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**THE EFFECTS OF PERCEIVED CONTROL ON THE
OUTCOMES OF WORKPLACE AGGRESSION AND VIOLENCE**

A Thesis

Presented to

The Faculty of Graduate Studies

of

The University of Guelph

by

AARON C. H. SCHAT

In partial fulfilment of requirements

for the degree of

Master of Arts

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ABSTRACT

THE EFFECTS OF PERCEIVED CONTROL ON THE OUTCOMES OF WORKPLACE AGGRESSION AND VIOLENCE

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This study examined the role of perceived control in ameliorating the negative outcomes associated with the experience of violence at work, using two large samples comprised of hospital ($N = 187$) and group home staff ($N = 195$). Exploratory and confirmatory factor analyses of the measure of perceived control developed for the study converged in suggesting a three-factor structure consisting of understanding, prediction and influence. Results of a series of moderated regression analyses suggested that perceived control did not moderate the relationships between violence and fear, or between fear and emotional well-being, psychosomatic health or neglect. However, perceived control did have a direct effect on emotional well-being and indirect effects on psychosomatic health and neglect. In addition, training that targets workplace violence was found to enhance employees' perceptions of control. The implications of these findings for practice and research are discussed.

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THE EFFECTS OF PERCEIVED CONTROL ON THE OUTCOMES OF WORKPLACE AGGRESSION AND VIOLENCE

Violence is becoming an increasingly prevalent phenomenon in North American workplaces. A 1989 survey conducted by the National Institute for Occupational Safety and Health (NIOSH; 1993) found that in the United States, homicide was the third leading cause of job-related death. By 1993, it had become the second leading cause (Bureau of Labor Statistics, 1995). Non-fatal violence and aggression, although less severe, appear to be even more widespread. A survey by Northwestern National Life Insurance Company (1993) found that between 1992 and 1993, one in four full-time, American workers was harassed, threatened or attacked on the job. And this phenomenon is not limited to the United States. For example, in 1992, four people were murdered at Montreal's Concordia University by a frustrated faculty member ("Montreal University," 1992). In addition, recent research examining Workers' Compensation Board claims in British Columbia found the incidence of workplace violence to be increasing, particularly in the health care field (Boyd, 1995).

Despite the increasing prevalence of workplace violence, very little systematic research has been carried out to investigate the phenomenon. Much of what has been written about the topic is anecdotal and speculative; very few studies have examined the personal and organizational outcomes of experiencing violence at work (Leather, Cox, & Farnsworth, 1990). Several recent studies have been done (Barling, Rogers, & Kelloway, 1999; Rogers & Kelloway, 1997); however, more research examining the experience and impact of workplace violence is necessary. The present study aims to address this issue,

and in particular, seeks to examine whether perceived control reduces the fear and other negative outcomes that are associated with exposure to violence.

Considering Workplace Violence within the Work Stress Framework

Consistent with the approach suggested by Barling (1996) and used by Rogers and Kelloway (1997), I will apply the traditional work stress framework (Pratt & Barling, 1988) to the present study of workplace violence. According to this framework, a distinction is made between stressors, stress and strain: stressors refer to objective environmental characteristics or events, stress reflects an individual's subjective experience of these characteristics or events, and strain refers to the outcome(s) of stress (Pratt & Barling, 1988). In accordance with this framework, violent or aggressive events on the job are stressors, the fear of future violence experienced by the individual represents stress, and negative personal and organizational outcomes reflect strain.

Stressor—Workplace Violence and Aggression

Workplace violence is a complex phenomenon. Examination of the literature illustrates a variety of behaviours that have been considered under the rubric of workplace violence. For example, Kraus, Blander, and McArthur (1995) considered only direct physical assaults in their review of archival data, while others have included threats of assault (e.g., Jenkins, 1996). Folger and Baron (1996) further broaden the definition by including non-physical acts of aggression (e.g., yelling). Clearly, workplace violence is a complex phenomenon, and broadly defined, may comprise a variety of 'mistreatment' behaviours.

The current study will include measures of direct physical violence, threats of violence, non-physical aggression and vicarious violence. Non-physical (i.e.,

psychological) aggression will be included because its incidence in the workplace is higher than that of physical violence (Greenberg & Barling, 1995, as cited in Barling, 1996). In addition, research on family violence indicates that psychological aggression often precedes physical aggression (Murphy & O'Leary, 1989). Therefore, as suggested by Barling (1996), psychologically aggressive behaviours will be included in the measure of workplace violence used in the present study.

Research on disasters and other serious trauma has found that their impact is not only felt by primary victims. In fact, secondary victims—those who witness or hear about the events—also exhibit stress and strain reactions (Taylor, 1989). Because similar findings have been noted in research on workplace violence (Northwestern National Life Insurance Company, 1993; Rogers & Kelloway, 1997), a measure of vicarious violence will also be included in the present study.

Stress—Fear

In the present study, fear represents the subjective experience of workplace violence, and is therefore hypothesized to be its primary direct consequence (Cox & Leather, 1994). Related to this, it is expected that both direct and indirect exposure to violence will result in fear. It is further hypothesized that fear will mediate the effects of workplace violence on personal and organizational outcomes (Barling, 1996).

Evidence supporting these predictions comes from a number of studies. First, Duffy and McGoldrick (1990) found that fear of being assaulted on the job was a major source of job stress for bus drivers. Second, a study of corrections officers by Hall and Spector (1991) demonstrated a strong association between perceived danger and anxiety and illness symptoms. Other research has also shown that fear of workplace violence is

strongly associated with mental and physical distress, turnover intentions and reduced productivity (Budd, Arvey & Lawless, 1996; Northwestern National Life Insurance Company survey; 1993). Support for the proposed hypotheses has been even more clearly demonstrated by Rogers & Kelloway (1997), who found that both direct and vicarious exposure to workplace violence predicted employees' fear of future violence, which in turn predicted their emotional and psychological well-being, as well as their intentions to leave the organization. In accordance with the above findings, it is hypothesized that in the current study, fear will mediate the effects of both direct and vicarious workplace violence on negative personal and organizational outcomes.

Strain—Personal Outcomes

Consistent with the research on post-traumatic stress reactions and workplace violence, it is hypothesized that fear of future violence will predict reduced emotional and psychosomatic well-being. Data on those who have experienced violence at work (Budd et al., 1996; Rogers & Kelloway, 1997) and other trauma (Braverman, 1992) indicate that both physiological (e.g., gastrointestinal problems, headaches and sleep disturbance) and emotional (e.g., anxiety, depression) symptoms result. Because psychological functioning has been shown to have physical manifestations (Rogers & Kelloway, 1997), a direct effect of emotional well-being on psychosomatic well-being is also hypothesized.

Strain—Organizational Outcomes

In addition to its impact on emotional and psychosomatic well-being, fear associated with workplace violence can also be manifested at the organizational level. Studies have suggested that fear of future violence leads to turnover intentions (Budd et al., 1996; Rogers & Kelloway, 1997) and productivity decreases (Budd et al., 1996).

Research has also found fear to be associated with lower affective commitment (Barling et al., 1999), although this was not found by Rogers and Kelloway (1997). Decreased job satisfaction has also been exhibited by victims of violence (Budd et al., 1996; Williams, 1996), but the mediating role of fear was not directly assessed in these studies, so it cannot be clearly determined whether job satisfaction is a direct or indirect outcome of workplace violence. Finally, Barling et al. (1999), found that fear of workplace violence and sexual harassment predicted neglect, decreased interpersonal job performance ratings and perceptions of injustice (Barling et al., 1999). It is difficult, however, to ascertain whether the outcomes in this study can be uniquely attributed to either sexual harassment or violence, or whether the outcomes are similar for both.

In the current study, it is posited that fear of future violence will predict neglect. Neglect is a form of job withdrawal that is conceptually related to variables such as absenteeism and turnover, and involves employees exerting less effort while they are at work. This is represented by behaviours such as arriving to work late and taking extended lunch breaks. Research by Withey and Cooper (1989) has found that employees who are dissatisfied with their job conditions tend to exhibit more neglect than those who are satisfied, although employees in the study responded to their dissatisfaction in other ways as well (e.g., leaving the organization). Similarly, Rogers and Kelloway (1997) and Budd et al. (1996) found that fear of future violence was associated with intentions to leave the organization. Only one study has examined whether employees who have been exposed to violence exhibit neglect; however, the measure used was a combined measure of violence and sexual harassment. Specifically, Barling et al. (1999) found that the effects of violence and sexual harassment on neglect

were mediated through fear of future violence and sexual harassment. The present study seeks to elucidate these findings by removing the potential influence of sexual harassment and considering only the effects of violence. In accordance with prior research, however, it is predicted that neglect will be affected by workplace violence indirectly, through fear of future violence and emotional well-being.

Perceived Control

Research on stress has shown that different reactions to objectively similar stressors vary from one person to the next. For example, being yelled at by a supervisor may be perceived as stressful by one individual but have little impact on another, suggesting that other factors besides the objective stressor(s) influence whether or not stress or strain will result. This is the basis of Lazarus and Folkman's (1984) transactional stress model, which incorporates two stages of cognitive appraisal into the process of stress and coping. The first stage, primary appraisal, involves an individual deciding whether an event is positive, negative or irrelevant. If the event is deemed negative, the individual must decide whether he or she can do anything about it. This represents the second stage, called secondary appraisal. If the individual feels that something can be done about the situation, it will not result in the experience of stress or strain. If, however, secondary appraisal leads the individual to feel that little can be done to deal with the event, it will be perceived as stressful and adversely affect his or her functioning.

In the transactional stress model, factors which influence the appraisal process are considered moderators, because they interact with an objective stressor (e.g., a violent event at work) to influence whether or not the event is perceived as stressful, and, in turn,

whether or not perceived stress results in adverse consequences. Previous research has provided some evidence for the moderating role of factors such as internal locus of control (Krause & Stryker, 1984; Storms & Spector, 1987) and high self-esteem (Moos & Billings, 1982). However, to date, little research has directly examined whether there are personal or organizational factors that moderate the affects of workplace violence. The one exception is a study by Rogers (1994), which found that workplace support did not moderate the relationship between workplace violence and fear.

The present study will expand on prior research by examining the direct, indirect and interactive effects of three dimensions of perceived control—prediction, understanding and influence—on stress and strain. Sutton and Kahn (1987) first proposed these three variables as antidotes to organizational stress. Citing research about the lack of predictability contributing to adverse effects of role ambiguity (e.g. Beehr, 1976), Sutton and Kahn (1987) suggest that prediction—“the ability to forecast the frequency, timing, duration, and quality of events in one’s environment” (p. 274)—should buffer the negative effects associated with those events. With respect to the current study, this would involve the ability to predict the timing, duration and nature of the violent or aggressive events at work.

Sutton and Kahn (1987) also suggest that understanding, defined as “knowledge about the causes of significant events in the workplace” (p. 275), should have a similar effect, which, if applied to workplace violence, would involve individuals knowing and appreciating the personal and situational characteristics underlying the violent or aggressive acts.

Finally, the authors argue that control (called influence in the current study) should also act as a buffer against the usual sequelae of stressors and stress. Referring to Seligman's (1968) research on learned helplessness, Sutton and Kahn (1987) suggest that control, the opposite of helplessness, should offset the negative outcomes associated with helplessness. According to their definition, control refers to "the exercise of effective influence over events, things, and persons" (Sutton & Kahn, 1987, p. 276). Applied to the current study, it would consist of the ability to take action against the perpetrator of the violence or influence the violent situation in some other manner.

Prior research has examined the effects of control on work-related stress and strain. Much of this research stems from Karasek's (1979) job demands—job control model, which suggests that job decision latitude helps to offset the negative effects of job demands on employee well-being. Results of this research provide support for the direct, indirect and moderating effects of control on employee functioning.

A recent review of the literature on control conducted by Terry and Jimmieson (1999) found that research employing Karasek's (1979) measure of job decision latitude and other more specific measures of work control has demonstrated that high levels of control are directly associated with a wide range of positive outcomes, including decreased anxiety and depression (e.g., Carayon, 1993; Mullarkey, Jackson, Wall, Wilson, & Grey-Taylor, 1997), burnout (e.g., Melamed, Kushnir, & Meir, 1991), psychosomatic health complaints (e.g., Carayon, 1993; Fox, Dwyer & Ganster, 1993), job satisfaction (e.g., Tetrick & LaRocco, 1987), and job performance (e.g., Greenberger, Strasser, Cummings & Dunham, 1989).

Although there is much theoretical support for the indirect effects of work control, relatively little research has been done in this area. In developing a theoretical model of the effects of control, Sutton and Kahn (1987) posited that perceived stress would mediate the effects of control on outcomes such as employee adjustment. Support for this has been demonstrated by Jimmieson and Terry (1993), who employed measures of control similar to those used in the present study. In their study of employees in a retail organization, decision control, understanding and prediction affected psychological well-being, depersonalization and job satisfaction through perceptions of work stress. The current study relates measures of understanding, prediction and influence to workplace violence, and tests whether their effects on employee well-being are fully or partially mediated by fear of future workplace violence.

Support for the interactive effects of work control on various outcome variables has been mixed (See Terry & Jimmieson, 1999, for a review). For example, Tetrick and LaRocco (1987) found that understanding and control (similar to the influence construct employed in the present study) moderated the relationship between perceived stress and job satisfaction; however, the relationships between perceived stress and psychological well-being and between satisfaction and well-being were not moderated by prediction, understanding or control. Similarly inconsistent results were noted by Jimmieson and Terry (1993). While there was some evidence of the interactive effects of task control and a composite measure of prediction and understanding in their study, several other hypothesized interactions did not emerge.

It has been suggested that for moderation to occur, the proposed moderator variables must be situationally relevant (Cohen & Wills, 1985; Tetrick & LaRocco,

1987). With respect to bivariate relationships, the principle of relevancy suggests that the association between an independent and dependent variable will be strongest when both are measured along similar dimensions. Extending this, Tetrick & LaRocco (1987) suggest that moderator variables are most likely to influence a relationship when they are conceptually relevant to the independent and dependent variables they are proposed to moderate. The authors attribute the moderating impact of understanding and control on the relationship between perceived stress and satisfaction to this, suggesting that understanding and control both pertain to events at work and are thus likely to moderate relationships involving job-related characteristics and attitudes such as job satisfaction.

In the present study, three dimensions of control—prediction, understanding and influence—are hypothesized to exert direct effects on perceptions of stress (i.e., fear) and both direct and indirect effects on strain (i.e., emotional well-being, psychosomatic well-being and neglect). In addition, the three dimensions of control are predicted to moderate the relationships between workplace violence and fear, and between fear and both personal and organizational outcomes. In accordance with the principle of relevancy suggested above, all three of these factors are conceptually related to the experience and fear of workplace violence as well as to emotional and psychosomatic well-being.

There are a number of reasons that the three facets of control being investigated are posited to affect the stress and strain associated with workplace violence. First, the predictability of violence at work is likely to reduce fear of violence. Research on fear of crime has shown that people's fear is largely influenced by perceived vulnerability to criminal acts (Killias, 1990). According to this view, vulnerability is characterized by a

diffuse perception of risk, which is likely to be reduced to the extent that the timing and nature of violent events at work can be predicted.

Second, the ability to understand why a violent event is being perpetrated should also have an effect on people's fear, well-being and organizational functioning. This is particularly expected in situations where contextual factors, or characteristics of the perpetrators of violence are intuitively associated with the risk of violence. For example, health care workers often interact with individuals experiencing physical and/or psychological difficulties. Any violent acts perpetrated by these individuals could be attributed to these problems, which would foster a better understanding of why the violence is occurring.

Finally, it is hypothesized that individuals who believe they can influence a violent situation would exhibit less fear and greater emotional and psychosomatic well-being. Evidence for the efficacy of perceived influence in reducing strain has been found in research on other types of work stressors (Barling & Kelloway, 1996; Spector, 1987; Tetrick & LaRocco, 1987). The current study, in which the stressor of interest is workplace violence, aims to replicate this pattern of results.

Current Study

As outlined above, previous research has found that workplace violence is associated with a number of negative personal and organizational consequences. The current study extended the research on workplace violence by considering the effects of perceived control on these outcomes. For the study, a tripartite measure of control was developed. The three hypothesized dimensions of control—understanding, prediction and influence—reflected the three conceptually related constructs that were proposed as

organizational stress antidotes by Sutton and Kahn (1987). The factor structure of the measure was tested using both exploratory and confirmatory factor analyses in order to assess the degree to which the items reflected the hypothesized three-dimensional nature of control.

Once the measurement properties and dimensionality of the control scale were established, the impact of perceived control on the stress and strain associated with workplace violence was examined. In particular, it was hypothesized that perceived control would exert direct effects on fear of future violence and both direct and indirect effects on emotional well-being (see Figure 1). In addition, it was hypothesized that control would moderate the relationships between violence and fear, and between fear and emotional and psychosomatic well-being and neglect (see Figure 2). There is strong theoretical justification for the hypothesized effects of control; however, until now, they have not been examined in the context of workplace violence. The current study, therefore, sought to fill this void. This is particularly important because it moves the research on workplace violence towards considering potential areas of intervention. For example, if control is found to ameliorate the negative consequences of workplace violence, strategies could be developed which aim to enhance employees' perceptions of control. This would be especially important in organizations where primary prevention efforts have failed or are infeasible.

Another goal of the current study was to assess the generalizability of Rogers and Kelloway's (1997) findings. In their study of workplace violence experienced by bank employees, they found that the effects of violence were mediated through fear of future violence. The degree to which these results generalize to occupational groups other than

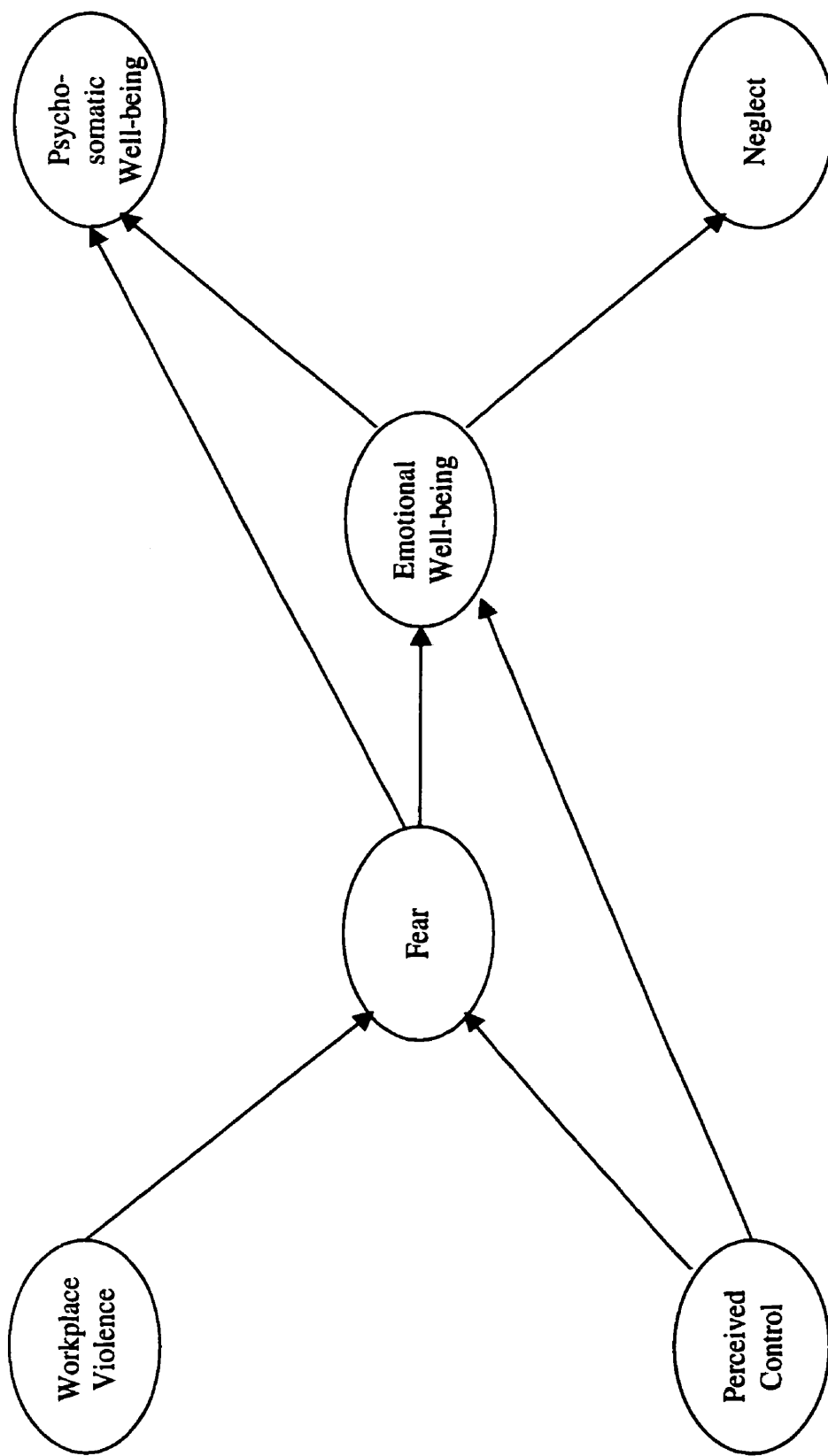


Figure 1. Hypothesized Model of the Effects of Workplace Violence and Perceived Control on Personal and Organizational Outcomes

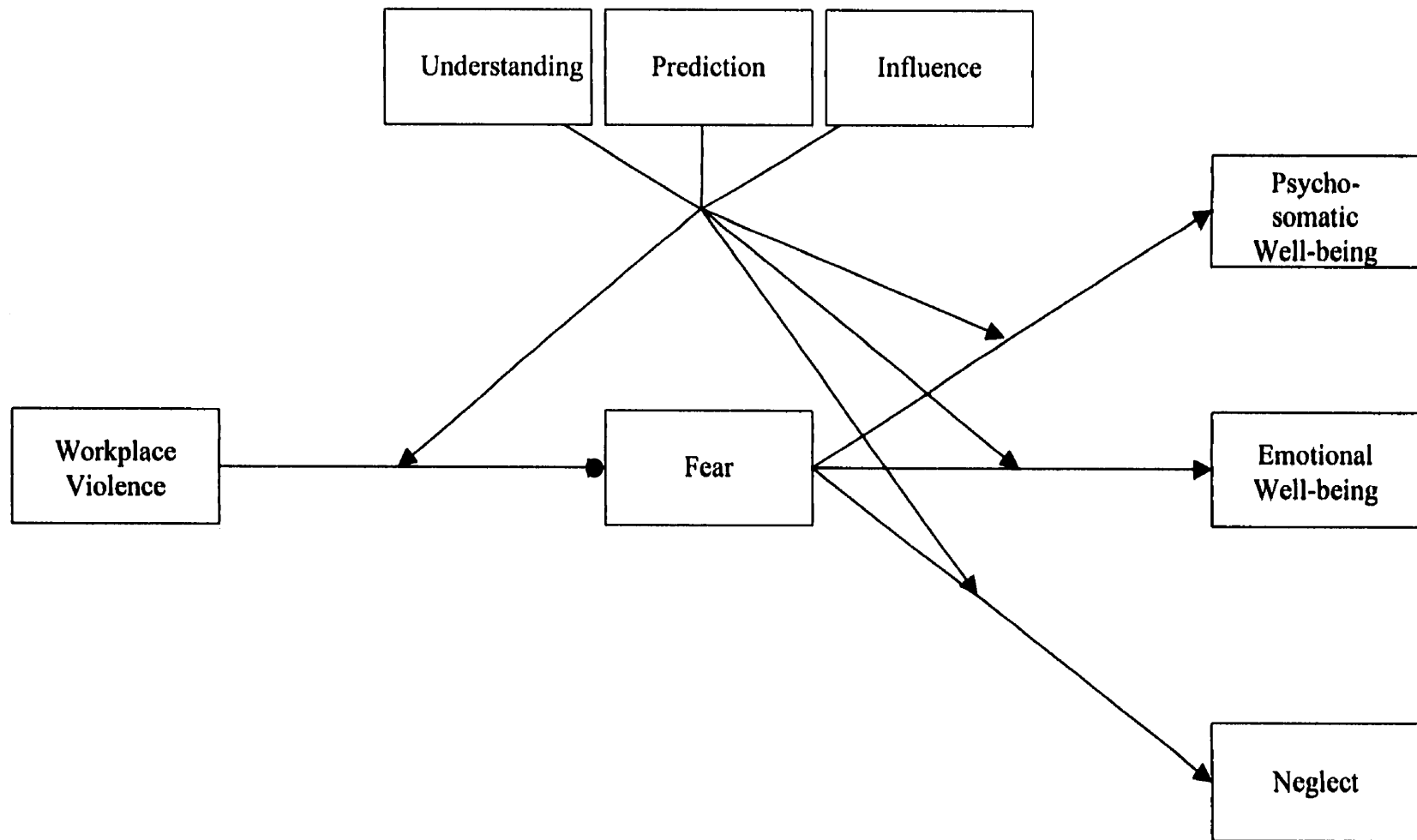


Figure 2. Hypothesized Model of the Moderating Role of the Three Dimensions of Control between Workplace Violence and Fear, and between Fear and Personal and Organizational Outcomes

bank employees will be examined in the present study. In particular, their mediational model will be tested on data obtained from both hospital and group home employees.

A further contribution of the current study is its assessment of the effectiveness of a training program that targets workplace violence. In particular, I examined whether a training intervention helps to increase employees' control perceptions. Although prior research has demonstrated the efficacy of stress debriefings following a violent incident (Manton & Talbot, 1990), there has not been any research examining whether training can enhance employees' ability to cope with violence at work. A goal of the current study was to fill this gap in the literature by comparing the levels of perceived control exhibited by trained versus untrained hospital staff.

Method

Participants

Participants in this study came from two organizations. Sample 1 was drawn from a survey of 496 staff members from an Ontario hospital. 197 surveys were returned, representing a response rate of 39.7%. 92% of the respondents were female and 8% were male. Participants' ages ranged from 25-67, with the average age being 43.4 (SD = 8.5). On average, participants had been working at the organization for 14.9 years (SD = 7.7). Cases missing more than one item on any given scale were excluded from the analysis, resulting in a final sample of $N = 189$.

Sample 2 was drawn from a survey of 670 staff members of an agency which runs group homes for the developmentally disabled throughout Ontario. 205 surveys were returned, representing a response rate of 30.6%. 77% of the respondents were female,

while the remaining 23% were male. Participants ranged from 19-60 years of age, with a mean age of 35.6 (SD = 10.5). Average organizational tenure was 4.7 years (SD = 3.7). Ten cases that were missing more than one item on any scale were excluded from the analysis, resulting in a final sample of $N = 195$. Demographic data for both samples is provided in Table 1.

Although a direct comparison of respondents and non-respondents of the two samples cannot be made, the ratio of male to female respondents in each sample corresponds to the overall compositions of the two organizations.

Table 1.
Demographic Data for Samples 1 and 2

	Sample 1	Sample 2
Total N	189	195
% Males (Females)	8% (92%)	23% (77%)
Mean Age in years (SD)	43.4 (8.5)	35.6 (10.5)
Mean Organizational Tenure in years (SD)	14.9 (7.7)	4.7 (3.7)

Measures

Direct Violence/Aggression at Work

To assess the occurrence and frequency of violent or aggressive events at work, an 11-item scale was used, which included examples of both physical violence and verbal aggression (see Appendix A). The measure consisted of the 8-item scale employed by Rogers and Kelloway (1997) and three of the items used by Barling et al. (1999). The three additional items were examples of violence and aggression that were not part of the scale used by Rogers and Kelloway (1997), and were added to allow for a more complete assessment of workplace violence and aggression. The items were rated on a four-point

scale ranging from 0 ('Never') to 3 ('4 or more times'). Mean scores on this scale ranged from 0 to 3, with high scores representing greater experience with multiple violent and aggressive events at work over the past year.

Rogers and Kelloway (1997) have previously demonstrated the validity of their 8-item scale. The high and significant correlation between their scale and the three items added for the current study ($r(189) = .68, p < .01$ for sample 1, and $r(195) = .54, p < .01$ for sample 2) suggest that the validity of the scale was not compromised by the addition of the three items. Internal consistency for the scale was excellent for both samples ($\alpha = .90$ and $.87$, respectively).

Vicarious Violence at Work

The 5-item scale used by Rogers and Kelloway (1997) was used in the current study to assess the occurrence and frequency of exposure to violent events that were not directly experienced by the respondents themselves (see Appendix A). The items asked respondents whether they had witnessed or heard about violent events directed at coworkers or supervisors in the workplace or if any friends or relatives had experienced violence or aggression at work. The items were rated on a four-point scale ranging from 0 ('Never') to 3 ('4 or more times'). Mean scores on this scale ranged from 0 to 3, with high scores reflecting the vicarious experience of multiple violent or aggressive events at work over the past year. The internal consistency of the scale was high across both samples ($\alpha = .88$ and $.83$, respectively). As with the Direct Violence/Aggression at Work scale, the validity of this scale has also been previously demonstrated (Rogers & Kelloway, 1997).

Prediction

The predictability of events at work was assessed with a scale developed for this study (see Appendix B). The items were written to reflect the construct of prediction as described by Sutton and Kahn (1987) and operationalized by Tetrick and LaRocco (1987), and to ensure their relatedness to the issue of workplace violence. The items were rated on a 7-point scale, with response options ranging from 1 ('Strongly disagree') to 7 ('Strongly agree'). Mean scores on the scale ranged from 1 to 7, with high scores reflecting an ability to predict events at work. Initial reliability analysis of the complete 6-item scale found internal consistency to be unacceptable ($\alpha = .68$). Closer inspection revealed that one negatively worded item was largely responsible for the low reliability; therefore, the item was deleted, and the resulting reliability of the 5-item scale for both samples was equivalent and high ($\alpha = .86$, for both samples).

Understanding

To assess respondents' understanding of why certain events occur at work, a 6-item scale was developed (see Appendix C). As with the prediction scale, items for the scale were written to reflect Sutton and Kahn's (1987) description of and Tetrick and LaRocco's (1987) operationalization of the understanding construct. The items were rated on a 7-point scale, with response options ranging from 1 ('Strongly disagree') to 7 ('Strongly agree'). Mean scores on the scale ranged from 1 to 7, with high scores reflecting a high degree of understanding about why events at work occur. The internal consistency of the scale for both samples was excellent ($\alpha = .89$ and $.88$, respectively).

Perceived Influence

To assess respondents' perceptions of their ability to influence events at work, a 7-item scale was developed to correspond to Sutton and Kahn's (1987) notion of and Tetrick and LaRocco's (1987) measure of control (See Appendix D). A 7-point response scale was used, with response options ranging from 1 ('Strongly disagree') to 7 ('Strongly agree'). Mean scores on the scale ranged from 1 to 7, with high scores representing a high degree of perceived influence over events at work. The scale demonstrated acceptable reliability across both sites ($\alpha = .83$ and $.76$, respectively).

Fear of Future Violence at Work

A 12-item scale was used to assess the degree to which individuals were afraid of experiencing violence at work during the next year (see Appendix E). Most of the items on this scale corresponded to the items on the Direct Violence/Aggression at Work scale (e.g., During the next year...I am afraid that I will be threatened with a weapon while I'm at work'). The scale was similar to the one used by Rogers and Kelloway (1997), with the addition of two items corresponding to those that were added to the Direct Violence/Aggression at Work scale. Responses were on a 7-point scale, ranging from 1 ('Strongly disagree') to 7 ('Strongly agree'), with higher scores indicating a higher degree of fear. The scale has been shown to be valid and highly reliable in a previous study (Rogers & Kelloway, 1997), and reliability was excellent in the current study as well ($\alpha = .97$ and $.96$, for each of the two samples).

Emotional Well-being

Emotional well-being was measured by a 12-item version of the General Health Questionnaire (GHQ; Banks et al., 1980). The GHQ is often used to detect minor levels

of psychiatric disturbance in the general population, and consists of items relating to depression, self-confidence and problem-solving (see Appendix F). A 7-point response scale was used, with responses ranging from 1 ('Never') to 7 ('Always'). Mean scores on this scale range from 1 to 7 with high scores indicating good psychological health over the past year. Prior research on the reliability of the 12-item version of the GHQ has demonstrated the high internal consistency of the scale, with Cronbach's alpha ranging from .82 to .90 (Banks et al., 1980). This pattern was maintained across both samples in the current study, with $\alpha = .90$ and $.87$, respectively.

Psychosomatic Well-being

To assess psychosomatic health, a modified version of Spence, Helmreich, and Pred's (1987) Health Scale, similar to that used by Rogers and Kelloway (1997) was employed. The scale consisted of fourteen items pertaining to sleep disturbance, headaches, respiratory infections and gastrointestinal problems (see Appendix G). The items were rated on a 7-point scale, ranging from 1 ('Never') to 7 ('Always'), with mean scores ranging from 1 to 7 and high scores reflecting good psychosomatic health. Internal consistency of the scale across both samples was high ($\alpha = .86$, for both samples).

Neglect

Neglect will be measured with the same 12-item scale used by Barling et al. (1999). The scale is comprised of items from Withey and Cooper's (1989) neglect scale, Hepburn and Barling's (1996) partial absenteeism scale, and several additional items added by Barling et al. (1999). For this scale, respondents were asked to indicate how often during the past year they took actions which reflected neglect of their job or job

duties (see Appendix H; e.g. tardiness, taking extended breaks, working slowly). A 7-point scale was used, with response options ranging from 1 ('Never') to 7 ('All of the time'). Mean scores on the scale ranged from 1 to 7, with high scores reflecting a higher degree of neglect. A number of respondents wrote comments beside one of the items on the scale (i.e., "Followed rules to the letter of the law, doing nothing more (i.e., 'work to rule')"), indicating that they did not understand its meaning. As a result, the item was deleted from subsequent analysis. Reliability of the remaining 11-item scale was acceptable across both samples ($\alpha = .78$ and $.75$, respectively).

In addition to the above scales, respondents were asked whether they had received any training on how to deal with aggressive or threatening events at work. A 'yes'/'no' response format was employed, and following the question, respondents who answered 'yes' were asked to briefly describe the type of training they had received.

Procedure

For sample 1, 496 hospital staff members received a survey package via the hospital's internal mail system. The survey package consisted of a cover letter from the researcher (see Appendix I), a survey containing the previously described measures, and a return envelope addressed to the researcher, care of an administrative assistant of the hospital. The cover letter informed participants of the purpose and nature of the study, guaranteed their anonymity, and stated that returning the survey indicated their informed consent to have their data used in the study. Two weeks following the initial mailing of the survey, a notice was placed in the hospital's newsletter, thanking those who had completed and returned the survey, and encouraging those who had not yet completed the survey to do so.

For sample 2, a total of 670 survey packages were sent to the coordinators of about 50 different group homes (9-15 packages were sent to each coordinator, depending on the number of staff working in each group home). A cover memorandum from the organization's Director of Human Resources and the researcher was addressed to the coordinators, which briefly explained the study and asked them to distribute the survey packages to the staff members of the respective group homes (see Appendix J). The package given to each staff member included a cover letter from the researcher, a survey containing the previously described measures, and a return envelope addressed to the researcher care of a member of the Human Resources Department at the organization's head office. The cover letter informed participants of the purpose and nature of the study, guaranteed their anonymity, and stated that returning the survey indicated their informed consent to have their data used in the study.

Method of Data Analysis

First, because the items pertaining to understanding, prediction and influence were written for this study, it was necessary to establish their dimensionality before proceeding with further analysis. This was accomplished through a two-step process, beginning with an exploratory factor analysis (EFA) on sample 1 and followed by a confirmatory factor analysis (CFA) on sample 2. Although the items were developed according to a strong theoretical rationale, the use of EFA rather than CFA is generally considered the best approach during the early stages of scale development (Tabachnick & Fidell, 1996). Once the hypothesized factor structure was initially determined with the EFA on sample 1, the results were cross-validated on sample 2 using CFA. In addition, a

one-factor model was also tested and its fit compared to that of the hypothesized three-factor model.

Once the factor structure of the control scales was established, the effects of control on stress and strain were tested. Specifically, moderated regression analyses were conducted to determine whether prediction, understanding and/or influence moderated the relationships between violence and fear, or between fear and personal or organizational outcomes. Following this, a latent variable model was tested on sample 1, which incorporated the direct, indirect and/or moderational effects of control. The model was assessed using maximum likelihood estimation as implemented in LISREL VIII (Joreskog & Sorbom, 1993). In order to establish the fit of the proposed model, I followed the two-step modeling procedure outlined by Anderson and Gerbing (1988), which involves first establishing the fit of the measurement model and then testing the proposed structural model. Once the fit of the overall model was established on sample 1, the model was cross-validated on sample 2. Next, the invariance of parameters across the two samples was explicitly tested, using the procedures outlined by Joreskog and Sorbom (1993).

For each of the latent variable models tested, both multiple and single indicators were used to represent the latent variables. The measures of direct and vicarious violence served as the two indicators for the workplace violence construct, while understanding, prediction and influence were used to indicate perceived control. The remaining study variables—fear, emotional well-being, psychosomatic well-being and neglect—were used as single indicators of their respective latent variables. In accordance with Kelloway's (1998) guidelines for using single indicator latent variables, each common

factor loading was fixed to the product of the reliability and the standard deviation, and each unique factor loading was fixed to $1 - (\text{reliability} * \text{variance})$. This strategy accounts for measurement error in the observed variables.

With structural equation modeling (e.g., both CFA and latent variable modeling), there are a number of methods by which model fit can be assessed. Rather than relying on one given method, Bollen and Long (1993) suggest that a number of fit indices be examined, with convergence across various fit indices lending support to one's findings. One of the common fit indices is the χ^2 test, which tests whether the population covariance matrix is equal to the covariance matrix implied by the model, with good fit being indicated by a non-significant χ^2 statistic. Because the test is extremely sensitive to sample size, a non-significant χ^2 is rare; therefore, other fit indices should also be considered. The Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) indicate the degree to which the model accounts for the covariances in the sample data. Values range from 0 to 1, with values greater than .9 reflecting better fit. The difference between the GFI and AGFI is that the AGFI adjusts for the number of degrees of freedom in the model (Kelloway, 1998). The Root Mean Squared Error of Approximation (RMSEA) is a fit index that involves the analysis of residuals, with smaller values indicating better fit to the data. Values below .1 are generally considered to reflect good fit while values less than .05 indicate very good fit (Steiger, 1990). The Normed Fit Index (NFI) compares the fit of the hypothesized model to the null model (in which no relationships between variables are specified). The Nonnormed Fit Index (NNFI) is similar to the NFI but adjusts for the number of degrees of freedom in the model. Values for both the NFI and the NNFI range between 0 and 1, with values above

.9 indicating good model fit (Kelloway, 1998). Finally, parsimonious fit indices such as the Parsimonious Goodness of Fit Index (PGFI) and Parsimonious Normed Fit Index (PNFI) can be used to assess model fit. These indices penalize models with fewer degrees of freedom. Because models with more estimated parameters will always fit the data better, the PGFI and PNFI should be considered when comparing models. Values range from 0 to 1, with higher values reflecting more parsimonious fit.

After the latent variable model incorporating control was established and cross-validated, I investigated whether people who have received training that targets workplace violence and aggression demonstrated higher levels of control than those who had not been trained.

Results

Exploratory Factor Analysis – Sample 1

Prior to conducting the EFA on sample 1, I examined the distributions for each of the control items. Although several items demonstrated slight skewness, there were no serious violations of univariate or multivariate normality and all other assumptions were met. No multivariate outliers were present, and because the presence of several moderate univariate outliers did not affect the results, these cases were retained. Cases missing data on any of the 18 control items were deleted ($N = 10$), leaving $N = 187$ for the EFA.

Principal Components extraction with Varimax rotation was performed on the 18 control items using SPSS for Windows 7. Three factors were extracted, which cumulatively explained 60.9% of the item variance. The item factor loadings, communalities and proportions of variance for individual factors are found in Table 2, along with item means and standard deviations. Factor 1, which accounted for 23.3% of

Table 2.

Means, Standard Deviations, Factor Loadings, Communalities and Proportions of Variance for Principle Components Extraction with Varimax Rotation for Control Items of Sample 1.

Items	Mean	SD	Factor 1	Factor 2	Factor 3	Communalities
			Understanding	Prediction	Influence	
1. I understand why clients/people at work behave as they do.	5.42	1.15	.791			.661
2. I know why certain events happen at work.	5.47	1.08	.635			.465
3. I know why clients/people at work treat me as they do.	5.34	1.20	.718			.537
4. I know why clients/people at work act aggressively when they do.	5.01	1.35	.857			.768
5. I understand why a client/person reacts negatively to someone or something at work.	5.13	1.25	.846			.774
6. I understand the cause(s) of negative/threatening events at work.	4.89	1.41	.826			.736
7. I am able to predict the behaviour of people at work.	4.61	1.50		.682		.603
8. I am able to predict daily events at work (or, what will happen at work each day).	3.99	1.63		.771		.605
9. I am able to predict how a client/person at work will react in certain situations.	4.64	1.49		.822		.734
10. I am able to predict if and when a client/person at work might become aggressive.	4.38	1.48		.750		.636
11. I can predict how clients/people at work will treat me.	4.70	1.39		.744		.649
12. I am able to prevent negative things from happening at work.	4.10	1.50		.464	.417	.461

continued...

Table 2 (cont'd)

Items	Mean	SD	Factor 1 Understanding	Factor 2 Prediction	Factor 3 Influence	Communi- nalities
13. I am able to deal with challenging situations that occur at work.	5.69	.79			.586	.389
14. I am able to avoid threatening situations at work.	4.52	1.39			.632	.430
15. I am able to respond to threatening situations at work.	5.28	1.14			.716	.671
16. I am able to protect myself from physical aggression at work.	4.82	1.44			.834	.712
17. I am capable of taking physical action (e.g., self-defense, restraining someone) to prevent harm to myself or others in cases where there are physical threats at work.	4.44	1.63			.727	.540
18. I am able to influence the behaviour of people at work.	4.56	1.40			.626	.583
Proportion of Variance			23.25%	19.13%	18.48%	

Only factor loadings exceeding .4 are included in table.

the rotated item variance, was labeled Understanding because of its correspondence to the construct of understanding suggested by Sutton and Kahn (1987). Factor 2 was labeled Prediction, because it relates to people's ability to predict the nature and timing of events at work (Sutton and Kahn, 1987). It accounted for 19.1% of the rotated item variance. Factor 3, which accounted for 18.5% of the rotated item variance, was labeled Influence. It corresponds to Sutton and Kahn's (1987) construct of control, and reflects the perceived ability to exert influence over one's work environment. The correlation between Factors 1 and 2 was $r(187) = .42, p < .001$; between Factors 1 and 3 was $r(187) = .41, p < .001$; and between Factors 2 and 3 was $r(187) = .49, p < .001$. The factor structure was found to be robust to various extraction and rotation methods (see Appendix K for factor loadings and communalities for Principal Axis extraction with Varimax rotation and Appendix L for Principal Components extraction with oblique rotation).

Item 12 ('I am able to prevent negative things from happening at work') presented some interpretive ambiguity because it loaded on both Prediction and Influence. Although the item was written to reflect an aspect of influence, its loading was slightly higher on the Prediction factor than on the Influence factor (.46 versus .42). However, because the difference in loading is negligible, and a priori theory linked this item with Influence, for the time being, item 12 will be considered as a part of that factor. I will address this issue further in the subsequent CFA on sample 2, in which I will compare a model where the item is freed to load on the Influence factor with a model where the item is freed to load on the Prediction factor. If there are no differences in the fit of the two models, or if the former model fits the data better than the latter, it can be concluded that

the hypothesized factor structure is confirmed. If, however, the model containing the path relating the item to the Prediction factor has superior fit, it would suggest that the item is spurious and ought to be rewritten or deleted.

Confirmatory Factor Analysis – Sample 2

Before conducting CFA on sample 2, I tested all assumptions and found them to be within acceptable limits. There were no multivariate outliers present, and several moderate univariate outliers were retained, because results when they were retained did not differ from when they were excluded. Cases missing data on any of the 18 control items were excluded from the factor analyses ($N = 10$), leaving $N = 195$ for the CFA.

CFA, based on the covariance matrix of the control items, was conducted, using maximum likelihood estimation as implemented in LISREL VIII (Joreskog & Sorbom, 1993). Fit indices for the three models are presented in Table 3, and, as shown, none of the models provides excellent absolute fit to the data. However, poor absolute fit is common with CFA, because of the number of parameter constraints inherent in such models (Kelloway, 1998). Despite the lack of excellent fit, the indices converge in suggesting the superiority of the model hypothesizing three oblique factors. In particular, the three-factor model provides a better fit to the data than does the one-factor model ($\chi^2_{\text{difference}}(3, N = 195) = 559.38, p < .01$). Moreover, the parsimonious fit indices (i.e., the PGFI and PNFI) suggest that the three-factor model provides the most parsimonious fit to the data.

Table 3.
Fit Indices for the Three Confirmatory Factor Analysis Models

Model	χ^2	df	N	GFI	AGFI	PGFI	NFI	NNFI	PNFI
1-factor	875.17*	135	195	.59	.48	.47	.49	.46	.43
3-factor (Hypothesized)	315.79*	132	195	.85	.80	.65	.81	.86	.70
3-factor (item 12 linked to prediction)	330.73*	132	195	.84	.79	.65	.81	.85	.70

*p < .001

The model containing the path from item 12 to the Prediction factor provided similar but slightly poorer fit to the data than did the hypothesized model (which linked item 12 to the Influence factor). Although a $\chi^2_{\text{difference}}$ test cannot be used to compare the two models because they are not nested within each other, inspection of the other fit indices suggest that fit is slightly improved when the item is freed to load on Influence rather than on Prediction.

Standardized parameter estimates and associated R^2 values for the three-factor model are presented in table 4. All model parameters were significant ($p < .01$) and explained substantial item variance (R^2 ranged from .16 - .82). The three factors were significantly correlated ($r(195) = .32, .39$ and $.49, p < .01$, respectively) and internally consistent ($\alpha = .88, .86$ and $.76$ for Understanding, Prediction and Influence, respectively).

Tests of Moderation

Prior to conducting the tests of moderation, I evaluated the assumptions of linearity, homoscedasticity, multicollinearity and multivariate normality and found them to be acceptable in both samples. In addition, the presence of univariate and multivariate outliers was examined. Nine univariate outliers were detected in each sample. Of these,

Table 4.
Standardized Parameter Estimates and R² Values for Confirmatory Factor Analysis of Control Items—Sample 1

Item	Factor 1 Understanding	Factor 2 Prediction	Factor 3 Influence	R ²
1. I understand why clients/people at work behave as they do.	.72			.48
2. I know why certain events happen at work.	.65			.58
3. I know why clients/people at work treat me as they do.	.61			.63
4. I know why clients/people at work act aggressively when they do.	.90			.19
5. I understand why a client/person reacts negatively to someone or something at work.	.79			.38
6. I understand the cause(s) of negative/threatening events at work.	.73			.47
7. I am able to predict the behaviour of people at work.		.70		.51
8. I am able to predict daily events at work (or, what will happen at work each day).		.51		.74
9. I am able to predict how a client/person at work will react in certain situations.		.86		.26
10. I am able to predict if and when a client/person at work might become aggressive.		.90		.18
11. I can predict how clients/people at work will treat me.		.74		.46
12. I am able to prevent negative things from happening at work.			.40	.84
13. I am able to deal with challenging situations that occur at work.			.63	.60
14. I am able to avoid threatening situations at work.			.50	.75
15. I am able to respond to threatening situations at work.			.71	.49
16. I am able to protect myself from physical aggression at work.			.75	.44
17. I am capable of taking physical action (e.g., self-defense, restraining someone) to prevent harm to myself or others in cases where there are physical threats at work.			.65	.58
18. I am able to influence the behaviour of people at work.			.44	.81

Note: All parameters significant at $p < .01$

only three cases from sample 2 were substantially discrepant (> 4.5 SDs away from the mean) and were deleted. Following the deletion of these three cases, there were no multivariate outliers detected in either sample, as Cook's distance values for all cases fell well below the generally accepted cutoff of 1 (Tabachnick & Fidell, 1996). As a result, no further cases were deleted. Descriptive statistics, internal consistency coefficients and intercorrelations for all study variables are included in Tables 5 (sample 1) and 6 (sample 2).

In order to assess whether understanding, prediction and/or influence moderate the relationship between violence and personal or organizational outcomes, a series of moderated regression analyses were conducted separately for both samples using SPSS for Windows 7. In all of the following tests of moderation, hierarchical regression was used, with the predictors entered together into the first step and their interaction term entered into the second step of the regression equation. The first set of regressions tested whether understanding, prediction and/or influence moderate the relationship between violence and fear. In each of the regressions, fear was regressed on both violence and one of understanding, prediction or influence, as well as on the interaction between both violence and one of the three control variables. The second set of regressions assessed whether understanding, prediction and/or influence moderate the relationship between fear and any of the personal or organizational outcomes. In this set of regression equations, each of the three outcomes (emotional well-being, psychosomatic well-being and neglect) were regressed separately on fear, the three control variables, and the interaction between fear and the control variables. Following the strategy outlined by Aiken and West (1991), all predictors were standardized before computing the interaction

Table 5.
Descriptive Statistics, Internal Consistency Coefficients and Intercorrelations of Study Variables for Sample I

Variable	Mean	SD	α^a	1	2	3	4	5	6	7	8	9
1. Direct Violence	1.07	0.74	90									
2. Vicarious Violence	1.29	1.02	88	77								
3. Understanding	5.22	1.00	89	09	11							
4. Prediction	4.47	1.20	86	05	01	42						
5. Control	4.76	0.97	83	-14	-06	40	49					
6. Fear	3.31	1.79	97	77	68	-08	-12	-29				
7. Emotional Well-being	5.45	0.90	90	-30	-27	24	31	39	-47			
8. Psychosomatic Well-being	5.07	0.94	86	-32	-34	19	25	40	-46	64		
9. Neglect	1.66	0.51	78	27	25	-15	-10	-15	34	-43	-35	

Note: Decimal points are omitted except in the mean and standard deviation columns $r \geq .15, p < .05; r \geq .19, p < .01$
^aCronbach's index of internal consistency

Table 6.
Descriptive Statistics, Internal Consistency Coefficients and Intercorrelations of Study Variables for Sample 2

Variable	Mean	SD	α^a	1	2	3	4	5	6	7	8	9
Direct Violence	1.49	0.81	87									
Vicarious Violence	1.74	0.96	83	75								
3. Understanding	5.43	0.91	88	07	09							
4. Prediction	4.93	1.04	86	-12	-06	43						
5. Control	5.37	0.69	76	-06	-09	32	38					
6. Fear	3.69	1.83	96	63	55	-11	-22	-31				
7. Emotional Well-being	5.32	0.79	87	-30	-24	26	14	27	-35			
8. Psychosomatic Well-being	4.94	0.95	86	-20	-14	13	03	12	-20	55		
9. Neglect	1.82	0.50	75	26	27	-17	-01	-08	17	-42	-36	

Note: Decimal points are omitted except in the mean and standard deviation columns $r \geq .17, p < .05; r \geq .20, p < .01$
^aCronbach's index of internal consistency

terms. This procedure helps to avoid the multicollinearity that is created when computing an interaction with unstandardized variables.

In the above analyses, none of the proposed moderator effects was statistically significant ($p > .05$). Specifically, none of the products of violence and understanding, violence and prediction or violence and influence made a significant contribution to the prediction of fear. Similarly, none of the products of fear and understanding, fear and prediction nor fear and influence made a significant contribution to any of the personal or organizational outcomes. Therefore, all moderated relationships were deleted from the model, and only the direct and mediated effects of the three dimensions of control posited earlier were considered in subsequent latent variable path analyses.

Latent Variable Path Analyses

Sample 1

The proposed measurement model provided acceptable, but not outstanding fit to the data ($\chi^2 (20, N = 189) = 60.91, p < .01$; GFI = .94, AGFI = .86, NFI = .92, NNFI = .89, PGFI = .42, PNFI = .51). The hypothesized latent variable model incorporating both measurement and structural relations provided excellent fit to the data ($\chi^2 (23, N = 189) = 32.58, p > .05$; GFI = .97, AGFI = .93, NFI = .95, NNFI = .98, PGFI = .49, PNFI = .61). A path model with the standardized parameter estimates for sample 1 is presented in Figure 3. As shown, all 7 model parameters were significant in the expected direction and explained substantial amounts of variance (R^2 ranged from .35 - .97). Neglect was predicted by emotional well-being ($\beta = -.52, p < .01$). Psychosomatic well-being was predicted by both fear ($\beta = -.18, p < .01$) and emotional well-being ($\beta = .64, p < .01$),

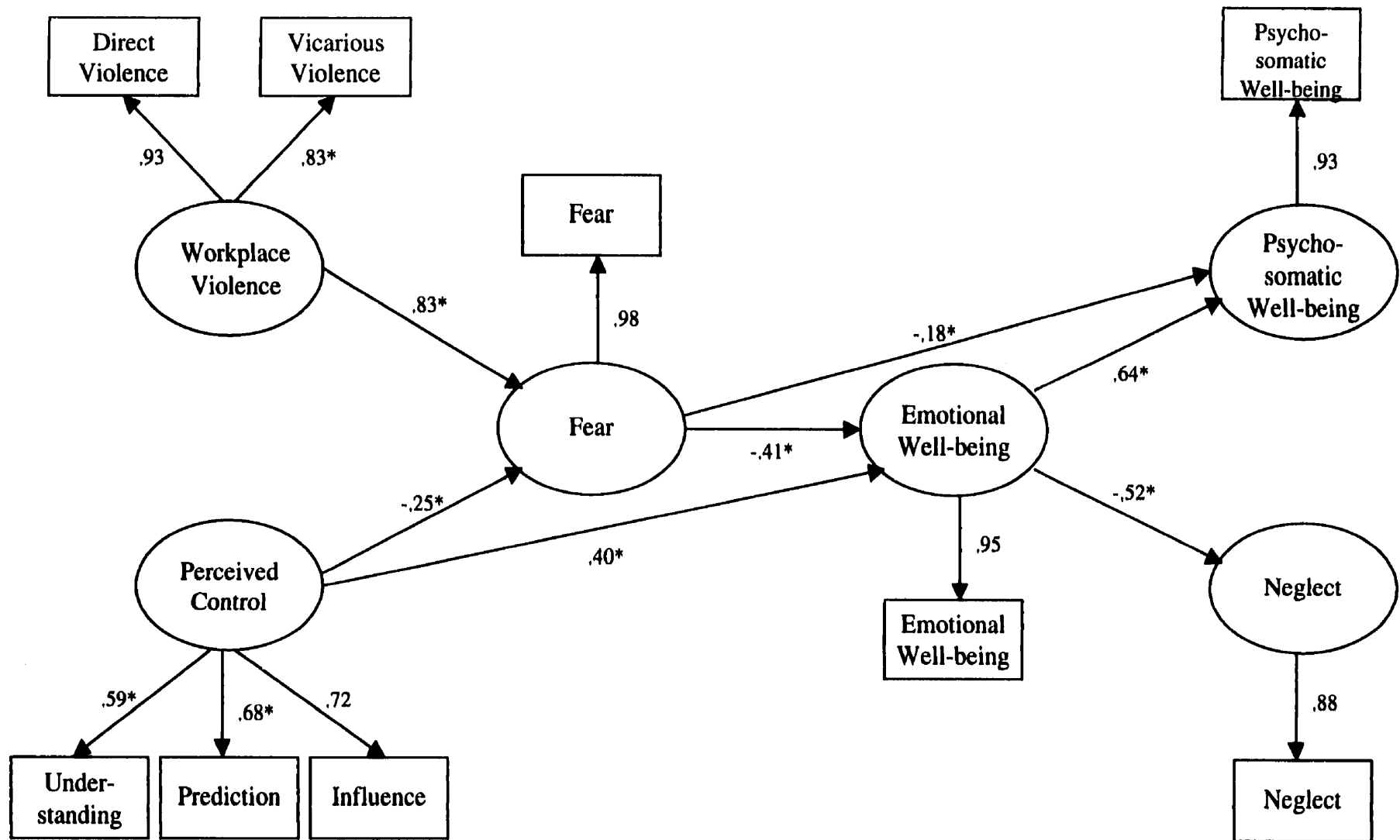


Figure 3. Standardized Parameter Estimates for Final Model: Sample 1

*p < .01.

which was in turn predicted by fear ($\beta = -.41, p < .01$) and control ($\beta = .40, p < .01$).

Fear was predicted by both control ($\beta = -.25, p < .01$) and violence ($\beta = .83, p < .01$).

Sample 2

Both the proposed measurement model ($\chi^2 (20, N = 195) = 55.02, p < .01$; GFI = .94, AGFI = .87, NFI = .90, NNFI = .88, PGFI = .42, PNFI = .50) and the latent variable model ($\chi^2 (23, N = 195) = 49.99, p < .01$; GFI = .95, AGFI = .91, NFI = .91, NNFI = .92, PGFI = .49, PNFI = .58) provided acceptable fits to the data. The standardized parameter estimates for sample 2 are provided in Figure 4. As shown, 6 of the 7 hypothesized model parameters were significant and predicted substantial amounts of variance (R^2 ranged from .35 - .96). Both neglect ($\beta = -.53, p < .01$) and psychosomatic well-being ($\beta = .64, p < .01$) were predicted by emotional well-being, which was in turn predicted by both control ($\beta = .22, p < .01$) and fear ($\beta = -.30, p < .01$). Fear was predicted by both control ($\beta = -.29, p < .01$) and violence ($\beta = .68, p < .01$).

Cross-Sample Comparisons

To assess the stability of model parameters across the two samples, the structural parameters of both samples were contrasted using multi-sample analysis as implemented in LISREL VIII. To do this, the hypothesized latent variable model was first freely estimated in both samples ($\chi^2 (46) = 82.57, p < .01$). Then, the parameters of sample 2 were constrained to equal those of sample 1 ($\chi^2 (53) = 98.11, p < .01$). The $\chi^2_{\text{difference}}$ between these ($\chi^2_{\text{difference}} (7) = 15.54, p < .05$) was significant, indicating differences between the two samples. Specifically, the magnitudes of three of the structural parameters differed between the two samples. The path from fear to psychosomatic well-being was stronger for sample 1 ($b = -.19$) than for sample 2 ($b = .03; \chi^2 (1) = 7.88, p <$

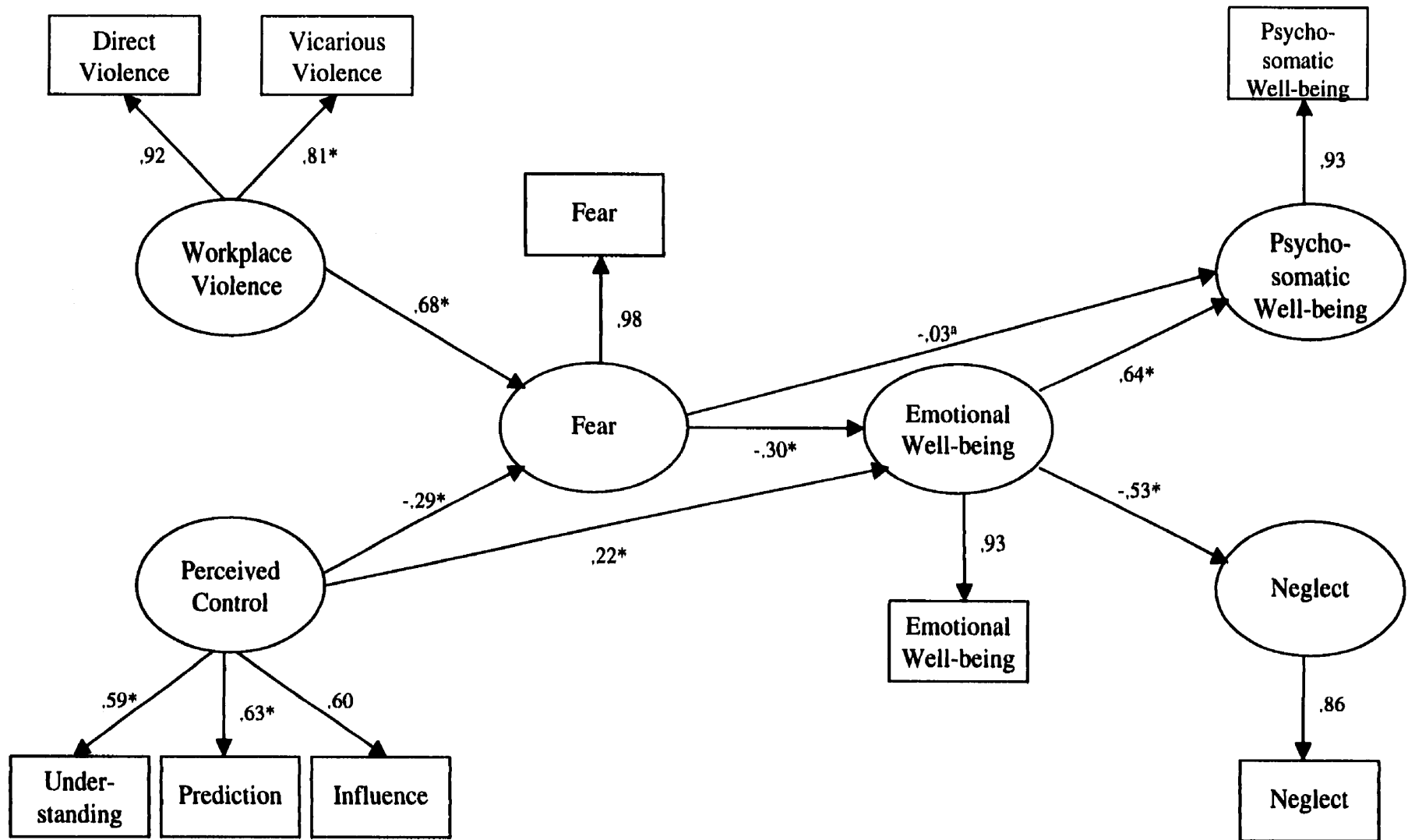


Figure 4. Standardized Parameter Estimates for Final Model: Sample 2

*p < .01. ^ap > .05

.01) as was the path from violence to fear (for sample 1, $\beta = 1.22$; for sample 2, $\beta = .92$; $\chi^2(1) = 9.03$, $p < .01$). Finally, the prediction of fear by control was stronger for sample 2 ($\beta = -.72$) than for sample 1 ($\beta = -.37$; $\chi^2(1) = 4.28$, $p < .05$). All remaining structural paths were invariant across the two samples.

Effects of Training on Perceived Control

To assess whether violence prevention and intervention training affects people's perceptions of control, a multivariate analysis of variance (MANOVA) was conducted on sample 1 using training (training versus no training) as the independent variable (IV) and direct violence, vicarious violence, influence, understanding and prediction as dependent variables (DVs). Direct and vicarious violence were included as DVs in order to allow for the examination of differences on influence, understanding and prediction after the effects of violence were partialled out.

Prior to conducting the MANOVA, the assumptions of normality, linearity, homoscedasticity and multicollinearity were examined on all DVs across both trained and untrained groups. No serious violations of assumptions were evident. Data were also examined for the presence of outliers, with several univariate and no multivariate outliers being detected. Inclusion of the univariate outliers in the analysis did not affect the results; therefore, they were retained for the ensuing analysis. Thirteen cases were deleted because of missing data, resulting in a final sample of $N = 184$, with $n = 94$ in the training group and $n = 90$ in the no training group.

Using Pillai's criterion, the combined DVs were significantly affected by training, $F(5, 179) = 4.10$, $p < .01$. Univariate and stepdown analyses were also performed, although a stepdown analysis on the prioritized DVs was deemed more appropriate

because the DVs of primary interest (i.e., influence, understanding and prediction) were all correlated above .40. Order of entry of the DVs was direct violence, vicarious violence, influence, understanding and prediction. Because it was assumed that people who experience more violence would be more likely to receive training, direct and vicarious violence were entered first. This allowed for the examination of the impact of training on the three control DVs after the effects of violence were partialled out. Results of the univariate and stepdown tests are summarized in Table 7.

Table 7.
Univariate and Stepdown Tests for MANOVA on the Effects of Training

IV	DVs	Univariate F	df	Stepdown F	df
Training	Direct violence	4.89*	1/182	4.89*	1/182
	Vicarious violence	1.97	1/182	0.24	1/181
	Influence	10.85**	1/182	14.12**	1/180
	Understanding	6.04*	1/182	0.19	1/179
	Prediction	5.18*	1/182	0.84	1/178

Note: **p < .001; *p < .05

A significant difference in direct violence was found between the training groups ($M_{\text{training}} = 1.17 (.71)$, $M_{\text{no training}} = .94 (.75)$). However, after partialling out the effects of direct violence, no differences were found between the two groups on vicarious violence. After partialling out the effects of both direct and vicarious violence, a difference was found on influence ($M_{\text{training}} = 5.0 (.87)$, $M_{\text{no training}} = 4.54 (1.01)$). Although differences between the groups on understanding and prediction were found with the univariate tests, these differences became non-significant in the stepdown analysis after the effects of influence were removed.

Discussion

The current study was undertaken to achieve three objectives. To begin with, the psychometric properties of a scale developed to assess three dimensions of control were examined. Next, a latent variable model of the effects of violence and control on several personal and organizational outcomes was evaluated and cross-validated. Finally, the impact of a training program addressing workplace violence and aggression was examined.

The results of the EFA and CFA converged in suggesting that the three-factor model of control, composed of understanding, prediction and influence, most closely reflected the data. While freeing additional parameters in the CFA would improve model fit, such modifications are ill advised, as they would be atheoretical and would involve capitalizing on chance (Kelloway, 1998).

The CFA also helped to clarify an ambiguous factor loading that resulted from the initial EFA. Both a priori theory and the fit indices supported the inclusion of the path from item 12 to the influence factor rather than to the prediction factor.

The three factors accounted for moderate to large amounts of the item variances and were found to be internally consistent, suggesting that the factors are well-defined. Therefore, the tripartite conceptualization of control introduced by Sutton and Kahn (1987) was substantiated by the present findings. The demonstration of the factor structure of the control scale using EFA on a sample of hospital staff (i.e., sample 1) and its cross-validation using CFA on a sample of group home staff (i.e., sample 2) supports the robustness and generalizability of the scale's factor structure. Because the items for the current study were developed to assess understanding, prediction and influence in the

context of workplace violence, it remains for future research to establish the generalizability of these dimensions across contexts characterized by stressors other than aggression and violence. Although Tetrick and LaRocco (1987) employed measures of understanding, prediction and control in their study of role stress, they did not assess the factor structure of these variables, and so their dimensionality in that context cannot be unequivocally determined.

Contrary to one of my original hypotheses, understanding, prediction and influence did not moderate the relationship between violence and fear, nor did they moderate the relationship between fear and personal and organizational outcomes. While this differed from what was expected, the absence of a moderating effect of control on stress and strain in this study is consistent with many other studies assessing similar moderation hypotheses (see Ganster & Fusilier, 1989 and Terry & Jimmieson, 1999, for reviews) and with studies testing stress-buffering hypotheses in general (see Cohen & Wills, 1985, for a review). While a number of studies discussed in these reviews have found support for the moderating effects of control and other variables, these studies are greatly outnumbered by studies which found no moderation, even when the expectation of such effects was theoretically justified.

Although the findings are counterintuitive, there are a number of possible reasons for the lack of moderation in the present study. First, the statistical procedure used to detect moderation in this study, moderated regression analysis, is a conservative technique that lacks power (Aiken & West, 1991; Evans, 1985). Aiken and West (1991) outline several factors that reduce the power of moderation tests, two of which are particularly relevant to the current study. The first relates to the fact that in moderated

regression analysis, the interaction term is considered after the main effects of the predictor and proposed moderator on the criterion have been examined. As noted by Baron and Kenny (1986), the ideal moderator would not be correlated with either the predictor with which it interacts or the criterion it is predicted to moderate. Any correlation between the proposed moderator and the predictor, the criterion or both, will reduce the power of the test, and hence, the likelihood of detecting moderation. Because the variables that were involved in the tests of moderation were nonorthogonal, the power of the tests was attenuated.

The second factor that may have reduced the power of the moderation tests was the presence of measurement error in the proposed moderators. As noted by Aiken and West (1991), in the absence of perfect or nearly perfect reliability in the moderator variable(s), the more variance that is accounted for by the predictors, the less likely it is that the interaction term will add significantly to the prediction of the criterion. Although the internal consistency of the proposed moderators was reasonable (i.e., alpha ranged from .76 - .89), the presence of any unreliability is magnified in moderated regression analysis. Therefore, the evidence presented by Evans (1985) and Aiken and West (1991) would suggest that the presence of measurement error and the nonorthogonality of the predictor and moderator variables in the present study greatly weakened the power of the moderation tests.

Besides the non-significant interactions, all hypothesized relationships were supported by the latent variable path analyses. Fear was predicted by both violence and control, while control also predicted emotional well-being. Fear also predicted emotional well-being, which in turn predicted psychosomatic well-being and neglect.

These results replicate and extend the findings of previous research on the personal and organizational outcomes of workplace violence (e.g., Rogers & Kelloway, 1997). As was found by Rogers and Kelloway (1997), the current results indicate that the effects of violence on emotional and psychosomatic well-being are mediated through fear of future violence, and that the effects of fear on psychosomatic well-being are partially mediated through its effects on emotional well-being. In addition, the results demonstrate that both direct and vicarious workplace violence have negative consequences for individuals and organizations. The measures of direct and vicarious violence were strongly correlated in both samples (i.e., $r(189) = .77, p < .01$, in sample 1, and $r(195) = .75, p < .01$, in sample 2), and both contributed to the latent variable representing violence. These findings accord with previous research which has suggested that both direct and indirect victims of workplace violence experience consequences (Rogers & Kelloway, 1997; see also Northwest National Life Insurance Company, 1993; Taylor, 1989).

The current findings extend previous research on workplace violence in several ways. First, the results of Rogers and Kelloway's (1997) study of violence experienced by bank employees were found to be similar for both hospital and group home staff. As stated by Cook and Campbell (1979), the external validity of findings can only be demonstrated through replication across heterogeneous samples. The replication of this model across three different work environments strongly enhances its generalizability.

Second, the effects of control perceptions on stress and strain in the context of workplace violence were examined. In particular, results showed that perceptions of control serve to mitigate the negative effects of violence by reducing fear and enhancing

psychological well-being. These findings correspond to the results of other research which has examined the positive effects of control in contexts characterized by a variety of different stressors, and extend them to include those in which violence occurs.

More importantly, the results show the beneficial impact which control perceptions can have for people who experience workplace violence. Although prevention of workplace violence should receive first priority, in situations where preventive efforts fail or are not possible, the present results demonstrate the ameliorative potential of interventions targeted at enhancing people's perceptions of control at work.

In addition to examining the impact of control on personal and organizational outcomes associated with workplace violence, this study also extends the research on workplace violence by including a measure of job withdrawal (i.e., neglect) in the model. Specifically, the results demonstrate that the effect of violence on neglect is mediated by both fear and emotional well-being. This extends the findings of Barling et al. (1999), by removing the potential confound of sexual harassment from this relationship, and by demonstrating the mediational role of emotional well-being. Furthermore, this adds to previous research examining the organizational outcomes of workplace violence, that found violence to be associated with decreases in job satisfaction and productivity (Budd et al., 1996), and fear of violence to predict increased turnover intentions (Rogers & Kelloway, 1997). Taken together, these findings illustrate the potential deleterious consequences of workplace violence on organizational functioning.

The MANOVA comparing trained versus untrained hospital staff in sample 1 revealed that those who had received violence prevention and intervention training showed higher levels of experience with direct violence and exhibited higher levels of

control than those who had not received training. No differences were found between the groups on the amount of vicarious violence experienced. The univariate tests found that trained staff had higher levels of all three dimensions of control. However, when influence was entered first into the stepdown analysis, followed by understanding and prediction, only influence was found to significantly differ between the two groups. This is largely due to the intercorrelation among the three control dimensions.

The higher levels of control exhibited by the trained group is a very important finding, especially when it is considered along with the results of the latent variable path analysis discussed above, which demonstrated the mitigating effects of control on stress and strain. Taken together, the findings suggest that providing people with training would enhance their feelings of control, which could potentially offset the negative outcomes that are typically associated with workplace violence. This represents a promising basis for intervention strategies and provides a very fruitful avenue for future research on workplace violence.

The greater levels of exposure to direct violence exhibited by the trained group likely reflects the organization's practice of offering training to those most likely to face aggression or violence on the job. This is likely a common practice in many organizations that offer violence training; however, the absence of a difference in levels of vicarious violence between the two groups is particularly noteworthy. Because the results of the present study provide strong evidence for the adverse consequences of experiencing vicarious violence, they would suggest that training should not be limited to those facing only direct violence. Although it seems intuitive that violence prevention and intervention training should be targeted at those directly exposed to violence, the

present results suggest that even those experiencing only vicarious violence would benefit from enhanced feelings of control. Based on these findings, it is evident that organizations ought to offer violence-related training to all staff, as this could enhance their emotional and physical well-being as well as improve organizational functioning.

Limitations

The results of the present study should be considered in light of several potential limitations. First, the data came entirely from self-reports, raising the possibility that mono-method bias is operating. Although this is possible, an examination of the correlation matrices for both samples reveals that the influence of mono-method bias in the current study is doubtful. In general, the main concern regarding mono-method bias is that it results in the artifactual inflation of correlations between study variables (Spector & Brannick, 1995). The existence of a number of non-significant zero-order correlations between several study variables suggests that the effect of mono-method bias on the present results is implausible.

The second potential limitation of the current study is its cross-sectional nature. Because data on the study variables were collected concurrently, the causal sequence of the variables cannot be unambiguously determined. Although the proposed model provided adequate fit to the data across two different samples, with structural equation modeling there are a number of other models which would provide similar fit to the data (MacCallum, Wegener, Uchino, & Fabrigar, 1993). For example, the fit of a model in which fear of future workplace violence predicts control perceptions would be comparable to that of the proposed model. The strong theoretical foundation of the proposed model casts doubt on the plausibility of such alternative models. However,

they can only be completely ruled out through longitudinal research on workplace violence.

Directions for Future Research

On the basis of the findings of the present study, a number of directions for future research could be suggested. First, in addition to the personal and organizational variables included in the present study and in prior research on workplace violence (e.g., Budd et al., 1996; Rogers & Kelloway, 1997), there are a number of other possible outcomes of workplace violence that merit further investigation. Researchers could examine how violence affects personal variables including marital functioning and substance use, and organizational variables such as absenteeism, burnout and job performance. In addition, the ameliorative influence of control, social support or other factors on these outcomes could also be examined.

Further research also needs to be conducted on perceived control. While the present results provide support for a three-dimensional conceptualization of control and demonstrate its efficacy in reducing the stress and strain associated with workplace violence, they do not imply that this is an all-encompassing definition of control. Previous investigators have postulated the existence of other dimensions of control, including involvement in decision-making in the organization (i.e., decision control), choice over job tasks (i.e., task control), and control over physical aspects of one's environment (Ganster, 1988, 1989; see Terry & Jimmieson, 1999, for a review). Future research should investigate these and other dimensions of control, and assess whether they also help to ameliorate the negative consequences of workplace violence.

The effectiveness of training demonstrated in the present study also merits more extensive investigation. For the present study, respondents were simply asked whether or not they had received any training pertaining to workplace violence. Although the current findings are very promising, the causal effect of training on perceived control could be confirmed through a longitudinal study of training, using pre- and post-training measures of perceived control. Furthermore, the content of successful training courses must be examined to delineate the aspects that are most effective in enhancing people's control perceptions. The means by which this enhancement occurs also ought to be investigated. A better understanding of both the control-enhancing content of such training programs, as well as the process by which control perceptions are improved, would help to establish training as an effective means for improving people's well-being and functioning if they are faced with violence and other stressors at work.

Future research could also address a number of methodological limitations of the present study. Although the implausibility of the mono-method bias affecting the present results has been discussed, collecting data from multiple sources would help to further mitigate concerns relating to mono-method bias. Another direction for future research would be to examine the effects of workplace violence and control in other contexts in which violence occurs. While the current findings demonstrate the consistency of the effects of workplace violence and control perceptions across two different sites and provide some evidence of its external validity, the fact that violence affects people in many different occupations and organizations suggests the need to further assess the generalizability of these findings in other contexts as well.

The reliance on cross-sectional, self-report data in this study presents several potential limitations, and demonstrates the need for a longitudinal investigation of the effects of workplace violence and perceived control on personal well-being and organizational effectiveness. Newly hired staff at hospitals, group homes or other organizations could be studied over a period of several years, tracking their exposure to violent events while taking measures of perceived control, fear, emotional and psychosomatic health, neglect, and other organizational variables at the time of hire and at regular, subsequent intervals. Changes in the levels of some of these variables could be examined in light of the timing and type of the violence experienced. A study of this nature would help to clarify the pattern of causality among these variables, and contribute to a more comprehensive understanding of the effects of workplace violence.

Conclusions

In summary, a three-dimensional measure of perceived control was developed and substantiated. A model examining the effects of workplace violence and perceived control on personal and organizational outcomes was then proposed and tested. The results showed that the adverse effects of both direct and vicarious violence are mediated through fear. In addition, perceived control was found to improve people's emotional well-being both directly and indirectly through a reduction in the fear of future violence. The consistency of these findings across two different samples supports their generalizability. Finally, training was shown to increase people's perceptions of control. Because perceived control was found to reduce people's fear and enhance their emotional well-being, it would indicate the potential for training to ameliorate the negative consequences of workplace violence. Taken together these results have implications for

both practice and research. In practice, endeavouring to enhance employees' perceived control through training is an intervention strategy which should be considered by organizations in which violence occurs and where primary prevention efforts are ineffective or infeasible. In addition, because the serious consequences and increasing incidence of workplace violence have been demonstrated, researchers are urged to further investigate the phenomenon of workplace violence, paying particular attention to factors which help to prevent or reduce its negative outcomes.

References

- Aiken, L.S., & West, S.G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage Publications.
- Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin, *103*, 411-423.
- Banks, M.J., Clegg, C.W., Jackson, P.R., Kemp, N.J., Stafford, E.M., & Wall, T.D. (1980). The use of the General Health Questionnaire as an indication of mental health in occupational settings. Journal of Occupational Psychology, *53*, 187-194.
- Barling, J. (1996). The prediction, experience, and consequences of workplace violence. In G.R. VandenBos & E.Q. Bulatao (Eds.), Violence on the job: Identifying risks and developing solutions (pp. 29-49). Washington, DC: American Psychological Association.
- Barling, J., & Kelloway, E.K. (1996). Job insecurity and health: The moderating role of workplace control. Stress Medicine, *12*, 253-259.
- Barling, J., Rogers, A.G., & Kelloway, E.K. (1999). Behind closed doors: Organizational and personal consequences of sexual harassment and workplace violence for in-home workers. Manuscript submitted for publication.
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. Journal of Personality and Social Psychology, *51*, 1173-1182.
- Beehr, T.A. (1976). Perceived situational moderators of the relationship between subjective role ambiguity and role strain. Journal of Applied Psychology, *61*(1), 35-40.

- Bollen, K.A., & Long, J.S. (1993). Testing structural equation models. Beverly Hills, CA: Sage.
- Boyd, N. (1995). Violence in the workplace in British Columbia: A preliminary investigation. Canadian Journal of Criminology, 37(4), 491-519.
- Braverman, M. (1992). Post-trauma crisis intervention in the workplace. In J.C. Quick, L.R. Murphy, & J.J. Hurrell (Eds.), Stress and well-being at work (pp. 299-316). Washington DC: American Psychological Association.
- Budd, J.W., Arvey, R.D., & Lawless, P. (1996). Correlates and consequences of workplace violence. Journal of Occupational Health Psychology, 1(2), 197-210.
- Bureau of Labor Statistics (1995, August 3). News. National census of fatal occupational injuries, 1994 [news release]. Washington, DC: Author.
- Carayon, P. (1993). A longitudinal test of Karasek's job strain model among office workers. Work and Stress, 7, 299-314.
- Cohen, S., & Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. Psychological Bulletin, 98, 310-357.
- Cook, T.D., & Campbell, D.T. (1979). Quasi-experimentation: Design and analysis issues for field settings. Boston, MA: Houghton Mifflin.
- Cox, T. & Leather, P. (1994). The prevention of violence at work: Application of a cognitive behavioural theory. In C.L. Cooper & I.T. Robertson (Eds.) International Review of Industrial and Organizational Psychology, Vol. 9 (pp. 213-245). Chichester, England: John Wiley & Sons Ltd.
- Duffy, C.A., & McGoldrick, A.E. (1990). Stress and the bus driver in the UK transport industry. Work and Stress, 4(1), 17-27.

Evans, M.G. (1985). A Monte Carlo study of the effects of correlated method variance in moderated multiple regression analysis. Organizational Behavior and Human Decision Processes, 36, 305-323.

Folger, R., & Baron, R.A. (1996). Violence and hostility at work: A model of reactions to perceived injustice. In G.R. VandenBos & E.Q. Bulatao (Eds.), Violence on the job: Identifying risks and developing solutions (pp. 51-85). Washington, DC: American Psychological Association.

Fox, M.L., Dwyer, D.J., & Ganster, D.C. (1993). Effects of stressful job demands and control on physiological and attitudinal outcomes in a hospital setting. Academy of Management Journal, 36, 289-318.

Ganster, D.C. (1988). Improving measures of work control in occupational stress research. In J.J. Hurrell, L.R. Murphy, S.L. Sauter & C.L. Cooper (Eds.), Occupational Stress: Issues and Developments in Research (pp. 88-99). New York: Taylor & Francis.

Ganster, D.C. (1989). Worker control and well-being: A review of research in the workplace. In S.L. Sauter, J.J. Hurrell & C.L. Cooper (Eds.), Job Control and Worker Health (pp. 3-24). Chichester, UK: Wiley.

Ganster, D.C., & Fusilier, M.R. (1989). Control in the workplace. In C.L. Cooper & I.T. Robertson (Eds.) International Review of Industrial and Organizational Psychology, Vol. 4 (pp. 235-280). Chichester, England: John Wiley & Sons Ltd.

Greenberger, D.B., Strasser, S., Cummings, L.L. & Dunham, R.B. (1989). The impact of personal control on performance and satisfaction. Organizational Behavior and Human Decision Process, 43, 29-51.

Hall, J.K., & Spector, P.E. (1991). Relationships of work stress measures for employees with the same job. Work and Stress, 5(1), 29-35.

Hepburn, C.G., & Barling, J. (1996). Eldercare responsibilities, interrole conflict, and employee absence: A daily study. Journal of Occupational Health Psychology, 1(3), 311-318.

Jenkins, E.L. (1996). Violence in the workplace: Risk factors and prevention strategies. (DHHS [NIOSH] Publication Number 96-100). Washington, DC: Government Printing Office.

Jimmieson, N.L., & Terry, D.J. (1993). The effects of prediction, understanding and control: A test of the stress antidote model. Anxiety, Stress and Coping, 6, 179-199.

Joreskog, K.G., & Sorbom, D. (1993). LISREL VIII user's guide. Chicago, IL: Scientific Software International, Inc.

Karasek, R.A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. Administrative Science Quarterly, 24, 285-308.

Kelloway, E.K. (1998). Using LISREL for structural equation modeling: A researcher's guide. Thousand Oaks, CA: Sage Publications.

Killias, M. (1990). Vulnerability: Towards a better understanding of a key variable in the genesis of fear of crime. Violence and Victims, 5(2), 97-108.

Kraus, J.F., Blander, B., & McArthur, D.L. (1995). Incidence, risk factors and prevention strategies for work-related assault injuries: A review of what is known, what needs to be known, and countermeasures for intervention. Annual Review of Public Health, 16, 355-379.

Krause, N., & Stryker, S. (1984). Stress and well-being: The buffering role of

locus of control beliefs. Social Science and Medicine, 18(9), 783-790.

Lazarus, R.S., & Folkman, S. (1984). Stress, appraisal, and coping. New York: Springer.

Leather, P., Cox, T., & Farnsworth, B. (1990). Violence at work: An issue for the 1990s. Work and Stress, 4(1), 3-5.

MacCallum, R.C., Wegener, D.T., Uchino, B.N., & Farbrigar, L.R. (1993). The problem of equivalent models in applications of covariance structure analysis. Psychological Bulletin, 114(1), 185-199.

Manton, M., & Talbot, A. (1990). Crisis intervention after an armed hold-up: Guidelines for counsellors. Journal of Traumatic Stress, 3(4), 507-521.

Melamed, S., Kushnir, T. & Meir, E.I. (1991). Attenuating the impact of job demands: Additive and interactive effects of perceived control and social support. Journal of Vocational Behavior, 39, 40-53.

Montreal University staff gunned down. (1992, August). Calgary Herald, p. A1.

Moos, R.H., & Billings, A.G. (1982). Conceptualizing and measuring coping resources and process. In L. Goldberger and S. Breznitz (Eds.), Handbook of stress. New York: Free Press.

Mullarkey, S., Jackson, P.R., Wall, T.D., Wilson, J.R. & Grey-Taylor, S.M. (1997). The impact of technology characteristics and job control on worker mental health. Journal of Organizational Behavior, 18, 471-489.

Murphy, C.M., & O'Leary, K.D. (1989). Psychological aggression predicts physical aggression in early marriage. Journal of Consulting and Clinical Psychology, 57, 579-582.

National Institute for Occupational Safety and Health (1993). Alert: Request for assistance in preventing homicide in the workplace. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, DHHS. Publication No. 92-109.

Northwestern National Life Insurance Company (1993). Fear and violence in the workplace: A survey documenting the experience of American workers.

Pratt, L.I., & Barling, J. (1988). Differentiating between daily events, acute and chronic stressors: A framework and its implications. In, J.J. Hurrell, Jr., L.R. Murphy, S.L. Sauter, and C.L. Cooper (Eds.), Occupational stress: Issues and developments in research. New York: Taylor & Francis.

Rogers, K. (1994). Violence at work: Personal and organizational outcomes. Unpublished master's thesis: University of Guelph, Guelph, Ontario.

Rogers, K., & Kelloway, E.K. (1997). Violence at work: Personal and organizational outcomes. Journal of Occupational Health Psychology, 2(1), 63-71.

Seligman, M.E.P. (1968). Chronic fear produced by unpredictable shock. Journal of Comparative and Physiological Psychology, 66, 402-411.

Spector, P.E. (1987). Interactive effects of perceived control and job stressors on affective reactions and health outcomes for clerical workers. Work and Stress, 1(2), 155-162.

Spector, P.E., & Brannick, M.T. (1995). The nature and effects of method variance in organizational research. In C.L. Cooper & I.T. Robertson (Eds.) International Review of Industrial and Organizational Psychology, Vol. 10 (pp. 249-274). Chichester, England: John Wiley & Sons Ltd.

Spence, J.T., Helmreich, R.L., & Pred, R.S. (1987). Impatience versus achievement strivings in the Type A pattern: Differential effects on students' health and academic performance. Journal of Applied Psychology, *72*, 522-528.

Steiger, J.H. (1990). Structural model evaluation and modification: An interval estimation approach. Multivariate Behavioral Research, *25*, 173-180.

Storms, P.L., & Spector, P.E. (1987). Relationships of organizational frustration with reported behavioural reactions: The moderating effect of locus of control. Journal of Occupational Psychology, *60*, 227-234.

Sutton, R.I., & Kahn, R.L. (1987). Prediction, understanding, and control as antidotes to organizational stress. In J.W. Lorsch (Ed). Handbook of Organizational Behavior, (pp.272-285). Englewood Cliffs, NJ: Prentice-Hall.

Tabachnick, B.G., & Fidell, L.S. (1996). Using multivariate statistics. 3rd Ed. New York: HarperCollins.

Taylor, A.J.W. (1989). Disaster and disaster stress. New York: AMS Press.

Terry, D.J., & Jimmieson, N.L. (1999). Work control and employee well-being: A decade review. In C. L. Cooper & I. T. Robertson (Eds.) International Review of Industrial and Organizational Psychology, Vol. 14 (pp. 95-148). Chichester, England: John Wiley & Sons Ltd.

Tetrick, L.E., & LaRocco, J.M. (1987). Understanding, prediction, and control as moderators of the relationships between perceived stress, satisfaction, and psychological well-being. Journal of Applied Psychology, *72*(4), 538-543.

Williams, M.F. (1996). Violence and sexual harassment: Impact on registered nurses in the workplace. AAOHN Journal, *44*(2), 73-77.

Withey, M.J., & Cooper, W.H. (1989). Predicting exit, voice, loyalty and neglect. Administrative Science Quarterly, 34, 521-539.

APPENDIX A

VIOLENCE/AGGRESSION AT WORK

The following items describe violent or aggressive events which may occur from many sources at work (e.g. customers, clients, other employees). For each item please indicate how often you have experienced the violent events at work during THE PAST YEAR.

Please respond to each item by circling the appropriate number.

0 = Never 1 = 1 time 2 = 2-3 times 4 = 4 or more times

IN THE PAST YEAR...

1. Have you been hit, kicked, grabbed, shoved or pushed by anyone while you've been at work?
2. Have you been spat on or bitten by anyone while you've been at work?
3. Have you had an object thrown at you while you've been at work?
4. Have you been threatened with any of the above examples of physical violence while you've been at work?
5. Have you been threatened with a weapon while you've been at work?
6. Have you been yelled at or shouted at while you've been at work?
7. Have you been sworn at while you've been at work?
8. Have you been glared at while you've been at work?
9. Has your personal property or workplace property been damaged by someone at work?
10. Has anyone threatened to damage any of your personal or workplace property while you've been at work?
11. Have you had a door slammed in your face while you've been at work?

12. Have you seen any of your co-workers/managers experiencing violent events at work?
13. Have you heard about any of your co-workers/managers experiencing violent events at work?
14. Have you seen any co-workers/managers being threatened with physical violence at work?
15. Have you heard about any co-workers/managers being threatened with physical violence at work?
16. Have any of your friends/relatives experienced or been threatened with physical violence while they've been at work?

APPENDIX B

PREDICTION

The following items ask you to indicate the degree to which you are able to predict things that will happen at work. Please respond by circling the appropriate number.

1 = Strongly disagree 5 = Slightly agree

2 = Disagree 6 = Agree

3 = Slightly disagree 7 = Strongly agree

4 = Neither agree/disagree

1. I am able to predict the behaviour of people at work?
2. I am able to predict daily events at work (or, what will happen at work each day)?
3. I am able to predict how a client/person at work will react in certain situations?
4. I am able to predict if and when a client/person at work might become aggressive?
5. I can predict how clients/people at work will treat me?

APPENDIX C

UNDERSTANDING

The following items ask you to indicate the degree to which you understand why things happen at work. Please respond by circling the appropriate number.

- | | |
|----------------------------|--------------------|
| 1 = Strongly disagree | 5 = Slightly agree |
| 2 = Disagree | 6 = Agree |
| 3 = Slightly disagree | 7 = Strongly agree |
| 4 = Neither agree/disagree | |

1. I understand why clients/people at work behave as they do?
2. I know why certain events happen at work?
3. I know why clients/people at work treat me as they do?
4. I know why clients/people at work act aggressively when they do?
5. I understand why a client/person reacts negatively to someone or something at work?
6. I understand the cause(s) of negative/threatening events at work?

APPENDIX D

PERCEIVED INFLUENCE

The following items ask you to indicate the degree to which you are able to influence things that will happen at work. Please respond by circling the appropriate number.

- | | |
|----------------------------|--------------------|
| 1 = Strongly disagree | 5 = Slightly agree |
| 2 = Disagree | 6 = Agree |
| 3 = Slightly disagree | 7 = Strongly agree |
| 4 = Neither agree/disagree | |

1. I am able to prevent negative things from happening at work?
2. I am able to deal with challenging situations that occur at work?
3. I am able to avoid threatening situations at work?
4. I am able to respond to threatening situations at work?
5. I am able to protect myself from physical aggression at work?
6. I am capable of taking physical action (e.g. self-defense, restraining someone) to prevent harm to myself or others in cases where there are physical threats at work?
7. I am able to influence the behaviour of people at work?

APPENDIX E

FEAR OF FUTURE VIOLENCE AT WORK

For the following items, please indicate your level of agreement or disagreement with the statements by circling the appropriate number. Note that the statements apply to THE NEXT YEAR.

- | | |
|----------------------------|--------------------|
| 1 = Strongly disagree | 5 = Slightly agree |
| 2 = Disagree | 6 = Agree |
| 3 = Slightly disagree | 7 = Strongly agree |
| 4 = Neither agree/disagree | |

DURING THE NEXT YEAR...

1. I am afraid that I will be hit, kicked, grabbed, shoved or pushed while I'm at work.
2. I am afraid that I will be spat on or bitten while I'm at work.
3. I am afraid that I will be hit with an object while I'm at work.
4. I am afraid that I will be threatened with any of the above examples of physical violence while I'm at work.
5. I am afraid that I will be threatened with a weapon while I'm at work.
6. I am afraid that I will be sworn at while I'm at work.
7. I am afraid that I will be shouted at while I'm at work.
8. I am afraid that someone will damage or threaten to damage my personal or workplace property while I'm at work.
9. I am afraid that I will be a victim of workplace violence.
10. If I encounter a potentially violent individual at work, I am afraid that I will not be able to prevent a violent confrontation.

11. If I am a victim of workplace violence, I am afraid that I will be injured.
12. In general, I am afraid of experiencing some form of aggression, violence, or threat of aggression or violence at work.

APPENDIX F

EMOTIONAL WELL-BEING – GENERAL HEALTH QUESTIONNAIRE

The following items focus on how you have been feeling **emotionally** in **THE PAST YEAR**. Please respond by circling the appropriate number.

1 = Not at all

5 = Fairly often

2 = Rarely

6 = Often

3 = Once in a while

7 = All of the time

4 = Some of the time

OVER THE PAST YEAR...

1. Have you been able to concentrate on whatever you're doing?
2. Have you lost much sleep from worry?
3. Have you felt you're playing a useful part in things?
4. Have you felt capable of making decisions about things?
5. Have you felt under strain?
6. Have you felt that you couldn't overcome your difficulties?
7. Have you been able to enjoy your normal day-to-day activities?
8. Have you been able to face up to your problems?
9. Have you been feeling unhappy and/or depressed?
10. Have you been losing confidence in yourself?
11. Have you been thinking of yourself as a worthless person?
12. Have you been feeling reasonably happy, all things considered?

APPENDIX G

PSYCHOSOMATIC WELL-BEING

The following items focus on how you have been feeling physically in THE PAST YEAR. Please respond by circling the appropriate number. Please note that the last 3 items on this scale have somewhat different response options than the others.

1 = Not at all

5 = Fairly often

2 = Rarely

6 = Often

3 = Once in a while

7 = All of the time

4 = Some of the time

OVER THE PAST YEAR...

1. How often have you had difficulty getting to sleep at night?
2. How often have you woken up during the night?
3. How often have you had nightmares or disturbing dreams?
4. How often has your sleep been peaceful and undisturbed?
5. How often have you experienced headaches?
6. Did you get a headache when there was a lot of pressure on you to get things done?
7. Did you get a headache when you were frustrated because things were not going the way they should have or when you were annoyed at someone?
8. How frequently have you suffered from an upset stomach (indigestion)?
9. How often did you have to watch that you ate carefully to avoid stomach upsets?
10. How often did you feel nauseated ("sick to your stomach")?
11. How often were you constipated or did you suffer from diarrhea?
12. How many times have you had minor colds (that made you feel uncomfortable but

didn't keep you sick in bed or make you miss work)? (0 times, 1 time, 2 times, 3 times, 4 times, 5 times, 6 or more times).

13. How many times have you had respiratory infections more severe than minor colds that "laid you low" (such as bronchitis, sinusitis, etc.)? (0 times, 1 time, 2 times, 3 times, 4 times, 5 times, 6 or more times).

14. When you had a bad cold or flu, how long did it typically last? (1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 or more days).

APPENDIX H

NEGLECT

The statements below describe actions that employees take from time to time in the workplace. Indicate how often you have taken each action over THE PAST YEAR.

1 = Not at all

5 = Fairly often

2 = Rarely

6 = Often

3 = Once in a while

7 = All of the time

4 = Some of the time

OVER THE PAST YEAR, HOW OFTEN HAVE YOU...

1. Waited, hoping any problems would solve themselves?
2. Called in sick, not dealing with what was happening?
3. Come in late to avoid some problems?
4. Left early?
5. Taken unauthorized, extended lunch breaks?
6. Said nothing to others, assuming things would work out?
7. Become less interested and made more errors?
8. Not passed on messages to others?
9. Covered up your mistakes?
10. Stayed out of sight to avoid work?
11. Intentionally worked slowly?

APPENDIX I
COVER LETTER

Dear Sir/Madam,

The attached questionnaire is part of a research project being conducted by Aaron Schat and Dr. Kevin Kelloway of the Department of Psychology at the University of Guelph. The purpose of the project is to examine how people experience and respond to various aggressive and threatening situations that may occur at work. The research is being conducted as part of Aaron Schat's Master's thesis and we would very much appreciate your participation in the project. Your responses will help contribute to a better understanding of how people experience and deal with aggression at work.

(Name of Organization) is one of the organizations that was asked and has agreed to participate in this research project. Of course, your participation in the study is voluntary. Completing and returning the questionnaire will be taken as consent to have your data used in the study. Once you have completed the questionnaire, please seal it in the accompanying envelope and return it via internal mail to (Name of contact person). The sealed envelopes will then be forwarded to the researchers, and only they will open the envelopes and have access to the completed questionnaires.

All data are being collected anonymously—please do NOT put your name on the questionnaire or return envelope. The information you provide will remain confidential, with data from the study being reported in the form of group totals only.

We very much appreciate your willingness to participate. Should you require further information about the study or would like to receive a short summary of the research results (available in August), please feel free to contact Aaron Schat (519-824-

4120 Ext. 8931) or Dr. Kevin Kelloway (519-824-4120 Ext. 4475) or write to the address given above.

Sincerely,

E. Kevin Kelloway, Ph.D.

Professor of Psychology

University of Guelph

Aaron Schat

University of Guelph

APPENDIX J

COVER MEMORANDUM FOR SAMPLE 2

RE: Survey Research Project

FROM: (Name), Director of Human Resources, Aaron Schat, University of Guelph

Enclosed is a package of surveys which are part of a research project being conducted by Aaron Schat and Dr. Kevin Kelloway of the Department of Psychology at the University of Guelph. (Name of Organization) has agreed to participate in this project, and we would appreciate it if you could distribute a survey package to as many of your team members as possible. Please note that their participation is voluntary, and they may choose not to complete the survey.

If there are not enough surveys for each team member, please just distribute them until there are no surveys left. If there are extra surveys, please dispose of them. For those members of your team who are willing to participate, please encourage them to return the surveys as soon as possible (within about 2 weeks from the time the surveys are distributed).

In addition to distributing the surveys, you are also asked to collect the surveys once they have been completed. The surveys should be returned to you sealed in the envelope which is provided by the researchers (as per the instructions given to the participants in the survey cover letter). Please forward the sealed envelopes to (Name of contact person).

Your assistance in coordinating this project is greatly appreciated. If you have any questions, please feel free to contact Aaron Schat (519-824-4129 Ext. 8931) or (Name of Director of Human Resources).

APPENDIX K

Means, Standard Deviations, Factor Loadings, Communalities and Proportions of Variance for Principle Axis Extraction with Varimax Rotation for Control Items of Sample 1.

Items	Mean	SD	Factor 1			Communalities
			Understanding	Prediction	Influence	
1. I understand why clients/people at work behave as they do.	5.42	1.15	.731			.578
2. I know why certain events happen at work.	5.47	1.08	.549			.367
3. I know why clients/people at work treat me as they do.	5.34	1.20	.633			.432
4. I know why clients/people at work act aggressively when they do.	5.01	1.35	.846			.749
5. I understand why a client/person reacts negatively to someone or something at work.	5.13	1.25	.840			.763
6. I understand the cause(s) of negative/threatening events at work.	4.89	1.41	.804			.701
7. I am able to predict the behaviour of people at work.	4.61	1.50		.621		.528
8. I am able to predict daily events at work (or, what will happen at work each day).	3.99	1.63		.662		.458
9. I am able to predict how a client/person at work will react in certain situations.	4.64	1.49		.797		.699
10. I am able to predict if and when a client/person at work might become aggressive.	4.38	1.48		.689		.559
11. I can predict how clients/people at work will treat me.	4.70	1.39		.690		.580
12. I am able to prevent negative things from happening at work.	4.10	1.50		.421	.392	.403

continued...

Appendix K (cont'd)

Items	Mean	SD	Factor 1 Understanding	Factor 2 Prediction	Factor 3 Influence	Communi- nalities
13. I am able to deal with challenging situations that occur at work.	5.69	.79			.481	.286
14. I am able to avoid threatening situations at work.	4.52	1.39			.526	.313
15. I am able to respond to threatening situations at work.	5.28	1.14			.687	.628
16. I am able to protect myself from physical aggression at work.	4.82	1.44			.813	.678
17. I am capable of taking physical action (e.g., self-defense, restraining someone) to prevent harm to myself or others in cases where there are physical threats at work.	4.44	1.63			.625	.405
18. I am able to influence the behaviour of people at work.	4.56	1.40			.590	.531
Proportion of Variance			21.21%	16.54%	15.90%	

Only factor loadings exceeding .35 are included in table.

APPENDIX L

Means, Standard Deviations, Factor Loadings, Communalities and Proportions of Variance for Principle Components Extraction with Oblique Rotation for Control Items of Sample 1.

Items	Mean	SD	Factor			Communalities
			1 Understanding	2 Prediction	3 Influence	
1. I understand why clients/people at work behave as they do.	5.42	1.15	-.814			.661
2. I know why certain events happen at work.	5.47	1.08	-.643			.465
3. I know why clients/people at work treat me as they do.	5.34	1.20	-.743			.537
4. I know why clients/people at work act aggressively when they do.	5.01	1.35	-.886			.768
5. I understand why a client/person reacts negatively to someone or something at work.	5.13	1.25	-.861			.774
6. I understand the cause(s) of negative/threatening events at work.	4.89	1.41	-.842			.736
7. I am able to predict the behaviour of people at work.	4.61	1.50		-.671		.603
8. I am able to predict daily events at work (or, what will happen at work each day).	3.99	1.63		-.833		.605
9. I am able to predict how a client/person at work will react in certain situations.	4.64	1.49		-.849		.734
10. I am able to predict if and when a client/person at work might become aggressive.	4.38	1.48		-.761		.636
11. I can predict how clients/people at work will treat me.	4.70	1.39		-.750		.649
12. I am able to prevent negative things from happening at work.	4.10	1.50		-.391	.326	.461

continued...

Appendix L (cont'd)

Items	Mean	SD	Factor 1 Understanding	Factor 2 Prediction	Factor 3 Influence	Communi- nalities
13. I am able to deal with challenging situations that occur at work.	5.69	.79			.587	.389
14. I am able to avoid threatening situations at work.	4.52	1.39			.649	.430
15. I am able to respond to threatening situations at work.	5.28	1.14			.689	.671
16. I am able to protect myself from physical aggression at work.	4.82	1.44			.877	.712
17. I am capable of taking physical action (e.g., self-defense, restraining someone) to prevent harm to myself or others in cases where there are physical threats at work.	4.44	1.63			.774	.540
18. I am able to influence the behaviour of people at work.	4.56	1.40			.579	.583
Proportion of Variance			13.12%	9.71%	38.03%	

Only factor loadings exceeding .30 are included in table.