

Running Head: Coworker Relationships

Coworker Relationships:

Using a New Measure to Predict Health Related Outcomes.

Thesis submitted in partial fulfillment of the Requirements for the Degree of Master of  
Science in Applied Psychology (Industrial/Organizational)

Cindy A. Hain

Saint Mary's University

Halifax, Nova Scotia, Canada

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L. Robinson, Ph.D.

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Coworker Relationships:  
Using a New Measure to Predict Health Related Outcomes.

Cindy A. Hain  
Submitted January 2005

Abstract

The current research investigates further the psychometric properties of the Coworker Relationship Scale (Hain & Francis, 2004) and evaluates a structural model relating coworker relationships to job satisfaction, emotional health, psychosomatic symptoms, and work neglect. Data from an employed convenience sample (N=218) were analyzed via structural equations modeling. The one-factor structure for the 11-item coworker relationship scale, extracted in a previous study using exploratory analysis, was re-examined using a confirmatory factor analysis. The fit for a one-factor model using confirmatory factor analysis was acceptable but not outstanding. An examination of the factor loadings and content of the scale items suggested that a shorter measure would offer both a better fit and be of greater practical use. As such the number of items in the coworker relationship scale was reduced to five. A confirmatory factor analysis on the five items resulted in a good fitting, one factor model. Observed variable path analysis was used to test a hypothesized model in which job satisfaction partially mediated the relationship between coworker relationships and emotional health and emotional health in turn predicted psychosomatic symptoms and work neglect. This partially mediated model was not supported. A revised model in which job satisfaction fully mediated the path between coworker relationships and emotional health and also allowed a direct path from job satisfaction to work neglect provided the best fit to the data. Recommendations for future research, organizational implications, and limitations of this study are discussed.

## Coworker Relationships:

### Using a New Measure to Predict Health Related Outcomes.

#### Introduction

In the workplace, coworkers interact, confer, and develop relationships with each other both to satisfy their job requirements and their personal need for fellowship. One can see the value of positive coworker relationships in studies of such personal and organizational outcomes as job satisfaction, social support, and health issues. For example, positive coworker relationships are associated with reduced job strain (Johnson & Hall, 1988) and negative coworker relationships are linked to low levels of job satisfaction (Hurlbert, 1991).

Despite the frequent reference to coworkers in the organizational literature and the apparent importance of positive coworker interactions, the study of coworker relationships and their influence in the workplace tends to be but a secondary issue in the existing research. Hodson (1997, p. 429) noted that the “horizontal dimensions of interactions among coworkers... has been all too frequently missed or minimized by studies of the contemporary workplace”. Numerous other researchers express this sentiment in a similar manner (e.g., Ducharme & Martin, 2000; Nielsen, Jex, & Adams, 2000; Seers, Petty, & Cashman, 1995; Sias & Cahill, 1998). Although Raabe and Beehr (2003) acknowledge the lack of research regarding coworker influences, they assert that it is well accepted, even without corroborating empirical evidence, that coworkers influence reactions to the workplace. Research is clearly needed to provide concrete

evidence of this well accepted assumption; specifically, the origins and nature of coworker relationships as well as their impact on individual and organizational outcomes needs to be determined.

The current research addresses these concerns. Specifically, this thesis project has two goals. First, as the ability to reliably measure the construct of interest is a vital concern early in a new program of research, I will investigate further the psychometric properties of a recently developed measure, the Coworker Relationship Scale (Hain & Francis, 2004). As an initial step in the current project, the 11 items from the original measure will be further examined. This analysis will include an examination of the inter-item correlations, the item total correlations, and the internal consistency of the items. Further, the one factor structure demonstrated in a previous study (Hain & Francis, 2004) via exploratory analysis will be re-evaluated using confirmatory factor analysis. Second, to illustrate the effect of coworker relationships on outcomes that carry both individual and organizational value, a model relating coworker relationships to job satisfaction, emotional health, psychosomatic symptoms and work neglect will be tested. To set the stage for the current study, the existing coworker relationship literature is reviewed below.

## Coworker Relationships

### *Defining Coworkers*

Coworkers are individuals who work alongside each other in the workplace and who hold positions or ranks similar to each other (Yoon & Thye, 2000). In the majority of businesses and organizations, people interact with coworkers on a continual basis. However, with the onset of the computer age, a greater number of people are working

with others in a virtual environment. Coworkers in either a face-to-face or virtual environment interact regularly with each other and can experience both positive and negative interpersonal relations (Avolio, Kahai, Dumdum, & Sivasubramaniam, 2001).

It is apparent that the pattern of interactions among coworkers serves important organizational functions. Hodson (1997), using ethnographic observations, determined that coworker relationships have four main purposes. First, coworker relations are important for occupational socialization; for example, coworkers can screen apprentices and approve their membership into an occupation. Second, when positive coworker relationships exist, coworkers contribute to solidarity within an organization; for instance, coworkers defend each other against managers, customers, or other work groups. Third, supportive coworker relationships are essential if coworkers feel the necessity to resist those in authority. Last, by engaging in rituals surrounding events such as birthdays, coworker relationships can affirm group identities. Summarizing the ethnographic evidence, Hodson states that coworker conflict and solidarity are extremely important in determining job satisfaction, management relationships, and the sense of having meaningful work. In fact, Hodson reported that strong solidarity among coworkers can actually lead to better relationships with management. On the basis of this evidence, Hodson concluded that coworker cohesion and solidarity are foundations for smoothly functioning workplaces and therefore coworker relationships should be given greater visibility in future research.

Despite the multitude of studies that mention coworker relationships and their apparent impact on a host of organizationally and individually relevant outcomes, coworker relationships have rarely served as the central focus in existing research. What

is clear from studies that have peripherally included coworker relationships, however, is that good coworker relationships have a positive effect on various personal or workplace outcomes, and poor coworker relationships have a negative effect on various personal or workplace outcomes. Specifically, positive coworker relationships appear to be connected with reduced job stress, strain, or burnout (Beehr, Jex, Stacy, & Murray, 2000; Fry & Barker, 2002; Hepburn, Loughlin, & Barling, 1997; Johnson & Hall, 1988; Koeske & Koeske, 1989;), higher job satisfaction (Ducharme & Martin, 2000; Hurlbert, 1991; Nielsen et al., 2000; Roxburgh, 1999), reduced turnover intentions and higher commitment (Nielsen et al., 2000), and improved performance (Barrick, Stewart, Neubert, & Mount, 1998). Poor coworker relationships lead to decreased job satisfaction, weaker employee-management relationships, and decreased productivity (Hodson, 1997; Jehn, 1995).

#### *Measuring Coworker Relationships*

As noted earlier, the effects of coworker relationships are alluded to in numerous studies, but a review of the literature reveals a paucity of studies specifically dealing with coworkers. One potential reason for this oversight is a lack of available measurement tools that specifically deal with coworkers. The most commonly used measures pertaining to coworker issues are in fact sub-scales of job satisfaction instruments. Three multifaceted job satisfaction scales incorporate coworker related questions: the Index of Organizational Reactions (Smith, 1976) – a five-item coworker subscale; the Job Descriptive Index (Smith, Kendall, & Hulin, 1969) – an 18-item coworker subscale; and the Job Satisfaction Survey (Spector, 1985; Spector & Jex, 1998) – a four-item coworker subscale. Perhaps the role of these three scales as sub-components of job satisfaction

measures has promoted the placement of coworker interactions as a secondary focus in overall job satisfaction research. If this is the case, in order for coworker relationships to gain prominence in their own right, measures pertaining to coworkers must be disentangled from job satisfaction scales.

Nielsen et al. (2000) developed a measure that focused exclusively on a single aspect of coworker interactions. In particular, Nielsen et al., (2000) developed and validated a 12-item Workplace Friendship Scale. The scale was based on the premise that coworkers become friends as a result of spending a great deal of time together in the workplace and consists of two dimensions; namely friendship opportunity and friendship prevalence. Given its recent development, very few studies have used the Workplace Friendship Scale. As such, the impact of workplace friendships on various individual and organizational outcomes remains to be determined.

Although Nielson et al.'s (2002) efforts to put forth a measure focusing specifically on coworkers may help gain attention in the research, this measure alone will not fully address the broad range of questions pertaining to coworkers that need to be examined. Their scale assesses only those coworker relationships that are considered workplace friendships and certainly not all coworkers become friends. Coworker relationships that result due to on the job interaction may or may not lead to friendship, yet even coworkers who are not friends may have a good and positive working relationship. Certainly, a scale that only measures the presence or absence of friendships would not sufficiently reflect cases where coworkers are pleasant with each other and have positive interactions, but do not consider themselves as friends. Nor would such a

measure capture the more extreme case where friendships are non-existent and the coworkers are actually in conflict with each other.

The existence of a wide range of coworker interaction patterns was discussed by Kram and Isabella (1985) in their examination of the purpose and types of peer relationships in the workplace. They determined that peers offer a range of developmental support in career-enhancing and psychosocial ways. Career-enhancing functions include information sharing, career strategizing, and job related feedback. Psychosocial functions of relationships with coworkers include confirmation, emotional support, personal feedback, and friendship. Furthermore, they postulated three types of peer relationships: information, collegial, and special. An information peer provides a low demand relationship in which both parties benefit from the sharing of information. The information peer thus receives career-enhancing developmental support. In addition to information sharing, a collegial peer also offers emotional support and feedback and is afforded a moderate level of trust and self-disclosure. The most intimate and rare relationship between peers is described as special and such relationships are characterized by a high level of self-disclosure and self-expression. A special coworker relationship usually takes years to develop and the coworkers typically experience some kind of change and transition together. Both the collegial and special peers thus offer both psychosocial support in addition to other types of career-enhancing developmental support.

Kram and Isabella clearly identified a range of coworker relationships from those that are low demand interactions to friendship. As such, a single measure focused on a particular type of peer relationship in the workplace will not permit a sufficiently broad

scope to fully assess the impact of coworker interactions. For instance, the Workplace Friendship Scale appears to assess special peer relationships, but does not evaluate informational or collegial interactions at work.

Hain and Francis (2004) responded to the continued scarcity of measures designed to specifically evaluate coworker interactions with the development of an 11 item Coworker Relationship Scale (see Appendix A).<sup>1</sup> This measure was intended to tap a wider range of peer interactions in the workplace than the Workplace Friendship Scale. In fact, the Coworker Relationship Scale does not focus on workplace friendships, but rather targets the more frequent, day to day aspects for coworker interactions, including those that are informational and collegial. The construct definition guiding the initial development of the Coworker Relationship Scale was the overall affective orientation derived from interacting with coworkers. This definition was developed by combining Hurlbert's (1991) use of the phrase 'overall affective orientation' in the definition of job satisfaction and with Hodson's (1997) reference to the 'interactions among coworkers'.

Initial studies using the Coworker Relationship Scale suggest that it is both reliable and valid (Hain & Francis, 2004). The measure appears to have high internal consistency. Furthermore, the Coworker Relationship Scale shows convergent validity as it is positively correlated with the Job Descriptive Index's (JDI) coworker subscale and the overall job satisfaction Job in General (JIG) scale (Smith et al., 1969). Although the Coworker Relationship Scale has a strong, positive correlation with the Workplace Friendship Scale (Nielson et al., 2002), a principal components analysis showed that the

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<sup>1</sup> Hain and Francis (2004) was a conference presentation that is not yet published. As an examination of previous research using the Coworker Relationship Scale may facilitate one's interpretation of the current study a summary of the results can be found in Appendix A.

two measures loaded on separate dimensions, suggesting that coworker relationships and workplace friendships are different constructs (Hain & Francis, 2004).

Despite encouraging results from early evaluations of the Coworker Relationship Scale, further assessment of its psychometric properties is needed. Hain and Francis' (2004) results are based on an assessment of two rather small samples, one of which was a student sample. Moreover, prior assessments of the Coworker Relationship Scale's factor structure have been exclusively exploratory. In the current study, I will re-evaluate the psychometrics of the scale and perform a confirmatory factor analysis of its underlying structure.

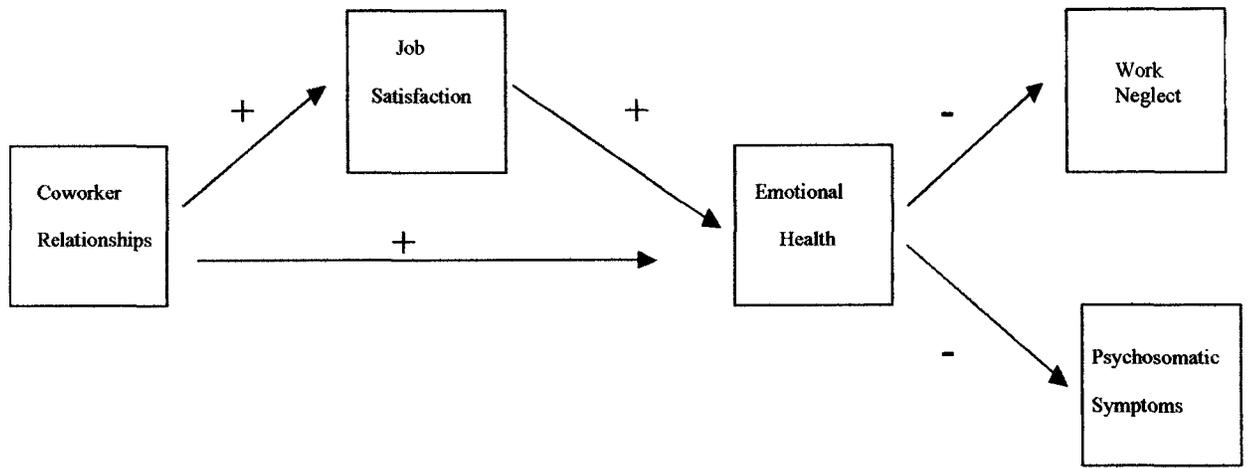
#### *Relating Coworker Relationships to Individual and Organizational Outcomes*

Beyond re-evaluating the underlying structure of the Coworker Relationship Scale, a further goal of the current research is to consider the impact of coworker relationships on important outcomes. I have chosen to examine a model relating coworker relationships to a number of health related variables. A model focused on health seemed a pertinent starting point for a consideration of the affect of coworker relationships on organizations and individuals. Matters pertaining to occupational health are a pivotal concern for both organizations and their employees. Occupational stress carries an economic impact of billions of dollars each year (Sauter, Murphy, and Hurrell, 1990). Individuals experiencing stress face a number of potential long-term consequences including depression (Billings & Moos, 1982; Tepper 2001; Warr, 2005; Zohar, 1995), respiratory problems (Quick, Quick, Nelson & Hurrell, 1997), cardiovascular disease (Kristensen, 1996), substance abuse (Frone, 1999; Frone, Cooper, & Russell, 1994) and reduced job performance (Jex & Crossley, 2005). The organizational ramifications of

these individual consequences are obvious and include increased absenteeism, higher health benefit costs, and reduced productivity.

Given the organizational and individual ramifications of workplace stress, further research on the predictors of health outcomes is valuable. Previous research suggests that poor coworker interactions may be a workplace stressor that puts employees at risk for stress (e.g., Sauter et al., 1990). Given such previous findings it seemed logical to examine a model relating coworker relationships to workplace stress. Such an effort may provide further insight into the causes of workplace stress.

The proposed model relating coworker relationships to a number of pertinent health related outcomes is presented in Figure 1. A discussion of this model relies on distinctions among three related concepts in the occupational health literature, namely stressor, stress, and strain (Pratt & Barling, 1988). Stressors are objective, external events that contribute to stress. For instance, a demanding work load may be described as a stressor. Stress is the negative internal response to a stressor. Finally, strain, which can be psychological, physical or behavioral in nature, results from the long-term experience of stress. Psychological strain is characterized by such symptoms as a decreased ability to concentrate, trouble making decisions, depression, and having a feeling of low personal worth (Billings & Moos, 1982; Tepper 2001; Warr, 2005; Zohar, 1995). Physical strain is typified by problems such as sleeping difficulties, frequent headaches, stomach upset, nausea, colds, flues, cardiovascular disease and respiratory infections (Kristensen, 1996; Quick et al., 1997). Behavioral related strain is multidimensional and includes such problems as increased alcohol and drug use (Frone, 1999; Frone, et. al., 1994) and neglect of one's work (Jex & Crossley, 2005).



*Figure 1.* Partially mediated model relating coworker relationships to job satisfaction and health related outcomes.

As noted earlier, previous research has suggested that poor coworker interactions are a work-related stressor. In fact, numerous models of workplace stressors incorporate coworker interactions. For example, the National Institute of Occupational Safety and Health model of work stressors lists poor interpersonal relations as a source of workplace stress (Sauter et al., 1990). Similarly, Kelloway and Barling (1994), in their research on stressors prevalent in the Canadian military, identified poor interpersonal relations with coworkers and members of the public as a stressor. As yet another example, Warr's (1987) vitamin model of work related stressors noted the importance of interpersonal contact in the experience of stress. Low quality interactions may be perceived as a stressor. Previous models of work stress have referred to poor interactions as stressors. However, the Coworker Relationship Scale measures perceptions of interactions with

coworkers, and therefore scores on this measure are perhaps best categorized as a reflection of the amount of internal stress one feels about coworker interactions.

Although I attempt to distinguish between the terms stressor and stress, and suggest that the Coworker Relationship Scale measures stress, some inter-mixing of the terms is somewhat difficult to avoid because many existing studies in the stress literature appear to use the terms stress and stressor interchangeably.

Researchers have studied the role that coworkers play in stress and strain. For instance Johnson and Hall (1988) noted that poor social support resulted in higher occurrence of medical conditions involving the heart, more psychological problems, higher cholesterol levels, increased illness, greater job stress, and increased psychological strain. Johnson and Hall found that work-related coworker social support reduced job strain. Moreover, as social support was reduced, the prevalence of cardiovascular disease increased along a strain diagonal. Beehr et. al. (2000) also found that social support from coworkers could predict psychological strain – the more support, the less strain. In related research, Koeske and Koeske (1989) concluded that building a socially supportive work environment among coworkers could forestall social worker burnout, provide emotional relief, and reduce turnover. Hepburn et. al. (1997) also noted that interpersonal relationships in the workplace could affect a person's mental and physical health.

According to Hepburn et al., social support can act as a buffer against work stress and the lack of support can intensify negative effects from work related stressors. Seeking social support, which includes support from coworkers, is listed as an effective coping strategy for stressful events.

Given this evidence, it appears that coworker support has an impact on emotional health. However, this previous research on the role of coworkers in work stress is by no means definitive. As noted earlier, studies that focus specifically on coworker interactions are few. Research in this area has either treated coworker interactions as a secondary issue or studied related concepts such as social support. In the current model, coworker relationships are more broadly defined than social support and the role of coworker relationships as a workplace stressor will be examined using the Coworker Relationship Scale. As such, the present research will permit an examination of the relationships among coworker relationships and a number of variables related to workplace stress.

Job satisfaction is a frequently considered outcome in studies of workplace stress (Beehr & Glazer, 2005; Kahn & Byosiere, 1992; Matteson & Ivancevich, 1982). A high degree of job satisfaction is associated with increased psychological well-being, while job dissatisfaction is considered a psychological indicator of strain. As such, if poor coworker relationships are indeed a workplace stressor, low quality coworker relationships should be associated with decreased job satisfaction. Alternatively, high quality coworker relationships should predict increased job satisfaction.

Given that people interact with their coworkers predominantly in the workplace, it seems logical that the quality of such interactions would impact job satisfaction. In particular, positive coworker relationships should serve to increase job satisfaction. Empirical evidence supports this claim. Hain and Francis (2004) found that coworker relationships were highly correlated with job satisfaction. Those who reported more positive coworker interactions on the Coworker Relationship Scale had higher levels of

overall job satisfaction. Studies using other measures pertaining to various facets of coworker interactions also report a link between the quality of work peer relationships and job satisfaction. For instance, Nielsen et al. (2000) found that participants who reported high levels of workplace friendship also experienced greater job satisfaction. Similarly, Hurlbert (1991) found that being part of a coworker social circle increased job satisfaction levels, even once social, demographic, and worker values were controlled.

Research on the role of coworker social support also illustrates a positive association between having good coworkers and job satisfaction. For instance, Ducharme and Martin (2000) measured the effects of coworker instrumental support – the provision of guidance or advice, and coworker affective support – the experiencing of feeling accepted and cared for, on job satisfaction. Both forms of coworker social support had significant positive effects on job satisfaction, with instrumental support making a stronger contribution than affective support.

Thus, the accumulated research suggests that coworker interactions affect one's job satisfaction. In light of this body of evidence, I offer the following hypothesis:

*H1: Coworker relationships will be positively and directly related to job satisfaction; the more positive coworker relationships are the greater the levels of job satisfaction reported.*

The hypothesized model also includes a path linking job satisfaction to emotional health. Both job satisfaction and emotional health have long been implicated in the organizational stress process as psychological indicators of strain (e.g., Beehr & Glazer, 2005, Jex & Crossley, 2005, Kahn & Byosiere, 1992). One might differentiate between the two concepts in terms of breadth. Job dissatisfaction may be described as a measure

of strain. If a person is exposed to workplace stressors, and as a result experiencing workplace stress, it may manifest in reduced job satisfaction. Certainly, measures of job satisfaction focus exclusively on one's reactions to and feelings about work. Emotional health, on the other hand, is broader in nature. Measures of emotional health stretch beyond reactions to work to encompass such issues as self esteem, depression and anxiety. It is certainly logical that persistent feelings of job dissatisfaction might contribute to symptoms of depression, anxiety and reduced self worth. Previous research has found that individuals who are happier with their work also report better emotional health (e.g., Abramson, Ritter & Gofin, 1992). Based on such an analysis linking job satisfaction to emotional health, I offer the following hypothesis:

*H2: Job satisfaction will predict emotional health; people who report being more satisfied with their jobs will also tend to report better emotional health.*

The hypothesized model also includes a direct link between coworker relationships and emotional health. Thus, in the hypothesized model I propose that the relationship between coworker relationships and emotional health is partially mediated by job satisfaction. The argument in favour of partial, rather than full, mediation is as follows. Overall job satisfaction measures, like the one used in the current research, assess the extent to which people like their jobs in general. Presumably, job related affect is influenced by the extent to which people enjoy their total work environment including their assigned tasks, the amount of challenge in their jobs, as well as the people they work with. As such, having positive coworker relationships likely does contribute to increased job satisfaction. However, it also appears that people may have good relationships with

their coworkers while detesting other, more task related aspects of their jobs. In this case, they may report lower job satisfaction. Nevertheless, in such a situation, positive interactions with coworkers may in fact contribute to other forms of emotional well-being. Under this logic it seems reasonable to hypothesize that coworker relationships have both direct and indirect effects on emotional health.

Based on the preceding analysis I put forth the following hypothesis:

*H3: Coworker interactions will directly and positively predict emotional health. Those who have positive coworker interactions will tend to report higher levels of emotional health.*

With respect to the relationships among emotional, physical, and behavioral strain, Schat and Kelloway (2000) found that emotional well-being directly predicts behavioural strain as measured by work neglect and the presence of psychosomatic symptoms. Those with higher levels of emotional health reported less avoidance of their work duties and fewer psychosomatic concerns. Based on this recent research, I present the following hypotheses:

*H4: Emotional health will directly and negatively predict work neglect; the higher an individual's reported emotional health, the less workplace neglect will be reported.*

*H5: Emotional health will be directly and negatively related to psychosomatic symptoms; the stronger an individual's reported emotional health, the fewer psychosomatic symptoms will be reported.*

## Method

### *Participants*

A convenience sample of working participants was recruited to participate in the current study. Participants were recruited through friends of the researcher and through students who asked their own family and friends to participate and also to circulate the survey package to others. The sample included 82 male and 136 female participants for a total of 218 participants. Participants worked in various industries and at various levels within their organizations. For example, a number of participants worked in factories, schools, and banks. Generally, participants worked at an employee rather than management level. Age ranged from 19 to 60 with a mean age of 37.09 ( $SD=9.41$ ). A large number of the participants (47%) reported job tenure of over five years ( $N=102$ ). 86% of the participants reported being employed full-time ( $N=188$ ), 12% part-time ( $N=25$ ), and 2% reported 'other' ( $N=5$ ). The mean number of coworkers reported was 43.92 ( $SD= 94.47$ ).

### *Procedure*

A paper and pencil questionnaire was administered to participants. Participants were asked to complete a demographic form and then respond to a questionnaire package. Data were collected over the course of five months, beginning in January 2004 and ending in May 2004.

### *Measures*

*Coworker Relationship Scale*. The Coworker Relationship Scale (Hain & Francis, 2004) is an 11-item scale (see Appendix B) that uses a Likert type 7-point scale that ranges from 1 (strongly disagree) to 7 (strongly agree); higher scores indicate more

positively oriented coworker relationships. Participants are directed to think about their current job as they respond to this measure. This measure has shown high internal consistency in previous research ( $\alpha=.92$ ) (Hain & Francis).

*Overall Job Satisfaction.* The current study used the 6-item version (Agho, Price, & Mueller, 1992) of the job satisfaction scale developed by Brayfield and Rothe (1951). Items that are assessed using a Likert type 5-point scale that ranges from 1 (strongly disagree) to 5 (strongly agree); higher scores on this scale represent greater job satisfaction (see Appendix C). Estimates of internal consistency for this measure are high ( $\alpha$  ranges from .83 to .90) (Fields, 2002).

*General Health Questionnaire-Short Form.* The short form of the General Health Questionnaire (Banks, Clegg, Jackson, Kemp, Stafford, & Wall, 1980) is a 12-item scale (see Appendix D) that measures emotional well-being. A modified Likert type 7-point scale was used, ranging from 1 (not at all) to 7 (all of the time). Six of the 12 items are reversed scored; higher scores indicate good general health. Banks et al. report the coefficient alpha as ranging from .82 to .90.

*Psychosomatic Well-being.* Psychosomatic Well-being was measured using Schat, Desmarais, and Kelloway's (in press) Physical Health Questionnaire, a 14-item modification of Spence, Helmrich, and Pred's (1987) scale (see Appendix E). A Likert type 7-point scale that ranges from 1 (not at all) to 7 (all of the time) was used in the current study. Higher scores on this scale indicate more symptoms. Schat and Kelloway (2000) report the internal consistency of the scale as  $\alpha = .86$ . Due to a high number of participants not responding to the item regarding how long a participant's cold or flu lasts, this item was deleted and all analyses were thus based on the 13 remaining items.

*Work Neglect.* The Work Neglect measure (see Appendix F) is a 12-item scale (Barling, Rogers, & Kelloway, 2001) that uses a Likert type 7-point scale ranging from 1 (not at all) to 7 (all of the time). The scale measures the frequency with which one's job duties are neglected. Higher scores on this scale indicate greater neglect. Schat and Kelloway (2003) report an internal consistency of  $\alpha=.76$ . Due to a large number of participants' failure to respond to the item regarding work to rule this item was removed from the scale and thus all analyses are based on 11 items

*Positive and Negative Affect Scales.* The Positive and Negative Affect Scales (Watson, Clark, & Tellegen, 1988) are designed to measure two dimensions of mood. They were included in the survey package so that I could assess if mood had an effect on the manner in which participants responded to the other measures in the survey package. Ten questions assess each of positive and negative affect (see Appendix G). The 20-items are measured using a Likert type 5-point scale that ranges from 1 (very slightly or not at all) to 5 (extremely). When asking participants how they generally feel, the internal consistency for positive affect is .88 and .87 for negative affect.

### *Demographics*

Participants were asked to respond to a number of demographic questions (see Appendix H). Respondents were asked to give their gender (coded 0=male and 1=female), tenure (coded 0=less than 2 years, 1=2 to 5 years, 2=5 to 10 years, and 3=10 or more years), and full or part-time status (coded 0= full-time, 1=part-time, and 2=other). Participants also were asked to provide information regarding their age and the approximate number of coworkers they have.

## Results

### *Descriptive Statistics*

Table 1 presents a summary of the descriptive statistics and the correlations between measures used in this study. None of the demographic variables – age, gender, number of coworkers, full or part-time status, and job tenure – were correlated with the Coworker Relationship Scale. Some of the demographic variables significantly correlated with variables included in the proposed model. However, because these correlations tended to be small and due to potential statistical difficulty incorporating control variables in structural models, these factors were not controlled for in further analyses.

Table 1

*Descriptive Statistics and Correlations Between Measures*

Scale	1	2	3	4	5	6	7	8	9	10	11	12	<i>M</i>	<i>SD</i>
1. Coworker Relationship	.95	.43**	.26**	-.19**	-.28**	.29**	-.20**	.08	.03	.09	-.03	-.00	5.64	.95
2. Overall Job Satisfaction		.87	.44**	-.26**	-.43**	.54**	-.25**	.17*	-.02	-.17*	-.17*	.02	3.77	.77
3. Emotional Health			.90	-.67**	-.45**	.55**	-.68**	.10	-.13	-.01	-.15*	-.07	5.35	.95
4. Psychosomatic Health				.81	.27**	-.38**	.57**	-.11	.12	.02	.08	-.04	2.79	.86
5. Work Neglect					.83	-.27**	.46**	-.19*	-.17*	.05	.04	.02	1.58	.59
6. Positive Affect						.89	-.37**	.07	-.06	-.03	-.26**	.09	3.59	.67
7. Negative Affect							.88	-.10	-.00	-.01	.11	-.02	1.71	.62
8. Age								-	-.04	-.01	-.23**	.44**	37.09	9.41
9. Gender									-	-.08	.16*	-.09	.62	.49
10. Number of Coworkers										-	-.05	.14	43.92	94.47
11. Full or Part-time Status											-	-.16*	.16	.43
12. Tenure												-	1.44	1.20

\*\*Correlation is significant at  $p < .01$ ; \*Correlation is significant at  $p < .05$ . Listwise  $N=186$ . Coefficient alpha is on the diagonal.

*Evaluation of the Psychometric Properties of the Coworker Relationship Scale*

The Coworker Relationship Scale has a high coefficient alpha of .95 (see Table 1); this finding is in keeping with previous research using the Coworker Relationship Scale, which also produced high alpha coefficients (Hain & Francis, 2004). Analyses were performed on the Coworker Relationship Scale to identify mediocre or deficient items. The inter-item correlations (see Table 2) indicate that no one item is mediocre or deficient. Inter-item correlations of less than .3 are considered low. In this case, the lowest inter-item correlation is .43 and the highest is .79. Additionally, the item-total correlations appear high (see Table 2), with the range from .62 to .85. Overall, the psychometric properties of the Coworker Relationship Scale are very good.

Table 2

*Correlation Matrix for Items of the Coworker Relationship Scale*

Coworker Relationship Scale Item	1	2	3	4	5	6	7	8	9	10	11
1. I have good relationships with my coworkers	.72										
2. I like spending work hours with my coworkers	.65	.74									
3. I look forward to working so I can see my coworkers	.59	.69	.76								
4. My coworkers and I cooperate well with each other	.67	.57	.57	.77							
5. Coworkers positively affect my job experience	.56	.61	.63	.65	.80						
6. The more I interact with my coworkers the better I enjoy my job	.53	.61	.68	.55	.73	.78					
7. My coworkers positively affect my mood	.44	.43	.49	.48	.63	.60	.62				
8. My coworkers and I interact positively on the job	.62	.58	.57	.78	.69	.58	.51	.80			
9. I enjoy the time I spend on the job with my coworkers	.70	.67	.68	.70	.68	.66	.49	.77	.85		
10. I feel lucky to be working with the people that I do	.57	.64	.64	.69	.65	.64	.49	.72	.75	.80	
11. I feel fortunate that I have good coworker relationships	.65	.62	.66	.69	.66	.69	.54	.76	.79	.76	.84

Listwise  $N=212$ . Item-total correlation is on the diagonal.

*Factor Analysis*

To confirm the one factor structure reported by Hain & Francis (2004), a confirmatory analysis was performed (see Table 3). The one factor solution, however, did not provide a good fit to the data ( $\chi^2(44) = 181.64 p < .01$ , GFI = .86; NFI = .91; CFI = .93; AGFI = .78; RMSEA = .13). Given the strong results of the exploratory factor analysis in Hain and Francis' previous work and the relatively strong factor loadings in the confirmatory analysis, the lack of absolute and relative fit was somewhat surprising. One possible reason for the results is that the 11 items, which are all quite highly

correlated, contain some redundancies that are working to reduce the fit of the one factor model. As such, an attempt was made to reduce the number of items. A shorter scale might not only provide a better factor solution, but also prove to be more practical for organizational usage. The 11 items were carefully scrutinized and it was determined that the item with the lowest factor loading “my coworkers positively affect my mood” would be deleted and that items with evidence of conceptual redundancy would be deleted as well. Two items focused on the feeling of luck: “I feel fortunate that I have good coworker relationships” and “I feel lucky to be working with the people that I do”. The item “I feel fortunate that I have good coworker relationships” was deleted. Three items referred to time spent on the job with coworkers: “I enjoy the time I spend on the job with my coworkers”, “I like spending work hours with my coworkers”, and “I look forward to working so I can see my coworkers”. The items “I like spending work hours with my coworkers” and “I look forward to working so I can see my coworkers” were removed. Two items dealt with coworker interactions: “my coworkers and I interact positively on the job” and “the more I interact with my coworkers the better I enjoy my job”. The item “the more I interact with my coworkers the better I enjoy my job” was removed. The item “I have good relationships with my coworkers” was removed in preference to two more specific items that dealt with positive affects and cooperation: “coworkers positively affect my job experience” and “my coworkers and I cooperate well with each other”.

Confirmatory factor analysis on the 5-item measure (see Table 4) showed that a one-factor solution provided an excellent fit to the data ( $\chi^2(5) = 8.34$ , ns, GFI = .98; NFI = .99; CFI = 1.0; AGFI = .95; RMSEA = .06). Further, the five-item scale maintained its

internal consistency with a coefficient alpha of .92. With the concern that following the deletion of 6 items the scale may have lost its essence, a correlation between the new five-item Coworker Relationship Scale and a measure made up of the deleted six items was performed. The correlation of .88 suggests that the five-item Coworker Relationship Scale does indeed reflect the larger scale and the construct tapped by the scale was likely not affected by the reduction.

Table 3

*Factor loadings from the one factor, Confirmatory Factor Analysis for 11-item Coworker Relationship Scale*

	Factor 1
I enjoy the time I spend on the job with my coworkers	.88
I feel fortunate that I have good coworker relationships	.87
Coworkers positively affect my job experience	.80
I feel lucky to be working with the people that I do	.84
My coworkers and I interact positively on the job	.85
My coworkers and I cooperate well with each other	.81
I look forward to working so I can see my coworkers	.77
I like spending work hours with my coworkers	.75
The more I interact with my coworkers the better I enjoy my job	.78
I have good relationships with my coworkers	.75
My coworkers positively affect my mood	.62

Table 4

*Factor loadings from the one factor, Confirmatory Factor Analysis for 5-item Coworker Relationship Scale*

	Factor 1
I enjoy the time I spend on the job with my coworkers	.84
Coworkers positively affect my job experience	.78
I feel lucky to be working with the people that I do	.89
My coworkers and I interact positively on the job	.87
My coworkers and I cooperate well with each other	.83

### *Hierarchical Regression Analysis*

Before testing the hypothesized model using observed variable path analysis, it was important to ensure that any relationship between coworker relationships and job satisfaction are indeed attributable to a person's relationships with their peers as opposed to their general mood state or personality. To do so the impact of coworker relationships on job satisfaction, while controlling for the effect of mood, was evaluated using hierarchical regression. The positive and negative affectivity measures were entered on step one and the Coworker Relationship Scale on step two of the regression. For the prediction of job satisfaction,  $R$  squared was significant at the end of the first step,  $R^2 = .29$ ,  $F(2, 201) = 42.49$ ,  $p < .01$ , and also at the end of the second step,  $R^2 = .39$ ,  $F(1, 200) = 35.53$ ,  $p < .01$ . The Coworker Relationship Scale accounted for an additional 10.6% of the variance in job satisfaction beyond the affectivity variables alone ( $\Delta R^2 = .106$ ,  $F_{change} = 35.53$ ,  $p < .01$ ). With all variables entered into the equation, positive affectivity ( $\beta = .43$ ,  $t(200) = 7.06$ ,  $p < .01$ ) and Coworker Relationships ( $\beta = .35$ ,  $t(200) = 5.96$ ,  $p < .01$ ) were significant predictors of job satisfaction, however negative affectivity ( $\beta = -.01$ ,  $t(200) = -.24$ , ns) was not. These results show that coworker relationships account for unique

variance in job satisfaction and that any relationship found in the model between coworker relationships and job satisfaction is not solely attributable to general mood states.

#### *Observed Variable Path Analyses*

The fit of the hypothesized partially mediated model was compared to that of a model in which job satisfaction fully mediated the relationship between coworker relationships and emotional health and a non-mediated model in which job satisfaction did not mediate the relationship between coworker relationships and emotional health. As both the full and non-mediated models are nested within the partially mediated model, the  $\chi^2_{\text{difference}}$  test could be used to evaluate which of these models provided a superior fit to the data. All three models were tested using LISREL 8.51 (Joreskog & Sorbom, 2001). Table 5 summarizes the fit indices for the competing models.

Both the partially ( $\chi^2(5) = 21.26 p < .01$ , GFI = .96; NFI = .92; CFI = .94; AGFI = .88; RMSEA = .12) and the fully mediated ( $\chi^2(6) = 22.3 p < .01$ , GFI = .96; NFI = .92; CFI = .94; AGFI = .90; RMSEA = .11) models provided satisfactory, though not outstanding, fit to the data. The non-mediated model did not provide a good fit to the data ( $\chi^2(6) = 50.65 p < .01$ , GFI = .92; NFI = .81; CFI = .83; AGFI = .80; RMSEA = .18). The  $\chi^2_{\text{difference}}$  test showed that the hypothesized partially mediated model provided a significantly better fit than the non-mediated model ( $\chi^2_{\text{difference}}(1) = 29.39, p < .05$ ). However, the hypothesized partially mediated model was not a significantly better fit than the fully mediated model ( $\chi^2_{\text{difference}}(1) = 1.04, ns$ ). Therefore, the fully mediated model, which is the more parsimonious of the two models, was retained. The lack of significant improvement to the fit with the addition of a direct path from coworker

relationships to emotional health, and the fact that this additional path was non-significant in the partially mediated model suggests that the influence of coworker relationships on emotional health is through other variables rather than direct. Figure 3 shows the beta weights for the fully mediated model. Note that all the beta weights are significant at  $p < .05$ .

As the absolute and relative fit for the fully mediated model was not outstanding, I examined the modification indices to determine possible alterations to the model. These indices suggested that a direct path from job satisfaction to work neglect would improve the model fit. Such a path also seems intuitively logical as it makes great sense that the greater one's job satisfaction the less amount of work neglect one would report. As such, the fully mediated model, with an additional path linking job satisfaction to work neglect was evaluated. This model provided a very good fit to the data ( $\chi^2(5) = 4.43$  ns, GFI = .99; NFI = .98; CFI = 1.0; AGFI = .97; RMSEA = 0.0). To evaluate if the additional path substantially improved fit relative to the original fully mediated model, a  $\chi^2_{\text{difference}}$  test was conducted. The additional path did significantly improve the model fit ( $\chi^2_{\text{difference}}(1) = 17.87, p < .01$ ). Figure 4 shows the revised, fully mediated model. Note that the beta weights are all significant at  $p < .05$ .

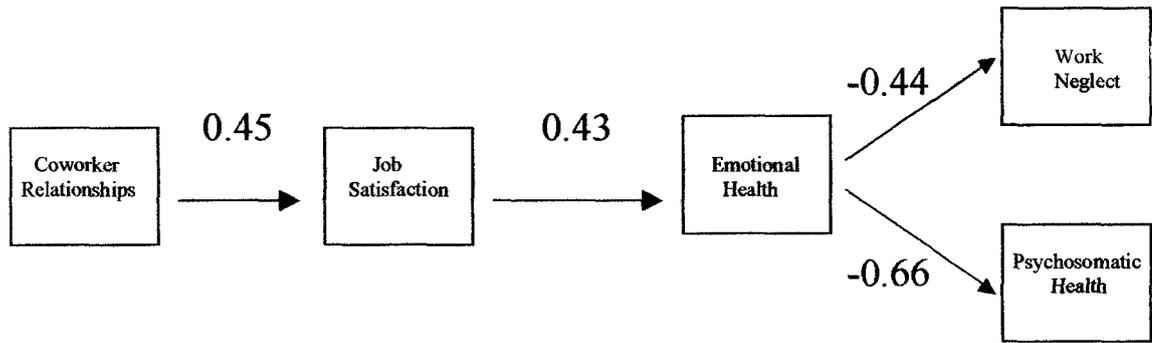


Figure 2. Fully mediated model relating coworker relationships to job satisfaction and health related outcomes.

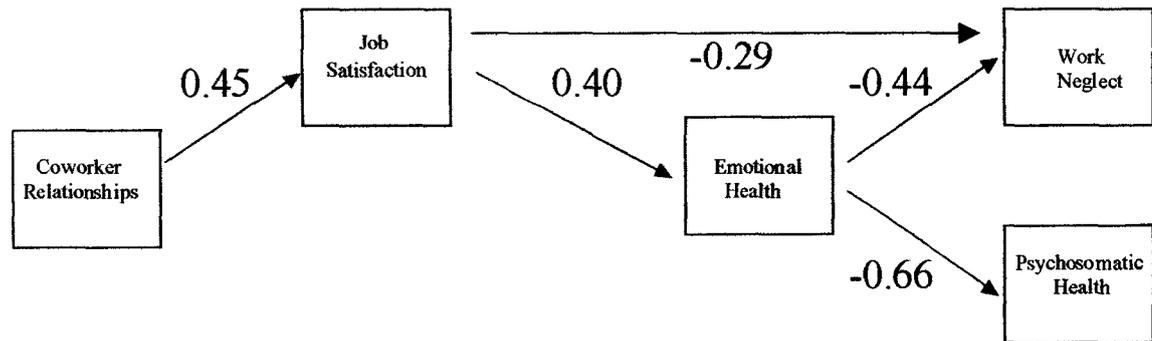


Figure 3. Revised, fully mediated model with a direct path from job satisfaction to work neglect.

Table 5

*Structural Equation Modeling Fit Indices Summary*

Model	GFI	NFI	CFI	AGFI	RMSEA
Fully mediated	.94	.90	.92	.87	.12
Partially mediated	.94	.90	.92	.85	.13
Non-mediated	.92	.81	.83	.80	.18
Revised, Fully mediated	.99	.98	1.0	.97	.00

## Discussion

One goal of the current research was to examine further the psychometric properties of the Coworker Relationship Scale. The current study shows the strengths of the Coworker Relationship Scale. There are no mediocre or deficient items, item-total correlations are high, and the scale has a high degree of internal consistency. The current examination of the psychometric properties of the Coworker Relationship Scale is consistent with Hain and Francis's (2004) consideration of the reliability and validity of the Coworker Relationship Scale.

The initial confirmatory factor analysis on the 11 item version of the Coworker Relationship Scale did not provide strong support for the one-factor solution that emerged in previous exploratory investigations of the factor structure (Hain & Francis, 2004). Accordingly, the 11 items were scrutinized for redundancy. By grouping items according to overlapping wording and by theme the number of items was reduced to five. Following the reduction in items, a second confirmatory factor analysis provided very strong support for a one factor solution. As shown by the substantial correlation between the five selected items from the shortened version and six deleted items, the shorter

measure improved fit without undue damage to the essence of the original, 11 item Coworker Relationship Scale.

In addition to improving the fit of a one factor solution, the reduction of the Coworker Relationship Scale to five items greatly increases the practical utility of the Coworker Relationship Scale. Both practitioners and organizational researchers alike have a strong preference for short, reliable and valid measures for inclusion in surveys of busy employees. The short five-item Coworker Relationship Scale will be quick for participants to complete and can easily be added to other measures for larger organizational studies. With the evidence provided by this current study, organizational researchers and practitioners can be confident that assessing coworker relationships via this measure will result in a reliable indication of the quality of relationships among coworkers and in doing so provide information pertaining to an important predictor of job satisfaction.

The second goal of the current study was to evaluate the predictive ability of the Coworker Relationship Scale in a model relating coworker relationships to job satisfaction and health related variables. The hypothesized model in which job satisfaction partially mediated the relationship between coworker relationships and emotional health was not supported. Rather, the more parsimonious model, in which job satisfaction fully mediated this relationship, was retained. Other than the lack of support for a direct path from coworker relationships to emotional health, all remaining hypothesized paths were supported. Coworker relationships were directly and positively related to job satisfaction. Higher job satisfaction predicted improved emotional health. A high degree of emotional health was in turn associated with reduced psychosomatic

symptoms and less work neglect. These results provide further support for the previously established link between job satisfaction and emotional health (Hepburn et al., 1997; Sauter et al., 1990) and also support previous research that ascertained that emotional health predicts psychosomatic symptoms and neglect (Schat & Kelloway, 2000).

Although the fully mediated model provided a superior fit relative to the partially mediated model, neither provided a good absolute fit to the data. Accordingly, based on an examination of the modification indices and a logical analysis of reasonable paths, a revised fully mediated model that introduced a direct path between job satisfaction and work neglect was examined. The revised, fully mediated model provided an outstanding fit to the data and significantly improved model fit relative to the original fully mediated model. Certainly the negative relationship between job satisfaction and work neglect makes sense, as it seems quite likely that those who gain a high degree of satisfaction from their work are less likely to engage in counterproductive behaviour such as neglecting tasks, arriving late and so forth.

The lack of support for a direct relationship between coworker relationships and emotional health is somewhat surprising given previous suggestions that poor interpersonal interactions at work function as a stressor (e.g., Kelloway & Barling, 1994; Sauter et al., 1990; Warr, 1987) and should impact strain related outcomes. The current finding that coworker interactions predict job satisfaction provides some support for the placement of poor coworker relationships among workplace stressors. A low degree of job satisfaction has been identified as a measure of psychological strain in previous research (see Beehr & Glazer, 2005). The current research suggests that the impact of poor coworker interactions on broad indicators of strain is indirect via faceted measures

of psychological strain such as job satisfaction. It is possible that there are other variables, not included in the current research, that also mediate the relationship between coworker relationships and emotional strain. For instance, positive coworker relationships may contribute to a high degree of affective organizational commitment which may in turn reduce emotional strain. Further, it is possible that positive coworker relationships are directly related to other health outcomes that were not incorporated in the current study. For example, positive interactions with coworkers may contribute to feelings of positive mental health (Hess, Kelloway & Francis, 2005). Further research is needed to determine if coworker relationships have a direct or indirect influence on various indicators of health.

The current findings must also be interpreted in light of previous research that suggests a link between coworker support and health related outcomes (e.g., Beehr, et. al., 2000; Hepburn, et. al., 1997; Johnson & Hall, 1988). On the surface, it may appear that the lack of a direct relationship from coworker relationships to emotional health is contrary to these previous reports. However, the divergent findings may be due to the fact that the definition and measurement of coworker relationships in the current research focus on the overall affective orientation derived from interacting with coworkers and not specifically with coworker support. The difference between having a good coworker relationship and having a supportive coworker still needs to be determined. Further, the relationships among these two conceptions of coworker interactions and health related outcomes should be the subject of future study.

The current study makes a number of valuable contributions to organizational research. First of all, it presents a coworker relationship scale that is much broader than

previous efforts such as the Workplace Friendship Scale (Nielsen, et. al., 2000). The coworker relationship scale takes into account the fact that coworkers do not necessarily have to be friends in order for a coworker relationship to have an influence on organizationally relevant variables such as job satisfaction. Second, the Coworker Relationship Scale is both psychometrically sound and brief. The integrity and brevity of the coworker relationship scale make it viable for inclusion in organizational surveys. From a research perspective, the availability of such a measure may heighten the presence of coworker relationship studies in the organizational psychology literature. From a practical perspective, the inclusion of the Coworker Relationship Scale in Employee Satisfaction Surveys may help practitioners identify and address problems among groups of employees. For instance, a Human Resource Manager may respond to reports of negative coworker interactions in a given department with team building efforts or work group retreats. Third, the Coworker Relationship Scale appears to be a strong predictor of job satisfaction, a very important and frequently studied outcome variable in organizational research.

As with most research, this study is not without its limitations. There was a heavy dependence in the present study on self-report measures. Such measures rely on participants' ability to remember how they felt or behaved over the course of the previous month. It is possible that participants forgot, remembered incorrectly, or chose not to answer honestly. Further, reliance on self-report measures for all the scales in the current study contributes to concerns regarding common method variance. In the present study, a core relationship between coworker relationships and emotional health was not significant; this finding suggests that common method variance was not at play to create

artificially inflated correlations. Bearing in mind these possibilities, an improvement in study design would have been to have multiple modes of measurement. For instance, physical measures of health (e.g., blood pressure or heart rate), along with the various self-report health measures, would strengthen the design of this research. Additionally, a more objective measure of coworker relationships such as having an independent observer rate coworker interactions or perhaps having coworkers rate each other, could also improve the study design. However, given the nature of the sample and the time limitations associated with research conducted as part of a graduate degree, such measures were not viable in the current study. As this is an initial study of the predictive ability of the Coworker Relationship Scale, I believe that the benefit of uncovering the usefulness of the scale far outweighs this limitation of the study design. Having established the psychometric properties of the scale, future research can be better designed to avoid mono method bias.

The cross sectional nature of the current data limits one's ability to reach causal conclusions regarding the variables included in the model. A longitudinal study relating coworker relationships to health related outcomes is called for. However, given that the current study was one of the first to use the new Coworker Relationship Scale, I argue that this cross-sectional research does provide valuable insight into the relationships between coworker interactions and other organizationally important variables.

Although the sample in the present study involved more than 200 participants, the number of missing data reduced the listwise  $N$  such that the structural equation modeling was conducted with a bare minimum sample size. Ideally, a larger sample size would have been better as it would permit a more powerful test of the hypothesized partially

mediated model. However, given the relatively low correlation between coworker relationships and emotional health and the fact that the direct path relating the two variables did not approach significance, it is unlikely that increasing the sample size would change the nature of the results.

On the demographics page, participants were asked to indicate approximately how many coworkers they had. In hindsight, this question is too vague. Participants reported a much higher number of coworkers than anticipated. Given the often large numbers of coworkers reported, I believe that participants responded in a broad manner, describing all people they consider as coworkers. However, the Coworker Relationship Scale was designed to focus more specifically on the coworkers that are in frequent contact with the participant and thus have an influence on their work day. In future studies, it is highly recommended that the demographic sheet give a definition of what a coworker is and focus the participant to think about those coworkers that work alongside the participant on a regular basis. In a similar vein, the instructions on the Coworker Relationship Scale were also vague, as respondents were only directed to think about a job they currently hold while they responded to the questionnaire. Future studies should include a statement in the instructions to focus participants to think about the coworkers with whom they most frequently interact and have dealing with.

Given the vagueness of the demographic question and the non-specific instructions on the questionnaire, it is highly conceivable that confusion about which coworkers the participant was thinking of when responding to the Coworker Relationship Scale, influenced the manner in which participants responded to the questionnaire. If participants were thinking of a broad category of coworkers and reported having

hundreds of coworkers, one must question how they responded to Coworker Relationship Scale questions concerning how well they cooperated or interacted with their coworkers. It is possible that participants retained their global perspective and averaged out their perceptions of their coworker interactions. If this is the case, it is possible that poor coworker relationships were not emphasized in their responses, thus not predicting poor emotional health that may have been reported. Or, participants may have narrowed their perspective and focused exclusively on the coworkers that most influence their work day. If this is the case, then responses are in the manner expected and anticipated at the beginning of the study. Because of these different response perspectives that participants may have had, it is quite conceivable that this may have influenced the non significant result found in the Coworker Relationship Scale's prediction of emotional health.

Future research should take into account the limitations noted in this study. With many researchers stating that coworker relationships are critical because they can be potential stressors (Kelloway & Barling, 1994; Sauter et. al., 1990; Warr, 1987), which may affect the rising costs of treating stress related health outcomes (Quick, et. al., 1997; Sauter et. al., 1990), the importance of coworker relationships cannot be overlooked or underestimated. To that end, it is important to understand how coworker relationships develop, change, or end and how the particular working context and level of coworker relationships affects individual and organizational outcomes. For example, what types of coworker relationships are most beneficial to the organization (i.e. information, peer or friend)? If research was conducted that demonstrated that special peers, or friends, perform better than information peers then organizations can encourage friendship development. When an understanding of coworker relationships is achieved,

organizations can implement new workplace policies, procedures, or training programs with the aim of improving job satisfaction, health outcomes, or reducing other outcomes such as work neglect or conflict. With the reduction of negative outcomes and the improvement of positive outcomes, the organization may find an increase in performance, which will satisfy their 'bottom line'.

As mentioned earlier, future research must also clarify the difference between coworker relationships and coworker support. Verification is required to determine if they are different concepts, how they relate to each other, and if they differentially predict health outcomes. Questions to consider include: Do coworkers provide support only if they have positive coworker relationships? Do coworkers provide support during difficult circumstances regardless of the perception of their relationship? Can coworkers have positive relationships but not provide coworker support? What sort of coworker relationship is necessary in order for a coworker to offer support?

Future studies should also examine the importance of degree of exposure to coworkers. For example, do coworker relationships differentially impact job satisfaction or other important variables for part-time and full-time employees? Perhaps part-time workers place less importance on coworker interactions than do full-time personnel. If a part-time worker is less affected by coworker relationships than full-time workers, because they have greater personal influences outside of the workplace, perhaps their job satisfaction is less affected by the nature of coworker interactions.

Future research that looks at other, non-health related outcomes associated with coworker relationships is needed. For instance, the impact of coworker relationships on such variables as organizational citizenship behavior or performance might also uncover

interesting and useful information. It is possible that the impact of coworker interactions on such variables is direct, rather than mediated by job satisfaction. It may also be useful to know if coworker relationships influence such important factors as organizational commitment, turnover intentions, aggression, and workplace violence. Are coworker relationships influential enough to predict these outcomes? Investigating the possibility that coworkers' relationships may influence such organizational factors can assist organizations in isolating causes of organizational dysfunction.

In summary, the validation of the Coworker Relationship Scale and determining its predictive potential is but a beginning step in addressing an area of research that has largely been overlooked as a central issue in the organizational psychology literature. Although proving to be a psychometrically sound measure of coworker relationships, the Coworker Relationship Scale still needs further study to determine if the current results can first be replicated and then expanded to include other organizational and individual outcomes. Given the personal and organizational ramifications associated with poor coworker interactions in terms of reduced job satisfaction and in turn decreased emotional and psychosomatic health and heightened job neglect, the benefits of understanding coworker relationships are substantial. It is time for the study of coworker relationships to take centre stage in organizational research.

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## Appendix A

*Hain and Francis (2004) contributed a poster presentation to the 65<sup>th</sup> Annual Convention of the Canadian Psychological Association held in St. John's, NL. Following is the abstract from the poster presentation and a summary of the two studies described in that presentation.*

### Abstract

In two separate studies we develop and provide reliability and validity evidence for a Coworker Relationship Scale (CRS). The scale was developed and tested using a student population (N=210) and further validated with a sample of non-student employed individuals (N=350). The scale proved reliable in both Study 1 ( $\alpha=.91$ ) and Study 2 ( $\alpha=.92$ ). In each case, the CRS demonstrated convergent validity with the Job Descriptive Index's coworker subscale and correlated with a measure of overall job satisfaction. The Workplace Friendship Scale (WFS) also demonstrated convergent validity with the CRS, but a principal components analysis revealed that the CRS and WFS reflect different dimensions, suggesting that coworker relationships and workplace friendships are different concepts. An examination of the literature reveals that the study of coworker relationships is currently ongoing, but as a secondary question in research on topics such as job satisfaction or social support rather than as a focal issue. The development and validation of the CRS is an initial step designed to address this apparent gap in a literature that neglects the study of coworker relationships as a primary and central concern.

### Study One

#### Method

##### *Participants*

210 undergraduate and graduate students from an Atlantic Canadian University participated in the study; 59 (28%) participants were male, 150 (72%) were female and one participant failed to provide this information. Age ranged from 17 to 35, with a mean age of 20.64 (SD=2.65). Tenure ranged from less than 2 years to 10 or more years, with a mean tenure of 1.39 years (SD=.62). Sign up sheets, placed on corridor walls of the

psychology department, were used to recruit participants. From the initial pool of participants, 199 students met the job experience criteria and their data was used in the study. Data from the student who failed to respond to the demographic questions, but responded to the questionnaire, was also retained for analysis. Thus, a total of 200 participants provided usable data.

### *Measures*

*Coworker Relationship Scale.* The Coworker Relationship Scale (Hain, 2002) is a 17-item scale that uses a Likert type 7-point scale that ranges from 1 (strongly disagree) to 7 (strongly agree); higher scores indicate more positively oriented coworker relationships. Participants are directed to think about their current job as they respond to this measure ( $\alpha=.91$ ).

*Job Descriptive Index (JDI).* One 18-item scale was chosen from the Bowling Green State University's 1997 revision of the Job Descriptive Index (Balzer, Kihm, Smith, Irwin, Bachiochi, Robie et. al., 1997), to provide construct validity evidence for the Coworker Relationship Scale. The coworker scale in the Job Descriptive Index is designed to determine the level of satisfaction one has with coworkers. Participants were directed to circle Y if the item described the people with whom they worked, N if it did not, or ? if the participants could not decide ( $\alpha=.85$ ).

*Job in General Scale.* The Job in General scale measures overall job satisfaction (Balzer, Kihm, Smith, Irwin, Bachiochi, Robie et. al., 1997) and was included in the present study to provide an alternate measure for the Coworker Relationship Scale. The Job in General scale directed participants to think about their job in general and gave the same scoring instructions as the Job Descriptive Index coworker subscale. Participants

responses were scored yes=3, no=0, and ?=1 for positively worded questions and yes=0, no=3, and ?=1 for negatively worded questions ( $\alpha=.92$ ).

## Results

Table 1 provides details regarding correlations and coefficient alphas for the measures used in this study. Table 2 displays the principal components analysis with varimax rotation results for the 17-item Coworker Relationship Scale. Table 2 clearly shows that the positively and negatively worded items load on separate factors.

Table 1

*Correlation Table with Coefficient Alpha along Diagonal for 17-item Coworker Relationship Scale*

Scale	1	2	3
1. Coworker Relationship Scale	.91		
2. Job Descriptive Index	.64*	.85	
3. Job in General Scale	.58*	.63*	.92

\*Correlation is significant at  $P < 0.01$ ; Listwise  $N = 200$

Table 2

*Principal Components Analysis with Varimax Rotation for 17-item Coworker**Relationship Scale (Solution accounts for 57.33% of the variance).*

Scale Item	1 (47.22% of the variance)	2 (10.11% of the variance)
I like spending work hours with my coworkers	.73	
I enjoy socializing with coworkers outside of working hours	.60	
I look forward to working so I can see my coworkers	.74	
Coworkers positively affect my job experience	.78	
The more I interact with my coworkers the better I enjoy my job	.69	
I feel fortunate that I have good coworker relationships	.75	
My coworkers positively affect my mood	.71	
My coworkers and I interact positively on the job	.69	
I enjoy the time I spend on the job with my coworkers	.86	
I feel lucky to be working with the people that I do	.82	
My coworkers and I cooperate well with each other	.68	.34
I have good relationships with my coworkers	.70	.45
There is often tension between my coworkers		.55
My coworkers and I often argue while we are working		.49
I often feel unhappy because I do not interact well with my coworkers		.73
Sometimes I feel demoralized because I do not get along well with my		.75
My coworkers and I do not get along well with each other		.67

## Study Two

## Method

*Participants*

Three hundred and fifty people from Nova Scotia ( $N=124$ ), Ontario ( $N=147$ ), Alberta ( $N=67$ ), and Hong Kong ( $N=12$ ) participated in the current study; 176 (50.3%) participants were male, 174 (49.7%) were female. Age ranged from 15 to 69, with a

mean age of 38.07 ( $SD=11.34$ ). 46.6% of respondents reported job tenure of more than five years; 53.4% reported job tenure of less than five years. A convenience sample was used to recruit participants. Family and friends of the researcher were approached and asked to circulate the survey package to their friends and family members. Parents of children who attended similar functions as the researcher's children were also asked to participate. As a result, medical workers, office workers, bus drivers, teachers, librarians, and trades people were some of the participants who completed the survey package.

### *Measures*

*Coworker Relationship Scale.* The Coworker Relationship Scale (Hain, 2003) is an 17-item scale that uses a Likert type 7-point scale that ranges from 1 (strongly disagree) to 7 (strongly agree); higher scores indicate more positively oriented coworker relationships. Participants are directed to think about their current job as they respond to this measure ( $\alpha=.92$ ).

*Job Descriptive Index (JDI).* One 18-item scale was chosen from the Bowling Green State University's 1997 revision of the Job Descriptive Index (Balzer, Kihm, Smith, Irwin, Bachiochi, Robie et. al., 1997), to provide construct validity evidence for the Coworker Relationship Scale. The coworker scale in the Job Descriptive Index is designed to determine the level of satisfaction one has with coworkers. Participants were directed to circle Y if the item described the people with whom they worked, N if it did not, or ? if the participants could not decide ( $\alpha=.85$ ).

*Job in General Scale.* The Job in General scale measures overall job satisfaction (Balzer, Kihm, Smith, Irwin, Bachiochi, Robie et. al., 1997) and was included in the present study to provide an alternate measure for the Coworker Relationship Scale. The

Job in General scale directed participants to think about their job in general and gave the same scoring instructions as the Job Descriptive Index coworker subscale. Participants responses were scored yes=3, no=0, and ?=1 for positively worded questions and yes=0, no=3, and ?=1 for negatively worded questions ( $\alpha=.92$ ).

Workplace Friendship Scale. The Workplace Friendship Scale (Nielsen et al., 2000) is a 12-item two-dimensional scale that uses a Likert 5-point continuum that ranges from 1 (strongly disagree) to 5 (strongly agree), and has a neutral point in the middle. Each dimension measured, friendship prevalence and friendship opportunity, has six questions; one item is negatively worded ( $\alpha=.88$ ).

## Results

Table 1 provides correlations and coefficient alphas for the measures used in the second Coworker Relationship Scale study. Table 2 displays the principal components analysis with varimax rotation results for the 17-item Coworker Relationship Scale. Table 2 shows that the positively and negatively worded items load on separate factors, as they did in the first study. Given the desire for a one dimensional scale, it was determined that the positively worded items would remain as part of the Coworker Relationship Scale and the negatively worded items would be removed. To demonstrate that the reduced 11-item Coworker Relationship Scale is a one-dimensional scale, a principal components analysis was performed (see Table 3). In Table 4 shows a principal components analysis with varimax rotation using the reduced 11-item Coworker Relationship Scale and Workplace Friendship Scale. The Coworker Relationship Scale

and Workplace Friendship Scale loaded on different factors, suggesting that coworker relationships are different from coworker friendships.

Table 1

*Correlation Table with Coefficient Alpha along Diagonal for 17-item Coworker*

*Relationship Scale*

Scale	1	2	3	4
1. Coworker Relationship Scale	.92			
2. Job Descriptive Index	.75*	.90		
3. Job in General Scale	.60*	.64*	.92	
4. Workplace Friendship Scale	.73*	.63*	.50*	.88

\*Correlation is significant at  $P < 0.01$ ; Listwise  $N = 200$

Table 2

*Principal Components Analysis with Varimax Rotation for 17-item Coworker**Relationship Scale (Solution accounts for 58.91% of the variance)*

Scale Item	1 (48.18% of the variance)	2 (10.73% of the variance)
I like spending work hours with my coworkers	.77	
I enjoy socializing with coworkers outside of working hours	.63	
I look forward to working so I can see my coworkers	.71	
Coworkers positively affect my job experience	.80	
The more I interact with my coworkers the better I enjoy my job	.78	
My coworkers positively affect my mood	.71	
My coworkers and I interact positively on the job	.68	
I enjoy the time I spend on the job with my coworkers	.75	
I feel lucky to be working with the people that I do	.78	
I feel fortunate that I have good coworker relationships	.78	.42
My coworkers and I cooperate well with each other	.64	.41
I have good relationships with my coworkers	.67	.47
There is often tension between my coworkers		.74
My coworkers and I often argue while we are working		.68
I often feel unhappy because I do not interact well with my		.68
Sometimes I feel demoralized because I do not get along well with my coworkers		.80
My coworkers and I do not get along well with each other		.59

Table 3

*Principal Components Analysis for 11-item Coworker Relationship Scale. (Solution accounts for 61.26% of the variance)*

Scale Item	1
I like spending work hours with my coworkers	.83
I look forward to working so I can see my coworkers	.74
Coworkers positively affect my job experience	.78
The more I interact with my coworkers the better I enjoy my job	.74
My coworkers positively affect my mood	.65
My coworkers and I interact positively on the job	.76
I enjoy the time I spend on the job with my coworkers	.81
I feel lucky to be working with the people that I do	.84
I feel fortunate that I have good coworker relationships	.88
My coworkers and I cooperate well with each other	.76
I have good relationships with my coworkers	.81

Table 4

*Principal Components Analysis with Varimax Rotation for 11-item Coworker*

*Relationship Scale and Workplace Friendship Scale (Solution accounts for 59.78% of the variance) \*Coworker Relationship Scale Items; \*\*Workplace Friendship Scale Items*

Scale Item	1 (46.04% of the variance)	2 (7.58% of the variance)	3 (6.16% of the variance)
I have good relationships with my coworkers*	.77		
I like spending work hours with my coworkers*	.75	.32	
I look forward to working so I can see my coworkers*	.63	.42	
My coworkers and I cooperate well with each other*	.74		
Coworkers positively affect my job experience*	.70		
The more I interact with my coworkers the better I enjoy my job*	.66	.32	
My coworkers positively affect my mood*	.61		
My coworkers and I interact positively on the job*	.75		
I enjoy the time I spend on the job with my coworkers*	.73	.31	
I feel lucky to be working with the people that I do*	.74	.34	
I feel fortunate that I have good coworker relationships*	.82		
I have the opportunity to get to know my coworkers**		.58	.41
I am able to work with my coworkers to collectively solve problems**	.48		.45
In my organization, I have the chance to talk informally and visit with others**			.72
Communication among employees is encouraged by my organization**			.71
I have the opportunity to develop close friendships at my workplace**		.66	.43
Informal talk is tolerated by my organization as long as the work is completed**			.71
I have formed strong friendships at work**		.79	
I socialize with coworkers outside of the workplace**		.75	
I can confide in people at work**	.36	.64	
I feel I can trust many coworkers a great deal**	.43	.61	
Being able to see my coworkers is one reason why I look forward to my job**	.51	.57	
I do not feel that anyone I work with is a true friend**		.63	

## Appendix B

*The 11-Item Coworker Relationship Scale with the 5-Items Retained in the Final Revised**Fully Mediated Model Identified with a Bullet Point*

<b>Coworker Relationship Scale</b>								
While responding to the following questions, think about a job you hold currently. Please <b>circle</b> your responses to the following questions.		Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
1	I have good relationships with my coworkers.	1	2	3	4	5	6	7
2	I like spending work hours with my coworkers.	1	2	3	4	5	6	7
3	I look forward to working so I can see my coworkers.	1	2	3	4	5	6	7
4	• My coworkers and I cooperate well with each other.	1	2	3	4	5	6	7
5	• Coworkers positively affect my job experience.	1	2	3	4	5	6	7
6	The more I interact with my coworkers the better I enjoy my job.	1	2	3	4	5	6	7
7	My coworkers positively affect my mood.	1	2	3	4	5	6	7
8	• My coworkers and I interact positively on the job.	1	2	3	4	5	6	7
9	• I enjoy the time I spend on the job with my coworkers.	1	2	3	4	5	6	7
10	• I feel lucky to be working with the people that I do.	1	2	3	4	5	6	7
11	I feel fortunate that I have good coworker relationships.	1	2	3	4	5	6	7

## Appendix C

*The 6-item Version of the Job Satisfaction Scale*

<b>Overall Job Satisfaction</b>						
While responding to the following questions, think about a job you hold currently. Please circle your responses to the following questions.		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	I am often bored with my job.	1	2	3	4	5
2	I feel fairly well satisfied with my present job.	1	2	3	4	5
3	I am satisfied with my job for the time being.	1	2	3	4	5
4	Most days I am enthusiastic about my work.	1	2	3	4	5
5	I like my job better than the average worker does.	1	2	3	4	5
6	I find real enjoyment in my work.	1	2	3	4	5

## Appendix D

*The 12-Item short form of the General Health Questionnaire*

<b>General Health Questionnaire</b>								
<p>As part of this study we are concerned about your general well-being and experience of stress and strain <b>during the past month</b>. These statements are meant to inquire into your general experiences, not just those in relation to your job. Please read the following statements and circle the response that best applies to you.</p>		Not At All	Rarely	Once In A While	Some Of The Time	Fairly Often	Often	All Of The Time
1	Have you been able to concentrate on whatever you're doing?	1	2	3	4	5	6	7
2	Have you lost much sleep from worry?	1	2	3	4	5	6	7
3	Have you felt that you're playing a useful part in things?	1	2	3	4	5	6	7
4	Have you felt capable of making decisions about things?	1	2	3	4	5	6	7
5	Have you felt under strain?	1	2	3	4	5	6	7
6	Have you felt that you couldn't overcome your difficulties?	1	2	3	4	5	6	7
7	Have you been able to enjoy your normal day-to-day activities?	1	2	3	4	5	6	7
8	Have you been able to face up to your problems?	1	2	3	4	5	6	7
9	Have you been feeling unhappy and/or depressed?	1	2	3	4	5	6	7
10	Have you been losing confidence in yourself?	1	2	3	4	5	6	7
11	Have you been thinking of yourself as a worthless person?	1	2	3	4	5	6	7
12	Have you been feeling reasonably happy, all things considered?	1	2	3	4	5	6	7

## Appendix E

*The 14-Item Psychosomatic Well-being Measure*

<b>Psychosomatic Well-being</b>								
<p>The following items focus on how you have been feeling <u>physically</u> during the <u>past month</u>. Please respond by circling the appropriate number. Note that the last item has a different response option than the others.</p> <p><b>During the past month, how often have you...</b></p>								
		Not At All	Rarely	Once In A While	Some Of The Time	Fairly Often	Often	All Of The Time
1	... had difficulty getting to sleep at night.	1	2	3	4	5	6	7
2	... woke up during the night.	1	2	3	4	5	6	7
3	... had nightmares or disturbing dreams.	1	2	3	4	5	6	7
4	... experienced a peaceful and undisturbed sleep.	1	2	3	4	5	6	7
5	... experienced headaches.	1	2	3	4	5	6	7
6	... got a headache when there was a lot of pressure on you to get things done.	1	2	3	4	5	6	7
7	... got headaches when things are not going the way they should.	1	2	3	4	5	6	7
8	... suffered from upset stomach.	1	2	3	4	5	6	7
9	... watched what you eat to avoid getting an upset stomach.	1	2	3	4	5	6	7
10	... felt nauseated.	1	2	3	4	5	6	7
11	... experienced minor colds that make you feel uncomfortable, but don't make you miss work.	1	2	3	4	5	6	7
12	... suffered from respiratory infections that caused me to miss work.	1	2	3	4	5	6	7
13	... had colds or flues that last a long time.	1	2	3	4	5	6	7
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 F

*The 12-Item Work Neglect Measure*

<b>Work neglect</b>								
<p>The statements below describe actions that employees take from time to time in the workplace. Indicate <u>how often</u> you have taken each action <u>during the past month</u>.</p> <p><b>During the past month, how often have you...</b></p>								
		Not At All	Rarely	Once In A While	Some Of The Time	Fairly Often	Often	All Of The Time
1	...waited, hoping any problems would solve themselves.	1	2	3	4	5	6	7
2	...called in sick, not dealing with what was happening.	1	2	3	4	5	6	7
3	...come in late to avoid some problems.	1	2	3	4	5	6	7
4	...left early.	1	2	3	4	5	6	7
5	...taken unauthorized, extended lunch breaks.	1	2	3	4	5	6	7
6	...said nothing to others, assuming things would work out.	1	2	3	4	5	6	7
7	...become less interested and made more errors.	1	2	3	4	5	6	7
8	...not passed on messages to others.	1	2	3	4	5	6	7
9	...covered up your mistakes.	1	2	3	4	5	6	7
10	...stayed out of sight to avoid work.	1	2	3	4	5	6	7
11	...intentionally worked slowly.	1	2	3	4	5	6	7
12	...followed the rules to the letter of the law of "work to rule".	1	2	3	4	5	6	7

## Appendix G

*The 20-Item Positive and Negative Affect Scales*

<b>Positive and Negative Affect Scale</b>						
<p>This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer.</p> <p><b>Indicate to what extent, during the past month, you have felt this way.</b></p>		Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely
1	Interested	1	2	3	4	5
2	Distressed	1	2	3	4	5
3	Excited	1	2	3	4	5
4	Upset	1	2	3	4	5
5	Strong	1	2	3	4	5
6	Guilty	1	2	3	4	5
7	Scared	1	2	3	4	5
8	Hostile	1	2	3	4	5
9	Enthusiastic	1	2	3	4	5
10	Proud	1	2	3	4	5
11	Irritable	1	2	3	4	5
12	Alert	1	2	3	4	5
13	Ashamed	1	2	3	4	5
14	Inspired	1	2	3	4	5
15	Nervous	1	2	3	4	5
16	Determined	1	2	3	4	5
17	Attentive	1	2	3	4	5
18	Jittery	1	2	3	4	5
19	Active	1	2	3	4	5
20	Afraid	1	2	3	4	5

## Appendix H

*The demographic questions used to gather information for the current study*

**Demographic Information**

(Please note that the following information will be used for descriptive purposes only.)

Please indicate your gender: Male \_\_\_\_\_ Female \_\_\_\_\_

Please indicate your age: \_\_\_\_\_

Are you currently working? Yes \_\_\_\_\_ No \_\_\_\_\_

Do you work:

Full-time \_\_\_\_\_

Part-time \_\_\_\_\_

Other (please specify) \_\_\_\_\_

How long have you worked at your present job?

Less than 2 years \_\_\_\_\_

2 – 5 years \_\_\_\_\_

5 – 10 years \_\_\_\_\_

10 or more years \_\_\_\_\_

What kind of business is it?

Government organization \_\_\_\_\_

Profit organization \_\_\_\_\_

Other (please specify) \_\_\_\_\_

Approximately how many coworkers do you have? \_\_\_\_\_



**Saint Mary's  
University**

Halifax, Nova Scotia  
Canada B3H 3C3

Research Ethics Board

tel 902.420.5728

fax 902.420.5104

e-mail [ethics@stmarys.ca](mailto:ethics@stmarys.ca)

web [www.stmarys.ca/academic/reb](http://www.stmarys.ca/academic/reb)

## **Saint Mary's University**

### **Certificate of Ethical Acceptability of Research Involving Human Subjects**

**This is to certify that the Research Ethics Board has examined the research proposal or other type of study submitted by:**

**Principal Investigator: Cindy Hain**

**Name of Research Project: Study of Coworker Relationships**

**REB File Number: 04-007**

**and concludes that in all respects the proposed project meets appropriate standards of ethical acceptability and is in accordance with the Tri-Council Policy Statement on the Conduct of Research Involving Humans.**

**Please note that for "ongoing research", approval is only effective for one year from the date approved. If your research project takes longer than one year to complete, submit Form #3 (Annual Report) to the REB at the end of the year and request an extension. You are also required to submit Form #5 (Completion of Research) upon completion of your research.**

**Date:**

*January 27/04*

**Signature of REB Chair:**