Organizational Interventions and Mental Health in the Workplace: A Synthesis of International Approaches

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Organizational Interventions and Mental Health in the Workplace: A Synthesis of International Approaches

STUDIES AND RESEARCH PROJECTS

REPORT

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SUMMARY

This report examines current knowledge on *organizational* intervention programs and strategies aimed at mental health (stress) in the workplace. Specifically, the three objectives of this report are to:

1) Present a framework that meaningfully captures and explains the types of organizational intervention methods

2) Review existing research evidence of the effectiveness and efficiency of these organizational interventions

3) Propose some potential applications and areas in need of research or attention for Quebec organizations

Method: In order to address the objectives, an extensive literature review using nine search engines (e.g., PsychInfo, Medline) and dozens of key terms was conducted. We also contacted researchers and examined key reports from relevant agencies (e.g., NIOSH; WHO). The main goal of this search was to uncover any papers, articles or reports since 1980 that refer to studies conducted on stress or mental health intervention in the workplace, any reviews of such studies and any conceptual or theoretical papers reflecting on the topic. We found few rigorous intervention studies; which agrees with recently conducted reviews by other research teams worldwide. However, a growing literature on the topic provided a rich base to address the three objectives.

Objective 1: We identified two types of frameworks to classify interventions: process models and content models. *Process models* explain the intervention process or strategy. These models communicate the "do's" and "don'ts" or blueprints of interventions ranging from the early stages of diagnosing the stressors in the workplace, through conducting changes and evaluating the results. We find them to be potentially useful in helping organizations follow critical issues as interventions unfold. *Content models* or *taxonomies* on the other hand are more concerned with the elements of the job, person or organization that need to change to address the problem of stress. These taxonomies use features that *characterize* the intervention such as the popular primary, secondary and tertiary classification of interventions. They are useful for listing any number of intervention strategies found in organizations (e.g., EAPs, Job design) but are seriously lacking in their ability to help organizations chose which type of intervention best deals with identified problems.

To better guide research and interventions, we propose an *evidence-based framework* as a hybrid model. Evidence-based practices or interventions are quickly gaining momentum in numerous medical and social fields. Put simply, they prescribe interventions based on evidence. Such requires a clear explanation and evidence of the sources of stress (i.e. stressors) and their consequences (i.e., stress & strain) so as to then propose and evaluate interventions that are expected to deal with the problem in its entirety. Within stress context, the framework communicates for each organizational stressor the evidence that exist for interventions relating to it as a source of stress. It is an improvement over the content models that simply list intervention

methods with little to no reference to the stressors or stress symptoms it intends to address, and it requires that we take account of the strength of existing evidence.

Objective 2: In concordance with other reviewers, our search turned up limited rigorous studies that evaluate organizational interventions. Some conclusions are possible. If we bunch interventions into a "broad" grouping, the limited research does suggest success for "Socio-technical" interventions. Interventions of this type center on objective changes in the work environment which include elements related to job design in most instances. So changes in workload and schedules, for instances, seem to have important effects on well-being and performance (Rick et al., 2002). Evidence is mixed for psychosocial types of interventions. These are "approaches to stress reduction intended to change employees' perceptions of the work environment through strategies such as increasing participation, communication and social support, reducing role ambiguity and conflict, and enhancing control over work tasks" (Parkes & Sparkes, 1998; p.3). Our opinion is that there is too little research to form firm conclusions. This is particularly true if we follow an evidence-based approach wherein the literature needs to be considered for each stressor. We warn that the lack of evidence is in no way indicative that interventions do not work, but rather points to the need for more research given that promising results have emerged in our search.

Objective 3: Several recommendations are made in the report that relate to [i] the research needed, [ii] concerns about study measurement and design, [iii] practical consideration for organizations, and [iv] issues to enhance research excellence.

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1. INTRODUCTION

Concerns about mental health issues at work are increasing worldwide. It is argued on a global front that the loss of productivity is one worry; however the looming human and financial costs associated with disability that extend to the individual, family, organization and society (e.g., Harnois & Gabriel, 2000). In Canada, the direct and indirect costs of stress-related problems at work were estimated to have totaled 14.4 billion in 1998 (Stephens & Joubert, 2001). Another study estimates that absenteeism due to stress due to work-home conflict costs Canadian employers 3.5 billion dollars annually (Duxbury & Higgins, 2001). In a second report published by the Public Health Agency of Canada, the authors estimated the costs to have risen to a new total between 6 and 10 billion (Duxbury & Higgins, 2003). In fact, any cursory review of the literature turns up staggering statistics that mostly suggest workplace stress is a significant societal issue.

In the broad sense of the word, mental health at work can include any number of problems relating to a persons psychological well-being and can thus be argued to emanate from any number of sources not exclusive to the workplace. Nevertheless, research measuring various sources of stress provides convincing evidence that the workplace remains a major source of psychological stress after controlling for other known sources (Marchand, Demers & Durand, 2005a; Marchand, Demers & Durand, 2005b). Indeed, stress is a growing problem that employers as a group are in need of reckoning with due to the impact that it has on the working population. For example, in one Quebec study (ESS98), workplace disability claims related to mental health are estimated to have gone from 7% to 13% between 1987 and 1998 and the length of absences due to such claims has tripled in duration (Vézina & Bourbonnais, 2001).

The problem has been taken up in several European countries where there is evidence of various policies, initiatives and research agendas underway (e.g., Cartwright, & Cooper, 1996; Cox, Leka, Ivanov & Kortum, 2004; Kompier, 2003; MacKay, Cousins, Kelly, Le & McCaig, 2004; Oeij & Morvan, 2004; Schaufeli & Kompier, 2001). In Canada, or Quebec in particular, there is not yet evidence of this type of concerted research and policy activity. Within Quebec particularly, there is evidence of summary writing on problems of stress and potential solutions for employers (e.g., Brun, 2004), but large scale research on intervention strategy is lacking excepting for the occasional study (e.g., Bourbonnais et al., 2005). It appears to be the time for Quebec employers and researchers to familiarize and position themselves with the issues within this international backdrop of growing concern, research and public policy on work-related stress and mental health.

The topic of mental health in the workplace is large and no single inquiry can tackle all parts adequately. Accordingly, this report examines current knowledge on *organizational* intervention programs and strategies aimed at mental health (stress) in the workplace. It is not the intention within this document to examine individual stress management or methods of *coping* except where comparison with organizational programs and strategies is relevant. The report derives from a research mandate with the *"Institut de recherche Robert-Sauvé en santé et en sécurité du travail"* (IRSST) to highlight the current state of knowledge relating to organizational interventions that are aimed at mental health in the workplace. The agency hopes to develop a better understanding of the area with the intention of considering policy for research priorities

and this report will, in part, help this initiative through three objectives. We offer a more detailed examination of how we define the concepts to be examined in this report later.

The three objectives are:

4) Present a framework that meaningfully captures and explains the types of organizational intervention methods

5) Review existing research evidence of the effectiveness and efficiency of these organizational interventions

6) Propose some potential applications and areas in need of research or attention for Quebec organizations

1.1   Organization of Report

The objectives were tackled in the first phase through a concerted examination of the literature relating to mental health, stress and organizational interventions aimed at such problems. Our initial findings are outlined in several sections of this report. The report begins with an overview of the theoretical framework underpinning our conceptualization of stress and mental health. This allows all readers, familiar or new to the topic of work-related stress, to develop a common bearing for the concepts and terminology. That section is followed by a brief methods section wherein we discuss the scope of our literature search for the purposes of this mandate. This search led to the development of the report's core elements contained in both the results and recommendation sections. The results section overviews basic frameworks, models and strategies with our commentary and criticism on their utility. We will then propose how a framework might best "evolve" from this review for the purposes outlined in objective # 1. The results section will then end with a brief summary of evidence related to objective # 2. The final section of the report will close with recommendations meant to guide the efforts of research and practices within Quebec. In a practical sense, we try to address those factors that will assist organizations and researchers to make changes that are likely to have a positive impact on mental health in organizations (Vézina, Bourbonnais, Brisson & Trudel, 2004).

1.2   Preparation of the Report

The protocol for this grant intended for a preliminary report to serve as a discussion piece during a consultative symposium with invited international, national and local experts. This symposium has taken place and the report hereafter includes commentary received from these participants.

2. CONCEPTUAL FRAMEWORK

Defining "mental health" in the "workplace" can be a complex undertaking. This is because it is an all-encompassing concept that is best understood as a domain of study wherein the focus is on individual's psychological health and well-being in relation to work. This recognizes that mental health potentially includes a number of psychological conditions and disorders that vary in their origin, effects and characteristics (e.g., Brun, Biron, Martel & Ivers, 2003; Thomas & Hite, 2002). Hence, to say we are studying mental health at work communicates only the equivalent of saying we are studying physical health, which is not a very useful concept on its own. Accordingly, we specify our focus within this larger scheme to be occupational stress. What is intended by the term occupational stress is developed in the sections that follow.

The tradition within this occupational stress literature suggests that good or poor mental health is a potential consequence of *stress* experienced at work (Smith, Sulsky & Uggerslev, 2002). Research within this tradition occasionally accounts for "other" factors such as individual differences and preexisting conditions or tendencies that might *also* contribute to mental health decrements. However, the main focus remains on understanding the multitude of factors that potentially contribute to observed stress in individuals at work and in relation to work.

It is an especially immense area of study with many sub-topics spanning thousands of published works. To illustrate, a computer search using "Occupational Stress" as a term in the PSYCHINFO search engine will generate nearly 11,000 "hits" of scholarly work since 1960. Particularly noteworthy is that this search is narrowed only to *keywords*, thus leaving out many other relevant articles that may have listed other related terms as the keyword instead of occupational stress (e.g., workplace stress). To help us all navigate with a common framework within this vast literature, we set a conceptual stage in the following section.

2.1 Occupational Stress and Mental Health

Vast as it is, the literature on occupational stress can be summarized for our purposes using the framework represented in Figure 1. This framework, which is a composite of similar others in the literature, presents stress as a process with three major conceptual phases that are additionally influenced by personal, social and environmental factors. In its most basic form, it can be referred to as the stressor--strain approach to occupational stress (Hart & Cooper, 2001) and it serves our purpose of simplicity at this stage.

The major phases include **[a] stressors** that are conceptualized as identifiable, stress-inducing agents that exist in the organizational and job environment, **[b] stress** which is the psychological interpretation and experience of these events by an individual as stressful and **[c] strain** which is a consequence to prolonged or acute stress in the form of behavioral, psychological, physiological and organizational outcomes. From a mental health standpoint, it is psychological strain that might mainly interest us (e.g., burnout, psychological distress), but it is understood that other health outcomes may result from or co-occur with stress (*behavioral* e.g., alcohol and drug abuse; *organizational* e.g., absenteeism, turnover; *physiological* e.g., ulcers).

This model also includes variables that arise from the individual or their environments that can consequently influence the stress process. We often refer to these variables as **[d] moderators** because they can influence the nature of the relationships observed in the stress process. These influences include, for example, individual characteristics such as personality and preferred coping styles, as well as environmental factors such as the support received from others and the culture of the organization (e.g., Hart & Cooper, 2001; Jex & Beehr, 1991; Kahn & Byosiere, 1992).

Figure 1 also contains reference to primary, secondary and tertiary prevention mechanisms. At this point it is useful to visualize these prevention categories and some sample strategies falling within each. It should help us understand that intervention strategies can be aimed at different segments of the stress process. We will examine some of these in more detail in the next section. Moreover, later in this paper we will turn our focus to frameworks that contain these prevention concepts and build upon them for the purposes set out in the objectives, understanding that they refer back to the basic stress process that we will now briefly review.

MODIFYING VARIABLES (EXAMPLES)
   [1] Individual Differences (e.g., personality; ability)
   [2] Organizational factors (e.g., social support; communication; policies)
   [3] Extra-organizational factors (e.g., life stressors; family support)

Stressors
Factors in the work environment that create demands on the individual (e.g., noise, violence, workload, work pace, role incongruence, physical challenges, lack of control, interpersonal tensions)

Stress
Experience and perception of demands from the environment Involves evaluations of threat to self, coping capability, and resources available for responding to the demands of the environmental stressor

Strain
Outcomes of stress involves immediate physical (e.g., fatigue, tension) and psychological responses (e.g., anxiety) and longer term effects (i.e., psychological; behavioral; physiological; orga nizational)

Primary Prevention
Tries to eliminate or reduce sources of stress in the workplace (e.g., job design, Org. structure, flextime)

Secondary Prevention
Tries to identify and make people aware of stressors and how to deal with them (e.g., wellness program, stress management, time management)

Tertiary Prevention
Focus is on recovery from stress and strain (e.g., Employee assistance program, counseling, rehabilitation classes)
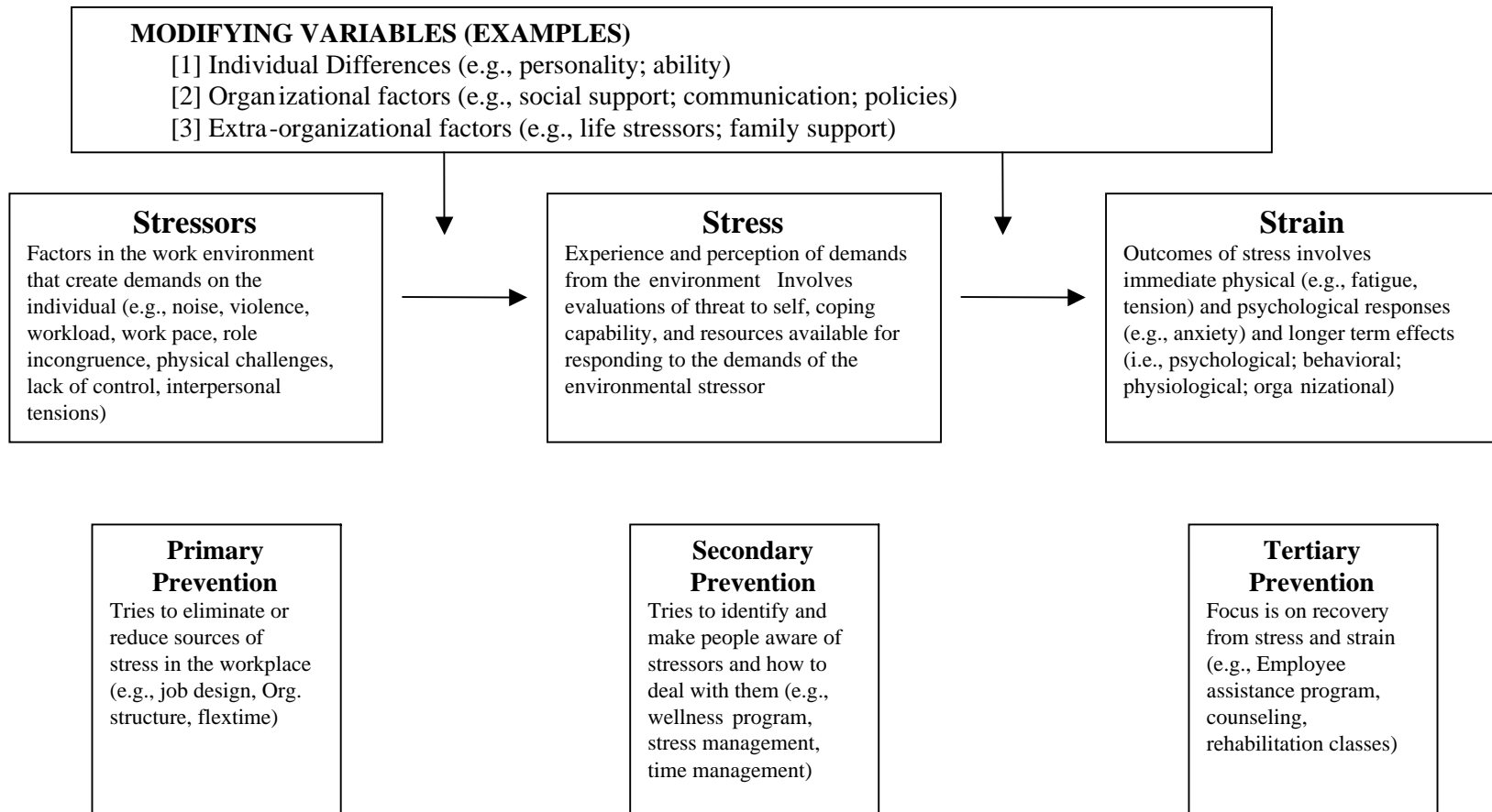
Figure 1   Stress Process

2.2   Stressors (Stress agents)

Stressors are variously referred to in the literature as psychosocial risk factors, sources or stress and stress agents. Sometimes they are simply compounded with the term stress when focusing on the experience—understand through all this that something "causes" stress. Regardless of the debate on this terminology, scholars are in general agreement that there are known sources of workplace stress (Kahn & Byosiere, 1992). These sources or factors are typically categorized as emanating from the work itself, one's role in the organization, career development issues, the home-work interface and other organizational factors such as structure and politics (e.g., Cooper, Dewe & O'Driscoll, 2001; Murphy, 1995). Slightly different terminology may be used elsewhere; such as the demands, control, support, relationships at work, role, change and culture used in one report by the Health and Safety Executive (for discussion, see Mackay et al., 2004).

Nonetheless, these sources of workplace stress are understood to exist with some consistency across jobs and are prominently referred to by National Health and Safety agencies in North America (i.e., Canadian Centre for Occupational Health and Safety [CCOHS]; National Institute for Occupational Safety and Health [NIOSH]) as factors to be examined and dealt with in the workplace. For illustration purposes, Table 1 presents these factors as reported by the CCOHS on their website.

Table 1   Sources of Job Stress Referred to by the CCOHS

(http://www.ccohs.ca/oshanswers/psychosocial/stress.html)

Job Stressors	Examples
Factors unique to the job	• Workload (overload and underload) • Pace / variety / meaningfulness of work • Autonomy (e.g., the ability to make your own decisions about our own job or about specific tasks) • Shiftwork / hours of work • Physical environment (noise, air quality, etc) • Isolation at the workplace (emotional or working alone)
Role in the organization	• Role conflict (conflicting job demands, multiple supervisors / managers) • Role ambiguity (lack of clarity about responsibilities, expectations, etc) • Level of responsibility
Career development	• Under/over-promotion • Job security (fear of redundancy either from economy, or a lack of tasks or work to do) • Career development opportunities • Overall job satisfaction
Relationships at work	• Supervisors; coworkers ; subordinates • Threat of violence, harassment, etc (threats to personal safety)
Organizational structure/climate	• Participation (or non-participation) in decision-making • Management style • Communication patterns

Adapted from: Murphy, L. R.,(1995) " Occupational Stress Management: Current Status and Future Direction's. *Trends in Organizational Behavior, Vol. 2*. p.1-14.

Understanding these factors is vital to the effective development of interventions. The sources of stress are a logical point of intervention for organizations seeking to reduce stress at work. Indeed, we will see later that several interventions efforts are focused on this element in the stress process, particularly primary interventions. An agency concerned with primary prevention might be particularly interested in this segment of the process. However, we will also see that workplace stressors have multiple pathways and patterns of influence on health and we therefore need to consider the full process of stress to effectively intervene. Focusing only on the stressor may not produce the expected results. In a recent review of this issue, it is argued that stressors can have an impact on health through [1] combined effects [2] individual differences [3] indirect or mediated links and [4] non-linear processes (Rick, Thomson, O'Reagan & Daniels, 2002).

Research has thus far been quite good at documenting the existence of such stressors but it seems that much research remains necessary to map out the various ways that these stressors act and interact in their creation of the stress-related outcomes. In part, this will come from increased clarity on the relationship that stressors have on strain through the stress process described next.

2.3   Stress

Stress is an important intermediary phase in the stress process which can be short or long in duration, depending on the nature of the stressor experienced. During this phase a complex dynamic of human and environmental factors combine to create the stress experienced. Stressors at work can ultimately create consequences for individuals, but how these consequences are arrived at need to be understood from a human processing and environmental influence outlook (e.g., French, Caplan & Harrison, 1982; Lazarus & Folkman, 1984). This perspective adds caveats to our understanding of interventions aimed at work-related stress.

To the extent that perceptions play a role in the stress process, we need to specificity a full theoretic development of interventions that capture all elements. Indeed, this adds to the general observation on intervention research that theory needs to play an important role in advancing our knowledge (Hurrell, 2005; Vezina et al., 2004). The specific focus at this point in the model is the implicit belief and recognition for interventions that perceptions of stressful circumstances at work are equally important to the objective factors that create them.

To this end, various theories are useful in explaining the mechanics of this stress phase (e.g., Cooper, 1998) and are useful to setting-up successful intervention efforts. For illustrative purposes, we outline in Exhibit 1 four such theories that researchers might explore because of their healthy base within the stress literature. Research on interventions would ideally be connected back to an existing or maturing literature on the stress process embodied within these theories.

EXHIBIT 1: Four theoretical positions illustrating the relevance of theory for interventions

- The role of the **stress appraisal process** outlined by Lazarus and colleagues is an example of a model that has important implications for explaining the interpretive process that individuals undergo when stressors appear in their environment and they ultimately respond to them based on a predicted mental and emotional appraisal processes (e.g., Lazarus, 1990; Lazarus & Folkman, 1984). For example, it might be expected that changes to organizations and jobs (stressors) would have important impacts on stress because it is identified as the "source", but this change is likely to be true and take hold to the extent that people appraise the changes as betterment and that threats to being able to cope with the work environment are indeed removed. In other words, objective change may have to be accompanied by personal conviction in that change. This theory has over the years proven to be a worthy method of understanding and modeling stress.

- Another influential model is the "**Demand – Control Model**" (e.g., Karasek & Theorell, 1990; Karasek, 1979) from which many definitions of stress are derived. This model has been useful in modeling the notion that environments place demands on individuals and that stress will emerge to the degree that there is a gap in available control that the individual has within the environment--with greater control theoretically negating the harmful impact of the demanding environment. In most respects, it complements the appraisal process just reviewed. What it adds, among other things, is the specification of autonomy and discretion as important elements to being able to cope with stressors or portions of it that may remain even after primary intervention.

- The "**Effort-Reward Imbalances**" at work model adds a slightly different perspective to the previous theory for viewing the point at which emotional distress can result from work (e.g., Siegrist, 1996; Siegrist, Peter, Junge, Cremer, Seidel, 1990). In this model the stress can result from imbalances that are created when the high effort one displays at work are not reciprocated with equally high gains in the form of money, self-esteem and status. The effort is seen as a cost and the reward as a gain; when there is an imbalance there is a greater change of autonomic arousal and associated strain (Siegrist, 1996). The most important thing with this theory, in complement to those we have seen, is the introduction of a "social" or "sociological" component to stress considerations.

- **Conservation of Resources Theory** is among the newer models of stress wherein it is proposed to fill the gap between environmental and cognitive theories of stress (Hobfoll, 1989). The model is based on the assumption that people work to protect and build resources and that any threat of loss of valued resources will produce stress (Hobfoll, 2001; 1998; 1989; 1988). Individuals are thus driven to preserve or build resources and to avoid circumstances that would deplete them, becoming stressed if these circumstances occur and persist. In this theory, Hobfoll (1989) explains these resources to consist of objects (e.g., home, car), conditions (e.g., seniority or tenure at work), personal characteristics (e.g., coping skills, influence) and energies (e.g., time, money and knowledge). Although newer, this theory is well articulated and provides for clear tests of its propositions.

2.4 Strain

The consequences of exposure to stressful events at work on the short, medium and long term are often referred to as strain. This strain can be categorized by the type of consequences that it creates with a common scheme being the [1] psychological, [2] behavioral, [3] physiological and [4] organizational categories (e.g., Cooper, Dewe, O'Driscoll, 2001; Jex & Beehr, 1991). Strain is clearly a complex process within its own that has been bundled into one concept for practical purposes. It is not our intention to unravel this complexity but only to recognize that several "outcomes" in the short to long term develop as result of stress at work.

Within the intervention sphere it would be the tertiary intervention strategies that are of concern at the strain stage. This would include strategies such as employee assistance programs (EAPs), counseling, therapies, debriefings and treatment from physicians, among others. The concern at this stage is usually restorative and related to repairing harm to enable individuals to continue working or return to work. Such programs are not a preferred method for combating mental health problems relating to work. They are clearly necessary, however, understanding that total irradiation of the causes rarely happens.

2.5 Moderators

These variables can modify (augment, reduce, transmit) problems or symptoms of stress experienced by individuals through a variety of means and mechanism that are beyond our immediate consideration. These variables are not thought to be responsible for observed stress, but rather contribute to the experience (e.g., intensity, sensitivity) of stressful situations such that objectively stressful situations may vary across individuals and contexts because of their presence.. These additional factors remind us that stress is a complex process with various mediating and moderating factors and that we should guard against simple cause and effect assumptions and solutions when setting-up interventions (Rick, Hillage, Honey & Perry, 1997).

Moderators can be organized in several ways, but they are commonly grouped into one of three forms: [1] Personality and demographic [2] Situational and [3] Social (Cooper, Dewe, & O'Driscoll, 2001). Personality characteristics frequently studied as moderators include Negative Affectivity, Type A behavior, Hardiness, Locus of Control and Self-Esteem (e.g., Cooper, Dewe, & O'Driscoll, 2001; Spector, 2003; Jex & Beehr, 1991; Kahn & Byosiere, 1992). Situational moderators typically include variables such as discretion or authority on the job (e.g., Cooper, Dewe, & O'Driscoll, 2001), but can include other situations such as trust in management (Harvey, Kelloway & Duncan-Leiper, 2003). Social variables include the various types and sources of social supports one can receive to presumably diminish the effects of stress at work (e.g., Kahn & Byosiere, 1992; Vaux, 1988). An important note to make about these moderators, particularly the last two types, is that they are sometimes examined as stressors. That is to say that the lack of these things in the workplace is often studied as a source of stress in and of itself.

3.   METHOD: LITERATURE SEARCH

The literature review for this work was conducted over a six-month period (January 2005 to July 2005). The main goal of this search was to uncover any papers, articles or reports since 1980 that refer to studies conducted on stress or mental health intervention in the workplace, any reviews of such studies and any conceptual or theoretical papers reflecting on the topic. Starting in 1980 roughly covered work that has appeared since Newman and Beehr (1979) published a first review. Several search terms were used across various search engines. The search engines included the following: Business Source Premier, Current Content, Ebscohost, Medline, Proquest, Psycharticles, PsychInfo, Science Direct and Web of Science.

Table 2 represents the terms used through various permutations and combinations to examine the literature for relevant articles. Based on this search thousands of materials were initially found and then reduced to a listing of 600+ articles that had some relevance to the topic of workplace interventions and stress in the broadest sense. These materials were then obtained, examined and used to identify any additional materials that had not been turned up in the search.

Table 2   Key Search Terms Used

Attention	Organization
Burnout	Prevention
Circle of stress	Proactive
Ergonomics	Program
Ergonomy	Promotion
Family	Social support
Gratification	Stress
Initiative	Stress management
Intervention	Stress reduc* prog*
Life-circle	Stress support
Management	Work
Measures	Work family
Mental health	Work-life balance
Meta analysis	Work place

Additional items were also identified through government websites and broadcast e-mails to specialized groups, World Wide Web based engines (e.g., Google) and through personal contacts developed during the search effort. These strategies located a number of other research initiatives and health agencies also concerned with the same issues.

3.1   Analysis

As a result of this search it quickly became evident that few rigorous studies were being identified; an occurrence that is in complete agreement with detailed reviews recently conducted by other research teams worldwide. In fact, very little in this search would complement the studies already identified, detailed and thoroughly reviewed by other research teams in several independent literature reviews. The analysis therefore focused on a thorough examination of the project objectives through this existing literature, conceptual models and the several competent, detailed reviews recently conducted.

Objective # 1 calls for a meaningful framework that integrates intervention strategies. Accordingly, several frameworks were identified and are reviewed in the following section. Our analysis identified two broad classes of frameworks; referred to in this report as process models and content models. These models are examined with an eye for their usefulness at research and practice. The result is emergent framework for research founded on evidence-based practices. The process models are useful for practice and we believe are readily available in the existing literature.

Objective # 2 deals with evaluating the effectiveness and efficiency of organizational intervention strategies. As noted earlier, on this point there have been several thorough reviews already conducted with consistent findings. We report on these findings in summary in the closing of the next section.

Objective # 3 corresponds to the implications of our findings for Quebec research and organizational practice. In the recommendation and conclusion section, we examine these implications.

Symposium: A symposium was held on March 17th of 2006 at the IRSST offices in Montreal to review with experts a draft version of this report. Three international experts were invited to read the report and provide comments on its contents with reference to the three objectives. Their commentary along with that received from nearly two dozen other participants from Quebec Universities, members of the IRSST and representatives from the CSST were all integrated to formulate this final report. Participants invited to the symposium for commentary are listed in Appendix I.

4.   RESULTS OF LITERATURE SEARCH

Several frameworks have been proposed as a means of integrating intervention strategies. Over twenty-six years ago, Newman and Beehr (1979) conducted what is considered to be a first comprehensive review of the stress management literature and at that time presented a way of classifying intervention types. Elements of that method are still in evidence today and used for practical purposes within more elaborated systems of diagnosis and action (e.g., Cox et al, 2000). In fact, its elements are arguably part of other frameworks or models proposed recently.

Several researchers have examined the literature since the work by Newman and Beehr (1979) (e.g., Beehr & O'Driscoll, 2002; Burke, 1993; Caulfield, Chang, Dollard & Elshaug, 2004; DeFrank & Cooper, 1987; Giga, Cooper, & Faragher, 2003; Hurrell, 2005; Jordan, Gurr, Tinline, Giga, Faragher & Cooper, 2003; Ivancevich, Matteson, Freedman, & Phillips, 1990; Kompier & Kristensen, 2005; Parkes & Sparks, 1998; Quick, Quick, Nelson & Hurrell, 1997; Rick, Thomson, Briner, O'Regan & Daniels, 2002). These reviews vary in their depth, focus and purpose (e.g., individual versus organizational intervention focus; commentary on literature versus extensive review of literature). However, the conclusions reached are generally similar. Aside from some varying methodological and conceptual recommendations, they all agree that there is a need for much more empirical research to complete the picture of intervention effectiveness. There are signs of success for certain interventions types, but the level of support remains wanting. No where is this made clearer than in an earnest critique of the field by Briner & Reynolds (1999) wherein we find caution against letting optimism for future research and success confound with the current lack of bona fide empirical evidence of intervention success.

In conducting reviews or comment, several of these authors and others explicitly presented frameworks for organizing the types or forms of stress intervention strategies. In order to understand the diversity of models and address our first objective of how they might be useful to organizing the intervention strategies, we review them below. This detailed section includes a(n) [1] review of the difference between process and content models [2] examination of the process models [3] examination of the content models, and [4] a proposal that evidence-based approach can integrate the content models with evidence-based thinking for research purposes.

4.1   Frameworks

For the purposes of our review, at least two types of models can be identified as relevant to the understanding of stress interventions at work. There are the **process models** which explain the intervention process or strategy. These frameworks are largely similar to the change management models frequently referenced in the literature on organizational change; but here they have been adapted to the cause of stress intervention. These models generally communicate the "do's" and "don'ts" or blueprints of interventions ranging from the early stages of diagnosing the stressors in the workplace, through conducting changes and evaluating the results. These models do not usually presuppose the specific changes required. They focus instead on the steps involved towards implementing a useful system.
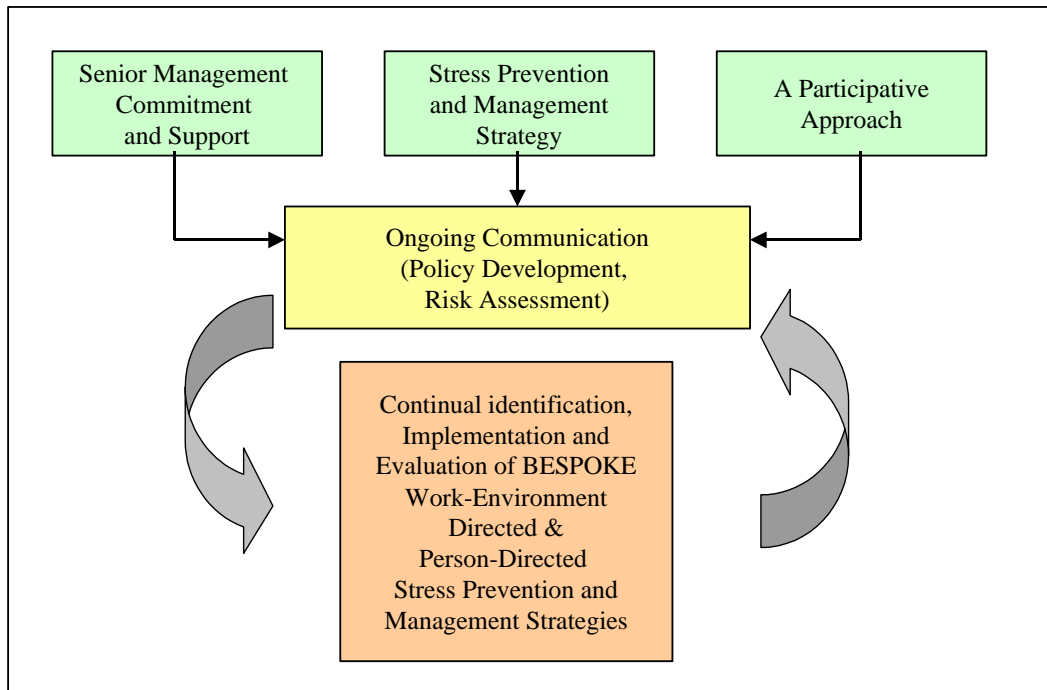
The **content models** or *taxonomies* on the other hand are more concerned with the elements of the job, person or organization that need to change to address the problem of stress. These taxonomies have for their purpose the classification of intervention strategies by some typology that *characterizes* the intervention. In this report we briefly review the diversity of these models and then examine more specifically what can be most useful to our purposes.

What we will ultimately suggest is that process frameworks are useful to *guiding* the practice within organizations of identifying and acting upon problems that are stress-related. The content frameworks show most promise in *guiding* research agendas on the topic of work-related stress, for they can act as a storehouse of knowledge in relations to the interventions. However, to be useful we will also advance that these models must be merged to and considered in tandem with an evidence-based approach to the topic to be truly useful and functional for research that informs practice.

4.2   Process Frameworks

The *process models* have a distinctive focus on the approach or steps taken to institute interventions for stress in the organization. Several models, frameworks or "philosophies" of intervention are present in the literature (e.g., Giga, Cooper & Faragher, 2003; Isreal, Baker, Goldenhar, Heaney & Schurman, 1996; Kompier & Kristensen, 2005). These process guides vary on the elements of focus in an intervention but they are all loosely consistent with models seen in the general management (e.g., decision making, change management) and health and safety literatures (e.g., risk assessment). Here we briefly illustrate several models understanding that others are complementary to these prototypes.

One approach to the intervention process is to isolate the activity from other organizational problem solving in order to study the specific issues. This is not to say that these models ignore other organizational processes (e.g., health and safety committees, policy etc.), but only that the conceptual focus is on the stress-related problem(s). Giga et al. (2003), for example, present a framework wherein it is emphasized that there is an overriding need for senior management support and commitment, clear prevention and management strategy that is paired with participation from the workforce in all efforts. This also requires on-going communication and development of policy which is linked itself to continual evaluation and implementation of strategies aimed at evolving issues. As illustrated in Figure 2, their strategy is based on the idea that there needs to be an on-going assessment of risks unique to the organization to ensure that strategies are appropriately designed and modified to meet particular circumstances. This is a holistic framework or philosophy of intervention because it does not prescribe specific step-by-step intervention strategy but rather a perspective that should permeate any particular steps followed.

Adopted from: Giga, S. I. Cooper, C.L. & Faragher, B. (2003) The Development of a Framework
for a Comprehensive Approach to Stress Management Interventions at Work. *International Journal
of Stress Management, 10*, 280-296.

Figure 2   Framework for comprehensive stress prevention

In other sources their may be a focus on specific steps involved in completing specific aspects of this process (e.g., Cooper & Cartwright, 2005; Cox, Griffiths, Barlowe, Randall, Thomson, Rial-Gonzalez, 2000; Kompier, Cooper and Geurts (2000). Cox et al. (2000) provide, for example, a detailed discussion of the steps inherent in assessing stress- related problems in the workplace as means to developing solutions and reviewing their effectiveness. They propose and discuss extensively the following: [1] identification of hazards [2] assessment of associated risk [3] design of control strategies (interventions) [4] implementation of control strategies [5] monitoring and evaluation of strategies [6] feedback and re-assessment of risk and [7] review of information and training needs for employees.

Similarly, Kompier, Cooper and Geurts (2000) provide their view of intervention requirements after reviewing several case studies and add what they call the "Big Five" success factors of stress prevention. Consistent with other writings and findings in the literature they suggest that successful interventions include: [1] systematic approach to the problem [2] proper diagnosis of the problem(s) [3] theoretically coherent package of intervention measures [4] participation from management and employees and [5] a sustained commitment from top management.

As can been seen, these models for intervention are focused on the problem of stress in the workplace. They understandably hope to illustrate the need to make careful work of interventions to properly target the problem and address all factors in the system that need to be considered. However, this process for intervention is examined in isolation of other managerial systems, particularly how psychosocial hazards may be viewed in a more comprehensive system as one among different types of hazards to be treated by health and safety committees or procedures.

One framework that represents the possibility for a more comprehensive coverage focused on integrating stress intervention more broadly with other health and safety concerns is the model presented by Israel et. al. (1996) and her colleagues. Figure 2 presents this model wherein Israel et al. (1996) demonstrate the potential for an integrated approach to stress management wherein psychosocial risks at work are considered within a Hazard framework along with other workplace hazards. This takes stress management out of an isolated examination of risk to one considered along with other risk hazards.

There could be several questions about the suitability of this and the previous models to guide interventions. For example, are H&S committees suitable for this task? Do psychosocial hazards get treated with less importance than other hazards? Many of these and other questions raised are clearly unaddressed and need research. For practice, however, both perspectives illustrate possibilities that are worthy of consideration and study by organizations. The models also provide us with consistent information in reminding organizations of the value of systematic assessment, intervention and evaluation of programs related to psychosocial stressors as they would for other risk hazards or managerial problems generally. The "content" of what gets changed or done to deal with stress is the topic of content frameworks.

A. Committee

Safety Committee

B. Identified Problem

- Lack of Committee Participation

- Lack of Goals and Structure

- Employee disbelief of management commitment to safety and health

C. Intervention Phase I

1. New membership
2. Set Goals
3. Subcommittee Formation.
   a. Infection control
   b. Accident Reporting
   c. Hazard Surveillance
   d. Waste & Hazardous Waste
   e. Effectiveness Review

D. Intervention Phase II

Task Forces formed to target specific problems. Such as:

- Needlestick Task Force

- Back Injury Task Force

- Violence Task Force

E. Identified Problem

Needlestick injuries: (Pre-intervention rate)

- Health Care Workers: 7.5/1,000 WFTE's

- Other Employees: 6.5/1,000 WFTE's)

(WFTE = Worked Full Time Equivalent Employee)

F. Intervention Phase III & Target of Intervention

- New sharps disposal system → Organizational Level

- Environmental modification - (placing sharps containers lower on walls.) → Organizational Level

- Needleless IV catheters → Organizational Level

- Personal Protective Equipment: provided and mandated (mangers held accountable) → Organizational/ Departmental Individual Levels

- Incentives for reporting (medical staff and employees) → Departmental/ Individual Levels

- Facility-wide video based training → Individual Level

G. Outcome Data

Needlestick Injuries (Post-intervention rate)

- Health Care Workers: 5.1/1000 WFTE (33% reduction)

- Other Employee: 3.6/1000 WFTE (45% reduction)

Adopted from: Isreal, B. A., Baker, E. A., Goldenhar, L. M., Heaney, C. A. & Schurman, S.J. (1996). Occupational stress, safety, and health: conceptual framework and principles for effective prevention interventions. *Journal of Occupational Health Psychology, 1,* 261-286

Figure 3   Israel et al.'s (1996) Overarching Conceptual Model

4.3   Content Frameworks

The *content models* or *taxonomies* found in the literature represent the organizational, job, individual or other content areas in which changes can be brought to mitigate stress at work. In their simplest form these models are a catalogue of such human resource techniques or programs (e.g., EAPs, Role Clarification, Job Design, Relaxation). They vary on the characteristics by which they categorize the strategies. In some cases, the classification lends itself to reviewing the major types of interventions in the literature because of a focus on main differentiating (theoretical) elements of focus. Such is the case with one classification scheme used in a report that has been widely cited in the literature. This report by Parkes and Sparkes (1998) divides interventions into two major types—Socio-technical interventions and psychosocial interventions. These intervention types have since also been used by others to summarize the intervention literature (e.g., Hurrel, 2005; Rick et al., 2002).

In this scheme, the *socio-technical interventions*-- which they also see as techno-structural—"are primarily concerned with changes to objective/structural aspects of the work situation (e.g., staffing levels, work schedules, company mergers, work patterns, staff meetings) which have implications for the stress, health and job satisfaction among the personnel concerned" (Parkes & Sparkes, 1998; p.3). They view these interventions as most likely to manipulate objective work conditions and therefore more readily amenable to systematic study. They might also be seen as consisting of mostly primary interventions focusing on the objective or stressor elements of the stress process.

Psychosocial interventions are "approaches to stress reduction intended to change employees' perceptions of the work environment through strategies such as increasing participation, communication and social support, reducing role ambiguity and conflict, and enhancing control over work tasks" (Parkes & Sparkes, 1998; p.3). They see these types of interventions as concerned with the perceived or "stress" portion of our model and not only the objective environmental changes that would typify the socio-technical interventions. Within this grouping they further differentiate between the Participatory Action Research (PAR) types of psychosocial interventions and what they call "other psychological interventions".

The *PAR methods* in contrast to other psychosocial interventions involve interventions wherein "employees actively participate in the identification of stress-related problems, and in proposing and implementing suitable interventions to alleviate them" (Parkes & Sparkes, 1998, p.3). This joint collaboration between management and employees can be manifested in numerous forms and is implicitly built in to the "process" models or philosophies we see in the literature. Indeed, the role of employee participation in enhancing management issues has been touted for some time and studies have been supportive of generally positive effects (Guzzo, Jette & Katzell, 1985). However obvious this may seem, we will see later that participation needs to be better understood in relation to stress interventions if we are to see such expected benefits. *Other* interventions included any study that did not fit these aforementioned descriptions.

Alternate schemes have been created for particular reviews such as that used by Beehr and O'Driscoll (2002). In their overview of the literature they group the intervention by its focus on one of six areas; [1] participation in decision making, [2] structural change, [3] ergonomic approaches, [4] role-based interventions, [5] social support, [6] providing information and [7] others. This type of taxonomy is most likely used by the authors because of a preferred division

it creates for them along conceptual grounds consistent with and meaningful to their task. Whether such a strategy or that used by Parkes and Sparkes (1998) are meaningful to how we should *conceptualize* the topic of interventions and thus study their effectiveness is an important question and leads to critical concerns. For example, one can argue that positive effectiveness evidence for "particular" interventions but not for others is partly due to the grouping in which we classify them. Hence it is reasonable to also consider other classification systems that attempt to provide conceptual or theoretical order to the intervention strategies based on traditions within the fields of health and safety at work.

These other models focus on characteristics that are common parlance within the field of health and safety at work. For example, Caulfield, Chang Dollard and Elshaug (2004) use a six cell approach to classify workplace stress programs. It relies upon the distinction between Primary, Secondary and Tertiary programs at organizational, individual and individual-organizational levels. Others also use variants of this approach by invoking the common primary, secondary and tertiary distinction (e.g., Cox, 1993; Cooper & Cartwright, 1997; Giga, Cooper & Faraher, 2004) or the individual, organizational and individual-organizational levels scheme (Jordon et al., 2003). These models present the intervention strategies in a way that communicates readily to most health and safety experts because they use a framework that has a fairly well-understood, though not universal, system—i.e., the three prevention stages or the level of intervention. Table 3 provides one example of intervention strategies categorized using the levels of intervention scheme.

Although sources are often in agreement on how to classify interventions using these schemes, there is variance between them in the classification of certain intervention strategies. For example, time management may be classified as an individual intervention in one source (e.g., Giga et al., 2003; Jordon et al., 2003) yet be seen as an individual-organizational in another classification (e.g., Caulfied et al., 2004). This may simply be an indication that intervention strategies are not mutually exclusive to categories. It may also point to the likelihood that we need to put less emphasis on such characteristics and how much they can inform us for the purpose of selecting an intervention.

Despite their intuitiveness, these models often do little more than state simplistic differences between interventions that do not appear useful in deciding upon intervention strategies, let alone evaluate their effectiveness. The taxonomy of this sort has been criticized for the simplicity of suggesting that solutions are readily identifiable or even "menu driven" (Cox et al, 2000). In the words of Cox (2000):

> If this approach were valid, and it is not, the informed organization would use a diagnostic tool to identify its main problem and then, consulting the appropriate menu, determine the single intervention (treatment) that would solve that problem. This, of course, is not what happens in reality. Organizations are complex, and their wider environment turbulent. It is naïve to assume that such a menu driven approach would ever be appropriate. (p. 44).

Table 3   Intervention Strategies by Level of Intervention

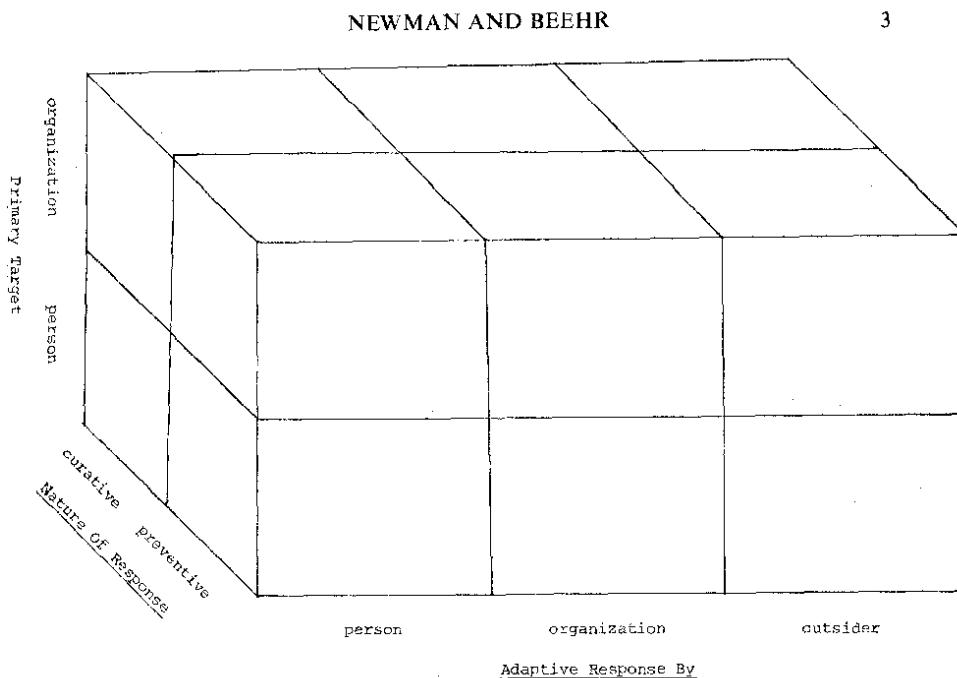| Organizational Level Programs	
Selection and Placement	Communication
Training and education programs	Job redesign / restructuring
Physical and environmental characteristics	Other organizational level interventions
Individual/Organizational Level Programs	
Co-worker support groups	Participation and autonomy
Person environment fit	Role issues
Other individual / organizational level interventions	
Individual Level Programs	
Relaxation	Exercise
Meditation	Time Management
Biofeedback	Employee assistance programs (EAP's)
Cognitive-behavioural therapy	Other individual level interventions

Taken from: Jordan, J., Gurr, E., Tinline, G., Giga, S., Faragher, B., & Cooper, C. (2003). *Beacons of excellence in stress prevention* (research report 133; Health and Safety Executive). London: Health and Safety Books.

Cox et al (2000) goes on to propose a balanced approach which seems reasonable and well-suited to many complex problems unique to each organization. He proposes a fairly elaborate risk assessment process that is useable by organizations as an approach to diagnosing problems and generating solutions. Within this approach it is understood that the solutions developed are likely to combine some variety of primary and secondary mechanisms for prevention and perhaps include some tertiary aspects where needed. Selecting a solution, it is proposed, can be built by reference to an older model by Newman and Beehr (1979) given slight alterations for the task. It provides some intuitive appeal that might make it useful for organizing thoughts about the problem. We briefly look at this model for the added detail it provides compared to the aforementioned models, understanding that it is useful as a tool for problem solving and that it is not a stand alone technique for picking the "solution" nor is it sufficient to classify all intervention strategies. For this latter point, we will argue in the section to follow that a more detailed evidence-based framework needs to be envisioned for better classification of methods.

The model by Newman and Beehr (1979) still stands among the more inclusive systems for understanding stress interventions, although one can effectively argue that it is also deficient in several ways including the oversight that stressors rarely operate in isolation of other organizational factors (Briner & Reynolds, 1999). This model is reproduced in Figure 4. It focuses on interesting elements of interventions that are not necessarily brought to attention in the other methods of classifying interventions. This model reminds of the importance in specifying the target of the intervention, the source of the intervention effort and whether the method is preventative or curative by nature. The preventative (primary and secondary prevention) and curative (tertiary prevention) elements are clearly contained by other models. What the model adds, however, is the notion that interventions have different sources and targets and that we must be careful not to confuse these. For example, when we speak of "organizational interventions" we need to be clear on whether the organization is the source of the intervention,

the target of the intervention or both. It is clear from looking at the classification schemes of other reviews that this adds confusion to the reviews.

All of these methods of classification provide helpful information, and some may even provide us with richer questions to ask during diagnosis (e.g., Newman & Beehr, 1979). However, alone they seem inadequate as a guiding framework for organizing knowledge in the area. An important attribute missing in the aforementioned classification approaches is a clear link to what (i.e., stressor, stress process, strain reaction or moderating variables) the interventions are intended to target. In order to fairly assess the success of interventions we feel it is important that there be clear targets or objectives to the intervention specified as part of the model that classifies them. In this regard, we believe that presenting the recent work at the Health and Safety Executive (HSE) in the UK as instrumental to furthering such a guiding framework.

Adopted from: Newman, J.E., & Beehr, T.A. (1979). Personal and organizational strategies for handling job stress: A review of research and opinion. *Personnel Psychology*, 32, 1-43.

Figure 4   Newman and Beehr Model of Workplace Interventions

4.4   Evidence-Based Framework

Recent work at the HSE has sought to elucidate the underpinnings of stressor—strain connections and in the process further elaborate the interventions that would be most apt to dealing with problem areas (e.g., Rick et al., 2002). The four basic questions driving the HSE study by Rick and her colleagues are represented in Exhibit 2. This undertaking is consistent with the idea of an *evidence-based approach* to building knowledge of effective stress interventions (e.g., Briner, 1997) that we are proposing as an essential starting point to building a

meaningful framework. Evidence-based practices or interventions are quickly gaining momentum in numerous fields for interventions related to problems as diverse as violence, psychopharmacology, anxiety disorders, social work, behavioral medicine and mental health among many others (e.g., Baez, 2005; Baldwin, et al., 2005; Lutzker, 2006; Rossi, Freeman, E., & Lipsey, 1999; Spring, Pagoto, Kaufmann, Whitlock, Glasgow, Smith, Trudeau & Davidson, 2005). The essence of the evidence-based approach is that that practice be based on the best available scientific evidence and that all recommended interventions be so informed. Where the information is lacking, there is an indication for research.

EXHIBIT 2: Objectives Driving the HSE

- **Question 1:** What proportions of the population are exposed to harmful levels of each of the nine stressors ?
- **Question 2:** What are the effects of the nine stressors on health, well-being and organisational performance ?
- **Question 3:** What are the mechanisms through which stressors have effects on health, well-being and organisational performance ?
- **Question 4:** What organisational activities reduce the levels of each of the nine stressors, and what are the subsequent effects on this health, well-being and organisational performance ?

Taken from: Rick, J., Thomson, L., Briner, R.B., O'Regan, S. & Daniels, K. (2002).
Review of existing supporting scientific knowledge to underpin standards of good practice for key work-related stressors-Part 1. Research Report 024, Health and Safety Executive, UK. p. ix.

For our purposes, this approach demands that we develop a clear understanding of the mechanisms involved in the stress process to then recommend which interventions are likely to be effective. In particular, given the range of psychosocial stressors identified in the literature, this requires that we be able to match particular stressors with intervention strategies given knowledge of the stressors. It is clear, for instance, that we are unlikely to propose the same interventions for violence-induced stress at work compared to workload-induced stress. The experiences are qualitatively different in the most obvious ways and will require that the organization intervene in ways appropriate to the particular problem. This is true of the many other stressors at work that may not differ in such obvious ways but nonetheless require interventions appropriate to the problem. The models and frameworks seen so far simply do not make the types of linkages proposed by the evidence-based approach.

Work in this direction has been undertaken by the HSE as reported by Rick and her colleagues (2002) as reflected in Exhibit 2. Such work requires that we first have a clear delineation and evidence of the specific stressor—strain pathways so as to then propose and evaluate interventions that are expected to deal with the problem. What we have in the classification schemes reviewed thus far is a method for typifying interventions strategies, but the characteristics used have no *necessary* anchoring in the problem they are expected to address. There may be an implicit understanding by interventionists or researchers that particular interventions address certain problems and not others, but this link is not explicit in these

models, nor are the strategies in these models necessarily evidence-based. This sort of preoccupation has also been referred to as a necessary "intervention development research phase" identified by the national occupational research agenda intervention effectiveness research team (Goldenhar, LaMontagne, Katz, Heaney, Landsbergis, 2001). That team outlined for health and safety interventions generally the need to first review existing data on the causes of the problem and interventions most likely to deal with them. What we are proposing is a framework that builds on the content models already reviewed and integrates their features with the systematic methods of an evidence-based approach.

In an evolved framework within the context of stress-related interventions we suggest that intervention strategies be organized according to the stressor(s) they can be expected to deal with. For example, a certain intervention may be a very appropriate primary intervention for a common set of stressors, but not be useful for others and this would be clearly specified as part of the framework. The intervention would be listed for those stressors for which it is useful. Conceptually, each stressor would have its own framework with the intervention strategies indicated in reference to specific characteristics common to stressors and interventions. Understanding the complexity of the stress process, the characteristics contained within this framework would include the types of information we have seen in framework so far and more (primary, secondary, tertiary function; level of intervention; other stressors that interact with the stressor; moderating variables; special circumstances, etc..). The information contained within the framework for each stressor would be augmented through an examination of existing evidence and/or collecting primary data where needed to further knowledge relating to particular stressors, processes and interventions. This process would be closely tied to the type of work carried out by the HSE and embodied in the report by Rick and her colleagues (2002). We see in the following example that preparing a framework from this approach will encourage an explicit examination of the strength of evidence in regards to particular intervention strategies with reference to the stressor.

4.4.1 Example of an Evidence-based Framework: Aggression at Work

We will outline the evidence building process of such frameworks shortly, but first let us consider and example to further our understanding of what this framework entails. In Figure 5, we provide a framework that builds on the idea that aggression and violence can be an important stressor at work and have an impact on mental health (e.g., Keashly & Harvey, 2005; Keashly & Harvey, 2006; Kelloway, Barling & Hurrell, 2006; LeBlanc & Kelloway, 2002; Mercy, Butchart, Dahleberg, Zwi & Krug, 2003; Ruyan, Zakocs & Zewrling 2000; Schat & Kelloway, 2005).

As the framework indicates, stressors need to be recognized for their various forms and dimensions. Aggression/Violence is not a straightforward concept. It has several forms, manifestations and likely effects as indicated in the framework and each needs to be understood for the effects it causes, the factors that give rise to it and the interventions that would therefore work. This is also readily true of other stressors as well; such as with work overload which can be divided into two basic (e.g., quantitative and qualitative) or more forms. In the case of physical violence, for example, we could even break it down further to include one of four common sources in order to set up the relevant safeguards that deal with the source with which we are most concerned. The information for interventions contained within these cells would be

weak or strong depending on the strength of existing evidence in the literature and such could trigger needed areas of research.

Figure 5   Sample Evidence Based Framework Workplace Aggression

Stressors : Forms of aggression[1]	Primary Prevention[2]	Secondary Prevention	Tertiary Prevention	Moderators?	Special circumstances?	Known consequences
Physical Aggression	Environment changes (shields, cameras etc)	Self defense training	Cognitive-behavioral therapy; EAPs, debriefing		Four types; each may require different environmental protections	Physical injury, PTSD,
Psychological Aggression (Harassment)	HR Policy, Culture change, education	Open Reporting channels	EAPs, Counselling, debriefing	Organizational Support +	May be hierarchical	Problem drinking, stress, somatic complaints, absenteeism, turnover, near miss accidents
Fear of Violence		Training to build confidence	Counselling, EAP's	Training +		Stress, somatic complaints
1. All entries would be referenced to specific work providing needed evidence and detail in support of points, including magnitude of evidence For example: Ruyan, Zakocs & Zewrling (2000) turn up little rigorous <u>intervention</u> research in a review of this area. 2. Any additional categories can be added, changed, or existing one modified as theory dictates.						

4.4.2   Building Evidence for the Framework in Quebec

This approach suggests a continual building process wherein new findings are integrated into the framework with modifications where needed. The framework is one that responds to five basic questions modeled on those used to guide the Rick et al. (2002) HSE report aimed at identifying the "best available evidence". Any useful framework, we believe, should be built on how well it summarizes this best available evidence, in order to see what we know, don't know and need to know. It provides a coherent instrument for organization essential knowledge. The first question is one of setting priorities and it interchanges with the second question; the remaining four questions help fill the framework once we have decided on the priority areas. These questions, slightly reworded from Exhibit 2 for our purposes, would be as follow:

[1] What Stressors are most common or damaging within the Quebec working population? This would help set research priorities.

[2] What percentage of the working population is exposed to these stressors?
We ultimately want to know how large the problem is and whether changes are later noticed.

[3] What are the effects of these stressors on health, well-being and organizational performance? In order to measure change we want to be sure we know what the stressors are thought to be causing and if there is clear evidence for this (in literature or our research).

[4] What are the mechanisms through which it has these effects? We need to know *how* the stressors are transformed into strain and whether there are added variables and processes considered to develop interventions that have the best chance of success.

[5] What interventions strategies work at dealing with the stressor and any of the identified corollaries? Once we develop interventions we need to evaluate them to be assured that the intended effects are occurring.

The point to be taken from such a framework and its line of questioning is that much of this evidence will be obtained through several means including partnerships with other research agencies who are conducting similar research, scanning of the published scientific literature on an ongoing basis and conducting one's own research to fill the voids. It is clear that given the number of stressors known to be problematic that priorities need to be fixed as to where knowledge building is most pressing. Building evidence in this way will provide employers with the kind of knowledge that is actionable and appreciated for its strengths, weaknesses and concerns.

4.5   Effectiveness of intervention strategies

The second objective was to provide information on the effectiveness of interventions. Given our suggestion of more elaborate frameworks, this is not an easy task for the work has yet to emerge for the specific purpose to which we would want to claim "interventions are effective and efficient". Initial work along evidence-based lines by Rick et al. suggests there is indeed limited research to form solid conclusions across stressors. Nonetheless, several other reviews have been conducted to date to evaluate the intervention types and their success. The overwhelming observation in most of these reviews is again that there is limited rigorous empirical literature upon which to base any firm conclusions, but some indications of success clearly exist (e.g., Beehr & O'Driscoll, 2002; Caulfield, Chang, Dollard & Elshaug, 2004; DeFrank & Cooper, 1987; Giga, Cooper & Faragher, 2003; Hurrell, 2005; Jordan, Gurr, Tinline, Giga, Faragher & Cooper, 2003; Ivancevich, Matteson, Freedman, & Phillips, 1990; Kompier & Kristensen, 2005; Parkes & Sparks, 1998; Quick, Quick, Nelson & Hurrell, 1997; Rick, Thomson, Briner, O'Regan & Daniels, 2002).

It is also important to note that the literature is not devoid of documented interventions. It is the lack of rigorous, scientific evidence that is wanting. The literature contains an abundance of case studies and correlation studies that are combined and treated by authors in interesting ways to make a case for certain fundaments of interventions (e.g., Cooper et al, 2000; Jordon et al., 2003; Kompier & Cooper, 1999; Taris et al., 2003). Vital for rich analysis and the development of intervention strategy, these types of studies are not as valuable to making empirical statements

about the etiology of stress and intervention strategy effectiveness. For that we must turn to empirical studies with rigorous design.

Those rigorous studies examined by recent reviews of the scientific literature on stress interventions provide some indication that there is promise for interventions. The conclusions that we draw from these reviews for our purposes are summarized in the sections to follow. The reader is referred to these sources for more detail and often meticulous study-by-study examination of the findings.

4.5.1 Socio-technical Interventions

Socio-technical interventions appear promising based on results of studies reviewed (e.g., Hurrell, 2005; Parkes & Sparkes, 1998; Rick et al., 2002). Studies on this intervention type have been found to be more "robust" (Hurrell, 2005) and include various measures that show increases in performance and well-being (Rick et al., 2002). Interventions of this type center on objective changes in the work environment which invariably include elements related to job design in most instances. So changes in workload and schedules, for instances, seem to have important effects on well-being and performance (Rick et al., 2002). These changes are likely successful also because they can target objective aspects of the job that have universal understanding and noticeable impact. The target for other types of changes for which stress might be associated as we will see in the next sections are not as easily identified, nor may they be universally experienced.

Parkes and Sparkes (1998, p.43) went as far as to suggest that the results are clear enough in cases of workload reduction (e.g., socio-technical interventions) to warrant changes to work at a national level. There are likely several reasons for the success of these programs, not the least of which is that they are directed at what are often salient, objective factors (schedule, workload) that lead to immediate relief when removed. The stressful circumstances that psychosocial interventions are attempting to address may not be as salient, obvious or easy to correct.

4.5.2 Psychosocial Interventions

Interventions within the psychosocial tradition we recall are "approaches to stress reduction intended to change employees' perceptions of the work environment through strategies such as increasing participation, communication and social support, reducing role ambiguity and conflict, and enhancing control over work tasks" (Parkes & Sparkes, 1998; p.3). Studies in this category provide less consistent support of intervention success. Reviewers uncovered mixed results ranging between weak to no effects, with few studies showing resounding evidence of effectiveness (e.g., Hurrell, 2005; Parkes & Sparkes, 1998; Rick et al., 2002). Those studies that show the most consistent results are those geared at improving decision authority (Rick et al., 2002).

The number of studies is low however, and the range of interventions considered is broad, so caution must be taken in interpreting this trend among the studies. In an evidence-based approach divided by stressor, for instance, the number quality studies for review varied between none and five depending on the stressor (Rick et al., 2002). It is clear therefore that much

research remains necessary before any conclusions can be brought to bear on the issue of psychosocial interventions. The nature of psychosocial interventions clearly makes them more difficult to evaluate and mixed findings should not be taken as an indication that these are less effective places and means to intervene. Indeed, much of the theory on stress (see example of theories earlier) suggests that interventions within this realm are important.

4.5.3 Organizational versus Individual Level Interventions

Individual level evaluations are more common in the literature and may have limited success on the short term as indicated by some studies, but the long term effects are not known, nor clear (Jordon et al., 2003; Giga, Cooper & Faragher, 2003). One recent meta-analysis of several "experimental" studies suggest that moderate effects can be observed for the effectiveness of cognitive-behavioral interventions and multimodal interventions, with a small effect for relaxation techniques and a non-significant effect for organizational interventions (van der Klink, Blonk, Schene, & van Dijk, 2001). The number of organizational interventions was too small to make this last conclusion reasonable.

One of the main concerns with intervention at the individual level, particularly if it is not accompanied by other forms and levels of intervention is that it deals with stress as an "individual coping" problem. This defaults to the false assumption that stress is an individual experience by design. We know from research that this is not the case. Stress is a process that begins with elements from the working environment. If nothing is done to reduce the source of stress the problem could persist on the longer term (Kompier & Cooper, 1999).

5.   RECOMMENDATIONS AND CONCLUSIONS

5.1   Research Needed

Fundamental to a review of existing knowledge is the added responsibility to indicate where evidence is lacking and research is needed. This section focuses on research needs identified by the research team as well as those added by the symposium participants as relevant to the area of organizational interventions. Several of these factors apply to the problem on an international level. Nevertheless, our focus remains on those factors that are likely to influence the quality and relevance of research in Quebec. The subsequent sections examine more pointed measurement and design issues, practical considerations for organizations implementing programs and recommendations for agencies newly considering contribution in this area.

5.1.1 Population-based studies in Quebec

There needs to be benchmark statistics on stress in Quebec for research on interventions to be appropriately directed to problems that are real and pressing for the employment community (Vezina et al., 2004). Normative measurement of this type would use common measures to examine a representative sampling of the Quebec working population on an ongoing basis. The effort should be broad in its tie to comparable measures throughout Canada where possible to ensure maximum benefits from comparative data.

Consistent measurement of this type would go a long way in setting up strong conditions for diagnosis, intervention and evaluation. Industry, government and researchers could benchmark problems and interventions in real time and thus arrive at more effective conclusions. The problem with ad hoc measures as we will see later has been a particular limitation of existing research.

5.1.2 Focused Interventions

Stress is complicated in its multiple causes, pathways and effects. Attempting to change and examine too much of this system in one study is likely to be difficult to manage. We believe that a significant part of intervention research needs to be focused on specific stressors. Several reviews have suggested that interventions focus on the most salient stressors when seeking change (e.g., Parkes & Sparkes, 1998; Rick et al., 2002). We believe that research is most likely to advance when it tests specific interventions aimed at the most important stressors in a particular workplace. This allows for focused questions and it likely increases the statistical power of the study.

Somewhat related, and as a side note, we believe that researchers need to ensure that they study these stressors based on its veracity within the particular working population. Too often researchers may "test" an intervention in a certain organization without certainty that the stressor is a predominant issue for the organization or the population tested. This occurs because researchers understandably have preset intervention models they wish to test and certain organizations may be "available" for them to conduct such research. However, if the intervention

is not aimed at something that is truly pressing, the effects (or lack of) may be unreliable. We are not certain that this threat is eliminated in some studies and at the very least it needs to be mentioned as a potential limitation.

5.1.3 Interventions need to account for the full stress process

Consistent with the context with which we began this report, intervention needs to be designed to account for all phases of the stress process and the theories depicting the process are an important backdrop for doing this. In general, theories of job stress such as those presented earlier can help guide the change by specifying the elements that need focus (e.g., Hurrel & Murphy, 1996).

This does not conflict with the call for greater *focus* on salient stressors in the previous recommendation. What it suggests is that the chosen source of stress needs to be recognized for the interactions that it has with other stressors, the "stress" process, and environmental variables. A good theoretical positioning of the intervention accordingly will hopefully encourage an appropriate understanding, manipulation and measurement of this more complete process. As Rick et al (2002; 1997) noted, there are multiple and complex pathways for stressors to have an effect and accounting for these in the intervention will help us design stronger knowledge and interventions.

5.1.4 The role of participation needs clarification

Participation is a ubiquitous concept to management theory for which the positive benefits are taken to be axiomatic. However, history tells us that we need to be careful of such uniform assumptions and that participation does not always lead to improved decisions (e.g., Locke, Schweiger & Latham, 1986). This is particularly true for the process models we reviewed that encourage participation in the process of making the workplace healthier (Nytro, Saksvik, Mikkelsen, Bohle & Quinlan, 2000). If we take goal setting theory for instance, we know that participation may not be necessary if people agree with or accept the goals set for them (e.g., Johns & Saks, 2005). In this regard, participation may be seen as a mechanism to help ensure people accept a change and presumably other approaches could also accomplish this state of affairs (e.g., Savoie & Bareil, 1999). Indeed, we will recall that the socio-technical systems interventions were among the effective intervention strategies identified and these do not (necessarily) include participative components.

The role of participation is evident in several ways among interventions strategies (e.g., participation in joint OH&S committees; participation in decision making on the job Mikkelsen, Saksvik & Landsbergis, 2000) and PAR programs in particular are dependent on the role of participation. Ironically, PAR is among those techniques that seem to produce the least convincing evidence of success thus far (e.g., Parkes and Sparkes, 1998) and participation seems to be its driving element. We believe that research attention is needed for participation given these difficulties and the importance that seems to be attached to it in most models of intervention.

5.1.5 Evidence-based approach to be preferred

It is clear from our report that we advocate an evidence-based practice. Research would be well-guided by such a framework and organizations would have access to the best available information at that time. The effectiveness of such a model, however, is only as good as its upkeep. We know from some research in this direction (e.g., Rick et al., 2002) that interventions for several stressor categories are left wanting for research evidence. These voids may well become priorities for research assuming they are also seen to be important for the population to which they are to be generalized (i.e., representative studies). Indeed, Bond and Hauf (2004) argue from their examination of primary prevention programs in general (across mental health fields) that an important determinant of success seems to be whether the program is closely tied to good theory and evidence.

On a second note, we also feel that it is important that a lack of *scientific* or *rigorous* evidence not stop researchers from putting forth the best available evidence in certain parts of frameworks. Caveats need to be clearly enunciated for those parts that are based on less than adequate information or evidence, but such "tentative" evidence or opinion would likely give organizations better information than what might appear to be a cacophony of recommendations coming from multiple and sometimes dubious sources. The use of expert panelist may provide the best educated guesses given otherwise sparse evidence and it would help identify at the same time those problems for which research is necessary.

5.1.6 Process and content models both need evaluation

As shown in the earlier models, interventions consist of process and content elements. Both aspect of intervention are important. This is not unique to organizational programs for there is evidence suggesting that this is true of most primary programs aimed at mental health (Bond & Hauf, 2004). Research therefore needs to invest time in understanding both implementation and content components of interventions to ensure that our knowledge base is complete. There may be tendency to overlook the *how* (process) assuming all we need to get right is the *what* (content).

Our recommendation is that sufficient research be focused on process as a main theme and not simply as an important "feature" to making content change. This latter view may create the tendency for researchers to "tack" on research questions or procedures to "monitor" the change because it is seen to be important yet not quite central.

Researchers may want to pay particular attention to the elements relating to diagnosis within these frameworks. The models contain useful information on conducting a diagnosis of situations (e.g., Cox et al., 2000), but there is little to no research examining the effectiveness of diagnostic approaches and the problems or prospects that emerge.

5.1.7 Research agenda should seek diverse experts' opinions

Occupational stress is a vast and complex process. Stressors vary considerably in their characteristics, solutions and the type of expertise needed to understand them fully. It is also true

that there are several environmental, physiological and psychological components to stress. Accordingly, the advancement of knowledge in this area is most likely to be arrived at through multi-disciplinary contributions.

Traditionally this has meant favoring the award of research grants to multi-disciplinary teams. We are not advocating this as a particular strategy here. Rather, we are suggesting that the steering of research agendas and maintenance of the evidence-based framework be accomplished by a multi-disciplinary group of experts. Such a group of experts would draw from different traditions to help ensure that all avenues of evidence gathering are use and considered. Our experience in the literature review is that there are separate literatures that can only be joined and used to build knowledge if contributions occur through such a collaborative means.

5.1.8 Neglected concepts need attention

There are processes, variables or concepts that tend to be ignored probably because they seem tangential or "soft". However, in some cases they show promise in helping us better comprehend the problems with stress and interventions. We identify one such theme here, but we believe several others could apply and we encourage a thoughtful look into them. It is our feeling that continuing to ignore such concepts will leave intervention researchers perplexed as to why otherwise technically proficient interventions cannot accomplish or maintain expected effects.

When we point to variables such as the organization's commitment to change being important to the success of the intervention (e.g., Giga, Cooper & Faragher, 2003; Hurrell, 2005), we soon realize that analogous concepts such as mental health climate, leadership and commitment can all be important constructs that need to be studied within the context of stress interventions much like they have *successfully* been examined recently within the related area of occupational safety. Researchers familiar with occupational safety recognize the importance of recent research on "safety climate". This variable is certainly not a "hard" safety engineering issue, nor one that was popular in initial studies focused on safety hazards at work. Yet lately we have seen a flood of developments on this topic showing experts that an organization's climate around safety issues can be a key predictor of safety behavior, and may even be central in certain ways (e.g., Zohar, 2003).

5.2   Research Measurement and Design

In this section we cover what we believe to be more specific research design and measurement issues than the previous section. Several of these issues are aptly covered in detailed reviews elsewhere. Therefore, in this section will focus only on those we feel will have a particular relevance to an emerging research agenda in Quebec.

5.2.1 Longitudinal Research is Important

Measuring the long-term effects of intervention strategies is a preferable approach to research. We do not believe that it is necessary to argue the benefits of this, for we all recognize that it would allow for better and truer tests of interventions over time and help us understand the dynamics, difficulties and solutions that can be brought to maintaining an intervention that

works. However, barriers of practicality and feasibility of such an approach in the field of occupational stress continue to make it difficult to accomplish.

What we wish to encourage is innovative thinking on how these barriers can be overcome. Knowledge will continue to be truncated and conclusions frustratingly short of definitive until more research of this scale occurs in sufficient volume that effects can be compared across studies. We think it now behooves the field to find collaborative, innovative and plentiful ways that this type of research can become common. This may require that researchers support important campaigns aimed at elevating employer and public awareness of the costs of not carrying out this research.

5.2.2 Multiple outcomes should be measured

Multiple outcome measures are to be encouraged whenever possible including both subjective (e.g., psychological distress, emotional exhaustion) and objective measures (e.g., absenteeism; turnover, accidents) (Hurrell, 2005; Hurrell & Murphy, 1996). Indeed, several measures are likely to help answer the many different questions that various constituents could use. Organizations may be moved to adopt practices that show objective organizational changes (e.g., Hurrell, 2005). Likewise, interventions may be better developed when subjective reactions are more clearly understood. With a full complement of outcome measures researchers are in a enhanced position to convince potential users.

We also believe that researches must attempt to measure the full spectrum of outcomes in relation to the evidence-based frameworks discussed and to do so with sensitively to what is important to individuals and organizations. Sometimes this means innovative departures from the traditional measures we value in the literature (e.g., turnover, productivity), but that may be highly valuable within particular occupations. For example, the issues of medical errors has been gaining much interest in the popular media and there is some earlier pioneering work suggesting stress may be an important factor and that risk assessment and intervention for such can be helpful (e.g., Jone et al., 1988). What this also reminds us of (from our review) is that occupational stress researchers can sometimes move backwards from what are problematic outcomes back towards identifying stressors that needed to be dealt with.

5.2.3 Experimental and Quasi-experimental designs preferred

It is a common complaint that deserves to be repeated each time a review is conducted. Study designs have been a major limitation for any conclusions deriving from research on stress interventions. When strict criteria of experimental design with randomized control group controls are applied, 74% of intervention studies in one review would be eschewed from analysis (Jordon et al., 2003). If one allows for quasi-experimental designs including alternate forms of control, the number eliminated can be reduced to 47% (Jordon et al., 2003). Most of the remaining studies are individual level interventions leaving little useful information to reach conclusions on organizational level interventions (e.g., van der Klink et al, 2001).

There are real practical, ethical and economic impediments that contribute to this state of affairs. Nevertheless, the possibility for improved research design should be at the forefront of most

intervention studies for this is one factor on which any one study will make exemplary contributions. Even where most field experiments are ruled out, including the difficulty or impossibility of using comparison groups, several quasi-experimental design alternatives exist and should be explored (e.g., Cook & Campbell, 1979; Cook, Campbell & Peracchio, 1990). These studies would be a marked improvement. We believe this to be principally important and true regardless of the acknowledged difficulties with studying particular interventions (e.g., PAR method to be discussed separately below).

5.2.4 Psychometric Concerns

The measurement of constructs within the field of occupational stress is under scrutiny for reasons similar to other related areas within organizational behavior and psychology (e.g., Sackett & Larson, 1990). Some of these issues are endemic to the type of context and issues we study. However, two points for which there are remedies have been of specific concern within occupational stress: [1] use of multiple self-report measures of stress processes that may show spurious relations, non-significant results and [2] use of ad hoc measures of stress and related constructs making comparisons difficult (Parkes & Sparkes, 1998).

Consistent with our opening call for more population-based research, common measurement would allow for normative data to be developed and used for knowledge building and comparative work. Moreover, the use of multiple objective and subjective measures as mentioned earlier would be constructive.

Additional measurement and psychometric issues are covered nicely in Brinner (1997), Rick et al. (2002), and Parkes and Sparkes (1998) among others. These should also be considered in all future research.

5.2.5 Theory-driven work

Theory-driven work is the necessary hallmark of good research and the social sciences are no less capable in this regard than the "hard sciences" (Campbell, 1990). The value of theory is that it lays a clear map for research effort, findings and the practical implications that follow. In our view, occupational stress research has suffered from the lack of theoretical use and not necessarily the lack of theoretical models to get started. As we showed in Exhibit 1 earlier in the report, theory in occupational stress exists and is developed sufficiently to drive research. Indeed, it has been observed in several reviews that intervention research stands to gain immensely with such a theory-driven attitude (e.g., Hurrell, 2005; Parkes & Sparkes, 1998; Reynolds & Brinner, 1994). A largely atheoertical or overly simplified theoretical approach to occupational stress has been a significant barrier to advancement of our knowledge in some cases (Reynolds & Brinner, 1994).

The role of theory in this context is not directed at devising "general laws" or grand theories of stress. Rather, we are suggesting modest theoretical models that function to help organizations solve their problems. As Campbell (1990) put it "mid-range theory, or any theory, should be used to identify important problems relevant for organizational functioning and suggest ways they can be addressed. It should not be used as a means to create 'grand' theory" (p.56). Indeed,

we see intervention strategies that focus on specific mid-range theory like job design (e.g., job characteristics model) to be of the type needed in the short run; and they have been successful (e.g., socio-technical systems).

5.2.6 PAR methods challenge

In our assessment, the PAR methods of intervention will continue to be intuitively appealing for use by many organizations. Indeed, they are frequently held up as examples of interventions and are akin to the process models by their related philosophy of involvement. The challenge is that these techniques have not received support for their effectiveness. Parkes and Sparkes (1998) point out that these programs are difficult to evaluate due to their nature and that we need to explore various options for evaluation. They are difficult to evaluate because of their dynamic development process that is not fixed but rather responsive to the unique environments in which solutions are devised and enacted.

The use of qualitative techniques is clearly one option proposed and this has its great advantages. However, we suggest that researchers take a closer (different) look at this set of intervention strategies by breaking it down into more "examinable" elements for study. We need to first specify the main features of what is expected to make a PAR successful (or not) and study these with particular attention. The same type of claim has been made for other organizational processes over the years and researchers have eventually overcome what were thought to be difficult dynamic processes (e.g., informal interviews [difficult to study] were improved with advent of structured interview focused on key features). In the rush to find "the" packaged intervention "system" or strategies that work for organizations in need, we may not be taking the system elements apart sufficiently to examine what might make a system work.

5.2.7 Significance, Practical and Statistical

It is common knowledge to statisticians and researchers that statistical and practical significance are not necessarily the same. Statistics are about probability; nothing of much substance comes from them. Consider for instance the common problem that something can be statistically significant but have limited value because it explains very little variance in a phenomenon of interest. Conversely something that is non-significant can be useful, but because of a small sample size or other design inadequacy the effect does not emerge to reveal what might be an important relationship. Our point is that of a cautious reminder; the search for interventions that are effective turns up many studies that are judged on significance (after adequate design). That research does not support certain types of interventions in these reviews should not be taken as a strike against the intervention. As we have seen in earlier points, too much has yet to happen in setting up effective studies to reach such conclusions. Moreover, it is also generally accepted in the social sciences that even small effect sizes can carry large economic impact (e.g., utility analysis). Even small effect sizes, difficult to detect at times can have important organizational implications.

5.3   Practice Issues for Organizations

In the following section we examine issues that are of relevance to organizations. Some research and authoritative knowledge with consensus does provide guidance on how we might approach the problems faced by organizations despite the recognition in this report that we have much knowledge to gain.

5.3.1   Interventions should focus on fewer, key stressors

The old adage of trying to do too much will lead to failure is exactly what we are implying in this section. Based on research and experience from authoritative recommendations to the same (e.g. Parks & Sparkes, 1998; Hurrell & Murphy, 1996), it is probably in the organization's favor of success if they prioritize stressors and focus interventions on the most important or salient. This may help because of any of several reasons including better sights on the purpose and goals of the intervention (Bond & Hauf, 2004), greater ease to design coherent strategy, it attacks problems that are most felt and likely to be responded to by large numbers of individuals and stressors are probably finite in number that have large system-wide effects. It also is possible that early successes from such interventions may encourage organizational members to trust in future interventions.

5.3.2   Participation is important

It is clear from many sources that participation in several phases of the intervention process by organizational members is valued and probably important. We see it in the process and content theories of intervention. Participation is mentioned in most every aspect of intervention ranging from involvement of employees on committees (e.g., Hurrell & Murhphy, 1996) to total system involvement of people throughout the intervention process (e.g., Giga, Cooper & Faragher, 2003). The value of participation is also likely appreciated by those who get involved and studies have historically supported the key role of participation in management theories (Guzzo, Jette & Katzell, 1985).

While we see no reason to dissuade organizations from getting employees involved in as many phases of the intervention as possible, we do not see evidence that it is a panacea of success or that it is sufficiently understood to explain to organizations why and how it should work. We called for more research on the role of participation in our earlier comments. In our minds, it is much like the call for more attention to the role of "control" (Hurrell & Murphy, 1996) in stress research. Participation, like control, is a complex construct with several facets that need to be carefully dissected and studied to fully comprehend what exactly should be recommended *about* participation relative to stress intervention.

5.3.3   Systematic Risk Assessments

The tools for organizations to conduct systematic assessments of the risks for psychosocial hazards are now more readily available and useable. Experiences worldwide are now published for the benefit of most organizations. These experiences range from formal government policy and use of specialized occupational health and safety services to assess risk in the Netherlands

(e.g., Schaufeli & Kompier, 2001) to detailed risk management procedures (e.g., Cox et al., 2000; Clark & Cooper, 2004).

There remains some work to be done on the development of common measures to help benchmarking. However, the process, procedures and systematized attitude that is encouraged in such an approach is a superb place for organizations to begin and it likely increases the chance they will identify and address the key stressors in their work environment. In Quebec, proper linguistic and cultural translations would be needed to encourage a full access to this information.

5.3.4   Avoid "Menu Driven" Approaches

We would encourage that organizations be communicated the importance of following evidence-based approaches to the problem after a systematic risk and organization specific assessment. This would promote a careful weighing of the intervention(s) that should work based on probably of success in unison with local preferences, customs and resources.

5.3.5   Models for Intervention

The process models reviewed earlier provide a good basis for planning interventions and can serve as a useful guide for organizations. Sometimes risk assessment procedures are already couched within these terms, but it stands to reason that models such as those presented in this report serve an important function in summarily representing steps and information. Looking at primary programs for mental health in general, Bond & Hauf (2004) argue that those programs that are structured and packaged to be transferable and translatable are most likely to be successful. In other words, models that are understandable, representative of individuals and organizations experience and theoretically sound will have the greatest chance of helping organizations.

5.3.6   Intervention must be viewed as Ongoing

There is the danger with any intervention that we assume it will "solve" the problem. This may be the case for certain situations, but it seems highly unlikely with the situation of stress as would be true of health and safety in general. Various conditions make it likely that any solution proposed now will fizzle in effectiveness with time. New stressors are likely to emerge as current stressors are resolved and with the changing nature of work the comfort of status quo becomes a futile effort. Organizations need to be encouraged to view stress management as an ongoing reality and imperative to good business.

When issues of commitment, organizational support and involvement from the organizational members are invoked as success factors (e.g., Giga, Cooper & Faragher, 2003; Hurrell, 2005; Nytro et al., 2000) there is in this another sign that the battle with stress is an ongoing one. Another way of looking at this is to suggest that certain failures will occur in many intervention strategies and organizations have to be willing to learn from these failing components to make improvements, understanding that this happens and is part of the process. Organizations must have an ongoing willingness or climate to learn from failures (Nytro et al., 2000).

5.3.7   Networking for Intervention Success

Organizations are most likely to profit from learning opportunities and resources to the extent that a networking is encouraged between various institutes, groups or agents who are already been actors in this field. These groups bring with them resources, knowledge and networks that can best serve organizations to the extent that information is integrated and directed at their needs. In Quebec, for example, this could include among others union groups, health and safety groups (e.g., IRSST, CSST, ASSTSAS), mental health research groups (e.g., Canadian Mental Health Association), health system representatives (e.g., CSSS) as well as information and advocate groups (e.g., Au bas de l'échelle). As it stands, many of these groups may be working in isolation of one another and not benefiting from a synergy to the fullest. Therefore, we strongly encourage these actors to initiate a dialogue addressing how to create a synergy between them.

5.3.8   Educating Employers

A recurrent theme among participants in the symposium was a need to better communicate with employers about the problems of mental health and work. We need to know more about what employers know, don't know and need to know. Several issues are important including sensitizing employers to the variety of mental health concerns at work as well as helping them appreciate the importance of doing something to resolve problems. This may include communicating the costs to the organization that associated with doing nothing. Increased awareness may lead to increased work towards solving the issues, but it also may help resolve one of the largest barriers to effective research in this area—organizations participating in long-term research on the topic. There remains much work to be done for mental health specialists to begin ensuring that their knowledge can be more readily transferred to employers who often operate under a different, but reconcilable perspective (e.g.. Neufeldt, 2004).

5.4   Issues for Research Excellence

In this section we close with brief comments on features that we believe an agency newly funding research in the area might consider. These relate mostly to factors of *growth* and *socialization* within the area. This is not an exhaustive list but rather one that would get the agency quickly and surely focused on a path of maximum returns.

5.4.1   Partnerships

From our review it has become quite clear that certain agencies worldwide have excelled at research on this topic. We have cited work from these agencies and their researchers frequently throughout this report, and there are others that could be added to our report if this were the purpose of the work. We recommend that any attempt to enter this area be accompanied with an extensive examination of potential partnerships with several world-class research agencies in this area. Those most familiar to researchers include the Health and Safety Executive (HSE; UK) and the National Institute for Occupational Safety and Health (NIOSH; USA). Other relationships can be found in many other countries also searching for developments in this area (e.g., Oeij & Morvan, 2004). Partnerships can range from the exchange of information to shared resources and

joint projects. Given the nature of the projects needed and methodological problems faced, this type of activity stands to benefit everyone.

5.4.2 Participation in Professional Activities

Exposure we believe is an important way of building the knowledge base we advocated in this report. This will come through partnerships as suggested above, but there also needs to be a significant amount of professional activity in publishing, presenting and attendance at key conferences and associations to bring such partnerships to fruition. There is an extensive network of journals now publishing key work in this area (e.g., Journal of Occupational Health Psychology, Work and Stress, International Journal of Stress Management, Journal of Occupational and Environmental Medicine - to name a few). An agency funding work within this area should expect from its grantees that they are capable of producing work of the quality that is potentially publishable in these scientific journals.

Likewise, a growing number of conferences (e.g., Annual International Conference on Occupational Stress & Health [APA-NIOSH]; European Academy for Occupational Health Psychology Conference) are now routinely available to professionals to share and gain cutting edge knowledge on the specific topic (stress at work). These conferences are sponsored by associations which also provide ongoing support for a growing number of professionals in this interdisciplinary field (e.g., European Academy of Occupational Health Psychology; Human Factors and Ergonomics Society; Society for Occupational Health Psychology).

5.4.3 Frameworks and research provide guidance

Any agency has finite resources to put towards projects of importance. Priorities must be set and hard decisions made. Accordingly, we strongly believe that research agendas can be fairly managed to the extent that several of our earlier recommendations are heeded. In particular, a clear framework summarizing the knowledge base in existence, an ongoing pulse on stress within the population and the input from a diverse group of experts are some ways to ensure that these resources are spent in those areas most pressing. We encourage any further building to continue along investigative lines wherein comprehensive research serves to set the foundation of resource allocations to come.

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