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Measuring Morale, Cohesion and Confidence in Leadership: What are the Implications for Leaders?

Throughout the history of warfare, high morale, unit cohesion, and capable command have been considered by military leaders to be essential elements for victory on the battlefield (e.g., Kellett, 1982; Mengelsdorff, 1999; Richardson, 1978). According to Wintle’s (1989) collection of historical military writings, Xenophon (circa 394 B.C.E) was sure the army “stronger in soul” would be victorious in battle, and Napoleon felt that “moral considerations” accounted for three quarters of the outcome in war. It is clear little had changed the minds of 20th century leaders when Montgomery (1958) stated that “the morale of the soldier is the greatest single factor in war” (p. 36). But how did these leaders assess the level of morale in their own forces and in those of their opponents? How did they understand the relation between morale and physical and mental health? How did they gauge the importance of leadership? Although we have little historical data to examine these questions, we can examine how present day military leaders monitor these variables, the accuracy of their assessments and how this information is used for decision-making purposes.

American, European, and Canadian research indicates that officer perceptions of soldier morale, cohesion, and confidence in leadership are generally inaccurate. For example, Stouffer and his colleagues (Stouffer, Suchman, Devinney, Star, & Williams, 1949) found that US Army officers in World War II (WW II) had consistently inflated views of their subordinates’ attitudes toward a range of military issues including pride in the outfit, desire to be a soldier, satisfaction with the job and the importance of the infantry. Similarly, Korpi (1965) found that Swedish officers had “very unreliable notions of the opinions in their units” (p. 302) and that officers were generally unaware that their perceptions of subordinate morale might be inaccurate. Interestingly, the greater confidence officers expressed in their assessments the larger the error in their predictions.
Military Leadership

More recently, Canadian officers have fared no better. Eyres (1998) found that although all ranks were generally satisfied with leadership at the non-commissioned member (NCM) levels within the unit, this was not the case for leadership at the officer level. While officers expressed general satisfaction with the leadership they provided, NCMs reported they were, at best, indifferent to officer leadership.

The consequences of such variation between the perceptions of officers and soldiers can be tragic. Indeed, Winslow (1997) attributed the murder of a Somali teenager by Canadian soldiers to a failure by some commanders to accurately perceive the prevailing attitudes, norms, and values in some unit subcultures. According to Winslow (1997), it was this failure that led to erroneous judgements with respect to the unit's readiness for peace support operations.

In part due to the disturbing events in the Canadian contingent in Somalia, the Canadian Forces (CF) expressed an interest in developing a psychometric instrument that could be used by commanding officers (COs) to measure the human dimensions of combat readiness within units before and during deployment (Farley, 1996). The instrument was to be developed with the ultimate goal of allowing COs to administer, score, and interpret it with or without specialist advice. Important variables in military psychology such as morale, cohesion, and confidence in leadership were to be examined. As previous research indicated a strong relation existed between morale and signs of illness in deployed Canadian soldiers (Farley, 1995), other variables such as stressors, strain, and methods of coping were also to be included for future analysis. Known as the Unit Climate Profile (UCP; Murphy & Farley, 2000) the instrument was introduced in 1997 and has been completed by Canadian soldiers on operations in Bosnia, Afghanistan, Haiti, Kosovo, and Eritrea.

Previous research on the UCP and related scales has focused primarily on its psychometric properties (Dobreva-Martinova, 1998a, 1998b, 1999a, 1999b) and group differences on several variables (Izzo, Lapointe, Vileneuve, & Columbe, 2000). For example, Izzo et al. (2000) observed a tendency for strain to increase with operational experience and to be higher for junior officers, widowed, and older members. Morale, cohesion, and confidence in leadership also tended to be highest in younger soldiers although women reported significantly less confidence in their leaders than did men.

This current study conducted at the Director of Land Personnel Strategy at National Defence Headquarters has extended this previous work in two important ways. First, this research tested a model of stress paying particular attention to the direct and indirect effects of morale, cohesion, confidence in leadership, and individual coping strategies on the strain experienced by Canadian soldiers over several years in operations. Figure 1 shows the conceptual model.

Figure 1. Proposed model of morale/cohesion and confidence in leadership as mediators of the stress-strain relationship for soldiers in combat.

Heretofore, the possible buffering effects of soldiers' confidence in leadership on the relation between stress and strain has not been examined. Moreover, as most previous military stress research has tended to focus on non-operational settings, the present research examined these processes in an active theatre of operations. The second purpose of the study was to confirm the psychometric properties of the UCP and associated scales. Findings of the study have implications for how military psychologists and commanders interpret elements of unit climate and offer suggestions for buffering the short- and long-term effects of stress experienced by soldiers in deployed operations.

MAJOR STUDY VARIABLES

Morale and Cohesion

Morale is often considered to be an individual level attribute or affective state (e.g., Baynes, 1967). The US Army (1983) for example defined morale as "... the mental, emotional, and spiritual state of the individual. It is how he feels - happy, hopeful, confident, appreciated, worthless, sad, unrecognized, or depressed" (p. 228). Several authors have gone further in their definitions to add the condition that the individual be a member of a goal-oriented group (e.g., Grinker & Spiegel, 1945; Manning, 1991; Shibutani, 1978). According to Manning (1991) for example, "morale is the enthusiasm and persistence with which a member of a group engages in the prescribed activities of that group" (p. 455).

Manning (1991) categorized the determinants of morale into individual factors and group factors.
Individual biological needs are basic requirements such as good health, good food, adequate rest and sleep, clean and suitable clothing, and equipment and protection from the elements. Individual psychological needs include clear goals, a role with little conflict and ambiguity, and self-confidence built upon success in training. In addition, Manning (1991) considered group level factors such as social background and shared experiences to be important determinants of morale.

A construct closely related to individual morale is group cohesion. According to Siebold (1999), "cohesion comes from the Latin, cohaerere, to stick together; it is also related to the Latin, cohorts, an enclosure or court, from which was derived the term cohort, a light-infantry-battalion-sized unit of 400 to 500 men, about one tenth of a Roman legion" (p. 9).

The concept of the cohesive and organized platoon (30 – 35 personnel) and company (3 platoons) combat formations are still of great value for the development of tactics and synchronization of individuals and teams (e.g., Mangelsdorff, 1999). Indeed, military leaders have long considered troop cohesion as an important element for unit readiness, combat effectiveness, and stress buffering (Griffith & Vaitkus, 1999; Henderson, 1985; Kellett, 1982; Little, 1964; Mangelsdorff, 1999; Marshall, 1966; Rosen & Martin, 1997; Rosen et al., 1999; Siebold, 1999). Siebold (1999) argued that a renewed interest in military unit cohesion in the last two decades of the 20th century resulted from four changes in modern warfare. These changes included the intensive lethality and terror possible on the modern battlefield which threatened a drastic increase in stress casualties; the use of numerically smaller forces against larger forces which called for the development of methods to increase efficiency; the ineffectiveness of the individual replacement model used in the American army during the war in Vietnam; and, organizational design issues which required the deployment of fairly autonomous, highly trained units to world trouble spots on very short notice.

Recently several theorists have argued that cohesiveness should be considered as a multidimensional rather than unitary construct. The most common distinction is between social cohesion and task cohesion (Griffith, 1988; Mudrack, 1989; Mullen & Copper, 1994; Siebold & Kelly, 1988; Zaccaro & McCoy, 1988). According to Griffith (1988) for example, social cohesion refers to the nature and quality of the emotional bonds of friendship, liking, caring, and closeness among group members. A group is socially cohesive to the extent that its members like each other, prefer to spend their social time together, enjoy each other's company, and feel emotionally close to one another. By comparison, task cohesion refers to the shared commitment among members to achieving a goal that requires the collective efforts of the group. A group with high task cohesion is composed of members who share a common goal and who are motivated to coordinate their efforts as a team to achieve that goal.

Interestingly, cohesion and social support constructs are similar in many ways. Both cohesion and social support are conceptualized as multidimensional and several dimensions of each appear to overlap. For example, cohesion is often defined in terms of communication, teamwork, and collective action (Siebold, 1999). In a similar way, social support is seen in terms of giving tangible support in the form of material assistance or information, advice, and guidance. Moreover, cohesion includes both attraction to the group (Widmeyer, Brawley, & Carron, 1985) and an emotional component indicated by the degree of trusting, caring and liking, or interpersonal support (Siebold, 1999) which are similar to social support characteristics emphasizing the individual in the context of the group such as social companionship (Flannery, 1990) and interpersonal connectedness (Sarason, Sarason & Pierce, 1990). According to Griffith and Vaitkus (1999), cohesion and social support function similarly in facilitating the productivity of the group member and successful interaction of the group as a whole.

Confidence in Leadership

According to Bartone and Kirkland (1991), optimally effective leaders in small army units capitalize on general processes of social influence, such as the power of the peer reference group. These leaders model behaviour that demonstrates competence in soldier skills, caring for the welfare of unit members, respect for subordinates as worthy and competent members of the unit, commitment to the importance of group goals and activities, and open sharing of information. Thus, from this perspective leadership is viewed as an important social support mechanism. Interestingly, however, research shows that leaders and those they lead have often very different views on the quality of the leadership experience (Eyres, 1998; Gabriel, 1985; Korpi, 1965; Stouffer et al., 1949).

For example, in their post-WW II study, "The American Soldier," Stouffer et al. (1949) reported a consistent pro-organizational bias in US Army officers' assessments of subordinates' opinions. That is, they reported a tendency for the officers to believe that their subordinates' opinions on several issues were more positive than anonymous questionnaires showed them to
be. In each of 53 rifle companies in the US, the company commander was asked several questions regarding their estimate of soldier's pride, desire to be a soldier, satisfaction with job, and importance of their job. For example, commanders were asked "How many of your enlisted men would you say feel proud of their company?" Responses were recorded on a five-point scale ranging from "Almost none of them" through "About half of them" to "Almost all of them". Similarly, the soldiers in the same company were asked a number of corresponding questions like "Do you feel proud of your company?" and recorded their answers on five-point scales ranging from "Yes, very proud" to "No, not proud". A commander was considered correct if his answer was "almost all of the men" and over 87.5% of the soldiers checked either "very proud" or "fairly proud". If 62.5% to 87.5% of the soldiers checked "very proud" or "fairly proud", the commander was considered correct if he checked "about three fourths" and so on.

Stouffer et al. (1949) reported that 8 of the 53 commanders estimated their soldiers' responses correctly. However, 43 overestimated the proportion of their soldiers who would say they were proud of their company, as contrasted with only two who underestimated. The same tendency was seen with respect to all other items. Stouffer et al. (1949) suggested that "this habit of officers overestimating their men's favorable attitudes was a product of the tendency to project one's own attitudes upon the men" (p. 393). To support this idea, they presented other data that showed large differences in the general attitudes of officers and enlisted soldiers. For example, when asked "In general, how would you say you feel most of the time, in good spirits or in low spirits?" 53% of officers reported to be "usually in good spirits" although only 24% of enlisted soldiers reported feeling the same way. Similarly, when asked "How many of your officers are the kind who are willing to go through anything they ask of their men to go through?" 92% of officers said "all" or "most" while only 37% of enlisted soldiers rated their officers this highly.

Korpi (1965) observed similar results in the Swedish Army. In a study of conscripts and their leadership cadre, he observed that leaders at all levels, from platoon sergeants to company commanders, consistently tended to over-estimate the favourableness of subordinates' responses to 21 morale-related questions. Not only was there an average absolute error of 22-25% per question, the degree of positive bias was generally observed to increase with rank/position. Significantly, having asked leaders to rate their confidence that they had accurately assessed opinion in their unit, he found that the more confidence they expressed in their accuracy, the less accurate their perceptions of morale actually were.

Eyres (1998) found similar relations between the opinions of leaders and those being led (N = 913) in the Canadian army. The mean scale scores at each of the four respondent rank-levels (Junior NCM, Senior NCM, Junior Officer, and Senior Officer) suggested that all ranks were generally satisfied with leadership at the Junior NCM and Senior NCM levels within the unit. This was not the case, however, for leadership at the officer level. Whereas officers reported general satisfaction with the leadership they provided, that opinion was not generally shared by NCMs. Non-commissioned members reported they were at best indifferent to officer leadership. In fact, for all relevant questionnaire items, NCMs' opinions of officer leadership were significantly lower than those expressed by the officers; additionally, subordinate perceptions of superiors' leadership were significantly lower than those of their superiors at all levels. As well, Junior NCM perceptions of Senior NCM leadership were significantly more negative than those of officers or Senior NCMs. According to Eyres (1998), it appeared that the opinions of the junior NCMs, in particular, had the effect of "dragging down" the NCM group perceptions. That is, Junior NCMs' perceptions were more negative than were those of Senior NCMs.

Additional analyses found significant differences between the various rank levels in terms of perceptions of differential treatment under the military justice system. More senior ranks were less likely to report perceptions of differential treatment than were more junior ranks.

Similar to research in other armies, Eyres (1998) concluded these officers were not having the positive leadership effect on their subordinates that they thought they had. Moreover, these results confirmed the findings of an earlier internal report (Canadian Forces, 1995) that was designed to assess morale in the army. That report concluded that "leaders have lost touch with the soldiers ... [and this represents] a serious loss of confidence and loyalty on the part of members towards military leadership, which carries with it the danger of a negative impact on operational effectiveness" (p. 87).

The tendency for officers to overestimate positive responses from soldiers might also be understood in the context of a stream of research on confidence in subjective judgements (e.g., Gigerenzer, Hoffrage, & Kleinbolting, 1991; Lichtenstein & Fischhoff, 1977; Lichtenstein, Fischhoff, & Phillips, 1982). Experiments in this area often ask respondents to indicate which of two
alternative responses to an item is correct and to state the probability that the chosen alternative is, in fact, correct (e.g., Lichtenstein & Fischhoff, 1977). According to Gigerenzer, Hoffrage, and Kleinbolting (1991), this research points to two fairly stable effects. The over-confidence effect occurs when the confidence judgments are larger than the relative frequencies of correct answers. The hard-easy effect occurs when the degree of overconfidence increases with the difficulty of the questions. Difficulty is measured by the percentage of correct answers. Lichtenstein & Fischhoff (1977) found that when an individual's knowledge of a particular area is low (less than 60% of items correct), the tendency was to be overconfident about the correctness of his or her responses. With increasing knowledge over-confidence decreased until very knowledgeable respondents (>80% of items correct) actually demonstrated moderate under-confidence in their responses. The term calibration refers to the degree to which an individual's probability assessments are similar to the accuracy of the responses. An individual is perfectly calibrated if, "over the long run, for all propositions assigned the same probability, the proportion true is equal to the probability assigned" (Lichtenstein & Fischhoff, 1977; p. 161).

In the context of confidence research then, officer overconfidence might indicate poor calibration. That is, a lack of knowledge about or experience with unit climate issues results in an overestimation, or positive bias, about these issues. According to Yates (1990), "...a major lesson of experience is the limits of our abilities. Perhaps overconfident individuals have had insufficient experience with the specific judgement domain to learn how little they actually know" (p. 99). Lichtenstein, Fischhoff, and Phillips (1982) suggested that people could be trained to become better calibrated by receiving outcome feedback. It should be clear that the most important function of the UCP is to provide commanders with this kind of information.

Positive and Negative Coping
According to Holahan, Moos, and Schaefer (1995), "Resilience in the face of adversity involves a dynamic interplay between personal and social resources and coping efforts. Moreover, personal and social resources are linked to staying healthy under adaptive challenge in significant part because they encourage more adaptive coping strategies" (p. 30). This is consistent with Lazarus and Folkman's (1984) idea that resources are what an individual "draws on to cope" (p. 158).

People who are optimistic tend to use problem-focused coping strategies, whereas people who have a pessimistic outlook prefer emotion-based strategies, such as denial and fatalism (Scheier, Weintraub, & Carver, 1986). Lazarus and Folkman (1984) found that this two-dimensional conceptualization of coping was the most prominent in their review of the coping research to that time. In fact, Parker and Endler (1996) stated that "almost all coping measures developed in the past few decades include scales that assess these two coping dimensions" (p. 9).

One measure that was designed to examine both problem-focused and emotion-focused coping strategies is the COPE Inventory (Carver, Scheier, & Weintraub, 1989). The COPE Inventory (Carver et al., 1989) is a multidimensional coping scale that incorporates 13 conceptually distinct subscales. Problem-focused strategies are all considered to be functional and include, active coping, planning, suppression of competing activities, emotional coping, and seeking social support for instrumental reasons (e.g., seeking advice for action). In contrast, emotion-focused strategies may be either functional or dysfunctional and include seeking social support for emotional reasons (getting moral support or sympathy), positive reinterpretation and growth, focus on and venting of emotions, acceptance, and denial.

Stress and Strain
Research into occupational stress has increased dramatically since the 1970s. Spielberger and Reheiser (1995) reported that the number of occupational stress articles in the medical, psychological, and organizational literature increased "more than fifty-fold" (p. 52) during the period 1971-1992 alone. In fact, the number of studies in 1992 (N = 169) was more than 8 times greater than all the articles published on the subject during the entire decade of the 1970s (N = 19). Research in occupational stress continues to be popular in many applied work areas such as transportation (Hanock & Desmond, 2001), corrections (Lariviere, 2001), and the military (Day & Livingstone, 2001; Dobreva-Martinova, Villeneuve, Strickland, & Matheson, 2002).

A major distinction in occupational stress research is that some investigators have focused on antecedent conditions and pressures associated with the characteristics of a particular job (person-environment fit) while others have been primarily concerned with the individual's interpretation of work-related stress (transactional approach).

For the purposes of the present paper, stress and strain measures take into account important ideas from both transactional and P-E fit approaches. Consistent with the transactional view, for example, the development of
METHOD

Participants
A total of 5,573 CF members have participated in UCP research from 1997 to 2003. Although accurate data on participation rate was not kept, in-theatre researchers reported that close to 100% of soldiers invited to participate in the study agreed to participate. All subjects were members of units on operations in one of several locations including Haiti, Bosnia, Kosovo and Eritrea. Of the total number, complete data from 2,012 participants serving in Bosnia from the period 1999 to 2001 had yet to receive any analysis and formed the data set for the present study. Table 1 summarizes the biographic variables of the data set analyzed here.

Table 1
Distribution of Biographic Variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
<th>Variable</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td></td>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>16.30%</td>
<td>Married</td>
<td>53.63%</td>
</tr>
<tr>
<td>Junior NCM</td>
<td>59.12%</td>
<td>Single</td>
<td>39.35%</td>
</tr>
<tr>
<td>Senior NCM</td>
<td>17.62%</td>
<td>Sep/div</td>
<td>4.99%</td>
</tr>
<tr>
<td>Officer</td>
<td>6.96%</td>
<td>Widowed</td>
<td>2.03%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>Tours</td>
<td></td>
</tr>
<tr>
<td>17 – 21</td>
<td>11.28%</td>
<td>0</td>
<td>10.89%</td>
</tr>
<tr>
<td>22 – 26</td>
<td>27.14%</td>
<td>1</td>
<td>44.53%</td>
</tr>
<tr>
<td>27 – 31</td>
<td>22.52%</td>
<td>2</td>
<td>21.32%</td>
</tr>
<tr>
<td>32 – 36</td>
<td>20.18%</td>
<td>3</td>
<td>13.72%</td>
</tr>
<tr>
<td>37+</td>
<td>18.89%</td>
<td>4+</td>
<td>9.54%</td>
</tr>
<tr>
<td>Language</td>
<td></td>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>93.28%</td>
<td>Male</td>
<td>91.00%</td>
</tr>
<tr>
<td>French</td>
<td>6.72%</td>
<td>Female</td>
<td>9.00%</td>
</tr>
</tbody>
</table>

Note. Tours = number of previous operational tours of duty. Sep/div = Separated/divorced.

Procedure
The data were obtained by surveying soldiers on operations. The survey instrument is described below. All surveys were administered by the in-theatre military psychologist in accordance with CPA ethical principles and approved procedures of the Department of National Defence regarding research with human subjects (Canadian Forces, 2002). In particular, participants were informed by the administrator of the nature of the research and that completion of the survey was voluntary. Similar information appeared on the front cover of the survey. Due to the short questionnaire administration period and frequently changing situation in-theatre, a random stratified sampling procedure was not possible. Therefore, data was collected based on the availability of personnel within company groups.

Briefly, the military psychologist attempted to collect data at two or three specific times within the same six-month period. About two weeks prior to each data collection, the military psychologist informed administration officers at each camp location of the date and time of the upcoming data collection and answered any questions. In turn, the administration officers informed camp personnel through daily briefings of the proposed time and were responsible to secure a common area such as the kitchen for the data collection.

Soldiers were told that they would receive a briefing by the military psychologist on a topic of interest (such as hostage survival techniques or family re-integration issues when going home) and would be asked to anonymously fill in the survey. Attendance at the briefing and survey completion was voluntary.

The completed questionnaires were collated by the military psychologist and returned to researchers at the Directorate of Human Resource Research and Evaluation (DHRRE) in Canada by military aircraft. Once there, data were entered in SPSS data files and sent electronically back to the military psychologist in-theatre for UCP output production.

The military psychologist in-theatre used SPSS on a laptop computer to generate the UCP output. A copy of the raw data was retained at DHRRE for further analysis. Once a UCP output was prepared for each sub-unit, the military psychologist arranged a meeting with the appropriate commander to discuss the results. Results were reported in the aggregate and there was no way individual members could be identified. As a rule, UCP production and briefing of commanders for one session was to be complete before data collection could commence for the next session.
Instruments
Morale/cohesion and confidence in leadership were measured using several subscales of the UCP (Dobreva-Martinova, 1999a). A factor analysis (direct oblimin rotation) was conducted on the 62-items resulting in a 12-factor solution accounting for 69.41% of the variance compared to a very similar 12-factor (66.38%) solution reported by Dobreva-Martinova (1999a). Reliability coefficients (Cronbach’s alpha) ranged from .71 for positive ethos to .95 for three factors; morale/cohesion, confidence in section commander and confidence in platoon commander.

Stress was measured using the Stress in Military Service Questionnaire (SMSQ; Dobreva-Martinova, 1999a). A factor analysis for the SMSQ using oblique (direct oblimin) rotation was conducted resulting in a five-factor solution very similar to that reported by Dobreva-Martinova (1999a). Total variance accounting for by the present solution was 59.94% compared to 54.69% for the previous analysis. The reliability coefficients for the five factors ranged from .86 (living conditions, career issues) to .92 (combat stressors).

Strain was measured using the Signs Scale (Dobreva-Martinova, 1999b). A factor analysis (orthobim rotation) was conducted on the Signs Scale data resulting in a four-factor solution accounting for 45.56% of the total variance compared to 42.8% for the previous study (Dobreva-Martinova 1999b). The factor structure appeared to be similar to Bartone et al.’s (1989) findings and the solution reported by Dobreva-Martinova (1999b). Reliability coefficients ranged from .59 (somatic complaints) to .80 (depression).

Individual level coping was measured using the COPE Inventory (Carver et al., 1988). A factor analysis (direct oblimin rotation) was conducted on the 56-items (Table 11) resulting in an 11-factor solution accounting or 58.86% of the total variance compared to a 13-factor solution (59.80%) reported by Dobreva-Martinova (1999b). Reliability coefficients ranged from .58 (for factor 9, restraint coping and factor 11, mental disengagement) to .92 (factor 3, turning to religion).

Scale scores for subsequent analyses were derived by computing the average score for all contributing items in a scale.

RESULTS
Hierarchical regression and structural equation modeling (SEM) techniques were used to test the proposed model and several moderating effects. Data screening for each scale was conducted using the procedures recommended by Kline (1997).

Exhaustive detail concerning the data analysis and results are available in Farley (2002). These analyses confirmed the psychometric properties of the UCP. In addition, following a factor analysis of the individual questions on the morale/cohesion scale, this concept was separated into two subscales: task cohesion and social cohesion.

Hierarchical Regression
Hierarchical regression was used to test the direct and moderating effects of coping style, morale/cohesion, and confidence in leadership on the relation between stress and strain. Gender, age, rank, operational experience and marital status were entered on the first step. That is, strain was regressed on these biographical variables first.

Working with the same data set that was used in the test of the overall model (N = 1,897), first order variables were standardized, and the interaction terms were calculated using these standardized cross-products to avoid problems with scale invariance and multicollinearity (Neter, Wasserman, & Kutner, 1989). Thus, strain was regressed on stress, task cohesion, social cohesion, confidence in platoon commander, confidence in company commander, positive coping and negative coping on the second step.

Strain was then regressed on each of the possible two-way interactions on the third step (stressors X morale/cohesion, stressors X confidence in leadership, stressors X coping style, morale/cohesion X confidence in leadership, morale/cohesion X coping style and confidence in leadership X coping style). Three-way and higher interactions were not necessary to test the relevant hypotheses and were not examined.

As can be seen in Table 2, in step one the biographical variables jointly accounted for a low but significant proportion of the variance ($R^2 = .01, p < .01$) in strain. Of these variables, only operational experience ($β = .08, p < .01$) and age ($β = .07, p < .05$) uniquely predicted strain. In step two, the main variables jointly accounted for a large proportion of the variance ($R^2 = .32, p < .001$).

Stress, of course, was the strongest predictor of strain ($β = .45, p < .001$). All other variables, with the exception of Positive Coping ($β = .02, ns$), uniquely predicted strain. Finally, on the last step, the interaction terms jointly accounted for a low but significant proportion of the variance ($R^2 = .02, p < .01$) in strain. Of these interaction terms, Stress X Confidence in Company Commander ($β = .01, ns$) and Stress X Confidence in Platoon Commander were not significant ($β = .02, ns$). The total proportion of variance in strain accounted for by this solution was 34%.
From this analysis it can be seen that both Task Cohesion ($\beta = -0.08, p<.001$) and Social Cohesion ($\beta = -0.10, p<.001$) moderate the effects of stress on strain. Although confidence in platoon commander and company commander showed mediating effects in the SEM analysis (below), they did not appear to moderate the relation between stress and strain. Finally, Negative Coping interacts with stress in such a way that strain increases more ($\beta = .12, p<.001$) than when Positive Coping interacts with stress ($\beta = .04, p<.05$).

As can be seen in Table 3, Model 3 provided an adequate fit to the data. In summary, the overall model (Figure 2) suggests important relations among components. First, there are direct, positive relations between stress and strain, and negative coping and strain. Negative coping increases as stress increases although there is no direct relation between stress and positive coping. Stress also has direct and negative effects on confidence in platoon commander, confidence in company commander and morale/cohesion. Stress directly influenced the levels of strain, negative coping, confidence in leadership, and morale/cohesion, but did not directly affect positive coping.

Positive coping has positive effects on confidence in platoon commander, confidence in company commander and morale/cohesion but does not affect strain directly; in this respect the final model differed from the original conception. Confidence in platoon commander and confidence in company commander have direct positive effects on morale/cohesion, as predicted. Morale/cohesion appears to play an important mediating role between positive coping, confidence in platoon commander, confidence in company commander and strain. Mediating coefficients can be calculated by multiplying the direct path coefficients of interest. For example, the effect of confidence in platoon commander on strain can be calculated by multiplying its coefficient to Morale/cohesion with the Morale/cohesion coefficient to strain ($-.08 \times .46 = -.08$). Therefore, strain decreases .08 of a standard deviation for every full standard deviation increase in confidence in platoon commander through its relation to Morale/cohesion.

In addition to the overall model, similar models were derived for both officers and soldiers. These models are summarized in Table 4. The statistical tests indicate only modest fit even for modified models. Both final models showed non-significant relations from positive coping to morale/cohesion and confidence in company commander. However, the soldier model differed from officer model, but was similar to the overall model, in that it showed significant negative relations between stress and morale/cohesion ($\beta = -0.22, p<.05$) and morale/cohesion

### Table 3

<table>
<thead>
<tr>
<th>Goodness of Fit Indices for Overall Model (N = 1,897)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X^2/df$</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td>Model 2</td>
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<td>Model 3</td>
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</tbody>
</table>

Note: $X^2$: Chi-square. df = degrees of freedom. GFI = Goodness of fit. AGFI = Adjusted Goodness of fit. NFI = Normed fit index. NNFI = Non-normed fit index. RMSR = Root mean square residual.
and strain (β = -.10, p<.05). That is to say, for soldiers but not for officers, increased stress tended to reduce morale/cohesion, and higher morale/cohesion tended to reduce strain.

*DISCUSSION*

This study was designed to demonstrate the importance of morale/cohesion and confidence in leadership as part of the relationship between stress and strain experienced by Canadian soldiers on operations. Of particular importance to the occupational stress literature, this study points out the utility of conducting military stress research in an active theatre of operations and, in addition, identifies the major role social cohesion plays in the amelioration of strain in this unique environment.

Most findings were consistent with predictions based on previous research. The model proposed in the present study predicted positive relations between stress and strain. In addition, previous UCP research found strong linear relations between stress and strain (Dobreva-Martinova, 1998a) and significant negative correlations between unit climate dimensions (morale/cohesion and confidence in leadership) and both stress and strain (Izzo et al., 2000). Given the presumed highly stressful nature of operations, it was also predicted that stress would predict positive and negative coping. All elements of this hypothesis were supported except one: Stress did not directly influence positive coping.

Positive coping might play a moderating rather than mediating role in the relation between stress and strain. Rather than stress alerting the individual to engage in positive coping strategies, positive coping might be independent of stress, and the relationship between stress and strain might differ depending on the positive coping skills the individual has developed. This finding stands in contrast to research conducted with soldiers not on operations, for whom positive coping declined as stress increased (Day & Livingstone, 2001), and merits further research.

Most importantly, the results show that morale and cohesion influence confidence in leadership, and that both variables influence strain experienced by soldiers on operations. This points to an important role for leaders in the maintenance of morale and cohesion. Task and social cohesion both exert strong buffering influences (including individual morale) on the relationship between stress and strain. Therefore, the relationships between social and task cohesion and strain merit some elaboration.

<p>| Table 4. Separate Model Approach Results: Officers (N = 135) and Soldiers (N = 302). |
|---------------------------------|-----------|-----------|-----------|-----------|-----------|</p>
<table>
<thead>
<tr>
<th></th>
<th>X²</th>
<th>X²/df</th>
<th>GFI</th>
<th>AGFI</th>
<th>NFI</th>
<th>NNFI</th>
<th>RMSR</th>
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<tbody>
<tr>
<td><strong>Optimal fit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>O Model 1</td>
<td>585.43</td>
<td>1.74</td>
<td>.77</td>
<td>.72</td>
<td>.80</td>
<td>.89</td>
<td>.09</td>
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<tr>
<td>O Model 2</td>
<td>481.50</td>
<td>1.46</td>
<td>.81</td>
<td>.76</td>
<td>.83</td>
<td>.93</td>
<td>.08</td>
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<tr>
<td>S Model 1</td>
<td>949.69</td>
<td>2.82</td>
<td>.82</td>
<td>.79</td>
<td>.81</td>
<td>.85</td>
<td>.09</td>
</tr>
<tr>
<td>S Model 2</td>
<td>910.99</td>
<td>2.69</td>
<td>.83</td>
<td>.80</td>
<td>.82</td>
<td>.86</td>
<td>.09</td>
</tr>
<tr>
<td>Note: X² = Chi-square. df = degrees of freedom. GFI = Goodness of fit. AGFI = Adjusted Goodness of fit. NFI = Normed fit index. NNFI = Non-normed fit index. RMSR = Root mean square residual. O = officer. S = soldier.</td>
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</table>

**Summary of Results**

Hierarchical regression and SEM techniques were used to test the proposed model and several moderating effects. Results indicate that positive coping, task cohesion, and social cohesion moderate the relation between stress and strain such that those individuals who reported using or seeking higher levels of these resources experienced lower strain. Conversely, negative coping was found to moderate the relation between stress and strain such that those individuals who reported using negative coping strategies tended to report experiencing more strain compared to people who used positive strategies. Finally, positive coping, confidence in one's platoon commander and company commander were found to play underlying or mediating roles in the generation of the interaction between cohesion variables and strain.
Social cohesion appears to be the dominant aspect of cohesion for soldiers, whereas task cohesion is more important for officers. Cohesion predicted strain in the soldier model but not for officers; it might be that the social aspect of cohesion is what makes the difference with respect to strain reduction. In fact, social cohesion was seen to have a greater effect on strain than task cohesion in the hierarchical regression analysis of the overall sample.

It should not be surprising that task cohesion plays a larger role in life of officers than social cohesion. First, task completion is their job. By and large, officers are the people responsible for the efficient completion of unit tasks. Task cohesion, therefore, is likely to be seen by officers as an important motivational instrument for work completion. Moreover, as there are fewer officers than soldiers in any unit, and officers are segregated from soldiers for social purposes, the importance of social cohesion might be seen by officers as less important. The effect, however, might be that the strain reduction benefits of social cohesion are not available to officers.

In light of these findings, what are the ethical implications for leaders? UCP data are available at both the unit level and, more generally, at the Army Headquarters for modeling purposes. Leaders at both levels have an ethical responsibility to integrate this information into leader practices. For example, as social rather than task cohesion appears to play the largest role in strain reduction for soldiers, responsible leaders will use this information in the development of training and work routines. A strict focus on task cohesion alone will not buffer the relation between stress and strain and stands to put the physical and mental health of soldiers at risk.

The broader role of the UCP as a mechanism of voice for soldiers is equally important. Most leaders would agree that there is great value in a structured opportunity for soldiers to express their views directly to the commanding officer on a variety of issues. That said, the UCP was not designed to replace chain-of-command leadership practices. Rather, the UCP is an additional method commanding officers can use to examine important human dimensions of operational readiness. The advantage of the UCP is that the information is collected systematically and, therefore, provides an “un-filtered” view of unit climate information.

Future research on unit climate issues will continue in the Army. Presently, researchers at the Directorate of Land Personnel Strategy are investigating several socio-cultural variables that might underpin the climate of units in operations. For example, current research is focused on assessing the alignment of soldiers’ attitudes toward central tenets of the military ethos such as the understanding that all CF members are subject to being lawfully ordered into harm’s way under conditions that could lead to the loss of their lives (in military jargon this is referred to as “unlimited liability”). The degree to which the values of soldiers mirror those of the Canadian population are also being investigated. In the future, the role of personality characteristics in the development of coping strategies and the effects of officer turnover and unit stability with respect to their relation to task and social cohesion require investigation.

The UCP has advanced the measurement of morale, cohesion and confidence in leadership in deployed units. Analysis of UCP data has provided important insights into the relationships among unit climate variables and the impact of leader practices on the reduction of both physical and psychological strain. The challenge for leaders will be to integrate this new information into professional practice and continue to always “put the soldier first”.

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