were found to have doubled as a result of a decrease in staff, and the increased workload was found to be an occupational hazard that justified the acceptance of her claim for an occupational disease (depression) (*Belleau and Agence Canadienne d'Inspection des aliments DRHC-Direction Travail et CSST* 2003).

Provincially, cutbacks in the healthcare sector have led to several accepted claims, including those that illustrate the mechanisms by which work reorganization and job insecurity can be associated with bullying and harassment, as shown in the literature (Baillen and De Witte 2009). In one example, a nurse who had worked for 23 years in the long-term care facility of a local hospital "bumped" (replaced because of higher seniority) a younger nurse in the operating room (OR) after the long-term care facility was closed. The physicians in charge of the OR, and other personnel, resented the arrival of a 55-year-old nurse to replace the younger nurse, whom they had trained and had hoped to keep as part of the OR team for a long time. The worker was the object of social exclusion and was provided little or no training; the team leader refused to communicate with her and she was the object of hostility coming from both physicians and colleagues. The team leader testified that no one wanted to train the worker because the doctors disapproved of her presence and no one wanted to have the doctors "on their backs." A colleague testified that when he attempted to provide her with some training, he was the subject of rejection by the rest of the team. The employer failed to provide support in this context, letting the situation deteriorate over a period of months. The factual situation predated Quebec's psychological harassment legislation, but in accepting the claim, the tribunal did conclude, perhaps surprisingly, that the worker was not a victim of harassment; nonetheless, the working conditions to which the worker was subjected were held to go beyond normal working conditions and her claim was accepted (*Langlais et Centre hospitalier de Chandler* 2006).

Restructuring in the Quebec healthcare sector also provided an illustration of what the tribunal described as "adaptation overdose," a consequence of workers being continually required to adapt to new situations (*Plouffe-Leblanc et C.H.U.S. – Hôpital Fleurimont* 2003). The tribunal concluded that the worker, who had been required to change her position within the hospital seven times in six years in the context of continual restructuring, was suffering from an occupational disease (situational depression) attributable to adaptation overdose. Her depression was actually triggered when she made a mistake in the administration of a vaccine to a child, and recommended to the mother to file a complaint, after which she felt torn between her professional responsibilities and her allegiance to her employer and colleagues. However, it was the cumulative exposure to change, involving important responsibilities and inadequate training, that led the tribunal to find in favour of the worker. She was a nurse who had had 17 years' seniority in the same department, which was then closed. She was subsequently required to work in seven different outpatient clinics over a course of six years, each requiring training that was

not necessarily provided, and, by the second year, she was required to train others, often without manuals or written protocols. The CLP, in concluding in favour of the worker, subscribed to the premise that restructuring is a management prerogative that is a normal working condition in the modern workplace. Nonetheless, in light of the factual and medical evidence the tribunal concluded that the working conditions to which the worker was subjected went beyond what can normally be expected in a workplace.

Conclusion

Legislative frameworks designed to protect workers' mental health and to provide them with economic and social support when they are disabled with mental health problems attributable to work take many forms. Their existence, or their absence, is a variable that needs to be considered in research, and their crafting needs to be carefully addressed by those responsible for public policy.

Access to non-stigmatizing economic support for those who are unemployed has been shown to be protective for the mental health of workers; however, those who need to have recourse to means-tested welfare programs see their mental health adversely affected (Rodriguez et al. 2001). This leads to the belief that depriving workers of workers' compensation for mental health problems attributable to non-acute stressful situations actually contributes to workers' mental ill health.

The existence of anti-violence legislation, including anti-harassment legislation, will influence workers' and employers' awareness of these phenomena, and will thus contribute to prevention. Increased awareness will also be reflected in higher reported prevalence; yet awareness is an essential step in the process of addressing occupational violence (Chappell and Di Martino 2006). When organizational culture suggests that exposure to violence is part of the job (Pizzino 2002), reported prevalence of violent acts may be far lower than in workplaces with good prevention programs, as the first step to prevention is the rejection of violence as "normal." Compensation boards that see some types of violence at work as normal (Laprise 2003; Lippel and Sikka 2010) suggest to employers and workers that violence in these contexts is somehow acceptable, a strategy that does little to prevent the health consequences of continual exposure to violence.

Access to non-stigmatizing economic support for those who are unemployed has been shown to be protective for the mental health of workers.

Similar concerns arise when physical violence is trivialized when perpetrators are members of the organization, be they employees or supervisors. This having been said, it is important to recall that in Canada, 17% of all violent criminal victimization occurs in the workplace, yet only 12% of those cases involve a co-worker as the perpetrator (de Léséleuc 2004).

Violence is a significant source of mental health problems for workers (Commission de la santé et de la sécurité au travail 2009), as is psychological harassment (Dupéré 2009); and, as the legislative overview above shows, violence is often the first psychosocial hazard to be addressed by Canadian regulators. Yet many other working conditions, if left unchecked, will undermine workers' mental health – it's not enough to act on issues of violence while leaving aside other psychosocial hazards that, in the long run, may prove to be equally or even more deleterious than physical violence. Mandatory risk assess-

ments for the identification of all psychosocial hazards in the workplace exist in several countries (Johnstone et al. 2009; Leka et al. 2010; Rasmussen et al. 2010; Bruhn and Frick, 2010), yet they are not required in most Canadian jurisdictions. National surveillance tools look at the mental health of Canadians, but nationally none gather information specifically on many organizational factors potentially contributing to workers' mental ill health (Dollard et al. 2007). Given the importance of mental health problems in the Canadian workforce (Gilmour and Patten 2007; Patten and Juby 2008), it is time we considered regulatory and policy strategies to reduce the exposures of Canadian workers to psychosocial hazards.

> *Compensation boards that see some types of violence as normal suggest that violence in these context is acceptable.*

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Workplace Design Contributions to Mental Health and Well-Being

INVITED ESSAY

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ABSTRACT

People spend much of their waking time in their workplaces (approximately 33% on a weekly basis), which raises the possibility that the conditions they experience at work influence their health and well-being. The workplace design literature has given scant attention to mental health outcomes, instead focusing on healthy populations. Conversely, the mental health literature gives scant attention to the potential contribution of workplace design in preventing mental health problems; nor does it provide much insight into facilitating return to work. Taken together, however, the literature does suggest both lines of research and possible interventions. Existing knowledge proposes that workplace design can influence mental health via the effects of light exposure on circadian regulation, social behaviour and affect; the effects of aesthetic judgement on at-work mood and physical well-being and at-home sleep quality; access to nature and recovery from stressful experiences; and privacy regulation and stimulus control. This paper includes a short review of the literature in this area, proposals for new research directions and consideration of the implications of this information on the design choices made by business owners, designers and facility managers. Providing suitable working conditions for all employees avoids stigmatizing employees who have mental health problems, while facilitating prevention and return to work among those who do.

Time-activity studies have revealed that people in industrialized countries spend close to 90% of their time indoors (Leech et al. 2002; Schweizer et al. 2007). People who are employed full-time outside the home spend approximately 33% of their waking hours at their workplace. Thus, exposures to physical conditions at work that can affect one's physical or mental health are both lengthy and frequent. If one's working conditions affect one adversely, the unwanted consequences, such as reduced capacity to work, increased error rates and absences from work, influence both the employee and the employer. Conversely, a well-designed workplace can be supportive, removing potential stressors and freeing individuals to focus on productive work.

Environmental psychologists have long studied work environments (Hedge 2000; Sundstrom 1987), although the research focus has tended to be more on offices than on other settings (Sundstrom et al. 1996) and almost universally on the effects of workplace design on healthy individuals. Common outcome measures have been job satisfaction, environmental satisfaction, job performance and non-specific health outcomes such as symptoms of sick building syndrome symptoms (headache, fatigue, stuffy nose, musculoskeletal problems). Mental health outcomes do not appear directly in this literature.

Conversely, the abundant literature concerning mental health issues in workplaces includes little consideration of the role of the physical environment as an influence on employees. A literature search identified a few articles in which workplace design was mentioned as a potential factor in mental health issues (Ramsay 2009; Woo and Postolache 2008) but none that evaluated the success of interventions addressing design.

In the absence of evidence to the contrary, a reasonable starting point for designing and operating workplaces that support mental health is to draw upon the evidence derived from studying healthy individuals. This review focuses on four processes through which there is some evidence that workplace conditions can benefit employees with certain mental health problems: social relations, attention focus, stress reduction and photobiology. Each topic leads to suggestions for specific workplace designs. Mental health issues are diverse; therefore, design interventions that work for one condition might be inappropriate for another. In the absence of empirical evidence about specific effects, the design guidance provided here is necessarily preliminary and general. The review concludes with research recommendations to address this gap.

Social Relations

Personal space is "the dynamic spatial component of interpersonal relations" (Gifford 2007: 135). This concept encompasses dimensions of portable territoriality, inter-individual spacing and communication – the space around oneself, one's varying desires to be near other people and the degree to which one wants to know others and be known. Environmental psychologists study personal space through concepts such as territoriality, crowding and privacy. Workplace design choices are fundamental to the occupants' experience of personal space in that the layout and furnishings largely determine the physical boundaries between individuals, the spatial density of the workplace (the floor area per person), the social density (the number of people per room or area) and the degree of visual or acoustic privacy (Archea 1977).

Territoriality can be considered the ability to monitor and to regulate the use of space (Evans 2003). We commonly use spatial boundaries to define our territory, both individually and collectively. Work groups function best when they can create a shared identity that expresses their common goals

(Beal et al. 2003; Latham 2007). Architectural features contribute to the development of social cohesion in work groups, in part by defining the areas in which functional groups occur. Proximity facilitates social interaction (Fleming et al. 1985); thus, group territories that include common areas can provide opportunities for unplanned social interactions between group members. Such social interactions, in turn, foster social support, which buffers stress (Evans 2003). Workplaces in which employees report good communication and strong social support are perceived as healthier, and this in turn predicts higher job satisfaction and morale and lower absenteeism and intent to turnover (Lowe et al. 2003).

As social density increases, environmental satisfaction decreases.

The benefits of establishing group territories have limits, in that if group size is too large, cohesion remains elusive. If the social density of the office is too large, individuals must manage more relationships and there are more potential intrusions. As social density increases, in general environmental satisfaction decreases (Duval et al. 2002) and physical discomfort increases (Aries et al. 2010). The design community has adopted a social density of 10–15 people as its rule of thumb for team spaces, but there is no empirical evidence on which to base such guidance.

Social density and its cousin spatial density are not synonymous with crowding, which is "a motivational state … directed toward the alleviation of perceived spatial restriction" (Stokols 1972: 275). Increasing social density that leads to crowding is a stressor. This stressor can cause behavioural aftereffects such as reduced frustration tolerance (Sherrod 1974). Chronic exposure to uncontrollable environmental stressors can lead to learned helplessness, a motivational deficit with well-known connections to the affective and cognitive deficits of depression (Evans and Stecker 2004).

Office environment research consistently reports a strong desire for privacy among employees (Brill et al. 1984; Veitch et al. 2003). Privacy is largely a matter of controlling information flow: that is, one wants to regulate the degree to which others have information about oneself, and conversely the information one obtains about others (Archea 1977). The ability to control environmental inputs is an important moderator of environmental stress (Evans and Stecker 2004). When one has the ability to control one's environment, the adverse effects of stressors are diminished.

Taken overall, the personal space literature identifies the important dimensions of workplace design that can foster (or diminish) strong social relations among co-workers: using architectural features to define group boundaries; limiting the size of work groups within the boundaries; and providing adequate privacy mechanisms so that individuals can regulate social interactions. The literature does not provide specific prescriptive guidance as to the optimal design features to support good mental health outcomes. One study identified a range of workstation sizes (area >4.5 m^2) that reduce the risk of environmental dissatisfaction (Newsham et al. 2008), but the authors did not reach a firm conclusion concerning optimal panel height for modular office furniture. Reasonable conclusions based on the literature are to make workstation or office assignments that are mindful of the personal space needs of those with mental health problems, balancing the needs for social interaction, social support, territoriality and privacy. For example, an enclosed office at the

end of a long corridor might not be the best location for an employee with depression, but neither would an office beside a high-traffic area lacking in visual and acoustic privacy.

Attention Focus

Everyone experiences distraction from time to time; but for some individuals, the ability to focus attention is a persistent problem. Researchers and clinicians now recognize that the persistence of attention deficit hyperactivity disorder (ADHD) from childhood to adulthood has adverse effects on workplace performance and career success (Goodman 2007; Nadeau 2005). In reviewing the literature for this paper, the only architectural design recommendation I could find in the mental health literature concerned office assignments for adults with ADHD: Ramsay (2009) recommended individual enclosed offices for people with ADHD to enable them to screen potential distractions.

This is a reasonable recommendation, although not one that many organizations are able to provide because of the ubiquitous use of open-plan office design. Where a fully enclosed office is not available, other design features aimed at increasing privacy assist in reducing distractions. Increasing panel height to a minimum of 1.7 metres, using carpet and sound-absorbing ceiling tiles, adding masking sound and creating an office etiquette to promote quieter speech are all elements of providing good acoustical privacy in open-plan offices (Bradley 2003). The person with ADHD would likely also benefit from being located away from high-traffic areas.

Work environment research consistently finds that people desire access to a window view of the outside (Veitch et al. 2003). This might be particularly beneficial for individuals with ADHD. Experimental investigations in healthy adults have shown that exposure to nature, both by walking in it and by viewing pictures, can improve performance on directed-attention tasks (Berman et al. 2008). Children who have opportunities to play in green surroundings show improvements in ADHD symptoms compared with those whose play occurs indoors or in built outdoor settings (Kuo and Taylor 2004; Taylor et al. 2001). Interestingly, having a view of nature through the windows at home benefits the self-discipline of girls aged seven to 12 but not boys (Taylor et al. 2002). There are no workplace studies of the effects of window access on adults with ADHD; but as an interim recommendation, it is not unreasonable to consider providing such access as part of workplace accommodations to improve attention focus.

Stress Reduction

Understanding the stressor-strain relationship is a major focus of occupational health psychology. Psychosocial stress is a known predictor of mental health problems (see, e.g., Godin et al. 2005).

Among the environmental features known to assist in recovery from stressful experiences is a window with a view. Ulrich (1984) demonstrated that hospitalized patients whose windows provided views of nature recovered more quickly from surgery and used less pain medication than did those with a view of a brick wall. Exposure to nature, both directly (Morita et al. 2007) and through viewing images (Chang and Chen 2005; Hartig et al. 1991), leads to physiological and affective responses consistent with stress reduction.

These effects might partly relate more to aesthetic judgements of the quality of the scene and surroundings rather than to its content (natural versus built). Aries et al. (2010) found that people whose office views were more attractive, regardless of content, reported reduced discomfort at work and better sleep quality at home. Oddly, those with natural views reported increased discom-

fort at work, although there was an indirect pathway through which people in offices with views of nature reported more favourable office impressions, which in turn predicted lower discomfort. Clearly there is more to be understood about the relationships between view content and quality and their effects on health and well-being.

Access to nature, or to a pleasant view, is most easily provided through windows. In many European countries, employers must by law provide window access within a prescribed distance from each desk or workstation (Danish Building and Housing Agency 1995; Government of Norway 1985). This is not the case in North America, with the consequence that many workplaces lack window access (Veitch et al. 2003). Given the potential to buffer the adverse effects of work stress, those who are most vulnerable to stress-related health problems are good candidates for priority in receiving window access.

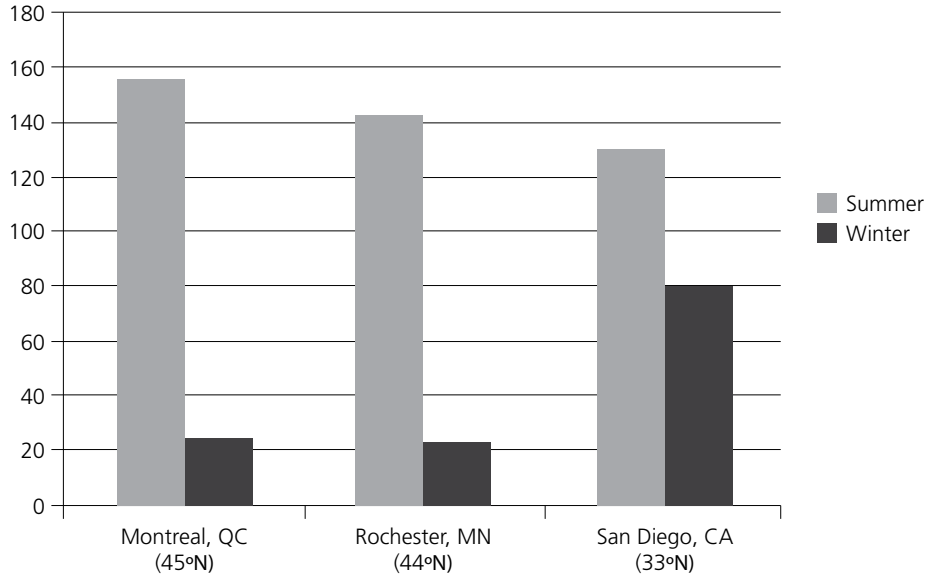
Photobiology

Estimates vary as to the prevalence of seasonal mood disorders, but there is little controversy concerning the potential for light therapy as an effective non-pharmacological treatment (Ravindran et al. 2009). Light therapy in that context involves the delivery of approximately 10,000 lux of white light (measured at the eye) for 30 minutes daily, usually in the early morning. This is a specific intervention for a diagnosed ailment, without a direct workplace application because of both the light intensity and timing. However, related research is revealing potential mental health benefits of increased light exposure in non-clinical populations (Commission Internationale de l'Eclairage [CIE] 2004).

Light exposure monitoring has revealed that total daily light exposure among North Americans is low (Figure 1). One study combined the wearing of wrist monitors for light and activity levels, with recurrent questionnaires about mental health status. Although the study was conducted in San Diego during a temperate and sunny period, the light level monitoring showed that people spent most of their time indoors (Espiritu et al. 1994). The median person spent 4% of each 24 hours in illumination greater than 1,000 lux and more than 50% of the time in illuminance levels from 0.1 to 100 lux. (An additional 38.6% of the time was below 0.1 lux, consistent with sleeping, driving at night, etc.) The people with the shortest daily exposure time to high light levels reported the lowest mood, with a moderate correlation between atypical seasonal affective disorder mood symptoms and time in bright light ($r = -.27$). Other investigators have replicated the light exposure measurements in summer in Rochester, Minnesota (Cole et al. 1995) and Montreal, Quebec (Hébert et al. 1998). Winter season high light exposures are considerably shorter even in San Diego but are much shorter at more northerly latitudes (see Figure 1). These findings, among others, led an international committee to conclude that the daily light dose received by people in industrialized societies might be too low for good mental health (CIE 2004). The same report concluded that there is insufficient evidence to set a recommended daily dose at this time. This is an active area of research, but international consensus recommendations take many years to develop.

Researchers are beginning to understand the effects of bright light from a physiological perspective and the consequences for social behaviour. In one study of people with mild seasonal mood shifts, bright light exposure increased tryptophan uptake (aan het Rot et al. 2007); tryptophan is a precursor of serotonin, a neurotransmitter implicated in affective pathways. This effect might explain the observation that hospitalized patients with

Figure 1. Mean daily exposures to light levels over 1,000 lux, by latitude and season



The measurements were taken from wrist-mounted devices following similar protocols.
Sources: The data for Montreal are taken from Hébert et al. (1998); for Rochester, Cole et al. (1995); and for San Diego, Espiritu et al. (1994).

depression had shorter hospital stays if they were assigned to rooms receiving sunshine than to rooms with no direct sunlight (Beauchemin and Hays 1996).

The current evidence is not sufficient for specific recommendations about the quantity, timing or spectral properties of the necessary daily light dose. Nonetheless, it seems reasonable to recommend that employees have an opportunity to obtain bright light exposure each day, particularly if they have a history of seasonal mood disorders. People with this history show persistent preferences for higher light levels across all seasons (Heerwagen 1990), and evidence from lighting quality research with healthy workers shows affective benefits to working under one's preferred light levels (Newsham and Veitch 2001; Newsham et al. 2004). Benefits to co-workers and employers could include more congenial social relationships; regarding individuals who have mild seasonal mood shifts, social interactions with these persons following bright light exposure (>1,000 lux) can be less quarrelsome and more co-operative than those following periods in low light levels (aan het Rot et al. 2008). The light exposure can be provided via direct sunlight through a nearby window or via time spent outdoors on breaks or lunch (Wirz-Justice et al. 1996). Merely adding a task light at the desk is unlikely to increase local light levels sufficiently to trigger this response. Any attempt at increasing light exposure at work must also avoid compromising task visibility and causing discomfort; recommendations for lighting design in workplaces are available (Illuminating Engineering Society of North America 2004; National Research Council Canada Institute for Research in Construction 2009).

Research Directions

There appear to be no studies of the effect of workplace design on mental health outcomes; nor are there evaluations of the success of office design accommodations in facilitating workplace success for individuals with mental health diagnoses. Recommendations made here are logical inferences from the literature, but they lack the imprimatur of peer-reviewed examinations of these precise research issues.

More generally, the literature reviewed here raises questions applicable to workplace design for any employee. A preliminary list of

research topics that flow from the literature cited here would include the following:

- What is the appropriate size of a work group to facilitate close ties between co-workers?
- Do people with mental health problems benefit from being attached to smaller work groups than others?
- What elements in the design and layout of work space most effectively promote group cohesion and social support?
- What designs most effectively balance the development of social connections against the need for distraction-free privacy?
- Does access to nature aid the attention focus of adults with ADHD? Is this access necessarily direct, or does viewing nature also confer benefits? Are there sex differences in these effects?
- What is the necessary light dose for optimal well-being: how much light, at what time of day, with what spectral properties and for how long?

Research programs addressing these questions need to include a mixture of laboratory and field investigations and appropriate combinations of outcome measures: physiological, affective, cognitive and behavioural. Field investigations, particularly evaluations of design interventions, would ideally include prospective longitudinal studies assessing both symptoms and work performance measures. Such investigations would not only address the direct effects of the workplace on mental health outcomes, but would also contribute to the development of strategies and inventions for effective job and career performance.

Concluding Remarks

By definition, good working conditions enable employees to work effectively. Investments in the physical workplace that create those conditions pay back quickly; salaries and benefits are approximately 80% of the cost of operating a building during its lifetime, whereas construction, furnishings, maintenance and operation total about 10% (Brill et al. 2001). Designing the workplace according to the empirical literature on workplace design (e.g., Aronoff and Kaplan 1995; Bauer et al. 2003; Becker and Steele 1995) will benefit all employees, not only those with mental health problems. Using this design sensibility to tailor the workplace design to individual needs of all kinds will have an added benefit for individuals and society, in that stigmas will disappear. No one is stigmatized when everyone's individual needs are, as much as possible, taken into account in the design, assignment and operation of the workplace.

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Intervention Study on Psychosocial Work Factors and Mental Health and Musculoskeletal Outcomes

INVITED ESSAY

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ABSTRACT

Organizations are facing ever-stiffer competition in the current globalized economy, and employees are consequently being exposed to increasingly adverse psychosocial work factors. Psychosocial work factors, also called psychosocial stressors, refer to all organizational factors and interpersonal relationships in the workplace that may affect workers' health. Two well-defined and internationally recognized theoretical models are used to assess these factors: the Karasek demand-latitude-support model and the Siegrist effort-reward imbalance model. The Karasek and Siegrist models reflect specific components of the work environment for which there is empirical evidence of a deleterious effect on health. Preventive interventions targeting these factors are conducted in workplaces. However, few studies have rigorously documented these interventions and their effectiveness in reducing adverse work factors and improving health outcomes. Most previous intervention studies were limited by (1) a short follow-up that may not have provided sufficient time for effects to appear, (2) small sample sizes (N ≤ 100) that limited the statistical power and the possibility of detecting results and (3) rare assessment of the Siegrist model.

The current paper presents the overall design and the main results of an intervention study on psychosocial work factors and related mental health and musculoskeletal outcomes. The study integrated (1) a development *phase that aimed at identifying the changes needed to reduce psychosocial factors in the target population and the best ways to bring about these changes, (2) an* implementation *phase that systematically documented how the intervention was carried out and (3) an* effectiveness *phase that evaluated whether the intervention was successful in reducing adverse psychosocial work factors and health problems. In addition, the study used repeated measurements of psychosocial work factors and health indicators at baseline and six and 30 months post-intervention to assess short- and medium-term effects of the intervention.*

Context

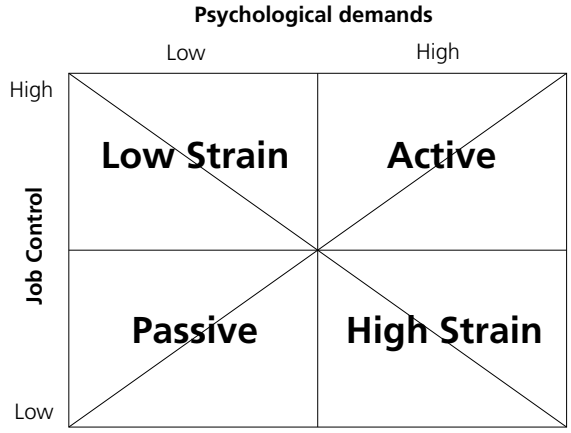
In industrialized working populations, musculoskeletal disorders and mental health problems constitute two of the most common, costly and debilitating health problems (Daveluy et al. 2000; Honkonen et al. 2007; Järvisalo et al. 2005; National Institute of Mental Health 2008; National Research Council and Institute of Medicine 2001; Sanderson and Andrews 2006). Musculoskeletal disorders, including arthritis, constitute the most common chronic condition (Lawrence et al. 1998) and one of the leading causes of activity limitations (National Center for Health Statistics 2007). Musculoskeletal disorders and mental health problems have reached alarming prevalence and constitute the two main motives of work absence for a certified medical condition, causing considerable loss of productivity for employers (Bourbonnais et al. 2005; Karttunen 1995; Niedhammer et al. 1998; Vézina et al. 2006; Vinet 2004).

Many adults in industrialized countries spend over half of their waking time at work (Bureau of Labor Statistics 2009; Parent-Thirion et al. 2007). Recent changes in the labour market conditions, such as increased competitiveness and workload and decreased job security, contribute to an increase in the prevalence of adverse psychosocial work factors (Aronsson 1999; Parent-Thirion et

al. 2007; Statistics Canada 2005). These adverse psychosocial factors have been shown to contribute to the development of chronic health problems (Belkic, Landsbergis, Schnall, and Baker, 2004; Bongers et al. 2006; Stansfeld and Candy 2006).

Two major theoretical models are used to assess the impact of psychosocial work factors on health: the Karasek job strain model (Karasek 1979) (Figure 1) and the Siegrist effort-reward imbalance (ERI) model (Siegrist 1996) (Figure 2). The two-dimensional Karasek job strain model suggests that workers simultaneously experiencing high psychological demands (PD) and low decision latitude (DL) are more likely to develop stress-related health problems (Karasek 1979). PD refer to an excessive workload, very hard or very fast work, task interruption, intense concentration and conflicting demands. DL is a combination of skill discretion (learning new things, opportunities to develop skills, creativity, variety of activities, non-repetitive work) and decision authority (taking part in decisions affecting oneself, making one's own decisions, having a say on the job and having freedom as to how the work is accomplished). Poor social support (SS), as indicated by a lack of help and co-operation from supervisors and co-workers, was introduced by Johnson et al. (1989) as a third component of the job strain model. The Siegrist ERI model (1996) proposes that extrinsic efforts (e.g., constant time pressure, many interruptions and disturbances, lot of responsibility, pressure to work overtime) should be rewarded in various ways: income, respect and esteem and occupational status control (job security, promotion prospects and unforced job change). Workers are in a state of detrimental imbalance when high extrinsic efforts are accompanied by low rewards and are thus more susceptible to health problems.

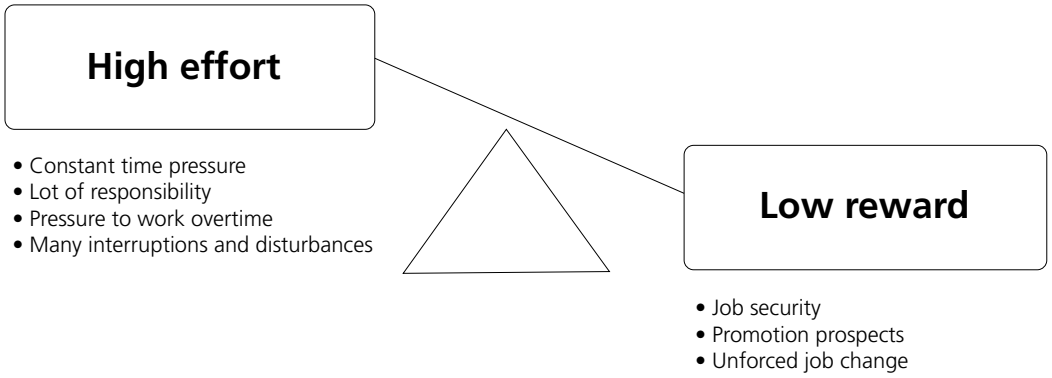
Figure 1. Karasek's job strain model



Source: Adapted from Karasek and Theorell (1990).

Several preventive interventions aimed at reducing the psychosocial work factors of the Karasek and Siegrist models have been

Figure 2. Siegrist's effort-reward imbalance model



Source: Adapted from Weyers et al. (2006).

conducted in workplaces and reported in the literature (Bambra et al. 2007; Egan et al. 2007). However, few studies have rigorously evaluated the effectiveness of such interventions in reducing psychosocial work factors and improving health outcomes (Bambra et al. 2007; Egan et al. 2007; Semmer 2006). Three main limitations of these studies have been observed:

1. Follow-up time was not long enough to allow the effects of the intervention to occur. Indeed, most recent studies evaluated the effects on health outcomes one year or less after the implementation of the intervention (Anderzen and Arnetz 2005; Berkhout et al. 2004; Bond and Bunce 2001; Bourbonnais et al. 2006; Eklof and Hagberg 2006; Fredriksson et al. 2001; Jackson and Mallarky 2000; Kawakami et al. 2005; Michie et al. 2004; Mikkelsen and Gundersen 2003; Mikkelsen et al. 2000; Park et al. 2004; Parker 2003; Ryan et al. 2005; Sluiter et al. 2005; Theorell et al. 2001; Wahlstedt et al. 2000). An appropriate follow-up requires that sufficient time elapse since the implementation of the intervention to produce a meaningful decrease in adverse work factors and consequent improvement in health outcomes. While a reduction of adverse work factors could occur over some months, related improvements in health outcomes will take longer. However, little is known on these time-related issues.
2. A number of previous studies had small intervention groups, that is, 100 or fewer workers, which limited the statistical power and the possibility of detecting differences in outcomes between intervention groups (Bond and Bunce 2001; Bourbonnais et al. 2006; Fredriksson et al. 2001; Kauffeld et al. 2004; Kawakami et al. 2005; Mikkelsen and Gundersen 2003; Sluiter et al. 2005; Wahlstedt et al. 2000).
3. Only three studies assessed the psychosocial work factors defined in Siegrist's model (Aust et al. 1997; Bourbonnais et al. 2006; Lavoie-Tremblay et al. 2004).

A three-phase framework was proposed by Goldenhar and colleagues (2001) to conduct rigorous intervention research. Each phase aims to answer complementary questions through corresponding quantitative and qualitative methods (Figure 3). The goal of the first phase, *development*, is to determine what theories apply to a specific situation, what changes are needed to improve the health of the targeted population and how can these changes be optimally implemented. The second phase, *implementation*, aims at systematically documenting how an intervention is carried out. The last phase, *effectiveness*, evaluates whether the intervention was successful in reducing the prevalence of psychosocial work factors and health problems. Few intervention studies on work organization and health have addressed these three phases. This paper presents the overall design and the main results of a study evaluating an intervention that aimed at reducing four well-documented psychosocial work factors (high PD, low DL, low SS and low reward) and their effects on two health indicators (psychological distress and musculoskeletal symptoms) using the three-phase framework.

Research Design

The research design of the current study has been described elsewhere (Brisson et al. 2006). Most parts of this section are adapted from the previous paper.

Study Population

The participating organization employed, at baseline, a total of 1,659 white-collar workers aged 18–65 years old, and was followed up for seven years (Brisson et al. 2001). At baseline,

Figure 3. Research phases and methods

PHASES	1. Development	2. Implementation	3. Effectiveness
	• What theories apply? • What changes are needed? • What are the best ways to bring about changes?	• What types of changes are needed? • How many workers are affected by the changes? • What is the actual degree of transformation achieved?	To what extent does the intervention reduce: • adverse work organization factors and • psychological distress and musculoskeletal symptoms?
CORRESPONDING METHODS			
Quantitative	Prior risk evaluation		Quasi-experimental study, pre-test/post-test design, control group, five years
Qualitative	• Focus groups with employees • Follow-up with managers and union representatives	• Intervention logbook • Focus groups with employees • Follow-up with managers and union representatives	

Source: Phases adapted from Goldenhar et al. (2001).

a total of 1,330 workers (826 women and 504 men) participated, representing 80.2% of all employees. More than half (53.6%) were 40 years or older. They were generally well educated (40% had a university degree, and 30% had a junior college degree). Their jobs encompassed the full range of white-collar positions, including senior and middle managers (5%), professionals (i.e., social worker, actuary, lawyer) (38%) and technicians (i.e., indemnity agent, inspector, computer analyst) and office workers (i.e., telephonist, receptionist, secretary) (57%). Their main activities were planning and providing insurance services to the general population. The organization was structured in six branches according to different functions (e.g., administration and finance, client services), which were further subdivided into 12 departments. Because the intervention targeted the entire organization, all employees were invited to participate in each measurement time, even if they did not participate in the preceding measurement(s). Therefore, the intervention had a repeated cross-sectional design in which employees participated in zero, one, two or three data collections.

The participation rate and participant characteristics were similar at baseline and follow-ups. At the first follow-up, six months after the intervention, 1,723 employees (1,099 women and 624 men) participated. At the second follow-up, 30 months after the intervention, 1,569 employees (983 women and 586 men) participated.

Definition of the Intervention

In the current study, the intervention was conducted at the organizational level and was defined as all changes undertaken by the institution with the explicit goal (or the plausible consequence) of reducing psychosocial work factors. In short, any objective organizational change introduced with the explicit goal (or the clear consequence) of improving the employees' situation in one or more psychosocial work factor was considered part of the intervention. The implementation of the intervention was the institution's responsibility and not that of the researchers. Decisions concerning changes were made

by the managers and were specific to each department. This intervention was therefore explicitly designed to include multiple components. This was necessary to address the multiple forms and aspects of adverse psychosocial work factors in a large workplace. Previous reviews of ergonomic interventions provide support for multiple-component interventions, which tend to produce more beneficial effects than single-component interventions (Karsh et al. 2001). A detailed content analysis of the current intervention will be presented elsewhere (Gilbert-Ouimet et al. in review). In brief, this analysis showed that DL and SS were the psychosocial factors that were acted upon most. Typical examples of changes implemented to improve these psychosocial factors were meetings on day-to-day matters, employee consultations (via a survey, suggestion box etc.) and individual employee–manager meetings. There were also major changes, that is, changes that (1) reached a large percentage of employees in the department and (2) brought about a genuine transformation in the work environment from the point of view of the key informants of the organization. Examples of these major changes are given in Table 1. Figure 4 presents the intervention period and the pre- and post-intervention measurements.

Data Collection and Variables

Data collection was conducted in the workplace. Employees were contacted by phone and provided with information regarding the study. An appointment was scheduled with those who agreed to participate. All participants signed a consent form that provided information about the study; they were free to withdraw at any time. Each of them received a personal health report following data collection. Department results were presented following every phase of the study. The project was approved by the Research Ethics Committee of Laval University.

At baseline and the six- and 30-month post-interventions, participants completed a self-administered questionnaire on demographic characteristics, psychological distress, musculoskeletal symptoms, cardiovascular disease risk factors, characteristics of work environment and characteristics of social life Trained staff measured participants' weight, height and waist circumference.

PD, DL (measured with nine items each) and SS from colleagues and supervisor (measured with six and five items, respectively) were evaluated using the French version of the Karasek Job Content Questionnaire. The psychometric qualities of this version have been demonstrated (Larocque et al. 1998).

Table 1. Examples of major changes reported by the key informants of the organization

Major Change	Psychosocial Work Factor Potentially Improved
Slower implementation of a large project to prevent increased workload	Psychological demands
Increased workforce and long-term leave replacements	Psychological demands
Organizational restructuring aimed at grouping teams to facilitate the use of expertise and to promote synergy	Psychological demands and social support
Promotion of career and skills development with conferences or training activities	Decision latitude
Improvement of management practices: consult, orient and coach	Psychological demands, decision latitude and social support

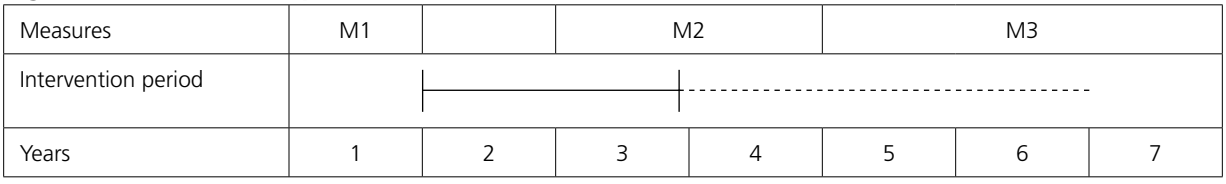
PD and DL were dichotomized at the median that was observed in a random sample of all Quebec workers (Santé Québec 1989). Most previous studies of these factors have used a median cut-off (Belkic et al. 2004). The quadrant method (Karasek 1979) was used to assess the exposure to PD and DL (job strain, active, passive and low strain). Scores of SS were divided into tertiles.

Reward was evaluated using the French version of the 11 original items recommended by Siegrist (2003). These items were divided into three scales assessing esteem (five items), promotions and salary (four items) and job security (two items). The factorial validity and internal consistency of both the English and French versions have been demonstrated (Niedhammer 2002; Siegrist 2003). Effort was measured with two original items of the French version of the Siegrist questionnaire ("over the past few years, my job has become more and more demanding" and "I am regularly forced to work overtime") and with two proxies ("my tasks are often interrupted before they can be completed, requiring attention at a later time" and "I have enough time to do my work") (Cronbach's α = .69). The effort-to-reward ratio was calculated and divided into tertiles (Niedhammer et al. 2000).

Psychological distress was evaluated with the Psychiatric Symptoms Index (PSI; Ilfeld 1976), a 14-item validated index that measures depression (six items), anxiety (four items), cognitive disturbances (two items) and anger (two items) during the previous week on a scale ranging from one (*never*) to four (*very often*) (Préville et al. 1992). The PSI-14 has shown good concomitant validity with four other indicators of mental health: consulting a health professional for a mental health problem, being hospitalized for this type of problem, having suicidal thoughts or attempting suicide and consuming a psychotropic medication (Préville et al. 1992). A total score for psychological distress was calculated from the answers to the 14 items. Participants with a total score ≥26.19, which represents the lower limit of the highest quintile observed in a general population sample (Daveluy et al. 2000), were considered prevalent cases of psychological distress.

Musculoskeletal symptoms were evaluated for three body regions: shoulder and neck, lower back and upper limbs. Upper limbs included symptoms at forearms, wrists and hands. A modified version of the Nordic questionnaire was used to measure musculoskeletal symptoms (Kuorinka et al. 1987). Prevalent cases were defined by musculoskeletal pain, ache or discomfort in the past six months (answered by yes or no) with related functional limitations at work, at home or in leisure activities. Functional limitations were investigated by the following question: "Did you have to decrease your activities because of your musculoskeletal symptoms?" and were measured by a yes or no answer for each of the three activity categories. Pre-shaded manikins were used to help subjects identify the correct body region (Pope et al. 1997).

Figure 4. Intervention period and measurements



M1 = measures taken before the intervention; M2 = first post-intervention measures, taken six months after the mid-point of the intervention; M3 = second post-intervention measures, taken 30 months after the mid-point of the intervention; --- = changes introduced after the intervention period.

Statistical Analyses

Student *t* test and χ^2 analyses were used to compare baseline and follow-up characteristics among participants. Logistic regression models were performed to compare the intervention group and the reference populations at baseline. Generalized estimating equations (GEEs) were used to assess pre-intervention and six- and 30-month post-intervention evaluations. GEEs constitute an appropriate statistical model for correlated repeated measures (Zeger and Liang 1986). Potential confounders were included as adjustment variables in the final model when they introduced a change of more than 10% in effect estimates. SAS 9.1 software (33) was used to perform all analyses.

The Intervention

Development Phase

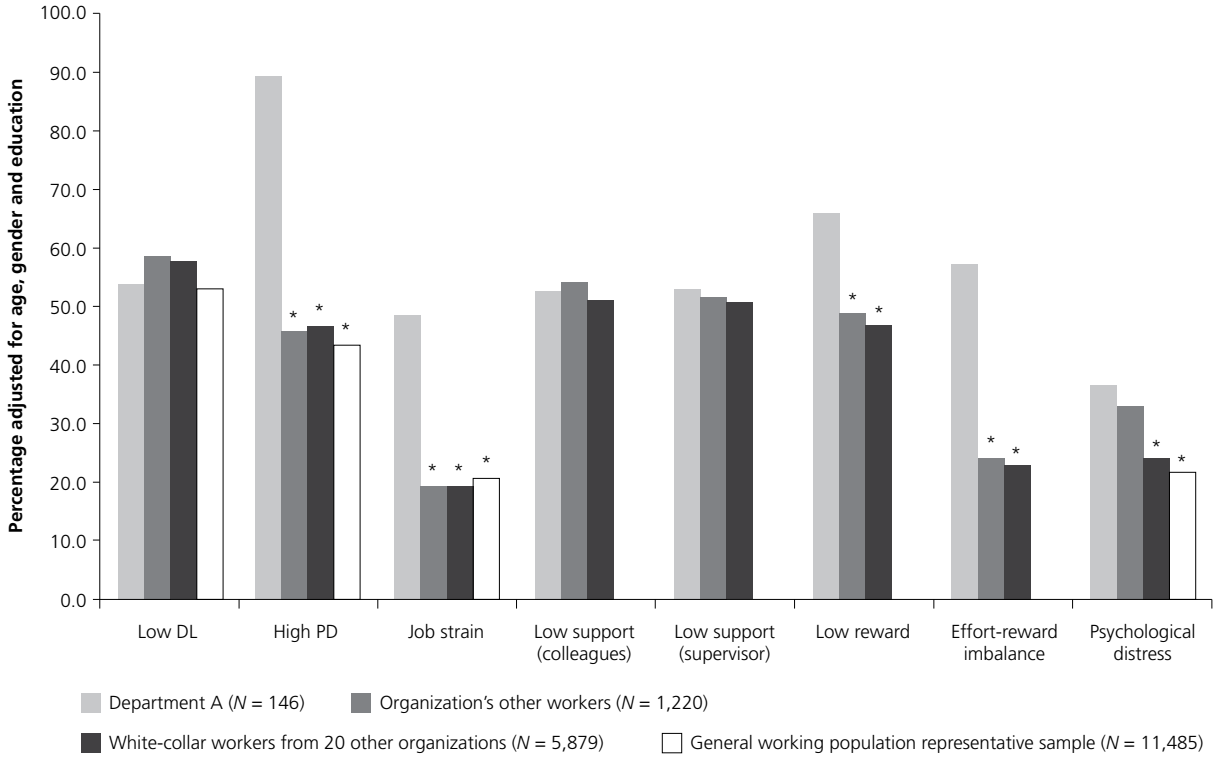
Assessing the Prior Risk

In the current paper, specific results from one major department are presented to illustrate the development phase. This department (department A) was composed of 146 office employees (28 men and 118 women) whose work consisted of answering and following-up client requests in accordance with pre-established rules. Although the sample results presented here are specific to department A, the same methodology was used in the other departments.

The prior risk evaluation consisted in a systematic assessment of the prevalence of the four psychosocial work factors and of psychological distress. This assessment aimed at identifying which groups were at higher risk within the organization. However, there are unique challenges in prior risk evaluation. Research on chemical and physical hazards typically allows the specification of exposure standards to control potential sources of illness. Comparable thresholds are not available for psychosocial work factors. It is therefore difficult to determine what levels of exposure to psychosocial work factors should be considered harmful and warrant prevention efforts. The approach used in this study draws on benchmarking practices to compare the psychosocial work environment in the study organization with two reference populations, thus providing a "barometer" of the extent of adverse psychosocial work factors within the organization. To this end, for each department, the prevalences of psychosocial work factors and health indicators were compared with those of two external reference populations and with the prevalence of the organization's other workers. In each department, psychosocial work factors whose prevalence were found to be greater than that observed in at least one of the reference populations were identified as targets for preventive interventions. The first reference population was made up of 11,485 workers who constituted a representative sample of the general Quebec working population. The comparison with this population allowed us to determine if the prevalences of psychosocial factors and psychological distress were higher in the study population than in Quebec workers. The other reference population was composed of 5,879 workers employed in 20 other white-collar institutions that participated in a cardiovascular health follow-up study conducted by our team in 2001 (Brisson et al. 2000). These comparisons allowed us to determine if the prevalence figures of the psychosocial factors and psychological distress were greater than those of white-collar workers employed in comparable institutions.

In department A, the prevalences of all four psychosocial work factors (high PD, low DL, low SS and low reward) and of psychological distress were significantly higher than in the reference populations (Figure 5). Specifically, the prevalence figures observed in department A for high PD, job strain and effort-reward imbalance (89.3%, 48.4% and

Figure 5. Prevalences of psychosocial work factors and psychological distress in department A compared with reference populations (development phase)



*$p < .05$, DL = Decision latitude; PD = Psychological demands.
Note: The number of men in department A was insufficient to perform separate analyses by gender.

57.1%, respectively) were more than twice as high as those observed in at least one of the reference populations. The prevalence of low reward was also high (66% compared with approximately 48% in the reference populations). Psychological distress was higher in department A (36.5%) than in the rest of the organization (32.7%) and the other reference populations (23%).

Conducting Focus Groups and Nominal Group Technique with Employees

During the development phase, focus groups were held in each branch or department targeted for intervention in order to obtain a more in-depth understanding of the main problems identified through the prior risk evaluation. Each focus group was led by two investigators and composed of eight to 14 workers who had accepted the invitation to participate. For the first meeting, the discussion was taped and subsequently transcribed verbatim. A detailed content analysis (L'Écuyer 1987, 1990) was performed to identify themes and subthemes expressed by the participants and related to psychosocial work factors. A report was produced and validated by the participants in a second meeting.

The goal of a third focus group meeting, involving the same participants, was to establish five priorities for intervention using the nominal group technique (Ouellet 1987). It is important to note that these priorities sought to solve problems identified during the prior risk evaluation by all employees of each department. This technique requires participants

to answer one question individually before sharing their ideas with the group and building consensus on five priorities through a voting procedure. The question was, "What things should be changed to improve work organization?" The priorities established were suggested to the managers, who then had to decide to implement them or not. These suggestions did not constitute an exhaustive list of all changes undertaken as part of the intervention.

In department A, 14 employees volunteered to participate in the three meetings. During the first two meetings, they confirmed that their work involved high PD and low reward. During the third meeting, they established five priorities for action: (1) hire additional staff, (2) set up a floating team, (3) put a temporary hold on work organization changes, (4) implement quality control and (5) consult employees about work organization changes. The first three priorities were related to PD and the last two to reward.

Implementation Phase

The implementation phase systematically documented how the intervention was carried out. The implementation of the intervention was monitored primarily with qualitative research tools: an intervention logbook and focus groups with employees. As with the development phase, specific results from department A are presented to illustrate the implementation phase.

Tracking the Intervention through Logbooks

A professional was appointed as key informant by the head manager in every department targeted for intervention. The key informant's role was to keep a logbook providing a detailed record of every activity introduced in the workplace to improve the four psychosocial work factors. A separate logbook was kept for each department. A member of the research team met with the key informant to provide detailed explanations on how to keep the logbook and to emphasize the importance of the task. The following information was recorded in the logbooks for each activity: (1) a description of the activity, (2) the goal (or problem targeted), (3) the administrative unit involved, (4) the date or period of the activity, (5) the number of employees involved, (6) the work organization factor(s) targeted and (7) the degree of improvement expected from the activity (weak, medium or strong).

The intervention logbooks were submitted to the president of the organization as well as to the research team. In two departments, logbooks were also submitted to the local work organization committee, which was composed of union and management representatives. Each logbook was updated twice. A qualitative analysis of the recorded activities provided a description of the nature and intensity of the changes implemented as part of the intervention. As a first step, the numerous activities recorded in the logbooks were categorized into specific types of activities (e.g., training, restructuring, social events etc.). Focusing solely on frequency may be misleading, as certain activities may have a stronger impact than others. For this reason, the second step of the analysis consisted of identifying major changes in collaboration with the key informants of the organization. The intensity of the changes was assessed based on an evaluation of the number of employees exposed to the change and the actual degree of transformation achieved.

The department A logbook described 48 activities that were implemented as part of the intervention. High PD and low reward were targeted by 35% and 54% of the activities, respectively. Table 2 shows the changes implemented in department A according to both the logbook and a fourth focus group (see below).

Table 2. Changes introduced in department A (implementation phase)

According to the Logbook	According to the Fourth Focus Group
Decreased the workload by: • increasing the workforce • putting a hold on a major project	Increased workforce Provided support staff
Conducted organizational restructuring Increased manager-employee communications Implemented employee-recognition practices Made employee health and well-being a priority	Conducted organizational restructuring and management changes Implemented new projects Increased employee recognition Made new compressed schedules available

Monitoring the Intervention through Focus Groups with Workers

The implementation phase was also monitored through a fourth focus group meeting conducted with the same participants. The aim of the meeting was to identify the changes introduced in the work organization during the intervention period and to determine whether or not those changes actually reduced adverse psychosocial work factors from the employees' point of view. In addition, the meeting allowed researchers to assess the participants' satisfaction with the focus group process and its contribution to the intervention.

In department A, seven of the initial 14 focus group participants were available for this last meeting, held after an 18-month intervention period (two declined to participate, two had left, one was ill and two were unavailable). Six main changes were identified and discussed by the participants (see Table 2, second column):

1. The increase in the workforce was assessed positively, but its effects were moderated by an ever-increasing workload.
2. The arrival of support staff helped to decrease the workload, but this change was perceived as a temporary solution.
3. Organizational restructuring and changes in the management team were evaluated positively in terms of collaboration and management concern for the employees' needs.
4. New projects that had been implemented had pros and cons.
5. Employee recognition had increased.
6. Compressed schedules were offered to employees but with no concomitant adjustments to the workload; these schedules resulted in an increased work tempo.

Reactions to the focus groups were generally positive: participants felt that they could express their views on organizational problems honestly, that their opinions were respected by the researchers and that confidentiality would be maintained. However, participants felt that feedback from management was lacking with regard to the focus group reports and which solutions were retained for intervention.

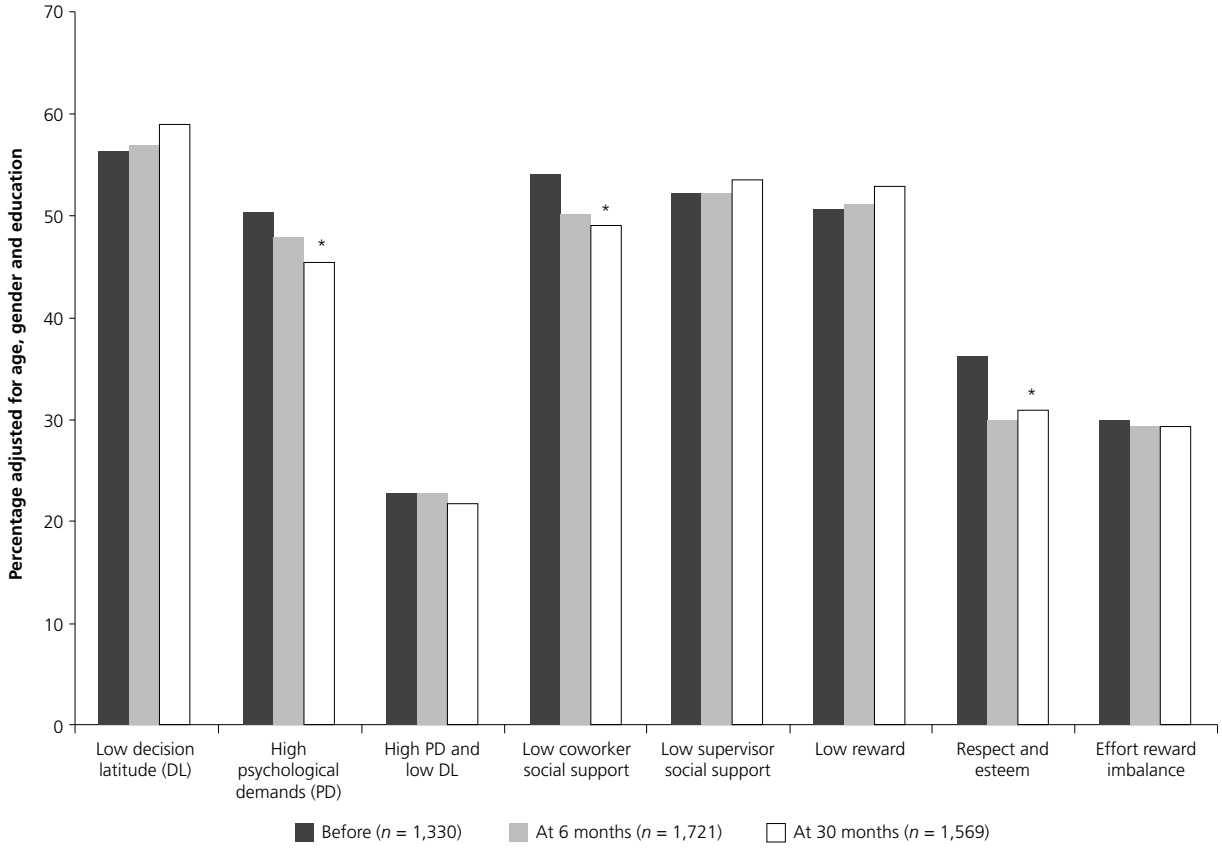
Effectiveness Phase

Comparing Pre- and Post-intervention Results

The last phase, effectiveness, measured the extent to which the intervention was successful in improving psychosocial work factors and health outcomes. Baseline data used for the prior risk assessment constituted the pre-intervention measure. As shown in Figure 4, the intervention period took place during the second and third years of the study. Post-intervention measures were collected at six and 30 months after the mid-point of the intervention period.

Results are presented here for the entire

Figure 6. Percentage of workers exposed to adverse psychosocial work factors at baseline and at follow-ups in the study population



*$p < .05$ between 36-month follow-up and baseline.
Note: In this figure, some of the four psychosocial factors are combined and others are subdivided.

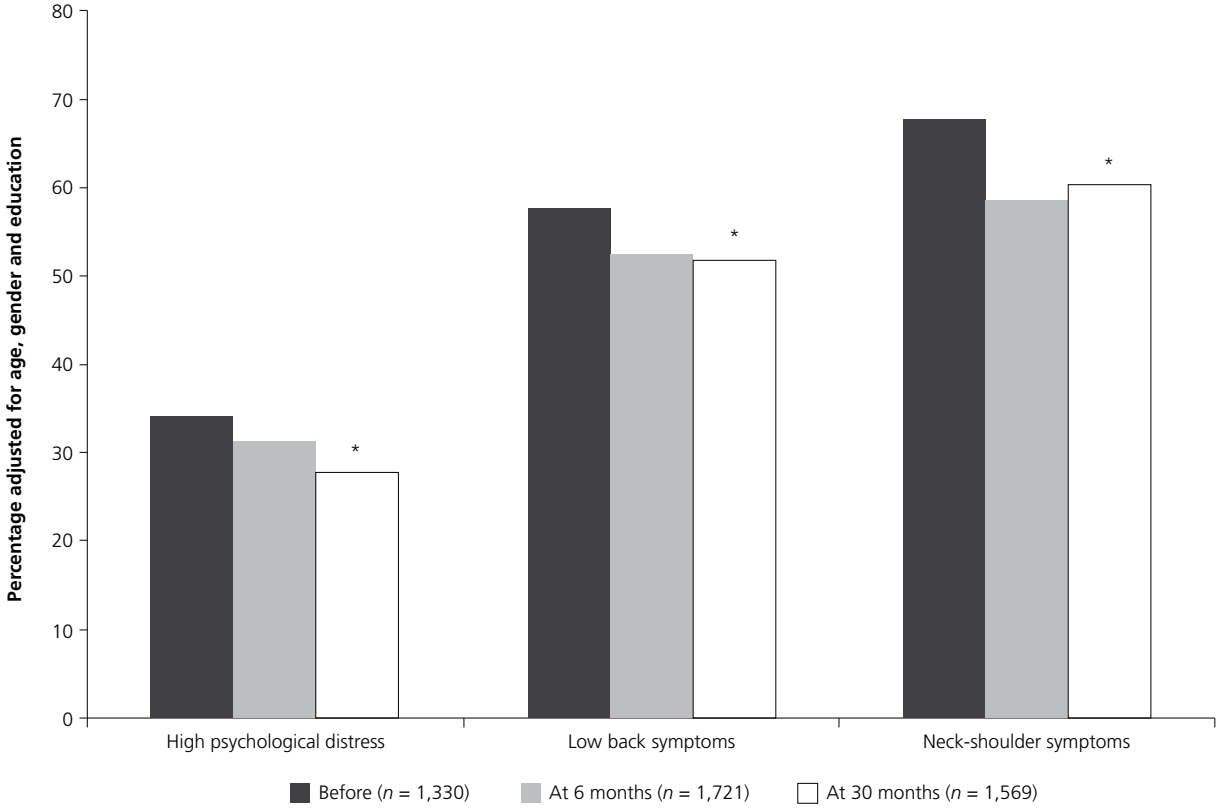
study population to present the global portrait. During the 30-month follow-up, the prevalence of three psychosocial work factors significantly decreased (Figure 6): high PD decreased from 50.1% to 45.4%, low co-worker SS dropped from 53.9% to 48.9% and low reward, as shown by a lack of respect and esteem, decreased from 36.1% to 30.9%. No significant changes were observed for low DL.

All health indicators improved significantly during follow-up (Figure 7). The prevalence of high psychological distress (workers in the highest quintile of psychological distress) decreased from 34.1% to 27.8%. As well, the prevalence of workers with low back symptoms or neck and shoulder symptoms decreased, respectively, from 58% to 52% and from 67.7% to 60.4%. For both health indicators, effects observed at six months were maintained 30 months after the intervention. For psychological distress, the effect was not only maintained but intensified at 30 months.

Discussion

The development phase set intervention targets through a quantitative prior risk assessment and focus group meetings with employees. In department A, the prior risk assessment showed that the prevalence of all four psychosocial work factors (high PD, low DL, low SS and low reward) was greater than in the reference populations. Focus groups

Figure 7. Prevalence of health indicators at baseline and at follow-ups in the study population



*$p < .05$ between 36-month follow-up and baseline.

with employees confirmed that their work involved high PD and low reward. Five action priorities were established. Three of them were suggested to improve PD, and the other two to improve reward.

The implementation phase documented the intervention with logbooks and assessed, through focus groups, whether or not the intervention was actually carried out and reached the employees (Kristensen 2005). The department A logbook described 48 activities that were implemented as part of the intervention. High PD and low reward were targeted by 35% and 54% of the activities, respectively. During focus group with employees, six activities introduced in the workplace were discussed. Two of them were perceived as beneficial for reward. Two others were perceived as moderately beneficial (pros and cons) for PD, another as having a temporary positive effect and the last as detrimental.

Results of the effectiveness phase were presented for the entire study population. These results showed an improvement in three of the four psychosocial work factors (high PD, low co-workers SS and low reward). These results are consistent with those of previous prospective intervention studies that observed an improvement in at least one psychosocial work factor (Anderzen and Arnetz 2005; Bourbonnais et al. 2006; Kauffeld et al. 2004; Logan and Ganster 2005; Mikkelsen and Gundersen 2003; Mikkelsen et al. 2000; Sluiter et al. 2005; Theorell et al. 2001; Wahlstedt et al. 2000). It is noteworthy that, in our study, only the respect and esteem

dimension of reward improved. This result might be explained by the fact that the participating organization did not have much control over the other two dimensions of reward (income and occupational status control) since it must comply with strict rules imposed on all public organizations in Quebec.

Health indicators also improved. The prevalence of high psychological distress significantly decreased. This result is consistent with those of four recent intervention studies. These studies observed short-term (12 months) effects (Bond and Bunce 2001; Mikkelsen and Gundersen 2003; Sluiter et al. 2005) or the start of a beneficial change process (Mikkelsen et al. 2000). However, two previous prospective studies observed an increase in emotional exhaustion after the intervention (Dahl-Jorgensen and Saksvik 2005; Ryan et al. 2005) and two others observed no effect (Kawakami et al. 2005; Logan and Ganster 2005). The studies that observed no effect had small sample sizes, which limited the statistical power and the possibility of detecting important differences between groups.

For psychological distress, the effect was not only maintained but intensified at 30 months.

The effectiveness phase also showed that the prevalence of low back and neck and shoulder symptoms significantly decreased during follow-up. Only two other intervention studies have measured musculoskeletal symptoms (Eklof and Hagberg 2006; Wahlstedt et al. 2000), and these observed no effect. These studies were limited by a short follow-up (one and six months), which might not have been long enough for the intervention to produce a beneficial effect. The Wahlstedt et al. study (2000) was also limited by a small sample size ($N = 82$).

In terms of public health, the results of the effectiveness phase could be substantial. Indeed, there is empirical evidence of a deleterious effect of the four adverse psychosocial work factors targeted on mental health and musculoskeletal indicators (Bongers et al. 2006; Stansfeld and Candy 2006). Furthermore, simultaneous improvements of small magnitude on several psychosocial work factors could result in significant improvements in health-related indicators. In this study, three of the four psychosocial factors simultaneous improved by about 5%. Likewise, the prevalence of three health indicators significantly improved by 6–7%, which means an improvement for approximately 100 workers for each indicator in our study population.

It is also interesting to mention that, in industrialized working populations, musculoskeletal symptoms and mental health problems are among the primary causes of work leave due to sickness (Bourbonnais et al. 2005; Karttunen 1995; Vézina et al. 2006; Vinet 2004). Since a day of absence costs up to 1.5–2 times the day's salary for the worker, a reduction in the prevalence of these health issues may have an important economic impact (Brun and Lamarche 2006). An upcoming paper will report the measured effect of the intervention on sickness leaves.

The current study had several strengths: (1) a rigorous design composed of three phases with a pre- and post-test evaluation; (2) the use of both qualitative and quantitative approaches; (3) high participation rates at baseline and at the six- and 30-month follow-ups, limiting the likelihood of selection bias; and (4) the use of validated instruments to assess psychosocial work factors and health indicators. It also met two necessary conditions for a successful

intervention study: the involvement of top and middle management and the use of employee knowledge and participation (Kompier and Kristensen 2000; Kompier et al. 1998).

There were other specific strengths regarding each of the three phases. The development phase allowed the gathering of crucial background information to characterize the problems and to target adverse psychosocial work factors. The results of this prior risk evaluation provided a sound basis for managers and union representatives to enhance their understanding of the nature and extent of the initial problems. A specific strength of the implementation phase consisted in its systematic noting of the activities introduced in the workplace in order to improve psychosocial work factors. It is noteworthy that this type of multiple-component intervention makes it more difficult to identify which intervention component(s) is responsible for the effects measured. However, systematic reviews of ergonomic studies evaluating biomechanical and work organization interventions have shown that multiple-component interventions have greater effectiveness (Karsh et al. 2001; Silverstein and Clark 2004). The underlying mechanism is that psychosocial work factors take multiple forms in concrete work situations, and these multiple forms can only be tackled by making several appropriate changes in work situations (Denis et al. 2008; Karsh et al. 2001). In another paper (in preparation), a complete and thorough description and analysis of these components will be provided. This will help with interpreting the effectiveness evaluation. Another strength of the implementation phase involved providing managers with employee feedback on the implemented changes, feedback that could be used to further improve the intervention. A final study strength is that the effectiveness phase made it possible to evaluate the short-term (six months) and medium-term (30 months) impacts on psychosocial factors and health indicators.

Study limitations also have to be discussed. First, the intensity and duration of the intervention were not controlled by the researchers since decisions concerning the implementation of the changes were made by the managers. To outline the intensity of the intervention, key informants at the organization identified major changes, taking into account the degree of transformation achieved and employee coverage. To assess the duration of the intervention, activities implemented were systematically documented in logbooks completed in each department.

A second limitation might result from the presence of the researchers in the workplace, that is, the Hawthorne effect: were the beneficial effects observed due to the intervention or to the researchers' presence? The latter seems unlikely since the follow-up period continued for two years after the departure of the researchers from the workplace (after the formal intervention period). In addition, any Hawthorn effect that might have resulted from the data collection per se should have acted equally at all three measurements and, therefore, could not explain the changes observed over time.

Third, comparison with a control group is not available at this time. It is therefore difficult to establish whether the improvements observed were due to the intervention or to other causes. A comparison with a control group will be done by our study group in the near future.

A fourth limitation might be related to the fact that both psychosocial work factors and health outcomes were self-assessed; this might have led to an overestimation of the association (Rothman et al. 2008). However, even when an objective measure of the work environment

has already been evaluated (Bosma et al. 1998), self-assessed measures seem more relevant since they rely on the person's appraisal toward their work environment (Siegrist et al. 1996). Since health indicators were self-reported, it is possible that the prevalence figures were overestimated due to specific psychological traits or states of the respondents (e.g., negative affectivity) (Macleod et al. 2001; Watson and Pennebaker, 1989). However, this potential bias would have occurred at all measurement times and thus could hardly explain a significant decrease after the intervention. In addition, the use of two health indicators and the observed decrease in both after the intervention show consistent findings. There are also research findings that indicate that self-assessed health is a better predictor of future health than are objective health measures (Idler and Benyamini 1997). Finally, ambulatory blood pressure, an objective health indicator evaluated in this population, also significantly decreased after the intervention (manuscript in preparation), providing further support for a true improvement of health indicators.

Simultaneous improvements of small magnitude on several psychosocial work factors could result in significant improvements in health-related indicators.

Fifth, the global effect of the intervention could have been diluted by the different dynamics and changes that took place in each department. Comparisons between the different departments would help with the interpretation of results of the effectiveness phase. An upcoming paper will investigate this issue.

Sixth, the improvement in musculoskeletal disorders prevalence might partly be due to a reduction of postural risk factors. Indeed, an ergonomic program was put in place during the course of the intervention. This program may have reduced postural risk factors such as bad posture and inappropriate position of the computer's screen and keyboard. However, the human resources registrar reported that this program also improved social support.

Seventh, the extent to which the results of an intervention study can be generalized might be limited (Rose 1992). However, the fact that the intervention targeted four well-defined, theory-based psychosocial work factors, whose deleterious health effects have been shown in various work settings, favours generalization. Although solutions to improve psychosocial work factors may be specific to each workplace, the process of problem identification and resolution as well as a rigorous evaluation of the intervention effects are exportable.

Finally, the qualitative approach made it possible to include the participants' experiences and their views concerning work organization and related changes. However, it might also have provided a somewhat-biased perspective, representative of only those individuals who volunteered to participate. Nevertheless, the reliance on both qualitative and quantitative approaches provided different perspectives on the research and intervention, and helped to compensate for the limitations of any particular methodology.

Conclusion

The present intervention study was carried out in a public insurance organization and addressed the three recommended phases of an intervention research: development, implementation and effectiveness. For the development and implementation phases, results were presented for a single department as an illustration of the intervention process that took

place in all other departments. These results showed that the changes that were put into effect in this major department were generally consistent with the targeted action priorities. For the effectiveness phase, results were presented for the entire organization. They showed that three psychosocial work factors significantly improved after the intervention (PD, co-worker SS and reward, as shown by respect and esteem). As well, two health indicators improved (prevalence of workers with low back or neck and shoulder symptoms and prevalence of high psychological distress). Short-term beneficial effects observed at six months were maintained at 30 months for both health indicators, and they were intensified for psychological distress. These results suggest that interventions aimed at reducing psychosocial work factors may lead to sizeable improvements in health indicators.

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Intervention Research on Working Conditions and Mental Health: Persistent Challenges, New Directions and Opportunities to Integrate Research Agendas

COMMENTARY

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ABSTRACT

This commentary provides a summary of the four preceding research papers. Three of the four papers, those by Gilbert-Ouimet et al., Marchand and Durand, and Veitch, provide direction for future workplace psychosocial intervention studies, while the remaining paper, by Lippel, offers insight into how existing occupational health and safety and workers' compensation legislation offers few motivations for employers to promote and protect the mental health of their employees. In addition to fleshing out the directions and insight offered by these papers, this commentary flags the challenges that persist in this area of intervention research. To conclude, the authors offer a summary of directions for future research, including opportunities to integrate research agendas.

This issue of *Healthcare Papers* contains four articles from the 2009 Canadian Congress for Research on Mental Health and Addiction (Gilbert-Ouimet et al. 2011; Lippel 2011; Marchand and Durand 2011; Veitch 2011). Two of the papers, those by Marchand and Durand and by Gilbert-Ouimet et al., describe interventions focused on changing the psychosocial work environment to reduce the burden of mental health problems; another, by Veitch, overviews the relationship between the physical work environment and mental health; while a fourth, by Lippel, offers us a broad perspective on the regulations currently in place in Canadian provinces to protect the mental health of workers and the ways that law and policy can have the unintended consequences of increasing the illness and disability associated with mental health problems. The objective of this commentary is to summarize and tie together these research papers. In doing so, this commentary highlights the importance of research examining the relationship between working conditions and mental health problems, describes persistent challenges that need to be overcome in this research field and provides direction for future research in this area.

From both organizational and public policy perspectives, evidence that negative changes in working conditions are associated with a subsequent increased risk in mental health problems (or that positive changes in the work environment are associated with a decreased risk of mental health problems) is important if the potential mental health effects, and their associated costs, are to be incorporated into decisions that will impact the work environment (Kuper and Marmot 2003; Macleod and Davey Smith 2003). In addition, intervention research focused on work environments (both physical and psychosocial) is particularly important as these interventions have the potential to have much larger impacts on mental health than those interventions that seek to change individuals' perceptions of, or reactions to, stress, or those that focus on the effective treatment of mental problems after they arise (LaMontagne et al. 2007a; Vézina et al. 2004).

Seven years ago, in this journal, Vézina and colleagues (2004) called for more rigorous research focusing on identifying the dimensions of the psychosocial work environment that should (and could) be changed, the best ways to bring about these changes and common barriers encountered when implementing changes within workplaces. In the paper from Gilbert-Ouimet et al. (2011), Vézina's group has answered this call and, in doing so, provided valuable direction for those researchers brave enough to undertake intervention research. Through their rigorously documented development, implementation and evaluation of an intervention focused on reducing psychosocial work stress, we can see concrete examples of the types of changes that were undertaken within different workgroups and whether they resulted in transformations in the psychosocial work environment and, ultimately, the health of workers (Gilbert-Ouimet et al. 2011).

This level of detail should be the standard for reporting among intervention studies since it can be used to understand why an intervention was, or was not, found to be effective. An intervention may fail because it is truly ineffective, because it was not implemented correctly or because the evaluation of the intervention was flawed (Issel 2009; Kristensen 2005). Few studies in the peer-reviewed literature in this area provide the detail necessary to distinguish between these three sources of intervention failure (Bambra et al. 2007; Egan et al. 2007). Similarly, when effects are found, this detail provides us with the information on what changes (if any) in the work environment brought about this mental health benefit.

The paper by Marchand and Durand (2011) also advances this field of intervention research by integrating bio-physiological measures into the evaluation of workplace psychosocial interventions. As noted by Marchand and Durand and previously discussed by LaMontagne and colleagues (2007a, 2007b), the process between psychosocial work stress and enduring mental health outcomes (e.g., chronic depression) is mediated through distress and short-term bio-physiological responses; we would possibly also add a pathway through changes in health behaviours. The advantage of integrating these bio-physiological measures is that they allow for early detection of the important changes in human physiology – in response to changes in the psychosocial work environment – that can in turn lead to disorders such as depression and burnout in the longer term. These measures can be used in conjunction with sensitive self-reported mental health measures for the early detection of important mental health changes that may not be captured by measures that focus on more debilitating mental health conditions (Marchand and Durand 2011). Further, if these measures are proven to be feasible, reliable and valid, they will allow research in this area to be conducted among smaller samples.

Despite the advances noted above, three important challenges persist in this area of intervention research. First, both the paper by Marchand and Durand (2011) and that by Gilbert-Ouimet and colleagues (2011) highlight challenges with the use of current measures of the psychosocial work environment in intervention research. Specifically, the two dominant models in this field – the demand-control model (Karasek and Theorell 1990) and the effort-reward imbalance model (Siegrist 1996) – provide limited guidance into how the important dimensions in these models might be changed. There is also a dearth of evidence as to whether these two models can in fact detect a change in the work environment when it occurs (Smith and Beaton 2008, 2009).

A second challenge is identifying the appropriate time lag between the implementation of an intervention and the assessment of the subsequent (mental) health impact (de Lange et al. 2003). Frese and Zapf (1988) have discussed the importance of examining the effects of an independent variable on an outcome over multiple time points (rather than just two time periods). Research examining the effect of work conditions on mental health has demonstrated that different time lags can result in various study findings (de Lange et al. 2004; Dormann and Zapf 2002; Ibrahim et al. 2009). The relationship between a change in the work environment and the onset of a mental condition may take many forms, including an immediate impact; a lagged effect – where the impact is gradual and cumulative in its effects over a number of years; or a sleeper effect – where the impact is not seen until many years after the change has taken place (Frese and Zapf 1988). Fully exploring the impact of workplace changes on mental health problems therefore requires the assessment of mental health at multiple follow-up time points after changes in the work environment have taken place.

The relationship between a change in the work environment and the onset of a mental condition may take many forms.

A final challenge in this area of intervention research is to better understand the relationship between the stress produced by work and that produced by other social stressors such as marriage, finances, neigh-

bourhood and community (Marchand et al. 2005; Marchand and Blanc 2010). The bio-psychosocial model, and ongoing research by Marchand and Durand's group, is leading the way in addressing this final challenge (Marchand and Durand 2011).

> *Canadian workers are not protected from workplace environments that can lead to mental health problems in the same way that they are protected from environments that lead to physical injury and illness.*

Moving from the psychosocial to the physical environment, the paper by Veitch (2011) provides compelling evidence related to how the physical work environment (e.g., personal space, social and spatial density, level of distraction and exposure to natural light) might be related to mental health outcomes. As pointed out by Veitch, there is a scarcity of research that has focused on linking changes in the physical work environment to mental health outcomes. However, there are compelling advantages to pursuing this research area with the same vigour as that observed in the pursuit of psychosocial work environment research. First, unlike changes to the psychosocial work environment, changes to the physical environment can be clearly implemented, measured and monitored. In addition, it is possible to imagine specific prescriptive and standard recommendations ("benchmarks") for the physical work environment (e.g., space per employee, seating location). Finding similar benchmarks for the psychosocial work environment presents an ongoing challenge. For these reasons, echoing Veitch, we recommend that further research be undertaken to determine if and how changes in the physical work environment influence both changes in the psychosocial work environment and employee mental health. When conducting this research, it will be important to consider the challenges we have outlined above, such as appropriate time lags and the need for responsive measures of mental health conditions.

The final paper, from Lippel (2011), outlines some of the current policy challenges related to employer motivation in relation to mental health conditions. Specifically, even if we know *what* factors in the workplace to change (psychosocial or physical) and *how* to change these factors, there are few legislative motivations in Canada related to the prevention of mental health conditions at work. Seven years ago, in this journal, Neufeldt (2004) described the need for different workplace parties to develop a shared vision of how mental health problems attributable to work might be prevented. The paper by Lippel highlights the fact that current occupational health and safety and workers' compensation policies in Canada provide no motivation for employers to engage in this process. Conversely, for many employers in Canada, the prevention of most physical injuries and diseases is motivated, in part, by the workers' compensation programs, which tie injury performance to the administration of premium payment surcharges and rebates of "financial consequence" (Kralj 1994; Tompa et al. 2007). However, as pointed out by Lippel, outside of post-traumatic stress disorders, most mental health conditions are not covered by workers' compensation mandates; and even when they exist, gaining access to compensation for these conditions is challenging (Lippel 2011; Lippel and Sikka 2010). The exclusion of mental health conditions by many workers' compensation agencies in Canada is detri-

mental to Canadian workers in multiple ways. First, Canadian workers are not protected from workplace environments that can lead to mental health problems in the same way that they are protected from environments that lead to physical injury and illness. Second, the exclusion of these conditions under occupational health and safety and compensation legislation, in turn, increases the skepticism about whether or not the etiology of these conditions includes a specific work-related component. Finally, awareness of the economic cost to society of mental health problems attributable to workplace factors remains partially hidden, outside of the absenteeism costs for employers for both work and non-work related conditions. Until the effects of mental health are tied to workplaces (via legislation and enforcement), mental health conditions and the working conditions that determine them will continue to receive relatively scant public and policy attention in Canada.

We offer the following set of recommendations to help enable the continued development of the research agenda focused on understanding the relationships between working conditions and mental health. Similar to recommendations given seven years ago (Vézina et al. 2004), we need more high-quality intervention research on working conditions and mental health. We specifically need interventions that provide information on what factors workers want changed, what factors employers want to change, which of these factors can actually be changed and how these changes can occur. The papers here by Marchand and Durand (2011) and Gilbert-Ouimet et al. (2011), and their associated research agendas, currently lead the way in Canada in this regard. There needs to be integration between work on the physical and the psychosocial work environments. The paper from Veitch (2011) describes specific physical workplace dimensions that may be associated with the mental health of workers. Integration of these areas of the physical work environment into the overall work and mental health research agenda, which has for the most part focused on the psychosocial work environment, is required. Finally, the work-relatedness of mental health problems needs to be integrated as part of a progressive policy agenda. Tying workplace policies and practices to employee mental health, similar to what is done for physical conditions, offers hope to the many Canadian workers, and their families, who are currently impacted by these conditions.

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Advancing Research on Mental Health in the Workplace

COMMENTARY

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ABSTRACT

A complex topic like workplace mental health requires multidisciplinary, multi-sectoral, mixed methods research and effective knowledge translation of research findings. In this commentary, two of the 13 institutes that comprise the Canadian Institutes of Health Research – the institute of Gender and Health and the Institute of Population and Public Health – discuss strategies for advancing research on mental health and the workplace. With a focus on each Institute's mandate, the commentary argues that there is a need to advance our understanding of how biological, social, cultural and environmental determinants of workplace mental health are influenced by sex and gender, and of how population health intervention research can generate evidence that will strengthen the impact of workplace interventions to reduce mental illness.

The social and physical conditions under which people work have been demonstrated in several studies to have a direct impact on disease, injury, disability and health-related outcomes in workers. Of increasing interest is the relationship between mental health and conditions at work and the related economic, social, legal and health-related consequences. In their review of the literature, Dewa and colleagues (2010) noted, mental health

problems are estimated to cost society from C$51 billion in Canada to US$83.1 billion in the United States on an annual basis with about 35% of these costs being associated with work disruptions (Dewa et al. 2010). In 2009, Shain and Nassar noted that Canadian employers have "an emerging, enforceable, legal duty to provide a psychologically safe workplace that parallels and complements the duty to provide a physically safe workplace" (2009: 6). Canadian researchers are contributing to a growing knowledge base about the influence of workplace design on employees' mental health; the application of bio-psychosocial models to understand how individual-level characteristics such as gender and physical health status interact with stressors in the work environment to exacerbate mental health problems; and how regulatory and policy strategies can reduce workers' exposure to psychosocial hazards.

"Employers have "an emerging, enforceable, legal duty to provide a psychologically safe workplace."

Our intent is not to summarize in any comprehensive manner key insights from this research. However, our review of the four papers in this supplement leads us to conclude that a complex topic such as workplace mental health requires a multi-stakeholder response involving representation from research, policy and practice. The authors outline research initiatives that engage multiple disciplines and sectors and surface the economic, legal, social, ethical and health implications of workplace mental health. Their findings call for mixed methods research, research that encourages the study of policy and program interventions to prevent mental illness, to improve support for people with mental illness in the workplace or to effectively use regulatory strategies to foster mentally healthy workplaces.

The Canadian Institutes of Health Research (CIHR) is Canada's major health research funding agency. It is dedicated to the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian healthcare system. In its latest *Health Research Roadmap*, CIHR has explicitly identified as one of its strategic health research priorities, research that contributes to a reduction in the burden of mental illness (CIHR 2009b). Two of the 13 institutes, the Institute of Population and Public Health (IPPH) and the Institute of Gender and Health (IGH), highlight relevant research priorities in their respective strategic plans that address (1) how population health intervention research can generate evidence that will strengthen the impact of workplace interventions to reduce mental illness and (2) the need to advance our understanding of the biological, social, cultural and environmental determinants of workplace mental health and how they are influenced by sex and gender.

The mission of IPPH is to improve the health of populations and promote health equity in Canada and globally by supporting research and encouraging its application to policies, programs and practices in public health and other sectors. The institute's current research priorities provide a platform for addressing workplace mental health research questions. The four priorities include pathways to health equity, population health interventions, implementation systems for population health interventions in public health and other sectors and theoretical and methodological innovations (IPPH 2009). A particular focus for IPPH is to increase the quality, quantity and use of population health

intervention research. Population health interventions are complex and dynamic and include policy, program and resource distribution approaches in many contexts such as workplaces. They are intended to shift the risk of entire populations or communities by focusing on the social, cultural and environmental determinants that influence the distribution of risk and illness in a society.

Population health intervention research can include an examination of the differential impacts of policies such as occupational health and safety legislation or office redesign accommodations on the mental health of workers, or the development and application of novel measures and theories to strengthen workplace intervention research study designs. Research on understanding the pathways to health equity might answer the question of how micro-environments (e.g., individual workplaces) and macro-environments (e.g., labour markets) intersect to produce health inequities for shift workers. Other examples of pertinent questions might include the following: How are interventions effectively scaled up to improve access to successful mental health workplace policies that prevent violence and harassment of vulnerable workers? How do intersectoral mechanisms (e.g., governance structures that involve labour, employers and employees) enhance the implementation and sustainability of workplace interventions? What are the ethical implications of delivering interventions in the workplace to prevent mental illness? These and other questions are examples of how workplace mental health issues intersect with the strategic priorities of IPPH.

The mission of IGH is to foster research excellence regarding the influence of gender and sex on the health of women and men throughout life, and to apply these research findings to identify and address pressing health challenges. "Work and health: research into action" is one of six strategic research directions identified in the institute's 2009–2012 strategic plan (IGH 2009). Work – both paid and unpaid – is influenced both by socially constructed gender identities, roles and relations and by sex-linked biology (e.g., body shape, size and composition). The jobs women and men do, how they are compensated for them and how their working conditions affect their health are all shaped by sex and gender. So too is workplace mental health and illness. There is a considerable body of evidence to show how gender and sex affect mental health. Take stress, for example: IGH-funded research has shown that men and women respond to and cope differently with stress, and that these differences are linked both to biology and to social expectation and structures (Andrews et al., 2008; Dedovic et al., 2009).

> *Gender and sex are often treated as confounders rather than as lenses through which to gain unique and important insights.*

The findings related to stress underscore the need to take sex and gender into account when designing research, policies and interventions aimed at promoting workplace mental health. Yet the majority of research on occupational health fails to do so (Gochfeld 2007; Messing et al. 2003). Gender and sex are often treated as confounders rather than as lenses through which to gain unique and important insights into workplace mental health. Accounting for sex and gender makes for better science and enables the tailoring of policies and interventions according to the unique needs of men and women. Consider Dewa et al.'s (2010) finding that women experienced higher rates of mental and behavioural disor-

ders than did men; at 67 days, these disorders had the longest disability episodes of those studied. Might an intervention tailored for women enable them to return to health (and to work) more quickly? Are the lower rates of these disorders among men a result of social or biological differences in men's mental health, or an artefact of gender differences in how we diagnose mental and behavioural disorders? This is but one example of why gender and sex matter to workplace mental health.

IGH and IPPH are both committed to advancing research on workplace mental health through their respective strategic priorities. The institutes are further committed to fostering knowledge translation – "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge" (CIHR 2009a) – of relevant research findings. The research showcased here are but a few examples of how research has the potential to make a difference in the lives of workers through facilitating evidence-informed decision-making by workplaces and other policy actors with a stake in workplace mental health.

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MENTAL HEALTH IN THE WORKPLACE:
HOW THE WORKPLACE IS RESPONDING

Healthcare*Papers*

The Business Case: Collaborating to Help Employees Maintain Their Mental Well-Being

INVITED ESSAY

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ABSTRACT

There has been a change in the mindset of businesses in recent years. Companies are starting to realize that proactively helping their employees to maintain mental health is beneficial, both for their workers and their business. In this article, we present three different but complementary views – those of an advocate, an employer and a provider – on helping employees maintain mental, and physical, health. In the first section, Sari Sairanen outlines programs and services to manage stress and maintain mental health that have been developed by the Canadian Auto Workers' union and implemented in partnership with employers, wellness providers, service agencies and other community partners. The union focuses on raising awareness and providing education, as well as removing the stigma associated with mental illness. Deanna Matzanke, in her section, discusses the commitment of a company, Scotiabank, to create and maintain an inclusive and accessible workplace for all its employees. It has recently worked with providers to develop and implement integrated services dealing

specifically with mental health illness and addiction, which aid not only its current employees but also possible future employees. Finally, Doug Smeall shares his observations as an insurer at Sun Life Financial, who has seen the rates of both short-term and long-term disabilities increase. He elaborates on the collaborative work between insurers and employers to help employees maintain their mental health, and to return to work sooner when issues do occur. Ultimately, this article argues that unions, employers and insurers can work together with partners and employees to promote and maintain employee health because, as Sairanen asserts, "preventing a problem in the first place is the best strategy."

We Can Do It: Evidence and Interventions for Transforming Mental Health in the Workplace

The Canadian Auto Workers' union (CAW) is the largest private sector union in Canada, with over 225,000 members from coast to coast. Our members work in aerospace, mining, fishing, auto and specialty vehicle assembly, auto parts, hotels, airlines, rail, education, hospitality, retail, road transportation, healthcare, manufacturing, shipbuilding and other sectors of the economy. CAW is not only dedicated to fighting for workers' rights at the bargaining table, it is equally committed to taking on economic, political and social issues that affect its members and their families in the broader community.

As a result, we have and continue to focus on developing new and innovative strategies for creating a healthy supportive workplace culture. One of the ongoing challenges in this regard is the amount of stress that members experience. In the present state of the economy, more than ever, tremendous pressure is being put on workers, retirees and families concerning job security, productivity and pensions. This stress is on top of that normally associated with day-to-day living.

While those with good coping skills can manage some of this anxiety, for many the additional worry is too much. Pressure and mental strain mount over time, often resulting in burnout or illness. Even those who can normally deal with increased amounts and sources of stress can find themselves experiencing some of the social and health problems associated with unmanaged anxiety.

CAW has always believed that preventing a problem in the first place is the best strategy. We also feel that it is important to provide our members and their families with the tools and personal resources in their workplace and communities to assist them in dealing with challenges. In our initiatives, we promote both physical and mental health. We focus on increasing our members' understanding of mental health as a risk factor for chronic disease. Health is more than just the absence of disease.

When it comes to stress and overall mental health, CAW has been focused on activities such as raising awareness, education, skill building, early detection and illness management and integration strategies. Programs and services regarding stress and overall mental health have been developed and implemented in partnership with employers, wellness providers, service agencies and other community partners.

Despite mental health claims being the fastest-growing category of disability costs in Canada, it has been a challenge to convince our employer groups to embrace wellness programs. However, perseverance and the alignment of physical and mental health for better health outcomes and cost-savings for companies have

helped to start conversations. In addition, CAW has used an approach of mental health promotion, focusing on the strengths, assets and capacities of employees rather than having a problem- or deficit-based orientation.

A clear message was given to our employer groups: CAW takes mental health in the workplace seriously. In the mid-1990s, we successfully bargained wellness programs within the auto industry; Motoring to Wellness at General Motors (GM), Working toward Wellness at Chrysler and Drive to Wellness at Ford. The common goals were to improve the health and well-being of employees, retirees and their families, to have working wellness committees and to implement comprehensive wellness programming via a variety of modalities.

A clear message was given to our employer groups: CAW takes mental health in the workplace seriously.

The joint wellness committees with the expert help of the Windsor-Essex County and Durham Region Health Units establish annual wellness goals for their respective workplaces. Each theme-based program consists of 12 core components such as health issues magazines, personal health guides, e-bulletins, contests, e-presentations, kick-off wellness events, posters and environmental and policy supports to provide multiple learning options.

Specifically, to support the mental health initiatives, the joint wellness committees developed programs such as Making Healthy Choices, Stress Management, Work-Life Balance and Sleep On It that were delivered using the core components in the workplaces. In addition, videos on aspects of mental health were produced and implemented into a regular health and safety routine. These videos addressed issues regarding workplace and home life and tips to reduce stress, such as positive self-talk, exercise and healthy eating, practising gratitude, getting adequate sleep, monitoring caffeine intake and "getting over stuff."

At GM, two- to five-minute videos depicting stress and depression vignettes were produced and piloted at one of the work locations to raise awareness and demystify mental illness. The initiative was so well received that the videos are now shown at all the GM work locations.

Unfortunately, the stigma of mental illness is a real obstacle in our workplaces. During a recent leadership meeting, a resolution regarding mental health was presented and debated by the more than 800 delegates from across Canada. Numerous delegates lined up at the microphones and passionately shared personal stories and encouraged the adoption of the resolution, which was unanimously passed:

> Therefore be it resolved that the National CAW develops a strategy to understand the scope and effects of mental illness on our membership …
>
> And be it further resolved that the CAW National Health and Safety Department develop and implement a national awareness campaign to educate all its members on mental illness, thereby remove the stereotype and stigma associated with this illness.

Sigmund Freud once said, "Love and work are the cornerstones of our humanness." Freud was perhaps one of the first to recognize the connection between work and mental health. Since his time (1856–1939), a lot of research has shown that work is important, if not essential, to a person's mental well-being. Mental disabilities are often challenging to identify and respond to appropriately in the workplace.

What research and experience have shown is that we can make a difference in our workplaces through effective leadership, education and training, communication to reduce the stigma, early intervention and, most of all, collective efforts and shared learning.

– *Sari Sairanen*

Mental Health Wellness in the Workplace: Partnering for the 21st Century

During its 178-year history, Scotiabank has made many strides in the area of inclusion of persons with disabilities in the workplace. Those strides have, in large part, been the result of a sense of commitment by managers and leaders across the bank to reflect the communities in which they serve and to do the right thing in welcoming historically disadvantaged groups into the workplace. In the vast majority of individual cases, the bank has been successful. However, these efforts have typically happened spontaneously or reactively in the spirit of addressing an immediate challenge or issue and have not generally been driven by a clear, proactive strategy to identify, address and eliminate barriers to or in the workplace for persons with disabilities and, in particular, those with a mental health illness or addiction.

Recognizing that the health and well-being or our employees is of paramount importance, and understanding that a coordinated or integrated effort was needed to effectively address some of the rising costs of mental health illness in the workplace, Scotiabank introduced a Wellness Strategy in 2004. Under this strategy, the bank focused on four key directions:

1. To incorporate wellness into policy, making it part of the fabric of who we are and what we do
2. To engage and challenge providers to integrate their services and offerings – creating an interconnectivity of physical and mental health and therefore wellness
3. To continue to achieve excellence in diversity, inclusivity and work-life balance
4. To offer integrated services and supports

Recently, the bank introduced a Global Diversity and Inclusion Strategy, which makes the commitment to create and maintain an inclusive and accessible workplace for all its employees and recognizes diversity and inclusion as important keys to business sustainability. Supporting this has been a long-standing and comprehensive flexible work options policy, as well as an accommodation policy with a centralized budget to support work adjustments and to purchase equipment.

> *A coordinated or integrated effort was needed to effectively address some of the rising costs of mental health illness in the workplace.*

The key connecting thread between these two strategies is a focus on developing and maintaining key partnerships with our service providers, our employees, community organizations and subject matter experts and to actively encourage the integration of services and offerings to and for our employees – in short, partnering for the 21st century for the benefit of our employees and for Scotiabank. The following is a brief description of some of the key partnerships and integrated services and supports that have clearly filled a gap for many employees over the past few years.

Two important service providers for Scotiabank are our Employee Assistance Program (EAP) provider, Shepell-fgi, and our insurance provider, Great West Life. These

companies have assisted us in developing and implementing new and integrated services dealing specifically with mental health illness and addiction.

Mental Health First Aid for Managers is a course offered through our EAP program that is available for any manager. This course addresses the signs of mental health issues and equips people leaders with the tools to address these problems as and when they arise in the course of business.

> *The majority of closed cases reported a 50–74% positive change in functionality.*

Depression Care, also provided through EAP, is an enhanced service that builds on basic confidential counselling services. It includes an extensive clinical assessment to determine the level of depression and the requirement for additional care.

EAP also offers other supportive offerings and services that include mind-body wellness, anger management, health coaching and a Health Assistance Program that includes Best Doctors – access to world-renowned doctors to ensure the accuracy of diagnosis and treatment.

Work Assist is an award-winning partnership between Scotiabank, Great West Life and Shepell-fgi. It is a voluntary counselling support service offered through the EAP that primarily focuses on emotional and mental health and is designed to help employees on short- or long-term disability benefits return to healthy and productive living. Most notably, the program is particularly helpful for those employees who are at work but who may be struggling with stress, anxiety or depression. Results from the program show that, in both 2008 and 2009, the majority of the closed cases were related to mental health issues. The best indicator that the program has been successful is the percentage of functional change in these cases – an increase in the persons' ability to function in daily living activities, including work. For both 2008 and 2009, the majority of closed cases reported a 50–74% positive change in functionality. This is quite significant and has clear implications in terms of the effects on work productivity, both in quantity and quality.

Aside from key partnerships with our service providers, Scotiabank cultivates an ongoing relationship with its employee resource group, called Scotiabankers for Universal Access. The group's mandate is to provide a voice for employees with respect to systemic barriers in the workplace. Most recently, at the request of the Human Resources Department, the group facilitated efforts to provide a peer supporter for an employee who was struggling to deal with his work and a mental health illness.

Scotiabank is also fortunate to be closely involved with the work of several community organizations, including the Job Opportunity Information Network (JOIN), which focuses on the integration of persons with disabilities into the workforce; the Episodic Disability Initiative, through the Canadian Working Group on HIV and Rehabilitation (CWGHR); and the Toronto District School Board (TDSB) Employment Accessibility Exchange, which offers a financial corporate practice firm where candidates with disabilities can practise key work behaviours before entering the workforce.

Another key community partner is the Centre for Addiction and Mental Health (CAMH) Employment Support and Development program, which assists people who have mental health and addiction histories to secure, retain and advance

in employment opportunities. The program offers counselling, skills training and ongoing professional support. In this case, Scotiabank has focused on helping CAMH identify candidates who can be referred to the TDSB practice firm. Once a candidate has reached a comfortable working level, he or she is referred for a position at Scotiabank. If hired, the new employee's manager undergoes our Mental Health First Aid for Managers course, and the new employee is connected with Scotiabankers for Universal Access. We also have plans to develop job aids for our managers on managing episodic disabilities, with the information and input from CAMH, JOIN and CWGHR.

Although these programs and partnerships are very new, all of those involved – employees, managers, service providers and community partners – understand that what will make a difference to the inclusion of persons with mental health illness or addiction in the workplace is this kind of integration and partnering that provides a "warm hand-off" of talented candidates to other services that work in concert. The impact of each service or effort, although valuable on its own, is trebled in many cases, and together they create a consistent, linked and durable support line for a prospective employee, while managing an unpredictable illness. Internally, Work Assist, EAP and an employee resource group provide us with that same support line for existing employees. The key is partnering – partnering from a 21st-century view of the globalized economy and social network in which we live and do business today.

– *Deanna Matzanke*

An Insurer's Perspective

Over the past several years, insurance companies have noticed a fairly steady increase in the percentage of short-term disability (STD) and long-term disability (LTD) claims that have a mental health condition listed as the primary or secondary diagnosis. It is not uncommon for the incidence of mental health issues for STD claims to be in the 30–40% range for some clients (companies). For most clients, the prevalence of mental health conditions is approaching 30% of all LTD cases and has been increasing at a rate of approximately 0.5–1% per year over the past several years.

We are also observing high rates of co-morbidity of mental health conditions associated with such physical conditions as diabetes, cancers and cardiovascular, musculoskeletal and gastrointestinal disorders. The presence of mental health conditions as either a primary or secondary diagnosis is having an impact upon both the incidence and duration of STD and LTD cases.

Whereas a number of years ago, mental health conditions were more prevalent in traditionally white-collar industries, we are now witnessing greater reporting of mental health issues in blue- and grey-collar industries as well. It would appear that the stress on increasing productivity in all sectors is manifesting itself in a greater reporting of mental health events.

We are also witnessing the impact of the "treadmill" effect on rising rates of presenteeism, absenteeism and STD and LTD claims. Employees who feel under constant demands to produce and who are challenged to balance work and home pressures are filing STD and LTD claims in increasing numbers. This effect is compounded if the employees feel they lack the ability to control their workload or have limited authority to make decisions.

The average STD claim lasts between six and eight weeks, and the average LTD claim payment is in excess of $80,000. The good news, however, is that we are finding that organizations are taking more proactive steps to prevent both physical and mental health–related disabilities from occurring in the

workplace. More and more organizations are raising awareness of mental health issues at work, and they are making significant strides in reducing the associated stigma. A number of organizations have also moved beyond just raising awareness to implementing programs that engage employees and help to promote better physical and mental health. With the right amount of communication and by providing various incentives, they have been able to achieve significant rates of employee participation in these programs. They are recognizing that addressing organizational culture issues and providing healthy lifestyle–promotion programs are starting to have an impact on the health and well-being of their people. Companies are seeing a reduction in the prevalence of health risk factors in their populations and are confident they will soon be able to measure reductions in the incidence and duration of absences from work.

Organizations are raising awareness of mental health issues at work and are making significant strides in reducing the associated stigma.

At Sun Life, we have witnessed an increased uptake of both our health assessment tools and our health promotion programs, which target both mental and physical health. Employers are leveraging online assessment and health promotion programs to assist their people in evaluating their overall state of health and adopting healthier lifestyle behaviours. We are also finding that organizations are working more closely with insurers to help their employees navigate the healthcare system and engage their healthcare teams and EAP providers in proactively managing their health and increasing their levels of resiliency.

Health promotion programs (both online and in person) are also proving effective in helping employees recover from mental and physical health issues and return to work. At the same time, insurers have evolved their processes in recognition of the fact that a return to work after a mental health issue requires a different approach than one involving a solely physical cause.

Insurers have also developed training programs that are available to managers to help them to identify employees possibly struggling with a mental health issue. These programs additionally assist employees to receive help through their EAP provider or physician.

Organizations are finding that if they address organizational culture issues that are impacting on their employees' mental health and if they actively promote health assessment and promotion programs, they positively impact employee morale, productivity and engagement. They also impact rates of absenteeism and shorten the duration of both STD and LTD claims. Ultimately, if organizations sustain their levels of support for health assessment and health promotion programs, we expect that they will start to see reductions in the incidence of employee absence from work.

– Doug Smeall

Opportunities Abound to Improve Mental Health and Psychological Safety in the Workplace

COMMENTARY

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ABSTRACT

This commentary provides a brief synopsis of the views expressed by the authors of the invited essay "The Business Case," Sari Sairanen, Deanna Matzanke and Doug Smeall. It then discusses the authors' views in light of the Mental Health Commission's framework for a Mental Health Strategy for Canada, titled Toward Recovery and Well-Being, *and Dr. Martin Shain's two reports to the Mental Health Commission of Canada* – Stress at Work, Mental Injury and the Law in Canada *and* Tracking the Perfect Legal Storm. *The initiatives discussed in the lead paper are then compared with a 2009 consensus statement generated at a forum co-hosted by the Mental Health Commission and the Great-West Life Centre for*

Mental Health in the Workplace. The consensus statement reflects the recommendation of the forum's 40 participants that a Canadian national standard for psychological health and safety in the workplace should be developed.

It is clear that all three authors of the invited essay "The Business Case" (Sairanen et al. 2011) believe that positive change can be made. Sari Sairanen states, with respect to the Canadian Auto Workers' union (CAW), "We have and continue to focus on developing new and innovative strategies for creating a healthy supportive workplace culture." Scotiabank's representative, Deanna Matzanke, stresses the need for partnerships to obtain the best results from their Global Diversity and Inclusion Strategy. This strategy "makes the commitment to create and maintain an inclusive and accessible workplace for all its employees and recognizes diversity and inclusion as important keys to business sustainability"; Matzanke notes that this commitment is supported by "a long-standing and comprehensive flexible work options policy." Doug Smeall, of Sun Life Financial, reviews the rising tide of disability affecting the Canadian workplace and notes in his concluding remarks that "organizations are finding that if they address organizational culture issues that are impacting on their employees' mental health and if they actively promote health assessment and promotion programs, they positively impact employee morale, productivity and engagement."

All three authors note the need for leadership and commitment to change by placing mental health high on the organizational agenda – a position that reaps positive benefits for employees and employers alike. They also recognize the value of prevention, especially at the primary level before significant issues start to arise. The concept of partnership and involvement of multiple stakeholders is also stressed; much of this also aimed at reducing stigma and discrimination.

> *People with mental health problems or illnesses have long argued that what they need is a home, a job, a friend.*

Many of the ideas expressed by the three authors closely reflect the work of the Mental Health Commission of Canada (MHCC) In November 2009, following extensive consultations across the country, the MHCC released a framework of seven high-level goals to transform the mental health system (broadly defined), titled *Toward Recovery and Well-Being* (Mental Health Commission of Canada 2009). The document adopts a "comprehensive" approach that includes transforming the mental health system to one that is accessible and centred on the multiple needs of people and their families. At the same time, it includes mental health promotion and the prevention of mental health problems and illness wherever possible, eliminates stigma and discrimination, and fosters full social inclusion for people living with mental health problems and illnesses. This vision of a transformed system includes not only traditional healthcare but also the other systems in which people live out their daily life, including families, communities, schools and workplaces. Thus, elements of all seven goals for mental health system transformation (Table 1) have relevance for the workplace, and, as described below, the first, second and seventh goals are particularly important.

The first goal stresses that recovery from mental health problems, in the sense of "recovering a meaningful life in the

community," is not only possible but much more common than many people think (Jacobson and Greenley 2001). People with mental health problems or illnesses have long argued that what they need is a home, a job, a friend, and evidence shows that opportunities for employment do much to restore mental health. As the following participant in the national consultations indicated, inclusive workplaces have a critical role to play in fostering the hope, expectation and opportunity for recovery:

> "I believe very strongly that a community also must include empowering workplaces and work opportunities for recovery. Having meaning, inclusiveness and a sense of autonomy and productivity at 'work,' whether it be part-time [or full-time], is essential to provide structure, hope and recovery." (Public, online participant)

The second goal calls for an "upstream approach" geared to promoting mental health and preventing mental health problems and illnesses from occurring wherever possible. The efforts described by the authors of the three mini-essays in "The Business Case" indicate that steps are already being taken that align with the goal of developing mentally healthy workplaces and promoting employees' mental health at work, a place where most adults spend a large proportion of their waking life. This idea is confirmed by another consultation participant:

> "Stressful work environments are responsible for problems of anxiety, depression and other stress-related difficulties in individuals who have previously coped well. Healthy workplace programs will be good prevention methods if companies are given sufficient education to recognize their worth." (Public, online participant)

Table 1. Goals for mental health system transformation

1. People of all ages living with mental health problems and illnesses are actively engaged and supported in their journey of recovery and well-being.
2. Mental health is promoted, and mental health problems and illnesses are prevented wherever possible.
3. The mental health system responds to the diverse needs of all people in Canada.
4. The role of families in promoting well-being and providing care is recognized, and their needs are supported.
5. People have equitable and timely access to appropriate and effective programs, treatments, services and supports that are seamlessly integrated around their needs.
6. Actions are informed by the best evidence based on multiple sources of knowledge, outcomes are measured and research is advanced.
7. People living with mental health problems and illnesses are fully included as valued members of Canadian society.

Source: Reproduced with permission from the Mental Health Commission of Canada (2009: 18–19).

The seventh goal focuses on social inclusion for people living with mental health problems and illnesses and for all people living in Canada. Inclusion in the workplace is a necessary element in achieving this goal, as outlined by Deanna Matzanke in her article. This was also expressed by a participant in the online consultations:

> "The workplace is more than a setting; it is an environment where we spend half our life … it is a community … Without equal access to meaningful employment, there can be no talk of equality. Businesses and employers should be put under political pressure to walk the talk. I believe there can be no real improvement in quality of the life of the consumer without having meaningful employment and adequate income." (Public, online participant)

> (Editor's Note: "Consumer", in this context, refers to the mental health consumer)

Development of the second phase of the Mental Health Strategy, which focuses on how to progress toward achieving the framework goals, is now well under way. To this end, important work has already been undertaken by the Workforce Advisory Committee (WAC) of the MHCC via a number of key initiatives to improve workplace mental health.

> *"The workplace is more than a setting; it is an environment where we spend half our life."*

Much of the WAC's work is based on two hallmark reports prepared for the MHCC by Dr. Martin Shain. These reports - *Stress at Work, Mental Injury and the Law in Canada* (Shain 2009) and *Tracking the Perfect Legal Storm* (Shain 2010) – outline shifts in Canadian jurisprudence and an emerging legal duty of care on the part of employers to provide a psychologically safe work environment which Shain (2010: 1) defines as, "one in which every practical effort is made to avoid reasonably foreseeable injury to the mental health of employees". Shain concludes, and the WAC agrees, that employers need to view mental health and psychological safety through the same lens as physical health and safety.

One of Dr. Shain's recommendations in his 2009 report is this:

> "At a social level, the implications of the same legal developments are that national standards need to be developed in connection with both measurement of risks to mental health at work and management of the employment relationship akin to those found in the United Kingdom … While such standards would be in all likelihood non-binding legally, they could have considerable status as means by which employers might demonstrate their commitment to a psychologically safe workplace and show due diligence in both a moral and a legal context." (2009: 9)

As a follow-up to this recommendation and in response to a wide agreement among WAC members about the need for a national standard, a meeting of a diverse group of approximately 40 interested stakeholders was held in Vancouver in 2009. The meeting was co-sponsored by the MHCC and the Great-West Life Centre for Mental Health in the Workplace. The consensus generated at this meeting states, "It is our vision to see the development of a National Standard of Canada for psychological health and safety in the workplace by December 1, 2011, and uptake by employers resulting in a measureable improvement in psychological health and safety within three years of that date."

Based on this output, and Dr. Shain's recommendations, the MHCC has entered into an agreement with the Bureau de Normalisation du Quebec and the Canadian Standards Association to proceed with development of the standard. The projected target date for completion is the first half of 2012.

Most employers want to avoid more red tape and regulatory burden. But many well accepted workplace standards exist without related regulation (e.g. OHSAS 18000, ISO 14000) that assist the users in developing a roadmap they can count on to help them find the right pathway to success. A national standard for psychological health and safety could reduce the cost of research and review of the many different approaches and strategies and

provide a credible resource that is independent of any particular service or product provider. It would allow employers to begin to craft solutions unique to their own workplace needs, knowing that extensive thought and consideration had already gone into the standard.

Some employers may be concerned that addressing psychological safety or promoting mental health is something that would be costly and yield no definite return on investment. These concerns often arise from a lack of awareness about the existence of effective approaches for addressing mental health in the workplace. Knowing which approaches might be best or how to tailor them to suit unique needs, and securing resources to implement and sustain them may also be concerns. As a result, employers who are faced with multiple competing demands may decide to do nothing until a crisis erupts – often leading to damage to reputation, job engagement, morale, and the bottom line. The end results may be costs that are much higher than those needed to develop solutions ahead of time. The good news is that providing a psychologically safe work environment is no longer the mystery that it once was. Publicly available tools and resources exist to assist employers and many low cost and no cost approaches can be used to reduce risk.

The WAC's leadership project is one example. On the leadership website (http://www.mhccleadership.ca), videos of eight well-known leaders from labour unions, non-governmental organizations and "big business" stress the importance of the leadership aspect when dealing with workplace mental health. These videos are presented in conjunction with some key ideas to assist organizations to make improvements in managing workplace mental health and psychological safety. The business case for ensuring that workplace mental health and psychological safety are well managed is also outlined on the website. Four key areas are presented: corporate social responsibility, cost-effectiveness, risk management and recruitment and retention.

> *"Just think how many employees support children and seniors – when they lose their jobs it has a massive ripple effect."*

The MHCC is also taking workplace mental health to heart within its own walls. From the beginning, the organization's leaders have been committed to promoting and protecting the health and well-being of MHCC employees. In early 2010, a Committee of Champions for Optimizing Mental Health in the Workplace, representing a broad cross-section of the organization, was formed to act as a steward of processes and activities related to employee health, well-being and safety. Shortly thereafter, over 70% of MHCC employees, including executives and managers, participated in an assessment process based primarily on qualitative interviews and supplemented with a short online survey regarding workplace stress. While the survey provided a rough assessment of stress levels in the organization, the qualitative data provided rich and specific information about organizational strengths and challenges in promoting and protecting employee well-being and safety in three broad areas: the psychosocial work environment; the design of work; and broader organizational processes such as communication and ongoing learning. Shortly after the release of the assessment findings, the MHCC's Board of Directors approved an overarching policy statement that put into writing the organization's commitment to optimizing the mental and physical

health, well-being and safety of its employees. Action planning processes are now under way at various levels of the organization, including the development of an overall monitoring plan.

The importance of the effort employers are making is well-recognized by the public and cannot be understated. This is illustrated by the comments of a participant in the national consultations:

> "Just think how many employees support children and seniors – when they lose their jobs it has a massive ripple effect – one that is felt by other social service agencies." (Public, online participant)

The examples provided by Sari Sairanen, Deanna Matzanke and Doug Smeall and the work of the MHCC are both a cause for hope and a call to action to enhance the mental health and productivity of the workforce in today's knowledge-based economy.

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Welcome to Our World

INVITED ESSAY

Rick Green
Producer and director, ADD and Loving It?!
Co-creator, TotallyADD.com

ABSTRACT

Richard Branson, David Neeleman and Paul Orfalea – what do these entrepreneurs have in common, other than wealth? They have a disorder that affects about one in 25 adults in North America – Attention Deficit/Hyperactivity Disorder. In this article, comedian and TV producer Rick Green outlines some of the history and costs of the disorder, and shares with us first-hand insight into the struggles – and rewards – this disorder can present.

Imagine an employee who is bright, fun and energetic. Someone who is empathetic while being open and unsecretive. A person who doesn't harbour resentment. Someone who is a natural networker, who works hard for approval and responds to positive feedback with enthusiasm and loyalty. Ideal, right?

Let's go further. What if this colleague is inventive and can think outside the box? Perceptually acute and able to see past the surface to the core issues. Moreover, what if this person is cross-disciplinary and interdisciplinary, with knowledge about a wide range of areas and the willingness to take risks to make ideas happen? Extraordinary, right?

Someone like billionaire entrepreneur/adventurer Richard Branson. Or JetBlue founder David Neeleman. Or the visionary philanthropist who created Kinko's, Paul Orfalea.

Someone who has adult attention deficit hyperactivity disorder (ADHD). Just like

Richard Branson, David Neeleman and Paul Orfalea do.

What Is ADHD?

These entrepreneurs share more than wealth. They have a disorder that affects about one in 25 adults in North America (Barkley 1996; Kessler et al. 2005). They have achieved success by understanding what ADHD is, and they have created strategies to minimize the challenges and maximize their potential. They have learned to bend themselves to fit how the world works, but also to bend their world to work for them.

> *…undiagnosed and untreated, this disorder can wreak havoc on every area of life.*

ADHD involves problems in three areas: inattention, hyperactivity and impulsivity. Two thirds of diagnosed children, mostly boys, have problems in all three areas. The rest, about equal numbers of boys and girls, have problems with only inattention, and this is known as Attention Deficit Disorder (ADD) (Barkley 1996). These are your classic daydreamers. For our purposes, in this article I refer to both subtypes as *ADD*.

The cluster of symptoms that make up ADD was first recognized back in the 1800s. The name evolved (in the early 1900s doctors actually called it a "defect of moral control"!), but it was always considered to be a childhood disorder until about 20 years ago (Weiss 1993, cited in Weiss 2008, November). The prevailing wisdom was that kids outgrew ADD during their teens, so that by adulthood, they were no longer showing the symptoms. In fact, adults simply outgrow the obvious hyperactivity, or internalize it into restlessness.

By 1989, the first long-term follow-up studies of the "Ritalin kids" (children who were given methylphenidate, an ADD medication) from the 1960s and 1970s revealed that they were still struggling with many of the same problems in adulthood (DuPaul et al. 1997; Heiligenstein et al. 1997; Murphy and Barkley 1996a, 1996b; all cited in Weiss 2008, November).

The problems and behaviours just looked different. After all, kids don't get divorced or face bankruptcy. These adults with ADD still wrestled with procrastination, managing focus, staying on task, over-focusing, impatience, anger, impulsivity, frustration etc. Children who constantly lost schoolwork, toys and gloves became adults who lose valuable time and energy looking for their keys, cell phone, wallet or tax papers.

Costs of the Disorder

Undiagnosed and untreated, this disorder can wreak havoc on every area of life. One study done at Harvard estimated the cost to the United States for judicial, medical and workplace problems at US$77 billion per year ("ADHD Costs U.S. Nearly $77 Billion Each Year" 2005, May 23; "ADHD Costs USA More Than Drug Abuse and Depression" 2004, September 12; Biederman 2008, cited in Weiss 2008, November). A report by the British Columbia Medical Association suggested that undiagnosed and untreated ADHD/ADD costs that province half a billion dollars a year (British Columbia Medical Association 2009). Extrapolated across Canada, that's close to the per-capita costs shown in the Harvard study.

The good news is that this is a disorder that responds well to treatment. Getting a diagnosis and understanding what this disorder is and what it isn't can be transformational. I know this first hand as I was diag-

nosed when I was 47. About one in 25 North American adults have ADD. Most of them are unaware of it and therefore do no seek help. (Kessler, Adler, Barkley, Biederman, Conners, Demler et al. 2006)

Understanding and Education

Unlike many other mental health issues, ADD is not an illness. It's not something you catch or a state you fall into, like depression. ADD runs in families; it's genetic. We "ADDers" are born this way. When you have ADD, it is all you have ever known. It is normal. You feel like you're just who you have always been – it's the world that is confusing, frustrating and slow.

The first identification of a gene identified as a marker for ADD, called *DRD-4.7*, occurred in the late 1990s (Hamarman et al. 2004).

It's a gene involved in producing dopamine. And, not surprisingly, ADD medications help your body produce slightly higher levels of dopamine and another chemical called norepinephrine. It seems those with ADD are slightly short in these chemicals, just as people with depression seem to be low in serotonin.

Another challenge to understanding what's going on is that the "impairments" are not exotic or unique to ADD: "trouble completing tasks," "appears to not listen," "forgetful, easily frustrated, easily distracted" and "talks too much, intrudes and interrupts." Many of these overlap depression, anxiety and other issues. That's why it's difficult to diagnose.

Many people struggle with distraction. Every student tunes out in class, now and then. But studies have shown that students with ADD stop paying attention two and half times more often (Dr. S. Kurtz, personal communication, September 2008). Whereas their peers tune out for 20% of the class, kids with ADD miss half of what's said.

Studies have shown that children with ADD who are undiagnosed and go untreated have far more fights, accidents and visits to the emergency room. They have fewer friends, lower self-esteem and three times the rate of drug use (NICE 2006, cited in Weiss 2008, November). By their teenage years, they have far higher rates of sexually transmitted infections, unplanned pregnancies, automobile accidents and dropping out of school (Pelham 2007, cited in Weiss 2008, November). In adulthood, they have dramatically higher rates of addiction, job loss and even incarceration. They're nine times more likely to be in multiple car accidents – and to be at fault. They have higher rates of divorce, and the household earnings are between $8,900 and 15,400 a year less than those in non-ADD households (Biederman 2008, cited in Weiss 2008, November). Keep in mind, though, that all of these statistics refer to ADD that is *undiagnosed and untreated*.

> *When you have ADD, it is all you have ever known. It is normal.*

Studies and first-hand experience show that the core symptoms of ADD have a huge response rate to treatment (Barkley 2006, cited in Weiss 2008, November; Jensen and Cooper 2002). When my colleagues and I began constructing our interactive website, TotallyADD.com, we interviewed a number of experts. Several admitted that they had been drawn to specialize in ADD after seeing how patients turn their lives around: "It's so rewarding."

The Good News

This brings us to the potential and the strengths. Many people with ADD are wildly successful. You may work for one of them. When people with ADD understand how

they are wired, they can win Stanley Cups, Grammy Awards or Oscars, or set sales records. They can transform the world through new technologies, become powerful problem solvers or be the people we turn to in a crisis.

The ADD brain loves novelty and excitement. Introverted people with ADD find novelty in lavish daydreams. If they harness that creativity, they can become prodigious artists.

> *You feel like you are just who you always have been – it is the world that is confusing, frustrating and slow.*

For extroverted people with ADD and also issues with hyperactivity or impulsivity, the novelty may come from trying new things, moving forward, following their curiosity. They start up an innovative business; and as soon as it's thriving, they know they must hand it off to a "manager" who will not keep tinkering and thereby mess with success. This leaves the "innovators" free to do what they do well – go exploring and start another new enterprise.

This craving for novelty explains why people with ADD are drawn to high-risk jobs such as police, firefighter, paramedic or ER nurse. We make great pilots, entertainers, comedians, journalists and soldiers. You'll find us thriving on the stock market floor or in a Silicon Valley laboratory. Children with ADD who are over-talkative and interrupt can find great success in adulthood as lawyers, public speakers, comedians or disk jockeys – even auctioneers!

When we are engaged in something we like, something we find fascinating, we can stick with it far longer than our peers. This is one of the many contradictions of ADD. We can be super-focused or hyper-focused. Alas, not always on what's urgent, or for the right length of time.

We are sprinters, not marathoners. We are better at seeing the big picture than details. We can be lateral thinkers and problem solvers.

When we find a workplace that recognizes our strengths and a boss who offers frequent positive feedback, we soar. When a workplace makes accommodations for ADD, it gains employees who can produce powerful results. For example, take the case of a boss who is frustrated because his best salesperson (who, incidentally, has ADD) is always late with invoicing. Rather than trying to force the talented salesperson to do the paperwork, he gives her a part-time assistant to handle the routine billing. This frees up the salesperson to do what she does best – make sales!

So many adults who have ADD live in luxurious mansions. Many others are homeless. Adults with ADD seem to be wildly successful or constantly struggling with failure. As Dr. Umesh Jain, an expert in ADD, explains, "It's like a reverse bell curve. I have clients who are millionaires, Oscar winners and top athletes. And I have clients who have never held a job for more than two months" (personal communication, September 2008). Success hinges on seeking a reliable diagnosis, educating yourself about what ADD is (and is not) and then taking it on. Accepting this unique mindset. Understanding the impairments and appreciating the potential. Impulsivity becomes creativity. Restlessness becomes energy. Risk taking becomes innovation.

The Key Is Education

Educating yourself is important because you know yourself best. I am shocked by how many people who come to our website, TotallyADD.com, and share their stories in our forums about being misdiagnosed with depression or anxiety disorder. Many people spent years, even decades, getting treatment,

taking medication and wondering why they never really got better, only to find out later in life that they had undiagnosed ADD. On the surface, ADD can look very much like depression, anxiety or even bipolar disorder. And, in fact, because many people with ADD struggle against a hidden saboteur their whole lives, they often do end up dealing with depression or anxiety in adulthood.

When I was producing my first television project on my own, *History Bites*, I used to lay awake at night. The fear? "How will I manage budgets with hundreds of thousands of dollars when I can't even sit down and figure out my own GST?!" It was only when I received a diagnosis of ADD and I did the reading and really understood what was going on, that I had some genuine power. Suddenly my failures made sense. And so did my successes. No wonder I was a skit comedy writer and couldn't bear the thought of writing a long screenplay! When I began treatment, including medication for seven months, I was able to put strategies in place and build habits that made me just as productive and creative, with far less wear and tear on my soul. When I'm "on," I feel like a baseball batter who is in the zone, standing in the batting cage as one ball after another flies at me and I hammer it out of the park: "Done! What next? Right … there, done! What next? Great … I'm done! What next?"

I waste far less time spinning my wheels. Now when I get stuck or lost or distracted, I have learned how to get back on track, fast. When I have a large, complex task ahead of me, I have learned how to break it up into easy-to-manage steps. The strategies for managing ADD can work for anyone. But they are especially powerful for our particular mindset.

So while people with ADD are leading the way in many different fields, what they do to manage their symptoms is actually valuable for anyone living in today's fast-paced, fractured, noisy, multi-tasking, overwhelming, understaffed, deadline-driven society.

Welcome to our world.

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This special issue focusing on mental health in the workplace is dedicated to the memory of Barbara Beckett, PhD, who was the assistant director of partnerships and government affairs at the Canadian Institutes of Health Research's Institute of Neurosciences, Mental Health and Addiction. She tirelessly supported this national research agenda with unfailing cheerfulness and optimism. She was a wonderful colleague. She is missed.