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Stress and Coping at the Workplace: The Role of Self-Efficacy and Social Support

by

Dominic Wong

A thesis submitted in partial fulfilment

of the requirement for the degree of

Doctor of Philosophy

in

Health Psychology

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Abstract

The present research explores whether levels of self-efficacy act as an additional moderator variable in the Job Demand-Control-Support (JDCS) Model, and also examine the role that work support and coping have in predicting health and occupational outcomes. Study 1 and Study 2 sought to identify modifiable factors of the working environment (work support) and the individual (general self-efficacy, work self-efficacy, and coping strategies) that operate through various processes to influence health and occupational well-being. Study 2 was designed to address some of the limitations arising from Study 1, while also endeavouring to discern stronger findings. The JDCS Model was shown to be a stronger predictor of health and occupational outcomes than the JDC Model in both Study 1 and 2. Study 1 supported the addition of general self-efficacy to only the JDC model, and not the JDCS Model. Study 2 supported the addition of work self-efficacy to both the JDC Model and the JDCS Model. Study 3 was an intervention study that was successful in improving work self-efficacy, instrumental support coping, and health and occupational outcomes. These studies contribute additional knowledge about the antecedents and the effects of work stress, and contribute to the understanding of many years of inconsistent evidence concerning the moderating role of self-efficacy, social support, and coping on the stressor-strain relationship in the workplace.

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## CHAPTER 1

## Introduction

*Statement of the Problem*

Occupational stress can have a detrimental effect on employees if they are unable to control or cope with the demands they experience at work, and may in time lead to, or worsen health conditions such as anxiety, depression and heart disorder (Jones, Huxtable, Hodgson, & Price, 2003). However, even when experiencing organisational constraints, workers are still expected to perform their jobs well (Jex, Adams, Bachrach, & Sorenson, 2003). There are signs that employees are becoming more and more aware of the negative impacts of their workplace. In the United Kingdom, the Health and Safety Executive (2006) reported that 2 million people suffer from ill health which they think is work-related. They also report that work-related stress accounts for over a third of all new incidences of ill health. In addition, it is estimated that 563,000 people in Britain were diagnosed to be suffering from work-related stress, depression or anxiety in 2002, with a further estimated 80,000 people reporting work-related heart disease (Jones, Huxtable, Hodgson, & Price, 2003). Though the figure for official work related health complaints is significantly less than the employees' appraisals of work stress, it is still a substantial amount, and represents the growing concerns that the working population have about work stress.

Organisations should take heed of the concern that employees have about their working environment, as in addition to contributing to higher levels of work-related illness, stress can have a direct impact on the organisation, as unfavourable job conditions are also predictive of turnover and absenteeism spells (e.g., Bakker, Demerouti, & Schaufeli, 2003; Schaufeli & Bakker, 2004). For example, in 2005/2006 24 million working days were lost due to work-related ill health, and each

case of stress-related ill health leads to an average of 30.9 working days lost (Health & Safety Executive, 2006). The cost of work-related stress and ill health for employers was about £1.5 billion in 2000/2001, and more generally, the cost to society was reported to be about £11.3 to £17.3 billion (Health & Safety Executive, 2002). Thus, the degree to which stress prevents workers from functioning efficiently is a pressing cause for concern. It is therefore crucial to discover why certain individuals are more prone to stress than others, not only to reduce the millions of pounds that are lost due to employees suffering from work-related stress, but also to enhance health and occupational well-being.

#### *Transactional Model of Stress*

Many theories differ in their views of the major determinants of stress. Some emphasise personal characteristics (e.g., Bandura, 1986, 1997), others emphasise aspects of the work environment (e.g., Karasek, 1979; Karasek & Theorell, 1990), whilst still others view stress as a function of an interaction between person and environment (e.g., Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Edwards, Caplan, & Van Harrison, 1998). However, the theoretical perspective that has most influenced thinking and research about stress is the transactional framework proposed by Lazarus and Folkman (Lazarus, 2000; Lazarus & Folkman, 1984).

Lazarus and Folkman (Lazarus, 2000; Lazarus & Folkman, 1984) defined psychological stress as a relationship between the individual and the environment appraised by the individual as taxing or exceeding their resources and endangering their well-being. In this model, stress refers to the overall subjective experience or transactional process. Their model distinguishes between potential sources of stress, the appraisal of stress, coping resources and strain, or the emotional reactions evoked when the individual is not able to cope with the threatening stressor (Lazarus, 1991).

*Coping resources.* Another element of Lazarus and Folkman's Transactional Model of Stress (Lazarus, 2000; Lazarus & Folkman, 1984) proposed to influence the coping process is external and internal (personal) coping resources. The Transactional Model of Stress refers to coping resources as personal resources that individuals have which can be used to cope with specific types of environmental threats or demands. Available coping resources determine people's coping responses, which can affect their overall well-being. Unsuccessful attempts to eliminate the demand (e.g., working long hours to catch up with workload only to receive more) as well as coping efforts directed toward unhealthy behaviours (e.g., smoking) will have negative impacts on an employee's health and well-being.

Coping resources are available to an individual as they exploit their coping strategies, with access to suitable resources encouraging the development of beneficial strategies. Lazarus and Folkman (1984) suggest that appraisal mediates the relationship between coping resources and coping, however, as discussed, coping resources may also have a direct impact on the coping strategies employed and an individual's well-being. Furthermore, as stress is the result of a continuous relationship, referred to as transaction, between the individual and the environment, personality traits (e.g., self-efficacy) may also act as important resources in the stress process (Vollrath, 2000).

### *Self-Efficacy Theory*

Self-Efficacy Theory (Bandura, 1986, 1997) views stress reactions principally in terms of a low sense of efficacy to implement control over aversive threats and high environmental demands. The concept of self-efficacy is similar to Lazarus and Folkman's concept of coping (Lazarus, 2000; Lazarus & Folkman, 1984), where the assessment of an individual's resources to cope with a particular

threat accounts for the fact that a person may believe that they have the resources to cope in a particular situation. Whether a person puts in effort and persists in the face of obstacles has implications for the coping outcome. For example, it has been found that those who have a low sense of self-efficacy, experience higher levels of sleep disturbances, heavy drinking, anxiety, and health problems. In addition, certain organisational conditions such as heavy workloads can weaken an employee's belief in their occupational abilities, thus intensify a low sense of coping efficacy (Bandura, 1997). Therefore, self-efficacy may be particularly important for examining the buffering effects of job conditions on employee strain (e.g., Job-Demand-Control Model; Karasek, 1979; Karasek & Theorell, 1990).

#### *Job-Demand-Control Model*

A clear example of the approach that emphasizes work environmental causes of stress is Karasek's Job-Demand-Control Model (Karasek, 1979; Karasek & Theorell, 1990). Karasek states that two factors determine job strain, namely, job demands (e.g., workload) and job control (e.g., autonomy). The Job Demand-Control Model (JDC) implies that the combination of these two factors is able to predict the working conditions that result in the greatest job strain and the least job strain. High demands and little control lead to the highest job strain, while low demands and high job control lead to jobs low in strain. This model was later expanded to include social support after research demonstrated the moderating effects of social support on job strain. (Johnson & Hall, 1988). Social support represents a key external coping resource that people consider when appraising and reappraising the stressfulness of a situation. However, empirical support for his hypotheses has been limited. To a large degree, failure to support the model is due to a range of theoretical and methodological problems. For example, the theory has been criticised

for being unclear and oversimplified. Critics have argued that the core constructs in Karasek's work and the relationships between these constructs are inadequately expressed, and that the various models have not been incorporated into a single framework (e.g., de Jonge & Kompier, 1997; Jones, Bright, Searle, & Cooper, 1998).

There is a distinction between Karasek's Job-Demand-Control Model (Karasek, 1979; Karasek & Theorell, 1990) and Lazarus and Folkman's Transactional Model of Stress (Lazarus, 2000; Lazarus & Folkman, 1984) in that the Job-Demand-Control Model asserts that the primary source of work stress lies not within the individual, but in the characteristics of the work environment. In the Transactional Model stress is seen as the result of the interaction between the individual and the environment, and only if the individual sees this transaction as a threat, the well-being of the person is challenged.

#### *Aims of this Research*

Therefore, in this thesis, it is argued that a more complete model is required. Such a model would use Karasek's Job-Demand-Control Model (Karasek, 1979; Karasek & Theorell, 1990) as a framework, incorporate aspects of the Transactional Model of Stress (Lazarus, 2000; Lazarus & Folkman, 1984), and build upon research findings that examine the interplay between work environments and personal characteristics (e.g., Moyle, 1998; Spector, Zapf, Chen, & Frese, 2000). This work aims to take into account and improve on, the measurement, design and analysis limitations of past research in this field.

This thesis provides details of an attempt to clarify, extend and test Karasek's (1979, Karasek & Theorell, 1990) theory of job strain by exploring whether general and work-related self-efficacy act as an additional moderator variables in the Job Demand-Control-Support Model, and also examines the role that work support and

coping have in predicting health and occupational outcomes.

### *Overview of Chapters*

The following chapter reviews the job stress and coping literature, identifying several pertinent concerns of past research within this field. Chapter 3 presents a test of whether general self-efficacy acts as an additional moderator variable in the Job Demand-Control-Support Model (JDCS) in which 133 employees from the longitudinal study participated. Chapter 4 presents a test of whether work-related self-efficacy acts as an additional moderator variable in the JDCS Model in which 157 employees from the longitudinal study participated. Chapter 5 presents an intervention study that aimed to improve work-self efficacy, work support and health and occupational outcomes. The final chapter reviews key findings from these studies, evaluates the contribution of this research and offers suggestions for future theory development, empirical research and organisational practices.

## CHAPTER 2

## Literature Review

*Chapter Overview*

Chapter 2 presents the theoretical and empirical foundation that supports the current studies. It starts with a general introduction to the methodological considerations in work stress research. It then goes on to describe the most influential theoretical perspectives that have guided work-related stress and coping research over the last few decades and examines studies that combine Self-Efficacy and the Job Demand-Control Model. Following this, work stress intervention studies are examined in relation to the main theories of interest. Chapter 2 ends by explaining the purpose of the current research and the questions which this research aims to address.

*Methodological Considerations*

Previous studies in the workplace have shown a relationship between several organisational variables (department, professional antiquity, type of contract, number of working hours; Ramirez, Graham, Richards, Cull, & Gregary, 1996; Schaufeli, 1999; Varga, Urdaniz, & Canti, 1996; Burbeck, Coomber, Robinson, & Todd, 2004). Provided that some organisational variables may also be associated with the psychosocial work environment, they should be considered in the analysis as possible confounding factors together with individual traits such as negative affect (e.g., Parkes, 1990; Pennebaker, 1992).

Cox and Griffiths (1995) argue that the measurement of the stress state should be based primarily on self-report measures that focus on the appraisal process and on the emotional experience of stress. However the overwhelming majority of the empirical studies are cross-sectional and do not allow inferences on causality. To

arrive at a clearer picture about the causal processes between stressors and strains, longitudinal studies are needed. Although they do not solve all the methodological problems (Zapf, Dormann, & Frese, 1996), they at least allow researchers to rule out some of the alternative interpretations.

The study of the relationship between coping and health is also dependent on characteristics of the dependent variable. The dependent variable must have the potential for change over the time period studied. General health status variables, for instance, have a tendency to be relatively constant in the general population and the likelihood that such variables might alter during a time period is small (Folkman, 1992). Therefore, as discussed in the next chapter, work-related well-being and somatic symptoms should be more liable to change over the period of study. In addition, future research should study larger samples covering a wider range of jobs and should examine whether findings generalise across different work settings and professions (see Donald et al., 2005).

#### *The Transactional Model of Stress*

According to the Transactional Model of Stress (Lazarus & Folkman, 1984; Lazarus, 1991, 2000), stress is an outcome of a relationship or transaction between the individual and the environment. When an individual perceives environmental stressors to be demanding to the extent that has exceeded his or her personal resources to cope with them effectively, the individual will experience stress. The negative effects of stress are most likely to occur when individuals view an event as a threat, and when they assess their coping skills as inadequate for handling the threat. The degree of stress the individual experiences may depend on a number of mediating or moderating variables.



The Transactional Model of Stress assumes that individuals engage in a process of primary and secondary appraisals. Primary appraisal involves a consideration of the stimuli in the environment. Primary appraisals focus on the potential harm or benefit in a given situation. Secondary appraisal involves an assessment of one's ability to manage the threats that exist in the environment. During secondary appraisal, available options are examined and the likelihood that the strategy is likely to accomplish what it is supposed to is determined, leading to the strategy effectively being applied. If the primary appraisal determines that the environmental conditions are relevant and potentially harmful, and the secondary appraisal concludes that the individual does not have the necessary resources to manage the threat, a state of stress will result. However it would be naïve to assume that stressors and resources are solely determined due to the individual's construal of the environment. Certain jobs may have more demands or have more resources available than others, thus contributing to both the perceived threat of stress and the inability to cope with that stress.

Although extensive investigations in work stress offer support for Lazarus's model and the role of stress appraisals (e.g., Terry, Callan, & Sartori, 1996; Portello & Long, 2001), several researchers have concentrated on dispositional accounts of stress outcomes. They claim that stress appraisals are difficult to measure and are principally affected by stable personality characteristics (e.g., Watson, 2002). However, studies that investigate the involvement of, and the association between, stable individual differences and situational appraisals have been limited (e.g., Long, 1993; Terry & Callan, 2000). Moos and Schaefer (1993) considered the relatively stable characteristics of either the person or the environment as "resources," which assist employees in coping with work stress. This view is similar to Lazarus's (1991,

2000) model that implies that the degree to which an individual has access to resources (e.g., person or social resources) will have an effect on how they cope with work stress.

While the Transactional Model approach to stress and coping may seem a functional theory, it can be problematic to differentiate coping from the stress reaction (Steptoe, 1991). It is also difficult to make a distinction between primary appraisal and secondary appraisal, and both appraisal types from decision-making (Cox & Ferguson, 1991). Furthermore, coping and primary appraisal are on occasion closely related, as coping makes it possible to change the significance of a stressful situation (Folkman, 1984; Frese, 1999).

#### *Coping with Work Stress*

The Transactional Model of Stress implies that the coping processes of individuals engage once the appraisal process has been activated. According to the majority of past coping literature, people are thought to employ problem-focused and/or emotion-focused coping as an effort to cope with stimuli or events that have been acknowledged as potential stressors (Lazarus, 2000). Coping strategies can be perceived as the actual behaviours employed to cope with stressors. If an individual has a general preference towards using a particular coping strategy in a stressful situation they can be thought to have a preferred coping style.

Traditionally there are widely believed to be two main types of coping strategy that are employed by individuals, namely problem-focused coping and emotion-focused coping. Problem-focused coping is typically thought to be used to alter the source of the individual's stress, whereas emotion-focused coping is thought to reduce the emotional distress that is brought about by the situation. Problem-focused coping tends to be employed when the situation is perceived as controllable,

whereas emotion-focused coping tends to be used when the situation is deemed as uncontrollable and must therefore be endured (Carver, Scheier, & Weintraub, 1989). The type of coping that is employed by an individual can be thought of as having either a negative or positive impact on well-being. For example, emotion-focused coping has been associated with higher amounts of burnout at work, whereas employing problem-focused coping strategies has been suggested to buffer the effects of work-related stressors on negative work-related outcomes, such as burnout (De Rijk, Le Blanc & Schaufeli 1998).

However, some researchers (e.g., Carver et al., 1989) believe that particular types of coping behaviour, such as behavioural disengagement or venting of emotion do not fit comfortably into either the problem-focused or emotion-focused category and may have either negative or positive effects on an emotional state and stressor. Therefore, the distinction between emotion-focused and problem-focused coping may be too crude for certain circumstances, as coping behaviours habitually entail more than two underlying constructs. For instance, problem-focused coping may suggest different actions, such as making plans or searching for information, while emotion-focused coping may represent denial or positive reinterpretations, thus representing differing coping responses (Carver et al., 1989; Folkman & Lazarus, 1988; Hepburn, Loughlin, & Barling, 1997). Furthermore, coping mechanisms involve processes that can be either adaptive or maladaptive and should not be confused with outcome measures (Lazarus, & Folkman, 1984; Carver, et al., 1989). Taking positive action and exerting efforts to remove the stressor, seeking instrumental and emotional social support and seeing the situation in a more positive light would be categorised as adaptive coping methods. Denying, venting of emotions, excessive alcohol and drug use, and mentally disengaging from the

experience would be categorised as maladaptive coping (Carver et al., 1989). In fact, studies on the dimensionality of the COPE Inventory have generally found three to four higher order factors: problem-focused coping, avoidance, support seeking, and emotion focused (Litman, 2005).

Some coping strategies, such as seeking social support, may function as both problem-focused and emotion-focused coping simultaneously. Social support has been suggested to have a beneficial influence on other coping strategies since it can help to solve problems and to deal emotionally with a stressor (e.g., Holahan, Moos, & Bonin, 1997). The social support perceived by an individual may influence the way they cope with stress and the effectiveness of their coping efforts, and may further motivate them to seek assistance when needed (Pierce, Sarason, & Sarason, 1996). Furthermore, coping strategies not only vary and depend on the situation and/or the stressor, but also on the social resources available and the individual's personality disposition (Folkman & Moskowitz, 2004). Therefore, the likelihood of an individual seeking social support as a coping strategy during a stressful encounter is highly dependent on the social context (Lazarus 1993). Thus, cognitive processes are crucial in the appraisal of the stressor (primary appraisal) as well as appraising the resources available, such as social support, in dealing with the stressor (secondary appraisal) (Lazarus & Folkman, 1984). However, few theories have integrated social support into their theoretical constructions of coping (Greenglass, 2000).

It has further been argued that individuals may be consistent in the coping strategy that they employ, and can be thought of as having coping dispositions that are utilised across a broad variety of situations (Carver, et al., 1989). In line with this dispositional view of coping, these coping dispositions have been found to be

correlated with a number of personality traits (e.g., Evers, Frese & Cooper, 2000; Hewitt & Flett, 1996). For example, neuroticism measured by trait anxiety has been found to relate to maladaptive coping (Parasuraman & Cleek, 1984). However, some researchers (e.g., Carver et al., 1989; Parkes, 1990) argue against this view, believing coping strategies may also be situation-specific.

Even if individuals have a preference towards a particular coping strategy, some individuals may be more naturally flexible in their coping strategies. For instance, pessimistic and depressive people tend to be more rigid in adjusting their coping strategies (Perrez & Reicherts, 1992), whereas optimistic people are more likely to accept uncontrollable situations and are more likely to use active coping strategies in controllable situations than are pessimists (Carver, et al., 1989). Individuals who show flexibility in utilising different coping strategies have an advantage, as they are more likely to switch between strategies depending on which are best suited to cope with a particular stressor.

The benefits of being able to successfully cope with a particular stressor may include individuals gaining an increased sense of well-being and belief in their abilities (Jew, Green, & Kroger, 1999), as they perceive themselves as being more able to cope with future stressors. However the reverse may be true for individuals who perceive themselves as unable to cope with stressors, as they may experience a sense of helplessness (Lazarus, 2000). The resources needed to deal with the stressor and the individual's ability to cope with the stressor can be influenced by both personal and environmental resources available, as well as the level of threat perceived by the individual (Carver, et al., 1989; Lazarus, 2000). Therefore, although there is evidence that individuals differ in their stylistic patterns of coping reactions, it is also apparent that situation-specific factors also play a major role in coping

reactions (Endler, Kantor, & Parker, 1994). Consequently, the interplay between dispositional and situational factors in coping should be examined more closely, in order to explore the interactions between an individual's characteristics and the environment they work in. For example, social and psychological factors (such as social support and personality traits) are usually seen as resources that the person can draw upon in the face of adversity (DeLongis & Holtzman, 2005).

As stated previously, models of coping are often divided into a 'Direct Effects' Model, a 'Moderated Effects' Model or a 'Mediated Effects' Model of coping. Where avoidant coping appears to have mainly direct effects on stress in spite of the situation, problem-focused coping is more likely to have moderating or mediating effects on stress (Aldwin, 1999). While a large number of studies have only investigated direct effects on stress at work, the research reviewed suggests a more complex relationship. It is probable that most of the effects of coping on stress and health outcomes are mediated or moderated through affect. Given that most theoretical models hypothesise coping as a stress buffer, it is surprising that this assumption is not tested more frequently. The few studies that have studied these effects of coping on stress have had relatively small sample sizes. Therefore future studies examining the moderation and mediation effects of coping on stress should make use of more sizable samples.

The relationship between coping and physical symptoms has also been found to dissipate after personality factors such as neuroticism and anxiety (Hemenover & Dienstbier, 1998) have been controlled for. In addition, based on previous studies on psychological symptom outcomes (Bolger, 1990), coping strategies, as well as having independent effects on symptoms, seem to at least be partial mediators between personality and health. However, there is still insufficient evidence of the

mediating and moderating function of different types of coping in the context of coping with work stressors. And when work stress has been considered, researchers have frequently failed to test the hypothesised moderating or mediating effect (e.g., Rush, Schoel & Barnard, 1995). This may be because, as Frazier et al. (2004) have suggested, it may be difficult to detect moderational or mediational relationships. In addition, while there is a relatively wide range of research on coping and mental health (Aldwin, 1999; Zeidner & Saklofske, 1996), most of the studies take place in clinical populations with comparatively very few studies of coping and physical health symptoms conducted in the general population or the work environment.

#### *Job-Demand-Control Model*

One of the main job stress models is the Job-Demand-Control Model (Karasek, 1979; Karasek & Theorell, 1990; see Figure 1). This model proposes that psychological strain does not result from a single aspect of the work environment, but from the joint effects of the job demands placed on the worker and the discretion permitted to the employee in how to meet the demands (i.e. job control). According to this model, jobs with high demands and low control will result in strain. Specifically, when job demands exceed an employee's adaptive capacities, these demands turn into stressors and lead to psychological and physiological costs (Hakanen, Bakker, & Demerouti, 2005).

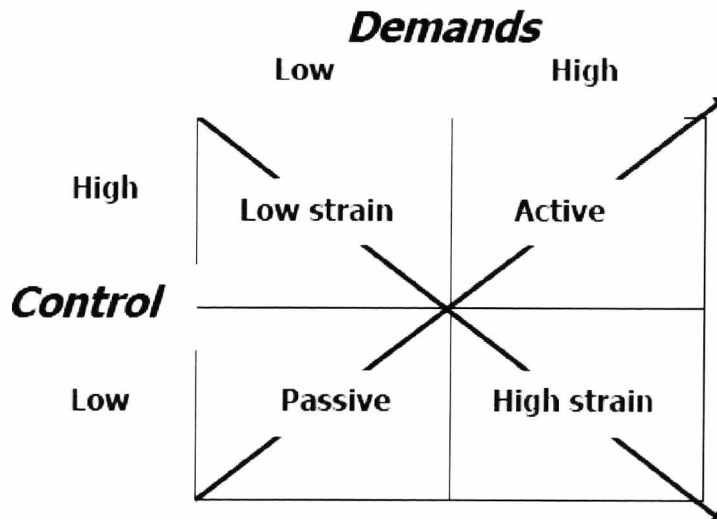


Figure 1. The Job-Demand-Control Model (adapted from Karasek, 1979).

Many researchers have tested this theoretical model with regards to employees. For example, Ganster, Duffy and Hurrell (1995) produced measures of occupational psychosocial demands and control from job analysis data and associated them to measures of mental and physical health with a sample of 2779 workers from 49 different occupations. Employees in occupations associated with high levels of demands and high levels of control reported fewer symptoms of ill health and took fewer sick days. These relationships endured even after gender, age, and exposure to non-psychosocial conditions such as physical hazards, were controlled for. However, although measures of health outcomes were obtained from individual workers, the complexity and control measures were based on occupational data. As a consequence, individual difference in exposure to job conditions within occupations, although probably substantial, was ignored and likely attenuated the results.

Specifically, the JDC model predicts that high job control alleviates (moderates) the negative effects of job stressors (e.g., workload) on various well-being outcomes (e.g., psychological distress, physical health, motivational



outcomes). However, empirical evidence concerning this moderator hypothesis is somewhat conflicting (Van der Doef & Maes, 1999); some studies have found such a moderator effect (e.g., Bakker, Demerouti, & Euwema, 2005; De Lange, Taris, Kompier, Houtman, & Bongers, 2003; Van Yperen & Hagedoorn, 2003; Wall, Jackson, Mullarkey, & Parker, 1996), whereas others have not (e.g., Boswell, Olson-Buchanan, & LePine, 2004; Rasku & Kinnunen, 2003).

However, it can often be difficult to divide the features of the work from those of the employees themselves. Problems derive from response consistency effects, attribution effects, and even certain individual traits such as negative affect (e.g., Parkes, 1990; Pennebaker, 1992) make interactions observed indefinite concerning the causal effects of jobs demands. Another main limitation of work-strain studies is the possible confounding of organisational differences in demands with differences in socio-economic status. Thus, limiting the study to one occupation in which participants share similar socio-economic status may afford better control. Therefore, the Job-Demand-Control Model has come under criticism for being too crude and ignoring the moderating effects of social support. The model has therefore been broadened to include social support at work (Johnson & Hall, 1988).

### *Social Support*

Although, Lazarus and Folkman (1984) consider social support to be a resource that affects the way one copes, Antoni (2002) suggests that social support can be considered a coping resource to the degree that it channels, assists, or maintains the use of coping strategies when dealing with stress. Several studies have demonstrated this relationship between social support and coping. For instance, social support has been shown to be associated with higher levels of active coping (Leslie, Stein, & Rotheram-Borus, 2002). In examining the association between

social support and coping, Schmitz and Crystal (2000) investigated the relationship between social support, coping style, and psychological distress. They employed model analyses that incorporated both social support and coping, and concluded that models that positioned social support prior to coping should provide better accounts of the criterion variable (psychological distress) than those in which coping preceded social support. Their study suggests that a person's perception of social support forms the basis from which coping choices are made.

As coping ability and social support are widely believed to be essential factors when analysing the effects of stress (Lazarus, 2000), the social support literature acknowledges the link between poor social support and health outcomes such as increased depression (Krause, 2001). In addition, past research has found that perceptions of receiving and perceiving social support was a main motive for electively entering and staying in addiction recovery organisations and self-help groups (Laudet, Cleland, Magura, Vogel, & Knight, 2004; Magura et al., 2003). As well as having a direct effect on stress, social support is thought to have mediating and moderating roles (Thotis, 1995). For instance, seeking social support has been found to relieve the effects of daily hassles (Grant et al., 2000). A similar study found no differences between men and women in the moderator effect of seeking social support (Felsten, 1998). Regarding the working environment, other studies have found that supervisor support is related to work-related outcomes such as job satisfaction (Baruch-Feldman, Brondolo, Ben-Dayana & Schwartz, 2002), and work-related stress (Jagdip, 2000).

According to Bandura (2004), individuals need to understand how to procure social support to sustain their behavioural efforts. Social support can come in the form of verbal or behavioural actions that help an individual assume and maintain a

particular behaviour. Social support can be further separated into concepts of functional support (the extent to which individuals perceive they can utilise interpersonal relationships to acquire resources), and structural support (the degree to which the structure of relationships is developed around an individual irrespective of the individual's actual perceptions or experiences of support. Functional social support is one of the most examined predictors of well-being and mental health (e.g., Carlson, McNutt, Choi, & Rose, 2002; Coker et al., 2002) with studies consistently showing a positive impact (Barrera, 2000). For example, Ducharme and Martin (2000) studied 2,505 full-time employees to test whether social relationships in the working environment increased job satisfaction and whether social support was more important to employees experiencing high job stress. In this study support was differentiated between instrumental support (functional interdependence) and affective co-worker support (personal affiliations). Results revealed that social support significantly increased workers' job satisfaction, but the negative impact of job stress was found not to be mediated by either instrumental support or affective social support.

Another study, examined the effect of perceived organisational support (POS) and support from supervisors and co-workers in the relationship between work-family conflict (WFC) and its effects on burnout on construction professionals and managers. The findings revealed that POS had a main effect on burnout and also moderated the relationship between WFC and burnout, and that the effects of supervisory and co-worker support were similar. However, different effects were found for different types of support. Emotional support had a main effect on burnout but not a moderating effect in the WFC-burnout relationship, while practical support had a moderating effect, but not a main effect on burnout (Lingard & Francis, 2006).

Co-workers have also demonstrated to be crucial in assessing the equity of pay and work requirements, and studies have demonstrated that an employee's co-worker's job satisfaction can also affect their own job satisfaction (Brown, 1998). Positive interactions between an employee and their co-worker's and supervisor's, include effective communication, constructive feedback, and concentrating on quality rather than quantity (Schroffell, 1999). For instance, Schroffell (1999) suggests that more experienced employees prefer less supervision and less experienced employees desire more supervision.

#### *Job-Demand-Control-Support Model (JDCS)*

Overall research on occupational stress has provided modest support for the Job Demand-Control Model with respect to the strain hypothesis and the interaction between workload and job autonomy (e.g., de Jonge & Kompier, 1997; Jones, Bright, Searle, & Cooper, 1998; Terry & Jimmieson, 1999), as most studies have found additive rather than interactive effects of these variables when predicting health and occupational outcomes. For example, significant main effects of high workload and low job autonomy are often found in relation to stress complaints (e.g., Barnett & Brennan, 1997; Parkes, Mendham & Von Rabenau, 1994). Therefore, the association between job characteristics and psychological well-being is inconclusive (Van der Doef & Maes, 1999).

The JDSC Model (Johnson & Hall, 1988; Karasek & Theorell, 1990) argues that job control is not the only resource available for coping with job demands, and that social support, either from supervisors or co-workers, can reduce the harmful impact of stressful situations at work (Schaufeli & Bakker 2004; Bakker et al., 2004). The JDSC Model predicts that job strain should be highest under high work stress when combined with low levels of work control and social support. This

model is in line with the Stress-Buffering Model of social support, which suggests that social support shields the individual against the harmful effects of stress (by helping the person to redefine the problem, providing a solution to it; Cohen, & Wills, 1985). Thus, jobs with high demands, low control and low support from co-workers or supervisors are thought to bear the highest health risks (i.e. job dissatisfaction, burnout, depression, and psychosomatic symptoms; Johnson & Hall, 1988; Landsbergis, 1998; Landsbergis, Schnall, Deitz, Friedman, & Pickering, 1992). Furthermore, the level of active coping (seeking support and seeking feedback from supervisors) has been reported as being significantly higher in occupations with both high demands and high control than in passive jobs with fewer demands (Dollard & Winefield, 1998).

There is increasing evidence for the joint moderating roles of work control and social support on the stress-strain relationship. Johnson and Hall (1988) reported that low levels of social support heightened the negative influence of high job demands and low job control on cardiovascular health indicators; however, the highest cardiac risk was apparent when employees had active work conditions (high demands and high control) and low support (e.g., Kristensen, 1995; Theorell, & Karasek, 1996). Landsbergis, Schnall, Deitz, Friedman, and Pickering (1992) also reported that a lack of social support decreased job satisfaction for jobs with high job demands and high job control (i.e. an active job). The authors suggested this indicated the positive impact of a cooperative rather than a competitive working environment. In addition, there is evidence that the JDCA Model is useful in predicting affective work outcomes. In an analysis of the interactive effects of demands, control, and support, Parkes et al. (1994) reported that in both cross-sectional and longitudinal research, psychosomatic health scores were related to high

strain jobs (i.e. high job demands and low control) under conditions of low (but not high) levels of social support at work (Karasek, & Theorell, 1990). In addition to the prospective health benefits, optimising levels of employee control and participation can enhance job satisfaction and morale, generating a variety of organisational benefits (Karasek, Brisson, Kawakami, Houtman, Bongers & Amick, 1998). This in turn can lead to more beneficial outcomes, for example, numerous studies have reported a relationship between job satisfaction and health whereby higher levels of job satisfaction were related to decreases in poor health (Burke, 2002; Cooper, Clarke, & Rowbottom, 1999; Heslop, Davey-Smith, Metcalfe, Maclead, & Hart, 2002; Johnson et al., 2005). The influence of social support however, is highly contextual, and depends upon the employee's needs and the receptiveness of colleagues in the workplace.

Work environment attitudes towards work stress have been criticised for being too simplistic as it views the individual as passive, ignoring the strong moderation effects that an individual's characteristics can have. Therefore the expanded JDCA Model has also come under scrutiny for not considering individual differences in coping potential and susceptibility to stress. This needs to be taken into account, as the interaction between the dimensions of the model and the outcome measures may depend upon employees' individual characteristics (de Rijk, le Blanc, Schaufeli, & de Jonge, 1998).

Reviews of the JDCA Model literature and psychological well-being at work (e.g., anxiety, depression, job satisfaction, burnout), have found that there is little evidence that control and/or support moderate the negative influence of high job demands (Van der Doef & Maes, 1999). Additionally, research that has studied the moderating effects of social support has not found support for the interaction

hypothesis (Melamed et al., 1991). Other studies have also tested the JDCS Model on well-being at work (de Rijk, Le Blanc, Schaufeli, & de Jonge, 1998), and also failed to indicate that control or support moderated the negative influence of high demands on burnout. However, they did suggest that job demands and control separately have an impact on burnout dimensions. Another key finding was that decision authority and skill discretion may not be of equally important value in predicting burnout.

For instance, there is evidence that increased control over one's job assists employees in utilising enhanced coping responses. Olson and Tetrick (1988) suggested that as top-level managers consider themselves as having more control over the situation they deal with change by seeking out more information and listening and reacting to feedback about the situation. In Armstrong-Stassen's (1998) study, supervisors were discovered to be more liable to employ control-oriented coping, rather than avoidance coping, which is more widely used by those in non-supervisor positions. Positive coping strategies have additionally been associated with better adjustment during stressful events (Terry, et al., 1996). This suggests that perceptions of control have an influence on how potentially stressful events are appraised, evoking negative emotions and coping strategies, and the amount of strain on the individual, all of which mediate health and occupational outcomes.

There is also extensive empirical evidence that the employee's perceived control over the stressor moderates the effect of the stressor on negative mental health outcomes (e.g., Parkes, 1986), due to the person being more able to control the level of threat associated with a situation. When individuals appraise stressors as controllable, the resulting positive attitude should enhance their efforts in improving

the situation, as they look forward to bringing about the required change. However, appraising an event as controllable may also lead employees to take on unnecessary responsibility for the stressful event, which may lead to self-blame (Terry, 1994). Even so, most studies indicate that perceptions of control lead to better health outcomes.

Contradictory evidence of research employing the JDC/JDCS Model may be associated with the diverse ways in which control is defined and imply that future studies on the model should differentiate between dimensions of control. Although the assumption that the interaction of high demands and low control in particular, produces negative health outcomes is often only partially established, research mostly demonstrate evidence for independent main effects of the work characteristics (van der Doef & Maes, 1999; de Jonge & Kompier, 1997). Furthermore, studies that examine the JDCS Model are most frequently based on cross-sectional designs, where data are collected from a single point of time (van der Doef & Maes, 1999; de Jonge & Kompier, 1997).

Cross-sectional studies are at a disadvantage as they can not support causal inferences from their data. In addition, as cross-sectional studies use the assessment of workers' perceptions of their work situation at one point in time (Landsbergis & Theorell, 2000), employees' perceptions of their work state may be influenced by external factors and may result in less reliable appraisals of their work characteristics. This may be less of a problem for longitudinal designs, as they provide a more stable and reliable assessment of the employee's working environment. This should lead to more reliable evidence of causal effects of the workplace environment on the individual's health.



Furthermore, control is often linked to problem-focused coping, and low control to emotion-focused coping. For example, Bosma et al. (1997) believe that control would not have obvious effects on stress without the appraisal process. According to Bosma et al. (1997), control only creates a stress reaction. It is personal factors (such as self-efficacy) that connect the stressor and the stress response. The association between problem-focused coping and control may seem evident (e.g., control decreases stress, because it leads to more effective coping), but the success of coping is seen as more multifaceted, and as discussed earlier, problem-focused coping may not be the most effective way to cope in every situation.

As regards to the support aspect of the model, higher levels of social support have been associated with lower levels of depressive symptomatology in later adulthood, and have been found to buffer the effects of ill health, disability, bereavement, and other stressors (e.g., Besser & Priel, 2005; Wallsten, Tweed, Blazer, & George, 1999). This may be particularly significant in demanding and stressful occupations (Parkes, Mendham, & Von Rabenau 1994). Social support can be seen as a dynamic resource that requires interaction. As such, the amount and quality of support an individual receives is dependent not only on the supporters but also on those who require the support (Buunk & Peeters, 1994). This suggests that obtaining social support requires some social skills. Therefore individuals who lack social skills will likely have a harder time eliciting support than those with greater social skills. In fact, Mallinckrodt and Wei (2005) state that adults who lack the capacity for secure attachment frequently also lack the skills required for adequate social functioning, for example, the ability to recruit supportive friendships and clearly communicate needs.

Support may moderate the effect of a stressor on emotional well-being by endowing a feeling that the employee has sufficient resources to cope with an event. Social networks can also bring about feelings of self-esteem and self-worth by offering a feeling of belonging and perceptions of being nurtured. For instance, social support groups have been found to have the most positive effect on physical functioning for breast cancer patients who lacked natural support or had fewer personal resources, but were detrimental for women who already had high support levels (Helgeson, Cohen, Schulz & Yasko, 2000), perhaps due to the increased level of stress that the greater social interaction places on them. If this is the case, employees who seek support when they already have high levels available may be more prone to stress at work.

The value of a support mechanism in increasing coping ability and lessening the impact of stress has been demonstrated through a number of studies. Similar to control, greater support can enhance coping ability by providing the individual with extra resources. Social support would likely enhance morale, which may in turn increase an employee's motivation to work, thus enhancing their coping ability and reducing stress. A more supportive social network would seem to better afford the use of certain coping strategies, such as the seeking of emotional or informational support, than a less supportive social network. Alternatively, the strategies individuals use to cope with stressors could affect the amount of support available from their social networks. For instance, those who seek social support as a method of coping may encourage support from others, while those who utilise strategies such as the venting of emotions and avoidance may deter others from offering support (Bolger, Foster, Vinokur, & Ng, 1996).

Cohen and McKay's matching hypothesis (1984) proposes that diverse stressors produce needs for diverse types of support and that the type of support must correspond with the person's needs. For instance, an employee who is experiencing work role overload is likely to benefit from co-workers taking on some of their responsibilities as it will help diminish their workload and thus their potential stress. Thus, when taking situational factors into account, the type of support available to the individual may affect the choice of coping strategies used in a particular situation.

Cohen and McKay (1984) suggested that social support might either change an individual's assessment of threat (primary appraisal) or one's assessment of their ability to cope (secondary appraisal). Perceived support from one's supervisor has been shown to be negatively associated with stress appraisals (Armstrong-Stassen, 1994; Terry & Callan, 2000). Cohen and McKay also suggested that perceived social support may promote specific types of coping behaviour. Terry and Callan (2000) demonstrated that employees who perceived high levels of supervisor support were more liable to undertake active coping responses than individuals who lacked support.

Most studies demonstrate that social support has a direct impact on stress outcomes (e.g., Baruch-Feldman, Brondolo, Ben-Dayana & Schwartz, 2002; Decker & Borgen, 1993; Jagdip, 2000), and in a few instances a moderating relationship is established (e.g., Dormann & Zapf, 1999; Frese, 1999; Griffith, Steptoe, & Cropley, 1999). However some researchers have not been able to establish any relationship between social support and health outcomes (e.g., Snapp, 1992), and a few studies have even demonstrated an inverse relationship (e.g., Hobfoll & Vaux, 1993; Rudkin, 2003). One rationalisation for this inconsistency is that the support available

needs to match the needs of each employee under stress (Cohen & Wills, 1985). Therefore, a more general support network may not be successful in decreasing depression when the stressor is job-related because what is required is support from one's supervisor or co-workers (Terry & Callan, 2000).

Direct effect models consider coping and stressors as performing separately to one another on their effect on occupational and health outcomes, whereas indirect models assume that social support moderates the relationship between stressors and outcomes (Viswesvaran, Sanchez, & Fisher, 1999). It may also be likely that people low in resources would be in more stressful situations or have a tendency to create more stress inducing situations (e.g., social stressors; Zapf, Vogt, Seifert, Martini, Isic 1999). If this were the case, this would not support a moderating or mediating effect of resources. However, Halbesleben and Bowler (2005) argue that it is likely that as the individual becomes emotionally exhausted, maintaining co-worker relationships is intensified to ensure support.

Although Parkes et al. (1994) demonstrated some support for the protective effects of social support by means of the JDCS Model, the tests for moderation and mediation in studies should be continued. In particular, there is a need to investigate the role of various support resources. Perhaps the lack of specificity in measuring social support can explain the failure of prior research to present explicit support for the moderating role of social support on stress at work. In terms of stress interventions at work, the ability in identifying which resources of support are most valuable to vulnerable employees is expected to be of value for individuals and organisations alike.

### *Social Cognitive Theory*

Social Cognitive Theory (SCT) (Bandura, 1986) focuses on personal, behavioural, and environmental influences of behaviour (Baranowski, 2004; Rinderknecht, 2004; Wilson, 2002), and asserts that when coping with an aversive threat, individuals low in self-efficacy are more likely to develop avoidance behaviour. According to SCT, three main factors influence the probability that an individual will change their health behaviour; self-efficacy, goals, and outcome expectancies (National Institute of Health, 2005). This theory highlights cognitive interpersonal and environmental factors that influence the acquirement of healthy behaviours. The fundamental aspect of the SCT is that an individual's behaviour is affected by constant interaction between personal characteristics and environmental factors. According to SCT, personal characteristics involve knowledge related to the outcomes of their behaviour (outcome expectancies), knowledge of the skills related to perform a specific behaviour (behavioural abilities), and the person's confidence in performing a specific behaviour (self-efficacy). Bandura refers to these features as the most beneficial in designing effective health interventions. Additional constructs of the SCT include self-control, reinforcements, observational learning and social support. The constructs of SCT offer a solid foundation for educators to exploit in order to enhance self-efficacy and employ lasting behaviour change. It is the theory of self-efficacy that is seen as the most important factor in enhancing an individual's self-efficacy toward modifying health behaviour.

### *Self-Efficacy*

Although there are many organisational studies that examine external and criterion-related validity, less research has studied the construct and internal validity of crucial variables and beliefs, such as goals, feedback, discrepancy, and self-

efficacy (Vancouver & Day, 2005). In the working environment, self-efficacy has been found to moderate the relationship between job design and somatic complaints (May, Schwoerer, Reed, & Potter, 1997), and therefore self-efficacy is thought to be influential to the stress-health relationship as it involves an individual's use of his or her personal resources (Lazarus & Folkman, 1984; Schwarzer, 1994).

The established relationship between the readiness to implement situationally effective coping strategies (Rippeto & Rogers, 1987) indicate that self-efficacy has an influence on health behaviours and as such is an important defence against negative health outcomes. Although Bandura (1997) perceived self-efficacy as being task or domain-specific, other authors prefer to consider self-efficacy as a more general construct that comprises an overall belief in one's coping ability across a varied range of situations (e.g., Scholz et al., 2002; Schwarzer & Jerusalem, 1995). Those high in general self-efficacy are believed to be more able to deal with a wide range of demanding situations and to cope with stressful events through employing a broad array of coping strategies depending on the situation. However, some people may perceive themselves as only possessing self-efficacy in a specific area or skill.

Self-efficacy theory has been demonstrated to be an essential motivational construct, affecting individual choices, goals, emotional reactions, effort, coping, and persistence (Gist & Mitchell, 1992). It can also be used to explain attitudes and behaviours in many workplace environments, including goal setting, performance (Brown, Cron, & Slocum, 1998), resistance to technology (McDonald & Siegall, 1996), and training (Saks, 1995). For instance, a study of Finnish smokers found a relationship between low smoking cessation self-efficacy and high depression scores in males when the smoking consumption rate was adjusted for (Haukkala, Uutela, Vartiainen, McAlister, & Knekt, 2000). For female smokers, high depression was

related with motivation to quit smoking. In fact, self-efficacy has been found is one of the greatest predictors for smoking cessation (Dornelas, Sampson, Gray, Waters, & Thompson, 2000; Shiffman, Balabanis, Paty, & Engberg, 2000; Amodel & Lamb, 2005). It has also been reported that the effect of smoking lapses results in increased negative affect and reduced self-efficacy (Shiffman, et al., 1997). For example, Dornelas et al. (2000) found that low self-efficacy was a predictor of relapse. Johnson, Budz, Mackay, and Miller (1999), included the use of self-efficacy measures, but did not find differences in self-efficacy between treatment and control groups. However, participants lost to follow-up may have impacted available data affecting to self-efficacy in Johnson et al's 1999 study, meanwhile demonstrating the loss of power with missing information from follow-up sessions.

Furthermore, self-efficacy is thought to be enhanced when others (e.g., supervisors and co-workers), perceive the employee to be competent, trust them and express these perceptions behaviourally, for instance, by assigning responsibilities (i.e. by role adjustment). Such role adjustments have a figurative value for the employee, serving to enhance their confidence. In addition, there is support that increases in the employee's job content raise self-efficacy (Burr & Cordery, 2001). As a consequence, the improvement of self-efficacy on the part of the employee is likely to be perceived as an additional demonstration of competence by supervisors and co-workers. In addition, self-efficacy gives employees the confidence to seek out, obtain and apply new information, and that in turn leads to more confidence (Leach, Wall, & Jackson, 2003).

#### *Self-Efficacy and the Job Demand-Control Model*

While social support, has received a considerable amount of attention as an environmental moderator, much less interest has been paid to how personal

moderators behave (Jex, Bliese, Buzzell, & Primeau, 2001). Furthermore, Bandura (1997) defines self-efficacy as confidence in an individual's abilities to meet situational demands and effectively perform a given behaviour or task. It seems reasonable then to think that employees with high self-efficacy are more liable to believe that they can cope with job demands in the face of work stressors (Jex et al., 2001). Among the few studies that have examined such issues directly only a few have found a moderating role on self-efficacy (Schaubroeck & Merritt, 1997; Jex & Bliese, 1999; Schaubroeck, Lam, & Xie, 2000; Jex et al., 2001). Using Karasek's Job Demand-Control Model, Schaubroeck and Merritt's (1997) results demonstrated that high self-efficacy matched the predictions of the Demands-Control Model when a three-way interaction involving self-efficacy was found. High job control and high self-efficacy was found to protect against the negative effects of demanding jobs, and a lack of control together with high self-efficacy was thought to be especially detrimental. However, they found that high job demands and high job control have negative physiological effects for those with low self-efficacy. They concluded that enhancing self-efficacy may be just as important as enhancing job control in decreasing the negative health effects of job demands.

Jex and Bliese (1999) used both individual and collective measures of self-efficacy and found that self-efficacy moderates the relationship between specific stressors, such as work overload or task meaning, and also influences outcomes, such as job satisfaction, physical symptoms, propensity to leave a job and organisational commitment. However, they did not find significant interaction effects as far as job satisfaction was concerned. They found similar main effects for organisational commitment, but no interaction effect between general self-efficacy and work overload. Similarly, in a cross-cultural study, Schaubroeck, Lam, and Xie (2000)



found that several strain measures were predicted through a three-way interaction of job demands, job control, and self-efficacy. Their results suggest that increasing job control for people low in self-efficacy could be harmful and that organisations should concentrate on increasing self-efficacy. Finally, Jex et al. (2001) examined the central role that self-efficacy plays in the stressor-moderator-strain relationship. Specifically, they found two three-way interactions involving self-efficacy (work overload, self-efficacy and avoidance coping, and role clarity, self-efficacy and active coping). They conclude that successful coping is dependant on the relationship between coping methods, the nature of the stressor, and beliefs about one's abilities.

#### *Sources of Self-Efficacy*

Bandura (1997) suggested that there are four main sources affecting self-efficacy; mastering experiences, vicarious experience, verbal persuasion, and physiological factors (Parjares, 2000). Mastery experiences are thought to be the strongest source of self-efficacy. They act as a sign of personal ability and are the evidence of success in a particular task or skill. Put another way, success raises self-efficacy, while failure lowers it. People who experience high levels of self-efficacy while performing a task are more likely to engage in behaviour that offers them more occasions for mastery experience, thus enhancing their perceived self-efficacy (Tucker & McCarthy, 2000). These positive self-beliefs of self-efficacy motivate the person to perform a role (Strieter, Celuch, & Kasouf, 1999). In contrast, those people who perceive themselves as having low levels of self-efficacy are more likely to avoid such activities, consequently denying themselves the opportunity to develop the skills needed to increase their self-efficacy. This can be thought of as vicious cycle, which Tucker and McCarthy (2000) describe as the "self-efficacy paradox". This cycle places low self-efficacy people at a substantial disadvantage. However,

past research has shown that despite mastery experiences many peoples' self-efficacy actually decreases with an intervention aimed at increasing self-efficacy (Winters, 2001). Thus, mastery experiences are only one way in which self-efficacy can be changed.

Vicarious experience is another source which is attained through the comparison and modelling of others, and follows the assumption that it can be beneficial to observe someone else successfully performing the same task. Vicarious experience is more effective when the individual sees themselves as similar to his or her model. Despite benefits demonstrated by several studies, vicarious learning is not often easily changeable. Since vicarious learning is a somewhat passive learning activity, learners may disengage from the activity or fail to address critical features of the performance, thus missing out on any benefits to be obtained. Given these impending difficulties, it may be helpful to combine vicarious experiences with other approaches that will enable employees to become and stay involved in the intervention. For instance, Wang, Ertmer, and Newby (2004) demonstrated that vicarious experiences together with goal setting were more successful than either strategy by itself for enhancing teachers' self-efficacy for technology integration.

Verbal persuasion attempts to increase an individual's belief about their personal level of skill through the use of persuasion from a significant person in their lives, whether professional or personal. Positive persuasions increase self-efficacy, negative persuasions decrease it (unfortunately, it is harder to increase someone's self-efficacy than it is to decrease it). In this regard, the type of social support an individual receives (i.e., positive or negative persuasion) is an important source of change for self-efficacy (Bandura, 1997).

Finally, physiological feedback, in which efficacy beliefs are formed from feedback created by a person's own physiological state (e.g., feelings of anxiety). A person with low-self-efficacy may view their emotional and physical physiological state as negative, while a person high in self-efficacy is more likely to view his or her state as positive. The interpretation of emotional and physical feelings as positive rather than negative is considered to offer internal feedback which can influence self-efficacy (Bandura, 1997). As people function best in a supportive environment, conditions that cause conflict may lead to low levels of self-efficacy and result in low participation and outcome expectations. Success in the enhancement and utilisation of self-management tasks using one or all of these self-efficacy sources can help an employee to gain more control over some of the manageable features of their stressful work environment.

Self-efficacy is thought to be built up through the successful experiences of an individual's past ability to cope with a particular situation. This in turn, is thought to lead to the employment of suitable coping strategies. In this respect, the theory of Self-Efficacy is similar to the JDCS Model and the Transactional Theory of Stress, as it is characterised by strong action orientation, in that subjective appraisals of given situations influence health-related behaviours and may have a moderation effect on health. The theory of self-efficacy is also associated in other health models that are relevant to this discussion. The Relapse Prevention Model (Marlatt & Gordon, 1985; Witkiewitz & Marlatt, 2004) and Moos and Holahan's (2003) integrative conceptual framework of coping behaviour both propose that self-efficacy and coping responses are interrelated and determine health outcomes, such as relapse to alcohol use. Witkiewitz and Marlatt's (2004) updated Relapse Prevention Model proposes that low self-efficacy is one part of an individual's

chronic vulnerability to relapse, and that this vulnerability might be made worse by poor coping skills. While Moos and Holahan (2003) conceptualised self-efficacy as a personal factor that influences health and well-being, and noted that cognitive appraisal and specific coping responses or skills might moderate the effect of self-efficacy on outcomes. Both these models further suggest a moderating process and imply that coping skills should influence the effects of self-efficacy on treatment outcome.

#### *Interventions Aimed at Improving the Psychosocial Work Environment*

Interventions based on stress models suggest that improving job resources (Karasek & Theorell, 1990), as well as utilising new coping skills promote positive health outcomes. However, workplace stress interventions that aim at reducing work constraints at the source present several challenges due to changing conditions in the workplace. Several intervention studies have found positive results (Parkes & Sparkes 1998; Bond & Bunce 2001), while others suggest that few significant results support a causal relationship between work characteristics and mental health (Reynolds, 1997; Amick & Kasl, 2000; Van der Klink, Blonk, Schene, & Van Dijk, 2001).

In addition to reducing psychological health symptoms, studies targeting organisational stressors have also been shown to reduce physical health symptoms (Heaney, Price, & Rafferty, 1992), as have work reorganisation interventions. For example, Bond and Bunce (2001) found that increasing job control led to decreases in psychological and physical health symptoms, as well as improvements in self-rated performance a year later. Successful results of interventions aimed at improving coping skills to reduce psychological symptoms have also been reported

for employees from a range of occupations (Kline & Snow, 1994; Snow & Kline, 1995; Snow, Swan, & Wilton, 2002).

With an increasing amount of evidence demonstrating the necessity for a balanced approach to work and life, there is a greater than ever need to discover interventions that are effective. However, past research has mainly focused on developing an awareness of the antecedents and outcomes of the work-life conflict (Baltes & Heydens-Gahir, 2003). Fewer studies have focused on the effectiveness of interventions that aim to improve the work-life balance and health and occupational outcomes. However, the implementation of work interventions must consider that most individual interventions are unsuccessful as less importance is given to the organisational level (Nytrø, Mikkelsen, Bohle, & Quinlan, 2000).

Nevertheless, those conscious of methodological limitations (e.g., an inadequate follow-up period, or the absence of rigorous methods) maintain that interventions are relevant (Ganster 1995; Shannon, Robson, & Sale, 2001). They appreciate the importance of founding their work on theoretical models. In most studies, the job strain model (Karasek & Theorell 1990) has been used to assess the dimensions of psychological demands, job control and social support, and the effort-reward imbalance model has been used to assess the reciprocity of efforts spent and rewards received at work (Siegrist 1996). Therefore, more effective workplace interventions are needed that make use of work stress theory to better enhance employee well-being, lower health costs, and to justify program investment.

#### *Social Support Interventions*

As positive effects of social support have been found to have a beneficial impact on health, interventions aimed at enhancing social support have been designed for conditions such as cancer, weight loss, and substance abuse (Hogan,

Linden, & Najarian, 2002). Support interventions are based on the idea that enhancing support leads people to better understand their illness and increase coping, as the increase of social support leads to fewer physical and psychological symptoms (Davidson, Pennebaker, & Dickerson, 2000). Support interventions may be applied in a group setting or designed for individuals. However, group designs are often more cost-effective than individual designs (Hogan, Linden, & Najarian, 2002). Many interventions are aimed at enhancing the perception of support, the size of the social network, or at improving social skills to assist in the creation of support (Hogan, Linden, & Najarian, 2002). The aim of the intervention may be to increase support from friends, family, or work colleagues, or it could be to increase support from health professionals. Though there have been an array of social support interventions found in the literature, there is still no agreement as to the types of interventions that are most successful or whether specific interventions are more beneficial to some groups than others (Hogan, Linden, & Najarian, 2002). Furthermore, often interventions failure to report pre and post measures of support, making it difficult to conclude whether changes in outcome variables were due to changes in support (Hogan, Linden, & Najarian, 2002).

However, social support interventions that have reported measures of support pre and post intervention have been found to be, at least partially successful. For example, Lavoie-Tremblay, Viens, Ve'zina, Durand, and Rochette (2005) designed a participatory organisational intervention for health care workers that was based on a contract, agreed on by representatives of carers and carried out through team work. Work constraints were identified, and an action plan that involved improving relationships with the medical team and pharmacy were put into practice. Absenteeism rates from the sample decreased over the intervention period, but in the

rest of the institution were unchanged. However, there was a significant decrease in social support from supervisors post-intervention. With respect to the Job Strain Model, the intervention demonstrated a reduction in job strain and psychological demands, a significant reduction in social support from superiors, and also a reduction in decision latitude and social support from colleagues' post-intervention. A similar study evaluated the effects of the implementation of resident-oriented care on the job characteristics (job autonomy, job demands, and social support) of nursing caregivers in nursing homes. In a quasi-experimental design, experimental and control groups in both general and psychogeriatric wards were examined for up to 22 months, using a pre-test and two post-tests by means of written questionnaires and semi-structured interviews. With respect to job characteristics, none of the expected intervention effects were found except for a positive trend with respect to contextual job autonomy in the experimental group and an increase of social support in the psychogeriatric experimental wards of one of the organisations (Berkhout, Boumans, Nicjhuis, Van Breukelen, & Abu-Saad, 2003).

Although results of reported support interventions appear to be beneficial, more research is needed using randomised control group designs to consider the effectiveness of these interventions (Hogan, Linden, & Najarian, 2002). Nonetheless, results suggest that a supportive work environment and the provision of social resources should be part of any intervention designed to improve well-being at the workplace.

### *Self-Efficacy Interventions*

As there is evidence that well-designed training increases behaviour specific self-efficacy (e.g., Anderson, 1995; Eden & Zuk, 1995; McCormick, Masse, Cummings, & Burke, 1999; Simon, Solkowitz, Carmody, & Browner, 1997), a

practical implication is to introduce workplace interventions designed to enhance self-efficacy. Although general self-efficacy is thought to be affected over a relatively long period of time, specific self-efficacy can be affected in the short term (e.g., training). Such research has used a multitude of intervention methods including various training methods, modelling, skill practice, and verbal persuasion (e.g., Eden & Zuk, 1995; Frayne & Geringer, 2000).

A number of workplace interventions aimed at enhancing self-efficacy and improving health and occupational outcomes have been conducted. For example, Earley's (1994) results from his multi-cultural study suggest that for individualists, self-focused training has a stronger impact on self-efficacy and performance than group-focused training. On the other hand, for collectivists, group-focused training had a stronger effect on self-efficacy and performance than self-focused training. In a similar study, Neck and Manz (1996) conducted a training intervention-based field study with accounting department workers to examine the applicability of thought self-leadership in an organisational setting dealing with a bankruptcy situation. The training lasted six weeks and included cognitive behavioural therapy and mental imagery. The findings revealed that employees who received the thought self-leadership training experienced increased mental performance and positive affect, higher job satisfaction, and decreased negative affect relative to those not receiving the training. Additionally, employees reported a strong and positive reaction to the training and also experienced increased perceptions of self-efficacy.

Godat and Brigham (1999) examined a self-management training that taught employees to deal with general work-related problems. The employees were allowed to choose their own target behaviours through the use of self-management projects. The behaviours chosen by participants for improvement were grouped into three



categories, job-related social skills, scheduling and organisational skills related to the job, and general health and self-improvement skills. The research used a between groups design with replications consisting of four training groups that received the same training at different times, and one control group. The intervention consisted of an eight-week training course in self-management (two hours per week). Results indicated that self-management training resulted in improvements in targeted work-related problems in 31 of 35 projects; however, as control group participants did not complete placebo self-management projects, causal inference was thought to be limited.

Martin and Sanders (2003) examined general and academic staff from a major metropolitan university who were reporting difficulties managing home and work responsibilities and behavioural difficulties with their children. Key transition times such as getting ready for work and arrival home from work were specifically targeted as important times for planned activity routines. Active training methods such as video modelling, rehearsal, practice, feedback and goal setting were used to teach specific parenting skills throughout the program. Following intervention, parents in the treatment group reported significantly higher levels of parental self-efficacy in managing both home and work responsibilities than parents in the control condition. Higher levels of social support, work commitment and job satisfaction were also found post treatment. These short-term improvements were maintained four months later.

Machin (2003) developed a fatigue management training program that aimed to identify specific factors that contribute to coach driver fatigue and assist coach drivers to develop more effective coping strategies to manage difficult or stressful work problems. The training program included a strategy of presenting realistic, job-

related situations and multiple responses to drivers and asking them how effective each response was in dealing with that situation. The evaluation of the training indicated that drivers who perceived the situational exercises as most realistic reported better training outcomes. Overall, the drivers reported positive reactions to the training and high levels of post-training self-efficacy.

Finally, based on social cognitive theory, Elbel, Aldana, Bloswick, and Lyon (2003) measured the effect of a physical activity intervention that was delivered by a peer and a professional leader. The intervention was designed to increase self-efficacy by emphasising the value of physical activity (i.e., expectancies), by utilising activities designed to help employees' recognise and overcome barriers to starting and staying with physical activity. The peer group showed positive trends in self-efficacy and self-reported physical activity.

#### *Online Health Interventions*

There are many studies that show that internet treatments can be effective for disorders such as depression, social phobia and panic disorder (Andersson et al., 2005; Andersson, et al., 2006; Carlbring et al., 2005). As well as being more cost-effective, a benefit of online interventions are that geographic distances are not a factor in terms of increased ease of access to treatment.

Most of the randomised controlled trials on Internet-based treatment, sometimes referred to as "Interapy" (Lange et al., 2000; Lange, van de Ven, & Schrieken, 2003; Lange, van de Ven, Schrieken, & Emmelkamp, 2001), have been done on minimal contact therapy. Although some authors who have reviewed studies conclude that the methodological quality of many internet based studies are weak (Bessel et al., 2002), and that there is a lack of evidence of any effects this may have on health outcomes, there are several more recent studies that have shown to

effectively treat headaches (Andersson, Lundstrom, & Strom, 2003; Strom, Pettersson, & Andersson, 2000), insomnia (Strom, Pettersson, & Andersson, 2004), and depression (Christensen, Griffiths, & Jorm, 2004; Clarke et al., 2002; Andersson et al., 2004; Marks et al., 2003), stress (Zetterqvist, Maanmies, Strom, & Andersson, 2003), posttraumatic stress (Lange et al., 2003), and smoking (Brandon, Collins, Juliano, & Lazev, 2000). According to Zabinski, Celio, Wilfley, and Taylor (2003), on-line interventions offer many practical advantages. Time constraints are removed and communication between therapist and participant does not have to be done simultaneously. In addition, treatment compliance can be easily and accurately monitored through computerised tracking devices, while the anonymity can reduce social barriers to self-disclosure. Computerised interventions can also be distributed easily in a cost-efficient manner.

#### *Purpose of Research*

As discussed in the previous chapter, an important limitation of the coping literature is that most studies have examined only main effects (and most examine only correlational relations in determining whether coping strategies are related to outcomes). The few studies that have studied the moderating effects of coping on stress are frequently cross-sectional in nature and have relatively small sample sizes. There is also considerable evidence of the main effect of personal resources (such as self-efficacy), and social resources (such as work support) on well-being at work (e.g., Salanova, Peiró, & Schaufeli, 2002). However, thus far there has been little empirical evidence on the moderating role played by these resources (and that of coping strategies) in the job stress process.

*Questions this Research Aim to Address*

The present research aims to overcome these limitations and extend this issue by investigating (a) whether self-efficacy is an important addition to the JDCA Model when predicting health and occupational outcomes, (b) the protective role of work support, and (c) the role played by job strain (job demands, job control), personal resources (self-efficacy), social resources (work support), and coping strategies by emphasising the moderating function these resources have on health and occupational outcomes.

## CHAPTER 3

## Study 1

*The Role of Work Support, General Self-Efficacy, and Coping Strategies in the Job**Demand-Control-Support Model**Chapter Overview*

Chapter 3 presents a test of whether general self-efficacy acts as an additional moderator variable in the Job Demand-Control-Support Model (JDCS). It starts with a discussion of the different effects models of coping. It then goes on to discuss the theoretical framework and the aims for Study 1. Following this, the data collection method and the sample characteristics, as well as a description of the measures used in the study are presented. The results of the statistical analyses are then presented and these results discussed.

*Effects Models of Coping*

To better understand how the coping process influences health, it is important to be aware of how researchers determine associations. Therefore, the three main models of the coping and health relationship will briefly be outlined. First the Direct Effects Model refers to associations between coping strategies and outcome variables. This model suggests that a direct relationship between coping strategies and outcomes exists, regardless of the situation. Second, the Moderated Effects Model assumes that coping has a moderating or buffering effect of stress (i.e. coping manipulates the strength and/or direction of the relation between a predictor variable and the outcome. Lastly, the Mediated Effects Model supposes that the effects of coping are mediated via other variables (particularly through affect). For example, coping interacts with outcome variables only to the degree that it modifies affect.

In this regard, Lazarus (1991, 2000) believes that the appraisal process mediates, or determines the influence of resources on outcomes of stress. For example, the direct effects of traits (i.e. personal resources, such as self-efficacy) on stress may be a consequence of the effect of these traits on the stress appraisals that, subsequently, influence stress. Mediation takes place when an independent variable (e.g., coping) accounts for the association between a predictor (e.g., job demands) and outcome (e.g., depression). However, Lazarus's conceptualisation of mediation has been criticised for being inconsistent (e.g., Holmbeck, 1997), especially as Lazarus tested moderating effects of appraisals, rather than mediating effects (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). An interaction effect involves a moderator variable which can be qualitative (e.g., ethnicity, job grade) or quantitative (e.g., job control, work support). The moderator, consecutively, affects the direction or strength of the relation between an independent or predictor variable and a dependent or criterion variable. Thus, moderator variables provide information as to the conditions in which we would expect a relationship between two variables to exist.

For instance, greater social support may be linked to a decrease in stress only when seeking social support. Although studies have demonstrated support for both moderating and mediating models (e.g., David & Suls, 1999; Portello & Long, 2001), research is often limited to a collection of data at only one point in time (cross-sectional design).

#### *Theoretical Framework of Study*

General self-efficacy is expected to have buffering effects on the relationship between job conditions (job demands and job control) and health and occupational outcomes. This hypothesis is supported by past studies. For example, Schaubroeck

and Merritt (1997) suggested that the inconsistent findings of Karasek's JDC Model could be explained by self-efficacy. Specifically, they found that the predicted demand-control interaction effect was only found for individuals high in self-efficacy (see also De Rijk, Le Blanc, Schaufeli, & De Jonge, 1998; Salanova, Peiró, & Schaufeli, 2002). These individuals use control to successfully deal with demanding tasks, making them less vulnerable to stress-reactions. In contrast, for individuals low in self-efficacy, high levels of control only resulted in additional stress if they had difficulties coping with challenging and new tasks for which they had power and responsibility over, thereby rejecting the interaction hypothesis of the JDC model. These results were supported by Salanova et al.'s study (2002) where a 3-way interaction effect was found for job demands, control, and self-efficacy. These results suggest that adding self-efficacy to the JDCS model should increase the power of the model. Extending the findings of Schaubroeck and Merritt (1997), people high in self-efficacy should cope more effectively when dealing with demanding tasks or demands (Green & Rodgers, 2001; Salanova et al., 2002; Schaubroeck & Merritt, 1997), and remain committed when responding to high job demands (Jex & Bliese, 1999).

Regarding the social support aspect of the JDCS Model, research has found inconsistent results for social support as a stress-strain moderator. Several researchers have found that social support has no moderating effects, others have found buffering effects, and still others have found reverse buffering effects (Beehr, 1995). As there is evidence that self-efficacy plays a main role in the stressor-moderator-strain relationship (Jex & Bliese, 1999; Schaubroeck et al., 2000; Schaubroeck & Merritt, 1997), it may be important in determining what role social support plays as a stressor-strain moderator. Furthermore, studies have demonstrated

that high self-efficacy promotes pro-social orientation and cooperation, helpfulness, and interest in the welfare of others (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Bandura, Pastorelli, Barbaranelli, & Caprara, 1999). Therefore, when an individual high in self-efficacy receives support it is more likely that they will view this as a positive interaction. Consequently, social support should buffer the negative effects associated with work stress. In contrast, employees low in self-efficacy may view the interaction as another source of pressure (i.e., another stressor) worsening the situation. Therefore, for low self-efficacy employees, social support may strengthen (reverse buffer) the stressor-strain relationship.

#### *Aims of Study 1*

Study 1 aims to investigate (a) whether general self-efficacy is an important addition to the JDCS Model when predicting health and occupational outcomes, (b) the protective role of work support, and (c) the moderating role of general self-efficacy, coping strategies and the JDCS Model when predicting health and occupational outcomes.

### Method

#### *Design*

This study employs a longitudinal correlational design. Measures were recorded at two points: Time 1 and at Time 2 (3 months later).

#### *Participants and Procedure*

A sample of 133 employees was recruited from four organisations in Kent, UK, for participation in a survey on work stress. From this sample, 68% were male, 32% were female, 92% were White British or Irish, and 94% were employed full-time. Mean age was 40.9 years old ( $SD = 12.5$  years), and mean tenure was 10.9 years ( $SD = 10.7$ ). The most frequent job grades reported were skilled manual (31%)



and skilled non-manual (31%). Questionnaire packs were posted directly to the companies and distributed to the employees by the contact persons in the companies. Participants were asked to seal their survey in the envelope provided, and return the completed questionnaire to the principal investigator. As a small compensation for participation, participants entered a raffle for a gift voucher of £20. All responses were voluntary and participants were given written assurance that all individual data would be confidential and anonymous. Only the researchers had access to the questionnaires, and the results were not presented in a form that could reveal an individual's identity or the Department in which they worked. All responses were converted into numbers and entered onto the computer database. Data will be kept in a locked room for as long as is required by the Data Protection Act, and then will be destroyed.

### *Measures*

*Demographic control variable.* Job grade (unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management) was used as a control variable as it was found to be the demographic variable that correlated with outcome variables the most consistently. Job grade categories were adapted from the National Statistics website (2004).

*JDCS.* To measure job demands, the subscale of the Job Content Questionnaire (Karasek, 1985) was employed comprising five items (e.g., "My job requires very hard work"). To measure job control, the Decision Authority Scale (Bosma et al., 1997) was employed comprising nine items that capture employees' authority to make decisions in their jobs (e.g., "I have a choice in deciding how I do my job"). To measure work support, a scale adapted from Payne (1979) was employed comprising nine items that capture various support resources in the work

environment (e.g., “I get help and support from my colleagues”). Across scales, participants responded to items on a 4-point scale from “never” to “often.”

*General self-efficacy.* To measure self-efficacy, the General Perceived Self-Efficacy Scale (GPSES; Schwarzer, 1993) was employed comprising ten items that capture participants’ broad and stable belief of their ability to deal effectively with a variety of stressful situations (e.g., “I can always manage to solve difficult problems if I try hard enough”). Participants responded on a 4-point scale from “strongly disagree” to “strongly agree.”

*Coping strategies.* To measure coping strategies, the Brief COPE scale (Carver, 1997) was employed comprising twenty four items that assess the use of different coping strategies used when experiencing stress at work. The brief version was chosen in preference to the original fifty two item version in order to reduce subject fatigue. Participants responded on a 4-point scale from “I haven’t been doing this at all” to “I’ve been doing this a lot”. An exploratory factor analysis (see Table 1) yielded six factors: social support ( $i = 4$ ); problem-focused ( $i = 6$ ); humour & acceptance ( $i = 5$ ); spiritual ( $i = 2$ ); substance-use ( $i = 2$ ); and maladaptive coping ( $i = 4$ ). Internationally, the Brief COPE possesses acceptable internal consistency, concurrent validity, and test-retest reliability (Carver, 1997). The alpha reliability scores of the Brief COPE subscales all exceed 0.60, with the exception of the subscales of Venting, Denial, and Acceptance, which all exceed 0.50 (Bowling, 2001). Carver has suggested a modification of this scale to meet individual research objectives. For the purpose of this study, an exploratory factor analysis was undertaken to identify the coping strategies in this population.

*Emotional health.* To measure emotional health, two subscales of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) were

employed. The anxiety subscale comprises seven items that capture anxious symptoms such as feeling tense or nervous (e.g., “I get sudden feelings of panic”). The depression subscale comprises seven items that capture depressive symptoms such as lack of energy and enjoyment (e.g., “I feel as if I am slowed down” or, reverse-scored, “I look forward with enjoyment to things”). Participants responded on a 4-point scale from “strongly disagree” to “strongly agree.”

*Physical health.* Two measures of physical health were employed. As a first measure, perceived general health was measured with one item asking participants how they would describe their health on a 4-point scale from “very poor” to “very good”. As a second measure, the Cohen-Hoberman Inventory of Physical Symptoms (Cohen & Hoberman, 1983) was employed comprising a list of 33 stress-related symptoms (e.g., headache or back pain). Participants were asked how often they had experienced the listed symptoms during the past three months and responded on a 4-point scale from “never” to “often.”

*Occupational outcomes.* Three measures of occupational outcomes were employed. As a measure of job satisfaction, five items were taken from Quinn and Shepard’s (1974) Job Satisfaction Index (e.g., “All in all I am satisfied with my job”), to which participants responded on a 5-point scale from “strongly disagree” to “strongly agree.” As a second measure, Propensity to leave the job was assessed with three items produced by Camman Fichman, Jenkins, and Klesh (1997). The first item asked participants to respond how concerned they would be if they had to take some other form of employment on a 5-point scale from “not at all concerned” to “very concerned,” the second item how likely it was that they would actively look for a new job in the next year on a 5-point scale from “extremely likely” to “extremely unlikely,” and the third item how often they thought about leaving their job on a 5-

point scale from “nearly all the time” to “never”. All items were reverse-scored. As a third, sickness absence was measured by asking how many days employees had off work due to illness in the last 3 months.

*Substance-use.* Alcohol-use, cigarette-use, alcohol-use increase, and cigarette-use increase were measured from Quine’s (2001) study on workplace bullying.

#### *Data Analysis*

All data entry and analyses were conducted using SPSS version 13.0 (SPSS, 2004). Data from the 133 completed questionnaires were entered into SPSS and checked for entry errors. Descriptive statistics were then generated for each variable. The results of the longitudinal analyses are presented after the results of the cross-sectional analyses.

*Factor analysis.* The factor structure of the Brief COPE on the sample at Time 1 was explored by using Principal Components Analysis. In all situations, parallel analysis was used to determine the number of factors to be retained (Russell, 2002). In parallel analysis, random data sets (usually 100) are drawn from a standard multivariate normal distribution yielding 100 data sets and thus 100 sample correlation matrices. The sample size and the number of uncorrelated variables are equal to those of the original data. The eigenvalues of the 100 sample correlation matrices are computed. A factor in the real data set is retained only if its eigenvalue is larger than the mean eigenvalue for the corresponding factor derived from the random data sets.

*Bivariate analyses.* Before moderated regression analysis was performed, intercorrelations among the independent and moderator variable were analyzed to detect possible presence of multicollinearity. For reasons of consistency, descriptions

of correlations were based on the guidelines for conventional practice outlined by Cohen and Cohen (1983). According to these guidelines effect sizes for correlations are as follows:  $r = .10$  (classified as weak),  $r = .30$  (classified as moderate), and  $r = .50$  (classified as strong).

*Multiple regression analyses.* Multiple regression analyses were used in Study 1 to investigate the interrelationship of study variables. To assess the moderating effects of the JDCS-GSE Model and coping strategies (independent variables) on health and occupational outcomes (dependent variables), moderated multiple regression analyses were undertaken, as recommended by Cohen and Cohen (1983). To examine interactions involving continuous variables, Aiken and West (1991) recommend centering all variables in moderated regression analyses in order to reduce problems of multicollinearity. In this Study 1, all variables included in the moderated regression analyses were first centered by converting them to  $z$  scores, and multiplicative terms were created for the standardized independent variables (Independent Variable  $\times$  Moderator Variable). In hierarchical regression analyses the predictor (independent) variables are entered in steps (or blocks) with each of these variables being assessed in terms of what they add to the prediction of the dependent variable, after any other predictor variable has been controlled for.

*Differences between completers and non-completers.* To investigate representativeness of the longitudinal sample, several comparisons using one-way analysis of variance (ANOVA) were conducted to test for differences of study variables between employees who responded at Time 2 (completers), and those who did not responded at Time 2 (non-completers). In addition, chi-square analyses were conducted to investigate differences between completers and non-completers in categorical demographic variables.

## Results

### *Data Analysis*

*Factor analysis.* An exploratory factor analysis (see Table 1) was undertaken to identify the factor structure of the Brief Cope items. A principal components analysis, employing a promax rotation yielded six factors: social support, problem-focused, humour & acceptance, spiritual, substance-use, and maladaptive coping. RanEigen (Enzmann, 1997) was used for determining the number of factors to retain by using random eigenvalues (parallel analysis). The parallel analysis method is an alternative to the rule of retaining eigenvalues greater than 1 and to the scree test. Retaining eigenvalues greater than 1 often leads to too many components being extracted and when using the scree test, it is not always clear where to draw the line that discriminates “significant” from “random” components (see Russell, 2002, for a discussion on best practices in factor analysis).

The goodness-of-fit chi-square statistic was 1349.48 ( $df = 378$ ,  $p < .001$ ), suggesting that the six-factor model provided an adequate fit. Items were retained for the subscales only if they had a loading greater than .40 on one factor and did not cross-load any higher than .30 on any other factor (see Russell, 2002). All loadings were above the acceptable value of .4 and accounted for 55.07% of the total variance.

As Carver did not use the parallel analysis method, limited comparisons with this study can be made. Carver’s own 1997 exploratory factor analysis yielded nine factors with eigenvalues greater than 1.0, which together accounted for 72.4% of the variance in responding (all primary loadings exceeded .4). His analysis formed four distinct factors: Substance Use, Religion, Humour, and Behavioural Disengagement. Similar to Carver’s factor analysis, Use of Emotional Support (5 and 15) and Use of

Instrumental Support (10 and 23) formed a single factor in the current analysis. As was also true of the Carver's analysis, Active Coping items (2 and 7) and Planning items (14 and 25) loaded on a single factor. Additionally, Behavioural disengagement items also loaded on the same factor as did the Active Coping and Planning items (Problem-focused Coping). Also similar to Carver's analysis Religion items (22 and 27) also loaded on a single factor, as did substance-use items (4 and 11). In only two cases did the items of a scale load on separate factors: One Acceptance item (24) loaded on the Humour & Acceptance factor, the other item did not load on any factor (20). One Venting item (21) loaded on the Maladaptive factor, the other item did not load any other factor (9). The Self-distraction items and Denial items (see Carver, 1997, for items) did not load on any factor.

Table 1

*Study 1. Factor Analysis of Coping items*

<i>Coping Scales</i>	I	II	III	IV	V	VI
<b>Social support</b>						
5. I get emotional support from others.	.84					
10. I get help and advice from other people.	.80					
15. I get comfort and understanding from someone.	.77					
23. I try to get advice or help from other people about what to do.	.73					
<b>Problem-focused</b>						
14. I try to come up with a strategy about what to do.	.75					
7. I take action to try to make the situation better.	.74					
2. I concentrate my efforts on doing something about the situation I'm in.	.71					
6. I give up trying to deal with it.	-.66					

Table 1 (continued)

*Study 1. Factor Analysis of Coping items*

<i>Coping Scales</i>	I	II	III	IV	V	VI
16. I give up the attempt to cope.		-.53				
25. I think hard about what steps to take.		.47				
<b>Humour &amp; Acceptance</b>						
18. I make jokes about it.			.71			
17. I look for something good in what is happening.			.67			
28. I make fun of the situation.			.64			
12. I try to see it in a different light, to make it seem more positive.			.64			
24. I learn to live with it.			.55			
<b>Spiritual</b>						
27. I pray or meditate.				.87		
22. I try to find comfort in my religion or spiritual beliefs.				.85		
<b>Substance-use</b>						
4. I use alcohol or other drugs to make myself feel better.					.84	
11. I use alcohol or other drugs to help me get through it.					.81	
<b>Maladaptive</b>						
13. I criticize myself.						.68
21. I express my negative feelings.						.67
26. I blame myself for things that happened.						.60
2. I concentrate my efforts on doing something about the situation.						.42

*Note.*  $N = 130-132$ . To measure coping strategies, the Brief COPE (Carver et al., 1989) was employed comprising twenty four items that assess the use of different coping strategies used when experiencing stress at work.

*Descriptive statistics.* Means, standard deviations and reliability coefficients (Cronbach's  $\alpha$ ) for Study 1 variables at Time 1 are presented in Table 2. 60.9% (81 out of 133) of participants had some form of missing data. However, once means



substitution was computed (see the process used to compute scales below), only 3 participants were excluded from analysis as they were not considered to have missing data at random. When computing scales, means were inserted for missing values at and over 70% in order to maximize available data. For example, the following syntax was used to compute the Time 1 Job Demands Scale: COMPUTE JD\_ScaleT1 = 5\* MEAN.4(JD1, JD2, JD3, JD4, JD5). Roth, Switzer, and Switzer (1999) highly recommend this conservative two thirds rule. That is, cases can be considered missing at random if the cases have more than two thirds valid responses of the items in a scale. According to Allison, Gorman and Primavera (1993), this strategy of filling in missing data with the mean of an item results in the smallest amount of information and statistical power lost. Furthermore, missing data can bias correlation coefficients downward because high or low scores tend to be lost and the lost data attenuate the correlation between underlying constructs (Roth, 1994). As maladaptive coping and propensity to leave had reliabilities lower than .70, these variables were not included in further analyses. All other variables had reliabilities higher than .70.

Table 2

*Study 1. Descriptive Statistics of Time 1 Variables*

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>α</i>
<i>Predictors</i>			
Job demands	15.36	2.55	.73
Job control	24.49	6.01	.87
Work support	29.08	5.19	.92

Table 2 (continued)

*Study 1. Descriptive Statistics of Time 1 Variables*

Variable	M	SD	$\alpha$
Self-efficacy	29.09	3.72	.89
Coping strategies			
Social support coping	11.33	2.85	.82
Problem-focused coping	20.05	2.59	.72
Humour & acceptance coping	14.63	2.83	.73
Spiritual coping	2.89	1.57	.92
Substance-use coping	2.89	1.57	.83
Maladaptive coping	11.36	2.17	.56
Time 1 Outcomes			
Perceived health	3.32	0.50	n.a.
Anxiety	15.34	3.70	.84
Depression	13.01	2.62	.73
Physical symptoms	56.62	12.84	.89
Sickness absence	0.73	1.34	n.a.
Job satisfaction	10.58	2.40	.88
Propensity to leave	5.76	1.80	.62

*Note.*  $N = 130-133$ .  $\alpha =$  Cronbach's alpha, n.a. = single item.

*Zero-order correlations (Time 1).* Hair, Anderson, Tatham, and Black (1998) noted that correlations exceeding .80 can be indicative of problems of collinearity. Therefore, bivariate collinearity was assessed through examination of the intercorrelations among measures. The bivariate correlation analysis indicated that, in most cases, the correlations between Time 1 job grade (control variable), job demands, job control, work support, work self-efficacy (predictor variables), coping

strategies, and Time 1 health and occupational outcomes were much lower than .80 (see Table 3). However, as a correlation of .86 was found between cigarette-use and cigarette-use increase, cigarette-use increase was not used in further analysis.

Regarding the correlations between job grade (control variable) and the health and occupational outcomes, significant correlations were found between job grade and Time 1 perceived health, depression, sickness absence, job satisfaction, cigarette-use, cigarette-use increase, alcohol-use, and alcohol-use increase. Job demands did not correlate significantly with any of the Time 1 health and occupational outcomes. For job control, significant correlations were found with Time 1 perceived health, anxiety, depression, sickness absence, job satisfaction, and alcohol-use. For work support, significant correlations were found with Time 1 perceived health, anxiety, depression, physical symptoms, sickness absence, and job satisfaction. For general self-efficacy, significant correlations were found with Time 1 anxiety, depression, physical symptoms, sickness absence, job satisfaction, and cigarette-use.

Correlations between coping strategies and Time 1 health and occupational outcomes were also examined (see Table 3). For social support coping, significant correlations were found with Time 1 perceived health, depression, and job satisfaction. For problem-focused coping, significant correlations were found with Time 1 perceived health, anxiety, depression, physical symptoms, sickness absence, and job satisfaction. For humour and acceptance coping, significant correlations were found with Time 1 depression, and cigarette-use increase. For spiritual coping, no significant correlations were found with any of the Time 1 health and occupational outcomes. Finally, for substance-use coping, significant correlations

were found with Time 1 perceived health, anxiety, depression, and physical symptoms.

Table 3

Study 1. Correlations Between Time 1 JDCS, General Self-Efficacy, Coping Strategies, and Health and Occupational Outcomes

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1. Job grade	-																			
2. Job demands	-.01	-																		
3. Job control	.57***	-.05	-																	
4. Work support	.26**	-.32**	.47***	-																
5. Self-efficacy	.29**	.08	.32***	.15	-															
6. Social support coping	.20*	-.03	.20*	.41***	-.01	-														
7. Problem-focused coping	.22*	.04	.34***	.28***	.49***	.22*	-													
8. Humour & acceptance coping	-.06	.01	.05	.22*	.13	.23**	.13	-												
9. Spiritual coping	-.03	-.18*	.05	.16	-.05	.15	.13	.20*	-											
10. Substance coping	.07	-.02	.03	-.05	-.08	-.05	-.20*	.06	-.08	-										
11. Perceived health	.34***	.06	.39***	.37***	.16	.24**	.20*	.05	-.01	-.19*	-									
12. Anxiety	-.09	.16	-.20*	-.27**	-.36***	-.02	-.19*	-.12	.06	.25**	-.27**	-								
13. Depression	-.18*	.02	-.19*	-.30***	-.45***	-.22*	-.32***	-.30***	.05	.22*	-.23**	.62***	-							
14. Physical symptoms	-.14	.04	-.13	-.27**	-.37***	.01	-.24**	-.07	.12	.27**	-.29***	.53***	.32***	-						
15. Sickness absence	-.19*	.13	-.23**	-.30***	-.24**	.02	-.19*	-.14	-.12	.09	-.13	.16	.17*	.31***	-					

Table 3 (continued)

Study 1. Correlations Between Time 1 JDCS, General Self-Efficacy, Coping Strategies, and Health and Occupational Outcomes

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
16. Job satisfaction	.36***	-.12	.37***	.53***	.38***	.20*	.37***	-.06	.07	-.09	.34***	-.38***	-.46***	-.28**	-.17*	-			
17. Cigarette-use	-.20*	.06	-.05	.04	.23**	-.12	.03	.12	-.07	.16	-.10	-.08	-.11	-.10	-.05	-.00	-		
18. Cigarette-use increase	-.24**	.10	-.12	.06	.16	-.04	.06	.19*	-.06	.21*	-.17*	.00	-.14	-.04	.00	-.02	.86***	-	
19. Alcohol-use	.22*	.00	.18*	.12	.14	-.01	-.02	.09	-.03	.38***	-.04	-.00	.06	-.04	-.07	.01	.00	.02	-
20. Alcohol-use increase	-.02	.02	-.01	.02	-.00	.03	-.05	.02	-.03	.28**	-.07	.24**	.17*	-.01	.10	-.09	.04	.10	.43***

Note.  $N = 130 - 133$ . JDCS = job demand-control-support, comprising job demands, job control, and work support. Job grade =

unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Multiple regression analyses.* As a main aim of the study was to test whether general self-efficacy made a significant contribution to the JDCS Model, the hierarchical multiple regression method was thought to be the most appropriate method, as all predictors needed to be included. In addition, Tabachnick and Fidell (2007) discourage entry based on the statistical properties of the variables (e.g., 'Stepwise method') as it is atheoretical. The number of responders varied across different analyses due to missing data. An alpha level of .05 was used for all statistical tests.

*Predicting time 1 health and occupational outcomes.* Hierarchical regression analyses were computed to test whether general self-efficacy adds to the JDCS Model in predicting Time 1 health and occupational outcomes. Job grade was controlled for in Step 1. The Time 1 JDCS Model variables (i.e., job demands, job control, and work support) were entered in Step 2. Finally, Time 1 general self-efficacy was entered in Step 3. Regression analyses were reported if general self-efficacy was found to be a significant predictor. However, as data regarding Time 1 outcomes were cross-sectional in nature, conclusions regarding the direction of causality among variables cannot be drawn.

Regarding the JDCS-GSE Model, main effects were not found for job demands and job control. High work support predicted higher job satisfaction and lower sickness absence (Table 4), depression (Table 5), and physical symptoms (Table 6). High general self-efficacy predicted higher job satisfaction (Table 4) and cigarette-use (Table 6) and lower sickness absence (Table 4), anxiety, depression (Table 5) and physical symptoms (Table 6).

Table 4

*Hierarchical Regression for Variables Predicting Job Satisfaction and Sickness Absence*

	Job satisfaction				Sickness absence			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.127***				.036*
Job grade	0.56	0.13	.36***		-0.17	0.08	-.19*	
Step 2				.203***				.071*
Job demands	-0.00	0.07	-.00		0.04	0.05	.07	
Job control	0.02	0.04	.06		-0.01	0.03	-.06	
Work support	0.20	0.04	.44***		-0.06	0.03	-.22*	
Step 3				.065***				.032*
General self-efficacy	0.17	0.05	.27***		-0.07	0.03	-.19*	

Note.  $N = 131-133$ . Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\*\* $p < .001$ .



Table 5

*Hierarchical Regression for Variables Predicting Anxiety and Depression*

	Anxiety				Depression			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.008				.032*
Job grade	-0.22	0.22	-.09		-0.31	0.15	-.18*	
Step 2				.079*				.064*
Job demands	0.14	0.14	.09		-0.04	0.09	-.04	
Job control	-0.07	0.07	-.11		-0.00	0.05	.01	
Work support	-0.14	0.07	-.20		-0.14	0.05	-.28**	
Step 3				.107***				.153***
General self-efficacy	-0.35	0.09	-.35***		-0.29	0.06	-.42***	

*Note.*  $N = 133$ . Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 6

*Hierarchical Regression for Variables Predicting Physical Symptoms and Cigarette-use*

	Physical symptoms				Cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.017				.039*
Job grade	-1.12	0.75	-.13		-0.16	0.07	-.20*	
Step 2				.060*				.017
Job demands	-0.22	0.47	-.04		0.04	0.04	.09	
Job control	0.12	0.25	.05		0.01	0.02	.04	
Work support	-0.69	0.26	-.28**		0.03	0.02	.11	
Step 3				.122***				.080**
General self-efficacy	-1.28	0.30	-.37***		0.10	0.03	.30**	

*Note.*  $N = 133$ . Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

*Moderation effects predicting time 1 outcomes.* Finally, the data for moderating effects were explored. To this aim, a series of multiple regressions were performed to test the interaction effects of job demands, job control, work support and general self-efficacy on health and occupational outcomes. As the predictor variables were continuous, they were centered before adding them into the regression model. Centering reduces multicollinearity between the predictors and the interaction term (see Cohen et al., 2003). After the predictor variables were centered, product terms were created that represented the interaction between the predictor variables. To create product terms, the centered predictor variables were multiplied together (Cohen et al., 2003) until there were six product terms that represented interactions between all of the predictor variables.

Job grade was controlled for in step 1. The centered Time 1 predictor variables (job demands, job control, work support, and general self-efficacy) were entered in step 2, and the interactions between the predictor variables were entered in the final step (see Tables A1-A11 in Appendix A for all interactions). When significant interactions were found, they were further explored by testing the simple slopes for significance as recommended by Aiken and West (1991). To further explore the direction of the significant interaction effects between the predictor variables on the outcome variables, the standard deviations of the predictor variables, and the B coefficients of the predictor variables, constant and interaction term of each interaction were taken from the final block of the moderated regression analysis and entered in to a regression interaction plotter (Giner-Sorolla, 2004) that used the following equation to plot regression lines at one *SD* above and one *SD* below the mean of the predictors/moderators:

$$Y_{\text{predictor}} = B_1 \times X_{c1} + B_2 \times X_{c2} + B_{\text{interaction}} \times X_{c1} \times X_{c2} + A \text{ (constant)}.$$

*Moderation effects of the jdc model in predicting time 1 outcomes.* Regarding the JDC model, the interaction effects of job demand with job control were found when predicting perceived health ( $\beta = .19, p < .05$ ). High job control buffered the negative influence of high job demands on perceived health. However, when job demands were low, higher job control was associated with lower perceived health (see Figure 2 below and Table A1 in Appendix A).

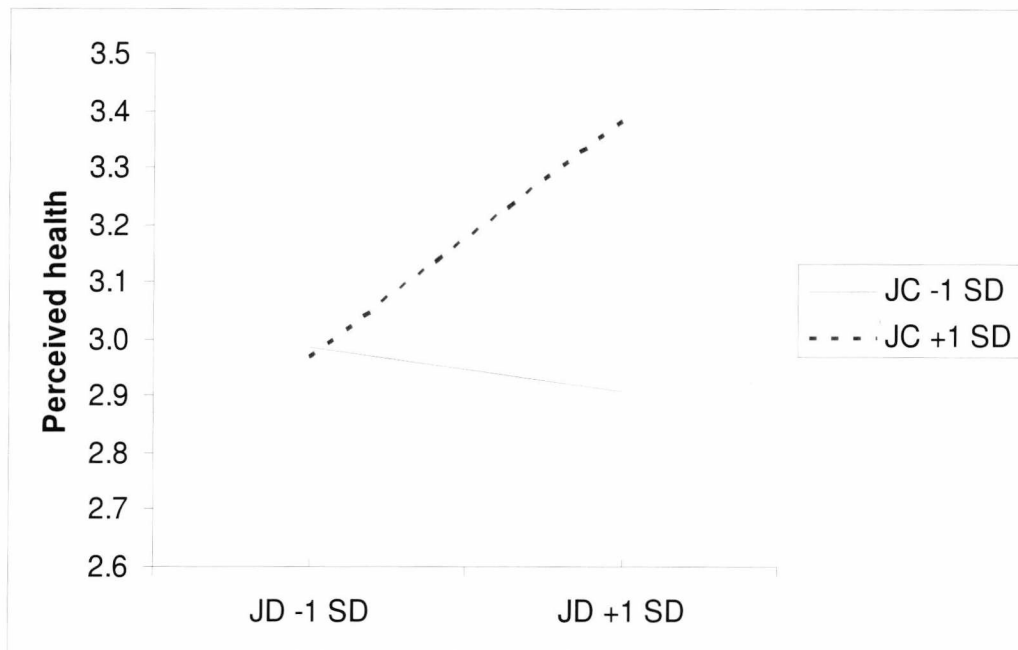


Figure 2. Interaction between job demands (JD) and job control (JC) on perceived health.

*Moderation effects of the jdcs model predicting time 1 outcomes.* Adding work support and regarding the JDWS model, interaction effects of work support with job demands were found when predicting perceived health ( $\beta = -.24, p < .01$ ). High work support did not buffer the negative influence of high job demands on perceived health. However, when job demands were low, higher work support was associated with higher perceived health (see Figure 3 below and Table A1 in Appendix A).

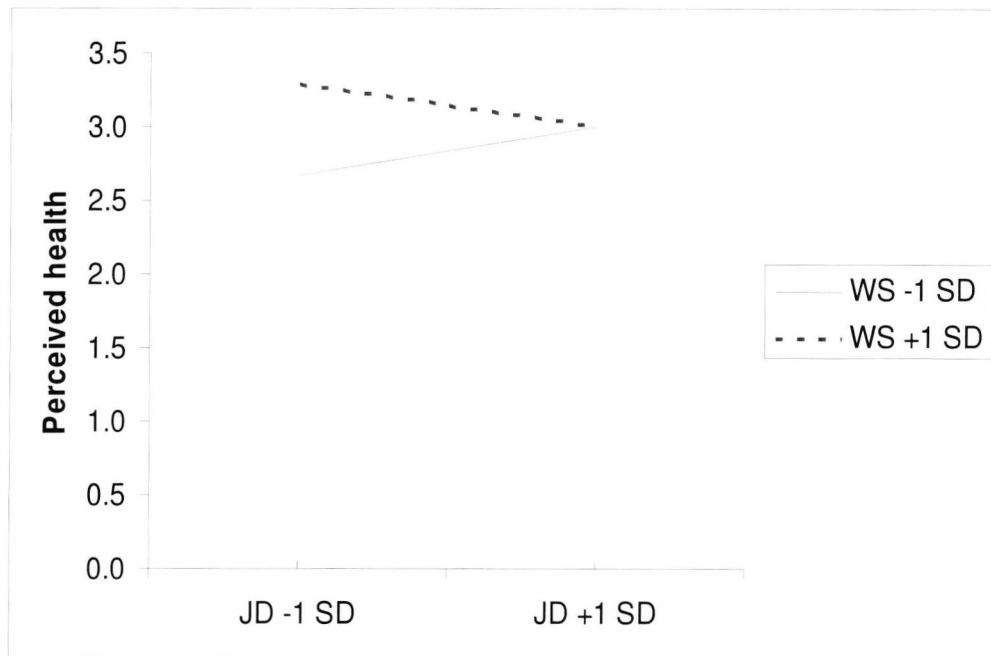


Figure 3. Interaction between job demands (JD) and work support (WS) on perceived health.

*Moderation effects of the jdcs-gse model predicting time 1 outcomes.* Finally adding general self-efficacy to the analyses, interaction effects of self-efficacy with job demands and job control were found ( $\beta = .33, p < .01$ ). High general self-efficacy buffered the negative influence of low job control on alcohol-use. However, when general self-efficacy was high, higher job control was associated with higher alcohol use (see Figure 4 below and Table A1 in Appendix A).

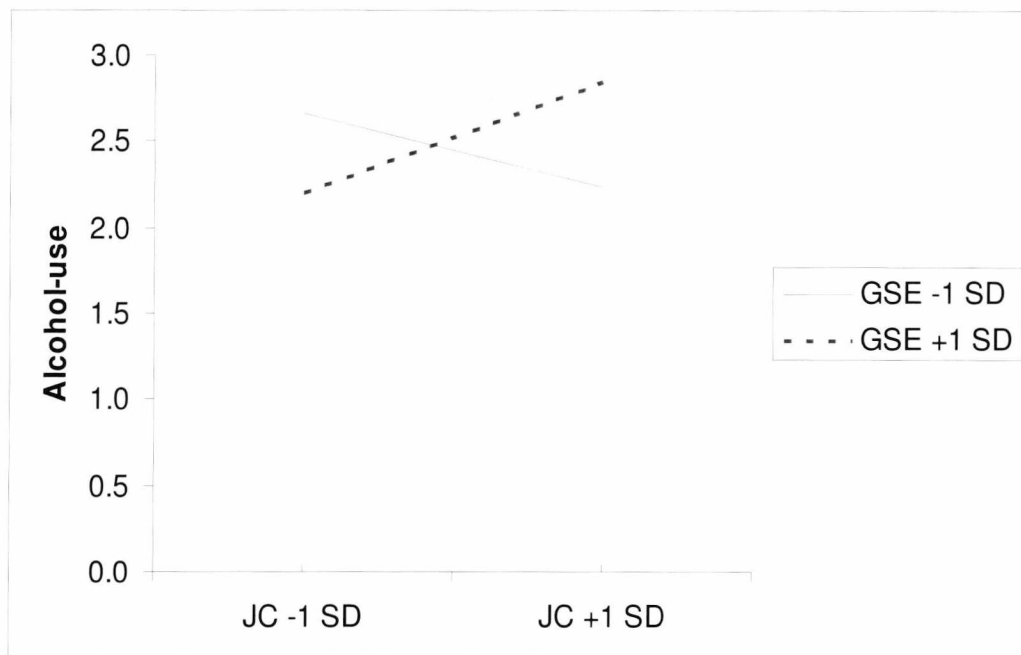


Figure 4. Interaction between job control (JC) and general self-efficacy (GSE) on alcohol-use.

*Moderation effects of coping strategies predicting time 1 outcomes.* In order to test which type of coping strategy is most beneficial for employees when moderating the JDCS-GSE Model's effects on Time 1 health and occupational outcomes, Time 1 coping strategies were added to the JDCS-GSE Model one by one in order to explore the interaction effects between the predictor variables on the Time 1 health and occupational outcomes. Similar to the JDCS factors and general self-efficacy, the type of coping strategy was centered before adding it into the regression model.

*Social support coping as a moderator predicting time 1 outcomes.* Regarding social support coping, two interactions were found with job demands on depression ( $\beta = .18, p < .05$ ), and physical health symptoms ( $\beta = .20, p < .05$ ). As can be seen in Figure 5 below (and Table A2 in Appendix A), high social support coping did not

buffer the negative influence of high job demands on depression. However, when job demands were low, higher social support coping was associated with lower depression. As can be seen in Figure 6 below (and Table A2 in Appendix A), high social support coping did not buffer the negative influence of high job demands on physical symptoms. However, when job demands were low, higher social support coping was associated with lower physical symptoms.

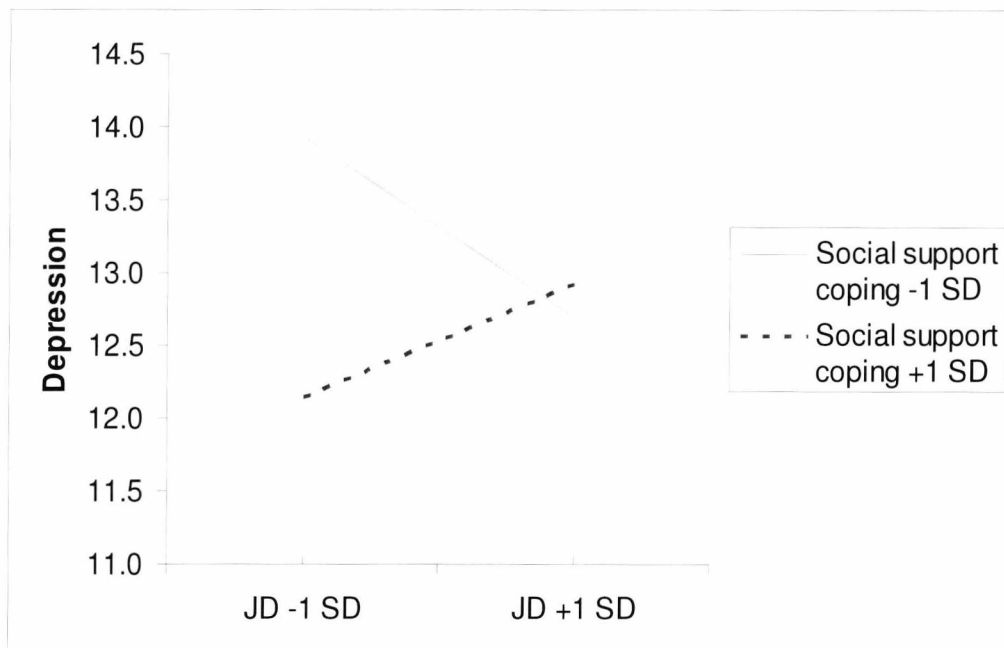


Figure 5. Interaction between job demands (JD) and social support coping on depression.

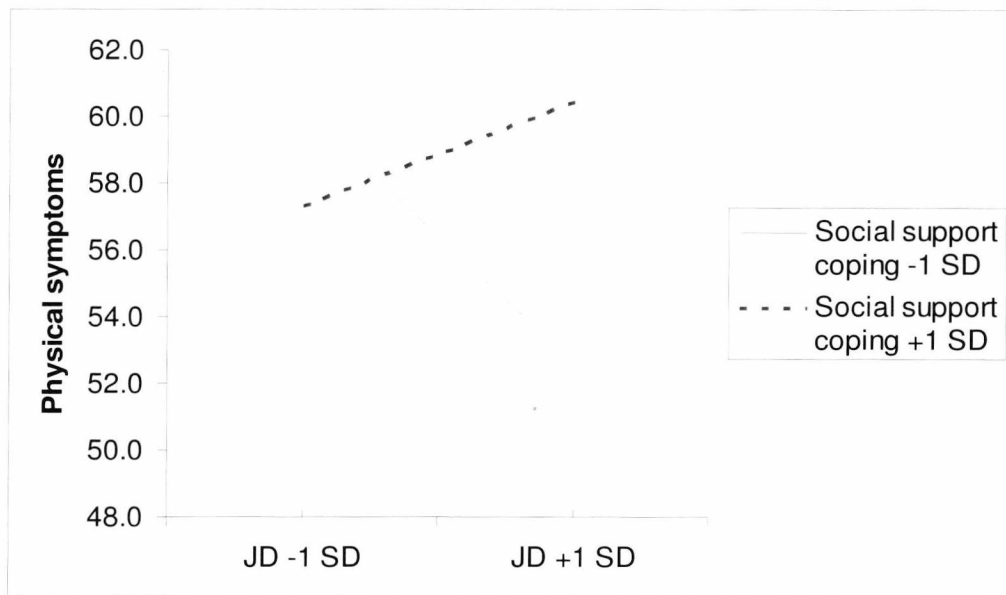


Figure 6. Interaction between job demands (JD) and social support coping on physical symptoms.

An interaction was also found for social support coping and work support when predicting perceived health ( $\beta = .24, p < .01$ ). High social support coping did not buffer the negative influence of low work support on perceived health. However, when work support was high, social support coping was associated with higher perceived health (see Figure 7 below and Table A2 in Appendix A).



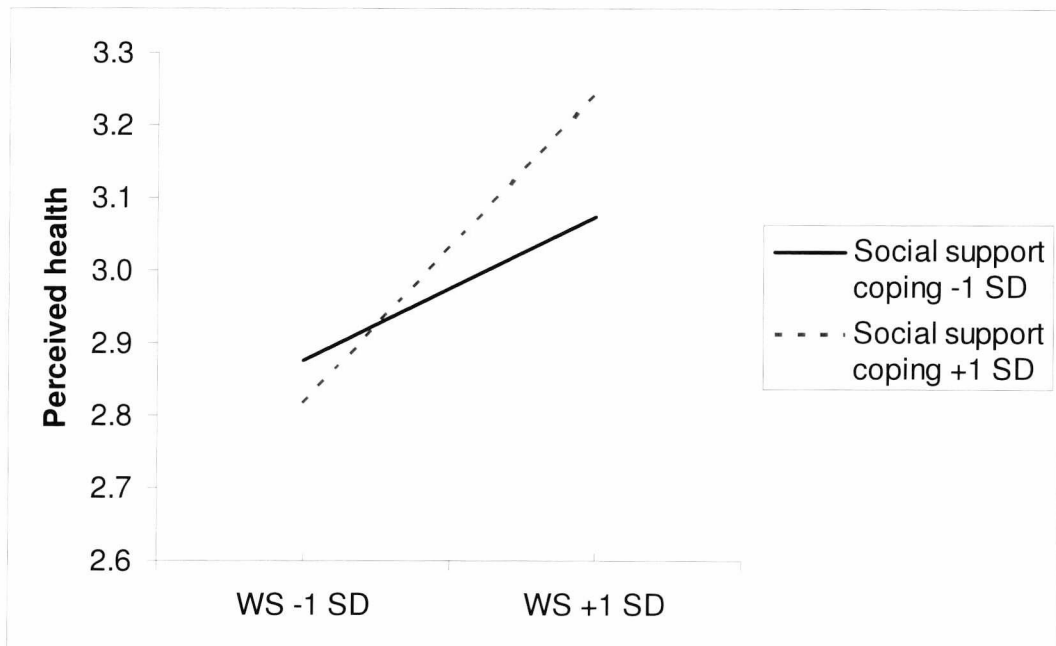


Figure 7. Interaction between work support (WS) and social support coping on perceived health.

*Problem-focused coping as a moderator predicting time 1 outcomes.* An interaction was found for problem-focused coping and job control when predicting alcohol-use ( $\beta = .27, p < .01$ ). High problem-focused coping buffered the negative influence of low job control on alcohol-use. However, when job control was high, higher problem-focused coping was associated with higher alcohol-use (see Figure 8 below and Table A3 in Appendix A).

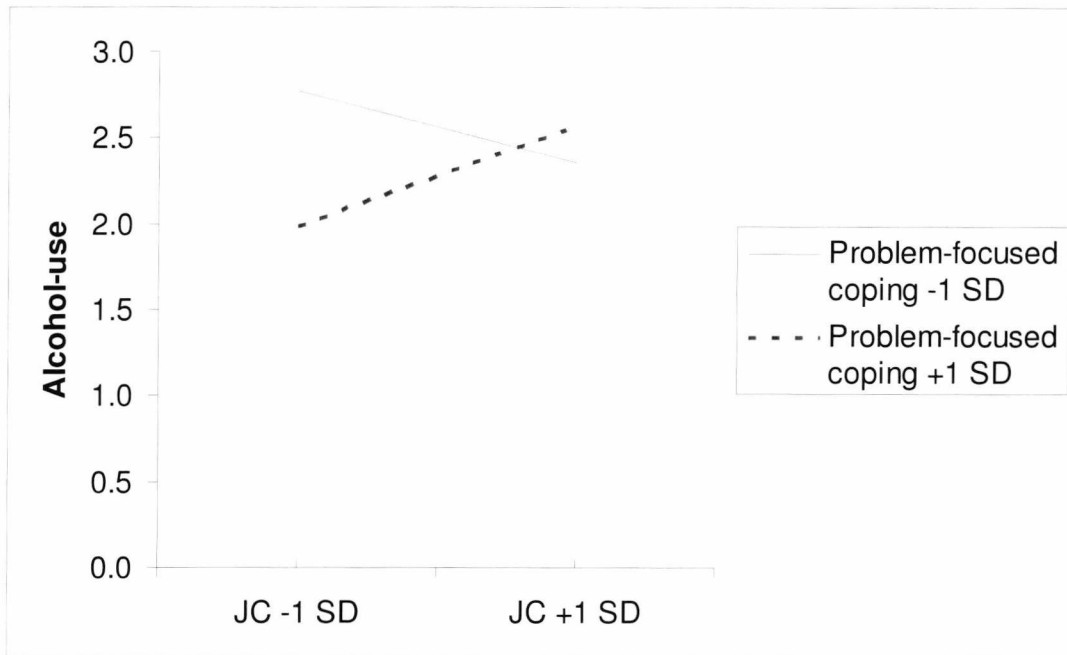


Figure 8. Interaction between job control (JC) and self-efficacy (GSE) on alcohol-use.

An interaction was found for problem-focused coping and work support when predicting job satisfaction ( $\beta = -.21, p < .05$ ). High problem-focused coping buffered the negative influence of low work support on job satisfaction. However, when work support was high, higher problem-focused coping was associated with lower job satisfaction (see Figure 9 below and Table A3 in Appendix A).

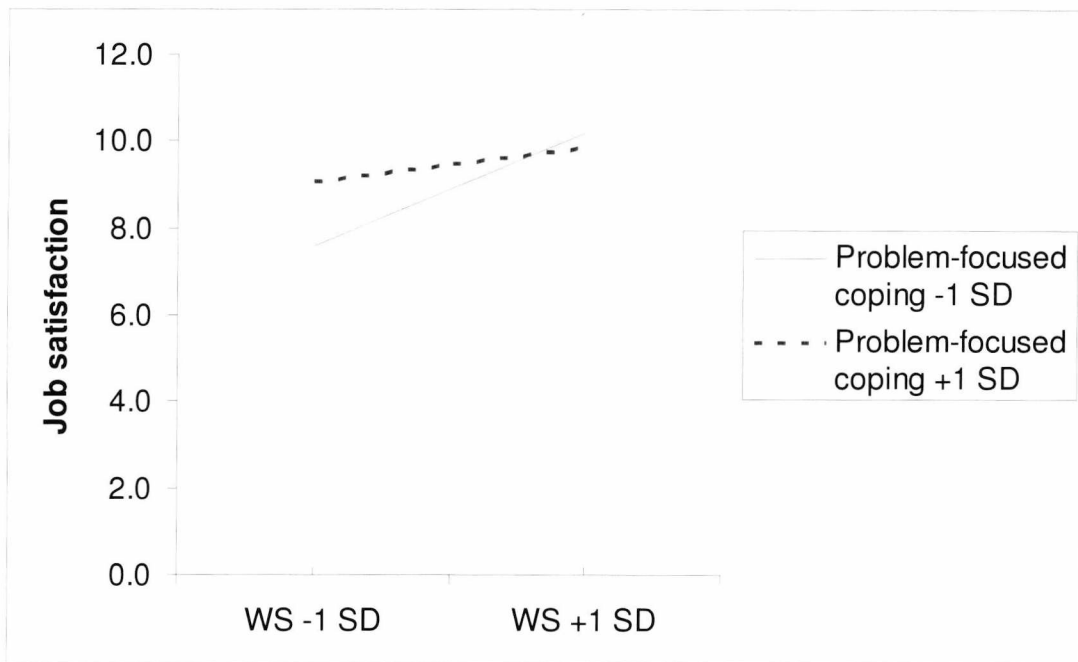


Figure 9. Interaction between work support (WS) and problem-focused coping on job satisfaction.

An interaction was found for problem-focused coping and general self-efficacy when predicting physical symptoms ( $\beta = .29, p < .01$ ). High problem-focused coping buffered the negative influence of low general self-efficacy on physical symptoms. However, when general self-efficacy was high, higher problem-focused coping was associated with higher physical symptoms (see Figure 10 below and Table A3 in Appendix A).

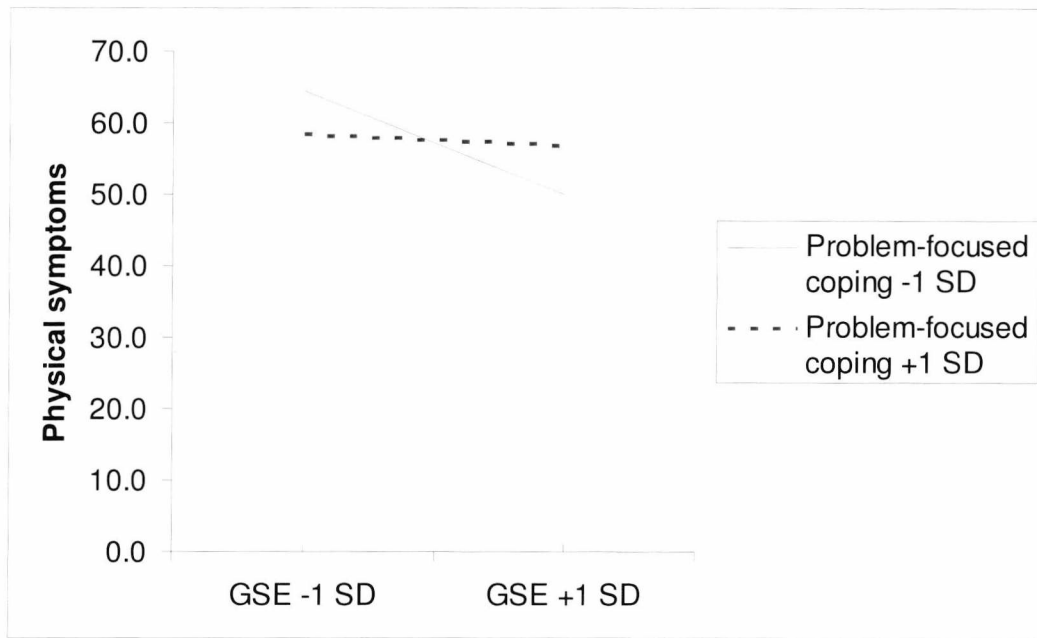


Figure 10. Interaction between job demands (JD) and general self-efficacy (GSE) on physical symptoms.

*Humour and acceptance coping as a moderator predicting time 1 outcomes.*

An interaction was found for humour and acceptance coping and job demands when predicting cigarette-use ( $\beta = .21, p < .05$ ). High humour and acceptance coping did not buffer the negative influence of high job demands on cigarette-use. However, when job demands were low, high humour and acceptance coping were associated with lower cigarette-use (see Figure 11 below and Table A4 in Appendix A).

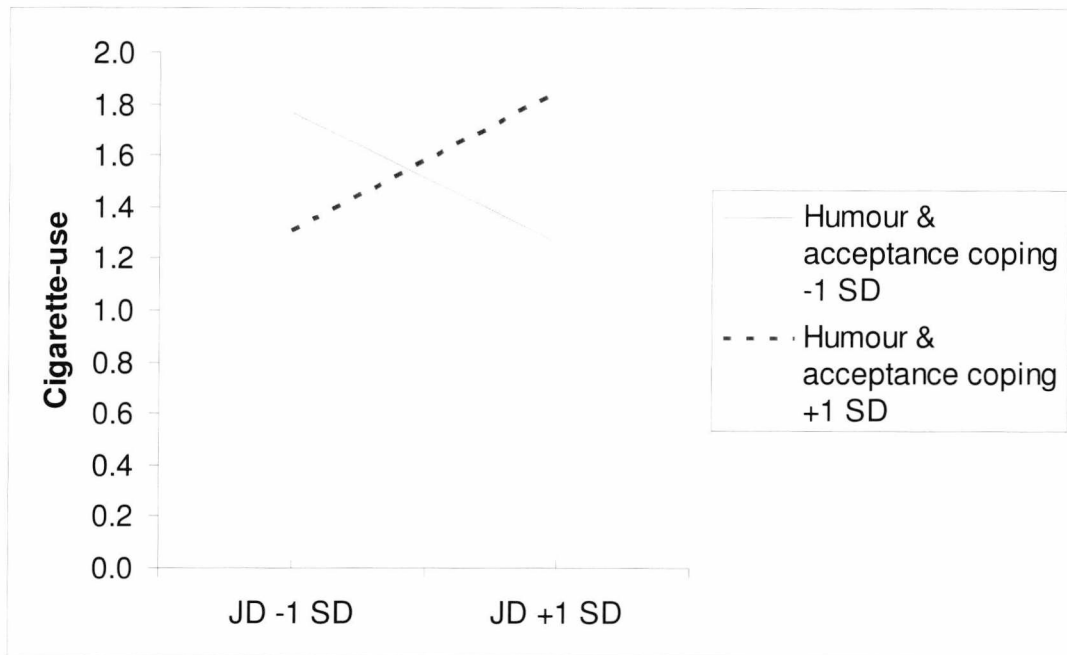


Figure 11. Interaction between job demands (JD) and humour & acceptance coping on cigarette-use.

*Spiritual coping as a moderator predicting time 1 outcomes.* Regarding spiritual coping, an interaction was found with work support on job satisfaction ( $\beta = -.20, p < .05$ ). High spiritual coping buffered the negative influence of low work support on job satisfaction. However, when work support was high, higher spiritual coping was related to lower job satisfaction (see Figure 12 below and Table A5 in Appendix A).

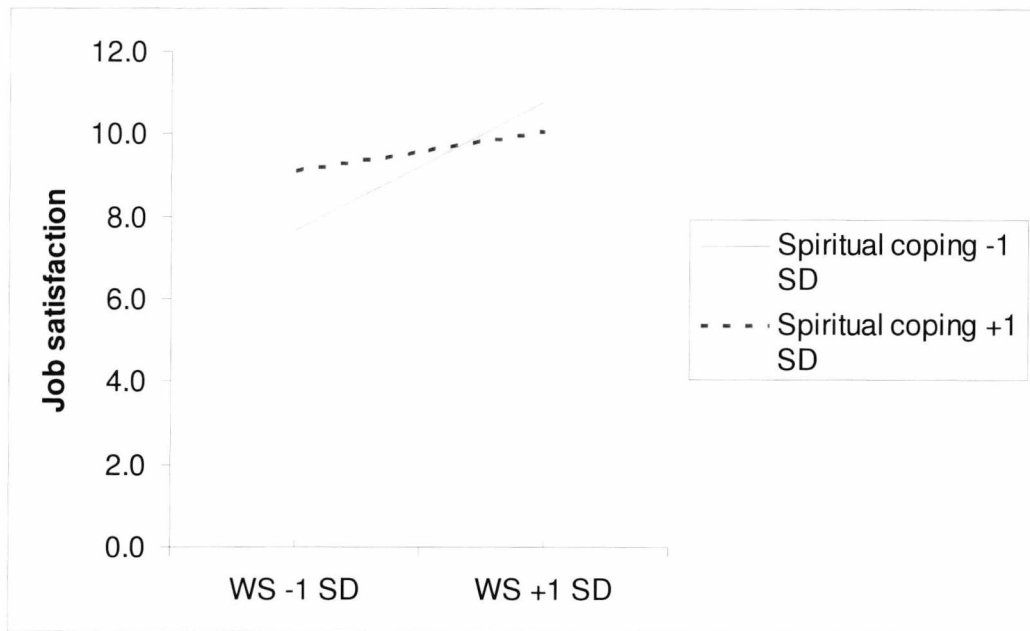


Figure 12. Interaction between work support (WS) and spiritual coping on job satisfaction.

An interaction was found between general self-efficacy and spiritual coping on physical symptoms ( $\beta = -.25, p < .05$ ). High spiritual coping did not buffer the negative influence of low work self-efficacy on physical symptoms. However, when general self-efficacy was high, higher spiritual coping was associated with lower physical symptoms (see Figure 13 below and Table A5 in Appendix A).

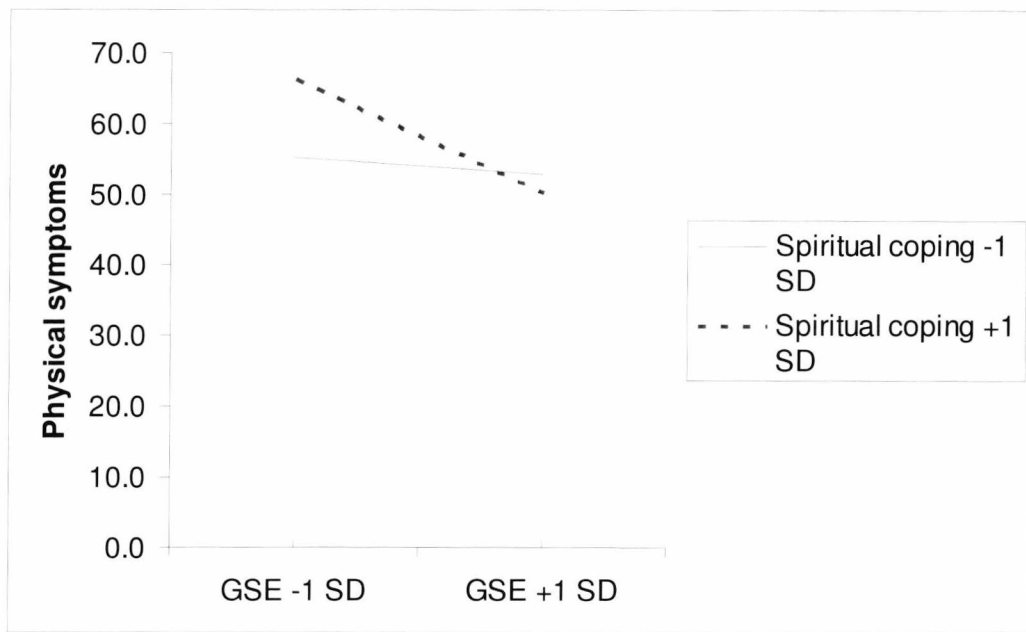


Figure 13. Interaction between general self-efficacy (GSE) and spiritual coping on physical symptoms.

*Substance-use coping as a moderator predicting time 1 outcomes.* Regarding substance-use coping, an interaction was found with job demands on perceived health ( $\beta = -.20, p < .05$ ). Low substance-use coping buffered the negative influence of high job demands on perceived health. However, when job demands were low, lower substance-use coping was associated with lower perceived health (see Figure 14 below and Table A6 in Appendix A).

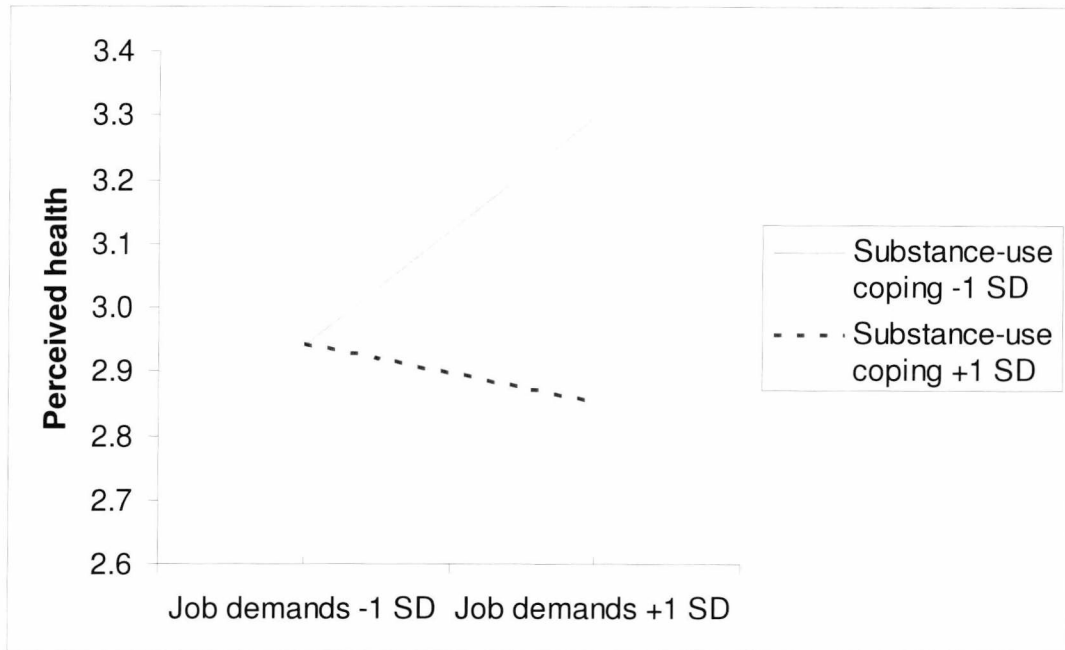


Figure 14. Interaction between job demands (JD) and substance-use coping on perceived health.

An interaction was found between work support and substance-use coping on depression was found ( $\beta = -.20, p < .05$ ). Low substance-use coping buffered the negative influence of low work support on depression. However, when work support was high, low substance-use coping was associated with higher depression (see Figure 15 below and Table A6 in Appendix A).



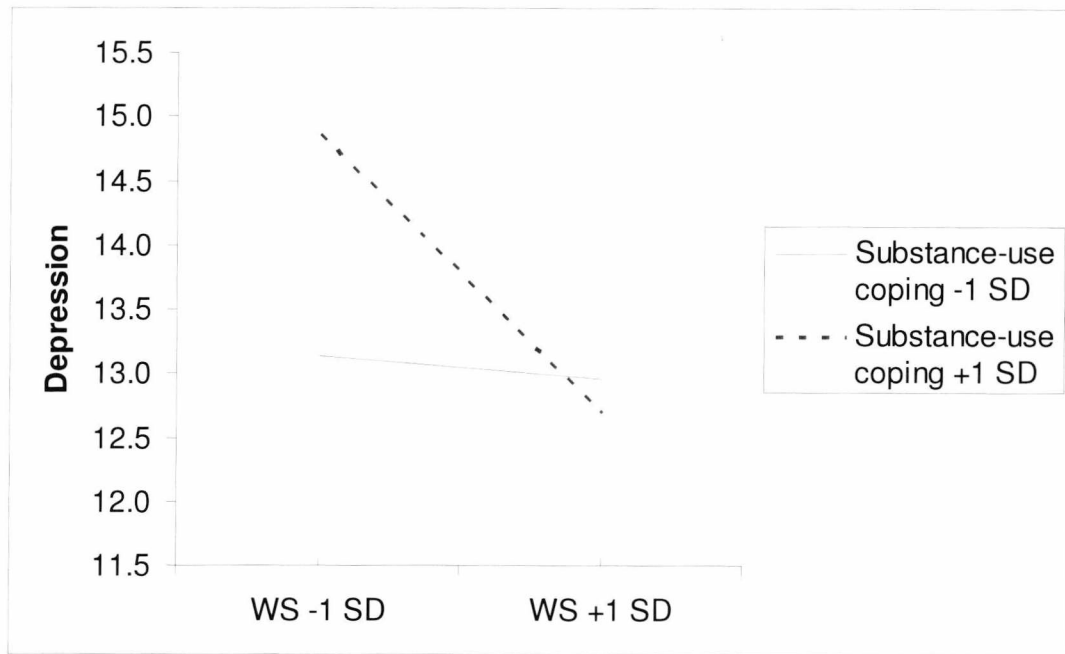


Figure 15. Interaction between work support (WS) and substance-use coping on depression.

An interaction was found between general self-efficacy and substance-use coping on alcohol-use was found ( $\beta = -.17, p < .05$ ). Low substance-use coping buffered the negative influence of low general self-efficacy on alcohol-use. (see Figure 16 below and Table A6 in Appendix A).

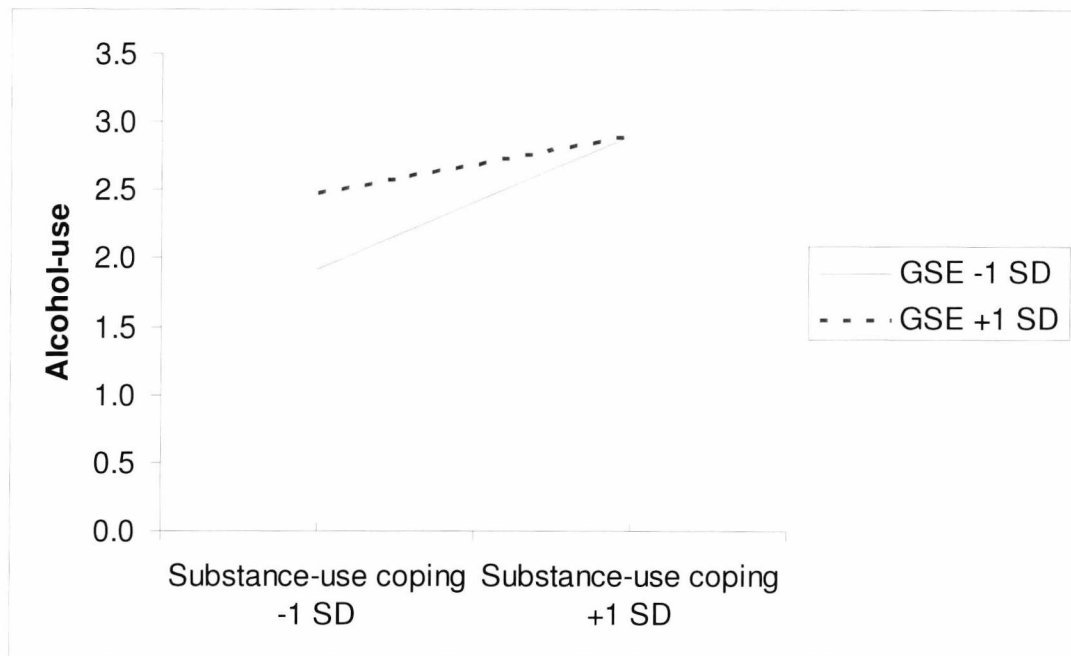


Figure 16. Interaction between general self-efficacy (GSE) and substance-use coping on alcohol-use.

*Descriptive statistics of time 2 outcomes.* Means, standard deviations and reliability coefficients (Cronbach's  $\alpha$ ) for Time 2 health and occupational outcomes are presented in Tables 7. All outcomes had reliabilities higher than .70.

Table 7

*Study 1. Descriptive Statistics of Time 2 Outcomes*

<i>Variable</i>	<i>M</i>	<i>SD</i>	$\alpha$
Time 2 Outcomes			
Perceived health	3.21	0.44	n.a.
Anxiety	14.93	3.43	.84
Depression	12.91	2.64	.73
Physical symptoms	56.94	11.76	.88
Sickness absence	1.39	7.13	n.a.
Job satisfaction	10.78	2.30	.88

*Note.*  $N = 68-130$ .  $\alpha$  = Cronbach's alpha, n.a. = single item.

*Differences between completers and non-completers.* To investigate representativeness of the longitudinal sample, several comparisons using one-way analysis of variance (ANOVA) were conducted to test for differences of study variables between employees who responded at Time 2 (completers), and those who did not responded at Time 2 (non-completers). In addition, chi-square analyses were conducted to investigate differences between completers and non-completers in categorical demographic variables. The only variable that differed significantly between completers and non-completers was alcohol use ( $F(1,131) = 5.22, p < .05$ ), with non-completers ( $M = 3.03, SD = .94$ ) consuming more alcohol per day than completers ( $M = 2.68, SD = .86$ ).

*Zero-order correlations (time 2).* Bivariate collinearity was assessed through examination of the intercorrelations between Time 1 job grade (control variable), job demands, job control, work support, general self-efficacy (predictor variables), coping strategies, and Time 2 occupational and health outcomes (dependent variables) (Table 8). As in Time 1, in most cases, the correlations among all the independent measures and dependent measures were much lower than .80. No measures were found to have correlations of .80 or higher.

Regarding the correlations between job grade (control variable) and Time 2 health and occupational outcomes, significant correlations were found between job grade and Time 2 cigarette-use and alcohol-use. No significant correlation was found for job demands or job control with any of the Time 2 health and occupational outcomes. For work support, significant correlations were found with Time 2 perceived health, depression, physical symptoms, and job satisfaction. For general self-efficacy, significant correlations were found with Time 2 anxiety, depression, and physical symptoms.

Correlations between coping strategies and time 2 health and occupational outcomes were also examined (see Table 8). For social support coping, significant correlations were found with Time 2 perceived health, and depression. For problem-focused coping, significant correlations were found with Time 2 perceived health, anxiety, depression, physical symptoms, job satisfaction, and alcohol increase. For humour and acceptance coping, significant correlations were found with Time 2 depression, sickness absence, and alcohol increase. For spiritual coping, no significant correlations were found with any Time 2 health and occupational outcomes. Finally, for substance-use coping, a significant correlation was found with Time 2 alcohol-use.

Table 8

*Study 1. Correlations Between Time 1 JDCS, General Self-Efficacy, Coping Strategies, and Time 2 Health and Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. Job grade	-																		
2. Job demands	-.01	-																	
3. Job control	.57***	-.05	-																
4. Work support	.26**	-.32**	.47***	-															
5. General self-efficacy	.28**	.08	.32***	.15	-														
6. Social support coping	.20*	-.03	.20*	.41***	-.01	-													
7. Problem-focused coping	.22*	.04	.34***	.28***	.49***	.22*	-												
8. Humour & acceptance coping	-.06	.01	.05	.22*	.13	.23**	.13	-											
9. Spiritual coping	-.03	-.18*	.05	.16	-.05	.15	.13	.20*	-										
10. Substance coping	.07	-.02	.03	-.05	-.08	-.05	-.20*	.06	-.08	-									
11. Time 2 Perceived health	.22	.05	.20	.33**	.13	-.32**	.25*	.17	.19	.03	-								
12. Time 2 Anxiety	-.02	-.00	-.16	-.18	-.44***	-.15	-.39***	-.17	-.08	.18	-.30*	-							
13. Time 2 Depression	-.13	-.01	-.19	-.34**	-.46***	-.32**	-.49***	-.37**	.03	.10	-.34**	.57***	-						
14. Time 2 Physical symptoms	-.10	.14	-.02	-.27*	-.28*	-.09	-.37**	-.09	.01	.20	-.30*	.42***	.48***	-					
15. Time 2 Sickness absence	.16	-.19	.10	.15	-.00	-.05	-.00	-.36**	-.08	-.10	-.09	-.17	-.00	-.02	-				

Table 8 (continued)

Study 1 (Time 2). Correlations Between Employees' JDCS, Self-Efficacy, Coping Strategies, and Time 2 Health and Occupational Outcomes

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
16. Time 2 Job satisfaction	.19	-.06	.13	.32**	.14	.22	.33**	.16	.22	-.05	.23	-.35**	-.37**	-.20	.13	-		
17. Time 2 Cigarette-use	-.25*	.04	-.20	-.13	.08	-.19	.03	-.01	-.06	.16	-.18	.12	-.02	-.01	-.05	.02	-	
18. Time 2 Alcohol-use	.31**	.00	.15	-.03	-.00	-.02	-.08	-.01	.03	.52***	.12	.14	.15	.20	-.08	-.09	.03	-
19. Time 2 Alcohol-use increase	.20	-.17	.16	.17	-.07	.04	-.25*	-.24*	.03	.23	.01	.19	.11	.11	.05	-.16	.07	.44***

Note.  $N = 68 - 133$ . JDCS = job demand-control-support comprising job demands, job control, and work support. Job grade = unskilled manual, semi-skilled manual, skilled manual, administrative, technical, managerial, and professional & senior management. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Predicting time 2 health and occupational outcomes.* Hierarchical regression analyses were computed to test whether general self-efficacy adds to the JDCS Model in predicting Time 2 health and occupational outcomes. First, the autoregressor (Dependant outcome at Time 1) was entered in Step 1. Job grade was controlled for in Step 2, while the Time 1 JDCS Model variables (i.e., job demands, job control, and work support) were entered in Step 3. Finally, Time 1 general self-efficacy was entered in Step 4. However no predictor variables were found to significantly predict any Time 2 outcomes. The use of the autoregressor in these analyses permits the inference that the predictors were associated with changes in the dependant variables, and is more suggestive of causality than a regression with no autoregressor.

*Moderation effects predicting time 2 outcomes.* Finally, the data for moderating effects were explored. To this aim, a series of multiple regressions were performed to test the interaction effects of job demands, job control, work support and general self-efficacy on health and occupational outcomes. Job grade was controlled for in step 1. The Time 1 centered predictor variables were entered in step 2 and the interactions between job demands, job control, work support, and self-efficacy were entered in the final step (see Tables A1-A11 in Appendix A for all interactions). To further explore the direction of the interaction effects between the predictor variables on the outcome variables, regression graphs were plotted.

*Moderation effects of the jdc model predicting time 2 outcomes.* Regarding the JDC model, the interaction effects of job demand with job control were found when predicting Time 2 anxiety ( $\beta = -.20, p < .05$ ), and Time 2 job satisfaction ( $\beta = -.18, p < .05$ ). As can be seen in Figure 17 below (and Table A7 in Appendix A), high job control

buffered the negative influence of high job demands on Time 2 Anxiety. However, when job demands were low, higher job control was associated with higher levels of Time 2 Anxiety. As can be seen in Figure 18 below (and Table A7 in Appendix A), high job control did not buffer the negative influence of high job demands on Time 2 job satisfaction. However, when job demands were low, higher job control was associated with higher Time 2 job satisfaction.

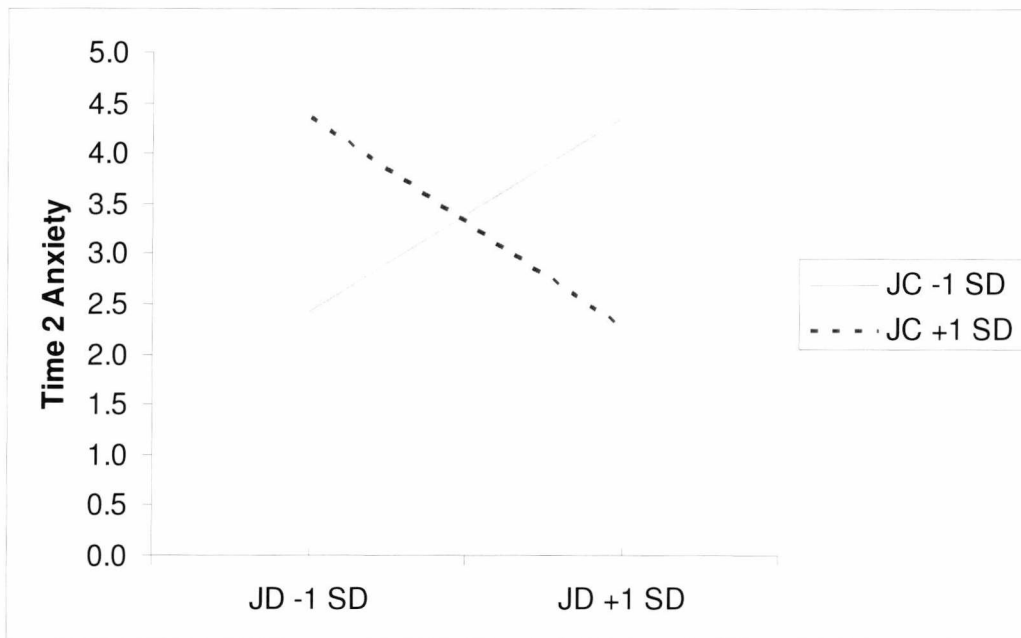


Figure 17. Interaction between job demands (JD) and job control (JC) on Time 2 anxiety.



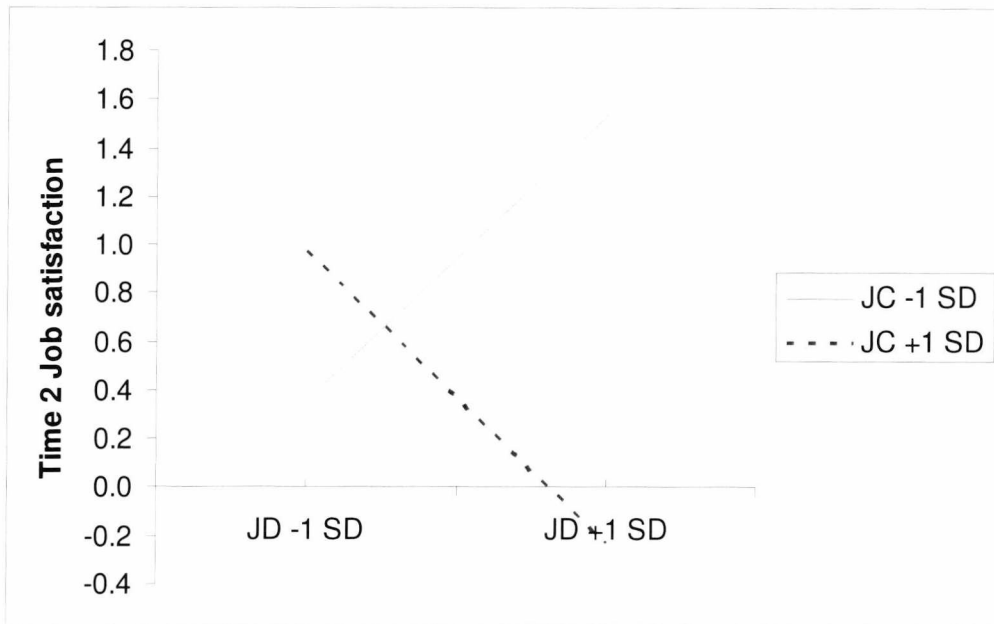


Figure 18. Interaction between job demands (JD) and job control (JC) on Time 2 Job satisfaction.

*Moderation effects of the jdc model predicting time 2 outcomes.* Regarding the JDCS Model, interaction effects of work support with job control were found when predicting Time 2 job satisfaction ( $\beta = .20, p < .05$ ). High work support did not buffer the negative influence of low job control on Time 2 job satisfaction. However, when job control was high, higher work support was associated with higher Time 2 job satisfaction (see Figure 19).



Figure 19. Interaction between job control (JC) and work support (WS) on Time 2 job satisfaction.

*Moderation effects of the jdcs-gse model predicting time 2 outcomes.* Time 1 general self-efficacy was not found to be a significant moderator in the prediction of Time 2 health and occupational outcomes.

*Moderation effects of coping strategies in predicting time 2 outcomes.* In order to test which type of coping strategy is most beneficial for employees when moderating the JDCS-GSE Model's effects on Time 2 health and occupational outcomes, Time 1 coping strategies were added to the JDCS-GSE model one by one in order to explore the interaction effects between the predictor variables on the Time 2 health and occupational outcomes. Similar to the JDCS factors and general self-efficacy, the type of coping strategy was centered before adding it into the regression model.

*Social support coping as a moderator predicting time 2 outcomes.* Interactions were found between job demands and social support coping on Time 2 anxiety ( $\beta = -.24$ ,  $p < .01$ ), and Time 2 alcohol-use increase ( $\beta = .29$ ,  $p < .05$ ). As can be seen in Figure 20 below (and Table A8 in Appendix A), high social support coping buffered the negative influence of high job demands on Time 2 Anxiety. However, when job demands were low, higher social support coping was associated with higher Time 2 Anxiety. As can be seen in Figure 21 below (and Table A8 in Appendix A), high social support coping did not buffer the negative influence of high job demands on Time 2 alcohol-use increase. However, when job demands were low, higher social support coping was associated with lower Time 2 alcohol-use increase.

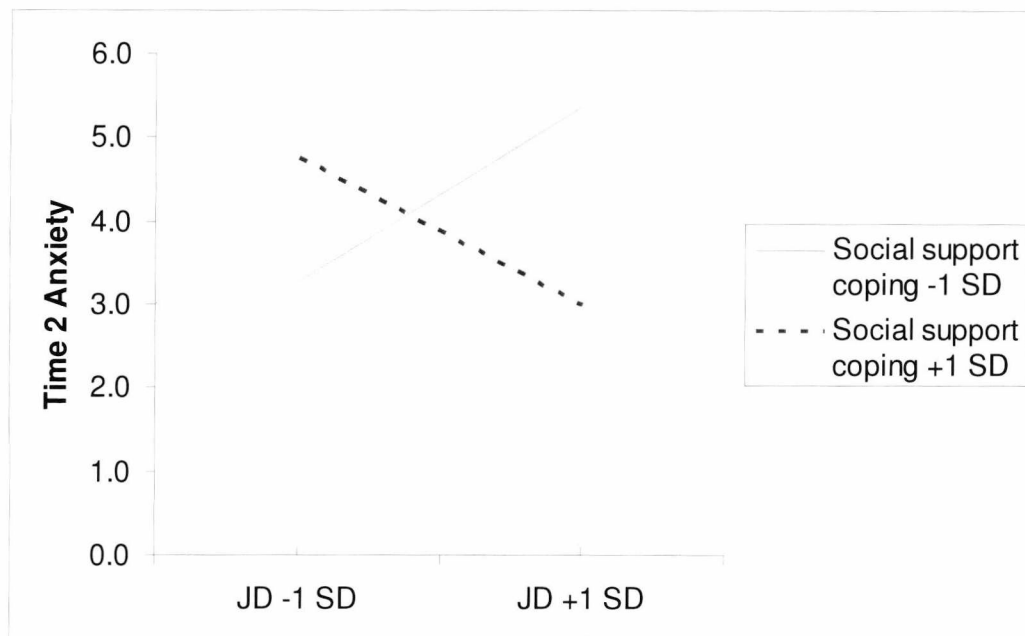


Figure 20. Interaction between job demands (JD) and social support coping on Time 2 anxiety.

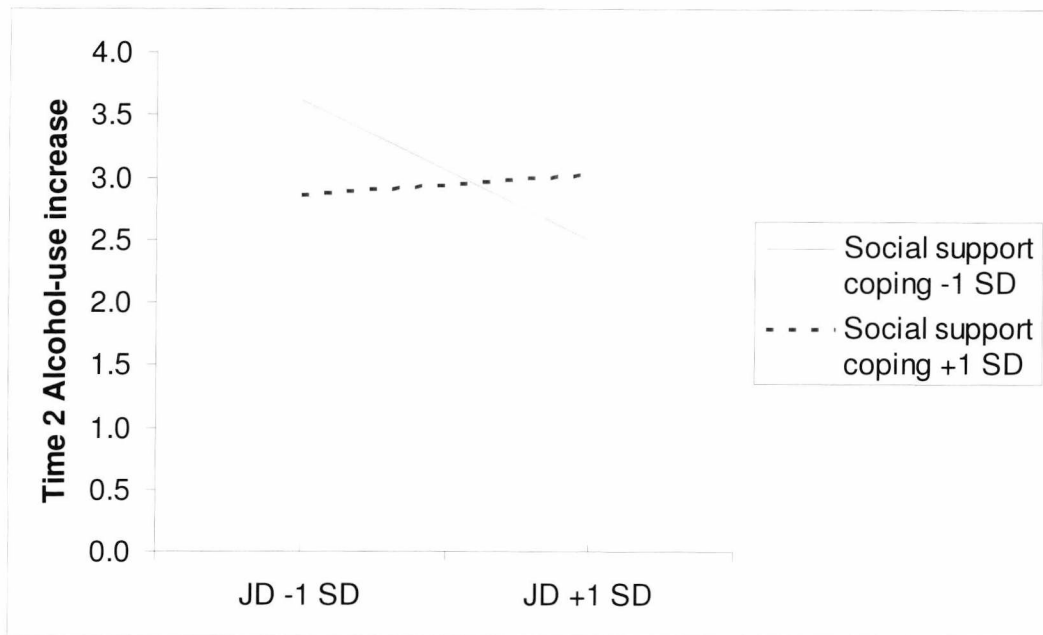


Figure 21. Interaction between job demands (JD) and social support coping on Time 2 alcohol-use increase.

An interaction between work support and social support coping on Time 2 anxiety was found ( $\beta = -.27, p < .01$ ). High social support coping did not buffer the negative influence of low work support on Time 2 Anxiety. However, when work support was high, higher social support coping was associated with lower Time 2 Anxiety (see Figure 22 below and Table A8 in Appendix A).

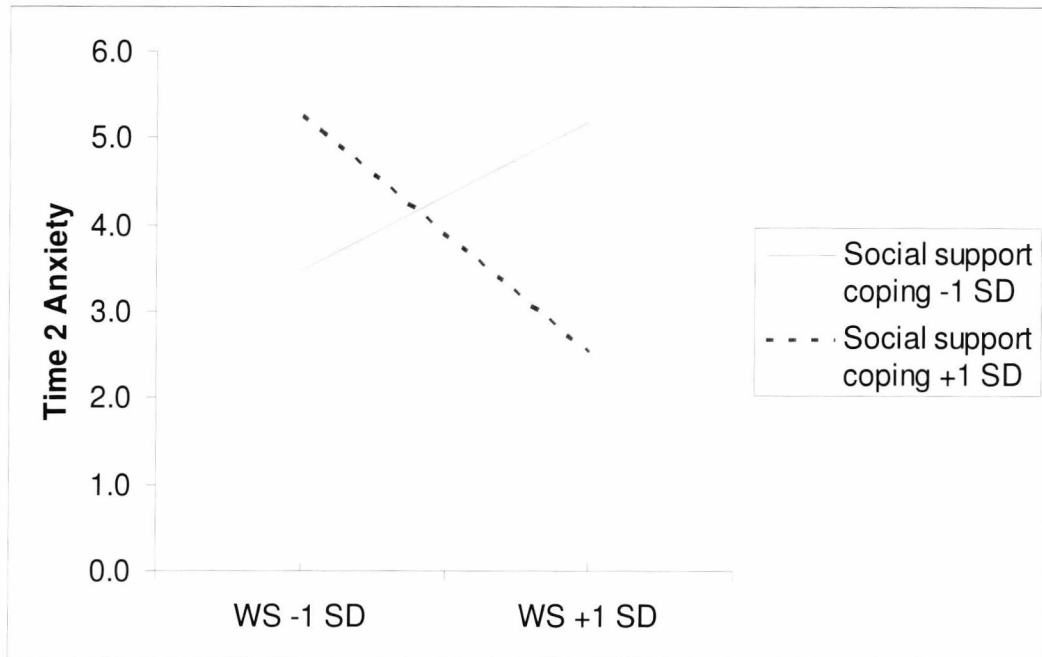


Figure 22. Interaction between work support (WS) and social support coping on Time 2 anxiety.

*Problem-focused coping as a moderator predicting time 2 outcomes.* Problem-focused coping was not found to be a significant moderator in the prediction of Time 2 health and occupational outcomes.

*Humour and acceptance coping as a moderator predicting time 2 outcomes.* An interaction was found for humour and acceptance coping and job demands when predicting Time 2 sickness absence ( $\beta = .43, p < .001$ ). High humour and acceptance coping did not buffer the negative influence of high job demands on Time 2 sickness absence. However, when job demands were low, higher humour and acceptance coping was associated with lower Time 2 sickness absence (see Figure 23 below and Table A9 in Appendix A).



Figure 23. Interaction between job demands (JD) and humour & acceptance coping on Time 2 sickness absence.

An interaction was found for humour and acceptance coping and job control when predicting Time 2 sickness absence ( $\beta = -.28, p < .05$ ). High humour and acceptance coping buffered the negative influence of low job control on Time 2 sickness absence. However, when humour and acceptance coping was low, higher job control was associated with higher Time 2 sickness absence (see Figure 24 below and Table A9 in Appendix A).

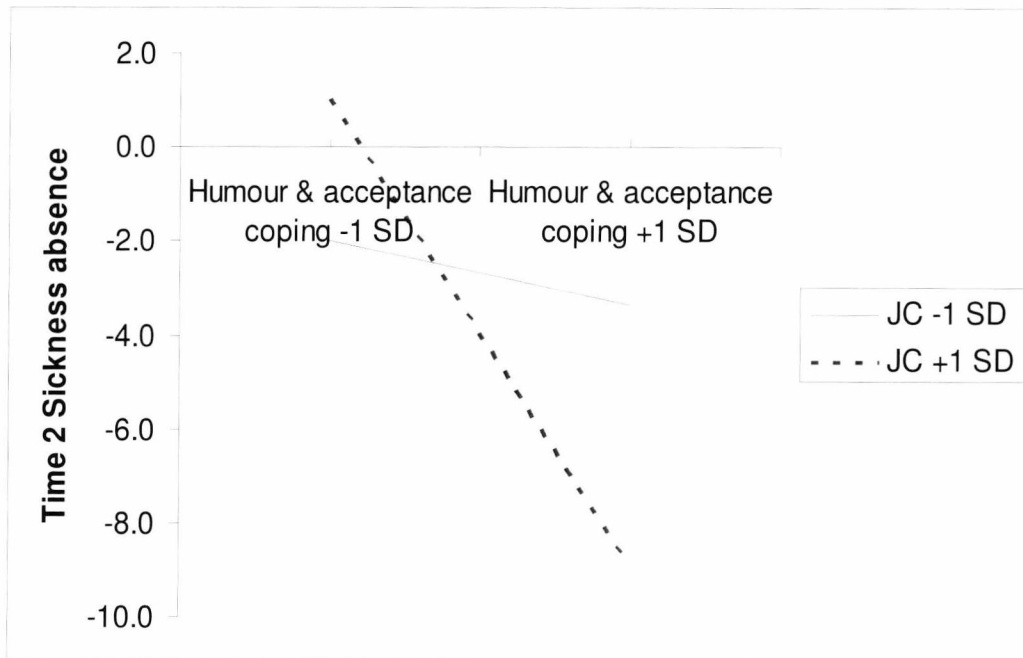


Figure 24. Interaction between job control (JC) and humour & acceptance coping on Time 2 sickness absence.

*Spiritual coping as a moderator predicting time 2 outcomes.* An interaction was found between job demands and spiritual coping on Time 2 perceived health ( $\beta = .40, p < .05$ ). High spiritual coping buffered the negative influence of high job demands on Time 2 perceived health. However, when job demands were low, higher spiritual coping was associated with lower Time 2 perceived health (see Figure 25 below and Table A10 in Appendix A).

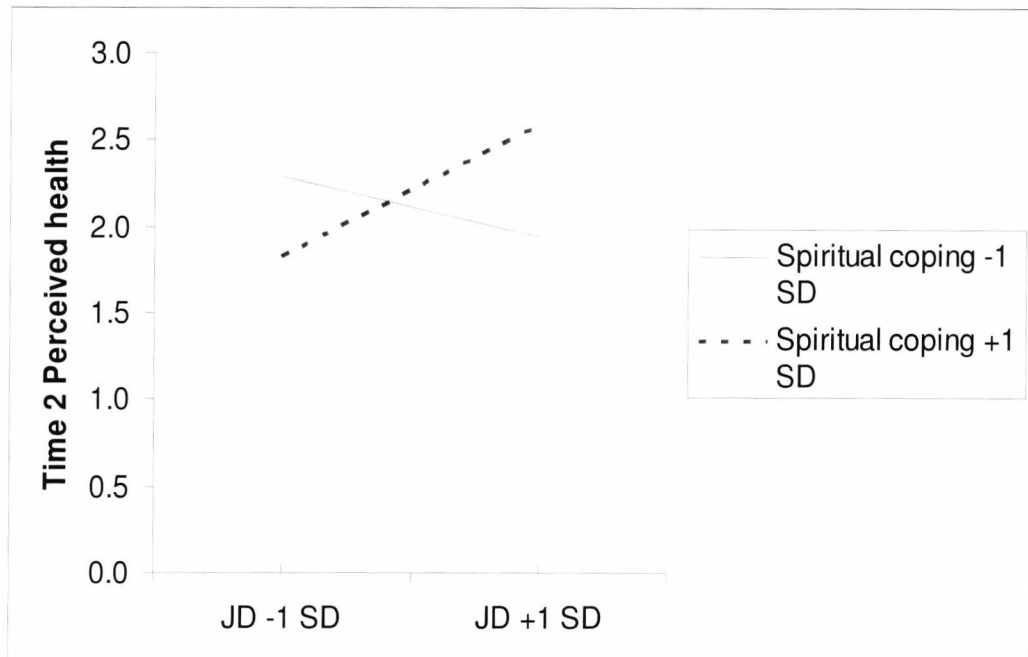


Figure 25. Interaction between job demands (JD) and spiritual coping on Time 2 perceived health.

*Substance-use coping as a moderator predicting time 2 outcomes.* An interaction was between general self-efficacy and substance-use coping on Time 2 cigarette-use were found ( $\beta = -.10, p < .01$ ). Low substance-use coping buffered the negative influence of low general self-efficacy on Time 2 cigarette-use. However, when general self-efficacy was high, lower substance-use coping was associated with higher Time 2 cigarette-use coping (see Figure 26 below and Table A11 in Appendix A).



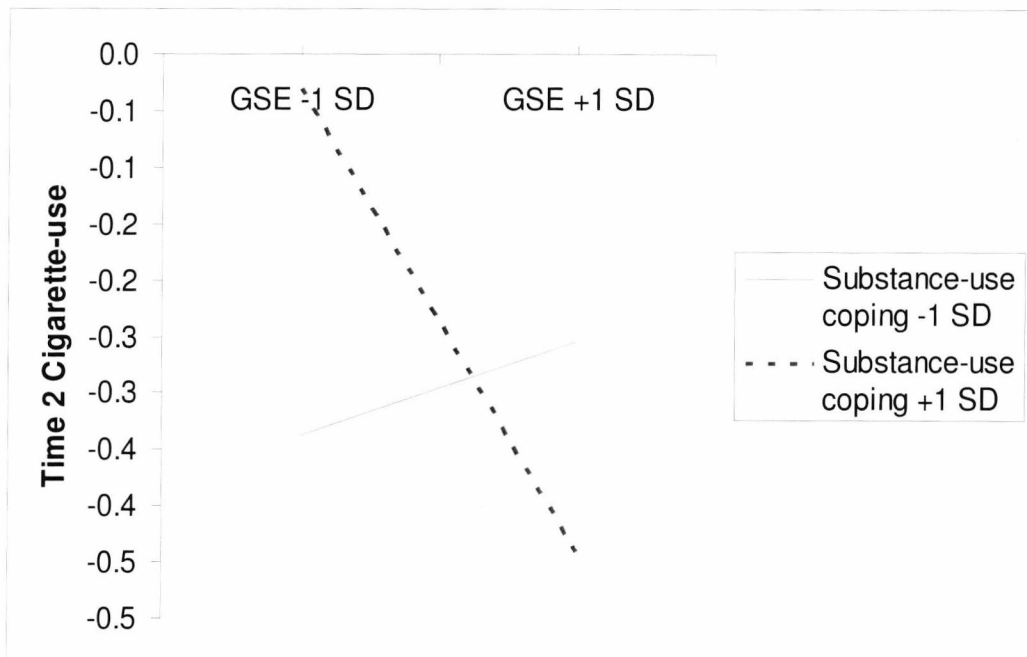


Figure 26. Interaction between self-efficacy (GSE) and substance-use coping on Time 2 cigarette-use.

### Discussion

Study 1 aimed to investigate (a) whether general self-efficacy was an important addition to the JDCS Model when predicting health and occupational outcomes, (b) the protective role of work support, and (c) the moderating role of general self-efficacy, coping strategies and the JDCS Model when predicting health and occupational outcomes. This study provides some support for the original JDC model of Karasek and the JDCS. In addition, Study 1 supported the addition of general self-efficacy to only the JDC Model and not the JDCS Model.

*Job Demands*

Main effects were not found for job demands when predicting either Time 1 or Time 2 outcomes. Furthermore, no significant correlations between job demands and health and occupational outcomes were found at either Time 1 or Time 2. It is possible that because the job demands scale used in this study only measures physical effort and time pressure, it may not be applicable across all occupational groups (e.g., de Jonge & Dormann, 2003; Van Der Doef & Maes, 1999). Therefore, a more situation-specific job demands scale may be needed when predicting health and occupational outcomes (Sparks & Cooper, 1999). On the other hand, job demands may still be useful in predicting occupational outcomes that are often conceptualized as mediators between work stress and strain (e.g. work-family conflict) as there should be more of a direct relationship.

*The JDC Model*

High job control was found to buffer the negative influence of high job demands on perceived health. This is in accordance with most empirical studies concerning the JDCA model, in addition to the finding that job control and work support had greater significance than job demands when predicting health and occupational outcomes (Theorell, 2001). In order for individuals with job control to approach their problems under conditions of high demands, employees must be inclined to use their appraised job control in order to take advantage of its benefits. To the extent that workers feel they have some autonomy in how tasks are completed and decisions are made, individuals who are able to use appropriate coping strategies may benefit from such autonomy.

However, when job demands were low, higher job control was found to be associated with lower perceived health at Time 1 and higher anxiety at Time 2. It seems employees were more likely to find their work stressful when it was based on their perceived responsibility rather than job strain. It could also be that these employees have more managerial roles, with their jobs more likely to be characterised as low strain (low job demands and high job control). For instance, Park (2007) found that white-collar workers were more likely than others to have low job strain and high job satisfaction, yet they also had higher levels of self-perceived work stress.

In addition, employees in active jobs (high job demands and high job control) were found to have the lowest job satisfaction at Time 2. This result is similar to a study that found that employees in active jobs had greater health impairment (Demerouti, Bakker, de Jonge, Janssen & Schaufeli, 2001) and that the effects of very high levels of job demands can not be reduced by increasing control. This is similar to Warr's Vitamin Model (1987), which notes that there are some job features that are desirable only at certain levels (i.e., too much or too little may contribute to psychological stress).

Hence, perceived job control may be stressful to some employees but not to others. Some employees may not want the increased responsibility connected with greater job autonomy. In such situations, a greater degree of job control would not necessarily be associated with positive effects on health or occupational outcomes. For instance, in a study of Dutch nurses, de Rijk, Le Blanc, Schaufeli, and de Jonge (1998) found that overall job control was positively related to employees' well-being, but for nurses who used active (or control) coping, high job control reduced the increase in emotional exhaustion due to job demands. In contrast, for nurses with low active coping,

high job control overtaxed such individuals when faced with high job demands, resulting in a lowered well-being; having high levels of control acted as a stressor for these individuals.

#### *The JDCS Model and Work Support*

Regarding the protective role of work support, employees who perceived higher levels of work support at Time 1 reported more positive health and occupational outcomes at Time 1. Furthermore, Time 1 work support was found to be more strongly correlated between Time 1 and Time 2 health and occupational outcomes than were Time 1 job demands and job control and between Time 1 general-self efficacy and Time 2 health and occupational outcomes. This is in line with past research that has found that support plays a crucial role in promoting employees' well-being, work attitudes, and health (e.g., Behson, 2002; Rhoades & Eisenberger, 2002; Rhoades, Eisenberger, & Armeli, 2001) and suggests that support at work has longer lasting health and occupational benefits than general self-efficacy.

Regarding the moderating role of work support, support was found to be beneficial when job demands were low, but detrimental when demands were high. In addition, work support was beneficial when job control was high but detrimental when job control was low. These results may reflect the relatively large amount of participants who worked in a factory environment (54% of participants from the total sample worked in this organisation). For example, limited interaction with co-workers is a common feature of industrial jobs such as assembly-line jobs. Co-workers are in similar working conditions to each other and may have little control over their environment. Therefore, workers may have to rely on appropriate supervisor support rather than support from

colleagues. However, supervisor support is likely to be affected by the climate of the organisation, especially, management styles, advocates, values, and rewards. The structures of the organisation and the type of job may also have a strong influence on co-worker support. For example, for factory workers, co-worker support may have little influence on health and occupational outcomes due to the highly individuated structure of work in some factories. Furthermore, factory workers who work independently of others tend to report lower co-worker support than other workers. Thus, levels of co-worker support are also limited by the type of work in addition to the values and climate of the organisation (Armeli, Eisenberger, Fasolo, & Lynch, 1998; Hutchison, 1997).

#### *General Self-Efficacy*

General self-efficacy was found to be an important addition to the JDCS Model when predicting health and occupational outcomes. Furthermore, moderate to strong correlations with health and occupational outcomes were found at Time 1, while fewer correlations (weak to strong) were found on health outcomes at Time 2. As past research has found stronger associations for specific rather than general self-efficacy with occupational outcomes (Bandura, 1997; Salanova et al., 2002; Schaubroeck & Merritt, 1997), it expected that work self-efficacy would be more highly correlated to occupational outcomes than general self-efficacy.

Employees who perceived higher levels of general self-efficacy reported more positive health and occupational outcomes at Time 1. However, these results were not evident on health and occupational outcomes at Time 2. These results support the role played by self-efficacy as a predictor of strain outcomes (e.g., Bandura, 1997; Jex & Bliese, 1999; Jimmieson, 2000; Judge & Bono, 2001; Salanova et al., 2000;



Schaubroeck & Merrit, 1997; Schwarzer, 1999; Speier & Frese, 1997) and might be attributed to the fact that individuals with high levels of self-efficacy tend to use problem-focused coping strategies at work (Semmer, 2003) which may be more effective when coping with job stressors. People high in self-efficacy may also choose to go into jobs and work environments that offer a greater degree of autonomy (Jex & Bliese, 1999).

The results of the present study also demonstrate the moderating effect of general self-efficacy on stress-health relationships, which also corroborate previous studies (Schaubroeck et al., 2000, Schaubroeck et al., 2001). Higher job demands with opportunity to exercise control over various facets of the work environment are not as relevant to individuals with high levels of perceived self-efficacy but are more stressful to those with low perceived efficacy. For this reason, any efforts to reduce work stress by increasing job control without raising efficacy to manage the increasing responsibilities might do more harm than good (Bandura, 1997). In addition, the findings suggest that self-efficacy protected employees from the negative effects of job strain. In particular, people higher in self-efficacy coped better when they had higher job control, whereas people low in self-efficacy coped better when they had low job control. Moreover, when combined with detrimental variables (e.g., low levels of problem-focused coping) high self-efficacy protected against negative health and occupational outcomes. As no significant interaction between general self-efficacy and work support was found, the reverse buffering effect of low self-efficacy on high work support could not be examined.

Overall, stronger main effect relationships were found for Time 1 than at Time 2, which is not surprising, given the 3 month period between the two waves of data collection.

### *Social Support Coping*

As the results of the present study suggest, social support coping is not beneficial for individuals who have high job demands. Perhaps the ability to cope with high job demands requires more problem-focused coping strategies to deal directly with the stressor, rather than concentrating on regulating the emotions related to the symptoms of the stressor. It is also likely that individuals who lack social skills find it harder to elicit support than those with greater social skills. For instance, in addition to social support coping not being beneficial for people with low work support when predicting perceived health and Time 2 anxiety, social support coping was found to have a more positive effect on employees who had available resources of work support, but were detrimental for people who had low support levels at work. This may be due to the increased level of stress that the social interaction places on them. For instance, there is evidence that increasing social support can increase perceived levels of stress and stress outcomes due to unhealthy social relationships such as overdependence (Quick, Joplin, Nelson, Mangelsdorff, & Fiedler, 1996; Quick, Quick, Nelson, & Hurrell, 1997). If this is the case, employees who lack social interaction skills may benefit from others helping them in obtaining relevant support at work (perhaps via a social support seeking intervention).

In addition, for people with low job demands, higher social support coping was associated with higher anxiety at Time 2. This supports Billings et al's (2000) hypothesis that resources gain their salience in the context of high demands or threats

rather than when fewer demands or threats are perceived. In addition, seeking social support is often associated with poorer health outcomes (Rook, 1998). This may be due to the negative reactions from others, or the act of seeking support may be indicative of poor networks or a detrimental coping style.

#### *Problem-focused Coping*

The results of the present study suggest that problem-focused coping was beneficial for individuals who experienced low job control, low work support, and low general self-efficacy. However, although coping is concerned specifically with the response to stressors, control does not necessarily involve stressful situations. Furthermore, control is often used to avoid stressors rather than adapt to them, therefore people with high job control may use coping strategies other than problem-focused when coping with a specific stressor. In addition, individuals who are low in self-efficacy or do not use problem-focused coping do not appear to reap the benefits from their perceived job control. Additionally, within each coping strategy, high or low job control also seems to have effects of different importance to the strain outcome.

In addition, for employees with low work support, higher problem-focused coping was associated with higher job satisfaction. This may suggest that as employees perceived that they had little social resources in which to mobilise in the face of stressors, they attempted to eliminate or minimize the demand itself (i.e., problem-focused coping). In addition, it is possible that very high levels of job demands may exceed the coping resources provided by work support. Whenever this level is exceeded, resources may not be able to match the requirements for effective coping. Well-being



may then decrease to the point observed for people with the same level of demands, but who have no coping resources (Daniels, 1999).

Furthermore, for employees with high general self-efficacy, high problem-focused coping was associated with higher physical symptoms. Perhaps employees high in self-efficacy are overconfident in their abilities and are more likely to stick to failing coping strategies. For example, Stone (1994) found that high self-efficacy led to overconfidence in one's abilities. For instance, instead of high-self-efficacy individuals contributing more of their resources toward a task, they contributed less. In addition, participants were found to be less attentive and effortful than low-self-efficacy participants. Moreover, Audia, Locke, and Smith (2000) found that participants with high self-efficacy were more likely to stick with a failed strategy than were low self-efficacy participants. As a result, the low self-efficacy individuals outperformed the high self-efficacy individuals in these studies.

#### *Humour & Acceptance Coping*

The results of the present study suggest that humour and acceptance coping was beneficial for individuals who had low job demands, low job control and high job control. In addition, people with high job demands who used more humour and acceptance coping strategies was associated with higher Time 1 cigarette-use and Time 2 sickness absence. Perhaps individuals in this situation need to make use of more problem-focused coping strategies to cope with the work stressors directly, as using humour to face the situation has been found to be positively related to emotional exhaustion and depression (Dorz, Novara, Sica, & Sanavio, 2003). It is also possible that people who use higher humour and acceptance coping socialise more, and as a result

lead a less healthy lifestyle than those who use lower humour and acceptance coping. For example, studies have found that individuals with a greater sense of humour smoke more and drink more than people with a lower sense of humour (Kerkanen, Kuiper & Martin, 2004; Martin et al., 2002). This may be because people who use more humour and acceptance coping may socialise more, and as a result increase the likelihood of smoking and drinking.

### *Spiritual Coping*

Spiritual coping was found to buffer the negative influences of high job demands, and low work support on health and occupational outcomes. Spirituality seems to be instrumental for coping, most likely through its generation of hope, sense of purpose, and provision of support through connection to something larger than self (Ganje-Fling & McCarthy, 1996). These aspects of spirituality can be greatly adaptive in times of stress, and have been shown to be widely used in the general populace (Rowan, 1996). Likewise, cancer patients have rated spiritual coping as beneficial and it is frequently employed as a strategy to increase feelings of support (Halstead & Fernsler, 1994). Furthermore, it is possible that pathways to health and well-being may vary across denominations.

In addition, when work support was high, higher spiritual coping was related to lower job satisfaction. This may be due to the more solitary environments that spiritual activities, such as mediation and praying may require. For instance, meditation has been linked to improved emotional stability and decreased anxiety and depression (Lee and Newberg 2005) and praying has been associated with high levels of positive emotion (Kahneman et al., 2004). However, with a high demand for their social support, people

may find it hard to set aside enough time to meditate or pray which may find them with more time constraints and less positive feelings about their jobs. In addition, those who typically rely on positive styles of spiritual coping may be particularly adept at marshalling social resources when undergoing a stressful situation. However, negative religious coping styles such as punitive reappraisals and religious discontent may increase isolation and estrange the individual from his or her peers (Exline & Rose, 2005).

In addition, when job demands were low, higher spiritual coping was associated with lower Time 2 perceived health. This may be due to the relationship between spirituality and health being seen as particularly strong in times of stress (e.g., Shaw et al., 2005). However, if job demands are low and employees perceive few stressors, the positive effects of spiritual coping on perceived health may be less obvious and in fact may have an inverse relationship due to an external locus of control (Seybold & Hill, 2001).

Furthermore, high spiritual coping did not buffer the negative influence of low work self-efficacy on physical symptoms. However, when general self-efficacy was high, higher spiritual coping was associated with lower physical symptoms. This association between self-efficacy and spiritual coping is not surprising as spiritual coping has been found to be highly adaptive. For example, it may have emotion-focused, cognitive and behavioural components and may be adaptive, active and problem-focused (Thune-Boyle, Stygall, Keshtgar, & Newman, 2006). Furthermore, having religious faith has been associated with a more active coping lifestyle in patients

with malignant melanoma but not necessarily with levels of distress (Baider et al., 1999; Holland et al., 1999).

#### *Substance-use Coping and Alcohol and Cigarette-use*

In this study substance-use seemed to have positive as well as negative influences on health and occupational outcomes. This might be attributed to the fact that substance-use coping specifically relates to a tension-reduction model (e.g., drinking to cope), whereas others forms of coping such as social support coping is less directly conceptually linked to alcohol-use and might even lead in some people to “social enhancement” drinking. For example, for some people substance-use coping may be a positive mechanism for reducing internal distress. Substances, such as alcohol may be used to regulate negative emotional responses that result from work stressors by distracting or numbing the individual temporarily in order to help them cope more easily with their affective states (e.g., Cooper, Frone, Russel, & Mudar, 1995). In addition, high work support, and high general self-efficacy protected against high substance-use coping when predicting health outcomes. These results are similar to Borelli & Mermelstein’s (1994) study that found that higher self-efficacy levels predicted follow-up abstinence and decrease in relapse, implying that the results of this study may be an indicator of future smoking and alcohol cessation success. In addition, affective states (especially negative mood states), previous lapses or abstinence violation, motivation, and low self-efficacy have been associated with relapse in tobacco dependency (Shiffman et al., 2000).

Furthermore, for employees who experienced high job control, both those with high general self-efficacy and those that used more problem-focused coping drank more

than low self-efficacious individuals and those who used less problem-focused coping, who drank more when they had less job control. Again, this may be due to high self-efficacious individuals (and individuals who use a high amount of problem-focused coping) employing substance-use coping in a moderate and effective way to help cope with stress. In contrast, those who are low in self-efficacy and use less problem-focused coping may use more harmful methods of substance-use coping such as binge drinking or drinking more when alone than with other people.

People with high job demands also increased their Time 2 alcohol-use more when they were high in social support coping, than people with low job demands who increased their use more when they used less social support coping. This may be simply because employees who have greater social networks and/or social skills maintain, and even increase their social resources, thus increasing their alcohol-use the more relationships they acquire. People with low job demands may increase their alcohol-use more when they use less social support coping as they may lack the appropriate social resources and/or social skills to maintain social relationships, and therefore increase negative alcohol-use.

Furthermore, people with high job demands, high work support and high humour and acceptance coping had a higher cigarette-use. More cigarette-use might be used to cope with the pressures of higher job demands. In addition, humour and acceptance coping may be popular when acquiring and maintaining social support and may result in people smoking more often when they are with others (e.g., social smoking).

*Comparison between Time 1 and Time 2*

The results of the longitudinal moderation analyses were quite consistent with the results of the cross-sectional analyses; the JDCS model was shown to be a stronger predictor of health and occupational outcomes than the JDC model. However, interactions between job control and general self-efficacy were only found in the cross-sectional analyses. In addition, the lack of main effects found for work support and self-efficacy on Time 2 outcomes may be due to the small sample size at Time 2 ( $n = 71$ ). Further, it is important to keep in mind that the work environment may change over time (e.g., new co-workers, new supervisor, new responsibilities). This could be one reason why differing results were seen at one time period, but not another. For example, Lazarus (1993) argued that coping is affected by temporal and contextual influences and changes from one time to another in any given stressful encounter.

*Limitations*

As the current study relied on self-report measures, common method variance may have contributed to the significant findings. Common method variance is caused by the methods of measurement rather than the constructs that are of interest to the study (Podsakoff et al., 2003). The problem of common method variance has led some researchers to call for possible confounding factors such as negative affect to be included in the analysis of organisational studies (e.g., Parkes, 1990; Pennebaker, 1992). However, as a main aim of the study was to test whether self-efficacy was an important addition to the JDCS Model, predicting residual “negative affect-free” health and occupational outcomes was not of interest. In addition, some research seems to justify the not controlling for this potential confounder when using self-reports in stress

research. For example, studies have shown that negative affect does not excessively distort relationships between self-report measures of stressors and strains (e.g. Dollard & Winefield, 1998; De Jonge et al., 2001). In addition, Karasek et al. (1998) argued that the cure could be worse than the problem and could easily be overdone, leading to Type 2 errors (i.e., true variance in strain measures could be removed with negative affect). In addition, while it is important to consider the potential for this bias in the current study, it should also be understood that this bias is present in most studies involving personality. Furthermore, as multicollinearity was found to not be an issue in the current study (variables were deleted if they were found to correlate highly with separate variables), it is likely that common method variance is not a significant problem in the study.

Although all predicted correlations were reported at an alpha level of .05, due to the large number of correlations that were conducted, there may be a chance of Type 1 errors. Similarly, any significant effects that were found need to be interpreted under caution of Type 1 error. For example, when running a large number of analyses, it is likely that some significant differences will appear. Therefore, continued data collection, with strong sample sizes, would help to provide a more accurate assessment of the relationship between these variables over time. In addition, the use of a convenience sample may weaken the generalizability of the study results since a convenience sample reflects a specific, targeted group, as opposed to a random sample that may potentially reflect the general population of office-based workers.

*Summary*

The present findings provide the first test of general self-efficacy as an additional moderator to the JDCS model, and suggest that general self-efficacy may prove a significant extension of the JDC model in predicting employees' health. The present study extends these findings in a longitudinal context, showing moderation effects both for relationships of coping dimensions to intercepts, and for relationships to change over time.

*Future Research and Study 2*

Study 2 aims to address some of the limitations arising from Study 1, while also endeavouring to discern stronger findings. Firstly, Study 2 aims to measure self-efficacy as it relates to the workplace. That is, measuring an employee's confidence in their ability to perform work specific tasks. Secondly, as work self-efficacy will be measured, this may provide greater power when predicting occupational outcomes. Therefore, in addition to work self-efficacy, more context specific indicator variables (occupational outcomes) for Study 2 will be introduced, namely, organisational commitment, job involvement, and work-family conflict.

While job satisfaction is often thought of as the primary indicator of the quality of work life, job involvement and organisational commitment have also been identified as important attitudinal outcomes that reflect the internal career and the quality of work life (Loscocco and Roschelle, 1991). Another reason that organisational commitment and job involvement variables were added was that most studies of Karasek's model have focused on negative outcomes, and have failed to include measures of positive outcomes. In addition, organisational commitment and job involvement were chosen as



outcome variables as they reflect the intrinsic work values of the job. Furthermore, Karasek's (1979) demands-control-support model is primarily a model of occupational stress, yet it is likely that it can be extended to make predictions concerning the spillover between work and family. Specifically, as work-family conflict is often conceptualized as a mediator between work stress and strain (e.g. Grandey & Cropanzano, 1999), the job demand and job control characteristics may also predict the more proximal experience of work-to-family conflict.

Furthermore, one of the criticisms of the original research of the JDC Model, is that Karasek used heterogeneous samples that came from diverse occupations and, consequently, the findings may have been confounded due to socioeconomic status (Sheffield, Dobbie, and Carroll, 1994). Therefore, in order to control for this confounding effect, Study 2 takes this into account by using more homogeneous samples.

Study 2 also sought to increase the response rate of participants, by increasing the incentive from a voucher worth £20 to one worth £50.

#### *Aims of Study 2*

Study 2 aims to investigate (a) whether work self-efficacy is an important addition to the JDCS Model when predicting health and occupational outcomes, (b) the protective role of work support, and (c) the moderating role of work self-efficacy, coping strategies and the JDCS Model when predicting health and occupational outcomes.

## CHAPTER 4

## Study 2

*The Role of Work Support, Work Self-Efficacy, and Coping Strategies in the Job**Demand-Control-Support Model**Chapter Overview*

Chapter 4 presents a test of whether work self-efficacy acts as an additional moderator variable in the Job Demand-Control-Support Model (JDCS). It starts by presenting the theoretical framework of the study. It then goes on to present organisational commitment, job involvement, work-family conflict and the aims for the Study 2. Following this, the data collection method and the sample characteristics, as well as a description of the measures used in the study are presented. The results of the statistical analyses are then presented and these results discussed.

*Theoretical Framework of Study*

Although it has been found that generalised and specific efficacy beliefs are correlated, and that the general tendency to feel efficacious may extend to specific situations (Yeo & Neal, 2006), past studies have demonstrated that in contrast to general self-efficacy, domain specific self-efficacy plays a more robust moderating role than general measures of self-efficacy (Bandura, 1997; Salanova et al., 2002; Schaubroeck & Merrit, 1997). The reason behind this is that an individual's self-efficacy beliefs are likely to differ depending on the domain to which it relates to (Bandura, 1999, 2001). For example, Salanova, Peiro and Schaufeli (2002) extended the Job Demands-Control, and included both computer self-efficacy and general self-efficacy as moderator variables between job conditions (i.e., job demands and job control) and exhaustion and

cynicism (i.e., burnout) for computer workers. This relationship was only found for computer self-efficacy and was not found for general self-efficacy. Consequently, although general self-efficacy can contribute in explaining well-being at work, work-related self-efficacy should explain more variance when predicting occupational outcomes.

Reviews of research on popular work stressors suggest that stressors are negatively related to job attitudes that are associated with retention (e.g., job satisfaction and organisational commitment) and positively related to propensity to leave job and turnover (Griffeth, Hom, & Gaertner, 2000). In order to further examine the impact work stress has on occupational outcomes, the following variables were included in this study:

#### *Organisational Commitment*

In this study, organisational commitment is viewed as affective commitment to the organisation. Affective commitment is described as an emotional attachment to the organisation and is particularly sensitive to work experiences such as work support (Powell & Meyer, 2004). Gellatly (1995) found that affective commitment was positively related to voluntary absence, while Somers (1995) found that affective commitment was associated with extended weekend and holiday absences. Participation in the decision-making process has been shown to have a positive effect on commitment (Wright, Saylor, Gilman, & Camp, 1997), as has job satisfaction and satisfaction with one's supervisor (Lambert, 2004; Robinson, Porporino, & Simourd, 1997). In addition, Lambert, Hogan, Barton, and Clarke (2002) found that increased instrumental communication and greater staff integration increased affective commitment to the

organisation among a group of non-supervisory employees. Their study also found that age, education, gender, race, position, and tenure failed to have any effect on levels of affective commitment for this group. Other studies show job stress to be negatively correlated with organisational commitment (Lambert, 2004; Robinson, Porporino, & Simourd, 1997).

#### *Job Involvement*

Job involvement is a specific belief about an employee has about their job and refers to the extent to which their job can satisfy their needs. Job involvement has been found to be positively related to job satisfaction, organisational commitment, and low turnover intention (Brown, 1996). However, job involvement has also been found to have negative effects. For instance, workers with high job involvement were found to respond more negatively to job stressors (Frone, Russell, & Cooper, 1995).

#### *Work-Family Conflict*

Several researchers have investigated the role of conflict between the workplace and the family as a possible outcome of occupational stress. Work-family conflict is the role tension that occurs as job demands interfere with the performance of family duties (Netemeyer, Brashear-Alejandro, & Boles, 2004). Burke (2002) reported that increased conflict of the workplace to the family life led to more psychosomatic health symptoms. This finding was further supported by Mikkelsen and Burke (2004) who reported that work-family conflict was associated with indicators of poor psychological health, but not poor physical health. These findings are consistent with previous research showing that work-family conflict is associated with increased psychological distress.

*Improvements on Study 1*

Study 2 was designed to address some of the limitations arising from Study 1, while also endeavouring to discern stronger findings. Firstly, Study 2 measures self-efficacy as it relates to the workplace. That is, it measures employees' confidence in their ability to perform work specific tasks. Secondly, as work self-efficacy is now being measured this may provide greater power when predicting occupational outcomes. Therefore, in addition to work self-efficacy, more occupational outcome variables for Study 2 were introduced, namely, organisational commitment, job involvement, and work-family conflict. Another reason these variables were added was that most studies of Karasek's model have focused on negative outcomes, and have failed to include measures of positive outcomes.

Furthermore, as Study 1 used heterogeneous samples that came from diverse occupations (i.e., factory workers and office based workers), Study 2 sought to control for this possible confounding effect of socioeconomic status by using more homogeneous samples (just office based workers).

Study 2 also sought to increase the response rate of participants, by increasing the incentive from a voucher worth £20 to one worth £50. However, this increase in price did not lead to a greater response rate as the response rate for both Study 1 and Study 2 was 29%

*Aims of Study 2*

Study 2 aims to investigate (a) whether work self-efficacy is an important addition to the JDCS Model when predicting health and occupational outcomes, (b) the protective role of work support, and (c) the moderating role of work self-efficacy,

coping strategies and the JDCS Model when predicting health and occupational outcomes.

## Method

### *Design*

This study employs a longitudinal correlational design. Measures were recorded at two points: Time 1 and at Time 2 (3 months later).

### *Participants and Procedure*

A sample of 157 employees was recruited from two organisations in Kent, UK, for participation in a survey on work stress. From this sample, 42% were male, 58 % were female, 94% were White British or Irish, and 89% were employed full-time. Mean age was 40.2 years old ( $SD = 12.4$  years). Mean tenure was 7.2 years ( $SD = 7.6$ ). Questionnaire packs were posted directly to the companies and distributed to the employees by the contact persons in the companies. Participants were asked to seal their survey in the envelope provided, and return the completed questionnaire to the principal investigator. As a small compensation for participation, participants entered a raffle for a gift voucher of £50.

*Demographic control variables.* As in Study 1, job grade was controlled for. Job grade categories were slightly different from Study 1 as participants in Study 2 were all based in offices. Job grade categories were adapted from the National Statistics website (2004). Job grade responses were; 1= manual (1%), skilled non-manual (59%), managerial (19%), and 5 = professional & senior management (21%).

### *Measures*

Most of the measures employed in Study 1 were used in Study 2. There were a few exceptions however. Propensity to leave job was not used in Study 2 as it was found to have a reliability of .62 in Study 1. In addition, work self-efficacy was used in place of general self-efficacy. A number of new measures were also added to the Study.

*Work self-efficacy.* To measure work-related self-efficacy, the General Perceived Self-Efficacy Scale (GPSES; Schwarzer, 1993) was modified to include the words; “regarding my work...” before the ten item scale to capture participants’ belief of their ability to deal effectively with stressful situations at work (e.g., “regarding my work... I can always manage to solve difficult problems if I try hard enough”). Participants responded on a 4-point scale from “strongly disagree” to “strongly agree.”

*Organisational commitment.* To measure organisational commitment, a short version of the Organisational Commitment Questionnaire (Mowday, Steers, & Porter, 1979) was employed comprising nine items (e.g., “I really care about the fate of this organisation”) to which participants responded on a 5-point scale from “strongly disagree” to “strongly agree.”

*Job involvement.* To measure job involvement, the Job Involvement Questionnaire (Lodahl & Kejner, 1965) was employed comprising of ten items (e.g., “I am very much involved personally in my job”) to which participants responded on a 5-point scale from “strongly disagree” to “strongly agree.”

*Work-family conflict.* To measure work-family conflict, six items from three subscales of the Work-Family Conflict Scale (Carlson, Kacmar, & Williams, 2000) were employed; the time-based work conflict with family, the strain based work conflict with

family, and the behaviour-based work conflict with family. In total this measure comprised of six items (e.g., “my work keeps me from my family activities more than I would like”) to which participants responded on a 5-point scale from “strongly disagree” to “strongly agree.”

#### *Data Analysis*

All data entry and analyses were conducted using SPSS version 13.0 (SPSS, 2004). Data from the 157 completed questionnaires were entered into SPSS and checked for entry errors. Descriptive statistics were then generated for each variable. The results of the longitudinal analyses are presented after the results of the cross-sectional analyses.

*Factor analysis.* As the general self-efficacy scale from Study 1 was adapted to be work-based in Study 2, a factor analysis was conducted for both of the scales in order to compare factor structures. The factor structures were compared by performing Principal Components Analysis for general self-efficacy on the Time 1 sample in Study 1 ( $N = 133$ ) and performing a Principal Components Analysis for work self-efficacy on the Time 1 sample in Study 2 ( $N = 157$ ). In all situations, parallel analysis was used to determine the number of factors to be retained (Russell, 2002).

*Bivariate analyses.* Before moderated regression analysis was performed, intercorrelations among the independent and moderator variable were analyzed to detect possible presence of multicollinearity. For reasons of consistency, descriptions of correlations were based on the guidelines for conventional practice outlined by Cohen and Cohen (1983). According to these guidelines effect sizes for correlations are as



follows:  $r = .10$  (classified as weak),  $r = .30$  (classified as moderate), and  $r > .50$  (classified as strong).

*Multiple regression analyses.* To assess the moderating effects of the JDCS-GSE Model and coping strategies (independent variables) on health and occupational outcomes (dependent variables), moderated multiple regression analyses were undertaken, as recommended by Cohen and Cohen (1983). To examine interactions involving continuous variables, Aiken and West (1991) recommend centering all variables in moderated regression analyses in order to reduce problems of multicollinearity. As in Study 1, all variables included in the moderated regression analyses were first centered by converting them to  $z$  scores, and multiplicative terms were created for the standardized independent variables (Independent Variable  $\times$  Moderator Variable). In hierarchical regression analyses the predictor (independent) variables are entered in steps (or blocks) with each of these variables being assessed in terms of what they add to the prediction of the dependent variable, after any other predictor variable has been controlled for.

*Differences between completers and non-completers.* To investigate representativeness of the longitudinal sample, several comparisons using one-way analysis of variance (ANOVA) were conducted to test for differences of study variables between employees who responded at Time 2 (completers), and those who did not respond at Time 2 (non-completers). In addition, chi-square analyses were conducted to investigate differences between completers and non-completers in categorical demographic variables.

## Results

### *Data Analysis*

*Factor structures of general self-efficacy (study 1) and work self-efficacy (study 2).* As the general self-efficacy scale from Study 1 was adapted to be work-based in Study 2, a factor analysis was conducted for both of the scales in order to compare factor structures. Principal components analysis, employing a promax rotation suggested that both the general self-efficacy and the work self-efficacy scales were one-factorial. RanEigen (Enzmann, 1997) was used for determining the number of factors to retain by using random eigenvalues (parallel analysis). The parallel analysis method is an alternative to the rule of retaining eigenvalues greater than 1 and to the scree test. Retaining eigenvalues greater than 1 often leads to too many components being extracted and when using the scree test, it is not always clear where to draw the line that discriminates “significant” from “random” components (see Russell, 2002, for a discussion on best practices in factor analysis).

For general self-efficacy, 52.57% of the total variance was explained by one factor. For work self-efficacy, 60.48% of the total variance was also explained by one factor. The difference in the total variance between the two factors could be due to the differences between the two samples. For example, there were 133 participants in Study 1, while Study 2 contained 157 participants.

*Descriptive Statistics.* Means and standard deviations and reliability (Cronbach's  $\alpha$ ) for Study 2 Time 1 variables are presented in Tables 9 and 10. 70.7% (111 out of 157) of participants had some form of missing data. However, once means substitution was computed (see Study 1 for scale computation process), only 5 participants were

excluded from analysis as they were not considered to have missing data at random. As in Study 1, when computing scales, means were inserted for missing values at 70% in order to maximize available data. As humour and acceptance coping had a reliability lower than .70, this variable was not included in further analyses. All other variables had reliabilities higher than .70.

Table 9

*Study 2. Descriptive Statistics of Time 1 Predictors and Coping Strategies*

<i>Variable</i>	<i>M</i>	<i>SD</i>	$\alpha$
<b>Predictors</b>			
Job demands	16.13	2.53	.75
Job control	28.45	4.75	.83
Work support	29.46	5.33	.92
Self-efficacy	29.74	4.42	.92
<b>Coping strategies</b>			
Social support coping	12.32	2.38	.84
Problem-focused coping	20.40	2.57	.77
Humour & acceptance coping	14.76	2.19	.62
Spiritual coping	3.27	1.94	.95
Substance-use coping	3.10	1.46	.81

*Note.*  $N = 151-156$ .  $\alpha =$  Cronbach's alpha, n.a. = single item.

Table 10

*Study 2. Descriptive Statistics of Time 1 Outcomes*

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>α</i>
<b>Time 1 Outcomes</b>			
Perceived health	3.18	0.63	n.a.
Anxiety	17.19	3.80	.81
Depression	19.00	2.73	.86
Physical symptoms	62.69	15.77	.93
Organisational commitment	30.50	6.68	.91
Job satisfaction	11.00	2.31	.83
Job involvement	26.50	6.44	.84
Work-family conflict	16.37	5.43	.90
Sickness absence	3.18	0.63	n.a.

*Note.* *N* = 69-155.

*Zero-order correlations (time 1).* Bivariate collinearity was assessed through examination of the intercorrelations between Time 1 job grade (control variable), job demands, job control, work support, work self-efficacy (predictor variables), and Time 1 health and occupational outcomes (see Table 11). As in Study 1, the bivariate correlation analysis indicated that, in most cases, the correlations among all the independent variables and dependent variables were much lower than .80. However, as a correlation of .91 was found between cigarette-use and cigarette-use increase, therefore cigarette-use increase was not used in further analyses.

Regarding the correlations between job grade (control variable) and Time 1 health and occupational outcomes, significant correlations were found between job grade and Time 1 physical symptoms, job involvement, and work-family conflict. For job demands, significant correlations were found with Time 1 job satisfaction, job involvement, and work-family conflict. For job control, significant correlations were found with Time 1 anxiety, depression, physical symptoms, organisational commitment, job satisfaction, and work-family conflict. For work support, significant correlations were found with Time 1 perceived health, anxiety, depression, physical symptoms, organisational commitment, job satisfaction, and work-family conflict. For work self-efficacy, significant correlations were found with Time 1 perceived health, anxiety, depression, organisational commitment, job satisfaction, and job involvement.

Table 11

Study 2. Correlations Between Time 1 Job Grade, JDCS, Work Self-Efficacy and Health & Occupational Outcomes

Variable	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17
1. Job grade	-															
2. Job demands	.22**	-														
3. Job control	.39***	-.01	-													
4. Work support	-.06	-.25**	.35***	-												
5. Work self-efficacy	.19*	.07	.23**	.21*	-											
6. Perceived health	.03	-.16	.27**	.32***	.30***	-										
7. Anxiety	-.07	.09	-.17*	-.34***	-.42***	-.42***	-									
8. Depression	-.01	.11	-.22**	-.35***	-.45***	-.41***	.66***	-								
9. Physical symptoms	-.24**	.09	-.35***	-.32***	-.42***	-.54***	.66***	.57***	-							
10. Organisational commitment	.06	-.11	.22**	.39***	.29***	.17*	-.15	-.28***	-.17*	-						
11. Job satisfaction	.09	-.20*	.33***	.42***	.28***	.27**	-.17*	-.34***	-.23**	.62***	-					
12. Job involvement	.32***	.18*	.14	.04	.19*	-.10	.09	.15	.02	.37***	.33***	-				
13. Work-family conflict	.18*	.31***	-.21**	-.31***	-.03	-.33***	.34***	.33***	.33***	-.07	-.03	.33***	-			
14. Sickness absence	-.11	.14	-.14	-.15	-.10	-.27**	.16*	.13	.27***	-.03	-.10	.05	.21**	-		

Table 11 (continued)

*Study 2. Correlations Between Time 1 Job Grade, JDCS, Work Self-Efficacy and Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
15. Cigarette-use	.02	-.09	-.06	.03	.09	-.05	.11	-.02	-.07	-.03	.03	-.12	-.01	-.11	-		
16. Cigarette-use increase	-.04	-.12	-.03	.10	.05	-.02	.09	-.03	-.08	.01	.05	-.10	-.01	-.10	.91***	-	
17. Alcohol-use	.08	-.06	.19*	.12	.16*	.16	-.20*	-.22**	-.19*	.14	.16*	.03	-.08	-.04	.07	.08	-
18. Alcohol-use increase	.09	-.02	.21**	.18*	.01	.09	-.16*	-.08	-.17*	.10	.12	.12	.04	-.06	.03	.02	.38***

*Note.*  $N = 152 - 155$ . JDCS = job demand-control-support comprising job demands, job control, and work support. Job grade = manual, skilled non-manual, managerial, and professional & senior management. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Correlations between Time 1 coping strategies and Time 1 health and occupational outcomes were also examined (see Table 12). For social support coping, significant correlations were found with Time 1 perceived health, depression, physical symptoms, and work-family conflict. For problem-focused coping, significant correlations were found with Time 1 perceived health, anxiety, depression, physical symptoms, organisational commitment, job satisfaction, work family conflict, and alcohol-use. For spiritual coping, significant correlations were found with Time 1 physical symptoms and alcohol-use increase. Finally, for substance-use coping, significant correlations were found with Time 1 alcohol-use.



Table 12

## Study 2. Correlations Between Time 1 Coping Strategies and Health &amp; Occupational Outcomes

Variable	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16
1. Social support coping	-														
2. Problem-focused coping	.26**	-													
3. Spiritual coping	.06	.06	-												
4. Substance-use coping	-.05	-.06	.05	-											
5. Perceived health	.17*	.36***	-.08	.04	-										
6. Anxiety	-.13	-.41***	.10	.16	-.42***	-									
7. Depression	-.29***	-.49***	.05	.06	-.41***	.66***	-								
8. Physical symptoms	-.22**	-.42***	.19*	.21*	-.54***	.66***	.57***	-							
9. Organisational commitment	.12	.22**	.07	-.08	.17*	-.15	-.28***	-.17*	-						
10. Job satisfaction	.03	.23**	.12	-.02	.27**	-.17*	-.34***	-.23**	.62***	-					
11. Job involvement	.02	.13	.05	-.04	-.10	.09	.15	.02	.37***	.33***	-				
12. Work-family conflict	-.17*	-.16*	.03	.14	-.33***	.34***	.33***	.33***	-.07	-.03	.33***	-			
13. Sickness absence	.04	-.12	-.01	.05	-.27**	.16*	.13	.27***	-.03	-.10	.05	.21**	-		
14. Cigarette-use	-.03	-.03	-.15	-.02	-.05	.11	-.02	-.07	-.03	.03	-.12	-.01	-.11	-	
15. Alcohol-use	.11	.25**	-.02	.46***	.16	-.20*	-.22**	-.19*	.14	.16*	.03	-.08	-.04	.07	-

Table 12 (continued)

Study 2. Correlations Time 1 Coping Strategies and Health & Occupational Outcomes

Variable	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16
16. Alcohol-use increase	.05	.09	-.27**	.02	.09	-.16*	-.08	-.17*	.10	.12	.12	.04	-.06	.03	.38***

*Note.*  $N = 152 - 155$ . \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Multiple regression analyses.* As the main aim of this study was to test whether work self-efficacy made a significant contribution to the JDCS Model, the hierarchical multiple regression method was thought to be the most appropriate method, as all predictors needed to be included. As in Study 1, the alpha level of .05 was used for all statistical tests.

*Predicting time 1 health and occupational outcomes.* Hierarchical regression analyses were computed to test whether work self-efficacy adds to the JDCS Model in predicting Time 1 health and occupational outcomes. Job grade was controlled for in Step 1. The Time 1 JDCS Model variables (i.e., job demands, job control, and work support) were entered in Step 2. Finally, Time 1 work self-efficacy was entered in Step 3. Regression analyses were only reported if work self-efficacy was found to be a significant predictor.

Regarding the JDCS-WSE Model, main effects were not found for job demands. Job control predicted higher job satisfaction (Table 13). High work support predicted higher perceived health, organisational commitment, job satisfaction (Table 13), anxiety, depression, and physical symptoms (Table 14). Finally, high work self-efficacy predicted higher perceived health, organisational commitment, job satisfaction (Table 13), anxiety, depression, and physical symptoms (Table 14).

Table 13

*Hierarchical Regression Analyses for Variables Predicting Perceived Health, Organisational Commitment, and Job Satisfaction*

	Perceived health				Organisational commitment				Job satisfaction			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				<.001				.001				.003
Job grade	-0.01	0.06	-.01		0.23	0.63	.03		0.16	0.23	.06	
Step 2				.138**				.158***				.235***
Job demands (JD)	-0.03	0.02	-.13		-0.15	0.21	-.06		-0.15	0.08	-.14	
Job control (JC)	0.02	0.01	.15		0.09	0.13	.06		0.10	0.05	.19*	
Work support (WS)	0.03	0.01	.24**		0.44	0.11	.35***		0.15	0.04	.34***	
Step 3				.039**				.031**				.021*
Work self-efficacy	0.03	0.01	.21**		0.28	0.12	.18**		0.08	0.04	.15*	

*Note.* *N* = 146–157. Job grade = manual, skilled non-manual, managerial, and professional & senior management. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table 14

*Hierarchical Regression Analyses for Variables Predicting Anxiety, Depression, and Physical Symptoms*

	Anxiety				Depression				Physical symptoms			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.002				.002				.043*
Job grade	-0.21	0.36	-.05		0.12	0.26	.04		-3.65	1.43	-.21*	
Step 2				.123**				.138***				.140***
Job demands (JD)	0.08	0.12	.05		0.08	0.09	.07		0.59	0.48	.10	
Job control (JC)	-0.02	0.07	-.02		-0.06	0.05	-.10		-0.53	0.29	-.16	
Work support (WS)	-0.23	0.06	-.33**		-0.15	0.04	-.30***		-0.73	0.24	-.25**	
Step 3				.107***				.126***				.085***
Work self-efficacy	-0.30	0.07	-.34***		-0.23	0.05	-.37***		-1.07	0.26	-.30***	

Note. *N* = 146–157. Job grade = manual, skilled non-manual, managerial, and professional & senior management. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

*Moderation effects of the jdc model in predicting time 1 outcomes.* Finally, the data for moderating effects were explored. To this aim, a series of multiple regressions were performed to test the interaction effects of Time 1 job demands, job control, work support and work self-efficacy on health and occupational outcomes. As in Study 1, the predictor variables were all continuous and were centered before adding them into the regression model. After the predictor variables were centered, product terms were created that represented the interaction between the predictor variables. To create product terms, the centered predictor variables were multiplied together (Cohen et al., 2003) until there were six product terms that represented interactions between all of the predictor variables. The tables of the moderation analyses are presented in Tables B1-B14 (see Appendix B).

*Moderation effects of the jdc model predicting time 1 outcomes.* No interaction effects were found regarding the JDC model when predicting Time 1 health and occupational outcomes.

*Moderation effects of the jdcs model predicting time 1 outcomes.* Regarding the JCWS Model, interaction effects were found for sickness absence ( $\beta = .20, p < .05$ ). High work support buffered the negative influence of low job control on sickness absence. However, when job control was high, higher work support was associated with higher sickness absence (see Figure 27 below and Table B1 in Appendix B).

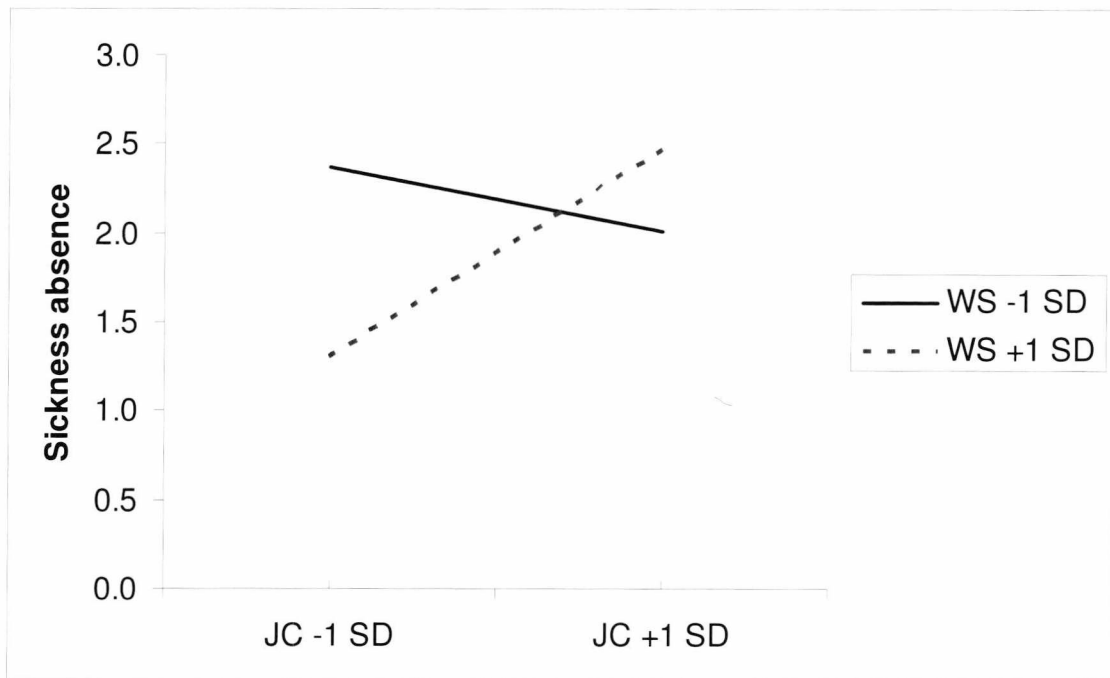


Figure 27. Interaction between job control (JC) and work support (WS) on sickness absence.

*Moderation effects of the jdcs-wse model predicting time 1 outcomes.* Adding self-efficacy to the analyses, an interaction effect was found between self-efficacy and work support in relation to sickness absence ( $\beta = .22, p < .05$ ). High work self-efficacy buffered the negative influence of low work support on sickness absence. However, when work support was high, higher work self-efficacy was associated with higher sickness absence (see Figure 28 below and Table B1 in Appendix B).

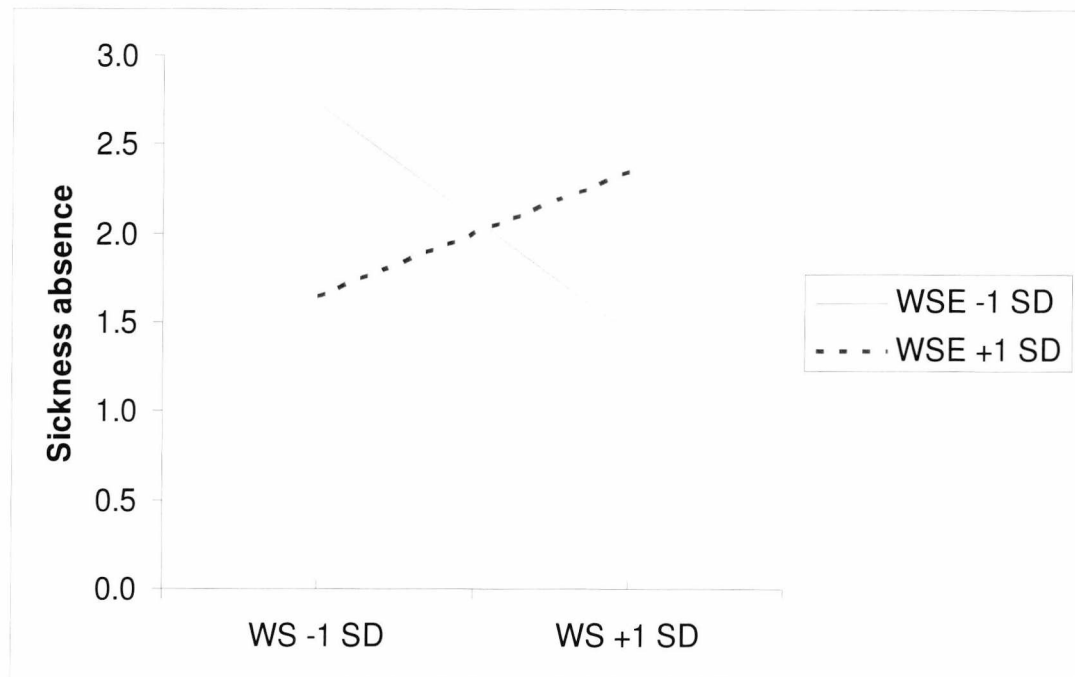


Figure 28. Interaction between work support (WS) and work self-efficacy (WSE) on sickness absence.

*Moderation effects of coping strategies predicting time 1 outcomes.* In order to test which type of coping strategy is most beneficial for employees when moderating the JDCS-WSE Model's effects on Time 1 health and occupational outcomes, Time 1 coping strategies were added to the JDCS-WSE model one by one in order to explore the interaction effects between the predictor variables on the Time 1 health and occupational outcomes. Similar to the JDCS factors and work self-efficacy, the type of coping strategy was centered before adding it into the regression model.

*Social support coping as a moderator predicting time 1 outcomes.* Regarding social support coping, interactions were found with job demands on anxiety ( $\beta = -.21, p < .01$ ), depression ( $\beta = -.17, p < .05$ ), and physical symptoms ( $\beta = -.15, p < .05$ ). As can be seen in Figure 29 below (and Table B2 in Appendix B), high social



support coping buffered the negative influence of high job demands on anxiety. However, when job demands were low, higher social support coping was associated with higher anxiety. As can be seen in Figure 30 below (and Table B2 in Appendix B), high social support coping buffered the negative influence of high job demands on depression. However, when job demands were low, higher social support coping was associated with higher depression. As can be seen in Figure 31 below (and Table B3 in Appendix B), high social support coping buffered the negative influence of high job demands on physical symptoms. However, when job demands were low, higher social support coping was associated with higher physical symptoms.

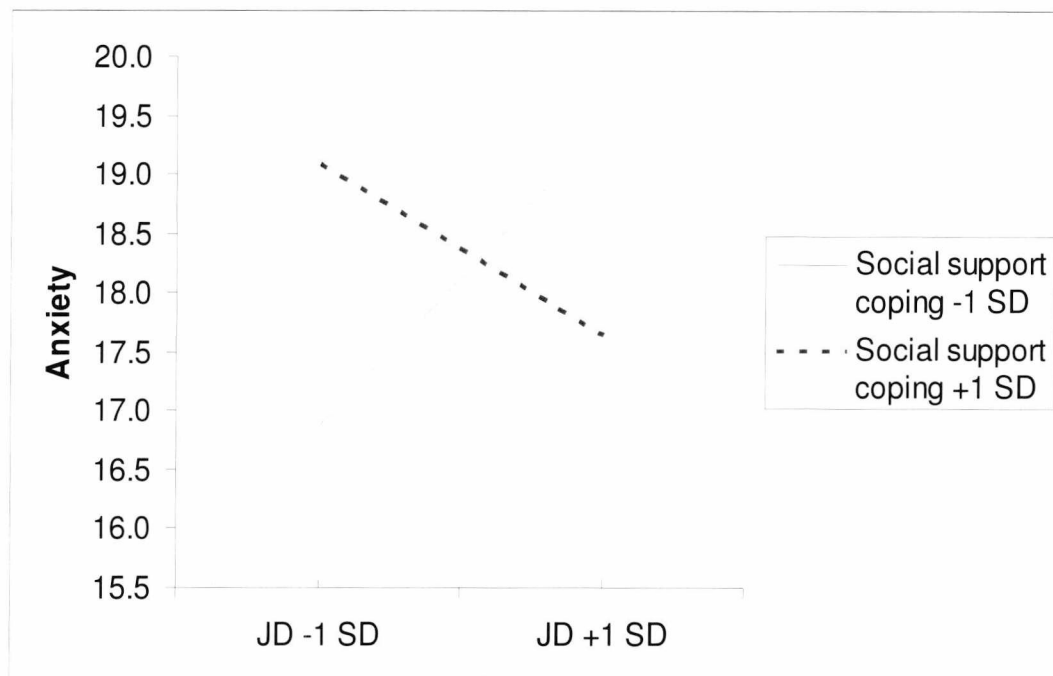


Figure 29. Interaction between job demands (JD) and social support coping on anxiety.

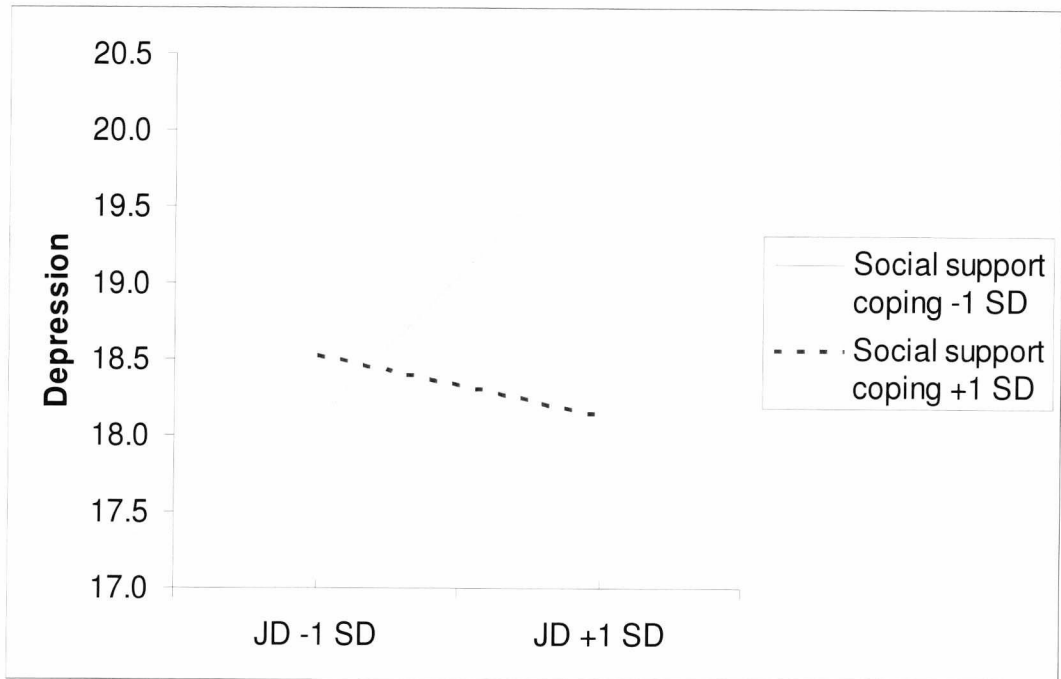


Figure 30. Interaction between job demands (JD) and social support coping on depression.

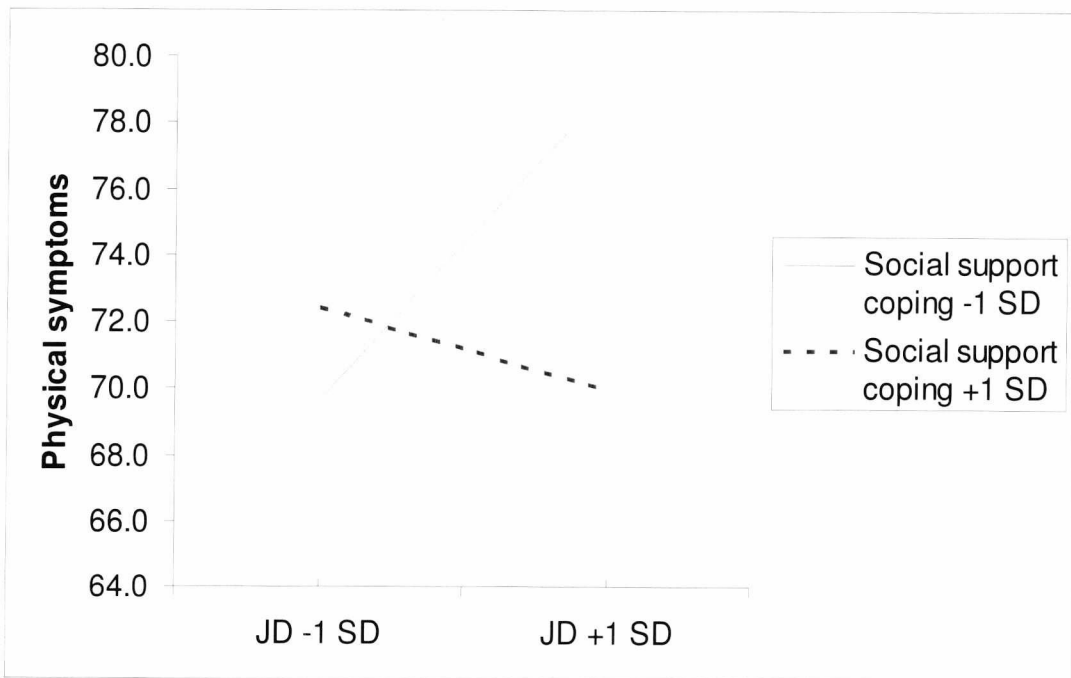


Figure 31. Interaction between job demands (JD) and social support coping on physical symptoms.

Interactions between social support coping and work self-efficacy were found when predicting depression ( $\beta = -.22, p < .01$ ), and cigarette-use ( $\beta = .25, p < .01$ ). As can be seen in Figure 32 below (and Table B2 in Appendix B), high social support coping did not buffer the negative influence of low work self-efficacy on depression. However, when work self-efficacy was high, higher social support coping was associated with lower depression. As can be seen in Figure 33 below (and Table B3 in Appendix B), high social support coping buffered the negative influence of low work self-efficacy on cigarette-use. However, when work self-efficacy was high, high social support coping was associated with higher cigarette-use.

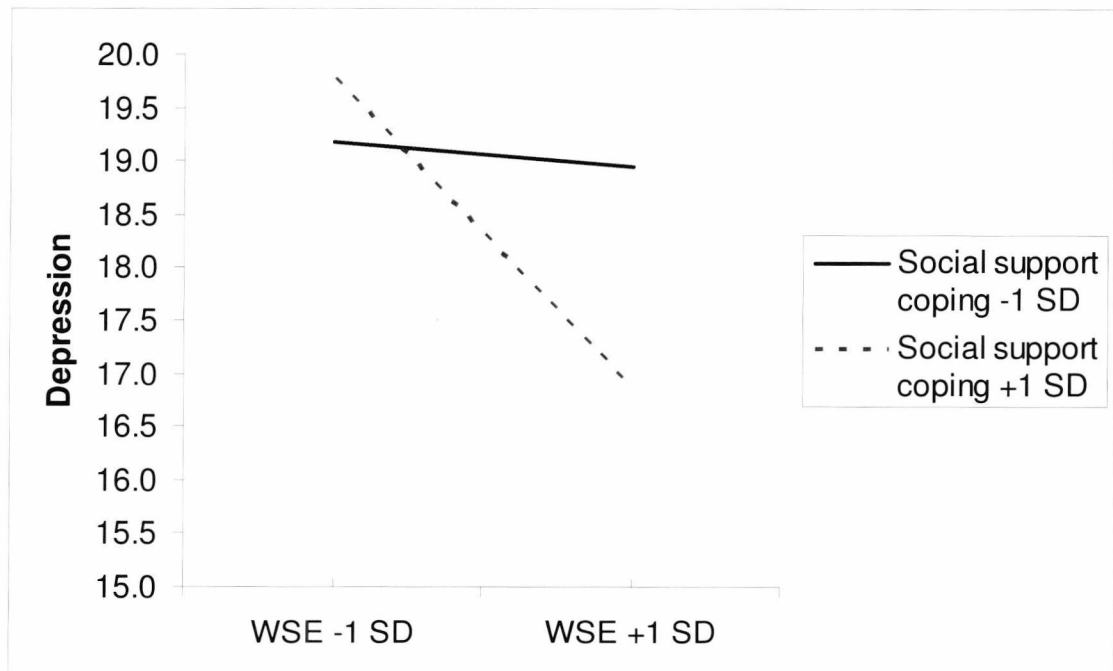


Figure 32. Interaction between work self-efficacy (WSE) and social support coping on depression.

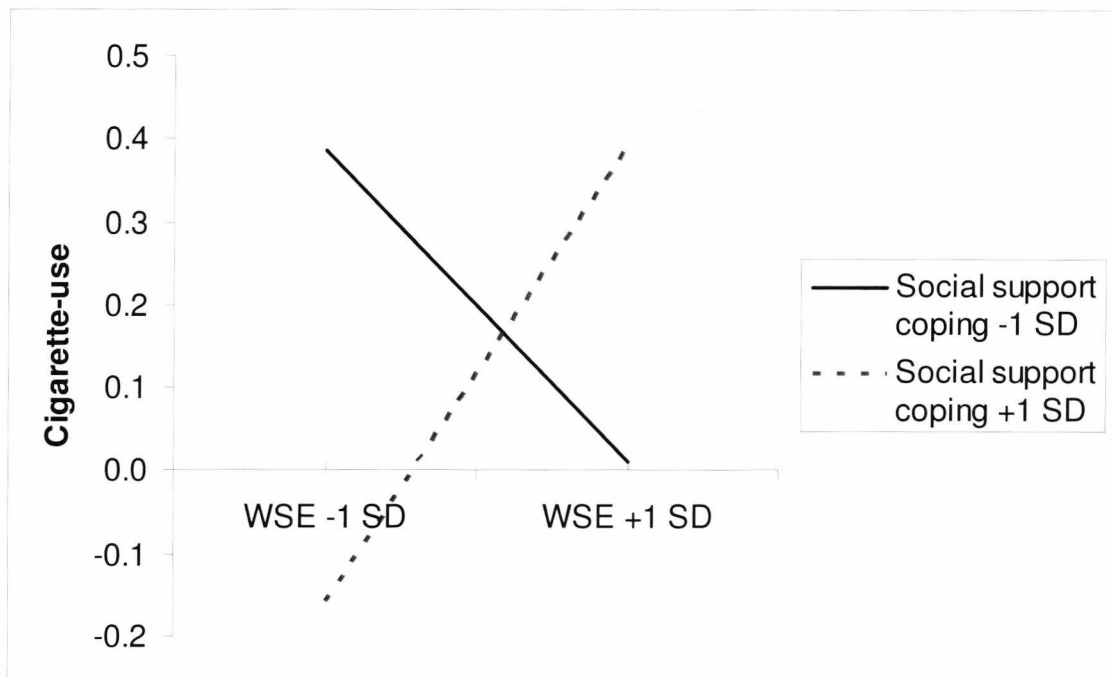


Figure 33. Interaction between work self-efficacy (WSE) and social support coping on cigarette-use.

*Problem-focused coping as a moderator predicting time 1 outcomes.*

Interactions were found between job demands and problem-focused coping when predicting anxiety ( $\beta = -.18, p < .05$ ) cigarette-use ( $\beta = -.18, p < .05$ ), and alcohol-use increase ( $\beta = .23, p < .01$ ). As can be seen in Figure 34 below (and Table B4 in Appendix B), high problem-focused coping buffered the negative influence of high job demands on anxiety. However, when job demands were low, high problem-focused coping was associated with higher anxiety. As can be seen in Figure 35 below (and Table B5 in Appendix B), high problem-focused coping buffered the negative influence of high job demands on cigarette-use. However, when job demands were low, high problem-focused coping was associated with higher cigarette-use. As can be seen in Figure 36 below (and Table B5 in Appendix B), high problem-focused coping did not buffer the negative influence of high job

demands on cigarette-use. However, when job demands were low, high problem-focused coping was associated with lower cigarette-use increase.

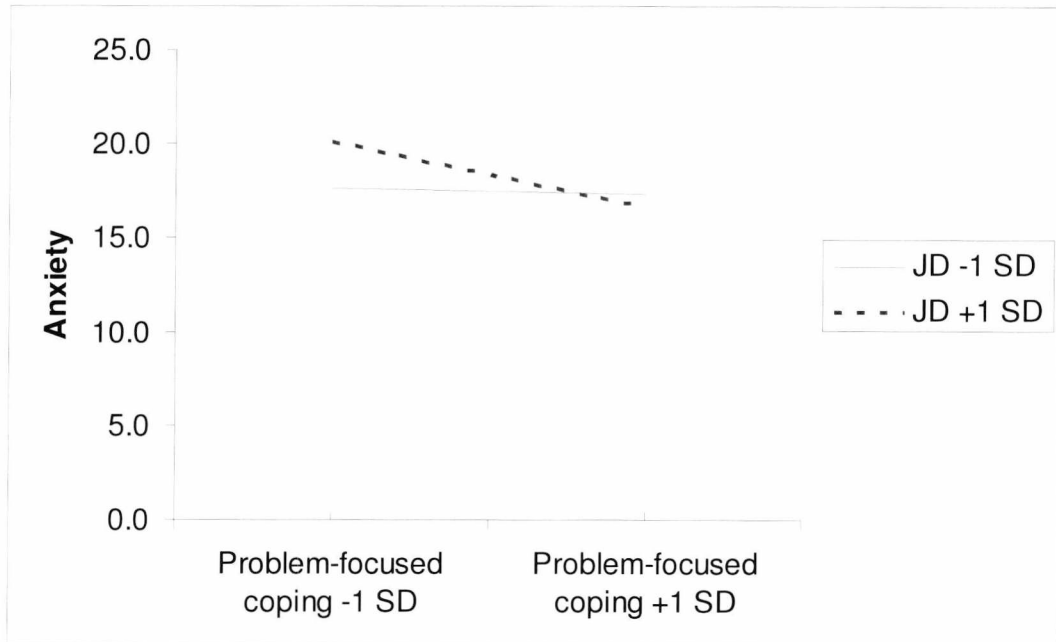


Figure 34. Interaction between job demands (JD) and problem-focused coping on anxiety.

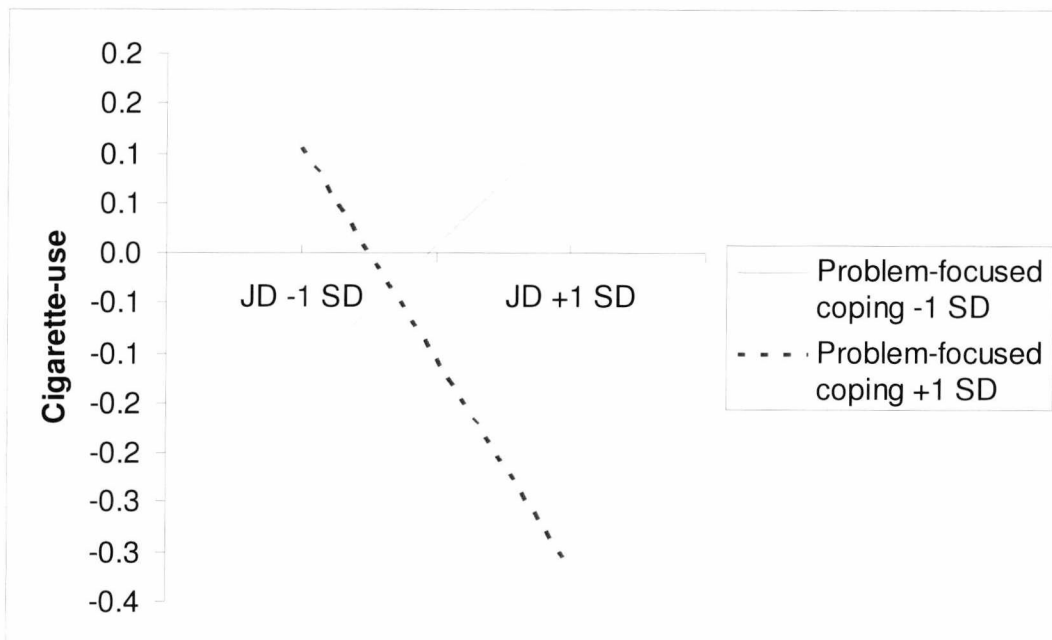


Figure 35. Interaction between job demands (JD) and problem-focused coping on alcohol-use increase.

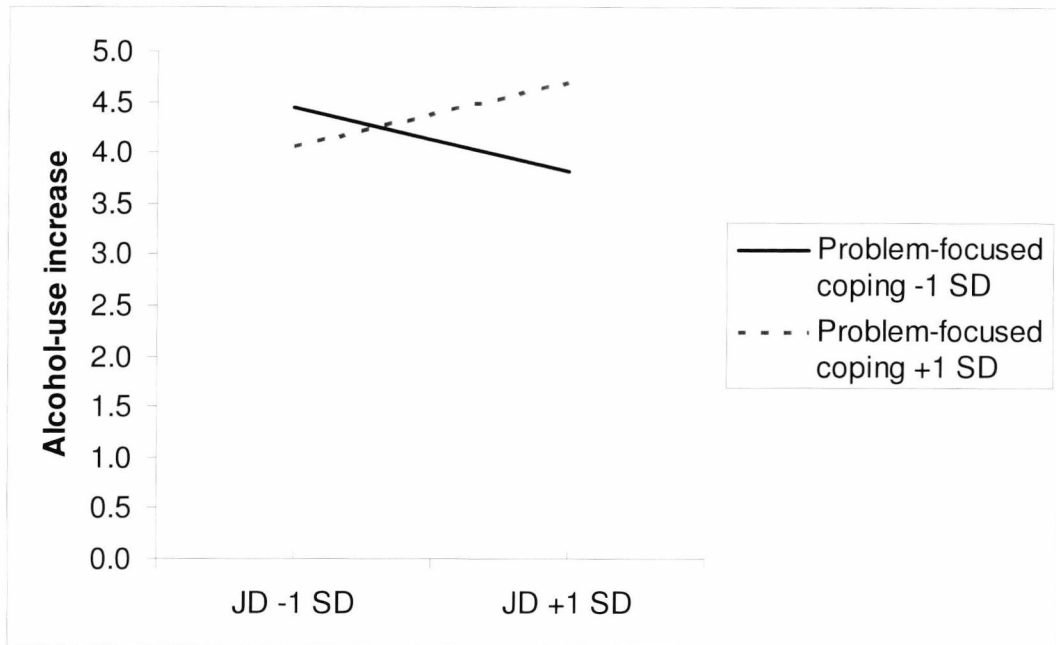


Figure 36. Interaction between job demands (JD) and problem-focused coping on alcohol-use increase.

An interaction between job control and problem-focused coping was found when predicting sickness absence ( $\beta = -.22, p < .05$ ). High problem-focused coping did not buffer the negative influence of low job control on sickness absence. However, when job control was high, high problem-focused coping was associated with lower sickness absence (see Figure 37 below and Table B5 in Appendix B).

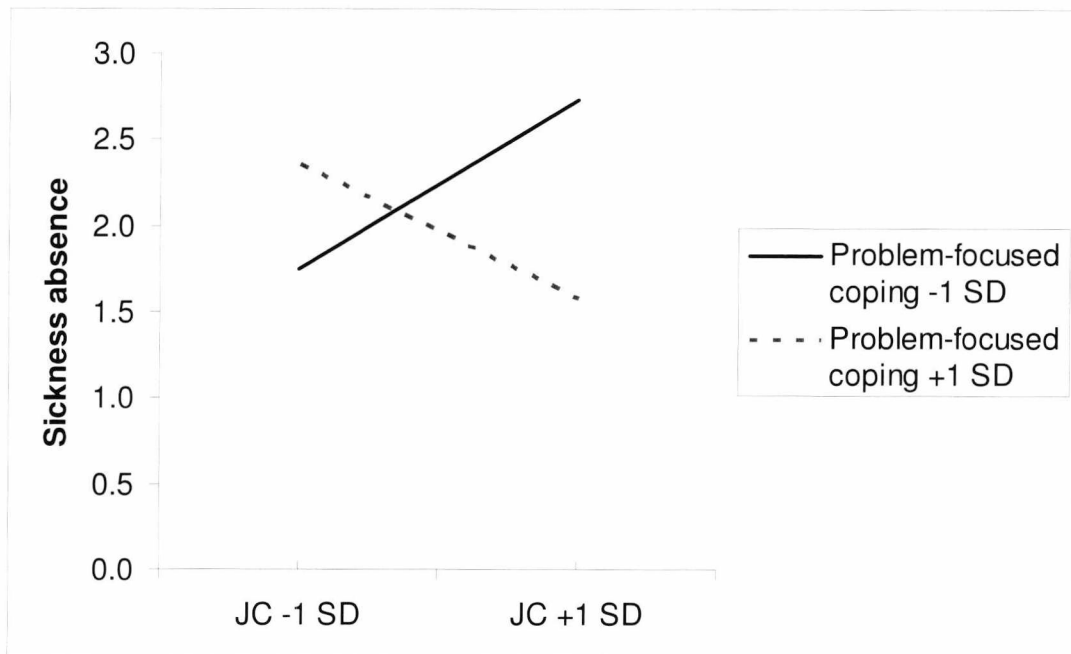


Figure 37. Interaction between job control (JC) and problem-focused coping on sickness absence.

Interactions were found between work support and problem-focused coping when predicting perceived health ( $\beta = -.21, p < .05$ ) and sickness absence ( $\beta = .27, p < .01$ ). As can be seen in Figure 38 below (and Table B4 in Appendix B), high problem-focused coping buffered the negative influence of low work support on perceived health. As can be seen in Figure 39 below (and Table B5 in Appendix B), high problem-focused coping buffered the negative influence of low work support on sickness absence. However, when work support was high, high problem-focused coping was associated with higher sickness absence.

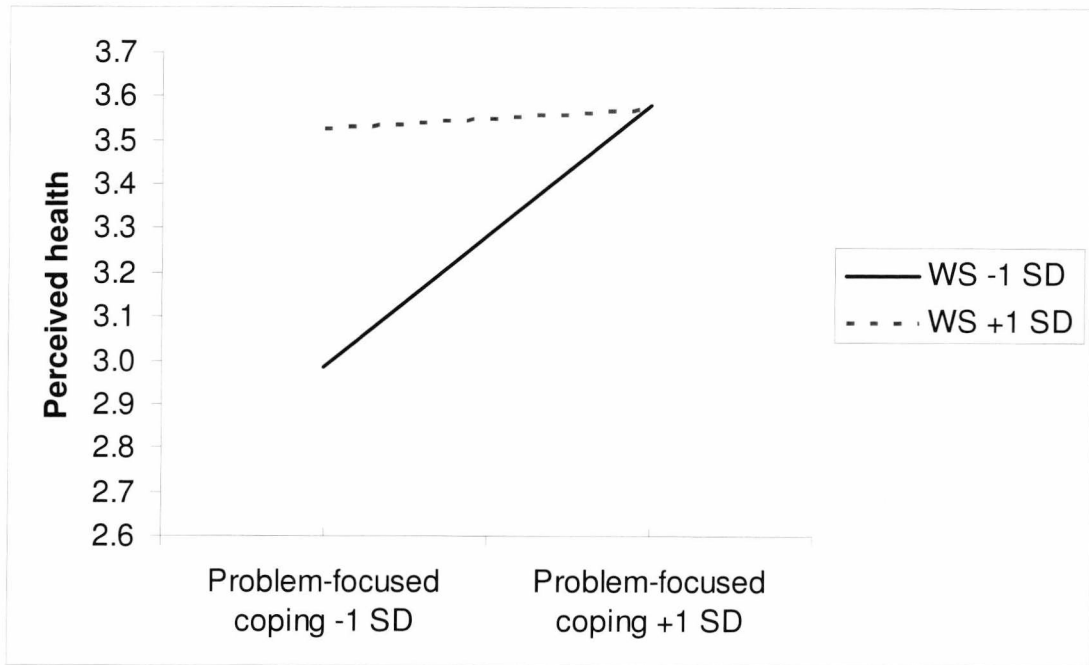


Figure 38. Interaction between work support (WS) and problem-focused coping on perceived health.

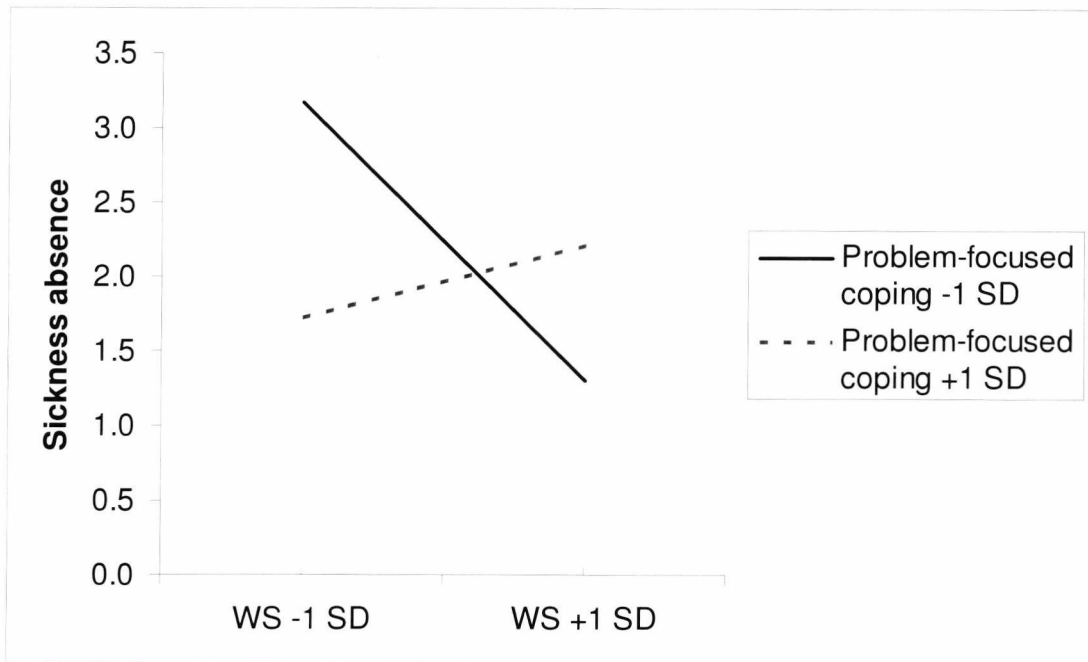


Figure 39. Interaction between work support (WS) and problem-focused coping on sickness absence.



An interaction between problem-focused coping and work self-efficacy was found when predicting alcohol-use increase ( $\beta = .19, p < .05$ ). High problem-focused coping buffered the negative influence of low work self-efficacy on alcohol-use increase. However, when work self-efficacy was high, high problem-focused coping was associated with higher alcohol-use increase (see Figure 40 below and Table B5 in Appendix B).

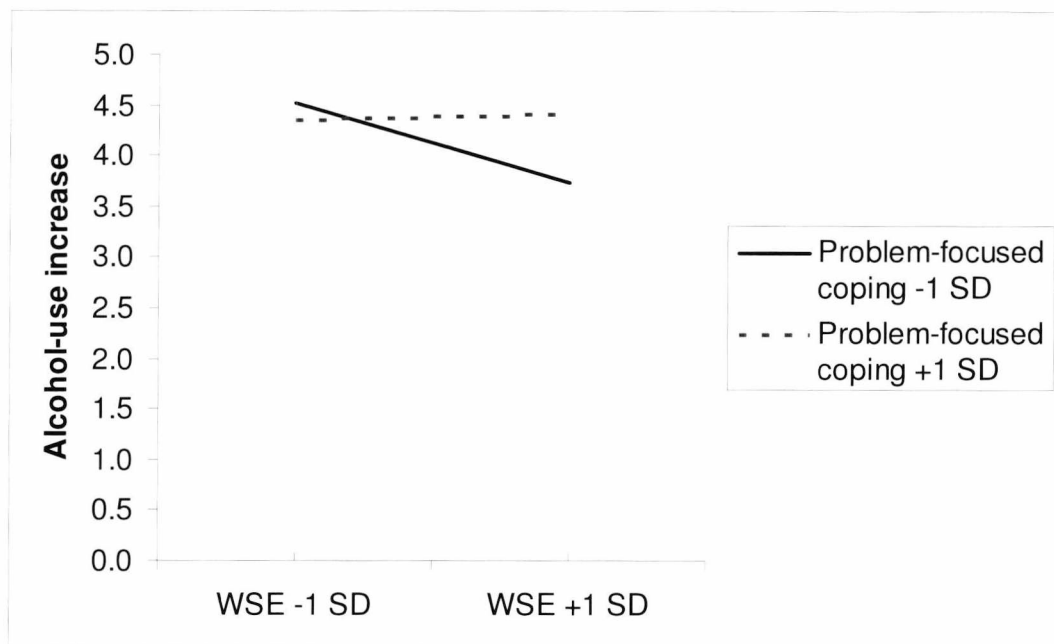


Figure 40. Interaction between work self-efficacy (WSE) and problem-focused coping on alcohol-use increase.

*Spiritual coping as a moderator predicting time 1 outcomes.* Regarding spiritual coping, an interaction was found with job demands when predicting perceived health ( $\beta = -.49, p < .01$ ). High spiritual coping did not buffer the negative influence of high job demands on perceived health. However, when job demands

were low, high spiritual coping was associated with higher perceived health (see Figure 41 below and Table B6 in Appendix B).

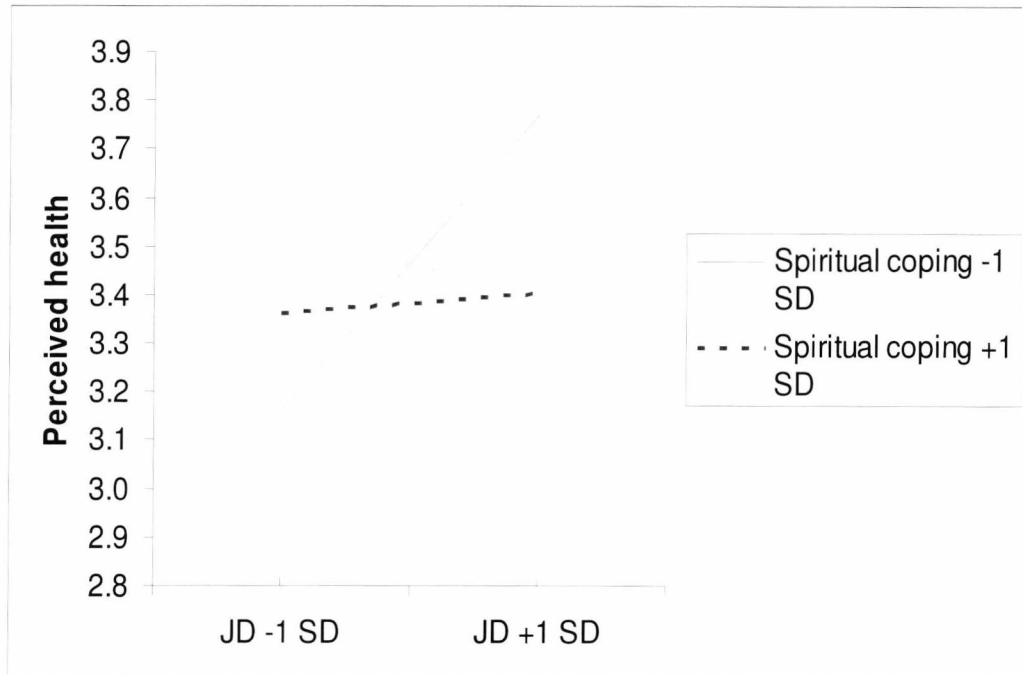


Figure 41. Interaction between job demands (JD) and spiritual coping on perceived health.

An interaction was found between spiritual coping and job control when predicting alcohol-use increase ( $\beta = .51, p < .01$ ). High spiritual coping buffered the negative influence of low job control on alcohol-use increase (see Figure 42 below and Table B7 in Appendix B).

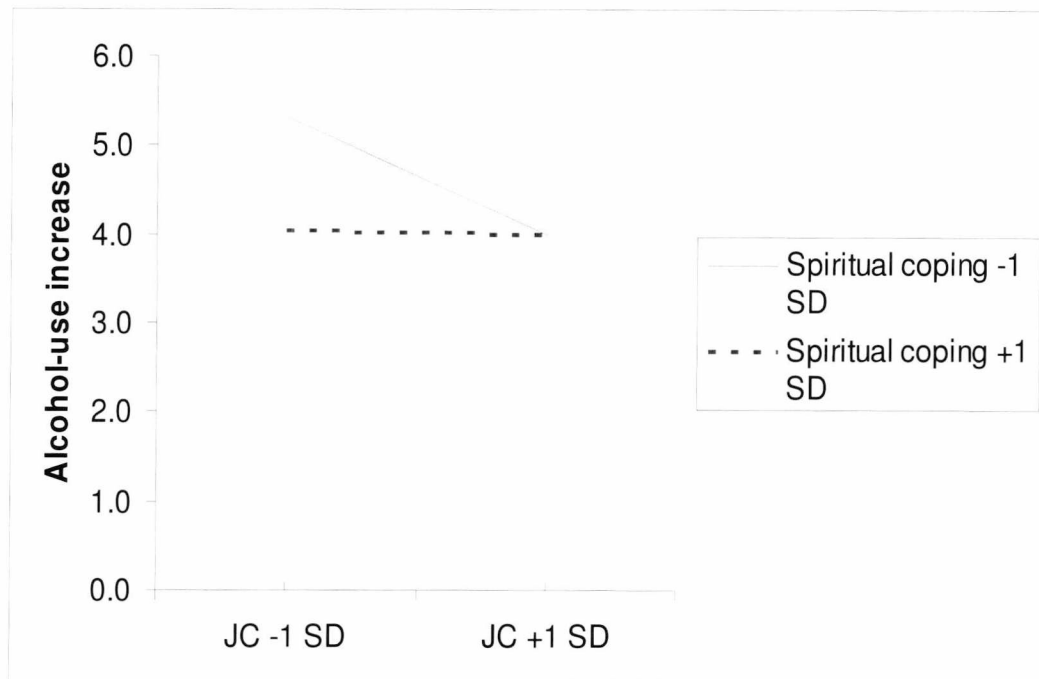


Figure 42. Interaction between job control (JC) and spiritual coping on alcohol-use increase.

An interaction was found between spiritual coping and work support when predicting job satisfaction ( $\beta = -.45, p < .01$ ). High spiritual coping buffered the negative influence of low work support on job satisfaction. However, when work support was high, high spiritual coping was associated with lower job satisfaction (see Figure 43 below and Table B6 in Appendix B).

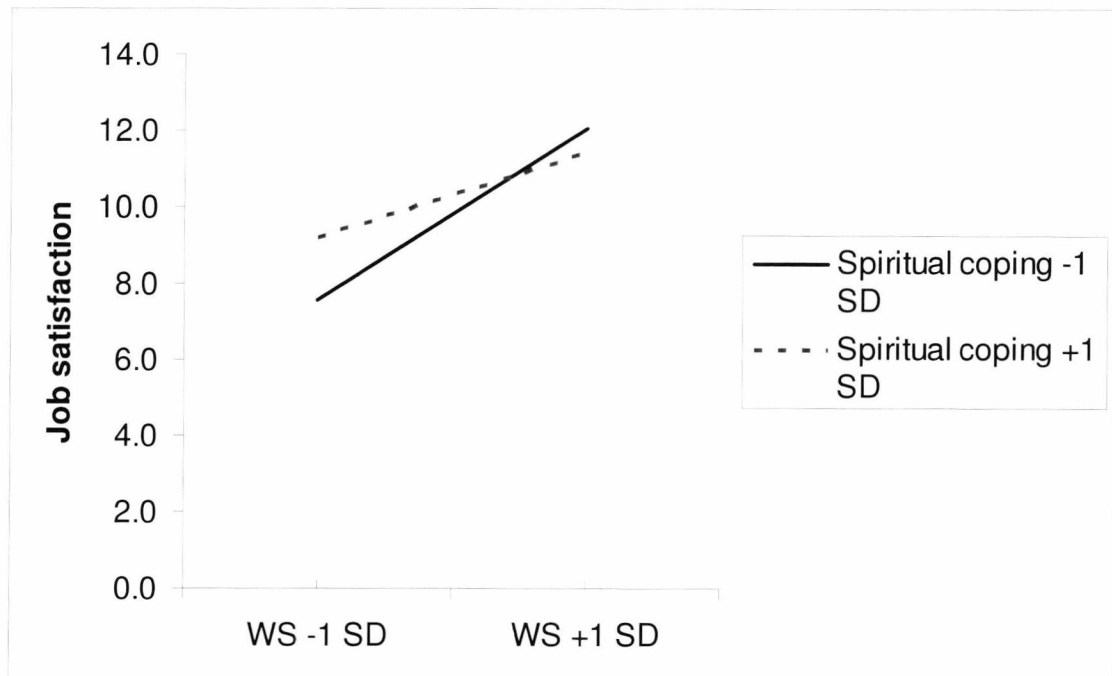


Figure 43. Interaction between work support (WS) and spiritual coping on job satisfaction.

An interaction was found between spiritual coping and work self-efficacy when predicting work-family conflict ( $\beta = .32, p < .05$ ). High spiritual coping buffered the negative influence of low work self-efficacy on work-family conflict. However, when work self-efficacy was high, high spiritual coping was associated with higher work-family conflict (see Figure 44 below and Table B7 in Appendix B).

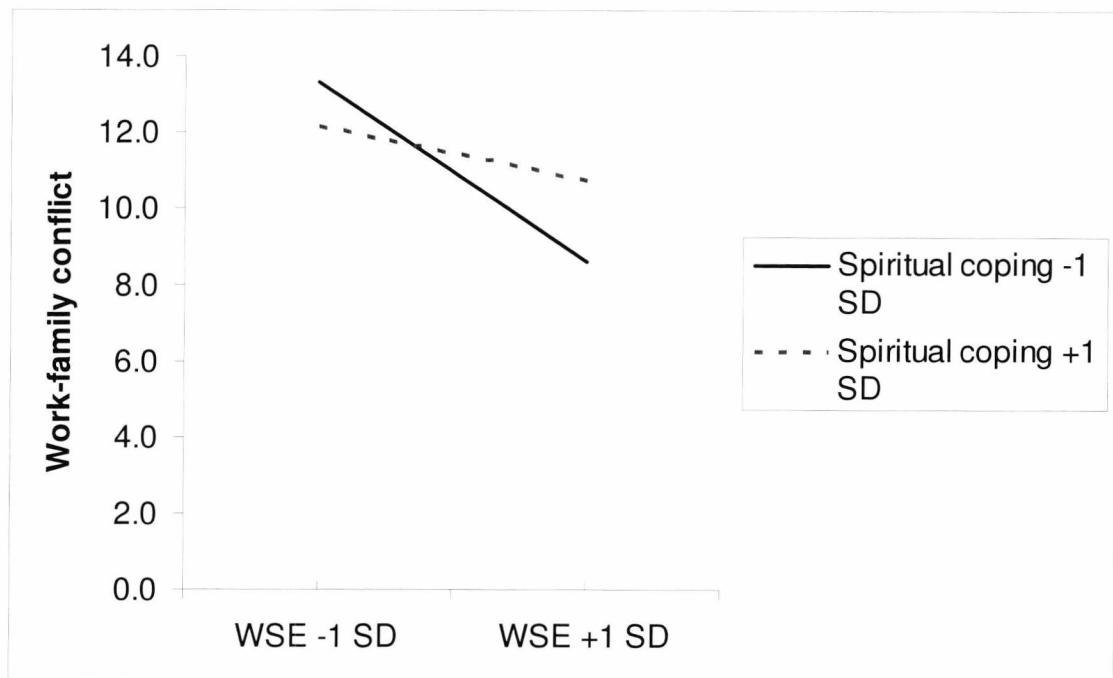


Figure 44. Interaction between work self-efficacy (WSE) and spiritual coping on work-family conflict.

*Substance-use coping as a moderator predicting time 1 outcomes.* An interaction was found between substance-use coping and job demands when predicting cigarette-use ( $\beta = .40, p < .05$ ). Low substance-use coping buffered the negative influence of high job demands. However, when job demands were low, low substance-use coping was associated with higher cigarette-use (see Figure 45 below and Table B9 in Appendix B).

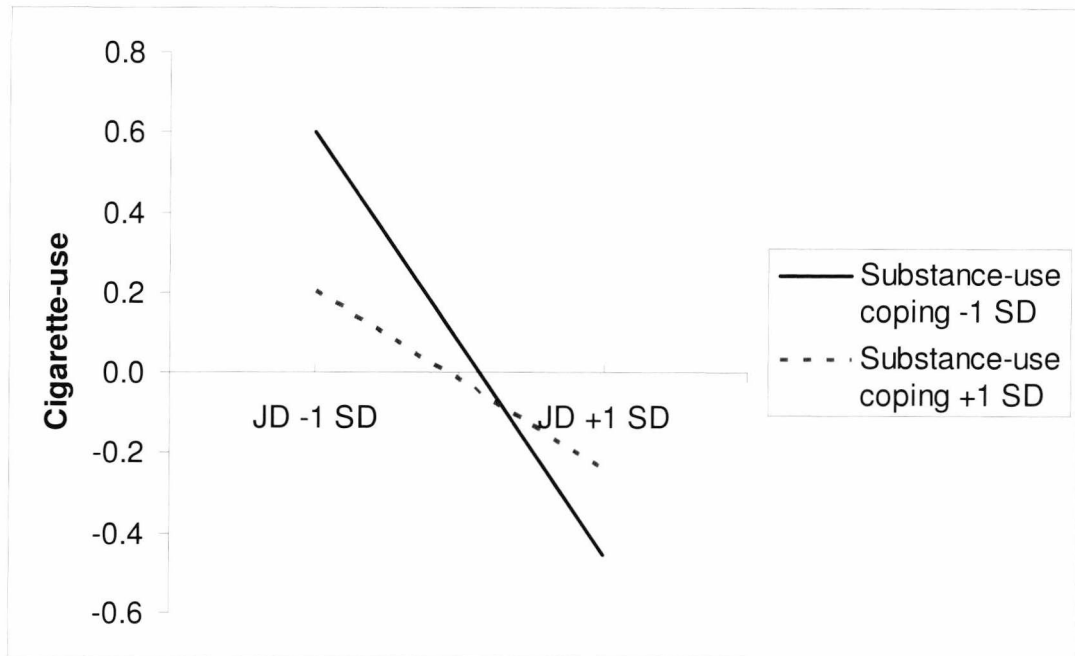


Figure 45. Interaction between job demands (JD) and substance-use coping on cigarette-use.

Interactions were found between substance-use coping and job control when predicting organisational commitment ( $\beta = .55, p < .01$ ) and job involvement ( $\beta = .41, p < .05$ ). As can be seen in Figure 46 below (and Table B8 in Appendix B), low substance-use coping buffered the negative influence of low job control on organisational commitment. However, when job control was high, low substance-use coping was associated with lower organisational commitment. As can be seen in Figure 47 below (and Table B8 in Appendix B), low substance-use coping buffered the negative influence of low job control on job involvement. However, when job control was high, low substance-use coping was associated with lower job involvement.

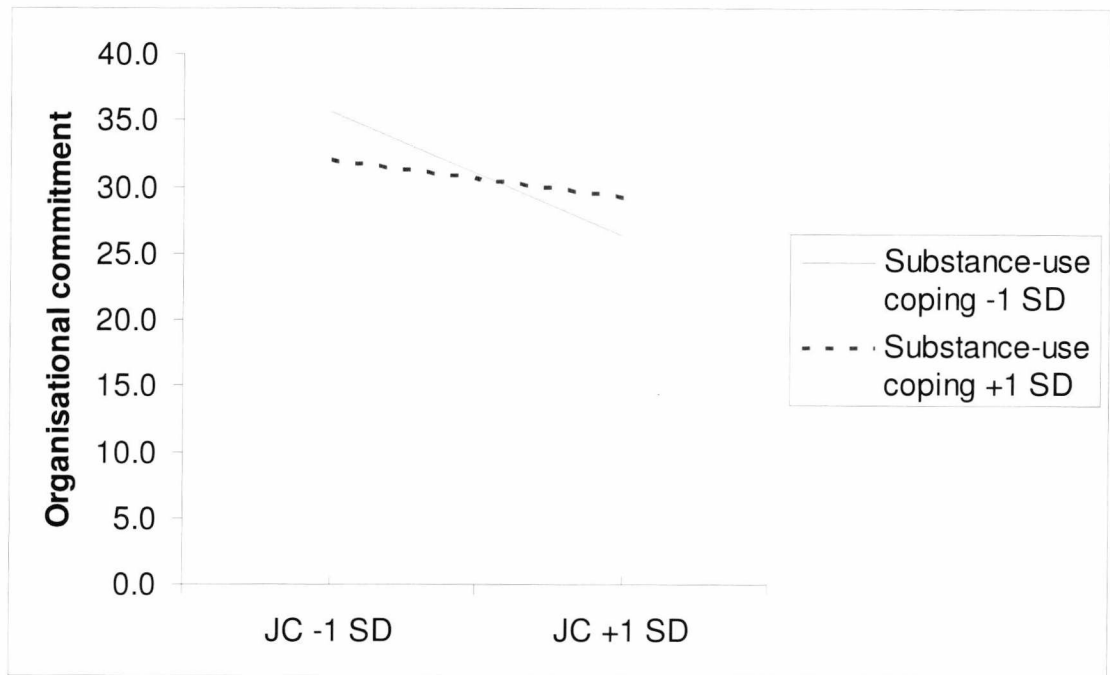


Figure 46. Interaction between job control (JC) and substance-use coping on organisational commitment.

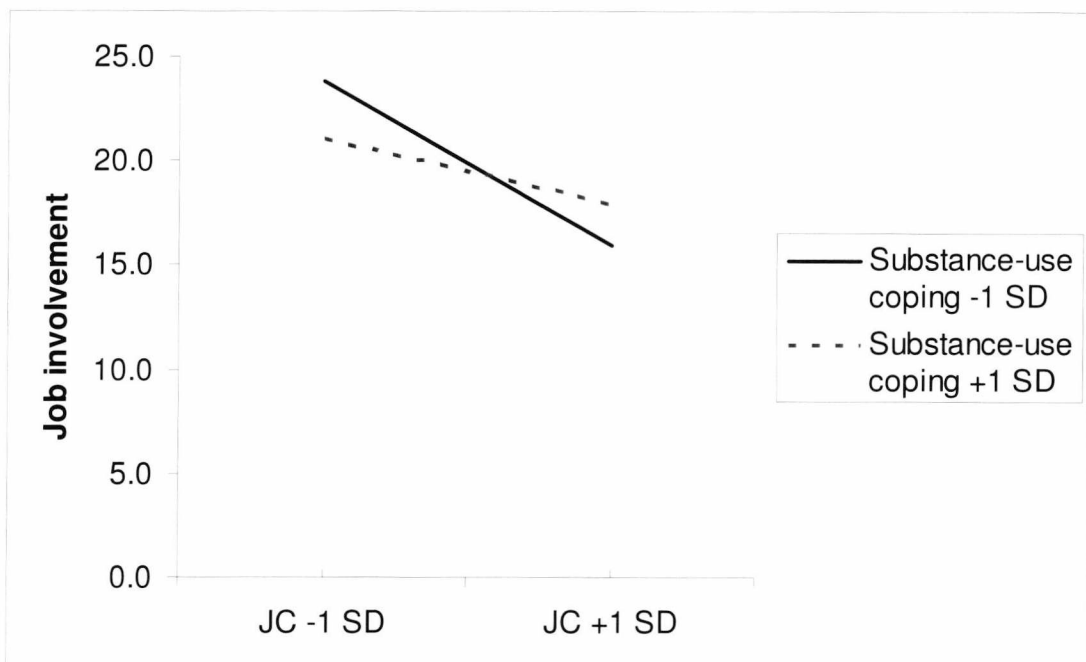


Figure 47. Interaction between job control (JC) and substance-use coping on job involvement.

Interactions were found between substance-use coping and work support when predicting depression ( $\beta = .39, p < .05$ ). Low substance-use coping did not buffer the negative influence of low work support on depression. However, when work support was high, low substance-use coping was associated with lower depression (see Figure 48 below and Table B9 in Appendix B).

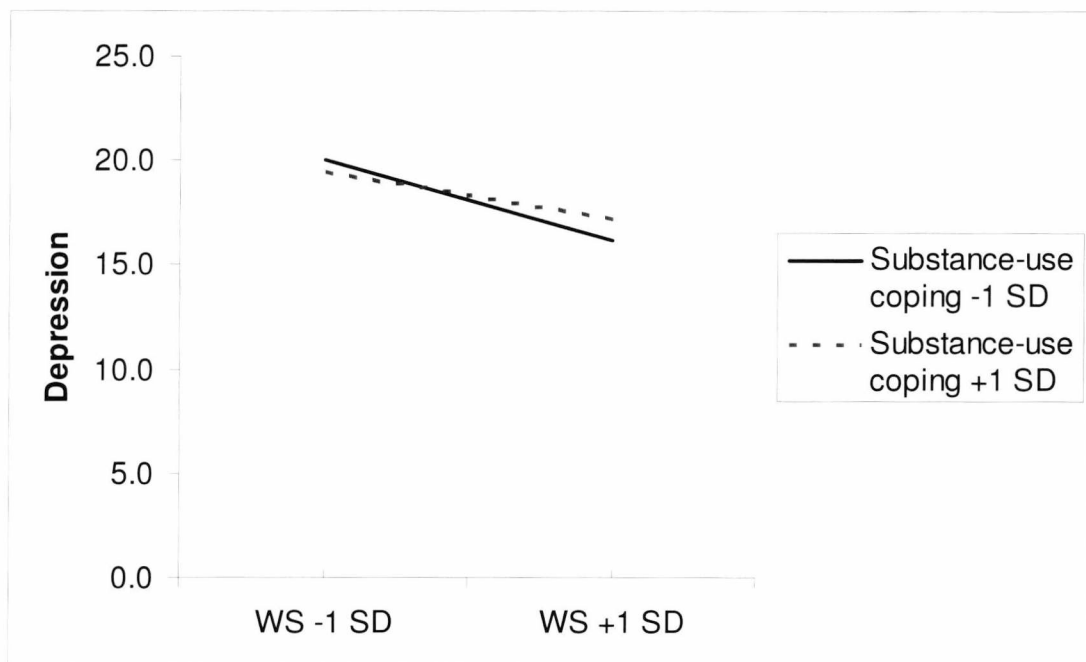


Figure 48. Interaction between work support (WS) and substance-use coping on depression.

An interaction was found between substance-use coping and work self-efficacy when predicting job involvement ( $\beta = .46, p < .05$ ). Low substance-use coping buffered the negative influence of low work self-efficacy on job involvement. However, when work self-efficacy was high, low substance-use coping was associated with lower job involvement (see Figure 49 below and Table B8 in Appendix B).



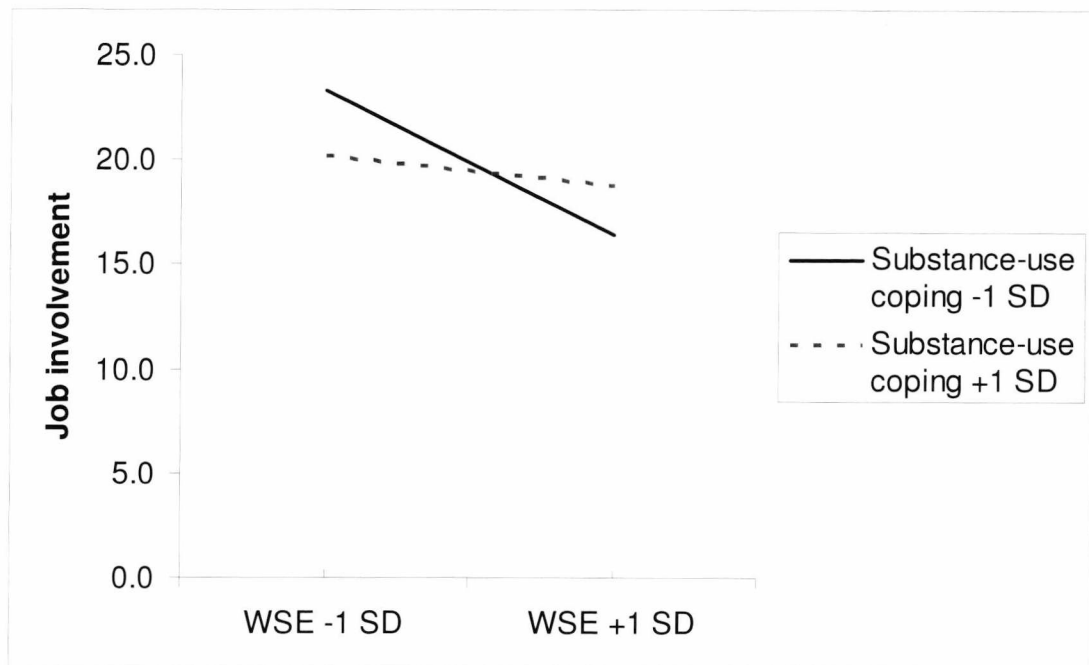


Figure 49. Interaction between work self-efficacy (WSE) and substance-use coping on job involvement.

*Descriptive statistics of time 2 outcomes.* Means and standard deviations and reliability (Cronbach's  $\alpha$ ) for Study 2 Time 2 health and occupational outcomes are presented in Table 15. All of the Time 2 outcomes had reliabilities higher than .70.

Table 15

*Study 2. Descriptive Statistics of Time2 Outcomes*

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>α</i>
Time 2 Outcomes			
Perceived health	3.09	.67	n.a.
Anxiety	16.94	4.66	.91
Depression	14.58	3.11	.84
Physical symptoms	62.10	15.16	.93
Organisational commitment	30.94	7.20	.92
Job satisfaction	10.42	2.53	.89
Job involvement	23.19	6.63	.88
Work-family conflict	17.13	5.65	.90
Sickness absence	1.64	3.74	n.a.

*Note.*  $N = 69-155$ .

*Differences between completers and non-completers.* To investigate representativeness of the longitudinal sample, several comparisons using one-way analysis of variance (ANOVA) were conducted to test for differences between employees who responded at Time 2 (completers), and those who did not respond at Time 2 (non-completers). In addition, chi-square analyses were conducted to investigate differences between completers and non-completers in categorical demographic variables. The only variable that differed significantly between completers and non-completers was spiritual coping ( $F(1,151) = 7.36, p < .01$ ), with completers ( $M = 3.73, SD = 2.28$ ) using more spiritual coping than non-completers ( $M = 2.89, SD = 1.51$ ).

*Zero-order correlations (time 2).* Bivariate collinearity was assessed through examination of the intercorrelations between Time 1 job grade (control variable), job demands, job control, work support, work self-efficacy (predictor variables), and Time 2 occupational and health outcomes (see Table 16). As in Time 1, in most cases, the correlations among all the independent measures and dependent measures were much lower than .80. No measures were found to have correlations of .80 or higher.

Regarding the correlations between job grade (control variable) and Time 2 health and occupational outcomes, significant correlations were found between job grade and Time 2 job involvement. For job demands, significant correlations were found with Time 2 job involvement, work-family conflict, and sickness absence. For job control, significant correlations were found with Time 2 physical symptoms and job satisfaction. Regarding work support, significant correlations were found with Time 2 perceived health, anxiety, depression, physical symptoms, organisational commitment, job satisfaction, and work-family conflict. Finally, for work self-efficacy, significant correlations were found with Time 2 perceived health, anxiety, depression, and physical symptoms, and cigarette-use.

Table 16

*Study 2. Correlations Between Time 1 Job Grade, JDCS, Work Self-Efficacy and Time 2 Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Job grade	-															
2. Job demands	.22**	-														
3. Job control	.39***	-.01	-													
4. Work support	-.06	-.25**	.35***	-												
5. Work self-efficacy	.19*	.07	.23**	.21*	-											
6. T2 Perceived health	.02	-.15	.15	.30*	.34**	-										
7. T2 Anxiety	-.13	.16	-.09	-.37**	-.50***	-.57***	-									
8. T2 Depression	-.18	.10	-.15	-.31**	-.43***	-.56***	.73***	-								
9. T2 Physical Symptoms	-.23	.13	-.30*	-.38**	-.53***	-.67***	.68***	.63***	-							
10. T2 Organisational commitment	.08	-.10	.21	.39***	.17	.25*	-.23	-.34**	-.22	-						
11. T2 Job satisfaction	.10	.00	.33**	.35**	.04	.29*	-.22	-.32**	-.17	.58***	-					
12. T2 Job involvement	.39***	.32**	.18	-.05	.07	-.19	.13	.16	.16	.37**	.25*	-				
13. T2 Work-family conflict	.20	.40***	-.22	-.44***	-.10	-.40***	.34**	.37**	.47***	-.18	-.23	.41***	-			
14. T2 Sickness absence	.07	.25*	-.14	-.19	-.08	-.28*	.37**	.21	.20	-.12	-.27*	-.12	.21	-		
15. T2 Cigarette-use	-.12	-.16	-.22	.14	.24*	.16	-.26*	-.16	-.22	-.02	-.04	-.18	-.10	-.06	-	

Table 16 (continued)

*Study 2. Correlations Between Time 1 Job Grade, JDCS, Work Self-Efficacy, and Time 2 Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16. T2 Alcohol-use	.04	-.08	.17	.21	.20	.16	-.17	-.17	-.11	.14	.22	.07	.04	-.27*	.09	-
17. T2 Alcohol-use increase	-.00	.18	.07	.10	.14	.17	-.11	-.11	-.06	.13	.17	.21	.06	-.43***	.04	.42***

*Note.*  $N = 146-155$ . T2 = Time 2. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Correlations between Time 1 coping strategies and Time 2 health and occupational outcomes were also examined (see Table 17). For social support coping, significant correlations were found with Time 2 perceived health, depression, physical symptoms, and organisational commitment. For problem-focused coping, significant correlations were found with Time 2 perceived health, anxiety, depression, physical symptoms, work-family conflict, alcohol-use, and alcohol-use increase. For spiritual coping, a significant correlation was found with Time 2 job satisfaction. Finally, for substance-use coping, a significant correlation was found for Time 2 alcohol-use.

Table 17

*Study 2. Correlations Between Time 1 Coping Strategies and Time 2 Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Social support coping	-															
2. Problem-focused coping	.26**	-														
3. Spiritual coping	.06	.06	-													
4. Substance-use coping	-.05	-.06	.05	-												
5. T2 Perceived health	.39**	.27*	-.05	-.01	-											
6. T2 Anxiety	-.14	-.32**	.12	-.05	-.57***	-										
7. T2 Depression	-.29*	-.44***	.02	-.10	-.56***	.73***	-									
8. T2 Physical Symptoms	-.34**	-.48***	.15	.18	-.67***	.68***	.63***	-								
9. T2 Organisational commitment	.24*	.11	.16	-.04	.25*	-.23	-.34**	-.22	-							
10. T2 Job satisfaction	.17	.20	.34**	.02	.29*	-.22	-.32**	-.17	.58***	-						
11. T2 Job involvement	-.02	.03	.10	-.17	-.19	.13	.16	.16	.37**	.25*	-					
12. T2 Work-family conflict	-.20	-.33**	-.01	.07	-.40***	.34**	.37**	.47***	-.18	-.23	.41***	-				
13. T2 Sickness absence	.05	-.21	-.05	-.05	-.28*	.37**	.21	.20	-.12	-.27*	-.12	.21	-			
14. T2 Cigarette-use	.03	.19	-.10	-.08	.16	-.26*	-.16	-.22	-.02	-.04	-.18	-.10	-.06	-		
15. T2 Alcohol-use	.11	.37**	.07	.42***	.16	-.17	-.17	-.11	.14	.22	.07	.04	-.27*	.09	-	

Table 17 (continued)

*Study 2. Correlations Between Time 1 Coping Strategies and Time 2 Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16. T2 Alcohol-use increase	-.03	.27*	-.06	-.06	.17	-.11	-.11	-.06	.13	.17	.10	.21	.06	-.43***	.04	.42***

*Note.*  $N = 146-155$ . T2 = Time 2. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



*Predicting time 2 health and occupational outcomes.* Hierarchical regression analyses were computed to test whether work self-efficacy adds to the JDCS Model in predicting Time 2 health and occupational outcomes. First, the autoregressor (Dependant outcome at Time 1) was entered in Step 1. Job grade was controlled for in Step 2, while the Time 1 JDCS Model variables (i.e., job demands, job control, and work support) were entered in Step 3. Finally, Time 1 work self-efficacy was entered in Step 4.

Regarding the JDCS-WSE Model, main effects were not found for job demands, job control, and work support when predicting Time 2 health and occupational outcomes. Work self-efficacy was found to predict higher Time 2 cigarette-use (Table 18).

Table 18

*Hierarchical Regression for Variables Predicting Time 2 Cigarette-use*

	Time 2 cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.922***
Time 1 regressor	0.96	0.03	.96***	
Step 2				<.001
Job grade	-0.00	0.02	-.01	
Step 3				.005
Job demands	0.01	0.01	.02	
Job control	-0.01	0.01	-.06	
Work support	0.01	0.00	.06	
Step 4				.007*
Work self-efficacy	0.01	0.01	.09*	

*Note.*  $N = 73$ . Job grade = manual, skilled non-manual, managerial, and professional & senior management. \* $p < .05$ . \*\*\* $p < .001$ .

*Moderation effects of the jdc model predicting time 2 outcomes.* The tables of the moderation analyses are presented in Tables B1-B14 (see Appendix B). No interaction effects were found regarding the JDC model for Time 2.

*Moderation effects of the jdcs model predicting time 2 outcomes.* Regarding the JDCS Model, interaction effects were found for Time 2 work-family conflict ( $\beta = .23, p$

< .01). High work support buffered the negative influence of low job control on Time 2 work-family conflict. However, when job control was high, high work support was associated with higher Time 2 work family conflict (see Figure 50 below and Table B10 in Appendix B).

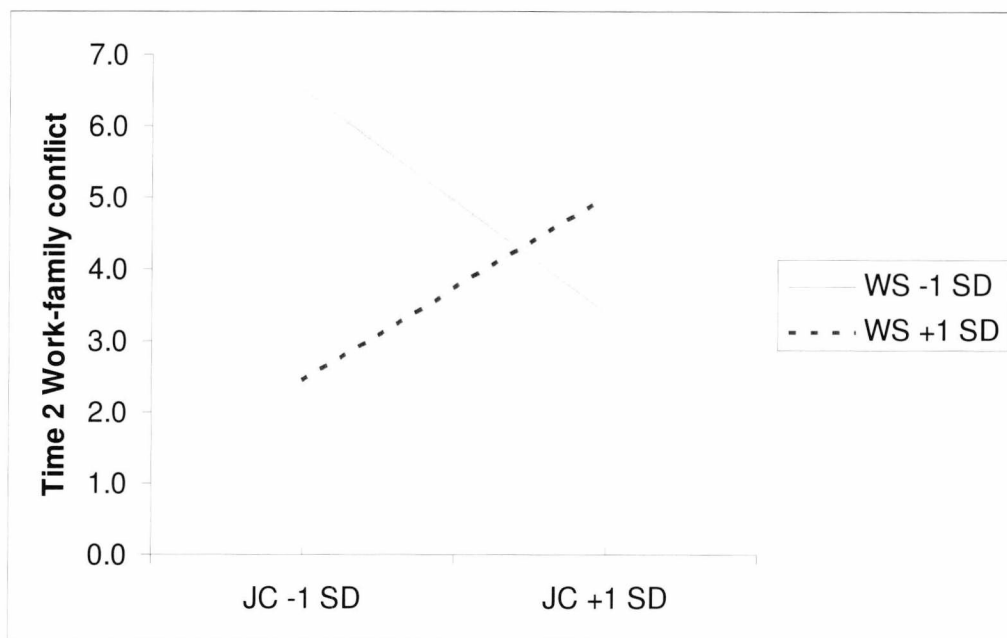


Figure 50. Interaction between job control (JC) and work support (WS) on Time 2 work-family conflict.

*Moderation effects of the jdcs-wse model predicting time 2 outcomes.* Interaction effects of self-efficacy with job demands were found in job involvement ( $\beta = .21, p < .05$ ), and work-family conflict ( $\beta = .20, p < .05$ ). As can be seen in Figure 51 below (and Table B10 in Appendix B), work self-efficacy buffered the negative influence of high job demands on Time 2 job involvement. However, when job demands were low, high work self-efficacy was associated with lower Time 2 job involvement. As can be seen in

Figure 52 below (and Table B10 in Appendix B), high work self-efficacy did not buffer the effect of high job demands on Time 2 work-family conflict. However, when job demands were low, high work self-efficacy was associated with lower Time 2 work-family conflict.



Figure 51. Interaction between job demands (JD) and work self-efficacy (WSE) on Time 2 job involvement.

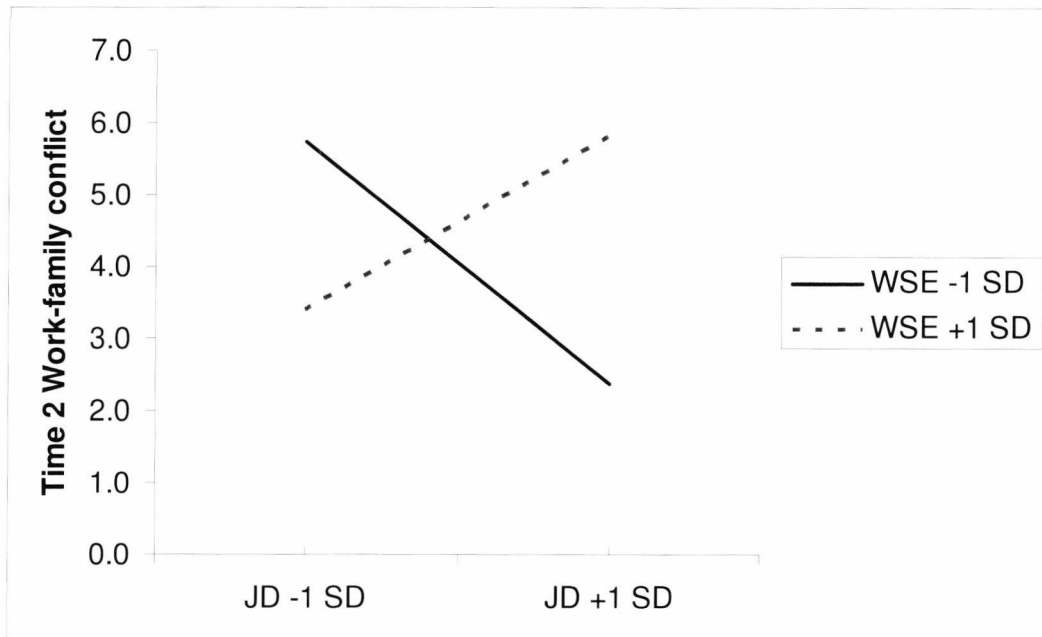


Figure 52. Interaction between job demands (JD) and work self-efficacy (WSE) on Time 2 work-family conflict.

*Moderation effects of coping strategies predicting time 2 outcomes.* In order to test which type of coping strategy is most beneficial for employees when moderating the JDCS-WSE Model's effects on Time 2 health and occupational outcomes, Time 1 coping strategies were added to the JDCS-WSE model one by one in order to explore the interaction effects between the predictor variables on the Time 2 health and occupational outcomes. Similar to the JDCS factors and work self-efficacy, the type of coping strategy was centered before adding it into the regression model.

*Social support coping as a moderator predicting time 2 outcomes.* Interactions were found between social support coping and work support when predicting Time 2 depression ( $\beta = .20, p < .05$ ) and Time 2 work-family conflict ( $\beta = .18, p < .05$ ). As can

be seen in Figure 53 below (and Table B11 in Appendix B), high social support coping buffered the negative influence of low work support on Time 2 depression. However, when work support was high, high social support coping was associated with higher Time 2 depression. As can be seen in Figure 54 below (and Table B11 in Appendix B), high social support coping buffered the negative influence of low work support on Time 2 work-family conflict. However, when work support was high, high social support coping was associated with higher Time 2 work-family conflict.

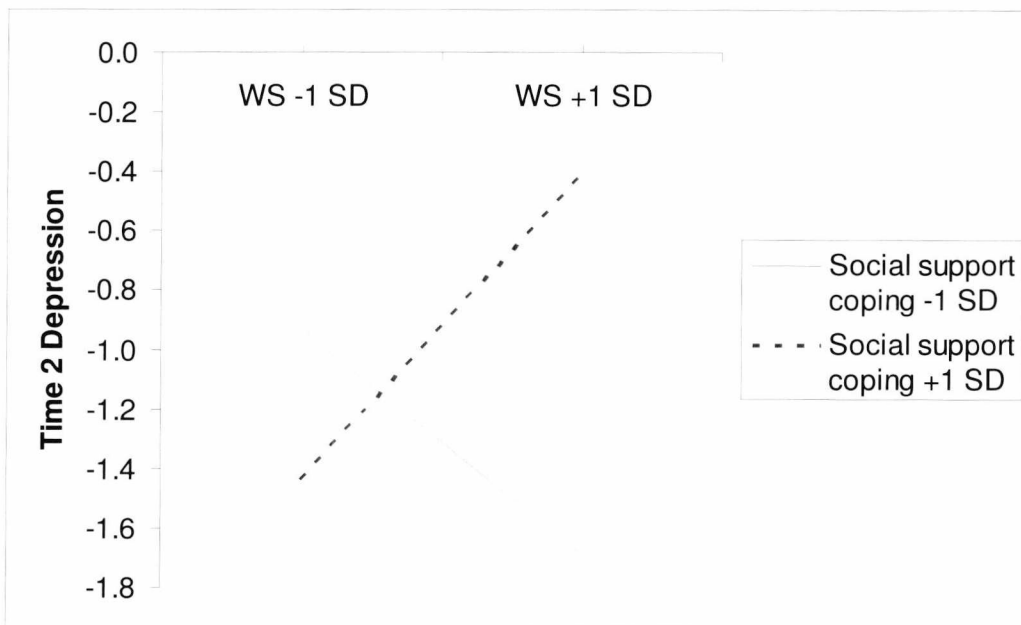


Figure 53. Interaction between work support (WS) and social support coping on Time 2 depression.

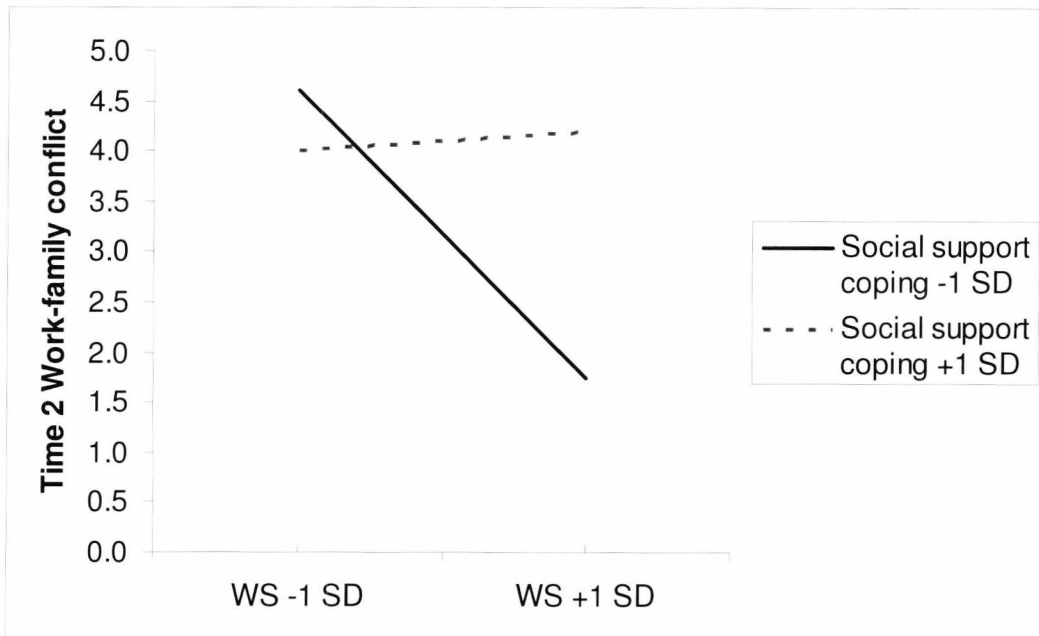


Figure 54. Interaction between work support (WS) and social support coping on Time 2 work-family conflict.

*Problem-focused coping as a moderator predicting time 2 outcomes.* An interaction was found between problem-focused coping and job demands when predicting Time 2 sickness absence ( $\beta = -.32, p < .05$ ). High problem-focused coping buffered the negative influence of high job demands on Time 2 sickness absence. However, when job demands were low, high problem-focused coping was associated with higher Time 2 sickness absence (see Figure 55 below and Table B12 in Appendix B).

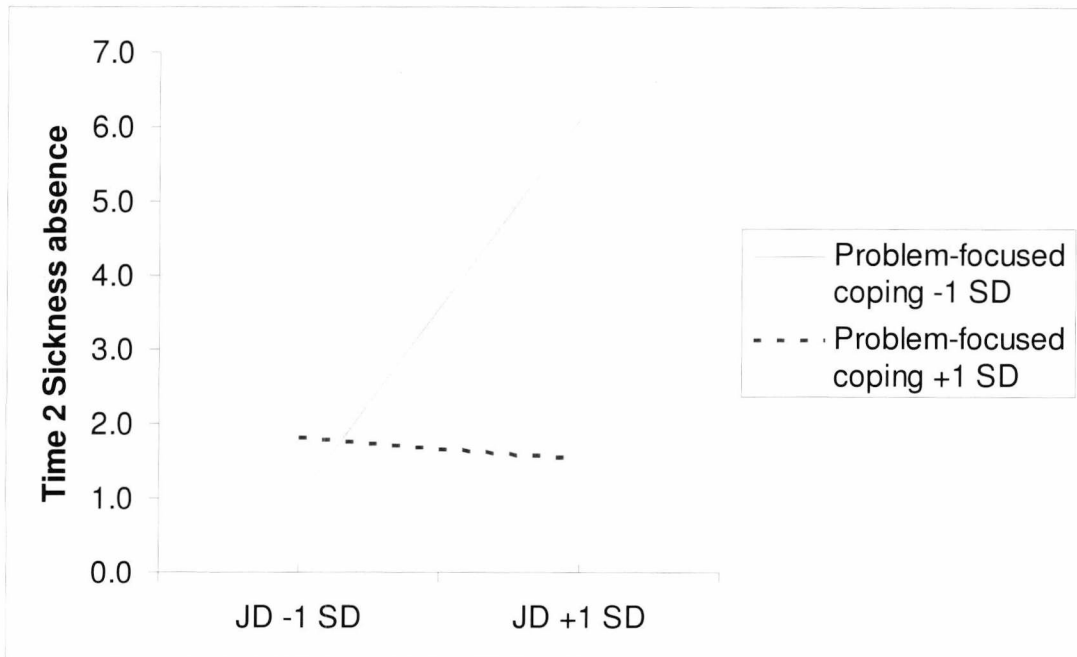


Figure 55. Interaction between job demands (JD) and problem-focused coping on Time 2 sickness absence.

Interactions were found between problem-focused coping and job control when predicting Time 2 perceived health ( $\beta = -.28, p < .05$ ). High problem-focused coping buffered the negative influence of low job control on Time 2 perceived health. In addition, when job control was high, high problem-focused coping was associated with lower Time 2 perceived health (see Figure 56 below and Table B12 in Appendix B).



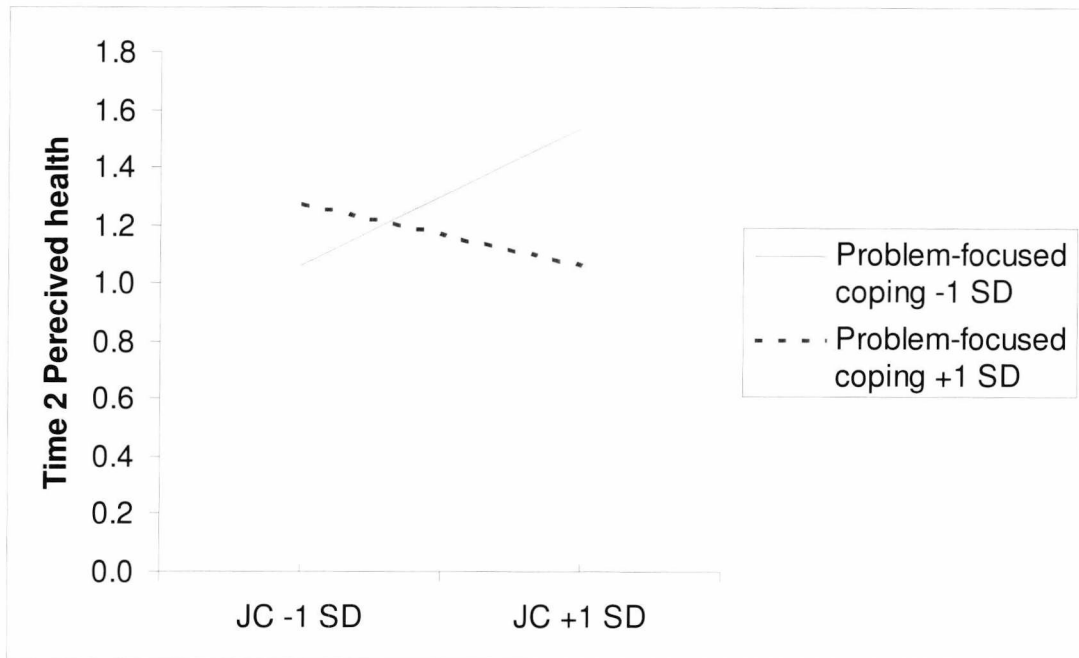


Figure 56. Interaction between job control (JC) and problem-focused coping on Time 2 perceived health.

*Spiritual coping as a moderator predicting time 2 outcomes.* An interaction was found between spiritual coping and job demands when predicting Time 2 depression ( $\beta = -.39, p < .05$ ). High spiritual coping buffered the negative influence of high job demands on Time 2 depression. However, when job demands were low, high spiritual coping was associated with higher Time 2 depression (see Figure 57 below and Table B13 in Appendix B).

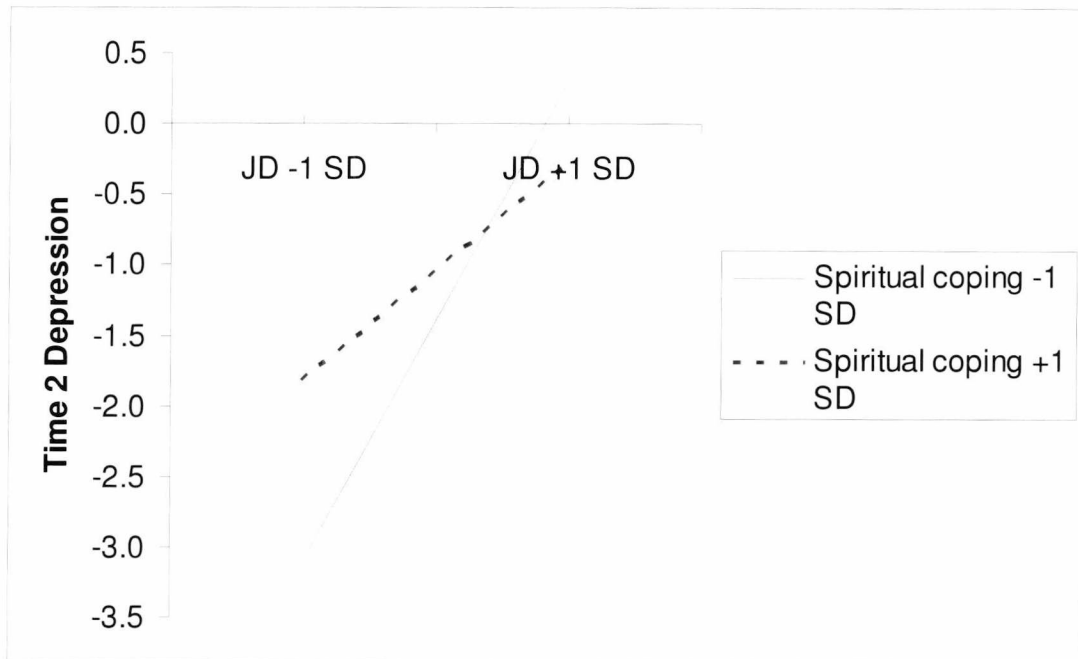


Figure 57. Interaction between job demands (JD) and spiritual coping on Time 2 depression.

An interaction was found between spiritual coping and work support when predicting Time 2 organisational commitment ( $\beta = .41, p < .05$ ). High spiritual coping did not buffer the negative influence of low work support on Time 2 organisational commitment. However, when work support was high, high spiritual coping was associated with higher Time 2 organisational commitment (see Figure 58 below and Table B13 in Appendix B).

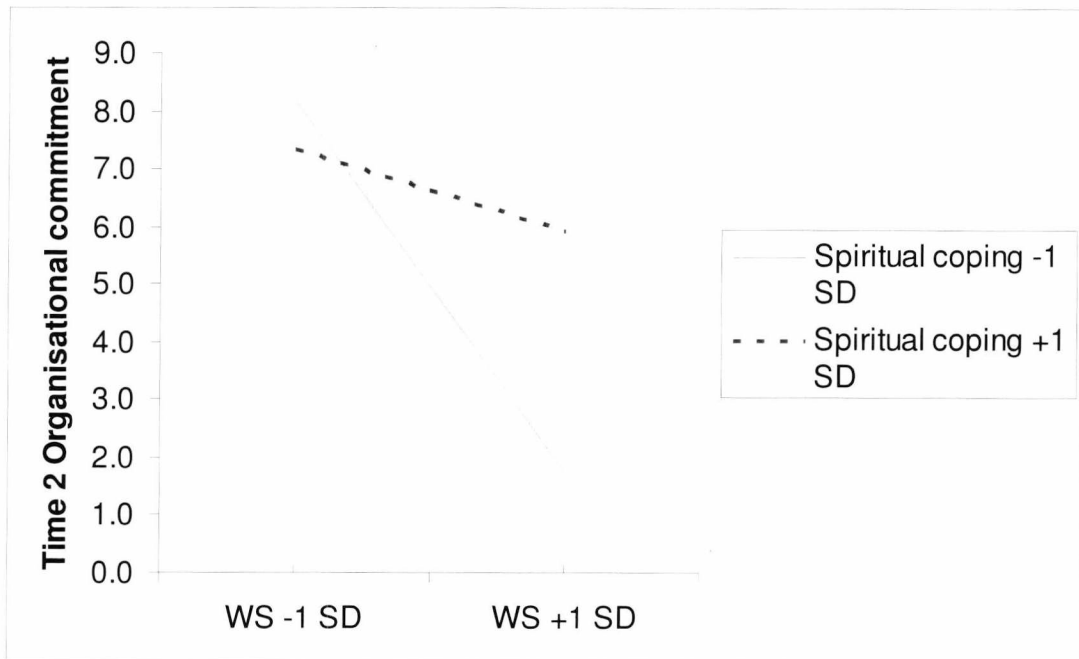


Figure 58. Interaction between work support (WS) and spiritual coping on Time 2 organisational commitment.

*Substance-use coping as a moderator predicting time 2 outcomes.* An interaction was found between substance-use coping and job demands when predicting Time 2 work-family conflict ( $\beta = -.31, p < .05$ ). Low substance-use coping did not buffer the negative influence of high job demands on Time 2 work-family conflict. However, when job demands were low, low substance-use coping was associated with lower Time 2 work-family conflict (see Figure 59 below and Table B14 in Appendix B).

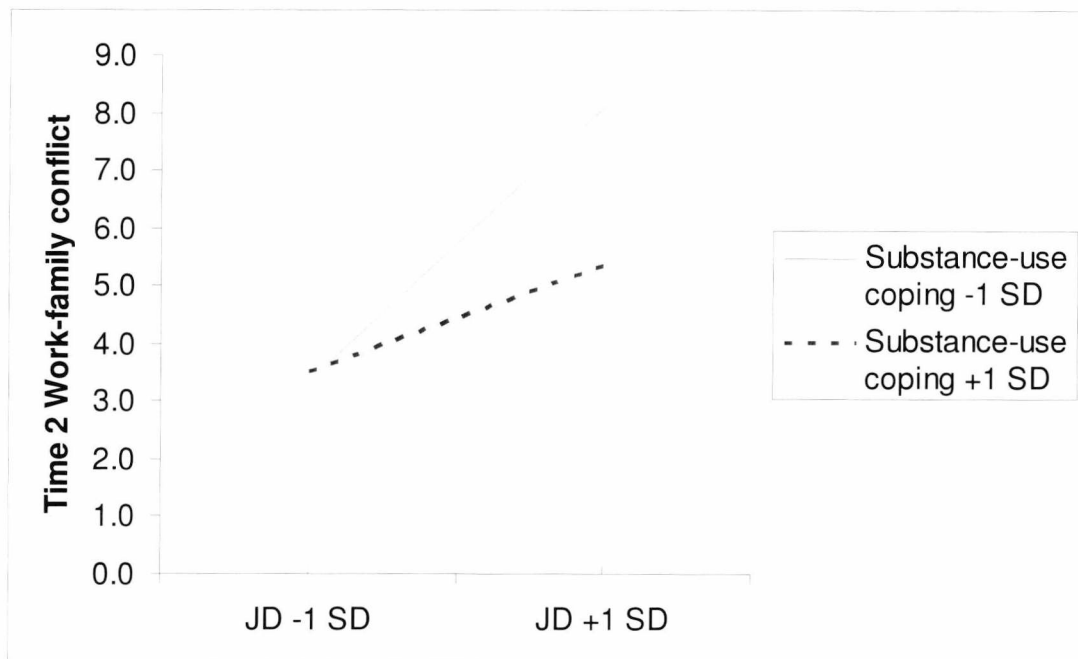


Figure 59. Interaction between job demands (JD) and substance-use coping on Time 2 work-family conflict.

### Discussion

Study 2 was designed to address some of the limitations arising from Study 1, while also endeavouring to discern stronger findings. Firstly, Study 2 measures self-efficacy as it relates to the workplace (work self-efficacy). Secondly, in addition to work self-efficacy, more occupational outcome variables for Study 2 were introduced, namely, organisational commitment, job involvement, and work-family conflict. These variables were mainly included as the addition of work self-efficacy was thought to provide greater power when predicting occupational outcomes.

The present findings provide the first test of work self-efficacy as an additional moderator to the JDCS Model, and suggest that work self-efficacy may prove a

significant extension of the JDC Model in predicting employees' health. In addition, the present study extends these findings in a longitudinal context, showing moderation effects both for relationships of coping dimensions to intercepts, and for relationships to change over time.

The results of the longitudinal moderation analyses were quite consistent with the results of the cross-sectional analyses; the JDCS Model was shown to be a stronger predictor of health and occupational outcomes than the JDC Model. However, the additional work self-efficacy variable when combined with either job demands or work support was a stronger predictor of health and occupational outcomes than both the JDC Model and the JDCS Model. In addition, only one main effect was found for work self-efficacy on Time 2 outcomes. This may be due to the relatively small sample size at Time 2 ( $n = 73$ ).

#### *Job Demands*

Although main effects were not found for job demands when predicting health and occupational outcomes, job demands in Study 2 was found to be significantly correlated with occupational outcomes at both Time 1 and Time 2. Specifically, weak to strong correlations were found between Time 1 job demands and Time 1 job satisfaction, job involvement, work-family conflict and Time 2 job involvement, work-family conflict and sickness absence. As Study 1 did not find any correlations between job demands and outcome measures, the significant correlations in this study may be explained in two ways. First, the new measures of job involvement and work-family conflict that were added for Study 2 may be more directly linked to job demands than other outcome measures. For example, work distress has been found to be an immediate

antecedent of work family conflict because it reduces the individual's ability to meet family role expectations (Frone, Yardley & Markel, 1997). Secondly, job demands may have been more applicable to the organisations in Study 2 than in Study 1. For example, 58% of participants in Study 2 were female and 11% were worked part-time, while in Study 1, 32% were female and 6% were employed part-time. Part-time workers, for instance, may have higher job demands due to shorter workdays within which to complete job requirements. For example, Steffy and Jones (1990) found that part-time hospital employees experienced greater job strain than full-time workers. In addition, Vahtera, Pentti and Uutela (1996) found that high strain jobs (i.e, high demands, low control) were more predictive of absenteeism in women than in men. Role conflicts have been suggested as a possible explanation of why women in active jobs have a heightened risk of adverse health effects (Krantz and Ostergren, 2002).

#### *Self-Efficacy*

Stronger significant correlations were found between work self-efficacy and Time 1 health and occupational outcomes than between general self-efficacy and Time 1 health and occupational outcomes in Study 1. This finding is similar to past research that has found stronger associations for specific rather than general self-efficacy with health and occupational outcomes (Bandura, 1997; Salanova et al., 2002; Schaubroeck & Merrit, 1997).

Self-efficacy was found to be an important addition to the JDCS Model when predicting health and occupational outcomes. This hypothesis was supported for Study 1 at Time 1 and Study 2 at both Time 1 and Time 2, maintaining that both general self-efficacy and work self-efficacy have main effects on health and occupational outcomes.

However general self-efficacy in Study 1 predicted more health related outcomes, while in Study 2, work self-efficacy predicted more occupational related outcomes. This is not surprising as, general self-efficacy is often seen as a better predictor for general psychological well-being indicators, as anxiety and depression (Schwarzer, 1993), while work specific self-efficacy is seen as a better predictor for more occupational related outcomes. These results confirm the suggestion that situation-specific variables are important in studying occupational stress and its complexity (Sparks & Cooper, 1999; Van Veldhoven, Taris, de Jonge, & Broersen, 2005). In both studies 1 and 2 stronger main effect relationships were found for Time 1 than at Time 2, which is not surprising, given the 3 month period between the two waves of data collection.

In addition, when work support was high, higher work self-efficacy was associated with higher sickness absence. This may be explained by the Effort-Reward Imbalance Model (Siegrist 1996), where the working situation is conceptualised as a reciprocity between the efforts or self-regulatory needs of a person (e.g., self-efficacy) and rewards (e.g., esteem). For instance, the employee offers labour and in return receives rewards from co-workers and supervisors. The model claims that a lack of reciprocity between costs and gains define a state of emotional distress which can lead to the arousal of the automatic nervous system and associated strain reactions. If there is a perceived discrepancy between efforts and rewards, the employee may attempt to reappraise the advantages and disadvantages in order to minimise the experienced discrepancy. If this is not possible or the experienced discrepancy is too large, the employee may attempt a number of solutions. This may include psychological adaptation, such as reducing commitment or increasing absenteeism.

*Work Support*

Work support was found to protect employees against the adverse effects of work stress on health and occupational outcomes. This was supported for both Study 1 and Study 2 at Time 1 and Study 2 at Time 2. The moderation effects of work support were found to be greater when predicting occupational outcomes (such as job satisfaction) compared to when predicting health outcomes. These results are similar to that of Bradley and Cartwright (2002), who examined the predictive power of social support in nurses, and found that a larger part of the variance predicted job satisfaction more than negative health outcomes.

Although no reverse buffering effect was found for participants low in work self-efficacy and high work support, participants low in work self-efficacy and high social support coping were found to have the highest levels of depression, while participants high in work self-efficacy and high in social support coping had the lowest levels of depression. One reason that can account for the buffering effect for employees high in self-efficacy and the reverse buffering effect for those with low self-efficacy relates to the content of communication (Kaufmann & Beehr, 1986). For instance, Beehr, King, and King (1990) found support for a three-form typology of content of communication that included positive job-related, negative job-related, and non job-related communication. Further research examining content of communication has shown that positive communications with the supervisor can lead to a buffering effect and negative communications can lead to a reverse buffering effect of the stressor-strain relationship (Fenlason & Beehr, 1994). Perhaps high self-efficacy employees in this sample received positive job-related communication, while low self-efficacy employees in this sample



may have had negative job-related interactions. For example, employees with higher levels of interdependency at work have been found to receive more positive social support from their supervisors (Shafiro, 2005).

In addition, when job control was high, higher work support was associated with higher sickness absence. This could reflect the higher percentage of women in the sample (58%). For example, higher managerial positions could be considered improper for women since such roles can not be combined with a traditional role of house wife. Such attitudes within organisations could be highly stressful for women striving for higher positions, which could increase the risk of adverse health effects and sickness absence. In fact, for women, active jobs have been associated with long-term sickness absence (Krantz & Stergren, 2002).

#### *Social Support Coping*

Unlike Study 1, Study 2 found that social support coping was beneficial for employees who had high job demands (anxiety, depression, and physical symptoms) or high work self-efficacy, and was found to be detrimental for employees who had low job demands or low work self-efficacy (depression). In addition social support coping was beneficial when work support was low, but detrimental when work support was high (Time 2 depression and Time 2 work-family conflict). This could be due to organisational differences between Study 1 and Study 2. For instance, over half of participants in Study 1 worked in a factory environment (54%), while all participants in Study 2 worked in office based jobs. As discussed in Study 1, limited interaction with co-workers is a common feature of industrial jobs such as assembly-line jobs, which may explain why work support and social support coping were not as beneficial when

predicting health and occupational outcomes as in Study 2. In addition, for people with low job demands and high self-efficacy, higher social support coping was associated with lower well-being. This gives further support to Billings et al's (2000) hypothesis that resources gain their salience in the context of high demands or threats (such as a lack of resources) rather than when fewer demands or threats are perceived. Furthermore, whether social support coping has positive or negative effects may depend on the severity of the stressor or illness. For example, relying on others led to increased psychological distress among women with arthritis who were in relatively good health, but lower levels of distress for women who were in poorer health (Reich & Zautra, 1995).

#### *Problem-focused Coping*

Problem-focused coping was found to be beneficial when job demands were high, but were detrimental when job demands were low (anxiety). Problem-focused coping was also beneficial when job control was low, but detrimental when job control was high (Time 2 perceived health). Although coping is concerned specifically with response to stressors, control does not necessarily involve stressful situations. Furthermore, control is often used to avoid stressors rather than adapt to them. Therefore people with high job control may use coping strategies other than problem-focused when coping with a specific stressor.

Problem-focused coping was also found to increase sickness absence when job demands and job control were low, and when work support was high. Participants who were exposed to high job strain may have used sickness absence as a coping strategy when they lacked other coping resources or behaviours. For example, Kivimaki et al.

(2003) suggests that short-term sick leave indicates employees have coped with job stress.

In addition, when job control was high, high problem-focused coping was associated with lower Time 2 perceived health. As discussed in Study 1, employees were more likely to find their work stressful when it was based on their perceived responsibility rather than job strain. It could also be that these employees have more managerial roles whose jobs may be characterized as low strain (low job demands and high job control). Another reason for this result is that problem-focused coping may be not be an appropriate coping strategy for some stressors or situations. For example, a more emotion-focused coping strategy may be needed if the stressor is emotionally distressing.

#### *Spiritual Coping*

Spiritual coping seems to be beneficial when employees perceive the situation to be uncontrollable (e.g., spiritual coping was beneficial when work self-efficacy was low, but detrimental when work self-efficacy was high when predicting work-family conflict). Therefore, spiritual coping may be linked to an external locus of control. Locus of control is a dimension of personality describing relatively stable differences between people who believe that events are the result of their own actions (internal locus), and people who believe that events in life are due to fate, luck, other people or deities (external locus) (Furnham & Steele, 1993). Research has demonstrated that people with an internal locus of control are better able to handle work stress. For example, Judge, Thoresen, Pucik, and Welbourne (1999) found internal locus of control to be correlated with both self and independent assessments of ability to cope with

organisational change. Internal locus of control individuals also perceive less stress and are more likely to use problem-focused coping over emotion focused coping (Judge et al., 1999). Therefore, as for having an external locus of control, employing spiritual coping may be beneficial in uncontrollable situations where problem-focused coping may not be as effective. This seems to be the case when predicting health outcomes such as anxiety and depression. However, when predicting job involvement and organisational commitment, spiritual coping seems to be more beneficial when work support and work self-efficacy are high, which may be attributed to the attitudinal nature of these outcomes.

In addition, when work support was high, high spiritual coping was associated with lower job satisfaction. As discussed in Study 1, this may be due to the more solitary environments that spiritual activities or negative religious coping styles increasing isolation. Furthermore, when job demands were low, higher spiritual coping was associated with lower Time 2 perceived health and Time 2 depression. As discussed in Study 1, this may be due to the relationship between spirituality and health being seen as particularly strong in times of stress (e.g., Shaw et al., 2005). However, if job demands are low and employees perceive few stressors, the positive effects of spiritual coping on perceived health may be less obvious and in fact may have an inverse relationship due to an external locus of control (Seybold & Hill, 2001).

#### *Substance-use Coping, Alcohol and Cigarette-use*

As in Study 1, substance-use seemed to have positive as well as negative influences on health and occupational outcomes. The only result which was not expected was the finding that low job demands and low substance-use coping was found

to predict the highest levels of cigarette-use at Time 1. A reason for this result could be that the substance-use coping items did not specifically ask whether participants used cigarettes to cope (i.e., "I use alcohol or other drugs to make myself feel better"). Therefore, the focus for participants may not have been whether they used alcohol or, for example, illicit drugs in order to cope with stress at work.

#### *Organisational Commitment*

Similar to past research, moderator effects of work support were found when predicting organisational commitment (Bellman, Forster, Still, & Cooper, 2003; Vashishtha & Mishra, 1998). Also, similar to past research, work self-efficacy was found to be a significant predictor of organisational commitment (Bogler & Somech, 2004). Employees who have high expectations of themselves to perform effectively and successfully in their organisation may perform extra functions beyond their job roles and may feel more committed to their organisation. Unlike past studies (e.g., Tudor, 1997), work self-efficacy was not found to be an effective moderator when predicting organisational commitment. However, as organisational commitment is often seen as a more stable and long-term attitude than other occupational outcomes, such as job satisfaction (Noblet, Rodwell, & McWilliams, 2006), longitudinal designs greater than 3 months may be needed in order to show greater main and interactive effects of the JDCS-WSE Model.

#### *Job Involvement*

Regarding job involvement, similar to past research, moderator effects of work self-efficacy in the prediction of job involvement were found (e.g., Tudor, 1997). However no main effect or moderator effect was found for Work support when

predicting job involvement. This supports a meta-analysis of 70 studies that examined the relationship between organisational support and occupational outcomes (Roadhes & Eisenberger, 2002). In their meta-analyses, Roadhes and Eisenberger (2002) found that the relationship between organisational support and organisational commitment was stronger than the relationship between organisational support and job involvement.

In addition, when job demands were low, high work self-efficacy was associated with lower Time 2 job involvement. As job involvement has been found both to be positively related with active jobs (high job demands, high job control; Landsbergis, Schnall, Deitz, Friedman & Pickering, 1992) and job self-efficacy (Yang, Kao, Huang, 2006), people with a high self-efficacy may become less involved in their jobs if they perceive their job to be less challenging (e.g., if their job demands are low). For example, employees who are more involved in their jobs have been found to work longer hours and be more dedicated to their work, which, in turn, creates even more involvement in their work (Schaufeli & Salanova, 2005).

#### *Work-Family Conflict*

Although Karasek (1979) argued that jobs high in both demands and job control, or 'active' jobs, enable or promote employee development outside of work, an interaction was not found between job demands and job control when predicting work-family conflict. Similar to past research no interaction effect of work support with job demands was found when predicting work-family conflict (Huffman, 2005). However, although job demands, job control, work support, and work self-efficacy were not significant predictors of work-family conflict individually, they each were shown to be useful moderators when predicting work-family conflict. This is not surprising, as each

of the JDCS-WSE variables have been shown to have associations with work-family conflict in past research. For example, job demands have been associated with higher work-to family conflict (e.g. Grzywacz & Butler, 2005; Grzywacz & Marks, 2000), while job control has been associated with lower work-family conflict (e.g. Grzywacz & Butler, 2005; Grzywacz & Marks, 2000), and social support and self-efficacy have been found to be associated with both higher and lower work-family conflict (Dombrowski, 2006; Yardley, 1995).

In addition, when work self-efficacy was high, high spiritual coping was associated with higher work-family conflict. As employees high in work-related self-efficacy are often found to be more involved in their job (Domenech, 2005), using a high amount of spiritual coping, which may include meditation, praying or church going, will leave even less time for them to invest in their families.

Furthermore, when job control was high, high work support was associated with higher Time 2 work family conflict. This may reflect the large percentage of women (58%). For instance, role conflicts have been suggested as a possible explanation of why women in active jobs have a heightened risk of adverse health effects (Krantz and Ostergren, 2002). Such role conflicts are often much stronger for women than men since childcare and housekeeping are still considered female responsibilities. In addition, women in active jobs are probably worse off than their male counterparts due to actual or self-perceived gender discrimination (e.g. less career opportunities or gender wage gaps). This can be related to the Effort-Reward Imbalance Model (Siegrist, 1996), where the differences of wages and other rewards may be of great importance for how employees perceive that their work-efforts are appreciated and valued.

### *Limitations*

In addition, to the limitations discussed in Study 1 (e.g., common method variance), the coping factors in this study accounted for 55% of the variance, which might indicate that the factor structure did not reflect employees' coping strategies exactly. It is also noteworthy that the numerous interactions detected in the present study each accounted for significant but relatively small amounts of variance. However, detecting moderator effects, particularly higher order effects, in analyses such as these is difficult (McClelland & Judd, 1993).

### *Future Research*

The results from both Study 1 and Study 2 suggest that a dual-process prevention approach that would aim both to increase work-related social support and self-efficacy would be beneficial to employees. This intervention could help employees' improve their social and personal resources in order to better cope with stressors in the workplace. For example, Schaubroeck et al. (2000), in discussing the results of their study investigating job demands, job control, and self-efficacy, suggest that employers could focus on enhancing self-efficacy as a way to protect against the negative outcomes associated with low self-efficacy. Interventions that aim at enhancing employees' self-efficacy may include exercises to reflect on experiences of success at coping with stress at work (enactive mastery), models of performance or behaviour modelling (vicarious experiences), coaching and encouragement (verbal persuasion), and reducing the emotional threats of rejection (managing physiological states). Interventions that aim to improve social support at work could include maintaining successful work relationships or developing new social network ties (Heaney and Israel, 2002), if the old ones are too



small and/or overburdened. Furthermore, interventions should aim at encouraging a better use of active coping and increasing the availability and utilisation of social support for work-related stressors since these factors are seen to play a protective role. In addition, problem-focused coping and social support coping were found to have the most moderator effects when predicting health and occupational outcomes, therefore when designing interventions, these types of coping strategies would likely be the most beneficial to modify.

#### *Aims of Study 3*

As Study 1 and Study 2 sought to identify modifiable factors of the working environment (social support) and the individual (self-efficacy, coping strategies) that operate through various processes to influence health and occupational well-being, the purpose of Study 3 is to employ an intervention in order to modify these factors, namely, work self-efficacy, work support, problem-focused coping, and social support coping.

## CHAPTER 5

### Study 3

#### *The Role of Work Self-Efficacy in Employees' Well-Being: a Self-Efficacy and Social Support Seeking Intervention*

##### *Chapter Overview*

Chapter 5 presents an intervention study aimed at improving work self-efficacy, work support, problem-focused coping, social support coping and health and occupational outcomes. It starts with presenting the theoretical framework and the aims of Study 3. It then goes on to describe the data collection method and the sample characteristics, as well as a description of the measures used in the study. Following this, the results of the statistical analyses are presented and the results discussed.

##### *Theoretical Framework of Study*

Interventions designed to reduce workplace stress can be classified according to their aim. Individual-focused interventions aim to enhance an individual's psychological resources and responses such as coping skills, while organisation-focused interventions aim to improve stressful work environments. An individual-focused approach was taken in this study. There is a range of different intervention techniques that can be employed in an individual-focused approach. Examples include, cognitive-behavioural training, personalised feedback, relaxation training, meditation, and physical fitness training. Evidence from past individual-focused interventions indicate that cognitive-behavioural training is the most effective technique (Ganster & Murphy, 2000, Van der Klink, Blonk, Schene, & Van Dijk, 2001).

Although some researchers (e.g., Shinn & Toohey, 2003) suggest that social support should be measured at higher levels of analysis (e.g., supportive organisations, cohesive and caring communities), the prevalence of studies linking social support to well-being has been at the individual level of analysis. Study 3 takes a more functional than structural view of social support; specifically, the perceived quality and strength of support (functional) rather than mere membership to social networks (structural).

#### *Aims and Hypotheses of Study 3*

Responding to a need to investigate both individual and organisational factors related to training outcomes (Colquitt, LePine, & Noe, 2000; Quiñones, 1997), Study 3 aims to investigate the effectiveness of an online intervention in modifying work self-efficacy, work support, positive coping behaviour, and health and occupational outcomes among employees, within the framework of the Job-Demand-Control-Support Model. A benefit of online interventions is that they are not limited in the same way traditional interventions are. For instance, they can overcome physical and geographical constraints as interventions can be offered independent of geographical locale. Second, they can be implemented in a cost-efficient manner and third, they are not time dependent.

According to Social Cognitive Theory (Bandura, 1986), it is expected that the intervention will increase work self-efficacy, work support and positive coping behaviour (primary outcomes), and decrease negative health and occupational outcomes and increase positive health and occupational outcomes (secondary outcomes) at post-assessment. Interventions designed to promote social support and self-efficacy in the workplace may be more effective than interventions aimed primarily at increasing work

stress-related knowledge. Therefore, the long term goal of this intervention is to provide a basis for developing more effective interventions beyond enhancing work stress knowledge to improve employees' health and occupational outcomes.

As Study 1 and Study 2 sought to identify modifiable factors of the working environment (work support) and the individual (self-efficacy, coping strategies) that operate through various processes to influence health and occupational well-being, the purpose of Study 3 is to employ an intervention in order to modify these factors, namely, work self-efficacy, work support, problem-focused coping, and social support coping. To this effect, the following hypotheses were proposed:

*Self-efficacy.* Post-intervention work self-efficacy will be higher than pre-intervention work self-efficacy.

*Social support.* Post-intervention work support will be higher than pre-intervention work support.

*Coping strategies.* Post-intervention social support coping and problem-focused coping will be higher than pre-intervention social support coping and problem-focused coping.

*Health and occupational outcomes.* Post-intervention negative health and occupational outcomes (Sickness absence, work-family conflict, anxiety, depression, and physical symptoms) will be lower than pre-intervention negative health and occupational outcomes.

Post-intervention positive health and occupational outcomes (Perceived health, job satisfaction, organisational commitment, and job involvement) will be higher than pre-intervention negative health and occupational outcomes.

*Substance-use.* As Study 1 and Study 2 found that substance-use coping, alcohol-use, and cigarette-use had both positive as well as negative influences on health and occupational outcomes, no specific hypotheses were proposed, however changes in levels are still discussed.

## Method

### *Design*

The study was a longitudinal intervention in which participants (an opportunity sample of office based workers), filled in questions and exercises online during four 5-15 minute sessions over 7 weeks (Time 1: baseline questionnaire; Time 2: increasing your coping ability and gaining support; Time 3: maintaining successful strategies; Time 4: follow-up questionnaire). In order to measure more subtle changes between pre-treatment and post-treatment variables, work support and work self-efficacy were measured using a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). All other measures used a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The study was conducted online using the department's online survey system QMS.

### *Procedure*

Organisations that consented to the study either sent out an email to their staff with an explanation of the study (with timeline) and a link to the first online session or an explanation of the study and the link were placed on the organisation's intranet. At the start of the first online session participants were asked to provide an email address in order to send them the link to the next online session (session 2).

*Session 1 (week 1): pre-intervention measures.* At the beginning of the first session, participants filled out the questionnaire used in Study 2 to take base line

measurements (i.e., job demands; job control; work support; work self-efficacy; coping strategies; job satisfaction; organisational commitment; anxiety; depression; physical health symptoms; job involvement; work-family conflict; sickness absence; alcohol-use; alcohol-use increase; cigarette-use; cigarette-use increase).

*Session 2 (week 2): increasing your coping ability and gaining support.* Before participants started the exercises in this week's session, they were presented with a paragraph describing how, by observing other people (similar to ourselves) coping with workplace stress we are able to model their behaviours we perceive as successful and relate it to our own situations. Some brief exercises then followed asking participants to reflect on how other people have successfully coped with work stressors (see Appendix C).

Participants were asked to think about their own past success with coping with stress. For example, "think of a past situation in your life where you successfully coped with a stressor at work, and to describe the situation briefly" (see Appendix C). Participants were also asked questions in relation to being well supported in the past. For example, "think about the times when you felt well supported. Were there specific people who helped more than once? (see Appendix C).

Participants were then asked to print off the social support seeking homework assignment that asked them to note down any work stressors that they thought they could cope more effectively with, and expected to experience in the coming week (see Appendix C). Noting down stressors and behaviours are thought to be beneficial in modifying coping behaviour. For instance, Porter et al. (2000) found that when

behaviour is recorded in a diary, men and women make equal use of social support to cope with stress.

They were told that the purpose of the next session was to concentrate on successful strategies that you have used when coping with work stress since this study started, and to maintain those successful strategies in the future (see Appendix C).

*Session 3 (week 3): maintaining successful strategies.* Before the start of this week's exercises participants were asked how many days they completed the assignment, how many people they asked for support and how many people gave them support. Some brief exercises then followed asking them to reflect on both the successful strategies they used for coping with work stress and in gaining support from others. Participants were also asked to report any positive changes in their behaviour as a result of the study and to identify at least 1 strategy that they plan to continue to cope with work stress from this point onwards (see Appendix C).

At the end of the session participants were informed that there would be a final session in 4 weeks time to see how they were doing at maintaining their successful strategies. And that until then, there would be no specific exercises for them to carry out but they were asked to try and maintain any successful strategies that they used to cope with work stressors since they first started the intervention

*Session 4 (week 7): post-treatment measures.* The final session involved the same questionnaire used in the first session seven weeks prior to pre-treatment, in order to examine any changes that may have resulted from the intervention study. After finishing the questionnaire participants were presented with a debriefing that explained about how the intervention examined whether an employee's work support and work

self-efficacy could be increased and explained how this could be beneficial in protecting better against the negative effects of work stress.

### *Participants*

A sample of 187 employees was recruited from seven organisations in the UK for participation in a workplace stress intervention study. From this sample, 35% were male, 65% were female, 68% were white, 12% were non white and 88% were employed full-time. Mean age was 36.5 years old ( $SD = 10.3$  years). Job grade responses were; 1 = manual (1%), skilled non-manual (25%), managerial (36%), and 5 = professional & senior management (39%). Mean tenure was 7.5 years ( $SD = 6.6$ ).

### *Measures*

Most of the measures employed in Study 1 and Study 2 were used in Study 3. There were a few exceptions however. Propensity to leave job was not used in Study 3 as it was found to have a reliability of .62 in Study 1. Humour and acceptance coping was not used in Study 3 as it was found to have a reliability of .62 in Study 2. The cigarette-use increase and alcohol-use increase items were not examined. Instead, changes between pre-intervention cigarette and alcohol-use and post-intervention cigarette and alcohol-use were used to measure increase or decrease of these variables. Consequently, the measures used in Study 3 were; job demands, job control, work support, work self-efficacy, social support coping, problem-focused coping, spiritual coping, substance-use coping, perceived health, anxiety, depression, physical symptoms, organisational commitment, job satisfaction, job involvement, work-family conflict, sickness absence cigarette-use, and alcohol-use.



*Demographic control variable.* The job grade categories were the same as in Study 2 (i.e., manual, skilled non-manual, managerial, professional & senior management), and was added as a control variable in each analysis if it was found to significantly correlate with the dependent variable.

#### *Data Analysis*

All data entry and analyses were conducted using SPSS version 13.0 (SPSS, 2004). Data from the 187 completed online questionnaires were entered into SPSS and checked for entry errors. Descriptive statistics were then generated for each variable.

*Bivariate analyses.* Before moderated regression analysis was performed, intercorrelations among the independent and moderator variable were analyzed to detect possible presence of multicollinearity. For reasons of consistency, descriptions of correlations were based on the guidelines for conventional practice outlined by Cohen and Cohen (1983). According to these guidelines effect sizes for correlations are as follows:  $r = .10$  (classified as weak),  $r = .30$  (classified as moderate), and  $r > .50$  (classified as strong).

*Pre to post intervention changes.* Baseline and the post-treatment scores of work support, work self-efficacy, social support coping, problem-focused coping, and the health and occupational outcomes were compared via paired samples t-tests to determine if there were statistically significant increases in the scores.

## Results

#### *Data Analysis*

*Descriptive statistics of time 1 variables.* Means and standard deviations and reliability (Cronbach's  $\alpha$ ) for Study 3 Time 1 variables are presented in Tables 19 and

20. 32.6% (61 out of 187) of participants had some form of missing data. However, once means substitution was computed (see Study 1 for scale computation process), only 33 participants were excluded from analysis as they were not considered to have missing data at random. As in Study 1 and Study 2, when computing scales, means were inserted for missing values at 70% in order to maximize available data. All Time 1 variables had reliabilities higher than .70.

Table 19

*Study 3. Descriptive Statistics of Time 1 JDCS, Work Self-Efficacy, and Coping*

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>α</i>
Time 1 Predictors				
Job demands	186	19.74	3.73	.82
Job control	187	28.51	6.59	.83
Work support	185	45.22	12.66	.95
Work self-efficacy	161	51.89	9.89	.94
Time 1 Coping Strategies				
Social support coping	159	13.95	3.68	.88
Problem-focused coping	159	27.71	3.73	.83
Spiritual coping	159	4.11	2.38	.88

Table 19 (continued)

*Study 3. Descriptive Statistics of Time 1 JDCS, Work Self-Efficacy, and Coping*

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>	$\alpha$
Substance-use coping	158	3.96	2.23	.91

*Note.* JDCS = job demand-control-support comprising job demands, job control, and work support. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

Table 20

*Study 3. Descriptive Statistics of Time 1 Health & Occupational Outcomes*

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>	$\alpha$
Time 1 Outcomes				
Perceived health	174	3.90	0.80	n.a.
Anxiety	172	18.75	6.40	.86
Depression	172	14.69	4.24	.76
Physical symptoms	173	64.75	22.16	.93
Organisational commitment	184	30.15	7.86	.91
Job satisfaction	181	9.41	1.26	.82
Job involvement	185	27.12	7.31	.85
Work-family conflict	186	17.06	6.67	.91

Table 20 (continued)

*Study 3. Descriptive Statistics of Time 1 Health & Occupational Outcomes*

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>	$\alpha$
Sickness absence	175	0.59	1.78	n.a.
Cigarette consumption	159	0.52	1.15	n.a.
Alcohol consumption	159	2.70	0.95	n.a.

*Note.*  $\alpha$  = Cronbach's alpha, n.a. = single item.

*Correlations between time 1 job grade, jdcs, work self-efficacy, and coping.*

Bivariate collinearity was assessed through examination of the intercorrelations between Time 1 job grade, the JDCS factors, work self-efficacy, and coping strategies (Table 21). As in Study 1 and Study 2, the bivariate correlation analysis indicated that, in most cases, the correlations among variables were much lower than .80. Significant correlations were found between job grade and Time 1 job demands.

Table 21

Study 3. Correlations Between Time 1 Job grade, JDCS, Work Self-Efficacy and Coping

Variable	1	2	3	4	5	6	7	8	9
1. Job grade	-								
2. Job demands	.17*	-							
3. Job control	.10	-.11	-						
4. Work support	-.08	-.14	.36***	-					
5. Work self efficacy	.04	-.01	.34***	.11	-				
6. Social support coping	.06	.13	.08	.35***	-.00	-			
7. Problem-focused coping	.09	.07	.31***	.23**	.63***	.23**	-		
8. Spiritual coping	.07	-.09	.04	.09	.22**	.08	.17*	-	
9. Substance-use coping	-.05	.11	-.17*	-.15	-.13	.02	-.13	-.13	-

Note.  $N = 156-187$ . JDCS = job demand-control-support comprising job demands, job control, and work support. Job grade = manual, skilled non-manual, managerial, and professional & senior management. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Correlations between time 1 job grade and time 1 outcomes.* Bivariate collinearity was assessed through examination of the intercorrelations between Time 1 job grade and Time 1 health and occupational outcomes (Table 22). As in Study 1 and Study 2, the bivariate correlation analysis indicated that, in most cases, the correlations among variables was much lower than .80. Significant correlations were found between job grade and Time 1 work-family conflict.

Table 22

*Study 3. Correlations Between Time 1 Job Grade and Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Job grade	-										
2. Perceived health	-.00	-									
3. Anxiety	.05	-.53***	-								
4. Depression	.06	-.49***	.63***	-							
5. Physical symptoms	-.02	-.58***	.69***	.41***	-						
6. Organisational commitment	.04	.18*	-.16*	-.23**	-.13	-					
7. Job satisfaction	.13	.29***	-.20**	-.20**	-.15	.37***	-				
8. Job involvement	.04	-.16*	.14	.04	.19*	.42***	.13	-			
9. Work-family conflict	.18*	-.46***	.42***	.41***	.39***	-.14	-.21**	.25**	-		
10. Sickness absence	.06	-.19*	.12	.18*	.06	-.29***	-.03	-.16**	.13	-	
11. Cigarette-use	-.06	-.06	.14	.23**	.19*	.01	-.07	.13	.03	-.08	-

Table 22 (continued)

*Study 3. Correlations Between Time 1 job grade and Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11
12. Alcohol-use	-.04	-.03	.07	.03	.04	-.13	-.02	.01	.05	.00	.14

*Note.*  $N = 154-187$ . Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Descriptive statistics of time 2 variables.* Means, standard deviations and reliability coefficients (Cronbach's  $\alpha$ ) for Time 2 are presented in Tables 23 and 24. All Time 2 variables had reliabilities higher than .70.

Table 23

*Study 3. Descriptive Statistics of Time 2 JDCS, Work Self-Efficacy, and Coping*

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>	$\alpha$
Time 2 Predictors				
Job demands	103	19.67	3.89	.85
Job control	103	29.52	6.63	.84
Work support	104	46.34	13.03	.93
Work self-efficacy	101	55.75	9.41	.96
Time 2 Coping Strategies				
Social support coping	101	15.01	4.12	.90
Problem-focused coping	101	24.76	3.18	.70
Spiritual coping	100	3.96	2.41	.88
Substance-use coping	101	3.83	2.21	.97

*Note.* JDCS = job demand-control-support comprising job demands, job control, and work support. Job grade = manual, administrative, technical, managerial, and professional & senior management.



Table 24

*Study 3. Descriptive Statistics of Time 2 Health & Occupational Outcome Variables*

*Variables*

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>α</i>
<b>Time 2 Outcomes</b>				
Perceived health	104	4.08	0.75	n.a.
Anxiety	104	17.60	6.10	.86
Depression	104	13.66	4.19	.79
Physical symptoms	104	58.49	19.88	.93
Organisational commitment	104	29.87	8.49	.93
Job satisfaction	103	11.63	2.61	.91
Job involvement	104	27.17	7.36	.85
Work-family conflict	104	16.82	6.18	.91
Sickness absence	104	0.23	0.71	n.a.
Cigarette consumption	89	0.52	1.18	n.a.
Alcohol consumption	101	2.56	0.94	n.a.

*Note.*  $\alpha$  = Cronbach's alpha, n.a. = single item.

*Correlations between time 1 job grade and time 2 jdcs, work self-efficacy, and coping.* Bivariate collinearity was assessed through examination of the intercorrelations

between Time 1 job grade and Time 2 JDCS factors, work self-efficacy, and coping outcomes (Table 25). As in Study 1 and Study 2, the bivariate correlation analysis indicated that, in most cases, the correlations among variables was lower than .80. No significant correlations were found between job grade and any Time 2 variables.

Table 25

*Study 3. Correlations Between Time 1 Job grade and Time 2 JDCS, Work Self-Efficacy and Coping*

Variable	1	2	3	4	5	6	7	8	9
1. Job grade	-								
2. T2 Job demands	.01	-							
3. T2 Job control	-.12	-.14	-						
4. T2 Work support	.00	-.06	.40***	-					
5. T2 Work self efficacy	.07	-.06	.22*	.33**	-				
6. T2 Social support coping	-.08	.09	.04	.53***	.20*	-			
7. T2 Problem-focused coping	.05	.11	.24*	.37***	.48***	.47***	-		
8. T2 Spiritual coping	.02	-.13	.13	.09	-.04	.16	.07	-	
9. T2 Substance-use coping	-.01	.13	-.24*	.04	-.09	.03	-.11	-.09	-

*Note.*  $N = 98-187$ . JDCS = job demand-control-support comprising job demands, job control, and work support. Job grade = manual, skilled non-manual, managerial, and professional & senior management. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Correlations between time 1 job grade and time 2 outcomes.* Bivariate collinearity was assessed through examination of the intercorrelations between Time 1 job grade and time 2 health and occupational outcomes shown in Table 37. As in Study 1 and Study 2, in most cases, the correlations among all the independent measures and dependent measures were much lower than .80 (see Table 26). No significant correlations were found between job grade and any Time 2 health and occupational outcomes.

Table 26

*Study 3. Correlations Between Time 1 Job Grade and Time 2 Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Job grade	-										
2. Time 2 Perceived health	.11	-									
3. Time 2 Anxiety	.03	-.38***	-								
4. Time 2 Depression	.09	-.38***	.58***	-							
5. Time 2 Physical symptoms	.15	-.52***	.65***	.37***	-						
6. Time 2 Organisational commitment	.12	.10	-.07	-.27**	-.21*	-					
7. Time 2 Job satisfaction	.03	.19	-.25*	-.31**	-.21*	.56***	-				
8. Time 2 Job involvement	.05	-.21*	.31**	.18	.28**	.40***	.28**	-			
9. Time 2 Work-family conflict	.10	-.33**	.51**	.43***	.39***	-.02	-.25*	.21*	-		
10. Time 2 Sickness absence	-.11	-.09	.12	.18	.09	-.12	-.10	-.12	.09	-	
11. Time 2 Cigarette-use	.11	.06	.04	.02	.08	.22*	.10	.24*	-.03	-.13	-

Table 26 (continued)

*Study 3. Correlations Between Time 1 job grade and Time 2 Health & Occupational Outcomes*

Variable	1	2	3	4	5	6	7	8	9	10	11
12. Time 2 Alcohol-use	-.06	.10	.03	.06	.05	-.12	-.14	-.07	.07	-.01	.06

*Note.*  $N = 87-187$ . Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Sample characteristics of completers and non-completers.* The descriptive statistics for both completers (participants who responded at Time 1 and Time 2) and non completers (participants who only responded at Time 1) were examined. Completers comprised of 65% females, while the non-completers included 65% females. The mean age of completers was 36.8 years ( $SD = 10.59$ ), while the mean age for non-completers was 35.8 years ( $SD = 9.65$ ). The mean tenure for completers was 8.0 years ( $SD = 7.17$ ), while the mean tenure for non-completers was 6.4 ( $SD = 5.27$ ). Seventy-three percent of completers were white and 9% were non-white, while 64% of non-completers were white and 16% were non-white. Completers comprised of 87% full-time workers while non-completers included 89% who worked full-time. Regarding job grade, completers were comprised of 39% senior managers or professionals, 38% of managers, 23% with skilled non-manual job roles, and 1 % with manual jobs. Non-completers included 38% senior managers and professionals, 33% of managers, and 28% with skilled non-manual job roles.

To investigate representativeness of the longitudinal sample, participants in the study were divided into those who completed session one (completers) and those who dropped out prior to session two (noncompleters). A series of one-way analysis of variance (ANOVA) were run to examine differences between completers and noncompleters. Significance tests of the differences were then examined. In addition, chi-square analyses were conducted to investigate differences between completers and non-completers in categorical demographic variables. No study variables were found to differ significantly between completers and non-completers.

*Test for differences and descriptive statistics for homework assignment.* Means and standard deviations for the seeking support homework assignment are presented in Table 27. As none of the homework assignment adherence variables correlated with any of the time 2 outcome variables, they were not used in further analysis.

Table 27

*Study 3. Descriptive Statistics for Social Support Seeking Homework**Assignment Adherence*

	<i>M</i>	<i>SD</i>
Homework assignment		
Number of work stressors	1.45	0.87
Number of people asked for support	1.38	1.01
Number of people who gave support	1.24	0.79

*Note.* *N* = 97-98.

*Testing intervention effects.* Paired sample t-tests were used to examine the changes between pre-treatment and post-treatment work self-efficacy, work support, problem-focused coping, social support coping and health and occupational outcomes. All pre-post-treatment comparisons for participants utilised a one-directional (i.e. one-tailed) level of significance, since the direction of change for each measure could be hypothesised a priori. The results of these comparisons are summarised in Table 28.

Table 28

*Study 3. Pre and Post Treatment Scores for Study Variables*

	Pre		Post		Significance
	M	SD	M	SD	
Work support	45.91	12.75	46.34	13.03	.402
Work self-efficacy	51.39	8.72	55.21	9.35	.002**
Problem-focused coping	27.58	3.37	24.88	3.13	<.001***
Social support coping	14.00	3.63	14.93	4.13	.049*
Perceived health	4.02	0.76	4.08	0.74	.270
Anxiety	17.97	6.09	17.66	6.00	.357
Depression	14.17	3.67	13.67	4.21	.190
Physical symptoms	61.32	20.28	58.58	20.01	.159
Organisational commitment	29.94	7.50	29.76	8.54	.441
Job satisfaction	9.51	1.10	11.68	2.53	<.001***
Job involvement	26.65	6.83	27.21	7.39	.274
Work-family conflict	16.50	6.43	16.82	6.18	.372
Sickness absence	0.58	1.12	0.24	0.73	.006**
Cigarette-use	0.19	0.60	0.50	1.13	.014*
Alcohol-use	2.79	0.85	2.56	0.99	.055

*Note.*  $N = 87-104$ . \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



*Changes in work support.* No participants reported any significant changes in work support (see Figure 60 below).

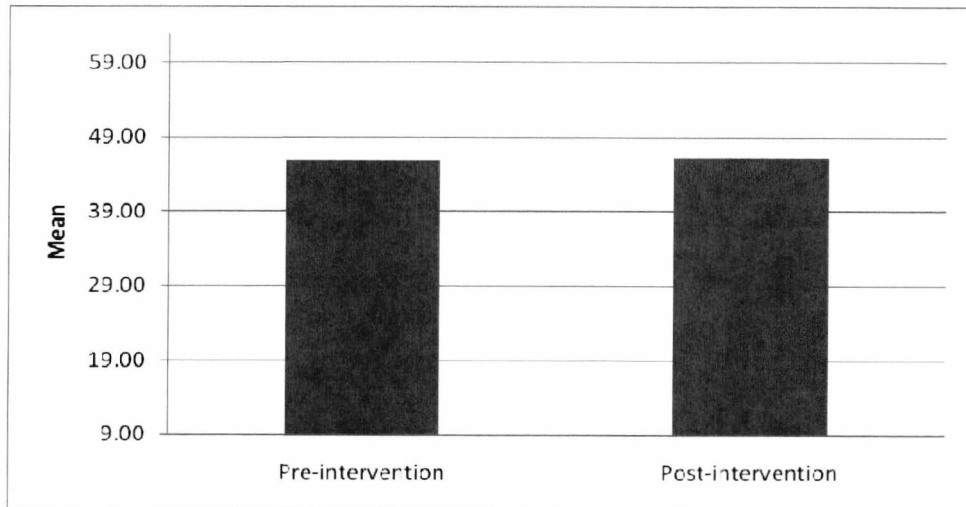


Figure 60. Changes in work support, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 104$ .

*Changes in work self-efficacy.* Participants reported significant changes in work self-efficacy (see Figure 61 below). At post-treatment, group members reported increases in perceived work self-efficacy ( $t = -3.049$ ,  $df = 88$ ,  $p < 0.01$ , one-tailed).

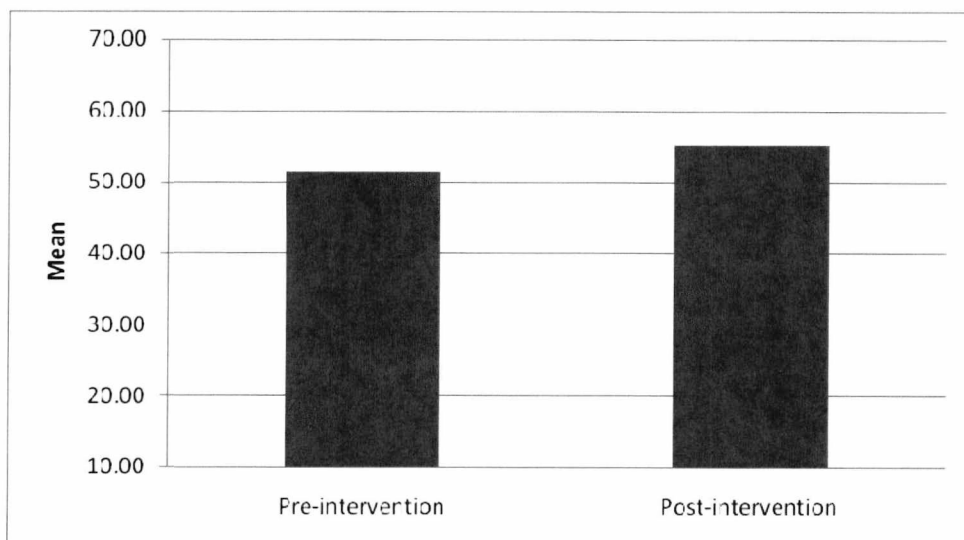


Figure 61. Changes in work self-efficacy, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 89$ .

*Changes in problem-focused coping.* Participants reported significant changes in problem-focused coping (see Figure 62 below). At post-treatment, group members reported decreases in problem-focused coping ( $t = 5.907$ ,  $df = 87$ ,  $p < 0.001$ , one-tailed).

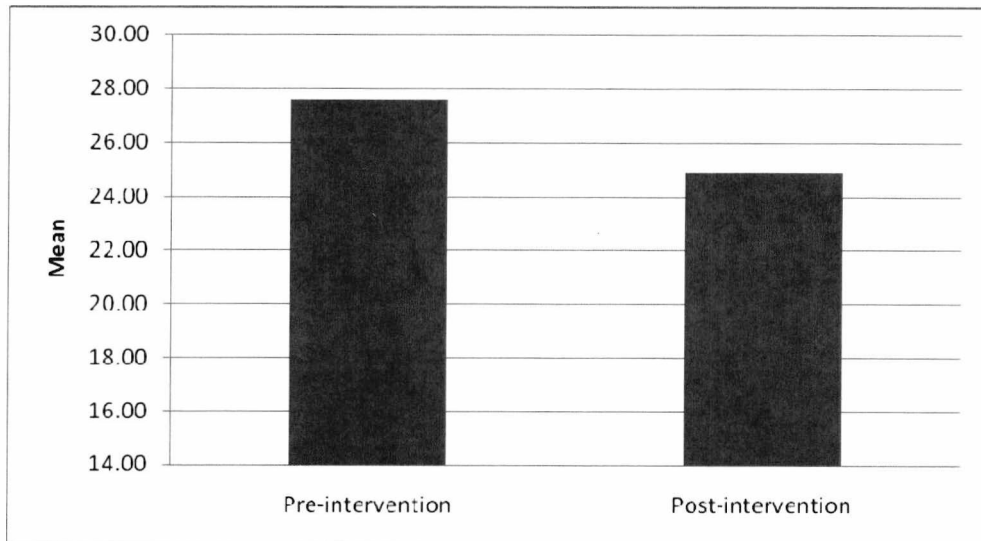


Figure 62. Changes in problem-focused coping, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 88$ .

*Changes in social support coping.* Participants reported significant changes in social support coping (see Figure 63 below). At post-treatment, group members reported increases in social support coping ( $t = -1.667$ ,  $df = 87$ ,  $p < 0.05$ , one-tailed).

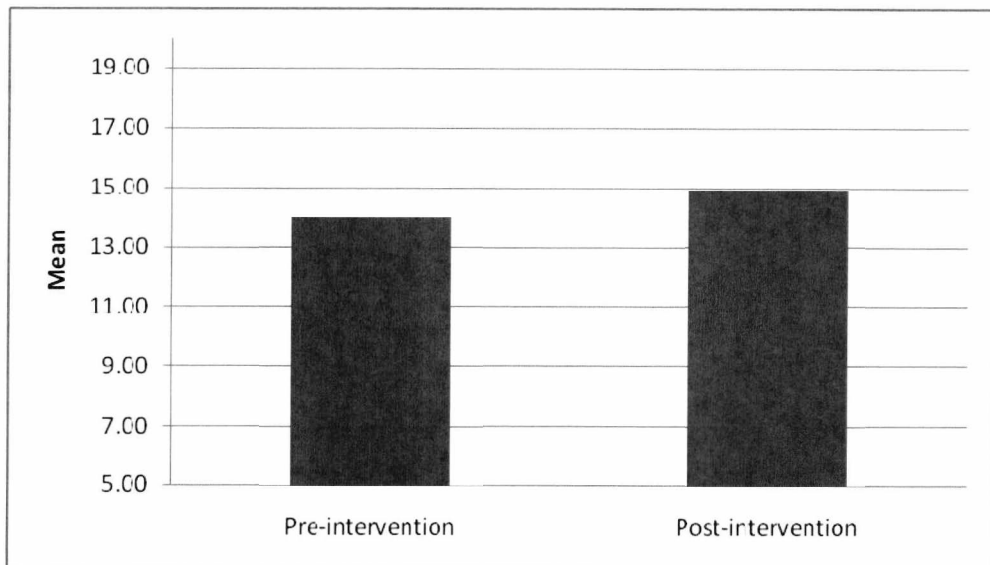


Figure 63. Changes in social support coping, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 88$ .

In order to examine which type of social support coping increased, the subscales of social support coping were examined. That is, emotional support coping,  $i = 2$ ,  $\alpha = .87$  (e.g., “I’ve been getting emotional support from others”) and instrumental support coping,  $i = 2$ ,  $\alpha = .79$  (e.g., “I’ve been getting help and advice from other people”). Participants reported significant increases in instrumental coping (pre = 7.09, post = 7.60,  $t = -1.798$ ,  $df = 86$ ,  $p < 0.05$ , one-tailed; see Figure 64 below).

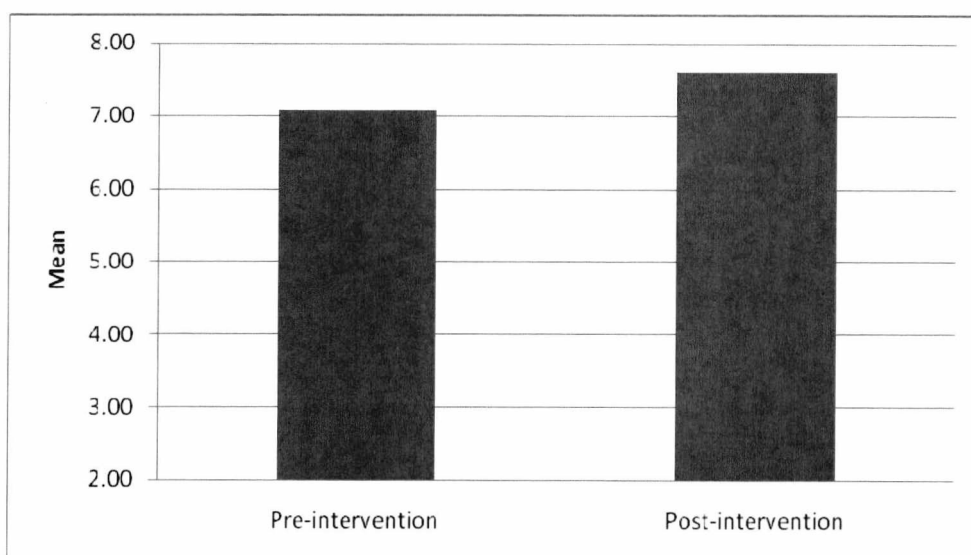


Figure 64. Changes in instrumental coping, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 87$ .

*Changes in job satisfaction.* Participants reported significant changes in job satisfaction (see Figure 65 below). At post-treatment, group members reported increases in job satisfaction ( $t = -7.620$ ,  $df = 98$ ,  $p < 0.001$ , one-tailed).

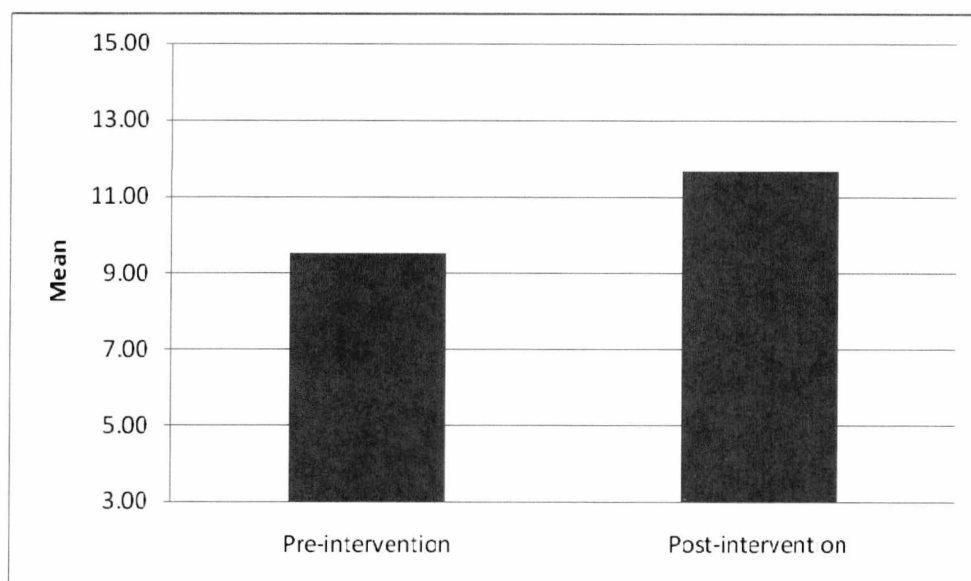


Figure 65. Changes in job satisfaction, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 99$ .

*Changes in sickness absence.* Participants reported significant changes in sickness absence (see Figure 66). At post-treatment, group members reported decreases in sickness absence ( $t = 2.591, df = 99, p < 0.01$ , one-tailed).

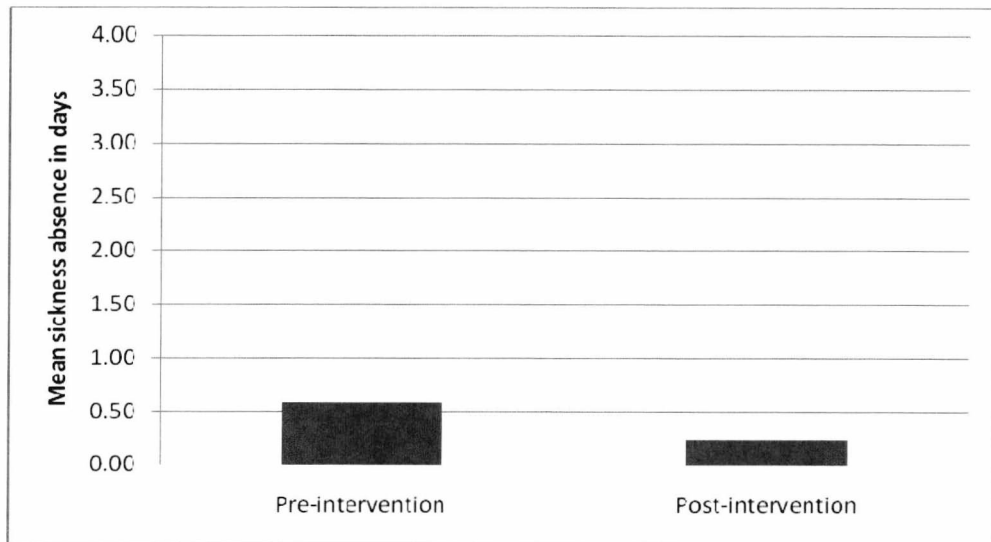


Figure 66. Changes in sickness absence, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 104$ .

*Changes in cigarette-use.* Participants reported significant changes in cigarette-use (see Figure 67). At post-treatment, group members reported increases in cigarette-use ( $t = -2.247, df = 77, p < 0.05$ , one-tailed).

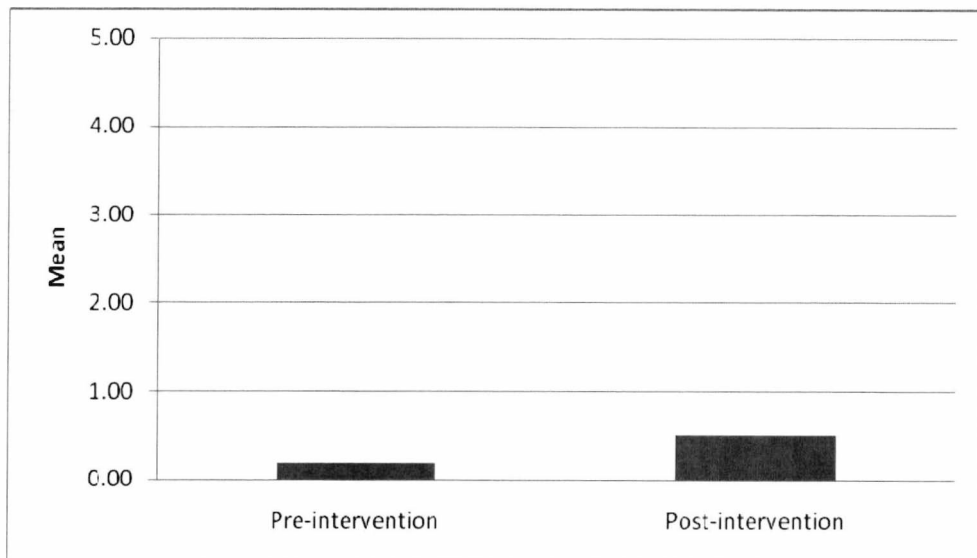


Figure 67. Changes in cigarette-use, pre-intervention to post-intervention. Post-intervention assessment at 7 weeks.  $N = 78$ .

### Discussion

Study 3 investigated the effectiveness of an online intervention on work self-efficacy, work support, positive coping behaviour, and health and occupational outcomes among employees, within the framework of the JDCS Model. According to Social Cognitive Theory (Bandura, 1986), it was expected that the intervention would increase work self-efficacy, work support and positive coping behaviour (problem-focused and social support coping). Negative health and occupational outcomes were expected to decrease and positive health and occupational outcomes were expected to increase at post-assessment.

### Summary

On the whole, the findings from the intervention support the hypotheses. Improvements in work self-efficacy and health and occupational outcomes over the period of the intervention were found, while instrumental support coping was also found to increase significantly. However work support levels were not found to

change significantly. Possible reasons include that the duration of the intervention was not long enough to detect changes in support, and/or that the support levels of the employees were already high pre-intervention and therefore, there was limited room for improvement. In addition, problem-focused coping was found to decrease. A ceiling effect of high problem-focused coping and the adaptiveness of participants in changing coping strategies are discussed as possible reasons.

### *Self-Efficacy*

There was an increase in levels of work self-efficacy post-intervention. The increase in work self-efficacy suggests that the intervention period of 7 weeks was long enough to see changes. This increase in self-efficacy suggests that the methods used in the intervention, namely, mastering experiences, vicarious experience, and verbal persuasion (via work support) were able to modify work self-efficacy. However, the method most effective at modifying self-efficacy should be identified in future studies. It is also possible that the specific methods designed to increase of self-efficacy did not modify self-efficacy directly but had indirect effects. For example, social support coping was found to increase while problem-focused coping was found to decrease. This may suggest that the intervention helped participants to recognise that different coping strategies (and resources) were available to them. For instance, when the work stressors were thought to be unchangeable (e.g., downsizing), participants may have changed from using problem-focused coping to using social support coping, which in turn may have increased work self-efficacy. As a result of actively seeking more support because of the intervention, an employee's work self-efficacy may have also been increased when their relationship with co-workers and supervisors improved. For example the employee may be more likely to be perceived to be competent, trustworthy, helpful, and be more likely to be assigned

responsibilities (i.e. by role adjustment). Such role adjustments have a figurative value for the employee, serving to enhance their confidence. For instance, there is support that increases in the employee's job content raise self-efficacy (Burr & Cordery, 2001). As a consequence, the improvement of self-efficacy on the part of the employee is likely to be perceived as an additional demonstration of competence by supervisors and co-workers.

In addition, self-efficacy gives employees the confidence to seek out, obtain and apply new information, and that in turn leads to more confidence (Leach et al., 2003). Employees with high levels of self-efficacy believe in their abilities and have positive thoughts about their job. They also have a greater pro-social orientation (Bandura et al., 1996, 1999). As a result, they may be inclined to view any work support they receive as positive. This should help lessen the negative consequences of work stress. However, individuals with low levels of self-efficacy may perceive a deficiency in their abilities and may feel threatened by the attention and support they receive. It could cause them to become more conscious of their own perceived incompetence. Consequently, it may be possible for social support to worsen the negative impact of stress. However, as there was no significant correlation found between Time 2 work self-efficacy and Time 2 work support or Time 2 social support coping in Study 3, the relationship between self-efficacy and social support may be even more intricate than thought.

#### *Problem-focused Coping and Social Support Coping*

Problem-focused coping decreased post-intervention. A likely explanation for this decrease of problem-focused coping is that levels were extremely high pre-intervention. For example, out of a maximum of 30, participants had a mean of 27.58 for problem-focused coping. This indicates that the employees were already using a



high level of problem-focused coping before the intervention. This high level of problem-focused coping may imply a ceiling effect, making enhancement of their already high levels of problem-focused coping difficult.

Another reason for a decrease in problem-focused coping is that participants changed their coping strategies, either as a direct effect of the intervention (participants reported significant increases in social support coping) or when they deemed the work stressors as unchangeable (e.g., downsizing). If the participants thought the situation was unchangeable, this would support the theory that coping is not adaptive or maladaptive, but is situation specific. For example, problem-focused coping is often an effective coping strategy, but may be limited when used in situations beyond a person's control (e.g., downsizing). In the same way, avoidance may be an effective coping approach in situations that are short-term (e.g., avoiding an annoying co-worker). Coping with work stress may call for varying coping strategies. For instance, since problem-focused approaches may be more effective in stressful situations that are chronic and controllable, they may prove effective only to a degree when coping with the working environment. While work stress can be chronic, employees have limited control over the eventual outcome. Because of this, problem-focused coping may be ineffective if attempts are repeatedly met with failure.

Thus, consistent with Lazarus and Folkman's assumptions regarding their theoretical framework, both problem-focused strategies and social support coping strategies may be ineffective in coping with certain work stressors. Interventions aimed at improving the selection of appropriate coping strategies may therefore be beneficial. Problem-focused coping involves some behaviours (e.g., direct problem solving) that in the absence of good emotion regulation skills can worsen, rather than

relieve the situation, when coping with work stress. If attempts at direct problem solving are unsuccessful, employees might become frustrated, leading to decreases in social skill.

### *Work Support*

Contrary to prediction, work support failed to significantly increase post-intervention. To understand why work support did not increase, the recruitment strategies and the characteristics of those willing to participate in the intervention must be considered. The precise motivation for participating in the intervention study is unknown, however, the decision to consent may reflect a positive level of individual interest in support-seeking related to the workplace. As such, workers who chose to participate in the intervention may have perceived that they already had sufficient levels of work support, and perceived their levels of work stress as manageable enough to participate in the intervention. It is feasible that workers with lower work support and/or work self-efficacy and debilitating levels of work stress chose not to participate in the intervention. In addition, for some employees providing a supportive environment may actually make the situation more stressful for those with low levels of self-efficacy, at least in the short-term until they gain mastery. Thus, the sample may comprise of a higher functioning group of individuals than would be seen if the sample had been completely random (rather than participants choosing whether to participate).

Another reason why significant changes in work support were not found is that levels of support were already high pre-intervention, which indicated that the employees were already receiving satisfactory levels of support before the intervention. This high level of support may make enhancement of their already high levels of social support difficult. Consequently, in order to create a strong

relationship with an employee, the time frame of 7 weeks may not have been long enough to detect changes in work support. Another reason for a lack of change in work support is that employees may be seeking support from sources outside of work (e.g., friends and family). Subsequent studies should examine which type and from which source employees deem as being most effective in coping with work stressors. Ribisl and Shumaker (2001) suggest social support is the most influential factor affecting the success of interventions as it has a direct affect on adherence.

Other studies that aimed to increase social support networks and to improve managerial support and supervision have also been found to have non significant or even negative effects. For example, Carson et al. (1999) found that potentially effective strategies may have failed to show an effect due to poor managerial support in their implementation. In addition, employee levels were often such that employees interested in participating could not be given time off to attend group supervision meetings.

#### *Significant Changes in Health and Occupational Outcomes*

Job satisfaction, physical symptoms and sickness absence were improved post-intervention. These variables have also been found to improve after workplace interventions from past studies. For example, LaMontagne (2001) outlined a quality management program which showed increases in employee job satisfaction upon completion of an employee training program. Similarly, Cormack, Nichols and Walsh (1991) reported increased levels of job satisfaction in university staff following the implementation of a structured support network. In addition, Bond and Bunce (2001) found that increasing job control led to decreases in physical health symptoms with improvements in self-rated performance a year later. Studies have

also shown social support interventions to decrease absenteeism rates over the intervention period (e.g., Lavoie-Tremblay et al., 2005).

#### *Non-Significant Changes in Health and Occupational Outcomes*

Although job satisfaction, sickness absence, and physical symptoms were improved post-intervention, the other health and occupational outcomes in the study did not change significantly from pre-intervention levels. This lack of change in the other health and occupational outcomes might suggest that a larger range of likert scale may be needed in order to measure more subtle changes between pre-treatment and post-treatment variables. In addition, evaluations of past interventions show a similar absence of positive effects on health when measured in the short-term (Bunce & West 1996, Petterson & Arnetz 1998), which suggest the importance of evaluating longer-term effects of an intervention on indicators of health (Burke 1993).

In addition, the intervention focused on the stressors evident within the organisations and the ways in which employees could better cope with the consequences of these stressors (secondary prevention). A limitation of secondary prevention is that the stressors themselves are not completely removed from the environment and therefore even after program completion, some stressors will still exist. If these stressors are organisational in nature and do not change after completion of the intervention then individual feelings of involvement or commitment towards the organisation may not change, nor would levels of work-family conflict.

#### *Strengths and Limitations*

As all of the employees experienced the same intervention conditions, there was no threat from testing or instrumentation. The Repeated measures design also

helped to cancel out individual variation, as each participant was measured more than once over a period of time.

*Length of study.* The length of the study may not have been sufficient to detect significant effects of the work support outcome. It is also possible that the work support scale used in this study was not sensitive enough to detect the changes for the participants involved in this study, or as discussed previously, it is possible that employees were already receiving high levels of support before treatment. Moreover, employees may have thought the study was too time-consuming (four 5-15 minute sessions, including a homework assignment) to take part, and many potential participants may have been unwilling to participate or complete the intervention. Employees' perceptions of the suitability of an intervention may be as important as the intervention itself, especially if employees are not keen on the intervention or do not see value in participating. If the barriers to participation are perceived to be too high and the benefits perceived to be too low, employees may not participate (Spath & Redmond, 1995). It may also take more time to transfer the attained coping skills to real life situations, thus longer-term evaluations could lead to clearer intervention effects (Shimazu, Okada, Mitsum, & Miura, 2003). A controlled follow-up of at least 12 weeks has been recommended to be part of the design of intervention studies (Van der Klink et al., 2001). However, long-term interventions are more sensitive to increased attrition rates (Kristensen, 2000).

*Gender differences.* Due to the high proportion of females among the sample, no gender differences were investigated. It is possible that the results would be different if both genders were represented equally in the study samples. However, a similar study found no differences between men and women in the moderator effect of seeking social support (Felsten, 1998) when examining stress and depression. In

addition, in this study, the participants were not randomly selected from the broader population. All employees volunteered for the study. Those participants who consented to the study may be different from those who did not take part. For example, it may be possible that those who volunteered and completed the study were not representative of the population of employees who experience a high level of work stress. A way to reduce this threat is to make participation in the study as convenient as possible (Campbell & Stanley, 1963).

*Lack of a control group.* Although, including a pre-test phase in the design helped to rule out many potential threats to internal validity than would otherwise be an issue with a Post-test-Only design, the limitation of not using a control group is the possible introduction of either a history or a maturation effect between the data collection points. For example, it is not known whether individual employees have experienced specific stressful events that could affect study results. Therefore, any observed change might be due to another event experienced by the group, such as redundancies.

*History.* Evaluations can be compromised when changes in participants' environment occur at a similar time as the study and cause participants to change their behaviour in ways that might be mistaken for the effects of the intervention. Such events can occur in the internal environment of the organisation or in its external environment. For instance, a corporate merger could cause employees to fear for their jobs, or an economic recession might cause a downturn in organisational performance that could mask the otherwise positive effects of a work stress intervention.

*Maturation.* Distinguishing between changes resulting from natural development and changes caused by the intervention can sometimes be difficult,

especially in designs that do not use control groups and continue over an extended period of time. Although maturation can be a threat in the evaluation of long-term systemic stress intervention initiatives, this type of threat is less likely to occur in interventions of shorter duration (unless the program is specifically for newly hired employees who might develop a variety of skills in a short time based on learning from their new job experiences).

Using a control group allows a researcher to better clarify the effects of the intervention, since both those participating in the treatment group and those in the control group should experience the same work environment. Therefore, in order to test the hypothesis that the treatment group demonstrates the efficacy of the stress intervention by showing significant changes in self-efficacy, work support, coping and health and occupational outcomes compared to the control group, future studies should contain both a treatment and a control group.

One type of control group often used in stress research is called a waiting list control. Using a waiting list control group is considered more ethical as all participants receive treatment and it also controls for any expectancy effects achieved in the sample. According to Kendall, Holmbeck and Verduin (2004) waiting list control groups are preferable to non-treatment control groups, since participants invest time and effort into the treatment and have knowledge that treatment is forthcoming. They may therefore anticipate change due to therapy, and a design utilising a waiting list control can compensate for such effects which otherwise might have been able to explain the outcome of the treatment. An example of how future studies could design an intervention employing a waiting list control group is discussed in the next paragraph.

Future studies examining the impact of stress intervention programs could employ a randomised controlled experimental treatment study containing both a waiting list control group and an active treatment group. Independent variables would be a between group variable (control or treatment group) and a within sample variable (time). During the orientation session the purpose of the study would be explained and randomisation to immediate intervention or waiting list control would be described. All participants would then fill out the pre-test questionnaire. The measurements would be collected to be used as baseline measurements for detecting changes in the dependent variables when compared to the post-test questionnaire. The participants would then be randomly assigned to either the immediate intervention or a waiting list control condition. The treatment group would begin the program within 1 week of the orientation session, while the waiting list control group would be told that they would be contacted again in 3 months time in order to fill out the post-test questionnaire along with the treatment group and begin the intervention themselves. The questionnaires (post-test) would be repeated 3 months after the orientation for both groups, 1 month after the intervention finished for the treatment group, and just before beginning the intervention for the waiting list control group. This means that some of the participants in the treatment group would not have completed the whole treatment program and that none of the participants in the waiting list control group would have begun their treatment before filling out the post-measurements to be compared to the baseline data. All participants who took part in the study (both treatment and control) would be sent follow-up questionnaires after 6 months in order to assess whether the benefits were maintained.



*Future Research*

Other methods of assessing the social support networks that assist the individual may be measured. This can be accomplished by having the employee provide a list of colleagues or supervisors who help with specific tasks. Another method would involve employees expressing their perceived strength and quality of the instrumental and emotional support that they receive. More robust measures of social support might prove to be important predictors of the outcome measures. Although less practical, multiple waves of data can be used to better examine the links between model components. Assessing the stress process over a longer period of time may be useful in assisting employees and organisations in determining how trajectories change over the months and years, as well as investigating what variables influence this change.

In addition, it is possible that more therapist involvement in online interventions may provide additional positive effects of treatment. For example, short weekly telephone calls could have additive effects. However, this negates the practical benefit of an online intervention, and may not have positive effects. For instance, no differences were found between participants who received weekly telephone calls and those who did not, in addition to an internet based self-help treatment in a randomized trial on treatment of headache (Andersson, Lundstrom, & Strom, 2003).

The results of this study lend support to the use of online interventions aimed at coping with work stress. However, so as to confirm the effectiveness of the treatment, it would also be advisable to conduct a replication of this intervention. It is also important to collect long term follow-up data in order to determine that the effects of the intervention are not short-term. An objective should be to collect

follow up data at six and twelve month periods post-intervention. Another way of examining the validity and reliability of this intervention would be to compare it to face to face treatment, so as to determine whether study characteristics or outcomes differ significantly. An alternative possibility would be to implement the treatment method of this intervention in a clinical setting to examine whether similar results are found. These results confirm the importance of a supportive work environment but future research should also examine the extent to which different types of support influence employees' adoption of coping strategies. Apart from potential cost-effectiveness, one of the reasons of online self-help therapy is the opportunity to treat people who may not otherwise seek treatment. However, Haaga (2000) suggests that not all participants need the same form and intensity of intervention. Some may benefit from self-help material, some by watching an instructional video, while others could benefit from having brief or long-term treatment, individual or group treatment.

Individual-focused interventions are easier to implement compared with organisational-focused interventions, which require more effort, time, commitment, and money on the part of the organisation. Organisational-focused interventions have been defined as planned structured activities or stepwise systematic approaches, aimed at directly or indirectly altering the workplace conditions (e.g., Mykletun, 2000). Interventions designed only to improve the employees' ability to cope with stress may not be sufficient if the source of stress is the working environment. It may therefore be necessary for interventions to combine individual and organisational focused methods (Mykletun, 2000).

However, an organisational-focused intervention has many challenges to overcome due to frequent organisational management changes (Pettersen, Hertting,

Hagberg, & Theorell, 2005). Reducing job demands is a difficult focus for an intervention because these are intrinsic components of most jobs. However, failure to do so may have costs not only to the individual but to the organisation as a whole. Soliciting information directly from employees through focus groups is another strategy to make the intervention more meaningful to participants. Although larger sample sizes and more complex techniques may be beneficial, qualitative research designs such as interviews and focus groups offer further benefits as to the intensity, depth, and detail associated with stress interventions (Barker, Pistrang, & Elliott, 1994). Therefore, a combination of research incorporating both quantitative and qualitative techniques is likely to prove more effective as qualitative information can help produce explanations for any unforeseen quantitative research findings.

In addition to self-reports, it would be beneficial to have observers (such as colleagues or supervisors) rate employees' behaviours during the intervention period to determine how well employees are able to apply skills learned from treatment (Timmons, Oehlert, Sumerall, Timmons, 1997). It is also likely that participants experiencing higher levels of stress would require the skills more than participants experiencing lower levels, and thus be more highly motivated, which, in turn, could cause intervention effects. Indeed, motivation, acceptance and compliance are regarded to be essential factors for intervention effects (Eriksen et al., 2002).

Job strain could be measured independently as opposed to self-reports. Independent assessment can be done using job descriptions or supervisor reports. In addition, as well as measuring the intensity of job demands, workers' enjoyment and interest levels of their tasks could also be examined. In addition, scales to measure stressors outside of the workplace would more accurately pinpoint an association between job strain and health and occupational outcomes.

The findings of this study and past research suggest that social support at work decreases work stress and its effects (Baker, Israel, & Schurman, 1996; Iverson, Olekans, & Erwin, 1998). Therefore, work stress and work support should be essential factors in workplace stress intervention programs. However, most stress interventions have been limited to decreasing psychological and physical symptoms of stress using education, coping strategies, counseling, or physical therapy. These methods work only for the release of strain and can not treat all of the problems surrounding work stress. Therefore, workplace stress interventions using high-level work support can not only contribute to stress prevention but also help to promote employee well-being.

## CHAPTER 6

## General Discussion

*Overall Summary*

The present research explores whether levels of self-efficacy act as an additional moderator variable in the Job Demand-Control-Support (JDCS) Model, and also examine the role that work support and coping have in predicting health and occupational outcomes. Study 1 and Study 2 sought to identify modifiable factors of the working environment (work support) and the individual (general self-efficacy, work self-efficacy, and coping strategies) that operate through various processes to influence health and organisational well-being. Study 2 was designed to address some of the limitations arising from Study 1, while also endeavouring to discern stronger findings. The JDCS Model was shown to be a stronger predictor of health and occupational outcomes than the JDC Model in both Study 1 and 2. Study 1 supported the addition of general self-efficacy to only the JDC model, and not the JDCS Model. Study 2 supported the addition of work self-efficacy to both the JDC Model and the JDCS Model. Study 3 was an intervention study that was successful in improving work self-efficacy, instrumental support coping, and health and occupational outcomes. These studies contribute additional knowledge about the antecedents and the effects of work stress, and contribute to the understanding of many years of inconsistent evidence concerning the moderating role of self-efficacy, social support, and coping on the stressor-strain relationship in the workplace.

*The JDC and JDCS Models*

The JDCS Model was shown to be a stronger predictor of health and occupational outcomes than the JDC model in both Study 1 and 2. Interactions were found between work support and self-efficacy in both Time 1 and Time 2. The

results from these studies support past studies that have found support for the main effects of control and demands, either additively or functioning as separate predictors for health and well-being (Griffith et al., 1999; Linzer et al., 2002; Pelfrene et al., 2002). On the other hand, many studies have failed to demonstrate the interaction effect (e.g. Beehr et al., 2001; De Croon, Van Der Beek, Blonk, & Frings-Dresen, 2000; Pelfrene et al., 2002). Study 1 supported the addition of general self-efficacy to only the JDC Model, and not the JDCS Model, while, Study 2 supported the addition of work self-efficacy to both the JDC Model and the JDCS Model.

### *Self-Efficacy*

The direct effects hypothesis was supported for both Study 1 and Study 2 maintaining that both general self-efficacy and work self-efficacy have main effects on health and occupational outcomes. These results support past studies that found that self-efficacy played an important role as a predictor of strain outcomes (e.g., Bandura, 1997; Jex & Bliese, 1999; Jimmieson, 2000; Salanova et al., 2000; Schaubroeck & Merrit, 1997; Schwarzer, 1999; Speier & Frese, 1997).

Regarding the moderating hypothesis, general self-efficacy and work self-efficacy were found to act as moderators (when combined with job demands, job control, and work support) on health and occupational outcomes. This is similar to past studies examining the moderating effects of self-efficacy. For example, self-efficacy was found to buffer the relationship between emotional job demands and emotional dissonance in a sample of 154 cabin attendants (Heuven, Bakker, Schaufeli, & Huisman, 2006). In addition, self-efficacy has been found to moderate the buffering effect that job control has over the relationship between job demands and poor immune health (Schaubroeck, Jones, & Xie, 2001). For example, these researchers found that having high job control reduced the relationship between job

demands and immune health for employees with high self-efficacy, but it increased the positive relationship between job demands and health for those who had low levels of self-efficacy. Therefore, such interventions that aim to increase job control should also incorporate efforts to increase the self-efficacy of the employees (for those who have low self-efficacy).

The current studies also corroborate past research in demonstrating that, in contrast to general self-efficacy, domain specific self-efficacy plays a more robust moderating role than general measures of self-efficacy are used (Bandura, 1997; Salanova et al., 2000; Schaubroeck & Merrit, 1997). The reason behind this is that an individual's self-efficacy beliefs are likely to differ depending on the domain to which it relates to (Bandura, 1999, 2001). For example, Salanova, Peiro' and Schaufeli (2002) extended the Job Demands-Control Model, and included both computer self-efficacy and general self-efficacy as moderator variables between job conditions (i.e., job demands and job control) and exhaustion and cynicism (i.e., burnout) for computer workers, and only found a relationship for computer self-efficacy. However, Schwarzer (1993) points out that general self-efficacy is a better predictor of general psychological outcomes, such as anxiety and depression.

### *Work Support*

The direct effects hypothesis was supported for work support. Main effects for work support were found on health and occupational outcomes in both Study 1 and Study 2. This is in line with past research that has found that work support promotes employees' well-being, work attitudes, and health (e.g., Behson, 2002; Rhoades & Eisenberger, 2002; Rhoades, Eisenberger, & Armeli, 2001).

Regarding the moderating hypothesis, work support was found to act as a moderator when predicting health and occupational outcomes. This finding supports

previous studies that have also demonstrated that support at work moderates the effectiveness of strategies aimed at reducing or preventing employee burnout. For instance, Van Dierendonck, Schaufeli, and Bunnk (1998) found that interventions designed to reduce burnout have a more immediate and stronger effect when social support is high. Janssen, Bakker, and de Jong (2001) also found that support moderates the degree to which job control acts as a buffer in the relationship between job demands and burnout. Therefore, employees are more likely to exercise control over their working environment when they perceive that social support is available.

In addition, when employees did not report high job demands or low job control, these supports were not always beneficial, or in some instances were associated with decreased well-being. For example, in Study 1, when employees had low job control higher work support decreased their Time 2 job satisfaction. This event was discussed by Cohen and McKay (1984) and Cohen and Wills (1985) through a goodness-of-fit model of social support transactions. According to this model, there must be a reasonable match between the coping requirements and the available support in order for a buffering effect to occur.

### *Coping Strategies*

Coping strategies were found to act as moderators when predicting health and occupational outcomes in both Study 1 and Study 2. For example, social support coping was not beneficial for employees low in work self-efficacy. This may be due to low self-efficacious individual lacking the appropriate social skills to obtain the appropriate social resources at work. Furthermore, employees high in work-self-efficacy had a higher cigarette-use when they used more social support coping. In contrast, people low in work self-efficacy had a higher cigarette-use when using less social support coping at both Time 1 and Time 2, which may be due to the difference



of positive and negative substance-use coping suggested in the previous discussion for Study 1. High work support and high social support coping lead to depression and work-family conflict, perhaps because people already high in work support may have already over-used or exhausted their social resources and may lead to negative perceptions.

Problem-focused coping was beneficial in both studies, and acted as a moderator on health outcomes. Previous research has found that problem-focused coping moderated the impact of stress on mental health outcomes (Jex, Bliese, Buzzell, & Primeau, 2001; Wanberg, 1997), and has been found to reduce stress (Shimazu & Kosugi, 2003). For example, in one study, active coping had an interaction effect with co-worker support, whereas it did not with job control and supervisor support. This suggests that it may be useful for future studies to differentiate between different types of support at work.

#### *Humour & Acceptance Coping*

In Study 1 humour and acceptance coping was beneficial for individuals who had lower job control, but was not beneficial for individuals who had high job demands. In addition, people with high job demands and high work support together who used more humour and acceptance coping strategies smoked more. A reason for the increase in cigarette-use is that people who use more humour and acceptance coping may socialise more, and as a result may smoke more. However, perhaps these people would benefit more from using problem-focused coping strategies that work to cope with the work stressor directly as humour has not always been found to have positive effects on health. For instance, in a study of burnout in doctors, using humour as a coping strategy has been found to be related to emotional exhaustion and depression for doctor (Dorz, Novara, Sica, & Sanavio, 2003). These researchers

suggest that people who were experiencing burnout may have been more likely to use black humour. Self-defeating humour has also been found to be related to higher anxiety and depression (Kuiper, Grimshaw, Leite & Kirsh, 2004). This suggests that further coping research should distinguish between adaptive and maladaptive humour strategies when examining their impact on health and well-being at work.

### *Spiritual Coping*

As discussed in Study 1, spiritual coping may be more helpful when reflecting on the “bigger picture” rather than dealing with short-term stressors or spiritual coping may reinforce a more positive attitude on life. Therefore, perhaps people who use more spiritual coping are more optimistic and/or have an external locus of control. Recent research has highlighted the importance of religion or spirituality in studies of the impact of coping on both physical (Powell, Shahabi, & Thoresen, 2003) and mental health (Miller & Thoresen, 2003). Although religious coping has been demonstrated to have relevance in explaining how individuals cope with stress, it appears to be independent of the constructs of active and passive coping and must therefore be included in any assessment of coping strategies.

### *Substance-use Coping and Alcohol and Cigarette-use*

In Study 1 and Study 2 substance-use seemed to have positive as well as negative influences on health and occupational outcomes. This may be because for some people substance-use coping may be a positive mechanism for reducing internal distress. Substances, such as alcohol may be used to regulate negative emotional responses that result from work stressors by distracting or numbing the individual temporarily in order to help them cope more easily with their affective states (e.g., Cooper, Frone, Russel, & Mudar, 1995). For example, previous research supports the notion that when drinking in a social context, alcohol consumption can

be linked to positive outcomes (e.g., Peirce, Frone, Russell, Cooper, & Mudar, 2000).

#### *Sickness Absence as a Coping Behaviour*

The moderation results from both Study 1 and Study 2 show that those participants who lacked a specific coping resource (i.e., job control, work support, self-efficacy) or behaviour (i.e., problem-focused coping, social support coping, humour and acceptance coping) reported a higher amount of sickness absence than participants with a high amount of a particular coping resource or behaviour. It is possible that this trend could be because participants who were exposed to high job strain used sickness absence as a coping behaviour when they lacked other coping resources or behaviours. In fact, past researchers have also come to this conclusion when examining similar trends. For example, Bourbonnais and Mondor (2001) found that female employees with high demand and low control over their jobs were quite likely to take more short-term sick leave. In addition, North, Syme, Feeney, Shipley, & Marmot (1996) found that men who reported high job demand and low job control took 10-20% more sick leave for short-term periods, while Kivimaki et al. (2003) suggested that short-term sick leave indicates employees have coped with job stress.

Although the trends were as expected, the individual variables of job demand and job control were not significantly associated with increased risk of taking sick leave in either Study 1 or Study 2. Perhaps conscientious employees do not use sick leave even when they are sick because they do not want to inconvenience their co-workers or supervisors. On the other hand, a conscientious supervisor may advise an employee to take sick leave when ill. Therefore, controlling for the negative affect of

employees may be useful when predicting sickness absence (Iverson & Deery, 2001; Pelled & Xin, 1999).

### *Limitations*

Despite these significant findings, it is important to note that some of the tests of these hypothesised buffering effects were not supported, as has been the case with some previous studies. This may suggest that the impact of job resource variables had small effect sizes which were not detected due to power limitations. However, the sample size of all studies were between the typical range of 100 to 400 participants seen in most social and behavioural health research samples (Hoyle & Panter, 1995). Regarding multiple regression, Tabachnick and Fidell (2007) state that, a minimum requirement is to have at least 5 times more cases than IVs. Therefore the regression analyses in our studies were well within Tabachnick and Fidell's guidelines.

Another limitation of this study is that all variables were measured through self-reports. This raises the concern that relations among variables were due to common method variance. Another issue concerning the use of self-report instruments when measuring coping is related to the fact that self-report methods designed to measure coping behaviours actually measure coping behaviour perceptions and not real behavioural responses (Jackson, 2000). For example, the phrasing of self-report questions may influence a participant's response (Dunbar-Jacob, Sereika, Rohay, & Burke, 1998). In addition, social desirability (Trochim, 2005) may have influenced employees' responses, although the researcher made efforts to overcome this limitation by guaranteeing confidentiality of answers. The use of a convenience sample also restricts the generalisability of the results to the greater population, and the study is vulnerable to a participant bias, that is,

employees who decided to participate may systematically differ compared to those who decided not to participate.

It is also feasible that coping only moderates the relationship between certain types of stressors and strain. Although respondents were asked to think back about stressors that had occurred in the past and about general coping strategies, their responses may have been influenced by their specific situations (stressors). That is, specific stressors may have elicited certain coping strategies. These strategies may have been salient in the respondents' minds as they completed the questionnaire, thus contaminating their responses for general coping strategies. The present study used a dispositional measure of coping and, thus, only assessed one facet of coping. Studies using more situational measures of coping would be useful.

Another limitation is the low response rates in studies. Lower than expected recruitment rates in Study 3 necessitated the recruitment of additional organisations to bolster numbers. An accurate response rate for this Study can not be calculated because some organisations were not able to tell the Researcher the exact number of employees that were able to access the intervention study. However, Study 1 and Study 2 both had response rates of 29%. With less than about 50% response rates the problems of self-selection and lack of ability to generalise to the population as a whole become significant (Brown & Liao, 1999; Capaldi et al., 1997). There was also no method set up to identify the factors that led the potential participants to refuse participant, and some of these unknown factors could be important factors that need to be addressed in a stress intervention.

All the studies focused on quantitative data. More qualitative methods would allow employees the opportunity to define what they perceive to be stressful. For instance, methods such as Critical Incident Analysis could be applied to the study of

work stress and employee well-being. O'Driscoll and Cooper (1994) recommended the use of this method for understanding stress and coping processes in work settings. They proposed that employee interviews should focus on describing stressful transactions in terms of their antecedents, responses and consequences.

*Contributions to Research and Theoretical and Practical Implications*

These studies make useful contributions to the research literature in several ways. First, as it is clear employees react to stressors over time (McGrath & Beehr, 1990), all the studies were longitudinal in nature, which considerably strengthens the research. Second, the combination of data from more than one organisation from a variety of occupations extends the generalisability of the study and increases our ability to find important variation in characteristics associated with different jobs (Tsang & Kwan, 1999; Warr, 1990). Third, these studies contribute additional knowledge about the antecedents and the effects of work stress. Fourth, this research examined the less studied process of seeking support (the majority of social support literature focuses on the availability and satisfaction with an individual's perceived social support, less focus is given to the process of seeking support). Fifth, this research contributes to the understanding of many years of inconsistent evidence concerning the moderating role of social support, self-efficacy, and coping on the stressor-strain relationship in the workplace.

Furthermore, the current studies extend prior research of social support and self-efficacy as moderator variables in several ways. First, most studies of moderators between the relationship of job characteristics (i.e., job demands and job control) on health and occupational outcomes (e.g., depression and job satisfaction), have used inappropriate methods for testing statistical interaction effects (e.g., dichotomising demands and control and forming subgroups or using a demands-control ratio). These types of analyses do not use multiplicative terms to test the interactions so they are not

taking the main effects of demands and control into account; this renders the test inappropriately liberal (Fox, Dwyer, & Ganster, 1993). Such analyses also cannot be interpreted in terms of 'buffering effects' because they often use logistic regression methods (dichotomous dependent variable such as have a symptom/do not have a symptom) rather than a continuous outcome which demonstrates the extent of the relationship.

In addition, most studies in the public health literature tend to examine Karasek's (1979) 'decision latitude' construct to represent job control, which includes both decision authority and skill discretion (e.g., Devereux, Rydstedt, Kelly, Weston, & Buckle, 2004; Toomingas, Theorell, Michelsen, & Nordemar, 1997). However, several researchers have argued that this measure is confounded in that decision authority is the key component (e.g., Wall et al., 1996). The present study took this into consideration and used decision authority rather than decision latitude.

This research also makes a contribution to the positive psychology literature as it sheds new light on how organisations can enable employees to develop to their full potential. In this manner, this research builds on the principles of positive psychology (Seligman & Csikszentmihalyi, 2000) and positive organisational studies (Cameron & Caza, 2004; Luthans, 2002) which aim to develop theoretical understandings of strengths, virtues, and health, as opposed to focusing on weakness and pathology in organisations.

Furthermore, this research has demonstrated that job and personal related resources may protect people in high strain situations. Job control, work support and self-efficacy seem to be valuable protective job resources. Therefore, organisations should provide their staff with more decision-making latitude and task authority in their jobs (Frese, 1989; Karasek & Theorell, 1990). However, it should be taken into account that too much job control can also harm an employee's health. According to

Warr (1987), many job characteristics (including job control) act like vitamins and an overdose of these vitamins can have negative rather than positive outcomes (see also Bakker et al., 2005). The optimal level of job control will vary between individuals, which should naturally be considered in job re-design and enrichment processes.

Although, previous studies have supported the underlying predictions of the JDCA Model, specifically, that job demands are the main predictors of negative job strain (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003; Bakker, Demerouti, & Verbeke, 2004), both Study 1 and Study 2 show job demands to be a weaker predictor of negative health and occupational outcomes than job control, work support, and both general and work self-efficacy. In both studies 1 and 2, stronger main effect relationships were found for Time 1 than at Time 2, which is not surprising, given the 3-month period between the two waves of data collection.

The role of coping as a moderator for the model builds on previous research that has identified other individual differences extending the JDC Model (Schaubroeck & Merritt, 1997). The results of the present study further bolster the position that coping strategies act as moderators, and they help to explain the conditions under which the demand-control relationship operates. The results also support the relapse prevention model (Marlatt & Gordon, 1985; Witkiewitz & Marlatt, 2004) and the integrative conceptual framework proposed by Moos and Holahan (2003). They emphasize the interactional nature of the relationship between personal factors like self-efficacy and transactional-situational processes, such as effectively coping with work stressors. Therefore, self-efficacy is an independent predictor of treatment outcome; in addition, increasing the level of self-efficacy is



especially important for individuals low in self-efficacy who rely on negative coping strategies.

The need to develop a more balanced representation of the stress process and to account for positive factors can also be seen in the recent Job Demands Resources (JD-R) model of burnout (Demerouti, Nachreiner, Bakker & Schaufeli, 2001; Schaufeli & Bakker, 2004). The initial JD-R model assumes two main processes: (1) a stress (or energy depletion) process in which high job demands exhaust the employee's energy; (2) a motivational process in which resources help to cope with successfully with high job demands and promote mental engagement. However, the JD-R model has been found to share many of the same limitations as the JDC model. For instance, it does not recognise individual factors and the part they play in the processes of motivation and health. In addition, the model can not identify factors that initiate and maintain motivation and health. Furthermore, it does not explain the relationship between motivation and health, other than implying that they are negatively related. Therefore more workplace health models are needed in order to better understand all the processes at work in the stress-strain relationship.

The practical implication of the present findings seems to be clear. Interventions aimed at reducing strains by increasing social support should consider an individual's work self-efficacy and vice versa. Schaubroeck et al. (2000), in discussing the results of their study examining job demands, job control, and self-efficacy, suggest that organisations could focus on increasing self-efficacy as a way to overcome the negative outcomes associated with low self-efficacy. They cite research (Gist & Mitchell, 1992) showing that training efforts using supportive supervisory practices, such as providing contingent positive feedback, have proved to be effective in building self-efficacy. However, the finding in Study 2 that those

high in both work self-efficacy and work support demonstrated the highest level of sickness absence suggest that the solution may not be that simple. Therefore, in addition to providing a supportive work environment, the reciprocity between the efforts or self-regulatory needs of a person (e.g., self-efficacy) and rewards (e.g., esteem) should also be considered.

In addition, The finding that no main effects for job demands on health and occupational outcomes in either Study 1 or Study 2, suggests that steps to reduce strain and enhance employee well-being require more attention to be paid to the other factors for which an effect was obtained (i.e., job control, work support, self-efficacy). The research provided evidence of main (and additive) effects of control, support and self-efficacy on strain. The practical implication of these findings is that steps to reduce strain and enhance employee well-being require action to be taken in relation to these factors rather than reducing job demands.

Finally, one of the most significant implications of the study, in terms of its usefulness to employees suffering with forms of stress in the workplace, are the intervention strategies that emerged from the study's findings. This research recognises that interventions should be aimed at both prevention and treatment. Developing interventions for the improvement of employee health is an area that has not been comprehensively addressed in the literature. By identifying the key moderator variables of job characteristics and resources in relation to employees' occupational and health outcomes this research was in a position to develop well targeted intervention strategies.

Improvements in work self-efficacy, instrumental support coping and health and occupational outcomes demonstrate that the internet was an effective medium for enhancing employees' coping. This has important implications for internet-based

health education. It appears possible that an internet workplace intervention has the potential not only to increase knowledge but also to change behaviour and perceived well-being, at least over a 7 week period. However, further research is recommended to determine if these changes are maintained in the longer term. In addition, using the internet to deliver interventions has important financial benefits. Cost effectiveness is an important consideration as it can be very costly to reach the large audiences necessary to bring about significant benefits for a population. In this case, internet delivery represents an inexpensive method to deliver health interventions, even to people in remote areas.

Many health interventions aim to show a reduction in the number of symptoms, symptom severity or disease status (e.g., Payton et al., 2000). While disease-related outcomes may give a good indication of the success of treatment programs, they do not give a good indication of the success of a prevention program because the target population is generally healthy and shifts in symptoms or disease prevalence are likely to be very small and may only become significant across large populations over many years (World Health Organisation, 2004). This may explain why trials of mental health prevention programs to date have reported inconsistent findings concerning the prevention of internalising disorders (Lowry-Webster, Barrett & Lock, 2003). This research supports the call for the measurement of more proximal outcomes to evaluate mental health prevention programs, such as changes in coping behavior and subjective well-being (e.g., job satisfaction).

#### *Future Research*

This study provided support for increasing self-efficacy and social support seeking methods into stress management programs. Health educators could

concentrate on helping those who are willing to change their behaviours, but perhaps need to conquer barriers such as high strain in working conditions.

For example, rather than attempting to change worker characteristics, Karasek's Job Strain Models (1987; 1990) suggest that characteristics of jobs, and the organisations in which they are embedded, are more appropriate targets for change. Specific interventions are likely to involve combinations of changing job demands, enhancing control and building social support and self-efficacy. For jobs to possess optimum levels of demands, control and support, initiatives must be taken at managerial and supervisory levels. An organisational intervention's efficacy is likely to depend upon the extent to which management is genuinely supportive, employees are involved in the design and implementation of change, and organisational systems and culture are congruent with such interventions (Murphy & Sauter, 2003). Karasek (1992), for example, concluded from his review of organisational interventions that programs most likely to be successful are those in which workers played key roles in task restructuring and work reorganisation.

In addition, specific problems may be persistent throughout the organisation and require all-encompassing interventions. Other problems such as excessive job demands may exist only in some departments and require more narrow resolutions such as redesigning of jobs. Still other problems may be specific to certain employees and unaffected by organisational change, demanding stress management interventions instead. Some interventions might be implemented rapidly (e.g. stress management training, improved communication), but others may require additional time to put into place (e.g. redesign of a manufacturing process). Whatever type of intervention is chosen, employees should be well informed about measures that will be taken and when they will take place. In addition, it is important to focus not only

on the individual worker, but also on the working environment. In the same way it is important not only to focus on the symptoms but the cause of those symptoms.

Furthermore, although the current studies support the main and moderating (buffering) role of work support on workplace stress, certain people may find work support more useful than others. For example, individuals with high self-efficacy did not find it as beneficial as those with low self-efficacy. Therefore, the type and source of support may also be important as the source of support perceived useful and more sought after by one person may prove to be less useful and wanted by others.

The stress-buffering effects of job resources other than control, support and self-efficacy should also be investigated. Evaluation studies could be conducted to assess the efficacy of interventions such as the one in Study 3. Ideally, the design of these studies would include random assignment of participants to treatment and control groups, include objective measures and long-term follow-ups of treatment effects (Giga et al., 2003).

In addition, qualitative methods should be used in conjunction with quantitative surveys in order to research fully the buffering effects of social support and self-efficacy. For example, a standardised interview could be used to determine what types of support are successful at reducing different types of job strain. Participants could be asked to discuss what types of support (e.g., informational/instrumental) they use from different sources (e.g., supervisor/family) of support to combat specific types of strain. Information about the employees' degree of control over each stressful situation could also be examined in order to establish whether there is a link between the types of support used and the controllability of the stressful situation.

*Conclusion*

The findings from the current studies support the need for further research into the exact nature of the interactions and changes of job and individual characteristics in the workplace. However, with several moderators that also have direct effects, it is problematical to present an easily understood overview. In addition, the simplicity of the original Demands Control Support Model is sacrificed by trying to understand how different psychosocial factors within a job are related and interact. Therefore, future research should keep the concept of this model, but at the same time try to attain the complicated relationship of the changing work environment and its effects on health and occupational well-being.

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## APPENDIX A

## Study 1 Moderation Tables

Table A1

*Study 1. Moderated Regressions for Variables Predicting Time 1 Health Outcomes*

	Perceived health				Alcohol-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.120***				.049*
Job grade	0.12	0.03	.35***		0.14	0.05	.22*	
Step 2				.123**				.011
Job demands (JD)	0.03	0.02	.16		0.01	0.03	.02	
Job control (JC)	0.01	0.01	.17		0.01	0.02	.04	
Work support (WS)	0.03	0.01	.29**		0.01	0.02	.05	
General self-efficacy (GSE)	-0.00	0.01	-.02		0.02	0.02	.07	

Table A1 (continued)

*Study 1. Moderated Regressions for Variables Predicting Time 1 Health Outcomes*

	Perceived health				Alcohol-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.072				.084
JD × JC	0.01	0.00	.19*		0.00	0.01	.02	
JD × WS	-0.01	0.00	-.24**		0.01	0.01	.09	
JC × WS	0.00	0.00	.13		0.00	0.00	.13	
JD × GSE	-0.00	0.01	-.01		0.01	0.01	.04	
JC × GSE	0.00	0.00	.06		0.01	0.01	.33**	
WS × GSE	-0.00	0.00	-.14		-0.01	0.01	-.12	

*Note.* *N* = 130-133. Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table A2

*Study 1. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 1 Health Outcomes*

	Perceived health				Depression				Physical symptoms			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.118***				.028				.014
Job grade	0.12	0.03	.34***		-0.28	0.15	-.17		-0.99	0.74	-.12	
Step 2				.127**				.218***				.179***
Job demands (JD)	0.03	0.02	.15		0.01	0.09	.01		-0.16	0.44	-.37	
Job control (JC)	0.02	0.01	.18		0.04	0.05	.09		0.32	0.23	1.38	
Work support (WS)	0.03	0.01	.26*		-0.10	0.05	-.20		-0.80	0.26	-3.06**	
General self-efficacy (GSE)	-0.00	0.01	-.01		-0.29	0.06	-.42***		-1.18	0.30	-3.91***	
Social support coping	0.01	0.02	.07		-0.12	0.08	-.14		0.56	0.40	1.40	

Table A2 (continued)

*Study 1. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 1 Health Outcomes*

	Perceived health				Depression				Physical symptoms			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.059*				.051				.033
JD × social support coping	-0.01	0.01	-.09		0.07	0.03	.18*		0.37	0.20	2.06*	
JC × social support coping	-0.00	0.00	-.03		-0.02	0.02	-.11		-0.01	-0.02	-.19	
WS × social support coping	0.01	0.00	.22*		-0.01	0.02	-.05		-0.02	-0.00	-.03	
GSE × social support coping	-0.01	0.00	-.14		-0.00	0.02	-.00		0.05	0.05	.59	

*Note.* *N* = 130-133. Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table A3

Study 1. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 1 Outcomes

	Physical symptoms				Job satisfaction				Alcohol-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.014				.121***				.054**
Job grade	-0.99	0.74	-.12		0.54	0.13	.35***		0.14	0.05	.23**	
Step 2				.167***				.269***				.042
Job demands (JD)	-0.07	0.44	-.02		-0.03	0.07	-.02		0.01	0.03	.02	
Job control (JC)	0.31	0.24	.15		-0.01	0.04	.41		0.01	0.02	.06	
Work support (WS)	-0.63	0.25	-.26*		0.19	0.04	.41***		0.02	0.02	.10	
General self-efficacy (GSE)	-1.17	0.34	-.34***		0.13	0.05	.21*		0.05	0.03	.18	
Problem-focused coping	-0.18	0.48	-.04		0.11	0.08	.12		-0.07	0.04	-.19	



Table A3 (continued)

Study 1. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 1 Outcomes

	Physical symptoms				Job satisfaction				Alcohol-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.084*				.038				.066
JD $\times$ problem-focused coping	-0.26	0.17	-.13		-0.01	0.03	-.03		-0.01	0.01	-.09	
JC $\times$ problem-focused coping	-0.15	0.08	-.18		-0.00	0.01	-.02		0.02	0.01	.27**	
WS $\times$ problem-focused coping	0.04	0.09	.05		-0.03	0.02	-.21*		-0.01	0.01	-.08	
GSE $\times$ problem-focused coping	0.34	0.10	.29**		0.01	0.02	.04		0.00	0.01	.03	

Note. *N* = 130-133. Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table A4

*Study 1. Moderated Regressions with Humour & Acceptance Coping as a Moderator Predicting Time 1 Health Outcomes*

	Cigarette-use				Cigarette-use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.041*				.059**
Job grade	-0.16	0.07	-.20*		-0.26	0.09	-.24**	
Step 2				.096*				.091*
Job demands (JD)	0.03	0.04	.06		0.08	0.06	.12	
Job control (JC)	-0.01	0.02	-.03		-0.03	0.03	-.10	
Work support (WS)	0.02	0.02	.09		0.05	0.03	.15	
General self-efficacy (GSE)	0.10	0.03	.29**		0.10	0.04	.22*	
Humour & acceptance coping	0.02	0.04	.05		0.06	0.05	.11	

Table A4 (continued)

*Study 1. Moderated Regressions with Humour & Acceptance Coping as a Moderator Predicting Time 1 Health Outcomes*

	Cigarette-use				Cigarette-use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.052				.053
JD $\times$ humour & acceptance coping	0.04	0.02	.21*		0.05	0.02	.24*	
JC $\times$ humour & acceptance coping	0.00	0.01	.02		-0.00	0.01	-.03	
WS $\times$ humour & acceptance coping	0.02	0.01	.20		0.03	0.01	.23*	
GSE $\times$ humour & acceptance coping	0.01	0.01	.05		0.00	0.02	.03	

Note.  $N = 130$ -133. Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table A5

*Study 1. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 1 Outcomes*

	Physical symptoms				Job satisfaction			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.014				.122***
Job grade	-0.99	0.75	-.12		0.54	0.13	.35***	
Step 2				.190***				.260***
Job demands (JD)	0.02	0.44	.00		-0.02	0.07	-.02	
Job control (JC)	0.29	0.23	.14		-0.00	0.04	-.01	
Work support (WS)	-0.69	0.24	-.28**		0.20	0.04	.44***	
General self-efficacy (GSE)	-1.20	0.30	-.35***		0.16	0.05	.26**	
Spiritual coping	1.25	0.67	.16		0.02	0.11	.01	

Table A5 (continued)

*Study 1. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 1 Outcomes*

	Physical symptoms				Job satisfaction			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.066*				.034
JD $\times$ spiritual coping	0.31	0.26	.11		-0.05	0.04	-.08	
JC $\times$ spiritual coping	-0.06	0.14	-.04		0.02	0.02	.07	
WS $\times$ spiritual coping	0.04	0.18	.02		-0.07	0.03	-.20*	
GSE $\times$ spiritual coping	-0.59	0.22	-.25**		0.04	0.04	.09	

*Note.* *N* = 130-133. Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table A6

Study 1. Moderated Regressions with Substance-use Coping as a Moderator Predicting Time 1 Health Outcomes

	Perceived health				Depression				Alcohol-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.119***				.028				.053**
Job grade	0.12	0.03	.35***		-0.29	0.15	-.17		0.14	0.05	.23**	
Step 2				.163***				.231***				.164***
Job demands (JD)	0.03	0.02	.16		-0.01	0.09	-.01		0.01	0.03	.02	
Job control (JC)	0.02	0.01	.19		0.04	0.05	.10		0.01	0.02	.05	
Work support (WS)	0.03	0.01	.26**		-0.12	0.05	-.23*		0.02	0.02	.09	
General self-efficacy (GSE)	-0.00	0.01	-.03		-0.28	0.06	-.40***		0.03	0.02	.13	
Substance-use coping	-0.07	0.03	-.21**		0.27	0.13	.16*		0.23	0.05	.38***	

Table A6 (continued)

*Study 1. Moderated Regressions with Substance-use Coping as a Moderator Predicting Time 1 Health Outcomes*

	Perceived health				Depression				Alcohol-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.053				.067*				.033
JD $\times$ substance-use coping	-0.03	0.01	-.20*		-0.06	0.06	-.09		-0.00	0.02	.00	
JC $\times$ substance-use coping	-0.01	0.01	-.10		-0.04	0.03	-.12		0.01	0.01	.08	
WS $\times$ substance-use coping	0.00	0.01	.05		-0.06	0.03	-.20*		0.00	0.01	.01	
GSE $\times$ substance-use coping	-0.00	0.01	-.03		0.03	0.03	.07		-0.02	0.01	-.17*	

*Note.* *N* = 130-133. Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table A7

*Study 1. Moderated Regressions for Variables Predicting Time 2 Health Outcomes*

	Time 2 anxiety				Time 2 job satisfaction			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.557***				.565***
Time 1 regressor	0.73	0.08	.75***		0.82	0.09	.75***	
Step 2				.003				.001
Job grade	0.13	0.19	.05		-0.05	0.14	-.03	
Step 3				.023				.025
Job demands (JD)	-0.07	0.14	-.04		-0.01	0.09	-.01	
Job control (JC)	-0.01	0.06	-.02		-0.05	0.04	-.13	
Work support (WS)	-0.06	0.07	-.09		0.03	0.05	.05	
General self-efficacy (GSE)	-0.14	0.09	-.15		-0.07	0.06	-.11	



Table A7 (continued)

Study 1. Moderated Regressions for Variables Predicting Time 2 Health Outcomes

	Time 2 anxiety				Time 2 job satisfaction			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.046				.112**
JD × JC	-0.07	0.03	-.20*		-0.04	0.02	-.18*	
JD × WS	-0.02	0.03	-.06		0.03	0.02	.10	
JC × WS	-0.02	0.01	-.14		0.02	0.01	.20*	
JD × GSE	-0.01	0.04	-.01		0.03	0.03	.09	
JC × GSE	-0.00	0.02	-.03		-0.01	0.01	-.08	
WS × GSE	-0.02	0.02	-.07		0.03	0.02	.17	

Note. *N* = 71. Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management. \**p*

< .05. \*\**p* < .01. \*\*\**p* < .001.

Table A8

*Study 1. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 2 Health Outcomes*

	Time 2 anxiety				Time 2 alcohol-use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.565***				.134**
Time 1 regressor	0.76	0.08	.76***		0.29	0.09	.37**	
Step 2				.002				.032
Job grade	0.10	0.19	.04		0.12	0.07	.18	
Step 3				.036				.054
Job demands (JD)	-0.02	0.14	-.01		-0.04	0.06	-.09	
Job control (JC)	-0.01	0.06	-.02		0.02	0.03	.11	
Work support (WS)	-0.05	0.08	-.07		0.02	0.03	.10	
General self-efficacy (GSE)	-0.17	0.09	-.17		-0.04	0.03	-.13	
Social support coping	-0.11	0.11	-.09		-0.02	0.04	-.06	

Table A8 (continued)

*Study 1. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 2 Health Outcomes*

	Time 2 anxiety				Time 2 alcohol-use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.076*				.106
JD $\times$ social support coping	-0.13	0.05	-.24**		0.05	0.02	.29*	
JC $\times$ social support coping	0.03	0.02	.15		0.00	0.01	.01	
WS $\times$ social support coping	-0.08	0.03	-.27**		-0.00	0.01	-.03	
GSE $\times$ social support coping	-0.01	0.03	-.05		-0.02	0.01	-.19	

*Note.*  $N = 71$ . Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table A9

*Study 1. Moderated Regression with Humour & Acceptance Coping as a Moderator Predicting Time 2 Sickness Absence*

	Time 2 sickness absence			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.002
Time 1 regressor	-0.20	0.60	-.04	
Step 2				.023
Job grade	0.74	0.60	.15	
Step 3				.190*
Job demands (JD)	-0.51	0.40	-.15	
Job control (JC)	-0.02	0.18	-.02	
Work support (WS)	0.27	0.23	.18	
General self-efficacy (GSE)	0.15	0.26	.07	
Humour & acceptance coping	-1.14	0.33	-.41**	

Table A9 (continued)

*Study 1. Moderated Regression with Humour & Acceptance Coping as a Moderator Predicting Time 2 Sickness Absence*

	Time 2 sickness absence			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.335***
JD × humour & acceptance coping	0.48	0.13	.43***	
JC × humour & acceptance coping	-0.13	0.06	-.28*	
WS × humour & acceptance coping	-0.12	0.07	-.19	
GSE × humour & acceptance coping	0.07	0.09	.10	

*Note.*  $N = 71$ . Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table A10

*Study 1. Moderated Regression with Spiritual Coping as a Moderator Predicting Time 2 Perceived Health*

	Time 2 perceived health			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.185***
Time 1 regressor	0.38	0.10	.43***	
Step 2				.013
Job grade	0.04	0.04	.12	
Step 3				.084
Job demands (JD)	0.01	0.03	.04	
Job control (JC)	-0.01	0.01	-.12	
Work support (WS)	0.03	0.01	.27	
General self-efficacy (GSE)	0.02	0.02	.17	
Spiritual coping	0.02	0.03	.07	

Table A10 (continued)

*Study 1. Moderated Regression with Spiritual Coping as a Moderator Predicting Time 2 Perceived Health*

	Time 2 perceived health			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.117
JD $\times$ spiritual coping	0.07	0.03	.40*	
JC $\times$ spiritual coping	0.01	0.01	.25	
WS $\times$ spiritual coping	0.01	0.01	.11	
GSE $\times$ spiritual coping	-0.01	0.01	-.18	

*Note.*  $N = 71$ . Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table A11

*Study 1. Moderated Regression with Substance-use Coping as a Moderator Predicting Time 2 Cigarette-use*

	Time 2 Cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.943***
Time 1 regressor	1.02	0.03	.97***	
Step 2				.002
Job grade	0.04	0.03	.04	
Step 3				.004
Job demands (JD)	0.01	0.02	.02	
Job control (JC)	-0.00	0.01	-.02	
Work support (WS)	0.00	0.01	-.00	
General self-efficacy (GSE)	-0.01	0.01	-.04	
Substance-use coping	0.04	0.03	.05	



Table A11 (continued)

*Study 1. Moderated Regression with Substance-use Coping as a Moderator Predicting Time 2 Cigarette-use*

	Time 2 Cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.010*
JD $\times$ substance-use coping	0.02	0.01	.05	
JC $\times$ substance-use coping	-0.00	0.01	-.02	
WS $\times$ substance-use coping	0.01	0.01	.06	
GSE $\times$ substance-use coping	-0.02	0.01	-.10**	

*Note.*  $N = 71$ . Job grade = unskilled manual, semi-skilled manual, skilled manual, skilled non-manual, managerial, and professional & senior management. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## APPENDIX B

## Study 2 Moderation Tables

Table B1

*Study 2. Moderated Regression for Variables Predicting Time 1 Sickness Absence*

	Sickness absence			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.011
Job grade	−0.26	0.20	−.11	
Step 2				.061
Job demands (JD)	0.14	0.07	.17*	
Job control (JC)	−0.01	0.04	−.02	
Work support (WS)	−0.05	0.04	−.12	
Work self-efficacy (WSE)	−0.03	0.04	−.06	

Table B1 (continued)

*Study 2. Moderated Regression for Variables Predicting Time 1 Sickness Absence*

Sickness absence				
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.126**
JD $\times$ JC	-0.01	0.02	-.05	
JD $\times$ WS	-0.02	0.01	-.11	
JC $\times$ WS	0.02	0.01	.20*	
JD $\times$ WSE	-0.02	0.02	-.10	
JC $\times$ WSE	-0.01	0.01	-.14	
WS $\times$ WSE	0.02	0.01	.22*	

*Note.* *N* = 157. Job grade = manual, skilled non-manual, managerial, and professional & senior management. \**p* < .05. \*\**p* < .01.

Table B2

*Study 2. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 1 Health Outcomes*

	Anxiety				Depression			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.003				.002
Job grade	-0.22	0.36	-.05		0.12	0.26	.04	
Step 2				.229***				.292***
Job demands (JD)	0.11	0.12	.07		0.13	0.08	.12	
Job control (JC)	0.01	0.07	.01		-0.04	0.05	-.06	
Work support (WS)	-0.18	0.06	-.26**		-0.09	0.04	-.18*	
Work self-efficacy (WSE)	-0.30	0.07	-.34***		-0.21	0.05	-.35***	
Social support coping	0.00	0.12	.00		-0.20	0.08	-.18*	

Table B2 (continued)

*Study 2. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 1 Health Outcomes*

	Anxiety				Depression			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.086**				.086**
JD $\times$ social support coping	-0.16	0.06	-.21**		-0.10	0.04	-.17*	
JC $\times$ social support coping	0.06	0.04	.13		0.00	0.02	.01	
WS $\times$ social support coping	-0.02	0.02	-.07		-0.02	0.02	-.08	
WSE $\times$ social support coping	-0.06	0.03	-.15		-0.06	0.02	-.22**	

*Note.* *N* = 155. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table B3

*Study 2. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 1 Health Outcomes*

	Physical symptoms				Cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.045**				.000
Job grade	-3.74	1.43	-.21**		0.02	0.08	.02	
Step 2				.233***				.029
Job demands (JD)	0.79	0.46	.13		-0.03	0.03	-.10	
Job control (JC)	-0.41	0.28	-.12		-0.02	0.02	-.12	
Work support (WS)	-0.47	0.24	-.16		0.01	0.01	.04	
Work self-efficacy (WSE)	-1.02	0.26	-.29***		0.02	0.02	.11	
Social support coping	-0.72	0.48	-.11		-0.01	0.03	-.03	

Table B3 (continued)

*Study 2. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 1 Health Outcomes*

	Physical symptoms				Cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.045				.056
JD $\times$ social support coping	-0.49	0.24	-.15*		-0.01	0.01	-.07	
JC $\times$ social support coping	0.25	0.14	.14		0.00	0.01	.02	
WS $\times$ social support coping	0.00	0.09	.00		-0.00	0.01	-.06	
WSE $\times$ social support coping	-0.06	0.13	-.04		0.02	0.01	.25**	

*Note.*  $N = 154-156$ . Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table B4

*Study 2. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 1 Health Outcomes*

	Perceived health				Anxiety			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.000				.003
Job grade	-0.01	0.06	-.02		-0.22	0.36	-.05	
Step 2				.235***				.270***
Job demands (JD)	-0.04	0.02	-.16*		0.15	0.12	.10	
Job control (JC)	0.02	0.01	.12		0.02	0.07	.02	
Work support (WS)	0.02	0.01	.17		-0.16	0.06	-.22*	
Work self-efficacy (WSE)	0.01	0.01	.10		-0.22	0.07	-.25**	
Problem-focused coping	0.07	0.02	.27**		-0.35	0.13	-.24**	



Table B4 (continued)

*Study 2. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 1 Health Outcomes*

	Perceived health				Anxiety			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.040				.047
JD $\times$ problem-focused coping	-0.00	0.01	-.03		-0.12	0.05	-.18*	
JC $\times$ problem-focused coping	-0.00	0.00	-.03		-0.01	0.02	-.02	
WS $\times$ problem-focused coping	-0.01	0.00	-.21*		0.02	0.03	.06	
WSE $\times$ problem-focused coping	0.00	0.00	.02		-0.03	0.03	-.11	

Note. *N* = 146–155. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table B5

*Study 2. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 1 Health Outcomes*

	Sickness absence				Cigarette-use				Alcohol-use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.011				.000				.008
Job grade	-0.26	0.20	-.11		0.02	0.08	.02		0.12	0.11	.09	
Step 2				.068				.034				.084*
Job demands (JD)	0.15	0.07	.18*		-0.03	0.03	-.10		0.01	0.04	.03	
Job control (JC)	-0.01	0.04	-.02		-0.02	0.02	-.12		0.04	0.02	.15	
Work support (WS)	-0.04	0.04	-.11		0.01	0.01	.05		0.04	0.02	.19*	
Work self-efficacy (WSE)	-0.02	0.04	-.03		0.03	0.02	.14		-0.03	0.03	-.13	
Problem-focused coping	-0.06	0.08	-.08		-0.03	0.03	-.09		0.04	0.04	.08	

Table B5 (continued)

*Study 2. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 1 Health Outcomes*

	Sickness absence				Cigarette-use				Alcohol-use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.079*				.045				.085*
JD $\times$ problem-focused coping	-0.01	0.03	-.02		-0.03	0.01	-.18*		0.05	0.02	.23**	
JC $\times$ problem-focused coping	-0.04	0.02	-.22*		-0.01	0.01	-.13		-0.01	0.01	-.14	
WS $\times$ problem-focused coping	0.04	0.02	.27**		-0.00	0.01	-.02		0.01	0.01	.11	
WSE $\times$ problem-focused coping	0.00	0.02	.00		0.01	0.01	.09		0.02	0.01	.19*	

*Note.* *N* = 152–155. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01.

Table B6

*Study 2. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 1 Outcomes*

	Perceived health				Job satisfaction			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.001				.003
Job grade	-0.02	.06	-.03		0.15	0.24	.05	
Step 2				.187***				.281***
Job demands (JD)	-0.04	0.02	-.16		-0.16	0.08	-.16*	
Job control (JC)	0.02	0.01	.19*		0.09	0.05	.17*	
Work support (WS)	0.02	0.01	.15		0.14	0.04	.31***	
Work self-efficacy (WSE)	0.03	0.01	.21*		0.08	0.04	.16*	
Spiritual coping	-0.02	0.03	-.05		0.19	0.09	.16*	

Table B6 (continued)

*Study 2. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 1 Outcomes*

	Perceived health				Job satisfaction			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.066*				.068*
JD $\times$ spiritual coping	-0.03	0.01	-.49**		-0.02	0.04	-.09	
JC $\times$ spiritual coping	0.00	0.01	.02		-0.01	0.02	-.10	
WS $\times$ spiritual coping	0.00	0.01	.01		-0.06	0.02	-.45**	
WSE $\times$ spiritual coping	0.00	0.01	.06		-0.01	0.02	-.05	

*Note.* *N* = 146–149. Job grade = manual, skilled non–manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table B7

Study 2. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 1 Outcomes

	Work–family conflict				Alcohol–use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.031*				.010
Job grade	1.11	.51	.18*		0.14	0.12	.10	
Step 2				.164***				.133**
Job demands (JD)	0.45	0.17	.21**		0.01	0.04	.03	
Job control (JC)	–0.28	0.10	–.25**		0.04	0.02	.15	
Work support (WS)	–0.14	0.09	–.13		0.04	0.02	.16	
Work self–efficacy (WSE)	–0.01	0.10	–.01		–0.02	0.02	–.09	
Spiritual coping	0.08	0.21	.03		–0.16	0.05	–.27**	

Table B7 (continued)

*Study 2. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 1 Outcomes*

	Work–family conflict				Alcohol–use increase			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.054*				.046
JD × spiritual coping	0.08	0.08	.15		0.00	0.02	.01	
JC × spiritual coping	0.08	0.05	.25		0.03	0.01	.51**	
WS × spiritual coping	–0.06	0.05	–.23		–0.01	0.01	–.22	
WSE × spiritual coping	0.10	0.05	.32*		–0.01	0.01	–.15	

*Note.* *N* = 152–157. Job grade = manual, skilled non–manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table B8

*Study 2. Moderated Regressions with Substance–use Coping as a Moderator Predicting Time 1 Occupational outcomes*

	Organisational commitment				Job involvement			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.001				.092***
Job grade	0.21	0.64	.03		2.30	0.60	.30***	
Step 2				.195***				.039
Job demands (JD)	-0.18	0.21	-.07		0.37	0.22	.14	
Job control (JC)	0.07	0.13	.05		-0.03	0.13	-.02	
Work support (WS)	0.40	0.11	.32***		0.08	0.11	.07	
Work self–efficacy (WSE)	0.28	0.12	.18*		0.18	0.12	.12	
Substance–use coping	-0.24	0.35	-.05		-0.24	0.35	-.06	



Table B8 (continued)

*Study 2. Moderated Regressions with Substance-use Coping as a Moderator Predicting Time 1 Occupational outcomes*

	Organisational commitment				Job involvement			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.065*				.080**
JD $\times$ substance-use coping	0.01	0.15	.01		-0.19	0.15	-.23	
JC $\times$ substance-use coping	0.23	0.08	.55**		0.17	0.08	.41*	
WS $\times$ substance-use coping	-0.05	0.06	-.13		-0.09	0.06	-.27	
WSE $\times$ substance-use coping	0.10	0.09	.22		0.21	0.09	.46*	

*Note.* T1 = Time 1. *N* = 157. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Table B9

*Study 2. Moderated Regressions with Substance-use Coping as a Moderator Predicting Time 1 Health Outcomes*

	Depression				Cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.001				.000
Job grade	0.11	.26	.04		0.02	0.08	.02	
Step 2				.265***				.826
Job demands (JD)	0.11	0.08	.10		-0.03	0.03	-.10	
Job control (JC)	-0.04	0.05	-.07		-0.02	0.02	-.12	
Work support (WS)	-0.11	0.04	-.22**		0.01	0.01	.03	
Work self-efficacy (WSE)	-0.23	0.05	-.37***		0.02	0.02	.11	
Substance-use coping	0.05	0.13	.03		-0.01	0.05	-.02	

Table B9 (continued)

*Study 2. Moderated Regressions with Substance-use Coping as a Moderator Predicting Time 1 Health Outcomes*

	Depression				Cigarette-use			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 3				.029				.041
JD $\times$ substance-use coping	0.06	0.06	.17		0.04	0.02	.40*	
JC $\times$ substance-use coping	-0.04	0.03	-.21		-0.01	0.01	-.22	
WS $\times$ substance-use coping	0.05	0.03	.39*		0.00	0.01	.01	
WSE $\times$ substance-use coping	0.02	0.04	.10		-0.01	0.01	-.13	

*Note.*  $N = 152-157$ . Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table B10

*Study 2. Moderated Regressions for Variables Predicting Time 2 Occupational outcomes*

	Time 2 job involvement				Time 2 work–family conflict			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.599***				.714***
Time 1 regressor	0.72	0.07	.77***		0.87	0.07	.85***	
Step 2				.010				.003
Job grade	0.85	0.65	.11		–0.40	0.45	–.06	
Step 3				.014				.026
Job demands (JD)	0.10	0.22	.04		0.02	0.16	.01	
Job control (JC)	0.00	0.13	.00		–0.05	0.10	–.04	
Work support (WS)	–0.02	0.10	–.01		–0.15	0.07	–.15*	
Work self–efficacy (WSE)	–0.18	0.13	–.11		0.10	0.09	.08	

Table B10 (continued)

*Study 2. Moderated Regressions for Variables Predicting Time 2 Occupational outcomes*

	Time 2 job involvement				Time 2 work–family conflict			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.037				.060*
JD × JC	−0.05	0.05	−.09		−0.01	0.03	−.02	
JD × WS	−0.04	0.04	−.08		−0.03	0.03	−.08	
JC × WS	0.01	0.03	.04		0.06	0.02	.23**	
JD × WSE	0.17	0.08	.21*		0.13	0.05	.20*	
JC × WSE	−0.02	0.03	−.08		−0.02	0.02	−.09	
WS × WSE	0.01	0.03	.04		−0.01	0.02	−.04	

*Note.*  $N = 72$ . Job grade = manual, skilled non–manual, managerial, and professional & senior management.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table B11

*Study 2. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 2 Outcomes*

	Time 2 depression				Time 2 work–family conflict			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.618***				.711***
Time 1 regressor	0.88	0.09	.79***		0.86	0.07	.84***	
Step 2				.009				.004
Job grade	–0.32	0.26	–.10		–0.41	0.46	–.06	
Step 3				.017				.031
Job demands (JD)	0.12	0.10	.12		–0.02	0.17	–.01	
Job control (JC)	0.02	0.06	.03		–0.05	0.10	–.04	
Work support (WS)	–0.01	0.05	–.02		–0.17	0.08	–.17*	
Work self–efficacy (WSE)	0.04	0.06	.06		0.11	0.09	.08	
Social support coping	0.02	0.10	.02		0.19	0.16	.09	

Table B11 (continued)

*Study 2. Moderated Regressions with Social Support Coping as a Moderator Predicting Time 2 Outcomes*

	Time 2 depression				Time 2 work–family conflict			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.033				.029
JD $\times$ social support coping	0.02	0.05	.03		0.11	0.09	.10	
JC $\times$ social support coping	–0.04	0.03	–.10		–0.01	0.05	–.01	
WS $\times$ social support coping	0.04	0.02	.20*		0.06	0.03	.18*	
WSE $\times$ social support coping	–0.01	0.03	–.02		0.00	0.05	.00	

*Note.*  $N = 72$ . Job grade = manual, skilled non–manual, managerial, and professional & senior management.

\* $p < .05$ . \*\*\* $p < .001$ .

Table B12

*Study 2. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 2 Outcomes*

	Time 2 perceived health				Time 2 sickness absence			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.417***				.001
Time 1 regressor	0.67	0.11	.65***		-0.06	0.21	-.04	
Step 2				.005				.005
Job grade	-0.05	0.08	-.07		0.31	0.56	.07	
Step 3				.038				.157
Job demands (JD)	-0.02	0.03	-.06		0.41	0.19	.29*	
Job control (JC)	0.01	0.02	.04		-0.11	0.11	-.13	
Work support (WS)	0.02	0.01	.16		-0.04	0.09	-.05	
Work self-efficacy (WSE)	0.01	0.02	.07		0.01	0.12	.02	
Problem-focused coping	-0.02	0.03	-.08		-0.35	0.21	-.24	



Table B12 (continued)

Study 2. Moderated Regressions with Problem-focused Coping as a Moderator Predicting Time 2 Outcomes

	Time 2 perceived health				Time 2 sickness absence			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.059				.080
JD $\times$ problem-focused coping	0.01	0.01	.12		-0.21	0.09	-.32*	
JC $\times$ problem-focused coping	-0.01	0.01	-.28*		0.02	0.04	.07	
WS $\times$ problem-focused coping	-0.00	0.01	-.02		-0.01	0.04	-.04	
WSE $\times$ problem-focused coping	0.01	0.01	.20		-0.01	0.04	-.03	

Note. *N* = 66–72. Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\**p* < .05. \*\*\**p* < .001.

Table B13

*Study 2. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 2 Outcomes*

	Time 2 organisational commitment				Time 2 depression			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.605***				.617***
Time 1 regressor	0.80	0.08	.778***		0.88	0.09	.79***	
Step 2				.001				.009
Job grade	-0.24	0.66	-.03		-0.33	0.26	-.10	
Step 3				.019				.018
Job demands (JD)	0.06	0.24	.02		0.13	0.10	.12	
Job control (JC)	0.11	0.14	.07		0.02	0.06	.03	
Work support (WS)	0.10	0.12	.07		-0.01	0.05	-.02	
Work self-efficacy (WSE)	-0.03	0.14	-.02		0.04	0.06	.06	
Spiritual coping	0.27	0.26	.09		0.05	0.10	.04	

Table B13 (continued)

*Study 2. Moderated Regressions with Spiritual Coping as a Moderator Predicting Time 2 Outcomes*

	Time 2 organisational commitment				Time 2 depression			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.030				.042
JD $\times$ spiritual coping	0.08	0.11	.13		-0.10	0.04	-.39*	
JC $\times$ spiritual coping	-0.03	0.07	-.09		0.01	0.03	.07	
WS $\times$ spiritual coping	0.12	0.06	.41*		-0.01	0.02	-.11	
WSE $\times$ spiritual coping	-0.01	0.07	-.03		0.04	0.03	.23	

*Note.*  $N = 72$ . Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\*\* $p < .001$ .

Table B14

*Study 2. Moderated Regression with Substance-use Coping as a Moderator Predicting Time 2 Work–Family Conflict*

	Time 2 work–family conflict			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.711***
Time 1 regressor	0.86	0.07	.84***	
Step 2				.004
Job grade	–0.41	0.46	–.06	
Step 3				.035
Job demands (JD)	0.01	0.16	.01	
Job control (JC)	–0.04	0.10	–.03	
Work support (WS)	–0.14	0.07	–.14	
Work self–efficacy (WSE)	0.11	0.09	.08	
Substance-use coping	–0.34	0.22	–.11	

Table B14 (continued)

*Study 2. Moderated Regression with Substance-use Coping as a Moderator Predicting Time 2 Work-Family Conflict*

	Time 2 work-family conflict			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 4				.041*
JD $\times$ substance-use coping	-0.20	0.09	-.31*	
JC $\times$ substance-use coping	-0.07	0.05	-.21	
WS $\times$ substance-use coping	-0.08	0.04	-.29	
WSE $\times$ substance-use coping	0.06	0.05	.15	

*Note.*  $N = 72$ . Job grade = manual, skilled non-manual, managerial, and professional & senior management.

\* $p < .05$ . \*\*\* $p < .001$ .

APPENDIX C

Study Material

**STUDY 1**  
**WORK STRESS SURVEY**

**Centre for Research in Health Behaviour**  
**University of Kent at Canterbury**

**KENT**  

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**UNIVERSITY OF KENT**  
**AT CANTERBURY ■■■■**

## WORK STRESS SURVEY

Thank you for taking the time to complete this survey. This is an opportunity to tell us about your experiences and make your views known. The results of the study will help us to develop strategies for reducing stress at work. This is your chance to let us know about your experience and views.

Please be assured that the information you provide will be treated confidentially. Your answers will be anonymous and **no-one** in the organisation will see your questionnaire. We will send out reminders in following weeks. We would also like to send you a follow-up questionnaire after a period of 3 months. If you agree to this please fill out your details on the sheet marked 'important'. This information will be used only for the purposes of sending you the questionnaires. Your participant number on the front of the questionnaire is the only information that will be recorded on our computer database and we cannot identify you from this.

When answering the questions please tick the answer that comes closest to your own opinion or applies to you. Please be as frank as you can with your answers.

When completed, please return the questionnaire to Dominic Wong, Department of Psychology, Keynes College, The University, Canterbury, Kent, CT2 7NP using the pre-paid envelope provided.

**If you return both the completed 1<sup>st</sup> and 2<sup>nd</sup> questionnaires you will be automatically be entered into a prize draw for a Boots voucher worth £20!**



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**SECTION 1: SOME QUESTIONS ABOUT YOUR JOB**

1. How long have you worked for the organisation? \_\_\_\_\_ years \_\_\_\_\_ months

2. What is your job title?

Please write in: \_\_\_\_\_

3. What is your job grade?

Please write in: \_\_\_\_\_

4. Are you employed (please tick one)

Full-time

Part-time

5. The following statements have been designed to reflect the amount of demands you experience in your job. Please circle the number that you think most applies to you.

	Never	Rarely	Sometimes	Often
1. My job requires very hard work.	1	2	3	4
2. My job requires very fast work.	1	2	3	4
3. My job requires excessive work.	1	2	3	4
4. My job involves conflicting demands.	1	2	3	4
5. My job involves not having enough time to get the job done.	1	2	3	4

6. The following statements have been designed to reflect the amount of control you experience in your job. Please circle the number that you think most applies to you.

	Never	Rarely	Sometimes	Often
1. I have a choice in deciding how I do my job.	1	2	3	4
2. I have a choice in deciding what I do at work.	1	2	3	4
3. Others take decisions concerning my job.	1	2	3	4
4. I have a good deal of say in decisions about work.	1	2	3	4
5. I have a say in my own work speed.	1	2	3	4
6. My working time can be flexible.	1	2	3	4
7. I can decide when to take a break.	1	2	3	4
8. I have a say in choosing with whom I work.	1	2	3	4
9. I have a great deal of say in planning my own work environment.	1	2	3	4



7. Now we want to ask you some questions about support at work. This refers to overall levels of helpful social interaction available while doing the job from colleagues and line managers/supervisors. Please circle the number that best reflects your feelings about support at work.

	Never	Rarely	Sometimes	Often
1. I get help and support from my colleagues.	1	2	3	4
2. My colleagues are willing to listen to my work-related problems.	1	2	3	4
3. I get help and support from my supervisor/line manager/ team leader.	1	2	3	4
4. My supervisor/line manager/team leader is willing to listen to my problems.	1	2	3	4
5. I get sufficient information from my line management.	1	2	3	4
6. I get consistent information from my line management.	1	2	3	4
7. I feel adequately supported by my colleagues.	1	2	3	4
8. I feel adequately supported by my line management.	1	2	3	4
9. Overall, I feel that I work in a supportive environment.	1	2	3	4

8. Listed below are a series of statements that represent possible feelings that individuals might have about the company or organisation for which they work. With respect to your own *feelings about the particular organisation for which you are now working* please indicate the degree of your agreement or disagreement with each statement by circling the number you think most applies to you.

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
1. I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful.	1	2	3	4	5
2. I talk up this organisation to my friends as a great organisation to work for.	1	2	3	4	5
3. I would accept almost any type of job assignment in order to keep working for this organisation.	1	2	3	4	5
4. I find that my values and the organisation's values are very similar.	1	2	3	4	5
5. I am proud to tell others that I am part of this organisation.	1	2	3	4	5
6. This organisation really inspires the very best in me in the way of job performance.	1	2	3	4	5
7. I am extremely glad that I chose this organisation to work for, over others I was considering at the time I joined.	1	2	3	4	5
8. I really care about the fate of this organisation.	1	2	3	4	5
9. For me this is the best of all possible organisations for which to work.	1	2	3	4	5

9. The following questions have been designed to assess how satisfied you are with your job. For each question please circle the number that you think most applies to you.

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. All in all I am satisfied with my job.	1	2	3	4	5
2. In general, I don't like my job.	1	2	3	4	5
3. In general, I like working here.	1	2	3	4	5

4. How concerned would you be if you had to take some other form of employment?

- |                        |                  |
|------------------------|------------------|
| 1 Not at all concerned | 4 Concerned      |
| 2 Not concerned        | 5 Very concerned |
| 3 Unsure               |                  |

5. How likely is it that you will actively look for a new job in the next year?

- |                    |                      |
|--------------------|----------------------|
| 1 Extremely likely | 4 Quite unlikely     |
| 2 Quite likely     | 5 Extremely unlikely |
| 3 Unsure, maybe    |                      |

6. How often do you think about leaving your job?

- |                       |          |
|-----------------------|----------|
| 1 Nearly all the time | 4 Rarely |
| 2 Rather often        | 5 Never  |
| 3 Sometimes           |          |

**SECTION 2: HEALTH**

- |   | Very poor | Poor | Good | Very Good |
|---|-----------|------|------|-----------|
| 1. How would you describe your health?  | 1         | 2    | 3    | 4         |
| 2. How many days have you had off work for illness in the last 3 months?<br>(Please estimate:) _____  |           |      |      |           |
| 3. The questions below refer to your feelings and emotions. Please read each statement and then circle the number that best reflects your response at the moment. |           |      |      |           |

	Disagree Strongly	Disagree	Disagree Slightly	Agree Slightly	Agree	Agree Strongly
1. After an embarrassing experience I worry about it for days.	1	2	3	4	5	6
2. I know that things will continually improve in my life.	1	2	3	4	5	6
3. I feel that I have a great deal to be proud of.	1	2	3	4	5	6
4. I often feel restless and jittery for no apparent reason.	1	2	3	4	5	6
5. Things rarely work out the way I want them to.	1	2	3	4	5	6
6. I am not as well liked as most other people.	1	2	3	4	5	6
7. Every day seems exciting, new, and different.	1	2	3	4	5	6
8. My feelings are more easily hurt than most other people's.	1	2	3	4	5	6
9. I can easily concentrate on things for as long as I like.	1	2	3	4	5	6
10. Whenever someone criticises me I think about it for days.	1	2	3	4	5	6
11. I am hopeful and optimistic about the future.	1	2	3	4	5	6
12. When things go wrong I blame myself.	1	2	3	4	5	6
13. I rarely lose sleep over worrying about something.	1	2	3	4	5	6
14. I am a person of worth, at least as good as other people.	1	2	3	4	5	6
15. I always expect the worst to happen.	1	2	3	4	5	6
16. I am more content and happy than most other people.	1	2	3	4	5	6
17. Happy endings only occur in films and in fairy tales.	1	2	3	4	5	6
18. I am not as self-confident as most other people.	1	2	3	4	5	6

	Disagree Strongly	Disagree	Disagree Slightly	Agree Slightly	Agree	Agree Strongly
19. When I meet people for the first time I am tense and uptight.	1	2	3	4	5	6
20. If I could live my life again I would do many things differently.	1	2	3	4	5	6
21. The future seems rather bleak and unpromising.	1	2	3	4	5	6

4. Please read each item and circle the number that comes closest to how you have been feeling in general in the past 3 months.

	Disagree strongly	Disagree	Agree	Agree strongly
1. I feel tense or 'wound up'.	1	2	3	4
2. I still enjoy the things I used to enjoy.	1	2	3	4
3. I get a sort of frightened feeling as if something awful is about to happen.	1	2	3	4
4. I can laugh and see the funny side of things.	1	2	3	4
5. Worrying thoughts go through my mind.	1	2	3	4
6. I feel cheerful.	1	2	3	4
7. I can sit at ease and feel relaxed.	1	2	3	4
8. I feel as if I am slowed down.	1	2	3	4
9. I get a sort of frightened feeling like 'butterflies' in the stomach.	1	2	3	4
10. I have lost interest in my appearance.	1	2	3	4
11. I feel restless as if I have to be on the move.	1	2	3	4
12. I look forward with enjoyment to things.	1	2	3	4
13. I get sudden feelings of panic.	1	2	3	4
14. I can enjoy a good book or radio or TV programme.	1	2	3	4

5. Now we want to ask you some questions about health symptoms that you have experienced in the past 3 months. Please circle the number that best reflects how often you have experienced the following health symptoms during the past 3 months.

	Never	Rarely	Sometimes	Often
1. Sleep problems (can't fall asleep, wake up in middle of night or early in morning).	1	2	3	4
2. Weight change (gain or loss of 5lbs or more).	1	2	3	4
3. Back pain.	1	2	3	4
4. Constipation.	1	2	3	4
5. Dizziness.	1	2	3	4
6. Diarrhoea.	1	2	3	4
7. Faintness.	1	2	3	4
8. Constant fatigue.	1	2	3	4
9. Headache.	1	2	3	4
10. Migraine headache.	1	2	3	4
11. Nausea and/or vomiting.	1	2	3	4
12. Acid stomach or indigestion.	1	2	3	4
13. Stomach pain (e.g. cramps).	1	2	3	4
14. Hot or cold spells.	1	2	3	4
15. Hands trembling.	1	2	3	4
16. Heart pounding or racing.	1	2	3	4
17. Poor appetite.	1	2	3	4
18. Shortness of breath when not exercising or working hard.	1	2	3	4
19. Numbness or tingling in parts of your body.	1	2	3	4
20. Felt weak all over.	1	2	3	4
21. Pains in heart or chest.	1	2	3	4
22. Feeling low in energy.	1	2	3	4
23. Stuffy head or nose.	1	2	3	4
24. Blurred vision.	1	2	3	4
25. Muscle tension or soreness.	1	2	3	4
26. Muscle cramps.	1	2	3	4
27. Severe aches and pains.	1	2	3	4
28. Acne.	1	2	3	4
29. Bruises.	1	2	3	4
30. Nosebleed.	1	2	3	4
31. Pulled (strained) muscles.	1	2	3	4
32. Pulled (strained) ligaments.	1	2	3	4
33. Cold or cough.	1	2	3	4

## SECTION 3: PERSONAL RESOURCES

The following questions refer to your personal resources.

1. For each of the following statements, please circle the number that best reflects your response as you see yourself today.

	Strongly disagree	Disagree	Agree	Strongly Agree
1. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
2. If someone opposes me, I can find ways and means to get what I want.	1	2	3	4
3. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
4. I am confident that I could deal efficiently with unexpected events.	1	2	3	4
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
6. I can solve most problems if I invest the necessary effort.	1	2	3	4
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
8. When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
9. If I am in a bind, I can usually think of something to do.	1	2	3	4
10. No matter what comes my way, I'm usually able to handle it.	1	2	3	4

2. These items ask how you typically cope with stress at work at present. Obviously, different people deal with things in different ways. We want to know to what extent you've been doing what each item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

<b>When I experience stress at work...</b>	Never	Rarely	Sometimes	Often
1. I turn to other activities to take my mind off things.	1	2	3	4
2. I concentrate my efforts on doing something about the situation I'm in.	1	2	3	4
3. I say to myself "this isn't real."	1	2	3	4
4. I use alcohol or other drugs to make myself feel better.	1	2	3	4
5. I get emotional support from others.	1	2	3	4
6. I give up trying to deal with it.	1	2	3	4
7. I take action to try to make the situation better.	1	2	3	4
8. I refuse to believe that it has happened.	1	2	3	4
9. I say things to let my unpleasant feelings escape.	1	2	3	4
10. I get help and advice from other people.	1	2	3	4
11. I use alcohol or other drugs to help me get through it.	1	2	3	4
12. I try to see it in a different light, to make it seem more positive.	1	2	3	4
13. I criticize myself.	1	2	3	4
14. I try to come up with a strategy about what to do.	1	2	3	4
15. I get comfort and understanding from someone.	1	2	3	4
16. I give up the attempt to cope.	1	2	3	4
17. I look for something good in what is happening.	1	2	3	4
18. I make jokes about it.	1	2	3	4
19. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4
20. I accept the reality of the fact that it has happened.	1	2	3	4
21. I express my negative feelings.	1	2	3	4
22. I try to find comfort in my religion or spiritual beliefs.	1	2	3	4
23. I try to get advice or help from other people about what to do.	1	2	3	4
24. I learn to live with it.	1	2	3	4
25. I think hard about what steps to take.	1	2	3	4
26. I blame myself for things that happened.	1	2	3	4
27. I pray or meditate.	1	2	3	4
28. I make fun of the situation.	1	2	3	4

## SECTION 4: SOME DETAILS ABOUT YOU

Now some background information about you.

1. What is your sex?
 

O Male	O Female
--------	----------
  
2. What is your age? \_\_\_\_\_
  
3. What is your ethnic group?
 

1 Indian 2 Pakistani 3 Chinese 4 Bangladeshi 5 Asian — other (please specify): _____	7 Black — Caribbean 8 Black — other (please specify): _____ 9 Mixed race 10 White — UK or Irish 11 White — other European 12 White — other
---	--
  
4. Over the past 3 months, which of the following best describes your typical drinking habits? (*One drink* is a single whisky, gin, or brandy, a glass of wine, sherry, or port, or a half pint of beer.)
 

1 Teetotal (no alcohol) 2 An occasional drink 3 Several drinks a week, but not every day	4 Regularly, 1 or 2 drinks a day 5 Regularly, 3 to 6 drinks a day 6 Regularly, more than 6 drinks a day
--	---
  
5. If you are not teetotal, has the quantity of alcohol consumed increased or decreased over the past 3 months?
 

1 Increased substantially 2 Increased 3 Remained the same 4 Decreased	5 Decreased substantially 6 Stopped 7 I don't drink
--	---
  
6. Which of the following statements is most nearly true of you?
 

1 I have never smoked 2 I have given up smoking	3 I am currently smoking
--	--------------------------



7. If you are currently smoking, please circle the number that constitutes your average daily consumption of cigarettes.
- |   |             |   |               |
|---|-------------|---|---------------|
| 1 | 0-5 a day   | 5 | 20-30 a day   |
| 2 | 5-10 a day  | 6 | 30-40 a day   |
| 3 | 10-15 a day | 7 | 40 plus a day |
| 4 | 15-20 a day | 8 | I don't smoke |
8. If you are a smoker, has the quantity smoked increased or decreased over the past 3 months?
- |   |                         |   |                         |
|---|-------------------------|---|-------------------------|
| 1 | Increased substantially | 5 | Decreased substantially |
| 2 | Increased               | 6 | Stopped                 |
| 3 | Remained the same       | 7 | I don't smoke           |
| 4 | Decreased               |   |                         |

**This is the end of the questionnaire. Thank you very much for your help. If there are any comments you would like to make, please write them below.**

**PLEASE RETURN THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED**

**STUDY 2**  
**WORK STRESS SURVEY**

**Centre for Research in Health Behaviour**  
**University of Kent at Canterbury**

**KENT**  

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**UNIVERSITY OF KENT**  
**AT CANTERBURY ■■■■**

## WORK STRESS SURVEY

Thank you for taking the time to complete this survey. This is an opportunity to tell us about your experiences and make your views known. The results of the study will help us to develop strategies for reducing stress at work. This is your chance to let us know about your experience and views.

Please be assured that the information you provide will be treated confidentially. Your answers will be anonymous and **no-one** in the organisation will see your questionnaire. We will send out reminders in following weeks. We would also like to send you a follow-up questionnaire after a period of 3 months. If you agree to this please fill out your details on the sheet marked 'important'. This information will be used only for the purposes of sending you the questionnaires. Your participant number on the front of the questionnaire is the only information that will be recorded on our computer database and we cannot identify you from this.

When answering the questions please tick the answer that comes closest to your own opinion or applies to you. Please be as frank as you can with your answers.

When completed, please return the questionnaire to Dominic Wong, Department of Psychology, Keynes College, The University, Canterbury, Kent, CT2 7NP using the pre-paid envelope provided.

Please take part and give us your views. If you have any queries about this survey please contact either Dominic Wong (email: DW56@kent.ac.uk; tel: 01227-823090) or Dr Joachim Stoeber (email: J.Stoeber@kent.ac.uk; tel: 01227-824196). We shall be happy to answer your questions. There are no known risks associated with this study.

**If you return both the completed 1<sup>st</sup> and 2<sup>nd</sup> questionnaires you will be automatically be entered into a prize draw for a Boots voucher worth £50!**



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**SECTION 1: SOME QUESTIONS ABOUT YOUR JOB**

1. How long have you worked for the organisation? \_\_\_\_\_ years \_\_\_\_\_ months

2. What is your job title?

Please write in: \_\_\_\_\_

3. Are you employed (please tick one)

- Full-time  Part-time

4. What is your job grade (please click one)

- Manual  Admin  
 Technical  Managerial  
 Professional/Senior Management

5. The following questions have been designed to assess how satisfied you are with your job. For each question please circle the number that you think most applies to you.

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. All in all I am satisfied with my job.	1	2	3	4	5
2. In general, I don't like my job.	1	2	3	4	5
3. In general, I like working here.	1	2	3	4	5

4. How concerned would you be if you had to take some other form of employment?

- 1 Not at all concerned  4 Concerned   
 2 Not concerned  5 Very concerned   
 3 Unsure

5. How likely is it that you will actively look for a new job in the next year?

- 1 Extremely likely  4 Quite unlikely   
 2 Quite likely  5 Extremely unlikely   
 3 Unsure, maybe

6. How often do you think about leaving your job?

- 1 Nearly all the time  4 Rarely   
 2 Rather often  5 Never   
 3 Sometimes

6. The following statements have been designed to reflect the amount of demands you experience in your job. Please circle the number that you think most applies to you.

	Never	Rarely	Sometimes	Often
1. My job requires very hard work.	1	2	3	4
2. My job requires very fast work.	1	2	3	4
3. My job requires excessive work.	1	2	3	4
4. My job involves conflicting demands.	1	2	3	4
5. My job involves not having enough time to get the job done.	1	2	3	4

7. The following statements have been designed to reflect the amount of control you experience in your job. Please circle the number that you think most applies to you.

	Never	Rarely	Sometimes	Often
1. I have a choice in deciding how I do my job.	1	2	3	4
2. I have a choice in deciding what I do at work.	1	2	3	4
3. Others take decisions concerning my job.	1	2	3	4
4. I have a good deal of say in decisions about work.	1	2	3	4
5. I have a say in my own work speed.	1	2	3	4
6. My working time can be flexible.	1	2	3	4
7. I can decide when to take a break.	1	2	3	4
8. I have a say in choosing with whom I work.	1	2	3	4
9. I have a great deal of say in planning my own work environment.	1	2	3	4

8. Now we want to ask you some questions about support at work. This refers to overall levels of helpful social interaction available while doing the job from colleagues and line managers/supervisors. Please circle the number that best reflects your feelings about support at work.

	Never	Rarely	Sometimes	Often
10. I get help and support from my colleagues.	1	2	3	4
11. My colleagues are willing to listen to my work-related problems.	1	2	3	4
12. I get help and support from my supervisor/line manager/ team leader.	1	2	3	4
13. My supervisor/line manager/team leader is willing to listen to my problems.	1	2	3	4
14. I get sufficient information from my line management.	1	2	3	4
15. I get consistent information from my line management.	1	2	3	4

	Never	Rarely	Sometimes	Often
16. I feel adequately supported by my colleagues.	1	2	3	4
17. I feel adequately supported by my line management.	1	2	3	4
18. Overall, I feel that I work in a supportive environment.	1	2	3	4

9. With respect to your own *feelings about the particular organisation for which you are now working* please indicate the degree of your agreement or disagreement with each statement by circling the number you think most applies to you.

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
1. I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful.	1	2	3	4	5
2. I talk up this organisation to my friends as a great organisation to work for.	1	2	3	4	5
3. I would accept almost any type of job assignment in order to keep working for this organisation.	1	2	3	4	5
4. I find that my values and the organisation's values are very similar.	1	2	3	4	5
5. I am proud to tell others that I am part of this organisation.	1	2	3	4	5
6. This organisation really inspires the very best in me in the way of job performance.	1	2	3	4	5
7. I am extremely glad that I chose this organisation to work for, over others I was considering at the time I joined.	1	2	3	4	5
8. I really care about the fate of this organisation.	1	2	3	4	5
9. For me this is the best of all possible organisations for which to work.	1	2	3	4	5

10. Please indicate the extent to which you AGREE or DISAGREE with each of the following statements by circling the number you think most applies to you.

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
1. The most important things that happen to me involve my present job.	1	2	3	4	5
2. To me, my job is only a small part of who I am.	1	2	3	4	5
3. I am very much involved personally in my job.	1	2	3	4	5
4. I live, eat, and breathe my job.	1	2	3	4	5
5. Most of my interests are centred around my job.	1	2	3	4	5
6. I have very strong ties with my present job which would be very difficult to break.	1	2	3	4	5
7. Usually I feel detached from my job.	1	2	3	4	5

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
8. Most of my personal life goals are job-oriented.	1	2	3	4	5
9. I consider my job to be very central to my existence.	1	2	3	4	5
10. I like to be absorbed in my job most of the time.	1	2	3	4	5

11. Please indicate the extent to which you AGREE or DISAGREE with each of the following statements by circling the number you think most applies to you.

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
1. My work keeps me from my family activities more than I would like.	1	2	3	4	5
2. The time I must devote to my job keeps me from participating equally in household responsibilities and activities.	1	2	3	4	5
3. I have to miss family activities due to the amount of time I must spend on work responsibilities.	1	2	3	4	5
4. When I get home from work I am often too frazzled to participate in family activities/responsibilities.	1	2	3	4	5
5. I am often so emotionally drained when I get home from work that it prevents me from contributing to my family.	1	2	3	4	5
6. Due to all the pressures at work, sometimes when I come home I am too stressed to do the things I enjoy.	1	2	3	4	5

**SECTION 2: HEALTH**

	Very poor	Poor	Good	Very Good
22. How would you describe your health?	1	2	3	4

3. How many days have you had off work for illness in the last 3 months?

(Please estimate:) \_\_\_\_\_

3. The questions below refer to your feelings and emotions. Please read each statement and then circle the number that best reflects your response at the moment.

	Disagree Strongly	Disagree	Disagree Slightly	Agree Slightly	Agree	Agree Strongly
1. After an embarrassing experience I worry about it for days.	1	2	3	4	5	6
23. I know that things will continually improve in my life.	1	2	3	4	5	6
24. I feel that I have a great deal to be proud of.	1	2	3	4	5	6
25. I often feel restless and jittery for no apparent reason.	1	2	3	4	5	6
26. Things rarely work out the way I want them to.	1	2	3	4	5	6
27. I am not as well liked as most other people.	1	2	3	4	5	6
28. Every day seems exciting, new, and different.	1	2	3	4	5	6
29. My feelings are more easily hurt than most other people's.	1	2	3	4	5	6
30. I can easily concentrate on things for as long as I like.	1	2	3	4	5	6
31. Whenever someone criticises me I think about it for days.	1	2	3	4	5	6
32. I am hopeful and optimistic about the future.	1	2	3	4	5	6
33. When things go wrong I blame myself.	1	2	3	4	5	6
34. I rarely lose sleep over worrying about something.	1	2	3	4	5	6
35. I am a person of worth, at least as good as other people.	1	2	3	4	5	6
36. I always expect the worst to happen.	1	2	3	4	5	6
37. I am more content and happy than most other people.	1	2	3	4	5	6
38. Happy endings only occur in films and in fairy tales.	1	2	3	4	5	6
39. I am not as self-confident as most other people.	1	2	3	4	5	6
40. When I meet people for the first time I am tense and uptight.	1	2	3	4	5	6
41. If I could live my life again I would do many things differently.	1	2	3	4	5	6
42. The future seems rather bleak and unpromising.	1	2	3	4	5	6



4. Please read each item and circle the number that comes closest to how you have been feeling in general in the past 3 months.

	Disagree strongly	Disagree	Agree	Agree strongly
1. I feel tense or 'wound up'.	1	2	3	4
2. I still enjoy the things I used to enjoy.	1	2	3	4
3. I get a sort of frightened feeling as if something awful is about to happen.	1	2	3	4
4. I can laugh and see the funny side of things.	1	2	3	4
5. Worrying thoughts go through my mind.	1	2	3	4
6. I feel cheerful.	1	2	3	4
7. I can sit at ease and feel relaxed.	1	2	3	4
8. I feel as if I am slowed down.	1	2	3	4
9. I get a sort of frightened feeling like 'butterflies' in the stomach.	1	2	3	4
10. I have lost interest in my appearance.	1	2	3	4
11. I feel restless as if I have to be on the move.	1	2	3	4
12. I look forward with enjoyment to things.	1	2	3	4
13. I get sudden feelings of panic.	1	2	3	4
14. I can enjoy a good book or radio or TV programme.	1	2	3	4

6. Now we want to ask you some questions about health symptoms that you have experienced in the past 3 months. Please circle the number that best reflects how often you have experienced the following health symptoms during the past 3 months.

	Never	Rarely	Sometimes	Often
1. Sleep problems (can't fall asleep, wake up in middle of night or early in morning).	1	2	3	4
2. Weight change (gain or loss of 5lbs or more).	1	2	3	4
3. Back pain.	1	2	3	4
4. Constipation.	1	2	3	4
5. Dizziness.	1	2	3	4
6. Diarrhoea.	1	2	3	4
7. Faintness.	1	2	3	4
8. Constant fatigue.	1	2	3	4
9. Headache.	1	2	3	4

	Never	Rarely	Sometimes	Often
10. Migraine headache.	1	2	3	4
11. Nausea and/or vomiting.	1	2	3	4
12. Acid stomach or indigestion.	1	2	3	4
13. Stomach pain (e.g. cramps).	1	2	3	4
14. Hot or cold spells.	1	2	3	4
15. Hands trembling.	1	2	3	4
16. Heart pounding or racing.	1	2	3	4
17. Poor appetite.	1	2	3	4
18. Shortness of breath when not exercising or working hard.	1	2	3	4
19. Numbness or tingling in parts of your body.	1	2	3	4
20. Felt weak all over.	1	2	3	4
21. Pains in heart or chest.	1	2	3	4
22. Feeling low in energy.	1	2	3	4
23. Stuffy head or nose.	1	2	3	4
24. Blurred vision.	1	2	3	4
25. Muscle tension or soreness.	1	2	3	4
26. Muscle cramps.	1	2	3	4
27. Severe aches and pains.	1	2	3	4
28. Acne.	1	2	3	4
29. Bruises.	1	2	3	4
30. Nosebleed.	1	2	3	4
31. Pulled (strained) muscles.	1	2	3	4
32. Pulled (strained) ligaments.	1	2	3	4
33. Cold or cough.	1	2	3	4

### SECTION 3: PERSONAL RESOURCES

The following questions refer to your personal resources.

- For each of the following statements, please circle the number that best reflects your response as you see yourself today.

Regarding my work...	Strongly disagree	Disagree	Agree	Strongly Agree
11. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
12. If someone opposes me, I can find ways and means to get what I want.	1	2	3	4
13. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4

<b>Regarding my work...</b>	Strongly disagree	Disagree	Agree	Strongly Agree
14. I am confident that I could deal efficiently with unexpected events.	1	2	3	4
15. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
16. I can solve most problems if I invest the necessary effort.	1	2	3	4
17. I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
18. When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
19. If I am in a bind, I can usually think of something to do.	1	2	3	4
20. No matter what comes my way, I'm usually able to handle it.	1	2	3	4

2. These items ask how you typically cope with stress at work at present. Obviously, different people deal with things in different ways. We want to know to what extent you've been doing what each item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

<b>When I experience stress at work...</b>	Never	Rarely	Sometimes	Often
1. I turn to other activities to take my mind off things.	1	2	3	4
2. I concentrate my efforts on doing something about the situation I'm in.	1	2	3	4
3. I say to myself "this isn't real."	1	2	3	4
4. I use alcohol or other drugs to make myself feel better.	1	2	3	4
5. I get emotional support from others.	1	2	3	4
6. I give up trying to deal with it.	1	2	3	4
7. I take action to try to make the situation better.	1	2	3	4
8. I refuse to believe that it has happened.	1	2	3	4
9. I say things to let my unpleasant feelings escape.	1	2	3	4
10. I get help and advice from other people.	1	2	3	4
11. I use alcohol or other drugs to help me get through it.	1	2	3	4
12. I try to see it in a different light, to make it seem more positive.	1	2	3	4
13. I criticize myself.	1	2	3	4
14. I try to come up with a strategy about what to do.	1	2	3	4
15. I get comfort and understanding from someone.	1	2	3	4
16. I give up the attempt to cope.	1	2	3	4

When I experience stress at work...	Never	Rarely	Sometimes	Often
17. I look for something good in what is happening.	1	2	3	4
18. I make jokes about it.	1	2	3	4
19. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4
20. I accept the reality of the fact that it has happened.	1	2	3	4
21. I express my negative feelings.	1	2	3	4
22. I try to find comfort in my religion or spiritual beliefs.	1	2	3	4
23. I try to get advice or help from other people about what to do.	1	2	3	4
24. I learn to live with it.	1	2	3	4
25. I think hard about what steps to take.	1	2	3	4
26. I blame myself for things that happened.	1	2	3	4
27. I pray or meditate.	1	2	3	4
28. I make fun of the situation.	1	2	3	4

#### SECTION 4: SOME DETAILS ABOUT YOU

Now some background information about you.

1. What is your sex? (please tick)

Male

Female

2. What is your age? (Please write in:) \_\_\_\_\_

3. What is your ethnic group?

1 Indian

7 Black — Caribbean

2 Pakistani

8 Black — other (please specify):  
\_\_\_\_\_

3 Chinese

9 Mixed race

4 Bangladeshi

10 White — UK or Irish

5 Asian — other (please specify):  
\_\_\_\_\_

11 White — other European

6 Black — African

12 White — other

4. Over the past year, which of the following best describes your typical drinking habits? (*One drink* is a single whisky, gin, or brandy, a glass of wine, sherry, or port, or a half pint of beer.)

1 Teetotal (no alcohol)

4 Regularly, 1 or 2 drinks a day

2 An occasional drink

5 Regularly, 3 to 6 drinks a day

- 3 Several drinks a week, but not every day
- 6 Regularly, more than 6 drinks a day
5. If you are not teetotal, has the quantity of alcohol consumed increased or decreased over the past year?
- 1 Increased substantially
- 2 Increased
- 3 Remained the same
- 4 Decreased
- 5 Decreased substantially
- 6 Stopped
- 7 I don't drink
6. Which of the following statements is most nearly true of you?
- 1 I have never smoked
- 2 I have given up smoking
- 3 I am currently smoking
7. If you are currently smoking, please circle the number that constitutes your average daily consumption of cigarettes.
- 1 0-5 a day
- 2 5-10 a day
- 3 10-15 a day
- 4 15-20 a day
- 5 20-30 a day
- 6 30-40 a day
- 7 40 plus a day
- 8 I don't smoke
8. If you are a smoker, has the quantity smoked increased or decreased over the past year?
- 1 Increased substantially
- 2 Increased
- 3 Remained the same
- 4 Decreased
- 5 Decreased substantially
- 6 Stopped
- 7 I don't smoke

**This is the end of the questionnaire. Thank you very much for your help. If there are any comments you would like to make, please write them below.**

**PLEASE RETURN THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED**

**STUDY 3**  
**COPING WITH STRESS AT WORK**

**SESSION 1**

This study aims to help employees' reflect on and cope with stressors at work, and to help enhance social support and the confidence in their own ability to deal with stressors.

The study is made up of 4 sessions over a 7 week period. Each session will take 5-15 minutes to complete. Email reminders will be sent out at the start of each session.

Session 1 (Week 1) – Questionnaire

Session 2 (Week 2) – Increasing Your Coping Ability and Gaining Support

Session 3 (Week 3) – Maintaining Successful Strategies

Session 4 (Week 7) – Follow-up Questionnaire

Before we get onto the exercises, we would like you to answer a few questions about you and how you are feeling at the moment. When answering the questions please choose the answer that you think mostly closely applies to you.

**Please enter a valid email address so that we can monitor your progress (this will be the only purpose that it will be used for).**

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**SECTION 1: SOME QUESTIONS ABOUT YOU AND YOUR JOB**

Now some background information about you.

1. What is your sex?
  - Male
  - Female
  
2. What is your age? \_\_\_\_\_
  
3. What is your ethnicity? \_\_\_\_\_
  
4. Are you employed (please click one)
  - Full-time
  - Part-time
  
5. What is your job grade (please click one)
  - Manual
  - Skill Non-Manual
  - Managerial
  - Professional/Senior Management

The following questions have been designed to assess how satisfied you are with your job.

For each question please click the number that you think most applies to you.

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. All in all I am satisfied with my job.	1	2	3	4	5
2. In general, I don't like my job.	1	2	3	4	5
3. In general, I like working here.	1	2	3	4	5

2. How concerned would you be if you had to take some other form of employment?
  - 1 Not at all concerned
  - 2 Not concerned
  - 3 Unsure
  - 4 Concerned
  - 5 Very concerned
  
3. How likely is it that you will actively look for a new job in the next year?
  - 1 Extremely likely
  - 2 Quite likely
  - 3 Unsure, maybe
  - 4 Quite unlikely
  - 5 Extremely unlikely
  
4. How often do you think about leaving your job?

- |   |                     |   |        |
|---|---------------------|---|--------|
| 1 | Nearly all the time | 4 | Rarely |
| 2 | Rather often        | 5 | Never  |
| 3 | Sometimes           |   |        |

The following statements have been designed to reflect the amount of demands you experience in your job. Please click the number that you think most applies to you.

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. My job requires very hard work.	1	2	3	4	5
2. My job requires very fast work.	1	2	3	4	5
3. My job requires excessive work.	1	2	3	4	5
4. My job involves conflicting demands.	1	2	3	4	5
5. My job involves not having enough time to get the job done.	1	2	3	4	5

The following statements have been designed to reflect the amount of control you experience in your job. Please click the number that you think most applies to you.

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. I have a choice in deciding how I do my job.	1	2	3	4	5
2. I have a choice in deciding what I do at work.	1	2	3	4	5
3. Others take decisions concerning my job.	1	2	3	4	5
4. I have a good deal of say in decisions about work.	1	2	3	4	5
5. I have a say in my own work speed.	1	2	3	4	5
6. My working time can be flexible.	1	2	3	4	5
7. I can decide when to take a break.	1	2	3	4	5
8. I have a say in choosing with whom I work.	1	2	3	4	5
9. I have a great deal of say in planning my own work environment.	1	2	3	4	5



Now we want to ask you some questions about support at work. This refers to overall levels of helpful social interaction available while doing the job from colleagues and line managers/supervisors. Please click the number that best reflects your feelings about support at work.

	Disagree Strongly	Disagree	Disagree Slightly	Neither	Agree Slightly	Agree	Agree Strongly
19. I get help and support from my colleagues.	1	2	3	4	5	6	7
20. My colleagues are willing to listen to my work-related problems.	1	2	3	4	5	6	7
21. I get help and support from my supervisor	1	2	3	4	5	6	7
22. My supervisor is willing to listen to my problems.	1	2	3	4	5	6	7
23. I get sufficient information from my supervisor.	1	2	3	4	5	6	7
24. I get consistent information from my supervisor.	1	2	3	4	5	6	7
25. I feel adequately supported by my colleagues.	1	2	3	4	5	6	7
26. I feel adequately supported by my supervisor.	1	2	3	4	5	6	7
27. Overall, I feel that I work in a supportive environment.	1	2	3	4	5	6	7

With respect to your own *feelings about the particular organisation for which you are now working* please indicate the degree of your agreement or disagreement with each statement by circling the number you think most applies to you.

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
1. I am willing to put in a great deal of effort beyond that normally expected in order to help this organisation be successful.	1	2	3	4	5
2. I talk up this organisation to my friends as a great organisation to work for.	1	2	3	4	5
3. I would accept almost any type of job assignment in order to keep working for this organisation.	1	2	3	4	5
4. I find that my values and the organisation's values are very similar.	1	2	3	4	5
5. I am proud to tell others that I am part of this organisation.	1	2	3	4	5
6. This organisation really inspires the very best in me in the way of job performance.	1	2	3	4	5
7. I am extremely glad that I chose this organisation to work for, over others I was considering at the time I joined.	1	2	3	4	5
8. I really care about the fate of this organisation.	1	2	3	4	5

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
9. For me this is the best of all possible organisations for which to work.	1	2	3	4	5

Please indicate the extent to which you AGREE or DISAGREE with each of the following statements by circling the number you think most applies to you.

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
1. The most important things that happen to me involve my present job.	1	2	3	4	5
2. To me, my job is only a small part of who I am.	1	2	3	4	5
3. I am very much involved personally in my job.	1	2	3	4	5
4. I live, eat, and breathe my job.	1	2	3	4	5
5. Most of my interests are centred around my job.	1	2	3	4	5
6. I have very strong ties with my present job which would be very difficult to break.	1	2	3	4	5
7. Usually I feel detached from my job.	1	2	3	4	5
8. Most of my personal life goals are job-oriented.	1	2	3	4	5
9. I consider my job to be very central to my existence.	1	2	3	4	5
10. I like to be absorbed in my job most of the time.	1	2	3	4	5

Please indicate the extent to which you AGREE or DISAGREE with each of the following statements by circling the number you think most applies to you.

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
1. My work keeps me from my family activities more than I would like.	1	2	3	4	5
2. The time I must devote to my job keeps me from participating equally in household responsibilities and activities.	1	2	3	4	5
3. I have to miss family activities due to the amount of time I must spend on work responsibilities.	1	2	3	4	5
4. When I get home from work I am often too frazzled to participate in family activities/responsibilities.	1	2	3	4	5
5. I am often so emotionally drained when I get home from work that it prevents me from contributing to my family.	1	2	3	4	5

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
6. Due to all the pressures at work, sometimes when I come home I am too stressed to do the things I enjoy.	1	2	3	4	5

**SECTION 2: HEALTH**

	Very poor	Poor	Good	Very Good	Great
43. How would you describe your health?	1	2	3	4	5

4. How many days have you had off work for illness in the last 2 months?

(Please estimate:) \_\_\_\_\_

The questions below refer to your feelings and emotions. Please read each statement and then click the number that best reflects your response at the moment.

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. After an embarrassing experience I worry about it for days.	1	2	3	4	5
44. I know that things will continually improve in my life.	1	2	3	4	5
45. I feel that I have a great deal to be proud of.	1	2	3	4	5
46. I often feel restless and jittery for no apparent reason.	1	2	3	4	5
47. Things rarely work out the way I want them to.	1	2	3	4	5
48. I am not as well liked as most other people.	1	2	3	4	5
49. Every day seems exciting, new, and different.	1	2	3	4	5
50. My feelings are more easily hurt than most other people's.	1	2	3	4	5
51. I can easily concentrate on things for as long as I like.	1	2	3	4	5
52. Whenever someone criticises me I think about it for days.	1	2	3	4	5
53. I am hopeful and optimistic about the future.	1	2	3	4	5
54. When things go wrong I blame myself.	1	2	3	4	5
55. I rarely lose sleep over worrying about something.	1	2	3	4	5
56. I am a person of worth, at least as good as other people.	1	2	3	4	5
57. I always expect the worst to happen.	1	2	3	4	5
58. I am more content and happy than most other people.	1	2	3	4	5

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
59. Happy endings only occur in films and in fairy tales.	1	2	3	4	5
60. I am not as self-confident as most other people.	1	2	3	4	5
61. When I meet people for the first time I am tense and uptight.	1	2	3	4	5
62. If I could live my life again I would do many things differently.	1	2	3	4	5
63. The future seems rather bleak and unpromising.	1	2	3	4	5

Please read each item and click the number that comes closest to how you have been feeling in general in the past 2 months.

	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. I feel tense or 'wound up'.	1	2	3	4	5
2. I still enjoy the things I used to enjoy.	1	2	3	4	5
3. I get a sort of frightened feeling as if something awful is about to happen.	1	2	3	4	5
4. I can laugh and see the funny side of things.	1	2	3	4	5
5. Worrying thoughts go through my mind.	1	2	3	4	5
6. I feel cheerful.	1	2	3	4	5
7. I can sit at ease and feel relaxed.	1	2	3	4	5
8. I feel as if I am slowed down.	1	2	3	4	5
9. I get a sort of frightened feeling like 'butterflies' in the stomach.	1	2	3	4	5
10. I have lost interest in my appearance.	1	2	3	4	5
11. I feel restless as if I have to be on the move.	1	2	3	4	5
12. I look forward with enjoyment to things.	1	2	3	4	5
13. I get sudden feelings of panic.	1	2	3	4	5
14. I can enjoy a good book or radio or TV programme.	1	2	3	4	5

Now we want to ask you some questions about health symptoms that you have experienced in the past 2 months. Please click the number that best reflects how often you have experienced the following health symptoms during the past 2 months.

	Never				Often
1. Sleep problems (can't fall asleep, wake up in middle of night or early in morning).	1	2	3	4	5
2. Weight change (gain or loss of 5lbs or more).	1	2	3	4	5
3. Back pain.	1	2	3	4	5
4. Constipation.	1	2	3	4	5
5. Dizziness.	1	2	3	4	5
6. Diarrhoea.	1	2	3	4	5
7. Faintness.	1	2	3	4	5
8. Constant fatigue.	1	2	3	4	5
9. Headache.	1	2	3	4	5
10. Migraine headache.	1	2	3	4	5
11. Nausea and/or vomiting.	1	2	3	4	5
12. Acid stomach or indigestion.	1	2	3	4	5
13. Stomach pain (e.g. cramps).	1	2	3	4	5
14. Hot or cold spells.	1	2	3	4	5
15. Hands trembling.	1	2	3	4	5
16. Heart pounding or racing.	1	2	3	4	5
17. Poor appetite.	1	2	3	4	5
18. Shortness of breath when not exercising or working hard.	1	2	3	4	5
19. Numbness or tingling in parts of your body.	1	2	3	4	5
20. Felt weak all over.	1	2	3	4	5
21. Pains in heart or chest.	1	2	3	4	5
22. Feeling low in energy.	1	2	3	4	5
23. Stuffy head or nose.	1	2	3	4	5
24. Blurred vision.	1	2	3	4	5
25. Muscle tension or soreness.	1	2	3	4	5
26. Muscle cramps.	1	2	3	4	5
27. Severe aches and pains.	1	2	3	4	5
28. Acne.	1	2	3	4	5
29. Bruises.	1	2	3	4	5
30. Nosebleed.	1	2	3	4	5
31. Pulled (strained) muscles.	1	2	3	4	5
32. Pulled (strained) ligaments.	1	2	3	4	5
33. Cold or cough.	1	2	3	4	5

**SECTION 3: PERSONAL RESOURCES**

The following questions refer to your personal resources.

For each of the following statements, please click the number that best reflects your response as you see yourself today.

Regarding my work...	Disagree Strongly	Disagree	Disagree Slightly	Neither	Agree Slightly	Agree	Agree Strongly
21. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4	5	6	7
22. If someone opposes me, I can find ways and means to get what I want.	1	2	3	4	5	6	7
23. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4	5	6	7
24. I am confident that I could deal efficiently with unexpected events.	1	2	3	4	5	6	7
25. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4	5	6	7
26. I can solve most problems if I invest the necessary effort.	1	2	3	4	5	6	7
27. I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4	5	6	7
28. When I am confronted with a problem, I can usually find several solutions.	1	2	3	4	5	6	7
29. If I am in a bind, I can usually think of something to do.	1	2	3	4	5	6	7
30. No matter what comes my way, I'm usually able to handle it.	1	2	3	4	5	6	7

These items ask how you typically cope with stress at work at present. Obviously, different people deal with things in different ways. We want to know to what extent you've been doing what each item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

When I experience stress at work...	Disagree Strongly	Disagree	Neither	Agree	Agree Strongly
1. I turn to other activities to take my mind off things.	1	2	3	4	5
2. I concentrate my efforts on doing something about the situation I'm in.	1	2	3	4	5
3. I say to myself "this isn't real."	1	2	3	4	5
4. I use alcohol or other drugs to make myself feel better.	1	2	3	4	5

<b>When I experience stress at work...</b>	<b>Disagree Strongly</b>	<b>Disagree</b>	<b>Neither</b>	<b>Agree</b>	<b>Agree Strongly</b>
5. I get emotional support from others.	1	2	3	4	5
6. I give up trying to deal with it.	1	2	3	4	5
7. I take action to try to make the situation better.	1	2	3	4	5
8. I refuse to believe that it has happened.	1	2	3	4	5
9. I say things to let my unpleasant feelings escape.	1	2	3	4	5
10. I get help and advice from other people.	1	2	3	4	5
11. I use alcohol or other drugs to help me get through it.	1	2	3	4	5
12. I try to see it in a different light, to make it seem more positive.	1	2	3	4	5
13. I criticize myself.	1	2	3	4	5
14. I try to come up with a strategy about what to do.	1	2	3	4	5
15. I get comfort and understanding from someone.	1	2	3	4	5
16. I give up the attempt to cope.	1	2	3	4	5
17. I look for something good in what is happening.	1	2	3	4	5
18. I make jokes about it.	1	2	3	4	5
19. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4	5
20. I accept the reality of the fact that it has happened.	1	2	3	4	5
21. I express my negative feelings.	1	2	3	4	5
22. I try to find comfort in my religion or spiritual beliefs.	1	2	3	4	5
23. I try to get advice or help from other people about what to do.	1	2	3	4	5
24. I learn to live with it.	1	2	3	4	5
25. I think hard about what steps to take.	1	2	3	4	5
26. I blame myself for things that happened.	1	2	3	4	5
27. I pray or meditate.	1	2	3	4	5
28. I make fun of the situation.	1	2	3	4	5

**SECTION 4: ALCOHOL AND SMOKING**

4. If you are not teetotal, has the quantity of alcohol consumed increased or decreased over the past year?
- |                           |                           |
|---------------------------|---------------------------|
| 1 Increased substantially | 5 Decreased substantially |
| 2 Increased               | 6 Stopped                 |
| 3 Remained the same       | 7 I don't drink           |
| 4 Decreased               |                           |
5. Which of the following statements is most nearly true of you?
- |                           |                          |
|---------------------------|--------------------------|
| 1 I have never smoked     | 3 I am currently smoking |
| 2 I have given up smoking |                          |
6. If you are currently smoking, please choose the number that constitutes your average daily consumption of cigarettes.
- |               |                 |
|---------------|-----------------|
| 1 0-5 a day   | 5 20-30 a day   |
| 2 5-10 a day  | 6 30-40 a day   |
| 3 10-15 a day | 7 40 plus a day |
| 4 15-20 a day | 8 I don't smoke |
7. If you are a smoker, has the quantity smoked increased or decreased over the past year?
- |                           |                           |
|---------------------------|---------------------------|
| 1 Increased substantially | 5 Decreased substantially |
| 2 Increased               | 6 Stopped                 |
| 3 Remained the same       | 7 I don't smoke           |
| 4 Decreased               |                           |

Thank you for your time today. Next week's session will be shorter and is intended for you to put into practice ways of gaining more support to help cope with work stressors.

**T2 EXERCISES****SESSION 2****Increasing Your Coping Ability and Gaining Support**

This session focuses on getting you to think about how you have seen others coping successfully, and how you have coped successfully with work stressors in the past.



This session is also intended for you to put into practice ways of gaining more support to help cope with work stressors.

#### *Observing How Other's Cope with Stress*

In observing the behaviour of people who are similar to us, we are able to model the behaviours we perceive as successful and relate it to our own situations. Taking this into account answer the following questions and please provide the email address you used in the last session.

Email address: \_\_\_\_\_

Think back to when you know of someone successfully coping with a stressor at work.

Describe the situation briefly:

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What do you think their successful approaches were?

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#### *Remembering Your Past Behaviours*

It is also important to remember your past successes and to relate these to your current situation. The more you have been successful in the past, the more you gain experience of yourself as successful. If you successfully coped with work stressors in the past you have the capability of doing the same in the future. Your previous achievements will remind you that you can overcome obstacles to success. Essentially, you are applying the strengths discovered through past successes to your goals.

Think of a past situation in your life where you **successfully** coped with a stressor at work.

Describe the situation briefly:

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What do you think the reason for your success was?

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Now think of a current problem at work that you would like to cope with better and describe the problem briefly:

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What do you think the most effective way to cope with the problem is?

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### Perceived Support and Reflection of Work Stressors

Social Support has been found to be a key factor in protecting against the negative effects of stress in the workplace. For instance, research has found that both the amount (e.g., frequency of contact with members from support network) and the type of social support (e.g., emotional support) from co-workers and supervisors to be associated with more positive well-being at work. The following information and exercises were designed to help increase the size and quality of an employee's support network at work.

#### Main Types of Support

In order for you to think about whether you receive appropriate types of support, 3 main types of support are briefly described below.

*Emotional support* involves the availability of individuals who can listen sympathetically when someone is having problems and can provide indications of caring and acceptance.

*Instrumental support* involves the provision of tangible aid and services that directly assist a person in need. This might include sharing the burden of tasks, or providing goods, services or financial aid.

*Informational support* involves the provision of advice, suggestions, and information that a person can use to address problems. It may also involve suggesting where (or how) individuals can obtain further advice.

*Seeking Support*

The following questions are meant to get you thinking about possible sources of support you could obtain from people at work to help you cope more effectively with work stressors.

Think about the times when you felt well supported. Were there specific people who helped more than once? If so, write only their first names, or initials.

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If you are not connected with them anymore, would you like to reconnect with them? If so, when and how could you do it?

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Think of a current stressor at work that you would like help with and describe the stressor briefly:

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Write the first names or initials of the people who might help you with this stressor?

- Consider people who have usually been supportive in the past:

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- Consider people who usually have not been supportive in the past but who might become supportive when they see your effort:

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What might they do to give you the support you would like?

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How can you get this support from them?

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Please click on the link below and print off the assignment. Do as little or as much as you feel you need to. The purpose of the next (much shorter) session is to concentrate on successful strategies that you have used when coping with work stress since this study started, and to maintain those successful strategies in the future.

## T2 ASSIGNMENT

### Work Stress Support Plan – PLEASE PRINT AND KEEP FOR YOURSELF

This log is meant as a plan for you to gain more support from co-workers and supervisors with work-stressors. Do as much or as little as you feel you need to. In the next session you will briefly review what you wrote down.

Note down any work stressors that you think you can cope more effectively with, and expect to experience this week. Try to think of who would be most appropriate and willing to offer the type of support you require to cope more effectively with the work-stressor.

Work Stressor	Whom can you contact?	When will you contact them?	What support will you request?	How did the support you received help you cope with the stressor?
Stressor 1				
Stressor 2				
Stressor 3				

**T3 EXERCISES****SESSION 3**

## Maintaining Successful Strategies

Last week's session got you thinking of how you can cope with work stress more successfully, and in gaining support from others. The purpose of this session is to concentrate on successful strategies that you have used when coping with work stress since this study started, and to maintain those successful strategies in the future.

## Review of Last Week's Assignment

Before you start this week's exercises please answer the following questions on the assignment you were given last week and type in the same email address you used.

Email address: \_\_\_\_\_

How many work stressors did you complete in this assignment?	0	1	2	3	4	5
How many people did you ask for support?	0	1	2	3	4	5
How many people gave you support?	0	1	2	3	4	5

### Successful Strategies

When answering the following questions please think about your successful experiences since you started this study.

What strategy did you find the most successful when coping with work stress?

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What method did you find the most successful in gaining support from others?

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Report any positive changes in your behaviour as a result of this study

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Identify at least 1 strategy that you plan to continue to cope with work stress after this week.

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How would you know that you were coping successfully with a work stressor?

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There will be a final session in 4 weeks time to see how you are doing at maintaining your successful strategies. Until then, there are no specific exercises for you to print off and carry out, but we do ask you to try and maintain any successful strategies that you have used to cope with work stressors since you first started this study.

## STRESS IN THE WORKPLACE

### Debriefing

The present study investigated if an employee's confidence in their ability to cope (self-efficacy) and the social support they receive from work could be increased over time, in order to protect better against the negative effects of work stress.

Studies predict that the negative effects of work stress should be highest when combined with high levels of job demands and low levels of work control. Studies also suggest that social support help protect the individual against the harmful effects of stress (e.g., by helping the person to redefine the problem, providing a solution to it). Thus, jobs with high demands, low control and low support from co-workers or supervisors are thought to bear the highest health risks (i.e. job dissatisfaction, burnout, depression, and psychosomatic symptoms).

Self-efficacy is also very influential to the stress-health relationship as it involves an individual's use of his or her personal resources. Self-efficacy is thought to be built up through the successful experiences of an individual's past ability to cope with a particular situation. This in turn, is thought to lead to the employment of suitable coping strategies.

Thank you very much for your participation in this study and for your help to further our understanding of the role of self-efficacy and social support in protecting against work stress.

**NB. Please make a printout of this page to keep for your records.**

If you have any queries at all about this survey, please contact

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or

Dr Joachim Stoeber Tel: 01227-824196, email: [J.Stoeber@kent.ac.uk](mailto:J.Stoeber@kent.ac.uk)

at the Department of Psychology, Keynes College, University of Kent at Canterbury, CT2  
7NP.

If you have any serious concerns about the ethical conduct of this study, please inform the Chair of the Psychology Research Ethics Panel (via the Psychology Department Office) in writing, providing a detailed account of your concerns.