Organizational Commitment: A Simultaneous Test of Antecedents, Consequences, and Correlates

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Abstract

Organizational Commitment: A Simultaneous Test of Antecedents, Consequences, and Correlates by Chris A. Mahar, May 5, 2004

The Canadian military is focused on attracting dedicated people to join and maintain membership in the military (National Defence, 2001). Comprehensive organizational commitment research is critical for the military to conduct in order to attain its strategic goals. The primary purpose of the current study was to develop and confirm a comprehensive model of organizational commitment within a military context. The second purpose of the study was to assess whether method variance affects the validity of results generated using the Organizational Commitment Questionnaire (OCQ; Mowday, Steers, & Porter, 1979). Data from 1680 randomly selected Regular Forces Air Command members from various Canadian provinces were used to test the OCQ dimensionality and the model of organizational commitment developed in the current study. The best fitting OCQ model was an orthogonal, two-factor structure representing affective commitment and method variance. The model fit the data well based on several fit indices and was confirmed using an independent sample. The model also was structurally invariant across gender, language, officer status, and career stage/age groupings, further supporting its generalizability within Air Command. Results are discussed in terms of their application within a military context.

Organizational Commitment: A Simultaneous Test of Antecedents, Consequences, and Correlates

A wide variety of definitions and a multitude of measurement methods of organizational commitment can be found within the extant literature. The construct has been defined as the relative strength of employee involvement with the organization, the congruence between employee and organizational goals and values, and the exchange of behavior for valued rewards (Kachmar, Carlson, & Brymer, 1999). Although definitions of organizational commitment are abundant within the literature, the existing conceptions of the construct tend to share a common theme: the bond or link between an individual and an organization (Mathieu & Zajac, 1990). Emergence of organizational commitment as a critical and important construct in organizational research is due to its strong ties to other work-related constructs (Eby, Freeman, Rush, & Lance, 1999). The level of organizational commitment possessed by employees has been linked to the amount of intrinsic and extrinsic rewards received (Mowday, Steers, & Porter, 1979), the potential for the employee to engage in 'extra-role' behaviors (Organ & Ryan, 1995; Schappe, 1998), the improvement of objective in-role performance (Mathieu & Zajac, 1990), and the probability of engaging in withdrawal behaviors including tardiness, turnover intention, and actual turnover (Russ & McNeilly, 1995; Tett & Meyer, 1993). Therefore, gaining a comprehensive understanding of the nature of organizational commitment potentially can improve employee well-being and organizational productivity. A comprehensive model outlining the nomological network of constructs related to organizational commitment however is absent in the extant literature.

A great deal of empirical work concerning the organizational commitment construct has been conducted since Mathieu and Zajac (1990) published the most

comprehensive and widely cited meta-analytic review of the construct (Meyer, 1997). Construction and testing of comprehensive causal models of organizational commitment is necessary for understanding the construct's relation to other employee behavior constructs, and for understanding the construct's development process (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997). Specifically, methods for improving employee commitment and productivity, such as reducing role stressors, enhancing team cohesion, improving employee-leader relations, and making changes to improve job satisfaction, can be enhanced by developing a comprehensive organizational commitment model (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997). Causal models of organizational commitment have appeared in the scientific literature since 1990. However, few studies have proposed unified and comprehensive models that test antecedents, consequences, and correlates of the construct simultaneously (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997). Specifically, scientific research tends to focus on incomplete models of organizational commitment, or on simple bivariate relationships among organizational commitment and related constructs (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997).[1] Therefore, the primary purpose of the current study is to test simultaneously the proposed antecedents, consequences, and correlates of organizational commitment outlined by Mathieu and Zajac (1990), and to develop and confirm a comprehensive organizational commitment model. Although the development of a comprehensive organizational commitment model is warranted based on empirical findings, it also must be applicable for use within practical and applied settings, such as within an organization as intricate as the Canadian Forces.

[1] Bivariate relationships are the underpinnings of the current model, without which the model would not have been conceivable. There is no intention to suggest that bivariate research designs are inappropriate. The point is that both design types contribute substantively to the understanding of the phenomena; therefore, balance with regard to their use is critical.

The Canadian military is focused on attracting dedicated and committed people to join and maintain membership within the military. The strategy is centered on organizational commitment, leadership at all levels of the organization, team and group cohesion, personal well-being and satisfaction, and improving military performance using proactive measures (National Defence, 2001). Comprehensive research on organizational commitment is critical for the military to attain strategic goals, yet a comprehensive model of organizational commitment and relevant constructs neither has been developed nor confirmed within a Canadian military context. The Canadian military will benefit from the current study's attempt to develop an organizational commitment model, which incorporates many key constructs suggested to be important within the National Defence (2001) document. Specifically, various levels of leadership, group cohesion, and job and institutional satisfaction are included in the current model. Additionally, data used in the current study were obtained from a large and representative Air Force sample, thereby making the results of the study directly applicable to a military context.

Before a comprehensive model of organizational commitment can be tested and confirmed with a military sample, the psychometric properties of the organizational commitment measure used in the current study must be examined. Determination of the dimensionality of a construct is necessary for understanding how it relates to other constructs, and how it fits into a nomological network of constructs (Caught, Shadur, & Rodwell, 2000). Specifically, a nomological network associated with a construct cannot be developed without the structure of the construct being confirmed. Furthermore, inconsistency in a measure's factor structure suggests that an instrument's construct validity is questionable, which may render results obtained from the instrument useless. The multidimensionality of the organizational commitment construct is well known, and has been verified empirically (Allen & Meyer, 1990; Clugston, 2000; Culpepper, 2000;

Mathieu & Zajac, 1990; Meyer, 1997). However, the dimensionality of the Organizational Commitment Questionnaire (OCQ; Mowday et al., 1979) is questionable/unknown (Caught et al., 2000). Although the OCQ is theorized to represent a global attitude or a unidimensional model of organizational commitment, evidence of multidimensionality has been obtained, and has been due to a measurement artifact in some cases (Caught et al., 2000). To this end, along with creating a comprehensive organizational commitment model, a second purpose for conducting the current study is to test the dimensionality and measurement artifacts inherent in the OCQ.

Dimensionality of the Organizational Commitment Questionnaire

One of the more popular measures of organizational commitment in management and psychology literature is the OCQ (Mowday et al., 1979; Caught et al., 2000). Since the late 1970s, the OCQ has been used in a wide variety of settings ranging from field/applied settings to laboratory settings (Caught et al., 2000). Although the Allen and Meyer's (1990) three-component scale largely has supplanted the use of the OCQ within organizational research, the OCQ continues to be used frequently in many applied contexts (Caught et al., 2000). The construct validity of the OCQ instrument is in question; its dimensionality is not consistent across studies (Akhtar & Tan, 1994; Allen & Meyer, 1990; Angle & Perry, 1981; Bar-Hayim & Berman, 1992; Caught et al., 2000; Dunham, Grube, & Castaneda, 1994; Hackett, Bycio, & Hausdorf, 1994; Luthans, McCaul, & Dodd, 1985; Mowday et al., 1979; Tetrick & Farkas, 1988; Tett & Meyer, 1993; Zeffane, 1994). Additionally, the measure may include construct irrelevant covariance (Akhtar & Tan, 1994; Angle & Perry, 1981; Caught et al., 2000; Tetrick & Farkas, 1988; Tett & Meyer, 1993). If a measure's construct validity is questionable, then it is unclear as to what phenomena the instrument is measuring, which could be detrimental to the organization when the instrument is used to make organizationally

relevant decisions. Due to its popularity, the determination of the psychometric properties of the OCQ is a major purpose for conducting the current study. It is necessary to establish the OCQ's dimensionality before further use in applied contexts.

A second reason for confirming the dimensionality of the OCQ is to represent the construct appropriately in the organizational commitment model being tested in the current study. The nomological network of a construct cannot be constructed or understood properly without the dimensionality of the construct being represented appropriately within the network. Because a primary purpose for conducting the current study is to develop and to confirm a comprehensive model of organizational commitment within a Canadian military context, it is of paramount importance to confirm the dimensionality of the model's namesake component.

The Unidimensional Position

Mowday et al. (1979) based the OCQ on a three-part definition of organizational commitment, which corresponded to three highly related factors: the acceptance of organizational goals and values (identification), motivation to work for the organization (involvement), and willingness to stay with the organization (loyalty). Although the OCQ was based on this three-component definition of the construct, the theory underlying the OCQ was intended to represent a unidimensional measure of organizational commitment (Mowday et al., 1979). The original validation of the scale used 200 participants who were employed in a variety of jobs across nine different organizations (Mowday et al., 1979). The results of six factor analyses in the original study did not provide evidence for the three-factor structure of the OCQ. Instead, a unidimensional model was the best fit to the data, and the internal reliability estimates were high, ranging from $\alpha = .82$ to $\alpha = .93$ (Mowday et al., 1979). Overall, empirical studies repeatedly found evidence for OCQ unidimensionality (Luthans et al., 1985).

Several studies have examined the relationship between the OCQ and Allen and Meyer's (1990) three-component questionnaire, which includes affective, normative, and continuance subscales. The OCQ appears to be related to only the affective commitment component of Allen and Meyer's (1990) scale, so the OCQ can be thought of as a unidimensional measure of affective commitment (Allen & Meyer, 1990; Dunham et al., 1994; Hackett et al., 1994). Mathieu and Zajac (1990) argue that there is little purpose for suggesting that the OCQ is multidimensional because it primarily is found to be unidimensional, and its subcomponents tend not to have substantive relationships with other relevant variables. Specifically, no evidence exists for the uncovered theoretical factors of the OCQ differentially predicting organizationally relevant constructs (Mathieu & Zajac, 1990). Finally, Caught et al. (2000) suggested that the multidimensional nature of the OCQ is due to a measurement artifact, whereby the measure is unidimensional when the artifact is controlled. Evidence for measurement artifact explanations of OCQ multidimensionality are relatively abundant (Akhtar & Tan, 1994; Angle & Perry, 1981; Tetrick & Farkas, 1988; Tett & Meyer, 1993). The current study tests the unidimensional OCQ model presented in Figure 1.

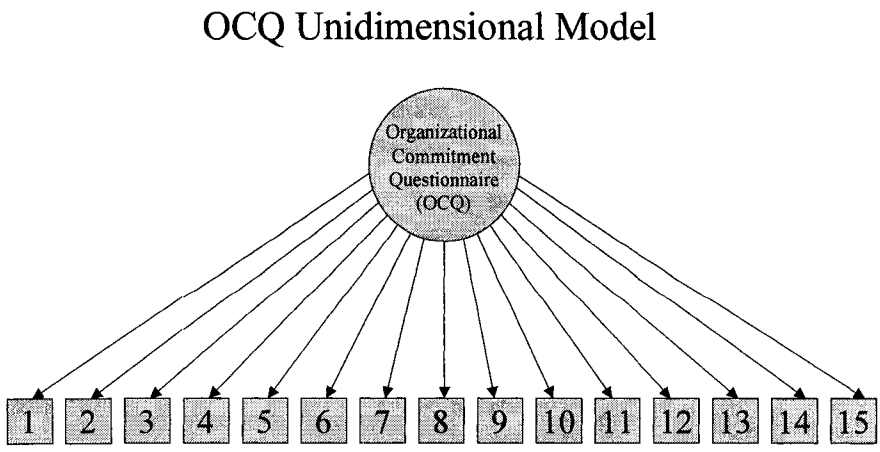

Figure 1. Unidimensional representation of organizational commitment.

The Multidimensional Position

Although the OCQ seems to reflect a unidimensional representation of organizational commitment, there is also evidence for the multidimensionality of the measure (Caught et al., 2000). A variety of multidimensional factor structures have surfaced within the OCQ literature. Two-factor models of the OCQ include a model representing corporate citizenship versus attachment to the organization (Zeffane, 1994), passive versus active commitment (Bar-Hayim & Berman, 1992), and value versus calculative commitment. However, positively worded items loaded onto one factor and negatively worded items loaded onto a second factor in this latter case (Angle & Perry, 1981). Other studies have verified that factors often emerge as a result of item wording (Tetrick & Farkas, 1988; Tett & Meyer, 1993). A three-factor structure included normative-affective commitment, continuance commitment, and volitive commitment components (Akhtar & Tan, 1994). Because evidence exists for the multidimensionality of the OCQ, further testing of the OCQ dimensionality is warranted. The second OCQ model tested in the current study is the original three-factor model posited by Mowday et al., which is presented in Figure 2.

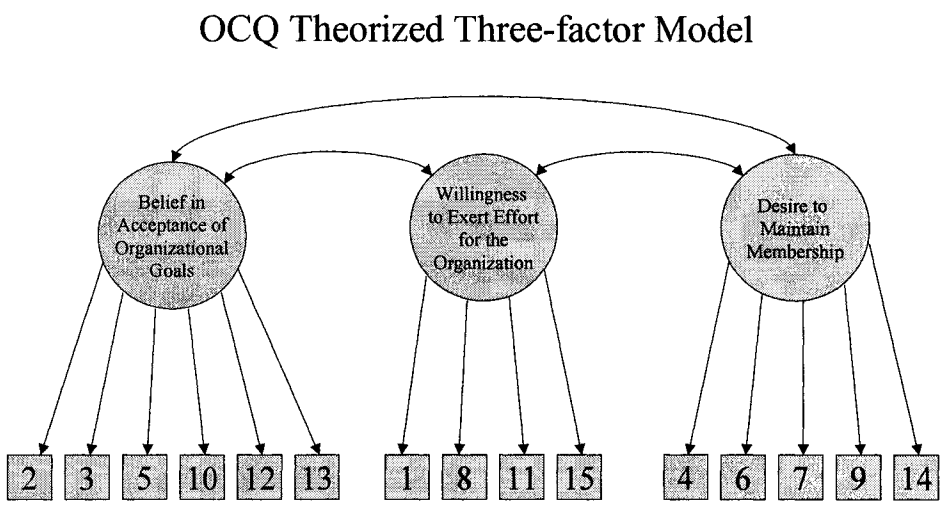

Figure 2. Three-factor representation of organizational commitment.

In some cases positively worded OCQ items load onto one factor and negatively worded items load onto another factor (Angle & Perry, 1981; Tetrick & Farkas, 1988). Cases also exist in which all the negative items loaded onto a single factor, suggesting the presence of a measurement artifact (Akhtar & Tan, 1994). The two-factor positive and negative item wording OCQ model in Figure 3 also is tested in the current study.

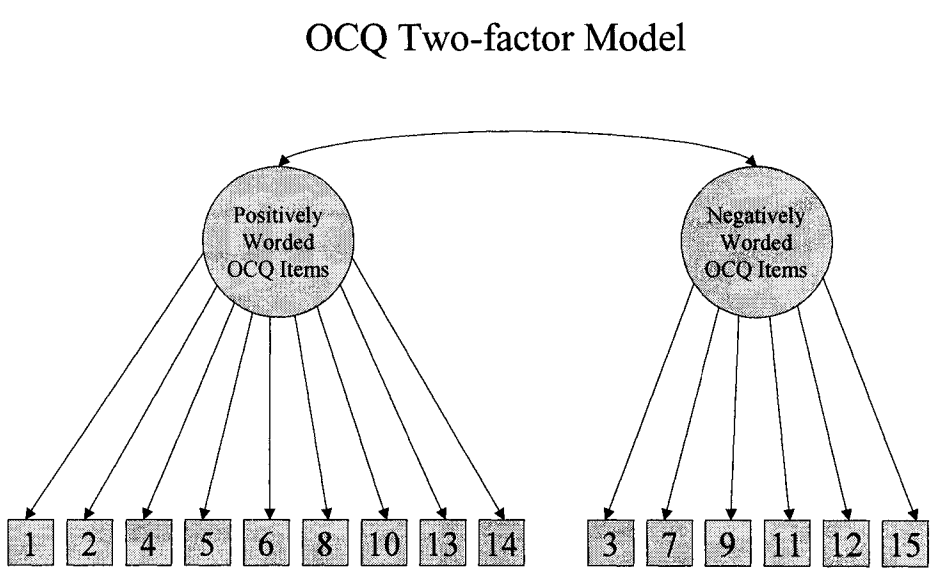

Figure 3. Two-factor representation of organizational commitment.

The final OCQ model to be reviewed, which has not been tested to date, concerns the potential for construct irrelevant covariance to degrade the validity of inferences made when using the OCQ to operationally define organizational commitment. Based on item wording explanations of OCQ dimensionality, a measurement artifact may have an impact on the validity of results obtained using the scale (Angle & Perry, 1981; Caught et al., 2000; Tetrick & Farkas, 1988; Tett & Meyer, 1993). Specifically, correlations among organizational commitment and relevant constructs may be spurious; thus, discovered relationships may be underestimated or overestimated due to the inclusion of construct irrelevant covariance within the OCQ. However, testing for method variance solely using item wording factor structure evidence is incomplete. To date, the measure has not been

tested for method variance using a marker variable approach. Therefore, this approach is used to determine whether the OCQ is confounded by method variance.

A relatively common method for determining the presence of construct irrelevant covariance is the use of an orthogonal marker variable. In general, a marker variable is an orthogonal second-order factor onto which negatively or positively worded items are constrained to load (Kelloway, Catano, & Southwell, 1992). At least three conditions signify the existence of method variance. Firstly, the fit of the marker variable model is significantly better than are the fits of other postulated models. Secondly, the paths load onto the orthogonal marker factor significantly better than they do onto other factors. Thirdly, the parsimony index of the marker variable model is unaffected or improved as compared to other postulated models (Kelloway & Barling, 1990). Evidence for the presence of a significant marker variable would provide strong empirical support for method variance inherent within the OCQ. Figure 4 outlines the marker variable model.

OCQ Multidimensional Marker Variable Analysis

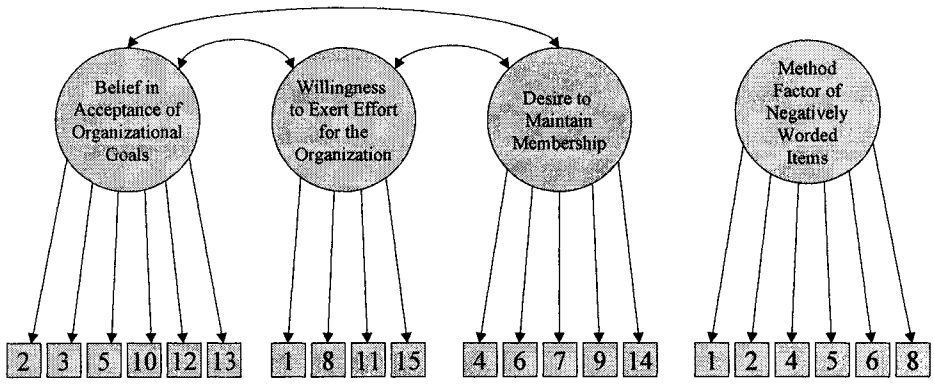

Figure 4. Four-factor representation of organizational commitment.

Testing the dimensionality of the OCQ by comparing the fit of four alternate models serves several purposes. Specifically, it will provide further evidence for the

construct validity of the instrument, which helps to establish the appropriateness of OCQ use within organizational settings. Testing OCQ dimensionality also determines how the organizational commitment construct should be represented within the current study.

A Causal Model of Organizational Commitment

The development of a comprehensive model outlining relationships among several relevant constructs such as organizational commitment, group cohesion, and leadership is critical for the military to begin the process of attaining a primary strategic goal outlined within the National Defence (2001) document – the attraction and retention of committed employees. Eby et al. (1999), Mathieu and Zajac (1990), and Meyer (1997) concluded that the development and testing of comprehensive causal models of organizational commitment were necessary for understanding the construct's relation to other employee behavior constructs, and for understanding the construct's development process. Specifically, methods for improving employee commitment and productivity, such as reducing role stressors, enhancing team cohesion, improving employee-leader relations, and making various changes to improve job satisfaction, can be enhanced through developing a comprehensive model of organizational commitment (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997). Few studies have proposed unified and comprehensive models that test antecedents, consequences, and correlates of organizational commitment simultaneously (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997), which is a primary purpose of the current study. A model of organizational commitment developed in the current study used findings outlined by Mathieu and Zajac (1990) as a guide to construct and confirm a comprehensive organizational commitment model in a Canadian military context. The restricted effects model is displayed in Figure 5 below and is discussed in the following several sections.

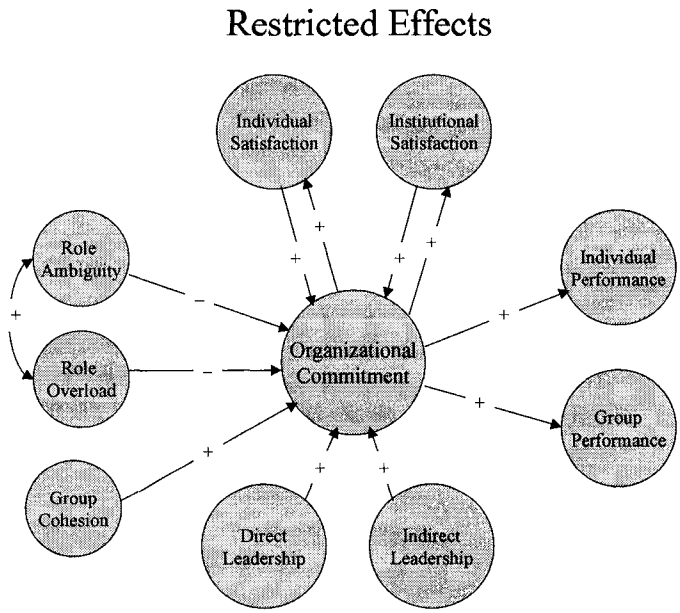

Figure 5. Restricted effects model of organizational commitment.

Mathieu and Zajac (1990) conducted a comprehensive meta-analysis on organizational commitment, whereby the relationship among various constructs and organizational commitment was expressed using a pseudo three-component taxonomy: antecedents, consequences, and correlates. The meta-analysis uncovered consistent relationships between organizational commitment and 26 antecedents, 8 consequences, and 14 correlates. The antecedent component comprises personal characteristics, job characteristics, group-leader relations, organizational characteristics, and role states. The consequences component consists of job performance and withdrawal intentions and behaviors. Finally, the correlates component contains employee psychological reactions to work, such as motivation, job involvement, and job satisfaction (Mathieu & Zajac, 1990). The pseudo three-component taxonomy of organizational commitment rarely is tested simultaneously even though meta-analysis results have provided evidence to warrant using the pseudo framework to develop comprehensive commitment models

(Aven, Parker, & McEvoy, 1993; Meyer, 1997). The current study tests five antecedents to organizational commitment: group cohesion, role ambiguity, role overload, perception of direct/immediate leaders, perception of indirect/senior leaders; two consequences: individual performance and group performance; and two correlates: individual and institutional satisfaction.

Before engaging in a detailed explanation of model development, the semantic treatment of the model regarding the use of terms such as antecedent and consequence needs to be reviewed. Few studies, other than those that have tested the organizational commitment-job satisfaction link, have confirmed the longitudinal causal sequence of antecedents and consequences of organizational commitment (Meyer, 1997). Therefore, the use of these terms may be inappropriate. Although causal direction among constructs has not been established empirically, the antecedent, consequent, and correlate terminology is used here to refer to the theoretical links among organizational commitment and other constructs that were outlined by Mathieu and Zajac (1990).

Antecedents of Organizational Commitment

Several variables have been defined in the literature either as pseudo or real antecedents of organizational commitment. These variables include group cohesion, role ambiguity, role overload, and direct and indirect leadership.

Group cohesion and organizational commitment. Policymakers, social scientists, and military leaders consider unit cohesion to be an important component for combat readiness and performance effectiveness (Griffith & Vaitkus, 1999). Strong positive effects have been found for small group bonding and group morale. Additionally, cohesion appears to buffer the effects of high stress situations, which leads to enhanced performance (Griffith & Greenless, 1993). A wide variety of cohesion definitions exist,

including the force that causes individual group members to remain part of the group (Zaccaro, 1990), a dynamic process reflected in the tendency for groups to remain united in the pursuit of goals and objectives (Oliver, Harman, Hoover, Hayes, & Pandhi, 1999), and the bond that unites members of a group (Glass & Benshoff, 2002). Cohesion as a bonding force within groups appears to be a generally accepted definition of the construct (MacIntyre, 2001). Although it seems logical to assume that group cohesion predicts employee organizational commitment, empirical confirmation of the path is necessary before the relation can be included in the developed model.

Mathieu and Zajac (1990) included group cohesiveness in their meta-analysis as an antecedent to organizational commitment, but included only three studies to determine the cohesion-commitment relationship. A corrected correlation of $r = .15$ was found, where statistical artifacts accounted for only 4% of the between-study variance; therefore, no definitive conclusion was warranted (Mathieu & Zajac, 1990). Evans and Dion (1991) did confirm positive and significant results for the commitment-cohesion relationship. Additionally, as the cohesiveness of army reservists decreases, so does organizational commitment (Griffith & Greenless, 1993). Variance in performance and organizational commitment can be explained by group cohesiveness when perceived task competence is removed from the analysis (Wech, Mossholder, Steel, & Bennett, 1998). When tested empirically, peer cohesion loaded most strongly onto the largest extracted canonical root that corresponded to affective commitment (Allen & Meyer, 1990). Increasing interpersonal attachment among group members increases group cohesiveness significantly, which in turn, increases commitment to a larger entity (Yoon, Baker, & Ko, 1994). Due to the existing evidence for the cohesion-commitment relationship, the restricted effects model will include group cohesiveness as a positive predictor of

organizational commitment. Although cohesion is treated as an antecedent in the current study, no evidence exists to confirm that it is a direct antecedent to organizational commitment as suggested by Mathieu and Zajac (1990). The causal ordering between the constructs has not been confirmed longitudinally.

Role ambiguity and organizational commitment. Role ambiguity refers to the discrepancy between the amount of information that a person possesses and the amount of information necessary for conducting a specific role adequately (Witt, 1991). The construct is considered to be a major source of work-related stress and tension that leads to decreased performance (Witt, 1991). When supervisor support is low, the presence of role ambiguity tends to lead to emotional exhaustion and burnout[2] (Posig & Kickul, 2003). Role ambiguity also decreases trainee satisfaction and effectiveness of military training (Mathieu, 1988). Due to its detrimental effect outcomes, an investigation of the relationship among role ambiguity and relevant consequences is warranted.

Mathieu and Zajac (1990) included role ambiguity in their meta-analysis as an antecedent to organizational commitment and obtained a significant corrected correlation of r = -.22. Role ambiguity is a consistent and significant predictor of commitment (Aven et al., 1993) and is one of the most important predictors of salespersons' organizational commitment (Agarwal & Ramaswami, 1993). Glisson and Durick (1988) found that role ambiguity was a stronger predictor of organizational commitment than several job, organizational, and work characteristics within a sample of human service individuals. Using meta-analysis, Cohen (1992) also found that regardless of job grouping, role ambiguity and organizational commitment had a consistent and negative relationship.

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[2] It is also possible that role ambiguity directly affects relevant outcomes rather than indirectly effecting outcomes through stress and strain.

When tested empirically, role clarity, or essentially the opposite of role ambiguity, highly loaded onto the strongest extracted canonical root that corresponded to affective commitment (Allen & Meyer, 1990). Regardless of the role factor model tested, role ambiguity consistently and negatively predicted organizational commitment, which was measured using a short form version of the OCQ (Netemeyer, Burton, & Johnston, 1995). Schaubroeck, Cotton, and Jennings (1989) found consistent support for role ambiguity predicting organizational commitment across two independent organizational samples. Finally, work-related variables, such as role ambiguity, are better predictors of work-place commitment as compared to demographic variables (Billingsley & Cross, 1992). A large body of evidence exists to support role ambiguity's propensity to predict organizational commitment negatively. Role ambiguity also is a confirmed direct longitudinal antecedent to organizational commitment (Adkins, 1995; Johnston, Parasuraman, Futrell, & Black, 1990), as is role conflict (Adkins, 1995). Therefore, the restricted effects model includes role ambiguity as an antecedent to, and negative predictor of organizational commitment.

Role overload and organizational commitment. When the number of demands placed on an individual exceeds the amount of time available to complete tasks, the individual is considered to be experiencing role overload (Pieró, González-Romá, Tordera, & Mañas, 2001). Role overload is considered to be a source of work-related stress and tension that leads to decreased performance (Witt, 1991). When supervisor support is low, the presence of role overload tends to lead to emotional exhaustion and burnout (Posig & Kickul, 2003). Within a military context, role overload is the only role state known to affect emotional exhaustion directly, and to affect emotional exhaustion indirectly through mood (Barling & McIntyre, 1993). Due to the potentially negative

impact on relevant consequences, a critical investigation of the relationship among role overload and relevant outcomes is warranted.

Like role ambiguity, role overload is a perception of the work environment that influences affective responses, and was included in the Mathieu and Zajac (1990) meta-analysis as an antecedent to organizational commitment. They found that it was a significant antecedent to organizational commitment and obtained a corrected correlation of r = -.21. Similar to findings associated with role ambiguity, role overload is a consistent and significant predictor of commitment (Aven et al., 1993). Role overload and emotional abuse account for similar proportions of unique variance in outcome variables such as organizational commitment and job satisfaction (Keashley, Hunter, & Harvey, 1997). Human resources practices, including job training and redesign, pay systems, promotion opportunities, and employee involvement do not buffer the negative and significant impact of role overload on organizational commitment (Teo & Waters, 2002). In a large and representative military sample, role overload was a stronger predictor of affective commitment than role ambiguity (Dobreva-Martinova, Villeneuve, Strickland, & Matheson, 2002). Research on survivor reactions to downsizing suggests that role clarity variables, such as role overload, directly and negatively impact organizational commitment. Specifically, as role overload increases, organizational commitment decreases (Allen, Freeman, Russell, Reizenstein, & Rentz, 2001). The restricted effects model in the current study treats role overload as an antecedent to, and negative predictor of organizational commitment, although no evidence exists to confirm that role overload is a direct longitudinal antecedent to organizational commitment as outlined by Mathieu and Zajac (1990).

The relationship between role ambiguity and role overload. Role ambiguity, role overload, and role conflict, which are considered to be highly related concepts, generally are used in concert to study the impact of role stressors on relevant employee and organizational outcomes (Posig & Kickul, 2003). Role ambiguity, conflict, and overload are known as role stressors and have a negative influence on various relevant constructs (Saks & Ashforth, 2000; Witt, 1991). As previously mentioned, role stressors are known to be negative predictors of organizational commitment. Although evidence exists to support the separateness of role overload from other role stressor variables, the construct is related to other role stressors, such as role ambiguity (González-Romá & Lloret, 1998). Therefore, the restricted effects model in the current study tests the posited positive correlation between role ambiguity and role overload

Direct/indirect leaders and organizational commitment. The leadership construct has been studied for nearly a century (Hains, Hogg, & Duck, 1997) and has been conceptualized using a wide variety of factors such as individual traits, leader behavior, follower perceptions, role relations, and influence over followers and on organizational culture (Yukl & Van Fleet, 1992). There appear to be as many definitions of leadership as there are individuals studying the construct (Kanji & Sa, 2001). The wide variation of leadership definitions and models reflect deep disagreement regarding the nature of leadership processes and the identification of leadership potential (Bass, 1985). Regardless of the philosophical position held regarding the construct, leadership has a direct impact on organizational commitment (Mathieu & Zajac, 1990). With regard to the current study, the leadership construct is divided into two functions: direct leadership, which refers to employee perceptions of immediate supervisors; and indirect leadership, which refers to employee perceptions of senior leaders.

The meta-analysis conducted by Mathieu and Zajac (1990) analyzed many leadership variables that tended to be significant antecedents of organizational commitment, including leader initiating structure, leader consideration, leader communication, and participative leadership. Although participative leadership could not be tested, the corrected correlations for initiating structure, consideration, and communication were $r = .29$, $r = .34$, and $r = .45$, respectively (Mathieu & Zajac, 1990). Several leadership behaviors, such as consideration, are consistent and positive predictors of organizational commitment (Aven et al., 1993). Furthermore, leadership style predicted employee organizational commitment after job satisfaction was controlled statistically (Lok & Crawford, 2001). Transformational leadership style predicted middle-level bank employees' commitment to an organization (Rai & Sinha, 2000). Charismatic leadership style, compared to expert and referent power, directly predicts the organizational commitment of subordinates as measured by the OCQ (Kudisch, Poteet, Dobbins, & Rush, 1995). Compared to several job characteristics, individual demographics, and organizational characteristics, leadership behavior was the best predictor of organizational commitment within a sample of human service individuals (Glisson & Durick, 1988). In a pretest-posttest control group design, transformational leadership training significantly affected organizational commitment of bank manager subordinates (Barling, Weber, & Kelloway, 1996). However, there is limited evidence to confirm that the leadership construct is a direct antecedent to organizational commitment.

Preliminary evidence suggests that leadership behavior is a causal determinant of organizational commitment. Cross-lagged regression analysis using longitudinal data has shown that leader punitive behavior is a causal antecedent to organizational commitment when measured using the OCQ (Bateman & Strasser, 1984). Although more research

needs to be conducted to determine if leadership is a direct antecedent to commitment, the restricted effects model includes perceptions of direct and indirect leaders as antecedents to organizational commitment.

Consequences of Organizational Commitment

The current study measured both individual and group performance and included them as consequences of organizational commitment. Individual performance refers to how employees perceive their own personal performance, and group performance refers to how employees perceive the performance of the group (MacIntyre, 2001). In their meta-analysis, Mathieu and Zajac (1990) tested the relationship between job performance and organizational commitment using other-reports such as supervisor and peer ratings of performance. The other-reports significantly related to commitment, although the effect size was extremely low (Mathieu & Zajac, 1990). The disappointingly low, yet significantly positive correlations between output measures and commitment have been replicated (Randall, 1990; Riketta, 2002). Nonetheless, significant positive relationships between performance and commitment also exist (Meyer, 1997).

The commitment-performance relationship cannot be discounted because of these positive results (Meyer, 1997). Moderated regression analysis showed that the affective commitment of employees of food service organizations was significantly and positively related to overall job performance and promotability (Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989). The results between performance and commitment may be due to the presence of moderator effects (Cohen, 1991; Mathieu & Zajac, 1990). Cohen (1991) found moderately strong correlations between performance and commitment when the sample consisted of late career stage individuals. Regardless of career stage, however, correlations between the constructs tended to be small but significant and positive. Low

correlations between performance and commitment tend to be focus-specific. Consistent, significant, and positive correlations occur when the measure of commitment is based on the internalization of organizational values (Becker, Billings, Eveleth, & Gilbert, 1996). The relationship between commitment and performance tends to be weak (Cohen, 1991; Mathieu & Zajac, 1990).

Self-report performance measures tend to show higher correlations with commitment than do output performance measures (Meyer, 1997; Randall, 1990). Affective-based commitment measures such as the OCQ tend to correlate more highly with performance than do other commitment measures (Meyer, 1997; Randall, 1990). A larger effect should be expected in the current study between commitment and performance due to the use of an affective-based commitment measure as well as self-report measures of performance. Although longitudinal evidence for causal ordering is absent in the literature, the restricted effects model includes individual and group performance variables as direct consequences of organizational commitment. Based on evidence for moderator effects (Cohen, 1991; Mathieu & Zajac, 1990), including the performance variable in the model allows for a direct test of moderator effects during the structural invariance section of the study.

Correlates of Organizational Commitment

Individual and institutional satisfaction variables are subcomponents or facets of the job satisfaction construct. Individual satisfaction refers to an employee's satisfaction with the job or immediate work environment (MacIntyre, 2001). Institutional satisfaction refers to an employee's overall satisfaction with the respective organization (MacIntyre, 2001). The current study indexes job satisfaction using individual and institutional satisfaction. Several job satisfaction variables or facets were analyzed in the Mathieu and

Zajac's (1990) meta-analysis, including overall satisfaction, satisfaction with coworkers and supervisors, and pay satisfaction. The corrected correlations between organizational commitment and satisfaction variables tended to be positive, significant, and quite large. Corrected correlations ranged from $r = .17$ for extrinsic job satisfaction to $r = .60$ for satisfaction with the work itself (Mathieu & Zajac, 1990). The magnitude of the correlations sparked a debate as to whether job satisfaction and organizational commitment are separate and distinct constructs (Mathieu, 1991). Furthermore, substantial between-study variance remained within each analysis; postulated moderators did not explain fully the remaining variance (Mathieu & Zajac, 1990). Therefore, satisfaction and commitment fit better as correlates rather than as antecedents or consequences (Mathieu & Zajac, 1990). Causal precedence between organizational commitment and job satisfaction variables is questionable. Using longitudinal data, Farkas and Tetrick (1989) found that the causal ordering of satisfaction and commitment reverses over time, which they believed reflected cyclical or reciprocal effects. Cross-sectional data supports the view that the reciprocal relationship between satisfaction and commitment is asymmetrical such that the path from satisfaction to commitment takes causal precedence (Charles, 1991; Mathieu, 1991; Mottaz, 1987). Although satisfaction may cause commitment, the opposite direction also has been confirmed (Bateman & Strasser, 1984; Mathieu & Zajac, 1990; Meyer, 1997; Vandenberg & Lance, 1992). Despite support for competing models, the proposed model posits reciprocal paths between both individual and institutional satisfaction and organizational commitment.

An Expanded Effects Model

The restricted effects model includes relationships among organizational commitment and its antecedents, consequences, and correlates as outlined by Mathieu

and Zajac (1990). However, there are other relationships that exist among constructs within the model. To develop a comprehensive model of organizational commitment, theoretically and empirically important paths should be included in the model. Specifically, several important links between group cohesion and both group performance and individual satisfaction, role ambiguity and individual satisfaction, and role overload and individual performance should be explored, as should the relationship between leadership and individual satisfaction, and leadership and performance. The expanded effects model shown in Figure 6 below is described in the following several sections.

Expanded Effects Model

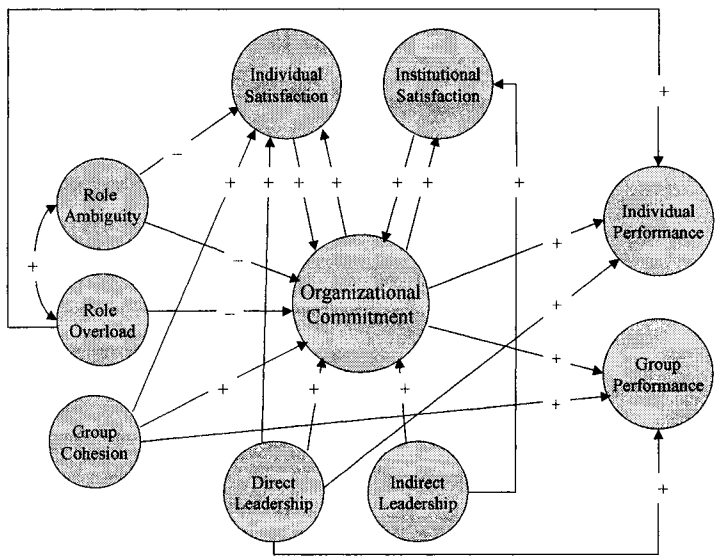

Figure 6. Expanded effects model of organizational commitment.

Group cohesion and group performance. Several past meta-analyses have found a consistent and positive relationship between group cohesiveness and performance. Corrected correlations have ranged from $r = .23$ to $r = .42$. This suggests that cohesive groups are more productive than are non-cohesive groups (Evans & Dion, 1991; Mullen & Copper, 1994; Oliver et al., 1999). Although a meta-analysis found a corrected

correlation between cohesiveness and performance to be disappointingly low at $r = .17$, the relationship is considered to be consistent and stable (Gully, Devine, & Whitney, 1995). MacIntyre's (2001) second strongest relationship within his model of small group constructs was that between group cohesion and group performance. Craig and Kelly (1999) found that individuals who were members of the high interpersonal cohesion and high task cohesion groups tended to produce the highest performance output when performance was indexed by the degree of creativity (Craig & Kelly, 1999).

The relationship between group cohesion and group performance tends to be stronger than the relationship between group cohesion and individual performance (Oliver et al., 1999). The strongest correlations between group cohesion and job performance are achieved when the study design is correlational rather than experimental, when the group size is small, and when the group exists naturally rather than when it is created, although most correlations between the aforementioned variables tend to be small, yet highly significant (Mullen & Copper, 1994). Therefore, group cohesion should predict group performance directly and positively.

Group cohesion and individual satisfaction. Based on a meta-analysis of a large sample of military personnel, the largest and most consistent effect size was the relationship between job/military satisfaction and group cohesion (Oliver et al., 1999). Based on other meta-analytic evidence, a substantial relationship exists between group cohesiveness and individual satisfaction, with corrected correlations ranging from $r = .18$ for pay satisfaction to $r = .45$ for individual satisfaction (Knicki, McKee, Schriesheim, & Carson, 2002). Group cohesion predicts individual satisfaction strongly and positively (MacIntyre, 2001; O'Reilly & Caldwell, 1985). Military cadets experience the greatest satisfaction with their job when they are members of highly cohesive groups (Dobbins & Zaccaro, 1986). Conversely, decreases in group cohesion tend to lead to stress, strain,

group performance disintegration, and job dissatisfaction within a military context (Griffith & Vaitkus, 1999). Therefore, group cohesion should predict individual satisfaction directly and positively.

Role ambiguity and job satisfaction. The direct and negative relationship between job satisfaction and role ambiguity is well known. Meta-analytic results have found consistently moderate and negative correlations between job satisfaction and role ambiguity (Abramis, 1994; Mathieu, 1991). Role ambiguity is the best predictor of job satisfaction when compared to organizational, employee, and job characteristics (Glisson & Durick, 1988). Additionally, role ambiguity directly and negatively influences job satisfaction (Yousef, 2002). One of the strongest negative paths among commitment, satisfaction, and role stressor variables in a group of salespeople was that between satisfaction with the work itself and role ambiguity (Grant, Cravens, Low, & Moncrief, 2001). There also is consistent support for role ambiguity predicting job satisfaction, although the relationship between job satisfaction and role ambiguity is stronger for intrinsic satisfaction, such as satisfaction with the work itself (Schaubroeck et al., 1989).

The consistent, significant, and negative prediction of job satisfaction by role ambiguity has been confirmed longitudinally (Adkins, 1995), cross-sectionally (Fisher, 2001; Netemeyer et al., 1995), and meta-analytically (Knicki et al., 2002), in this latter case the corrected correlations ranged from $r = -.17$ for pay satisfaction to $r = -.43$ for satisfaction with supervision. Role stressors accounted for 64% of the variance in job satisfaction after four months, and 32% of the variance after ten months of entry into the organization (Saks & Ashforth, 2000). Perceived control of a situation does not moderate the relationship between job satisfaction and role ambiguity. Rather, role ambiguity is expected to influence satisfaction directly and negatively (O'Driscoll & Beehr, 2000).

Role overload and individual performance. Role constructs such as role overload are expected to lead to increased employee strain and stress and decreased employee productivity (Witt, 1991). Role stressors also tend to contribute significantly to workplace burnout (Fogarty, Singh, Rhoads, & Moore, 2000). Role stressors increase organizational health costs, decrease job satisfaction and affect employee mental and physical health (Jex & Elacqua, 1999). Although links between role overload and organizational commitment are significantly negative (Mathieu & Zajac, 1990), the same negative impact may not be applicable when the outcome variable is individual performance. The positive link between performance and role overload makes sense because role overload tends to lead to significant increases in workload and productivity, decreasing employee satisfaction and commitment (Jex & Elacqua, 1999; Mathieu & Zajac, 1990). Due to the increase in completed tasks, overload may actually lead to improvements in objective and subjective employee performance (MacIntyre, 2001). Role overload may have a positive impact on employee job performance (Beehr, Walsh, & Taber, 1976; Fogarty et al., 2000; Jex & Elacqua, 1999; MacIntyre, 2001; Mathieu & Zajac, 1990). In a sample of Canadian Air Force members, role overload predicted individual performance positively and significantly (MacIntyre, 2001), which is consistent with the findings obtained using a group of accountants (Fogarty et al., 2000). Role overload also has a positive and significant relationship with job involvement, effort toward quantity, and effort toward quality (Beehr et al., 1976). For a group of females, the beta weight corresponding to overload predicting job performance was positive even though the correlation between overload and performance was negative, suggesting the possible presence of net suppression, mediation, or moderation (Lagace, 1988).

A partial explanation for the positive relationship between performance and role overload is that high levels of job scope may motivate employees to work more

productively due to the increase in experienced meaningfulness of job tasks and to the increase in employee feelings of importance. However, the downside to immense levels of job scope is the possibility of experiencing emotional exhaustion (Xie & Johns, 1995). Behrman and Perreault (1984) predicted and confirmed a positive relationship between role conflict and individual job performance of industrial salespersons. The result was expected because conflict was considered an inevitable aspect of a salesperson's job; effective salesperson performance depended on the individual's ability to confront and cope with the conflict. Role overload, therefore, is expected to predict individual performance positively.

Leadership and individual satisfaction. Locke (1976) suggested that employee satisfaction is shaped by perceptions of leaders. The link between leadership and various facets of individual satisfaction has been investigated extensively with satisfaction primarily considered an outcome variable (Yukl & VanFleet, 1992). There is substantial evidence for a positive relationship between immediate leadership and individual satisfaction. For human service employees, leadership behavior was a better predictor of job satisfaction than were several individual or organizational characteristics (Glisson & Durick, 1988). A nine-month leadership development program administered by Mellon Financial Services improved leader-subordinate relations on various measures such as individual satisfaction and job performance (Sirianni & Frey, 2001). The ability of leadership to predict performance remains significant and positive after controlling for various demographics, impression management, and organizational commitment (Becker et al., 1996).

In a large Canadian Air Force sample, perceptions of indirect leaders predicted institutional satisfaction positively and directly (MacIntyre, 2001). Using cross-lagged regression analyses with longitudinal data, leadership behavior was a significant causal

antecedent of job satisfaction (Bateman & Strasser, 1984). Williams and Hazer (1986) confirmed a multivariate structural model where leader consideration behavior consistently predicted job satisfaction. Management and leadership behaviors that involve respect for employees and overall organizational productivity predict employee work meaning and individual satisfaction significantly (Hodson, 2002). Commitment to an immediate leader also is a stronger predictor of in-role performance than is organizational commitment (Becker et al., 1996). A meta-analysis produced corrected correlations of r = .27 between leader consideration and satisfaction with promotion, and r = .95 between leader reward behavior and employee satisfaction with supervision (Knicki et al., 2002).

A clearer understanding of the relationships between leadership and individual satisfaction can be achieved through employing the concept of nested collectives (Lawler, 1992) because various levels of leadership have independent and direct effects on corresponding levels of individual satisfaction. Senior leaders are postulated to represent core beliefs, upon which the entire organization is based, so perceptions of senior leaders have a direct impact on organizational satisfaction. Direct leaders are expected to influence job satisfaction rather than institutional satisfaction, which is logical given a nested collectives explanation. A nested collectives perspective suggests that employees have greater affective ties to proximally nested collectives than to more distal collectives (Lawler, 1992). Distal forms of satisfaction are likely to have greater influence on employee perceptions of distal leadership positions, as compared to more proximal leadership positions influencing proximal forms of satisfaction. Indirect leadership should predict institutional satisfaction positively, whereas direct leadership should predict individual satisfaction positively.

Direct leadership and individual and group performance. Regardless of the particular style of supervision, leadership has a direct, positive impact on both individual

and group performance (Bass, 1999; Cohen, 1993; Lawler, Mohrman, & Ledford, 1995; MacKenzie, Podsakoff, & Rich, 2001). The influence of follower perception of leadership behavior on individual and group performance extends across cultural boundaries. Collectivist group members act in ways that benefit the group as a whole by joining together to complete tasks collaboratively. Individualist group members each act individually to secure their own position within the group by working individually to complete tasks competitively (Jung & Avolio, 1999). Collectivist groups perform significantly better when leaders are transformational, whereas individualist groups perform better when leaders are transactional (Jung & Avolio, 1999). Although group performance is affected by leader behavior more greatly than is individual performance, both types of performance are affected by leadership behavior (Jung & Avolio, 1999). Transformational leadership qualities predict performance better than transactional qualities (Geyer & Steyrer, 1998; MacKenzie et al., 2001), although both leadership styles predict short-term and long-term performance as objectively and significantly as they do employee extra effort (Geyer & Steyrer, 1998). Business unit level performance also is influenced by transformational leadership behavior directly and positively (Howell & Avolio, 1993). Groups that contain both appointed leaders and group members with high leadership potential are able to affect group performance (Taggar, Hackett, & Saha, 1999), although the leader's influence on performance does not require the leader to be present (Kelloway, Barling, Kelley, Comtois, & Gatien, 2003).

Many studies regarding the impact of leadership on performance involve direct contact with a real or simulated leader or require recall of one-on-one exchanges with actual leaders (Howell & Avolio, 1993). However, remote exposure to transformational leadership qualities may affect performance (Kelloway et al., 2003). Specifically, individual and group performance is higher when participants are exposed to e-mails

depicting transformational qualities (Kelloway et al., 2003). Employee perceptions of their direct leaders are expected to predict individual and group performance positively.

Structural Model Invariance Testing

A model of organizational commitment is comprehensive and practical if it can demonstrate an ability to generalize across groups. One statistical method for determining the stability or generalizability of a multivariate structural model is to test whether the predicted paths are invariant across groups expected to be different (Jöreskog & Sörbom, 1993). Structural invariance occurs when predicted paths are not statistically different across tested groups. The stability of the developed model of organizational commitment will be tested against four groupings that are relevant to the study of organizational commitment: gender, language, officer/NCM status, and career stage/age.

Gender and Model Structural Variance

Females tend to report significantly greater attitudinal commitment to their organizations compared to males (Aven et al., 1993; Kacmar et al., 1999; Mathieu & Zajac, 1990; Mowday et al., 1979). Females may have more barriers to overcome and may exert more effort to gain and maintain membership within organizations compared to males, which is known as the job model (Aven et al., 1993; Kacmar et al., 1999). Females, however, tend to be less committed attitudinally compared to males in professional associations and in the accounting profession, which is known as the gender model (Aven et al., 1993; Kacmar et al., 1999). According to the gender model, the main source of fulfillment and identity for females is in a family role rather than career role (Aven et al., 1993; Kacmar et al., 1999).

Mathieu and Zajac (1990) found that women are more committed to their respective organizations as compared to men, although the magnitude of the effect was small (r = -.15). Organizational commitment has a greater impact on employee turnover

intentions for males as compared to females (Russ & McNeilly, 1995). Gender moderates the relationship between organizational commitment and turnover intentions (Chen & Francesco, 2000) as well as the relationship between organizational commitment and supervisor support; the relationship is positive for females and negative for males (Kidd & Smewing, 2001). Blue-collar females are more committed to their organization than are blue-collar males, whereas white-collar males are more committed to their organization than are white-collar females (Cohen, 1992). Organizational commitment and job satisfaction positively and strongly relate to tenure among male accounting professionals but not for female accounting professionals (Lynn, Cao, & Horn, 1996). The organizational commitment model may not be structurally invariant based on gender. A null finding would provide further evidence for the generalizability of the developed model of organizational commitment within the Canadian military.

Language and Model Structural Variance

There are few studies of language differences and organizational commitment. One study, however, does report language differences for organizational commitment (Randall, 1993). Participants from twelve European nationalities who spoke English or French were unable to differentiate organizational commitment from occupational commitment, although some differences were found. The relationship between organizational commitment and intent to quit the organization was invariant culturally and based on language (Vandenberghe, Stinglhamber, Bentein, & Delhaise, 2001). Asian language speaking people have significantly greater organizational commitment and greater tenure compared to English speaking people (Parkes, Bochner, & Schneider, 2001). Interestingly, Roe, Zinovieva, Dienes, and Ten Horn (2000) developed a general model of organizational commitment, which included job characteristics, job satisfaction, performance, turnover, and work stress, that varied across Bulgaria, Hungary, and

Netherlands samples. Employees of Japanese automobile plants tended to score higher on family orientation, team approach, open communication, organizational commitment, and intrinsic and extrinsic satisfaction compared to employees of a U.S. based automobile plant (Tang, Kim, & O'Donald, 2000). Korean conglomerate business firm individuals also tended to be more committed to their organizations and were more satisfied with their work compared to U.S. individuals (Bae & Chung, 1997). Language, in this case French/English, may not be structurally invariant concerning the developed organizational commitment model within the current study. A null finding would provide further evidence for the generalizability of the developed Canadian military model of organizational commitment.

Officer Status and Model Structural Variance

With members of the Canadian Air Force, relational links among constructs within a model of organizational commitment may be different for officers compared to non-commissioned members (NCM). Although there is no empirical evidence for this expectation, the comparison is similar to the comparison between white-collar and blue-collar employees, whereby work duties and responsibilities, diversity of work roles, and experienced autonomy is different between the groups. The logic behind the statement equates military and civilian groups, in that employees at lower organizational levels are expected to experience work differently from employees at upper organizational levels.

Using meta-analysis to test 13 samples, Mathieu and Zajac (1990) found a positive and significant correlation between job level, which is similar to professional versus non-professional job classifications and organizational commitment. Statistical artifacts accounted for only 12% of the variance between studies. Job level also appeared to relate more highly to affective commitment than to other forms of commitment, although the result was not significant (Mathieu & Zajac, 1990). The relationship

between both role ambiguity and job autonomy with organizational commitment also is stronger for non-professional white-collar employees than for professionals (Cohen, 1992), as is the relationship between job performance and organizational commitment (Riketta, 2002). Furthermore, the negative relationship between turnover intentions and organizational commitment is stronger for white-collar workers than for blue-collar workers (Cohen & Hudecek, 1993). Military rank may be structurally invariant regarding the model of organizational commitment. A null finding would provide further evidence for the generalizability of the developed model of organizational commitment.

Career Stage/Age and Model Structural Variance

Side bets theory posits that as employees invest more years into a single organization, they are likely to acquire greater rewards for tenure and, in turn, will be more committed to the organization and less likely to engage in withdrawal cognitions or to leave the organization (Meyer & Allen, 1984). Levinson, Darrow, Klein, Levinson, and McGee's (1978) career models suggest that the probability of leaving an employer and a field of work decreases as individuals move into mid and late stages of their careers. The greatest probability of withdrawal cognitions and actual turnover occurs when employees are new to the organization. Mid-career stage employees are interested in developing stable personal and work lives, placing them in the process of making strong commitments to family, community, and work. Alternately, late-career stage employees are thought to be in a state of relative tranquility, whereby they are less likely to relocate for promotion purposes (Levinson et al., 1978). It is sensible to assume that employee career stage has an impact on relevant constructs such as job satisfaction, organizational commitment, and group cohesion.

Mathieu and Zajac (1990) found small, positive, and significant effects for organizational and position tenure. Corrected correlations were $r = .17$ and $r = .091$,

respectively. Few studies have found strong and direct links between career stage and organizational commitment (Cohen, 1991). Career stage moderates the relationship between commitment and relevant outcome variables (Cohen, 1991). The relationship between the two constructs may be reciprocal (Mathieu & Zajac, 1990), although to date, the reciprocal relationship between these constructs has not been tested. Organizational turnover intentions and actual turnover have a consistent and negative relation with employee career stage (Krau, 1981; Lynn et al., 1996). A meta-analysis by Wright and Bonett (2002) found that tenure, which is a widely used career stage indicator, has a large and nonlinear moderating effect on the relationship between organizational commitment and performance; correlations decrease exponentially as tenure increases. Military employee career stage may be structurally invariant concerning the organizational commitment model developed in the current study. A null finding would provide further evidence for the generalizability of the developed organizational commitment model, although using age as a pseudo index of career stage may be problematic.

The current study did not have access to data necessary to index career stage adequately. Specifically, the amount of time that each military member has been involved with the Canadian Forces is necessary to index career stage properly. However, age was considered to be an adequate index of the career stage variable. Similar results have been found for age when compared to career stage, although there are individual differences (Cohen, 1991). Age has been used to test side bets theory, which primarily is associated with the analysis of career stage (Mathieu & Zajac, 1990). Employment options tend to decrease as individuals age. Consequently, employees perceive their current jobs as more attractive, and become highly committed to their respective organization, decreasing the likelihood of withdrawal (Mathieu & Zajac, 1990). Conversely, organizational commitment is limited and withdrawal behaviors are likely to occur for young employees

(Mathieu & Zajac, 1990). The age variable correlates with commitment positively and strongly, which is similar to results found for organizational tenure; this provides evidence for the side bets theory (Mayer & Schoorman, 1998). Therefore, age was included in the model as a pseudo index of employee career stage.

Summary of Hypotheses

The hypotheses tested in the current study can be summarized briefly as follows: (1) the OCQ will fit either a unidimensional model, a two-factor item wording model, a three-factor theoretically-based model, or a four-factor method variance model; (2) the multivariate models of organizational commitment will fit the data adequately, although the expanded effects model will fit the data better than the restricted effects model; and (3) the final organizational commitment model will be structurally invariant across gender, language, officer status, and career stage/age groupings.

Method

Participants

The current study used data collected by MacIntyre (2001) for his doctoral dissertation. MacIntyre's dissertation was divided into two studies. The objective of the first study was to develop items for specific construct scales. The first study involved conducting focus groups with 174 military members and military civilians across Canada (MacIntyre, 2001). Information was obtained through interviews with high-ranking personnel. Focus group participants included serving members (ranks of Private to Chief Warrant Officer), officers within the Air Command Wings (ranks of Officer Cadet to Lieutenant Colonel), military members from reserve forces, and civilian members of the Department of National Defence (MacIntyre, 2001). Military personnel, females, and Francophone comprised 92.5%, 30.1%, and 29.1% of the sample, respectively. The sample age ranged from 19 to 58 years, with a mean age of 36.9 years.

The objective of the second study was to establish the psychometric properties of the newly developed scales and to administer the refined scales to a large representative sample of the Canadian Forces (MacIntyre, 2001). Questionnaires were administered to 6402 Air Command, 2042 of which were completed, yielding a return rate of 31.9%. Of the 2042 participants, 20% were female and 22% were Francophone. The return sample age ranged from 18 to 67 years, with a mean age of 38.5 years. Only data from regular air force members were used to test the developed models, which included 1680 participants. Appendix A presents a detailed description of the methods that MacIntyre (2001) used to create the measures and obtain the data analyzed in the current study.

Construct Measures

Data collected from the following ten measures comprising 101 items were used in the current study to test the presented models. The only measure used in the current study that was not reported in MacIntyre's (2001) dissertation is the OCQ. His dissertation did not involve any analysis of the OCQ or its relation to any other variables. Appendix F contains the finalized versions of the ten measures and their respective items.

Organizational commitment. The OCQ, a 15-item scale developed by Mowday et al. (1979), indexed organizational commitment. MacIntyre (2001) used the OCQ but did not analyze that data. Based on a sample of $N = 24358$, Mathieu and Zajac (1990) obtained an average internal consistency reliability of $\alpha = .88$. Cronbach's alpha for the OCQ ranged from $\alpha = .82$ to $\alpha = .93$ (Kacmar et al., 1999). For the current study, Cronbach's alpha was $\alpha = .90$. The scale items were modified to refer to a Canadian Forces context. For example, 'I would accept almost any type of job assignment in order to keep working for my organization' was changed to ' I would accept almost any type of job assignment in order to keep working for the Canadian Forces.'

Group cohesion. Fourteen items from the Unit Climate Profile questionnaire measured peer and hierarchical cohesion (Dobreva-Martinova, 1999). Items were changed to reflect an Air Command orientation instead of an Army orientation (MacIntyre, 2001). An additional 24 items were included in the questionnaire based on focus group information. Based on the results of MacIntyre's (2001) Study Two, seven items loaded onto a single factor, and were used to index the group cohesion construct. Cronbach's alpha for this scale is $\alpha = .94$. A sample item for the scale is 'In my unit we stick together no matter what.'

Role ambiguity. The Rizzo, House, and Lirtzman (1970) six-item measure of role ambiguity and role conflict was used to index role ambiguity. The questionnaire's rating scale format was changed to maintain consistency across questionnaires (MacIntyre, 2001). Fourteen items were added based on focus group information. Based on the results of MacIntyre's (2001) Study Two, 10 items load onto a single factor clearly, and were used to index the role ambiguity construct. Cronbach's alpha for the 10 items is $\alpha = .91$. A sample item for the scale is 'My job description does not reflect what I really do from day to day.'

Role overload. The Beehr et al. (1976) three-item measure of role overload was used to index role overload. The questionnaire's rating scale format was changed for consistency across questionnaires (MacIntyre, 2001). Fifteen items were added based on focus group information. Based on the results of MacIntyre's (2001) Study Two, 13 items clearly load onto a single factor, and were used to index the role overload construct. Cronbach's alpha for the 13 items is $\alpha = .86$. A sample item for the scale is 'I can't remember the last time I felt like my work was all caught up.'

Perception of leadership. A nine-item scale used in the Australian and Canadian military measured perception of leadership (MacIntyre, 2001). Fourteen items were

added based on focus group information. In MacIntyre's (2001) Study Two, leadership items were factor analyzed. The factor analysis yielded a nine-item factor representing perceptions of direct leadership and a ten-item factor representing perceptions of indirect leadership. Cronbach's alpha for the nine is $\alpha = .89$. A sample item is 'My immediate supervisor encourages us to do our best.' Cronbach's alpha for the 10 is $\alpha = .83$. A sample item is 'The senior leaders don't really know about problems further down the chain because they are sheltered from a lot of the bad information.'

Job performance. Six items used in the Australian Army were used to index job performance (MacIntyre, 1997,1998). Modifications were made to the wording of the items to be more appropriate for use within a Canadian context (MacIntyre, 2001). Focus group session results led to the addition of 14 items to the existing measure. Based on the results of MacIntyre's (2001) Study Two, the factor analysis yielded an eight-item factor representing perceptions of group performance and a six-item factor representing perceptions of individual performance. Cronbach's alpha for the eight items is $\alpha = .85$. A sample item is 'Even during high stress situations the people in my unit are able to perform effectively.' Cronbach's alpha for the six items is $\alpha = .74$. A sample item is 'I no longer feel as motivated to work as hard as I used to.'

Job satisfaction. Ten items used in the Australian Army were used to index job satisfaction (MacIntyre, 1997,1998). Focus group session results led to the addition of 13 items to the existing measure (MacIntyre, 2001). The items were structured to reflect the current place of work rather than general satisfaction with the Canadian Forces. Based on MacIntyre's (2001) Study Two, morale and job satisfaction items were factor analyzed simultaneously. A thirteen-item factor representing individual satisfaction with the immediate work environment and a ten-item factor representing institutional satisfaction emerged. Cronbach's alpha for the first factor is $\alpha = .87$. A sample item is 'There are

many things about my job that makes me happy.' Cronbach's alpha for the second factor is $\alpha = .78$. A sample item is 'There are too many inequities built into our present system.'

Statistical Analyses

LISREL 8.53 was used to apply structural equation modeling (SEM) to test all presented models (Jöreskog & Sörbom, 1993). Skewness and kurtosis, value ranges, and means and standard deviations were assessed for acceptability and for the presence of univariate outliers. Mahalanobis distance values were computed to detect multivariate outliers. Confirmatory factor analysis (CFA) then was used to determine the dimensionality of the OCQ and to test for measurement bias. Results aided in determining the appropriate representation of the OCQ measurement model within subsequent path models. All applications of Lisrel 8.53 used maximum likelihood estimation, which is appropriate due to the sample size and the satisfaction of multivariate normality. CFA was used again to test for the presence of monosource bias due to the sole use of self-report measures of constructs and to confirm the measurement model, which is necessary to complete before latent variable path analyses are conducted. Another tool used to assess common method variance is the lowest correlation between constructs, which is an index of the maximum possible effect of common method variance on cross-sectional results (Lindell & Whitney, 2001).

The sample was divided randomly into two sub samples. The first sub sample, Sample 1, was used to test the OCQ models and to develop the organizational commitment model. The second sub sample, Sample 2, was used to determine the best fitting OCQ model and to confirm the developed organizational commitment model, providing evidence against possible sample-specific results. Finally, group differences between gender, language, and officer status groups, and among career stage/age groupings were tested to determine the extent of generalizability of the model within the Canadian Air Force. Table 1 outlines the respective sample and sub sample statistics.

Table 1

Demographic Breakdowns of Samples and Sub Samples

N = 1680	Sample 1		Sample 2		Total	
Variable	**Count**	**%**	**Count**	**%**	**Count**	**%**
Military Rank						
Junior NCM	599	71.6	609	72.7	1208	72.2
Senior NCM	88	10.5	106	12.6	194	11.6
Junior Officer	72	8.6	49	5.9	121	7.2
Senior Officer	78	9.3	73	8.8	151	9
Total	837	100	837	100	1674	100
Gender						
Male	705	84	711	84.7	1416	84.4
Female	134	16	128	15.3	262	15.6
Total	839	100	839	100	1678	100
Language						
French	184	22	203	24.3	387	23.2
English	654	78	631	75.7	1285	76.8
Total	838	100	834	100	1672	100
Education						
Some High School	40	4.9	70	8.5	110	6.7
Finished High School	311	38	325	39.6	636	38.8
Some University	251	30.7	232	28.3	483	29.5
College Diploma	112	13.7	91	11.1	203	12.4
University Degree	73	8.9	72	8.8	145	8.8
Some Graduate School	12	1.6	11	1.3	23	1.4
Graduate Degree	19	2.2	20	2.4	39	2.4
Total	818	100	821	100	1639	100
Age						
18 to 30	94	11.5	91	11.2	185	11.4
31 to 42	590	72.2	592	72.6	1182	72.4
43 to 55	133	16.3	132	16.2	265	16.2
Total	817	100	815	100	1632	100

Assessing Model Fit

Multiple indices should be used to assess model fit and to interpret results (Tabachnick & Fidell, 2001). The current study used seven fit indices.

Chi-square (χ^2). The chi-square test is a test of absolute fit, whereby the sample covariance matrix is compared to the estimated population covariance matrix (Tabachnick & Fidell, 2001). A nonsignificant value is interpreted as evidence for model fit. Although the index is extremely sensitive to sample size leading to the likelihood of detecting trivial differences when large samples are used, however, the index was included in the present study for two reasons: the index is widely reported in structural equation modeling studies, and the index allows for simple comparisons of relative fit between/among models.[3]

Root mean square error of approximation. The RMSEA, a comparative fit index, determines the lack of fit in a model through comparing the obtained model with a perfect, or saturated model. Good fitting models produce values equal to or less than .06 (Tabachnick & Fidell, 2001). Although the index may not be appropriate for small samples, it is not unduly affected by sample size, it takes into consideration model parsimony, and it detects poorly specified models effectively (MacIntyre, 2001).

Normed and non-normed fit indices. The NFI (Bentler-Bonnett) and the NNFI (Tucker-Lewis) are comparative fit indices. When using the NFI or the NNFI, values higher than .90 are considered adequate (Tabachnick & Fidell, 2001), although .95 is considered a more appropriate and accepted level of fit (Pedhazur & Schmelkin, 1991).

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[3] With regard to nested models, the chi-square difference value between alternate models is distributed as chi-square, and therefore, nested models can be compared directly for statistical differences. Hence, the chi-square difference test was used throughout the results section.

Comparative fit index. The CFI also is a comparative fit index. A value of .95 or greater is indicative of fit (Tachnick & Fidell, 2001). The CFI has been reported in the current study because of its popular use within the literature.

Parsimony normed fit index. The PNFI, which accounts for the degree of parsimony in the model, was used in the current study. Based on the PNFI, a good fitting model exceeds a value of .90 (Tachnick & Fidell, 2001).

Standardized root mean square residual. The SRMR is a residual based fit index. The derivation of the SRMR is based on the average difference between the sample variances and covariances and the estimated population variances and covariances. A model is considered to be appropriately fitting the data when the value of the SRMR is less than .08 (Tabachnick & Fidell, 2001). Overall, a good fitting model will produce consistent results across several indices (Tabachnick & Fidell, 2001).

Results

Table 2 displays correlations among measures, Cronbach's alpha estimates, and construct descriptive statistics of all the variables within the tested organizational commitment models. All values are based on 1680 regular Air Force members.

Table 2

Descriptives, Correlations, and Alpha for Model Variables

#	Variable	Mean	S. D.	1	2	3	4	5	6	7	8	9	10
1	Organizational Commitment	3.21	.70	**.90**	-	-	-	-	-	-	-	-	-
2	Group Performance	3.44	.67	.41	**.85**	-	-	-	-	-	-	-	-
3	Individual Performance	2.73	.72	.49	.40	**.74**	-	-	-	-	-	-	-
4	Individual Satisfaction	3.51	.76	.56	.59	.53	**.87**	-	-	-	-	-	-
5	Institutional Satisfaction	1.99	.52	.37	.13	.46	.25	**.78**	-	-	-	-	-
6	Role Ambiguity	2.83	.67	-.45	-.44	-.63	-.58	-.39	**.91**	-	-	-	-
7	Role Overload	3.13	.82	-.20	-.07	.45	-.19	-.35	.44	**.86**	-	-	-
8	Group Cohesion	3.19	.82	.40	.67	.43	.64	.25	-.50	-.15	**.94**	-	-
9	Direct Leader	3.47	.84	.39	.46	.33	.48	.20	-.48	-.14	.52	**.89**	-
10	Indirect Leadership	2.46	.74	.51	.40	.58	.50	.55	-.63	-.29	.52	.46	**.83**

All correlations were significant at $p < .001$.
Cronbach's alpha reliability coefficients are bolded and displayed along the diagonal.

All alpha reliability estimates met the minimum acceptable level of $\alpha = .70$ for research purposes (Nunnally & Bernstein, 1994). All correlations between all constructs are strongly significant, which was expected based on the sample size. Careful inspection of the matrix provides preliminary evidence for the proposed pathways. Specifically, correlations ranged from $r = -.20$ for the relationship between role overload and organizational commitment, to $r = .67$ between group cohesion and group performance.

OCQ Analysis

Table 3 presents the data for the seven fit indices discussed based on LISREL 8.53. Fit indices are presented for the five OCQ models: the unidimensional model, two-factor item wording model, the unidimensional marker variable model, three-factor theoretical model, and four-factor marker variable model. All models were significant based on the chi-square statistic. All fit indices fit the data, except RMSEA, which suggested that all five models provided an acceptable fit to the data, and that the optimal dimensionality of the OCQ was questionable. All parameter values displayed in graphical form for all OCQ models are standardized values.

Table 3

Fit Indices of the Five Tested OCQ Models

Model	χ^2	Df	RMSEA	NFI	NNFI	PNFI	CFI	SRMR
Unidimensional Model	583.32	90	.081	.96	.96	.82	.97	.045
Two-factor Model	571.55	89	.081	.96	.96	.82	.97	.045
Unidimensional Marker Model	386.30	81	.067	.97	.97	.75	.98	.038
Three-factor Model	563.82	87	.081	.96	.96	.80	.97	.045
Four-factor Marker Model	373.27	78	.068	.97	.97	.72	.98	.039
Confirmatory Sample	427.84	81	.071	.96	.96	.74	.97	.044

The two-factor model fit the data better than did the unidimensional model, and produced a significant change in chi-square, $\Delta\chi^2_{(1)} = 11.77, p < .01$. The two-factor model only obtained a better chi-square value, whereby an OCQ model based on item wording clearly is not a substantively better fit than is a model based on a global construct. Figures 7 and 8 correspond to the unidimensional and to the two-factor item-wording model, respectively. All factor loadings were significant, $p < .01$, as was the correlation between the two factors in the two-factor model, $p < .01$.

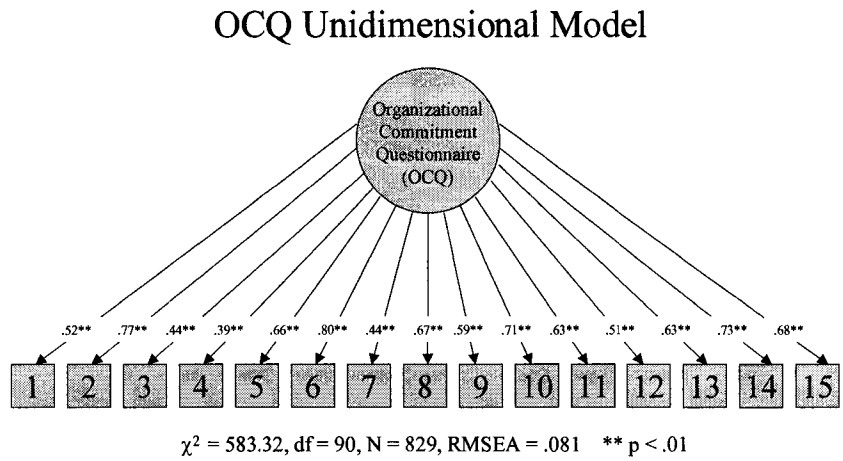


Figure 7. Factor loadings corresponding to the OCQ unidimensional model.

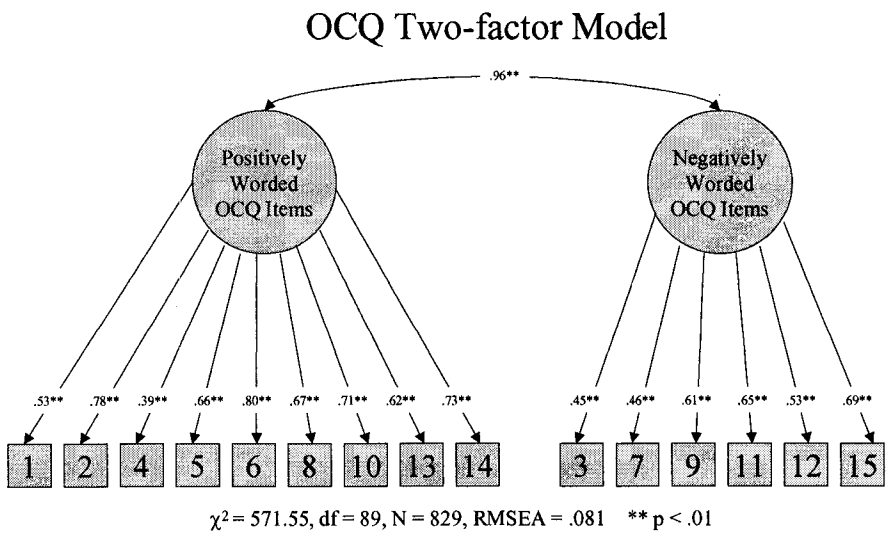


Figure 8. Factor loadings corresponding to the OCQ two-factor model.

There was a significant difference between the unidimensional and three factor models, $\Delta\chi^2_{(3)} = 19.5$, $p < .01$. The three-factor model was a better fit of the data than the unidimensional model based on the chi-square value alone. Figure 9 presents the loadings associated with the tested three-factor model. All factor loadings were significant, $p < .01$, as were all the factor correlations, $p < .01$.

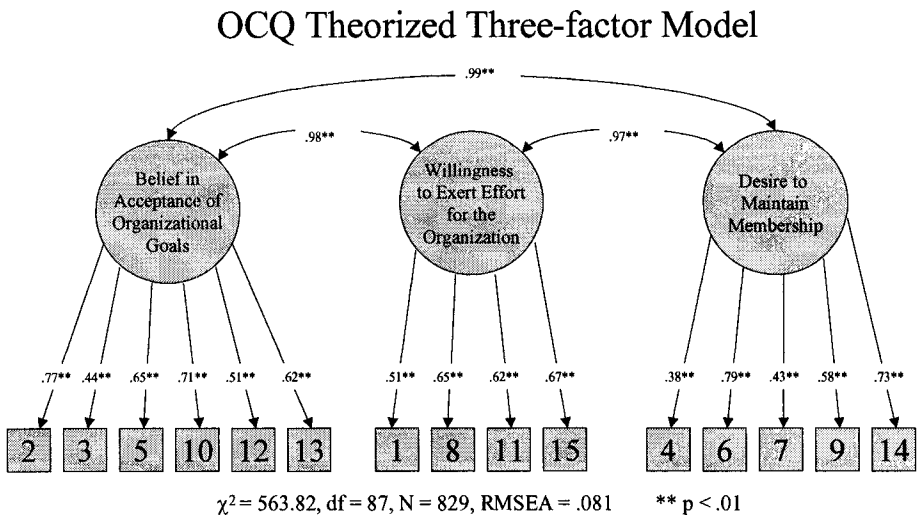


Figure 9. Factor loadings corresponding to the OCQ three-factor model.

The four-factor marker variable model fit the data better than did the three-factor theoretical model, $\Delta\chi^2_{(9)} = 190.55$, $p < .01$, which suggests the presence of method variance. The marker variable model had improved values for χ^2, RMSEA, NFI, NNFI, CFI, and SRMR, compared to the three-factor model. All items loaded onto the substantive factors significantly, $p < .01$. Items loaded more strongly onto the substantive factors compared to the method factor, although one item loaded nonsignificantly onto the method factor. Furthermore, the PNFI decreased moderately to .72 within the marker variable model. Therefore, method variance appears to be affecting the OCQ, although without having an impact on the validity of the OCQ (Kelloway & Barling, 1990). The four-factor marker variable model fit the data better than did the unidimensional model

based on χ^2, RMSEA, NFI, NNFI, CFI, and SRMR values, although a direct statistical test could not be computed. The marker variable model also fit the data better than did the two-factor model based on χ^2, RMSEA, NFI, NNFI, CFI, and SRMR values. The two-factor and the method factor models are not nested, and therefore, a direct statistical difference test could not be computed. Figure 10 presents the loadings associated with the four-factor marker variable model.

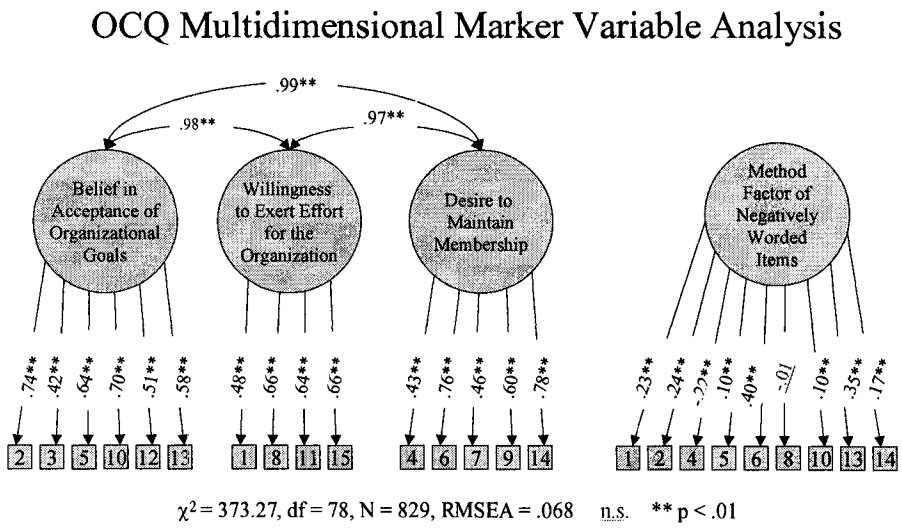


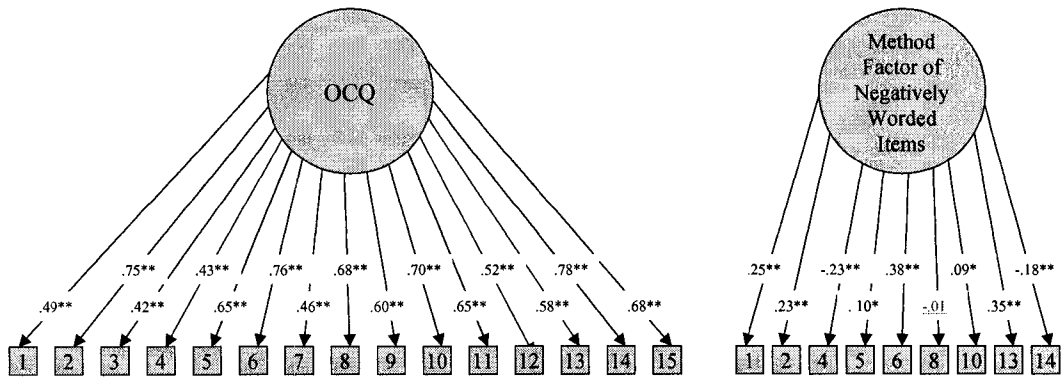
Figure 10. Factor loadings corresponding to the OCQ four-factor model.

The best fitting model was multidimensional and consisted of four factors, one of which was a method variance factor. The significant difference between the fit of the three-factor and the unidimensional model to the data was not substantive. Due to the exceedingly high correlations among OCQ subscales within the three-factor model, a case for theoretical multidimensionality of the OCQ was not supported, whereby multidimensionality is redundant. Based on the four-factor model, the multidimensionality inherent within the OCQ may have been due to the inclusion of construct irrelevant covariance. An orthogonal two-factor marker variable model test was

warranted, whereby factor one included items from the unidimensional model and factor two contained negatively worded items only.

The unidimensional marker variable model significantly fit the data better than did the unidimensional model, $\Delta\chi^2_{(9)} = 197.02$, $p < .01$, which suggested the presence of method variance. Compared to the unidimensional model, the two-factor marker variable model showed improved fit indices for χ^2, RMSEA, NFI, NNFI, CFI, and SRMR values. All items significantly loaded onto the substantive factors more strongly than onto the method factor, although two items loaded onto the method factor nonsignificantly. Similar to the four-factor model results, the PNFI decreased moderately to .75 within the unidimensional marker variable model. Therefore, method variance is affecting the OCQ, although without impacting OCQ validity (Kelloway & Barling, 1990). The unidimensional method variance model also fit the data better than did the four-factor method variance model based on RMSEA, PNFI, and SRMR values, and was the best fitting model in the entire set based on RMSEA and SRMR values. Therefore, the best representation of OCQ dimensionality is an orthogonal two-factor structure with the first factor corresponding to affective commitment and the second to a method variance factor. Figure 11 presents the unidimensional marker variable model.

OCQ Unidimensional Marker Variable Model

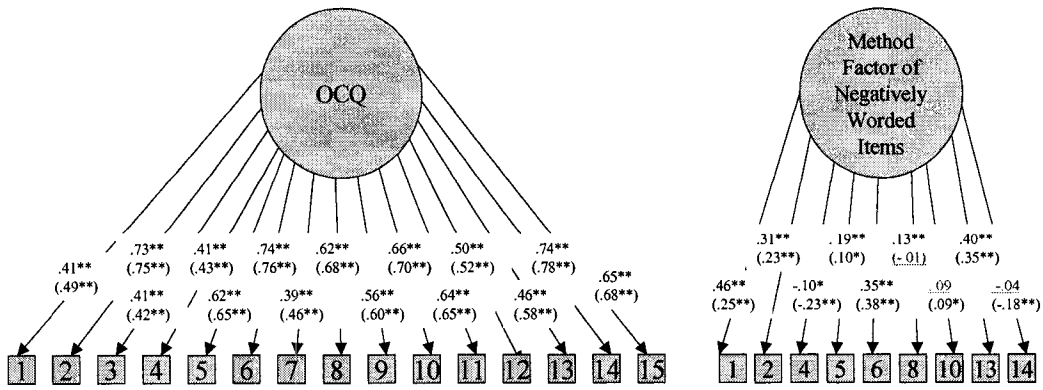


$\chi^2 = 386.3$, df = 81, N = 829, RMSEA = .067 n.s. * $p < .05$ ** $p < .01$

Figure 11. OCQ unidimensional marker variable model.

Using multi-sample analysis, a Chi-square difference test was conducted where the difference between OCQ parameters was fixed and then freely estimated. No difference was found between the confirmatory sample and the exploratory sample, $\Delta\chi^2_{(24)} = 11.36, p > .05$. The two-factor method variance model was tested using the confirmatory sample and the loadings were similar to estimates generated using the exploratory sample. Figure 12 presents the loadings associated with the unidimensional method variance model using the confirmatory sample. All factor loadings were significant, $p < .01$, and loadings in brackets correspond to values associated with the exploratory sample. The confirmatory sample did not fit the data as well as the exploratory sample, RMSEA = .071, NFI = .96, NNFI = .96, PNFI = .74, CFI = .97, and SRMR = .044. Based on the difference between the samples, all OCQ models were tested using the confirmatory sample. The same conclusion was reached using the confirmatory sample; the best fitting model was unidimensional with method variance problems. The method variance problems uncovered do not affect the validity of the OCQ, the OCQ was represented as a unidimensional scale within subsequent latent variable path analyses.

Confirmatory Sample Unidimensional Marker Model



$\chi^2 = 427.84$, df = 81, N = 828, RMSEA = .071 n.s. * p < .05 ** p < .01

Figure 12. Confirmation of the unidimensional marker model of the OCQ

Confirmation of the Measurement Model

The estimated measurement model comprised ten latent variables and 1481 participants. The variables within the organizational commitment model were organizational commitment, role overload, role ambiguity, direct leadership, indirect leadership, individual satisfaction, institutional satisfaction, individual performance, group cohesion, and group performance. The ten factor model fit the data well: $\chi^2_{(4805)} = 20309.28$, $p < .01$, RMSEA = .047, NFI = .96, NNFI = .97, CFI = .97, SRMR = .059, and PNFI = .93. All latent variables significantly predicted their respective indicators, $p < .01$. It appears that the measurement model is confirmed; however, monosource bias must be investigated and found to be minimal before a measurement model can be confirmed.

Monosource Bias Analysis

The Harmon one-factor test was used to determine the extent of common method variance. Items from all measures included in the analyses were constrained to load onto a single global factor (McFarlin & Sweeney, 1992; Sanchez & Brock, 1996). The results suggest a fairly poor fit when loading all items onto one single factor: $\chi^2_{(4850)} = 111835.54$, $p < .01$, RMSEA = .12, NFI = .90, NNFI = .91, CFI = .91, SRMR = .098, and PNFI = .88. The model fit the data marginally based on the NFI and the NNFI. Common method variance was unlikely based on the lowest correlation between constructs being .07, which is an index of the amount of common method variance present (Lindell & Whitney, 2001). Finally, one advantage to using a Harmon one-factor test is that the theoretically based measurement model (regarding the current study, the ten-factor model) can be directly compared to the one-factor method variance model. The one-factor model was compared to the ten-factor model, $\Delta\chi^2_{(45)} = 91526.26$, $p < .01$. The ten-

factor model fit the data significantly better than did the one-factor model. Common method variance does not appear to be a major concern with regard to the current study. Therefore, the measurement model is confirmed and the hypothesized ten factors will be used to develop and test all latent variable path models.

The Restricted Effects Model

With regard to the structural models tested in this section and the next three sections, all parameter values presented in graphical form are standardized estimates. The variance was set to unity for one item in each measure to set the scale of measurement for latent variables. Although exogenous correlations are not displayed within the presented path models in this section and the next three sections, the correlations were freely estimated (refer to appendix G for exogenous correlations for all tested structural models). The exogenous correlations were not presented because their inclusion degraded the clarity of the presented model figures, and they were not under investigation in the current study. The restricted effects model[4] provided a moderate fit to the data based on several fit indices[5], $\chi^2_{(4830)} = 13848.67$, $p < .01$, RMSEA = .050, NFI = .94, NNFI = .97, CFI = .97, SRMR = .078, and PNFI = .92. The RMSEA value was acceptable, although one could argue that a value less than .05 is preferred. As well, the NFI is below acceptable levels (.95). All other fit indices were acceptable. Most of the directional predictions were confirmed and all predicted paths were significant with the exception of direct leadership and role overload to organizational commitment. The paths from the

[4] The sample used to test the restricted effects model, the expanded effects model, and the final model consisted of 743 participants, and is referred to as the exploratory sample. A holdout sample, which consisted of 751 participants, was reserved to confirm the final model.

[5] See Table 4 on page 62 for a review of fit indices across all tested models.

satisfaction factors to organizational commitment were negative. The restricted effects model shown in Figure 13 fit the data fairly well.

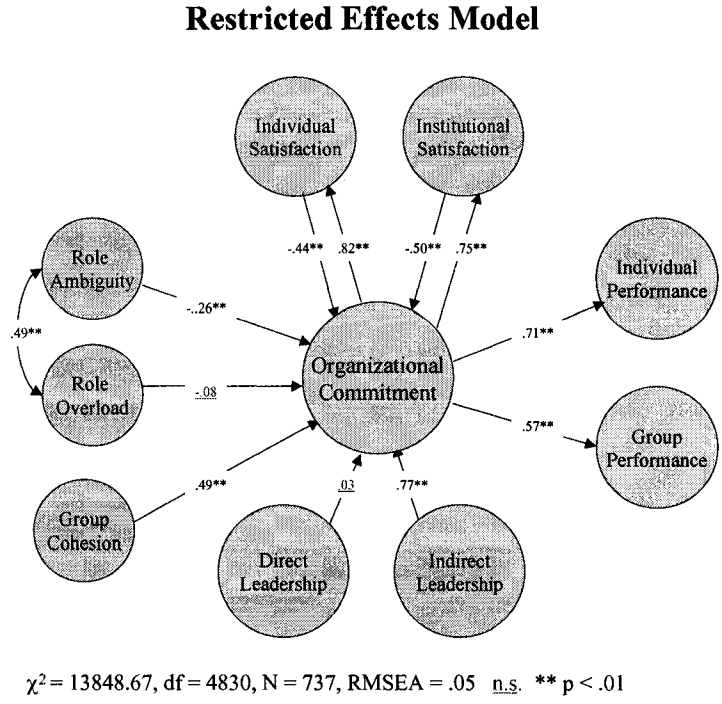


Figure 13. Restricted effects model of organizational commitment.

Squared multiple correlations for endogenous variables[6] in the structural equation were acceptable. The values represent the amount of variance in the endogenous variable that is accounted for by other constructs in the model. For organizational commitment specifically, 63% of the variance is accounted for by other model constructs.

The Expanded Effects Model

The expanded effects model provided a reasonable fit to the data based on several fit indices, $\chi^2_{(4822)} = 12641.71$, $p < .01$, RMSEA = .047, NFI = .95, NNFI = .97, CFI = .97, SRMR = .065, and PNFI = .92. The RMSEA and the NFI values are within an acceptable range, and the SRMR value was lower compared to the value obtained for the

[6] See Table 4 on page 62 for a review of squared multiple correlations across all tested models.

restricted effects model. The PNFI value was the same as that obtained for the restricted effects model. Furthermore, the expanded effects model fit the data significantly better than did the restricted effects model, $\Delta\chi^2_{(8)} = 11206.96$, $p < .01$. Figure 14 shows that most predicted paths were significant, and many directional predictions were confirmed. Unlike the results obtained for the restricted effects model, the satisfaction factors predicted organizational commitment positively. As well, the path from organizational commitment to institutional satisfaction was negative. Finally, the path from role overload to organizational commitment was positive. Contrary to what was hypothesized, the link from role overload to individual performance is negative. Three paths in the model were non-significant: perceptions of direct leadership to individual satisfaction, group cohesion to organizational commitment, and individual satisfaction to organizational commitment.

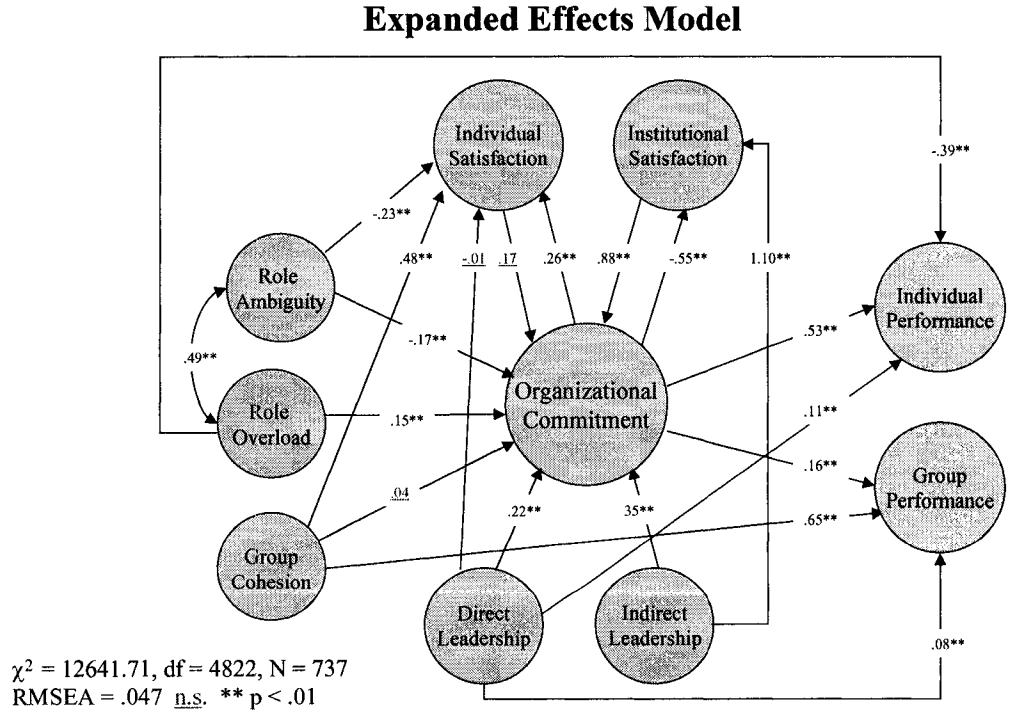


Figure 14. Expanded effects model of organizational commitment.

Squared multiple correlations for endogenous variables within the structural equation were higher than those obtained from the test of the restricted effects model for every construct except organizational commitment. All values were acceptable. None of the eight additional expanded effects model paths included organizational commitment directly. The added paths did however include four other endogenous variables directly, which partially explains the increase in variance accounted for in group performance (.40), individual performance (.09), individual satisfaction (.17), and institutional satisfaction (.25), and decrease in variance accounted for in organizational commitment (.20). Although the expanded effects model fit well, other paths warranted investigation.

Model Modification

Although the expanded effects model fit the data well, three paths were not significant: the prediction of individual satisfaction by direct leadership, and the predictions of organizational commitment by individual satisfaction and group cohesion. When the non-significant path from individual satisfaction to organizational commitment is removed, the path from group cohesion to organizational commitment becomes significant[7]. Therefore, non-significant paths were removed from the model, except for the group cohesion to organizational commitment path. Modification indices suggested that two paths would decrease the absolute value of chi-square substantially: the path from role ambiguity to individual performance, which would decrease chi-square by 102.99, and the path from individual satisfaction to individual performance, which would decrease chi-square by 81.13. Two of the non-significant paths were removed from the model and the modification index paths were added. The final model provided a

[7] Under no model scenario do paths from individual satisfaction to organizational commitment, or direct leadership to individual satisfaction become significant. Only the direct leadership link affects the cohesion-commitment path.

reasonable fit to the data, $\chi^2_{(4822)} = 12477.75$, $p < .01$, RMSEA = .046, NFI = .95, NNFI = .97, CFI = .97, SRMR = .063, and PNFI = .92. The final model could not be compared directly to the expanded model statistically because they are not nested. However, the absolute value of chi-square, the RMSEA value, and the SRMR value are lower than those associated with the expanded effects model. Furthermore, the model AIC and the model CAIC, which are indices used to compare non-nested models, is less in the final model suggesting better fit. Therefore, the final model fits the data better than did the expanded effects model.

Figure 15 shows that all final model paths were significant, and many directional predictions were confirmed. The role overload construct negatively predicts organizational commitment and positively predicts individual performance. As well, the path from organizational commitment to institutional satisfaction is negative. Figure 15 is the final model that was retained for confirmation using the holdout sample.

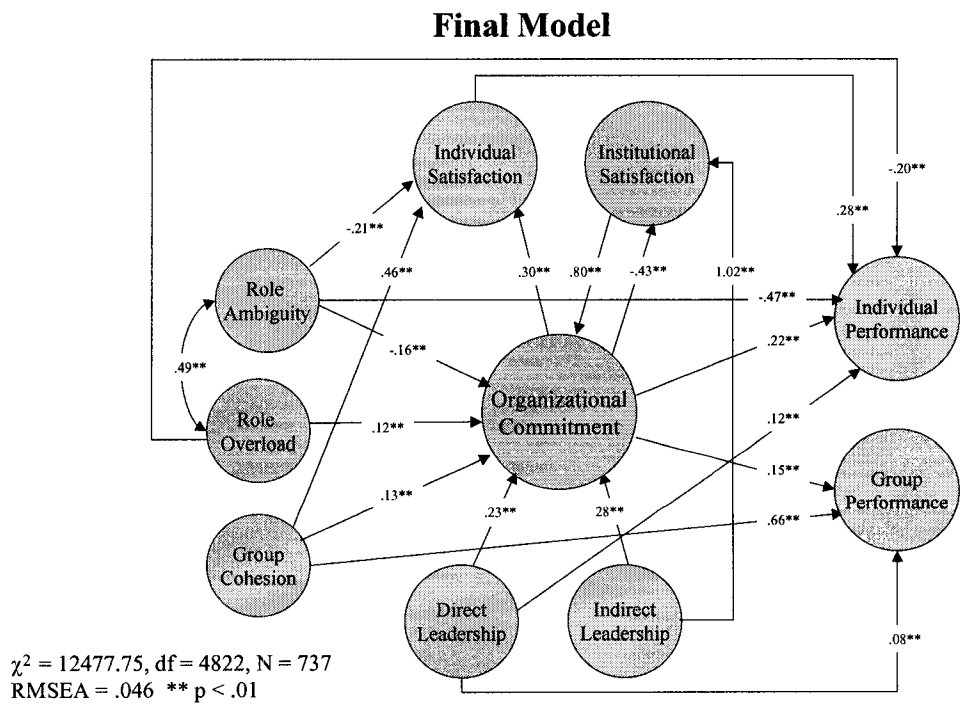


Figure 15. Final model of organizational commitment.

Squared multiple correlations for endogenous variables within the structural equation were similar to those obtained from the test of the expanded effects model. However, explained variance increased for individual performance, which increased by .26. The drastic increase in explained variance accounted for within the individual performance construct is likely due to the inclusion of corresponding paths in the final model.

Confirmation of the Model

The final model was estimated using the confirmatory sample. The final model of organizational commitment fit the data reasonably well within the confirmatory sample, $\chi^2_{(4822)} = 13206.74, p < .01$, RMSEA = .048, NFI = .95, NNFI = .97, CFI = .97, SRMR = .064, and PNFI = .92. The fit indices are similar to those obtained for the exploratory sample, although RMSEA, SRMR, and the absolute chi-square indicate a slightly worse fit for the confirmatory sample.

Figure 16 presents the loadings for both the exploratory and the confirmatory samples. Figure 16 shows that all paths in the confirmatory sample were significant, except the path from direct leadership to group performance within the confirmatory sample, and many directional predictions were confirmed. Bracketed values correspond to the exploratory sample, whereas all other values correspond to the exploratory sample. Path coefficients between the exploratory and confirmatory sample are similar. Specifically, the negative prediction of organizational commitment by role overload is confirmed, as well as the negative prediction of institutional satisfaction by commitment. A summary of the fit indices and squared multiple correlations for all tested models is displayed in Table 4.

Chi-square difference tests were computed to determine whether the measurement and the structural models are invariant across exploratory and confirmatory samples. First, the model is freely estimated between the samples using multi-sample analysis. Next, certain parameters are constrained to be equal between the two samples. A Chi-square difference test is then computed between the freely estimated model and the constrained model to test for invariance. The measurement model was the same within both sub samples, $\Delta\chi^2_{(90)} = 48.74, p > .05$. The structural model was invariant between the sub samples, $\Delta\chi^2_{(19)} = 15.42, p > .05$. Furthermore, all paths were significant, except one, and many are in the intended direction across both samples. Squared multiple correlations for endogenous variables in the structural equation for the confirmatory sample resembled those obtained using the exploratory sample and were acceptable. Therefore, the model was confirmed.

Final Model Validated on a Confirmatory Sample

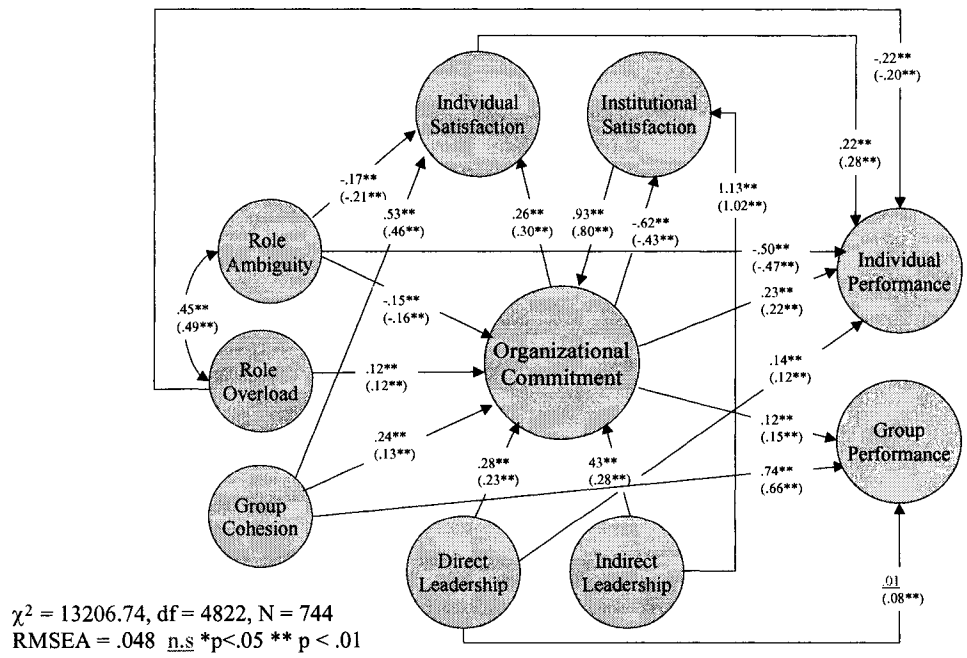


Figure 16. Confirmatory sample model of organizational commitment

Table 4

Fit Indices and Squared Multiple Correlations for All Tested Models

	Restricted Effects Model	Expanded Effects Model	Final Model	Confirmatory Sample for the Final Model
Fit Indices				
95% C.I. for RMSEA	.049 to .051	.046 to .048	.045 to .047	.047 to .049
RMSEA	.050	.047	.046	.048
NFI	.94	.95	.95	.95
NNFI	.97	.97	.97	.97
CFI	.97	.97	.97	.97
SRMR	.078	.065	.063	.064
PNFI	.92	.92	.92	.92
Squared Multiple Correlations				
Organizational Commitment	.63	.43	.42	.46
Group Performance	.21	.61	.61	.66
Individual Performance	.32	.41	.67	.66
Individual Satisfaction	.42	.59	.60	.64
Institutional Satisfaction	.35	.60	.59	.59

Structure Invariance Tests

The stability of the final model of organizational commitment was tested using structure invariance methods, and was tested against four relevant groupings: gender, language, military rank, and career stage/age[8]. Due to the small size of several of the

[8] Structure invariance tests determine the degree of generalizability of multivariate structural models. Model structural invariance is demonstrated when model paths do not differ statistically across tested groups (Jöreskog & Sörbom, 1993). The model is first estimated within groups simultaneously and freely, and then parameter estimates are constrained to be equal for both groups. A non-significant chi-square value between groups signifies model structural invariance.

samples used in the structure invariance tests, latent variable path analysis cannot be conducted because it is not possible to identify the model. Therefore, observed variable path analysis was conducted to test structure invariance between/among groups.

Gender and model structural variance. So that sample sizes across groups would be relatively equal, a random sample of males was selected. The structure of the model was compared using 233 females and 237 males. There was no difference between the male and female groups, $\Delta\chi^2_{(19)} = 8.44, p > .05$. The model was invariant across gender groupings.

Language and model structural variance. So that sample sizes across groups would be relatively equal, a random sample of English participants was selected. The structure of the model was compared using 350 French participants and 345 English participants. There was no difference between groups, $\Delta\chi^2_{(19)} = 14.74, p > .05$. The model was invariant across language groupings.

Military rank and model structural variance. So that sample sizes across groups would be relatively equal, a random sample of NCM participants was selected. The structure of the model was compared using 246 military officers and 266 NCM military members. There was no difference between the groups, $\Delta\chi^2_{(19)} = 10.36, p > .05$. The model was invariant across military rankings.

Career stage/age and model structural variance. Career stage/age was divided into three career stages: early (18 to 30 years), mid (31 to 42 years), and late (43 to 55 years). Because nearly two thirds of the sample fell between 31 and 42 years, a random sample was selected from the entire 31 to 42 year sample to form the mid career stage group. The structure of the model was compared using 166 early career stage members, 227 mid career stage members, and 229 late career stage members. There were no

differences among the groups, $\Delta\chi^2_{(38)} = 49.78, p > .05$. The model was invariant across career stage/age groupings. Overall, the model of organizational commitment was invariant across all four participant groupings that were tested.

Discussion

The Canadian military's strategic focus on attracting dedicated and committed people to join and maintain membership within the military led to the present study. Comprehensive employee commitment research is critical for attaining strategic goals in the Canadian military outlined in the National Defence (2001) document. Organizational commitment has solid ties to relevant work-related constructs considered to be critical within that document (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997; Mowday et al., 1979; Organ & Ryan, 1995; Russ & McNeilly, 1995; Schappe, 1998; Tett & Meyer, 1993). A comprehensive model, however, outlining the nomological network of constructs related to organizational commitment was in need of development (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997). The primary purpose for conducting the current study was to develop and confirm a comprehensive model of organizational commitment within a military context.

The current study also assessed the dimensionality of the OCQ, which is a primary measure used in the development of the organizational commitment model. OCQ dimensionality is important because of the relatively wide use of the measure within a multitude of settings (Caught et al., 2000), including child care settings (Weaver, 2002), business settings (Argawala, 2002), health care settings (Jones, 2003), and sales force settings (Commeiras & Fournier, 2001). Furthermore, recent cross-cultural research has been conducted using the OCQ as the primary measure of organizational commitment (Mathieu, Bruvold, & Ritchey, 2000; Siu, 2002). The OCQ has demonstrated

questionable psychometric properties in past research. Specifically, past evidence, which was further confirmed in the current study, suggested that the OCQ suffers from the inclusion of construct irrelevant covariance (Akhtar & Tan, 1994; Angle & Perry, 1981; Caught et al., 2000; Tetrick & Farkas, 1988; Tett & Meyer, 1993).

The current study used a marker variable approach to detect method variance in the OCQ. The best fitting model was in fact a two-factor method variance structure. Because the inclusion of construct irrelevant covariance does not affect the validity of the OCQ, the OCQ was used as a unidimensional measure of affective organizational commitment. Next, reported relationships from the seminal Mathieu and Zajac (1990) meta-analysis, as well as many other sources, were used to develop a comprehensive model of organizational commitment and relevant constructs. Although the initial restricted effects model fit the data reasonably well, the expanded effects model fit the data significantly better. The final model derived by deleting non-significant paths and adding important modification index paths fit well across several indices and fit the data better than did the expanded effects model. The final model was confirmed empirically using an independent sample. Finally, gender, military rank, language, and career stage/age were tested for structural invariance concerning the developed model of organizational commitment. No effects were uncovered, supporting the generalizability of the model within the Canadian Air Force.

Critical Assessment of the OCQ

The best fitting OCQ model was an orthogonal two-factor model corresponding to a substantive factor of affective commitment and a method variance factor. The item loadings significantly corresponded to the substantive factor more strongly than to the method factor, and the parsimony index was not greatly affected. Although the OCQ

suffered from method variance problems, the validity of the decisions made using the OCQ remain unchanged (Kelloway & Barling, 1990). The OCQ was represented unidimensionally within the developed model of organizational commitment. Nonetheless, based primarily on RMSEA and PNFI values, the fit of all of the OCQ models tested is poor, with the model used here being the best of the models tested. The erroneous use of the OCQ as a unidimensional construct may potentially compromise the integrity of the results reported here. Although the reliability of the OCQ is not problematic, validity problems are abundant (Akhtar & Tan, 1994; Allen & Meyer, 1990; Angle & Perry, 1981; Bar-Hayim & Berman, 1992; Caught et al., 2000; Dunham et al., 1994; Hackett et al., 1994; Luthans et al., 1985; Mowday et al., 1979; Tetrick & Farkas, 1988; Tett & Meyer, 1993; Zeffane, 1994). The current results confirmed the validity problems suffered by the OCQ. Caution should be taken when making critical organizational decisions using the OCQ or when interpreting the OCQ in general. The OCQ should be revised based on evidence from empirical studies, or organizational commitment should be indexed using a scale with more appropriate psychometric properties.

Allen and Meyer (1990) developed a theoretical model and scale to represent the multidimensionality of the organizational commitment construct. The model was developed through the observation that organizational commitment appeared to be represented by three specific concepts: an affective orientation toward the organization (affective commitment), the recognition of associated costs for leaving the organization (continuance commitment), and a moral obligation to stay with the organization (normative commitment). The multidimensionality of the organizational commitment construct is well known and has been verified empirically (Allen & Meyer, 1990;

Clugston, 2000; Culpepper, 2000; Mathieu & Zajac, 1990; Meyer, 1997). Furthermore, the Allen and Meyer (1990) three-factor scale has received considerable exploratory and confirmatory support for its dimensionality (Dunham et al., 1994; Hackett et al., 1994; Meyer, 1997). The measure also is known to be highly reliable and has been validated using a variety of methods, including discriminant and convergent validity techniques, and predictive validity techniques (Dunham et al., 1994; Hackett et al., 1994; Meyer, 1997). Unlike the OCQ, the Allen and Meyer (1990) scale is a reliable and a valid organizational commitment measure. The scale is a more isomorphic measure of the construct as compared to the OCQ because the measure is structured to represent the multidimensionality of the construct. The OCQ's use should be discontinued. The Allen and Meyer (1990) measure should be used in the future as the index for organizational commitment within newly developed multivariate models.

Even though the OCQ is psychometrically flawed and is a unidimensional representation of the organizational commitment construct, conclusions drawn from its use are not necessarily erroneous. Method variance may be inherent within the OCQ, but the measure's validity was unaffected for the purpose of developing the organizational commitment model. Furthermore, an argument can be made for affective commitment being the most substantive factor within the Allen and Meyer (1990) model. The OCQ is a confirmed measure of affective commitment that correlates highly with the Allen and Meyer (1990) affective commitment scale (Allen & Meyer, 1990; Dunham et al., 1994; Hackett et al., 1994); the OCQ was used to create the Allen and Meyer (1990) measure, and therefore, similarities between the measures are expected. Compared to normative and continuance commitment, affective commitment generates the strongest and most substantive correlations with organizationally relevant (performance, organizational

citizenship behavior) and employee relevant (stress, work-family relations) outcomes (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). As well, the nomological network for normative commitment is difficult to establish (Meyer et al., 2002). There is evidence that both continuance and normative commitment act as moderators for each other with regard to predicting relevant outcomes (Cheng & Stockdale, 2003; Snape & Redman, 2003). As well, method variance factor structures have been found to fit the data better than the theoretically based three-factor structure of the Allen and Meyer (1990) measure (Cheng & Stockdale, 2003). There is evidence that the Allen and Meyer (1990) three-factor model is problematic when used in cross-cultural analysis, whereby further research is warranted (Meyer et al., 2002). Finally, the continuance commitment scale currently is being treated as a two-factor structure: high sacrifice and low alternatives (Blau, 2003; Stinglhamber, Bentein, & Vandengerghe, 2002). It is not this author's intention to suggest that organizational commitment is a unidimensional construct; the point is that the dimensionality of the construct is not confirmed unequivocally. The use of the affective commitment factor alone to develop a model is justified; the factor consistently is found to be strong and substantive in the extant literature in comparison to other postulated dimensions. Because of the presence of method variance, however, OCQ results may contain more error compared to the Allen and Meyer (1990) affective component. If the OCQ is to be used in the future for research and applied purposes, then the measure should be revised to improve its construct validity, alternatively researchers might use the affective commitment scale of the Allen and Meyer (1990) measure.

Analysis of the Model Development Process

Using Mathieu and Zajac's (1990) meta-analysis as a guide, the current study developed a comprehensive model of organizational commitment and relevant constructs

using a large and representative sample of Canadian Air Force members. The restricted effects model fit the data reasonably well based on several fit indices, with many directional predictions being confirmed. However, the link from role overload, as well as the link from direct leadership to organizational commitment was not significant, and the prediction of organizational commitment by the satisfaction factors was negative. The expanded effects model fit the data significantly better than the restricted model based on several fit indices; the prediction of organizational commitment by both satisfaction factors became positive. The prediction of institutional satisfaction by organizational commitment is negative in the expanded effects model. As well, role overload predicts individual performance negatively, and predicts organizational commitment positively. Unlike the results found for the restricted effects model, however, the links between direct leadership and individual satisfaction, group cohesion and organizational commitment, and individual satisfaction and organizational commitment were not significant. The link from direct leadership to organizational commitment did become significant in the expanded model, unlike the restricted effects model. However, during modification, the path from group cohesion to organizational commitment became significant when the path from individual satisfaction to organizational commitment was removed. The cohesion-commitment path, therefore, was included in the final model.

A final model, which deleted non-significant paths and included links between role ambiguity and individual performance and between individual satisfaction and individual performance, improved the model fit on several indices. The final model fit the data better than the expanded effects model. All paths within the final model were significant and many were in the intended direction. The final model of commitment was

the most substantive and empirically justifiable model. This model subsequently was confirmed using an independent sample.

One of the primary catalysts to conducting the current study was the necessity to develop a comprehensive multivariate model of organizational commitment. A comprehensive model was considered necessary for gaining a more complete understanding of the nomological network of commitment. It was suggested that bivariate representations of a construct's network is incomplete. Various studies, mostly bivariate, were used to develop the models in the current study and were found to be substantive. However, some predictions were in opposition to what is reported in the extant literature: satisfaction factors predicting commitment negatively, and role overload predicting commitment positively. As well, in the restricted effects model, direct leadership did not significantly predict commitment. Direct leadership also did not significantly predict individual satisfaction in the expanded effects model. The reciprocal relationship between satisfaction and affective organizational commitment may be moderated by type of satisfaction and/or commitment. The current study only found evidence for an institutional satisfaction-organizational commitment reciprocal relationship. Past research did not detect the aforementioned anomalies possibly because of the methodology employed to study organizational commitment. As stated previously, bivariate methods are not considered to be inferior; only two theoretically based bivariate paths were removed to create the final model, which is considered to be accurate. Without the application of structural equation modeling a complete understanding of the relations among constructs would not have been feasible in the current study. Therefore, both bivariate and multivariate techniques are necessary for acquiring a comprehensive understanding of constructs.

Indirect relationships and the final model. Several indirect relationships were discovered in the final model. Organizational commitment acted as a complete mediator of the relationships between role factors and group performance, role overload and the satisfaction factors, direct leadership and the satisfaction factors, role ambiguity and institutional satisfaction, group cohesion and institutional satisfaction as well as individual performance, and indirect leadership and individual satisfaction as well as both performance factors. Within the final model, the modification indices for the aforementioned paths were either zero or non-significant (i.e. decrease Chi-square by 2.00 if freely estimated). Organizational commitment also acted as a partial mediator of the relationships between direct leadership and the performance factors, group cohesion and group performance as well as individual satisfaction, indirect leadership and institutional satisfaction, both role factors and individual performance, role ambiguity and individual satisfaction, and individual satisfaction to individual performance. The organizational commitment construct, based on the results of the current study, is an important and powerful mediator of several organizationally relevant constructs, which further enhances the necessity to discover and confirm its' nomological network. Because development of comprehensive organizational commitment models is relatively rare (Eby et al., 1999; Mathieu & Zajac, 1990; Meyer, 1997), fully and partially mediated relationships in the current study are considered new research findings, which may be particularly useful in directing future studies on the construct. Furthermore, the uncovered indirect relationships will be useful for the future development of a comprehensive theory of organizational commitment.

Unlike constructs that were considered empirically important in the model, some construct links were deleted due to statistical non-significance. Although the relationship

between direct leadership and individual satisfaction is supported by research (Bass, 1999; Bateman & Strasser, 1984; Becker et al., 1996; Glisson & Durick, 1988; Hodson, 2002; Knicki et al., 2002; Sirianni & Frey, 2001; Williams & Hazer, 1986; Yukl & VanFleet, 1992), perceptions of direct leadership failed to predict individual satisfaction. Possibly, organizational commitment may be fully mediating the relationship between direct leadership and individual satisfaction. Because the direct relationship between the constructs is well known, the present results may be sample specific, whereby the relationship between the constructs is fully mediated only within the Canadian Air Force. The leadership role within the military may focus more on commitment like constructs rather than satisfaction constructs as compared to non-military leaders creating sample specificity. This makes sense whereby stressful situations, such as battle, will require subordinates to maintain commitment to the cause while experiencing extreme dissatisfaction. Alternatively, problems inherent within construct measures may have led to the non-significant finding. Specifically, the measure of direct leadership may be confounded based on item wording (MacIntyre, 2001). Possibly, the relationship would have been discovered if a better measure of direct leadership had been used. The future assessment of a comprehensive model of commitment should include the link between direct leadership and job satisfaction. The model should be tested on a non-military sample using a better measure of direct leadership. Full mediation would be supported if those findings replicated the results reported here. Within the Canadian military, direct leaders serve short terms – three years. Subordinates may have more complete perceptions and understandings of senior leader behaviors, and therefore, senior leaders have a greater impact on their work due to their long-term standing as a leader. It is possible that the leadership results found in the current study reflect the short-term

placement of direct leaders. The non-significant reciprocal relationship between individual satisfaction and organizational commitment is discussed in the next section.

Reciprocal relationships and the final model. The reciprocal relationship between individual satisfaction and organizational commitment has been consistently confirmed in the literature (Bateman & Strasser, 1984; Charles, 1991; Mathieu, 1991; Mathieu & Zajac, 1990; Meyer, 1997; Mottaz, 1987; Vandenberg & Lance, 1992). Although in all tested models the reciprocal link between organizational commitment and institutional satisfaction was significant, the reciprocal link between commitment and individual satisfaction was not significant (the path from individual satisfaction to organizational commitment was not significant). Interestingly, the individual satisfaction link was significant in the restricted effects model. Based on the results from the expanded effects model, three potential theories may explain the discrepant finding. Firstly, the inclusion of the path between role ambiguity and individual satisfaction may have caused the non-significant outcome. In the restricted effects model, both role ambiguity and individual satisfaction predicted organizational commitment independently and significantly. However, the expanded effects model linked the two constructs, which inadvertently assumed that individual satisfaction partially mediated the impact of role ambiguity on organizational commitment. Individual satisfaction and role ambiguity may only have direct links to organizational commitment. Secondly, a null theory may explain the non-significant result. During the modification process, the link between direct leadership and individual satisfaction, between group cohesion and organizational commitment, and between individual satisfaction and organizational commitment, were entered into the model independently and in pairs. The reciprocal link between individual satisfaction and commitment was not significant regardless of which variable was entered into the model,

which also was true for the link between direct leadership and individual satisfaction. It is possible that a reciprocal connection between organizational commitment and individual satisfaction simply does not exist under many circumstances. Finally, the reciprocal relationship may have collapsed due to sample-specific reasons, such as the possibility of leadership redundancy which will be discussed in the limitations and recommendations section; including the expanded effects may not have had an impact on the reciprocal relationship in a non-military sample.

Another interesting finding regarding the reciprocal relationship between individual satisfaction factors and organizational commitment occurred in the restricted effects model; the prediction of organizational commitment by the satisfaction factors was negative, which was not the intended predictive direction. The predictive direction between individual satisfaction and commitment, however, did become positive in the expanded effects model. Sign direction reversal occurred between institutional satisfaction and commitment in the expanded and subsequent models. For all models after the restricted effects model, the prediction of institutional satisfaction by organizational commitment was found to be negative. Although the sign reversal is difficult to explain, its occurrence may indicate the presence of statistical suppression, multicollinearity, or mediation (Pedhazur & Pedhazur-Schmelkin, 1991); the inclusion of certain paths within subsequent models may have caused the sign reversal either directly or indirectly. This likely is why institutional satisfaction is negatively predicted by commitment in all models following the restricted model. For example, including the prediction of individual satisfaction by role ambiguity or group cohesion may have caused the prediction of organizational commitment by individual satisfaction to be positive within the expanded effects model, which supports a mediational explanation of

the event. Other interesting findings that vary in nature are discussed next in terms of plausible explanations for their outcomes.

Due to the increase in completed tasks, overload has been postulated to lead to improvements in objective and subjective employee performance (Beehr, Walsh, & Taber, 1976; Fogarty et al., 2000; Jex & Elacqua, 1999; MacIntyre, 2001; Mathieu & Zajac, 1990). The path from role overload to individual performance was hypothesized to be positive; however, the path was found to be negative in both the expanded and final models. There are two logical explanations for the aforementioned results. Role constructs such as role overload are expected to lead to decreased employee productivity (Witt, 1991). The prediction of performance by role overload may inherently be negative. The second explanation is that the performance measure used may be inappropriate. The individual performance measure used is a self-report scale. It is possible that a positive relationship may have been found if an objective measure of individual performance was used. For example, the employee may perceive their performance to be degraded due to overload, yet objective measures of productivity may have improved. Interestingly, the path from overload to commitment was positive in both the expanded and final models. One potential explanation for this effect is that role overload may lead to a sense of 'importance' or 'indispensability' within the organization that enhances commitment. Taking into consideration the negative prediction of performance by overload, the positive link between overload and commitment may suggest moderation. Specific levels of overload may enhance both commitment and performance; however, exceeding the specified level of overload may degrade performance. It is possible that moderate levels of role overload can enhance organizational productivity. Finally, the inclusion of expanded effects paths was most likely responsible for the significant positive prediction

of commitment by overload, which was negative and non-significant in the restricted effects model.

Other findings. The inclusion of significant paths in a model, based on post-hoc modification indices, must be consistent with empirical and theoretical rationales. The path from individual satisfaction to individual performance can be explained empirically based on the statistical findings of the current study and recent research. A recent meta-analysis found a substantial relationship between job satisfaction and individual performance (r = .30; Judge, Thoresen, Bono, & Patton, 2001), although the link found in the current study is between a facet of individual satisfaction (individual satisfaction) and individual performance. Satisfaction with work, such as tasks and environment, is expected to influence employee daily job performance. It is nonsensical to assume that work dissatisfaction would lead to enhanced productivity. Therefore the added path was considered logical and substantive, and should be investigated further in the future.

The discovered path from role ambiguity to individual performance is explained easily. Role constructs such as role ambiguity are expected to decrease employee productivity (Witt, 1991). Role stressors have been found to contribute to work-place burnout significantly (Fogarty et al., 2000). Role stressors also have been found to increase organizational health costs, decrease job satisfaction, and affect employee mental and physical health (Jex & Elacqua, 1999). Several other researchers have confirmed the link between role stressors, such as role overload, and individual performance (Beehr et al., 1976; Fogarty et al., 2000; Jex & Elacqua, 1999; MacIntyre, 2001; Mathieu & Zajac, 1990). Therefore, the link between role ambiguity and individual performance is logical, and should be included in future comprehensive commitment models.

The path from group cohesion to organizational commitment became significant when the path from individual satisfaction to organizational commitment was removed. A model was estimated where the path from group cohesion to organizational commitment was removed; the path from individual satisfaction to organizational commitment remained non-significant. There are two plausible explanations for the cohesion path attaining significance. Firstly, cohesion may only have direct effects on commitment; the addition of the individual satisfaction path represented a partial mediation relationship between cohesion and commitment. Secondly, the relationship between group cohesion and individual satisfaction may be partially mediated by organizational commitment. The cohesion path was included in the final model because it was the only non-significant path within the expanded effects model to attain significance under most model modification scenarios; furthermore, the commitment-cohesion relationship theoretically is well grounded.

Based on the previous discussion of the model development process, the developed commitment model is substantive. The model fits the data well, is theoretically based, and was confirmed on an independent sample. The results of the current study are preliminary in that the model must be replicated across several samples, especially non-military samples. The non-significant paths found in the current study may be sample-specific, whereby evidence for the statistical significance of the paths may have been found using a non-military sample, and should be included in future studies to rule out this possibility. There was relatively strong evidence for organizational commitment predicting performance variables, which may be an artifact of using self-report performance measures and the OCQ (Meyer, 1997; Randall, 1990). Future replication of the current study should include other methods for measuring performance, such as other-

reports or objective measures. Finally, the current study discovered several interesting indirect relationships that warrant future investigation, particularly within a non-military context.

Structure Invariance and Generalizability of Results

The developed model was confirmed using an independent sample. The model is invariant across gender, language, military rank, and career stage/age groupings. Non-significant results potentially are 'good news' for the Canadian military, whereby drastic behavior and attitudinal differences among personnel groupings may signal the breakdown of hierarchical structure and control within the military. Specifically, in the context of the Canadian Forces, any threat to unit cohesion and climate is expected to lead to negative consequences (National Defense, 2000).

The gender result is a positive sign with regard to the integration of female personnel within the military, especially when considering mixed gender units and teams. The integration of female members into the military has not occurred without a plethora of problems (Boyce & Herd, 2003). As well, significant gender differences would signify the possible necessity to develop gender-specific training programs, which would be a negative consequence for the military when considering increased costs and further gender segregation. However, gender segregation is less apparent within Canadian Forces Air Command. The language result also is a positive sign with regard to cultural unity within military units and teams. The French - English cultural separation within Canada is widely debated and long standing, which does not seem to be affecting personnel commitment to the Military. Interestingly, no difference was found between officers and NCM's. NCM's tend to enjoy fewer privileges and are treated with higher levels of control compared to officers, yet their commitment to the military hierarchy is similar to

that of the officers. A drastic difference between ranks concerning commitment to the military could be fatal. The current study confirmed a commitment model that largely comprised positive paths. It is possible, for example, that upper and lower military ranks could have generated diametrically opposed models of commitment (one model comprising negative paths and the other comprising positive paths). If leadership, for example, impacts NCMs negatively and officers positively, then it is likely that units would breakdown during critical situations, such as during battle. Finally, the age/career stage findings may suggest that the indoctrination of military personnel is relatively immediate and stable, which is necessary to maintain cohesion and readiness to fulfill the prime objective. The Canadian Air Force does not appear to be experiencing negative consequences, such as drastic age differences concerning commitment to the military, as might be expected if a generation gap were impacting on the experiences of Air Command personnel.

Although the results support the generalizability of the model, the results may be spurious. Structure invariance test results may be due to the use of a military sample. The grouping results may not hold in non-military contexts. Potential military personnel must sign legally binding contractual agreements to become members. A prerequisite for joining the military is the acceptance of the organization's prime objective – national defense. The pursuit and acceptance of a dangerous occupation/life-style may require greater and more stable commitment to the organization for survival purposes, and certainly highlights major differences between military personnel and most non-military employees. Furthermore, leaving the military organization prematurely will lead to direct and immediate negative consequences based on contractual law, which also may be the cause for commitment stability. In non-military situations, leaving a job often does not

lead to immediate punishment. However, similar penalties for early withdrawal also occur within non-military contexts. Additionally, some of the group sizes were small, which may have led to the non-significant results based on power considerations. As well, the current study did not have access to data necessary to index career stage adequately. The amount of time that each military member has been involved with the Canadian Forces (organizational tenure) is necessary to index career stage appropriately, although age is considered a good proxy measure within a military context because most members join the organizationa early and maintain membership. Structural invariance of the developed model can be confirmed only if positive results are found with other samples, and only if power restraints due to sample size are improved.

Study Limitations and Recommendations

Although study limitations have been discussed throughout the discussion section, certain limitations require particular attention. During the data collection phase of the MacIntyre's (2001) Study Two, evidence of construct blurring surfaced. Some participants were unable to distinguish between the constructs measured in this study, which may have been due to item wording. The scales were developed primarily through selecting items from a larger pool. Although every attempt was made to balance the scales in regard to positively and negatively worded items, unbalanced scales nonetheless occurred in some cases. Specifically, the perception of immediate leadership scale included positive items only, and the perception of senior/indirect leadership scale contained only one positively worded item. Scale problems can be rectified by rewording relevant items and by testing revised items on an independent sample (MacIntyre, 2001). Finally, two of the measures used had relatively low internal consistency reliability: the individual performance scale ($\alpha =$ .74) and the institutional satisfaction scale ($\alpha =$ .78).

Possibly, future research should revise these scales to improve reliability; otherwise more appropriate measures should be used to index the constructs.

The model developed in the current study only applies to a military context, and perhaps only to the Canadian Air Force. Military personnel are uniquely different when compared to civilians. The military is based on longstanding traditions of rigid and highly developed hierarchical systems. Few military members work independently; teamwork and group cohesion is cultivated to foster a strong group identity. Reward structures are traditionally regulated as well, and include symbolic unique reinforcements, such as medals and certificates of achievement (MacIntyre, 2001). The developed model may not be replicable within a civilian sample. To test the model in a non-military context, scale items can be reworded to eliminate the military focus within the items. An interesting future research study may be to investigate the structural invariance of the model across matched military and civilian samples, a contrast that rarely is found within the literature. Finally, although differences are blatantly evident between military and non-military groups, the model may generalize directly to civilian populations with minimal revision. Any detected differences in parameter magnitude and direction may only be minor.

Sign reversals regarding correlations and beta weights occurred in the current study, such as role overload predicting organizational commitment positively, yet the correlation between the constructs was negative. As well, satisfaction factors predicted organizational commitment negatively in the restricted effects model, yet the correlation between the constructs was positive. Sign reversals may suggest the presence of suppression or multicollinearity (Pedhazur & Pedhazur-Schmelkin, 1991). However, based on correlations, multicollinearity does not appear to be a problem concerning the aforementioned paths. Furthermore, the standardized prediction of institutional

satisfaction by indirect leadership was greater than one, which also may suggest multicollinearity (Jöreskog & Sörbom, 1993). The correlation between these two constructs was .55, which is high whereby an explanation based on multicollinearity may be warranted.

A final limitation to the current study is the inexperience of the author with regard to military life-style. Due to this experience, result interpretation may be preliminary or at a shallow level of analysis, or may be incorrect. However, an outside perspective of the military life-style may add objectivity to the interpretation of the results, whereby the interpreter's perception is not clouded by the necessity to affirm the positive aspects of military membership and life-style. The preferred method may be for non-military members conducting military research to 'become' a part of the military culture for a period of time, such as engaging in a relatively extensive internship position, to improve the accuracy of interpretation.

Organizational commitment research should begin a thorough assessment of two concepts: the multidimensionality of organizational commitment and the development of multivariate and multidimensional organizational commitment models, and application of the nested collectives theory (Lawler, 1992) to study the organizational commitment construct. Organizational commitment is an empirically verified multidimensional construct (Allen & Meyer, 1990; Clugston, 2000; Culpepper, 2000; Mathieu & Zajac, 1990; Meyer, 1997), so it is incomplete to study the nomological network of the affective commitment portion alone. Future development of complex models should index organizational commitment multidimensionally, especially due to the evidence for multidimensional scales producing significant differential predictions of relevant constructs (Meyer, 1997). Organizational commitment is considered to be one of many

dimensions that represent the underlying construct of work commitment (Meyer, 1997). The most appropriate representation, definition, or model of work commitment probably is multidimensional and each dimension itself may be multidimensional. Furthermore, each dimension may have connections amongst its network of constructs that are unique to the specified dimension. An interesting and necessary future research endeavor would be to develop and confirm a multidimensional model of work commitment. Relevant construct relations could be compared across known dimensions of organizational commitment to test for moderation effects; the unequivocal demonstration of differential prediction within multivariate space would be strong evidence for substantive multidimensionality.

Collectives refer to groupings of individuals who are associated as a result of a formal or informal grouping, such as senior management or frontline staff. Nested collectives refer to the hierarchical nature of these groupings, such as in the case of senior management, junior management, and frontline staff, respectively. In the current study, the reciprocal relationship between individual satisfaction and organizational commitment was non-significant even though the relationship between institutional satisfaction and organizational commitment was highly significant. A nested collectives perspective provides an adequate explanation for the finding. According to the theory of nested collectives as it relates to organizational commitment, employees have greater affective ties to proximally nested collectives than to more distal collectives (Lawler, 1992). Arguably, the institutional satisfaction factor is more proximal to organizational commitment than is individual satisfaction, which may explain the significant reciprocal relationship. Based on a nested collectives perspective, professional commitment or work-division commitment may be better commitment factors to compare to individual

satisfaction for determining reciprocal causation. It would be interesting to develop an organizational commitment model based on the nested collectives theory.

Implications for the Canadian Forces

Because the Canadian Forces Leadership Institute (CFLI) sponsored the current thesis, results have been used to provide practical recommendations to the CFLI as they relate to improving organizational commitment among new military recruits. Caution is recommended when interpreting the findings due to the use of the imperfect OCQ measure, and to the potential sample specificity of the results regarding generalizability to non-military samples.

Both direct and indirect leadership concepts positively and directly affected organizational commitment. The indirect leadership construct, however, was a better predictor of organizational commitment and satisfaction for all models in all samples. As stated previously, the nested collectives perspective (Lawler, 1992) provides a reasonable explanation for this result. Based on the hierarchical structure of the Canadian military and the results of the current study, using the leadership role to develop subordinate commitment may require a multiple focus. Specifically, leadership development initiatives possibly should be devised to reflect the specific form of commitment appropriate for the intended subordinate audience. The ability to develop subordinate commitment is important if the success of a training initiative is determined by assessing the success of the leader (Belcourt, Wright, & Saks, 2000). Although an interesting concept, the CFLI should investigate further into the viability of the nested collectives theory as it relates to leadership and commitment before implementing the approach to train leaders.

Currently, a major concern of the Canadian military is to recruit personnel who maintain organizational membership because of commitment to and satisfaction with the military lifestyle (National Defence, 2001). In the current study, the perceptions of indirect leadership strongly, significantly, and positively predicted institutional satisfaction consistently across all exploratory sample models. Positive subordinate perceptions of senior staff is extremely important for the development of attitudes necessary for maintaining organizational membership such as organizational satisfaction and commitment. Conversely, direct leadership did not affect satisfaction variables, and more interestingly, the construct did not predict organizational commitment in the restricted effects model. In the military, perceptions of senior leaders may be partially mediating the effect of direct leadership on organizationally relevant variables, a possibility that should be explored further. It also is possible that immediate leaders are perceived by subordinates as being isomorphic symbols or figureheads who actually represent senior leaders in the senior leader's absence. Therefore, the inclusion of both direct and senior leadership constructs may be redundant. Due to the hierarchical nature of the military, and assuming that the leadership redundancy scenario is correct, a null effect for direct leadership may represent reliability with regard to executing leadership roles within the Air Force. Executing leadership roles consistently is critical because of the level of control that must be exercised to engage in national defence. However, the weaker effects for direct leadership may be due to the brief three-year tenure of the position previously discussed.

The current study found strong negative effects of role ambiguity on organizational commitment, individual performance, and individual satisfaction. As well, role overload was found to have a significant negative effect on individual performance.

An individual's perception of the extent of experienced role stress depends on several factors, including the possession of relevant job competencies, the appropriateness of resource allocation within the organization, and the direct effect the leader has on clarifying tasks and organizing work behaviors. Based on the study results, leaders who allocate resources that minimize role ambiguity increase subordinate satisfaction, performance, and commitment. Despite the negative influence on commitment, however, leaders may opt to continue practices that increase role stress because of improvements to organizational commitment, and potential improvements to objective performance. In the current study, role overload positively affected organizational commitment but negatively influenced performance. Military leaders must recognize the converse effect of role stressors on relevant variables. Leadership training programs should include techniques to decrease subordinate role stressors to enhance performance and satisfaction. However, the potential for moderate levels of overload to enhance organizational commitment and performance must be investigated further. Moderate levels of role overload may enhance commitment and productivity; however, high levels of overload may lead to the complete paralysis of productivity, as well as job dissatisfaction and significantly reduced organizational commitment.

In conclusion, the OCQ should be revised; otherwise, its use should be discontinued. Past research concerning antecedents, consequences, and correlates of commitment was reasonably accurate, although past reports of prediction direction were less accurate. Bivariate analysis techniques cannot detect indirect effects between/among variables, which may explain the discrepant results for path directions in the current study. The developed model of organizational commitment has promise, although confirmation of the model will require the replication of the current study's results across

different samples. Furthermore, the model must be tested in a non-military sample before a comprehensive and generalizable theory can be developed. The model also should be tested using different measures of some of the constructs to establish consistency and validity of findings, and to eliminate statistical suppression/multicollinearity problems. Contemporary conceptualizations of multidimensional work and organizational commitment should be used to revise the model for future testing. The organizational commitment construct is a powerful and important mediator of several organizationally relevant and employee relevant variables. Finally, new relationships discovered in the current study should contribute positively to future research of the organizational commitment construct within the Canadian military, and the development of a comprehensive and generalizable theory of organizational commitment.

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Appendix A

Procedure used by MacIntyre (2001) to collect data and create measures for his doctoral dissertation.

Study One Procedure

The objective of MacIntyre's (2001) first study was to use interview and focus group transcripts to develop items for the construct scales used in the second study. There were 24 focus group sessions ranging in size from 4 to 12 participants. Sessions were held at Greenwood, Nova Scotia (3 officer groups and 5 serving member groups), Bagotville, Quebec (3 officer groups and 5 serving member groups), Winnepeg, Manitoba (2 officer groups and 4 serving member groups), and Edmonton, Alberta (1 officer group and 1 serving member group; MacIntyre, 2001). Each session began with a statement that outlined the purpose of the session and continued with broad questions regarding the variables outlined in the current study, including questions on direct leadership, institutional satisfaction, and group cohesion (MacIntyre, 2001). The facilitator used a list of general questions to stimulate the spontaneous generation of ideas. When the participants did not address certain topics of interest, the facilitator introduced the topics into the discussion to focus participants. Sessions were audio taped, and were terminated after 60 to 90 minutes of discussion (MacIntyre, 2001).

MacIntyre conducted French sessions, and a bilingual coordinator was contracted for the Bagotville sessions. The focus group materials and informed consent form are presented in Appendix B. Two independent coders reviewed information collected during interviews and focus group sessions. Appendix C outlines the operational definitions of constructs provided to the coders. Participant comments were annotated as being characteristic of the pre-selected constructs of interest, such as indirect leadership and group cohesion (MacIntyre, 2001). Recurring themes were examined for the possibility of inclusion into empirical models. Critical and frequently occurring themes were compared to pre-selected constructs for consistency. Consistent factors were retained for item and model development. Appendix D contains sample statements in reference to relevant constructs taken directly from focus group sessions.

Study Two Procedure

The purpose of the second study was twofold: to establish the psychometric properties of questionnaires refined and developed in study one, and to distribute questionnaires to a large representative sample so that structural equation modeling techniques could be applied to examine interactions among several constructs (MacIntyre, 2001). A random sample of 6042 Air Command members was obtained from the Directorate of Human Resource Research and Evaluation. A proportional representation at all ranks was achieved using stratified sampling techniques. Each participant received a package that consisted of instructions, a questionnaire, and a stamped return envelope. Appendix E contains two informed consent forms, a letter outlining the voluntary nature of the study, and a sample participant package, which includes test introduction and instructions for French and English language participants. Factor analysis was used on returned data to determine the dimensionality and separateness of contructs, such as to determine whether role ambiguity, role overload, and role conflict represented a single role stressor factor or three separate factors (MacIntyre, 2001). Factor analysis was used to refine questionnaires to be used to test interrelationships among group constructs (MacIntyre, 2001). The study generated the construct measures used in the first study and present study: group cohesion, role ambiguity, role overload, subordinate perception of direct and indirect leaders, perception of individual and group performance, and individual and institutional satisfaction.

Appendix B

Focus Group Format and Questions

Introductory Narrative

Good morning (afternoon), my name is Allister MacIntyre. Many of you may not be fully aware of why you are here today. I hope to make this clear for you before we get things underway. I have passed around a letter for you to read and sign. I will give you time to do that now.

Wait for everyone to finish.

Alright, you should at least understand now that this is a study that is being carried out by Queen's University for Air Command. I am a Graduate student in psychology at Queen's and this project will form part of my PhD thesis. There are a number of aspects in the workplace that we are interested in for this study. I don't want to tell you them all at this point. I would prefer to hear from you first. I do want you to understand that this research is not being done simply so that I can complete my PhD. Air Command is interested in using the findings to make whatever improvements to your workplace as possible. So your participation is very important because what comes out of this can have an impact on your workplace.

There are some ground rules. I will not make public any of the individual comments that are made here today. It is also expected that you will not go away from this discussion and refer to specific comments made by particular individuals. I simply ask that you show some respect for one another. If you do want to talk to others about our discussion in this room, do so in general terms. I also ask that you wait until all of the groups have finished before you do this. It is better that the members of the other groups not have any preconceived notions before our discussions get underway.

You will notice that there is a tape recorder set up. This is simply used as a memory aid. I will be conducting a total of 24 groups like this one from Greenwood to Edmonton. This represents a potential 48 hours of discussions involving close to 300 people. I could not possibly remember everything without such a memory aid. Rest assured, the tapes will not be made public. With that said, if anyone has an objection to being taped, please let me know now. Finally, you should understand that your participation is voluntary. If you would rather not be part of this group, then please let me know now.

Focus Group Format

The group will start with a broad statement and open-ended broad questions. Follow-up probes will be used to clarify things that are said. The facilitator may ask for an indication of consensus on some of the issues, and more specific questions will be used to target the factors previously identified. The groups will follow the same general format, but they will not be rigidly structured. Flexibility will be needed to explore the unique characteristics of each group. Thus, the questions that follow do not capture every possible avenue that the group may follow. As required, questions will be modified, or dropped, and new ones will be added.

Broad Opening

What this study is most interested in is finding out the things that you find satisfying, or dissatisfying, in your jobs, as well as what sort of things affect your performance.

Satisfaction. Lets start there. Tell me about some of the things you find most satisfying about where you work.

1. Dissatisfying?
2. What other job factors affect how satisfied you feel?
3. What makes you happiest about your work?
4. What makes you most upset?
5. What sort of rewards are in place to recognize good work?

Performance. What are the signs that tell you that you are doing a good job?

1. How would you go about comparing the performance in your unit with the performance in another unit?
2. What sort of workplace factors affects your ability to do a good job?
3. What sort of personal factors influence your performance?
4. What sort of training or education would help you do a better job?

Cohesion. Do most of you work alone or as part of a team?

1. How would you describe how people where you work get along?
2. Would you describe the people you work with just as co-workers or as friends?
3. Why? Why not?
4. When you have a problem at work who would you be most likely to turn to for help?
5. What sort of social functions are organized for your units?
6. Describe the relationship between supervisors and subordinates where you work.
7. Do the supervisors work as part of the team or just supervise?
8. Should they be working as part of the team? Why? Why not?
9. Does the level of cohesion in your unit affect how satisfied you are? Why/why not?
10. How well you perform? Why? Why not?

Leadership. How would you describe the leadership where you work?

1. What could be done to improve leadership?
2. Do you feel that you are kept well informed? Explain.
3. How would you describe the communication up and down the chain of command?
4. What impact does the leadership have on morale? Cohesion? Performance? Satisfaction?

Role Factors. We often wear different hats in the work place, different roles. I am interested in how these different roles affect your work and satisfaction.

1. Tell me about some of the different roles you have to play.
2. Do these roles ever conflict with one another? Explain.
3. Does anyone here ever feel as though they don't really know what they should be doing?
4. Give me some examples of when this would be the case.
5. How would you describe the workload in your unit?
6. Do you ever feel as though there is too much to do in the time available? Explain.

We have been talking about things like conflicting roles, workload, and doubts about job knowledge. How do these things affect your performance? Your satisfaction? How you view unit leadership?

Other. We have talked about many workplace issues ranging from leadership to performance and satisfaction. I am sure that you feel like we have explored every possible issue, but there may be something important that I have missed.

1. Please take a moment and think of any other possible workplace issues that can have an impact on how well you perform or how satisfied you feel.
2. Give participants a few moments to think. Then explore any possibilities.

Wrap-up. Thank everyone for participating. Reinforce the confidentiality issue. Summarize briefly the major discussion points. Explain when and how the results of the study will be distributed.

Informed Consent - Focus Groups and Interviews

To: Focus Group and Interview participants,

We are currently involved in a research project assessing a number of different factors within the workplace. This study has been endorsed by AIRCOM and has received technical and ethical approval from the Department of Psychology at Queen's University. The results obtained will form the basis for a PhD Dissertation, but the findings from this, and other administrations, will be used by AIRCOM as a guide for improving your work environment. For this purpose we request that you participate in either a focus group or a one-on-one interview.

Should you choose to participate, please be assured that individual responses will NOT be made public. Confidentiality will be ensured by only producing qualitative summaries of the information provided. A copy of the final report, in thesis format, will be made available at the Department of Psychology library for anyone wishing to read it. A separate report will be produced for AIRCOM and this report will be distributed throughout the Canadian Forces.

Please note that your participation is completely voluntary, and by signing below you are giving your consent to be included in the study. In any event, questions, concerns or complaints may be directed to either Dr. Lee Fabrigar (613-533-6492) or Dr. Alistair MacLean, Head of the Department of Psychology (613-533-2480).

I have read and understand the above. I choose to participate in this study.

_____

Signature

Appendix C

Operational Definitions for Coding Transcripts

Perception of Leadership

For this study, good leadership is defined as *any behaviour exhibited by a supervisor that has a positive effect on work performance and satisfaction.* Conversely, poor leadership will consist of those examples that hinder performance or reduce satisfaction. Furthermore, indicators will only be accepted as "perception" of leadership if the statements are uttered by subordinates.

Examples:

"My supervisor ensures that everyone carries an equal share of the work load."

"I am lucky because my boss is someone I can trust. He would not accept credit for someone else's work."

And NOT:

"I always make sure that my subordinates know what is expected of them."

Cohesion

Cohesion is conceptualized here as an indicator of bonding amongst the members of the work unit which contributes toward group commitment and a sense of belonging. Two types of cohesion should be identifiable. *Peer cohesion*, characterized by bonds within a work group at the same level of authority within the hierarchy; and *hierarchical cohesion* which reflects bonds that extend up and down the chain of command (i.e., between supervisors and subordinates).

Examples:

Peer cohesion.

"In my unit we stick together no matter what."

"I know I can count on my co-workers if I have a personal problem." (or problem on the job)

"The people in my unit care about what happens to each other."

Hierarchical cohesion.

"My supervisor is an important part of our team."

"I know that I can count on my supervisor if I have a personal problem."

"The supervisors where I work care about what happens to their subordinates."

Work Role Factors

This study includes three common role factors that have been shown to have an impact on job performance and satisfaction. These are: role ambiguity, which occurs when one lacks the information required to adequately perform a job; role conflict, wherein the pressures of one work role creates difficulties in complying with the pressures from one or more other work role; and role overload, when we simply have too many demands to complete in the amount of time we have available.

Examples:

Role ambiguity.

"Clear, planned goals and objectives exist for my job." (non-ambiguous)

"I know exactly what is expected of me." (non-ambiguous)

"I have not received the training I need to do my job." (ambiguous)

Role overload.

"I am given enough time to do what is expected of me on my job." (no overload)

"It often seems like I have too much work for one person to do."

"There is so much work to do that every day I have to decide which jobs are not going to get done."

Morale

For this study, morale is viewed as reflecting general sense of well being. It may include aspects such as pride in the achievements and aims of the group, trust in the group's leadership, and a sense of devotion and loyalty to the other members of the group.

Examples:

"It feels good to be part of my unit."

"The people in my unit are proud of where they work."

"I enjoy working in my present unit."

"I was lucky to have received this posting. "

Satisfaction

This factor includes any statements that indicate the level of satisfaction participants have for their job or workplace. The emphasis is on their current place of work rather than general satisfaction with the Canadian Forces.

Examples:

"In general, I am satisfied with my hours of work."

"I am confident that I know how well I am performing in my job."

"I like the work in my current position."

And NOT:

"I am glad that I joined the Canadian Forces."

"When talking to friends, I often recommend joining the Canadian Forces."

Performance

There are no widgets to count in the military to assess performance, but people will have an appreciation of how efficient and productive their workplace is. Thus, the statements for this factor will reflect perceptions of performance.

Examples:

"The people in my unit work more efficiently than most other units."

"I am always confident that we will get the job done."

"In my job deadlines are rarely missed."
"I am often surprised by how quickly the people in my unit are able to work."

Appendix D

Sample Statements Drawn From Focus Group Transcripts

Work Role Overload

If I hear the phrase "more with less" one more time I'm going to scream.

I was gone for two weeks and I had 169 e-mails, 19 of which dealt with me. The other 150 were nothing.

The job hasn't changed that much. The focus of the job . . . is a little different, we are the Forces and we move and deploy and we have exercises. So generally speaking the focus hasn't changed, we still have to work, and it's just that with less people we are still doing the same work.

. . . I would not pretend to say that our unit is any worse off than anyone else. I would certainly say that from my experience over the last couple years that the workload is killing people right now.

. . . the work piles up, so when you come back you've got even twice as much to do and I think just constantly feel that you are falling further and further behind, and it doesn't matter how many hours you put in.

Work Role Ambiguity

No one tells you your benefits, your rights or what you are entitled to. You have to dig it out yourself and, when you are younger, you don't really care about that. You just go, yeah whatever, lets go.

When I first got here, they said 'There's your desk,' and I said 'Well what do I do?' And they said 'Don't know, the guy has been gone for three months.' I started rooting through the desk drawers trying to figure out what this guy used to do. Fortunately, very fortunately, he left a book, a changeover book for the next guy. So I started flipping through that, started phoning phone numbers that didn't exist any more. It took me three to four months just to figure out what this guy did.

You take guys who fly their whole career, say a Captain, the guy flies all his career and he has absolutely no idea how to do a staff officer job, and all of a sudden bang, there, you are now a staff officer. How the heck do I become a staff officer? When I first got here they said you're a staff officer, and I said what the heck is a staff officer? I didn't have a clue how to do all this stuff. I had no training in it whatsoever. Maybe five years from now it will be very good, but right now, from what I hear they are not sure. They tell you something and then three days later things seem to change.

We don't know where we are going. We're not sure that people have done this before.

Hierarchical Cohesion

. . . you have two different bosses to begin with, the Air Reserves and the person you are working for. So your loyalties are split to begin with.

We had a really good shift and a new guy comes in, says I don't like it, so he changes it. So, for one guy to be happy it pisses off the entire crew.

. . . every time there is a new Major. They walk in and change the whole schedule. They don't ask people what they like or whether . . . it just doubled the mileage of my lease car and doubled my gas mileage . . . because I'm here seven days in a row instead of four. So for a lot of people it just doubled their babysitting fees and stuff. This . . . is just the way he's used to it and it's what he likes. He's never even there! He works Monday to Friday!

If they get a chance to screw you they will . . . 80% of the people I talk to say that. We have no faith whatsoever.

We have a higher rank who is retiring and they . . . collected money to buy a plaque for this higher up. They collected [from] eighty people $24.52 . . . they said this is for so and so's retirement plaque and they said I don't think so and walked away . . . And they gathered up all together at the end of the week and said we need money, and everybody looked at him and looked at each other, and one person got up and got a loony and gave it to him. I remember a couple of years ago we would have all donated just for the hell of it, just to keep the peace.

Peer Cohesion

I think one of the key things is when a person goes to a job, military or civilian. It's how you are treated that first day. Whether they are shown around, and you start off with a positive or negative attitude. Even though you are going to a great job, you could start off with a negative attitude. It could take a while to swing back over to the positive.

We got two or three maintenance crews . . . and they can all work together and we can look at our stats, they're great.

I'm not going to rush and make sure this plane is fixed on time, however if you provide everybody with the same thing, then . . . we are all in the same boat, let's work together and prepare that airplane.

Morale

We are trying to invest morale in Quality of Life, cutting money out of it is not necessarily for the good.

All the advantages we used to have before that are eaten away as the budget [receives] cuts. I thought the Army was bad, but the Air Force is even worse.

. . . there is a lack of basic things that you should have. We are near where the planes park. We have no rest area, no washroom. It's like you don't have basic necessities. You have to walk halfway across the hangar to go to the bathroom. So you have 10 minutes to eat, before the next plane comes in, you don't even have time to wash your hands . . . but we can afford for every bloody office to have a new computer and $600.00 chairs. The priorities are very screwed up. Everybody has new office furniture and air conditioners. Little things like that.

. . . it all comes back to business planning. It's affecting morale on the unit because it just never stops . . . It's even affecting morale on some of the courses.

Perception of Leadership

We basically have to go with the decisions that are made, done, and sometimes they don't even come down to ask our opinion.

The Commanding Officer looks around and says, you Captain, come here, you are my new Administration Officer, there you go. You may have taken engineering degrees and masters degrees and whatever, you are being employed in a very inefficient manner . . .

. . . one Sgt told a crew to do one thing and the other Sgt picks up the phone and tells them to do something else . . .

You can wait an eternity for a decision to be made. You can sit for hours and wait for someone to make a decision.

I have an excellent issue. We had, well he came in very close, he almost crashed. It was an extremely tight siuation, it was very stressful for him to pull through. We landed in England and the English supplied the stress management team . . . We had a big discussion about it. And we were received by the British RAF very well, and they handled the whole situation. We came back to Canada, we got back here and it was a totally different treatment. It was like, why did you let this happen? The onus was all put on us. It was your fault, your problem. Of the crew I flew with, there are only three people left on the squadron. The entire company took their release and other guys took postings to ground positions. There was a 100% 500 PSI to the chest when we got back to Canada.

Satisfaction

There's been a lot of positive things too, I think, over the past few years within the military. . . things that have changed, things that have evolved, to improve our Quality of Life.

You have to be able to have a good sense of humor. You have to be able to look at something and say what the hell are they doing with that? Otherwise you get depressed.

Sometimes when you complain people will say OK, I'll make them happy and make a decision, but then that is only 50% of people you satisfy, the other 50% is looking at it the other way and saying who made that stupid decision? So you can't satisfy everyone.

Dissatisfaction

When it comes down to dollars and cents it becomes a business issue then. So we can either train our people to be more efficient or we can keep thundering through the mud and wasting this money.

I came from a flying squadron and I fought tooth and nail not to come here, and I lost, obviously.

I think environmental considerations, lighting, air quality, there's a big thing about negative ions from computers affecting people. All these things that are negatively affecting our workplace. I think there should be a study on it, because I know the lighting is not the best.

. . . because there isn't enough money to give everyone everything then the immediate answer is to give everyone nothing.

. . . two units in the same Wing deploy. Some units providing support to other units. One unit is living in quarters provided meals and all that stuff, and the TD is $4.00 a day. The other unit deploys and provides services. They live in hotels. The running rate is $117.00 a day. So two groups on the same piece of land, there are huge differences like that.

I just got out of school and I don't know if I am going to ever use my degree. Sometimes it makes you wonder you know. You study for four years and you just want to have an engineering degree but you don't really need to use it.

That is why some of my people . . . go to Nortel because they are able to work [with] modern technology. They have a 30 year career ahead of them, they just don't want to stagnate at 20 years with equipment that was developed before they were born.

I think another one of the dissatisfiers with anything that we had that [has] been taken away for example is the Pri 5 travel, or the ability to jump on an airplane and go someplace.

Block leave seems to be forced on people . . . you take this three weeks off in the summer. One squadron gets July, one gets August and it switches every year and . . . if you are married to someone who works, and they can't get that time off, you don't want to take three weeks there sitting at home.

. . . our crew has been told, you are taking block leave, but the last week of your leave you will be in the . . . area for possible deployment. So, even though I am on leave, I have to be here. I'm forced to take my leave but I have to stay in the area just in case.

Getting back to the three month tours I did in Macedonia . . . We had a room, probably about this size right here and 30 guys lived there . . . we weren't allowed to shower any more than once a week . . . our laundry was taken away once every 11 days. There's no heat in the buildings in Macedonia, they shut down the heat at night . . . The food they gave us was catered . . . through Escopia and wasn't fit to eat. It was garbage. The Serbs would throw the food on the plate by hand.

Performance

I've seen attitudes like I'm not going to take this anymore and things like that. I'm sure that will influence the performance.

We in the military still have the possibility for promotion so that drives people a lot.

There's information overload, yet I am yelling that nobody tells me things. If they told me, I am not sure I would read it or whatever. It's hard to do a good job in anything.

If there is a tragedy within the country, ice storm in Ottawa and Quebec, or floods in Winnipeg, then it's fine. The Armed Forces will come and they will support and they will help out . . .

. . . .the reason why things are getting accomplished now, is because of the quality of the people who are in. The determination and pride that people take in their uniform, their job and their

performance, is what is making up for all the things that fall apart and the lack of support or the lack of leadership and the lack of vision.

I mean the military doesn't make anything, we are not productive to society, we maintain the peace and security of society . . . But if this was a business I would say that we are beyond bankruptcy. It's very disturbing to see what's happening.

We make things look like they are working because we put so much effort into it, and we have that can do attitude and we'll make it happen attitude, whereas perhaps in another organization people will just say stop, this is not going to happen.

Appendix E

Informed Consent for Study Two

DEPARTMENT OF PSYCHOLOGY
Queen's University
Kingston, Canada
K7L 3N6

Date, 2000

Dear AIRCOM member:

We are currently involved in a research project assessing a number of different factors within the workplace. This study has been endorsed by AIRCOM and has received technical and ethical approval from the Department of Psychology at Queen's University. The results obtained will form the basis for a PhD Dissertation, but the findings from this, and other administrations, will be used by AIRCOM as a guide for improving your work environment. For this purpose we request that you complete the enclosed questionnaire, it should not take more than a half hour.

Should you choose to complete the questionnaire, please be assured that individual responses will NOT be made public. Confidentiality will be ensured by only producing statistical summaries of the responses provided. A copy of the final report, in thesis format, will be made available at the Department of Psychology library for anyone wishing to read it. A separate report will be produced for AIRCOM and this report will be distributed throughout the CF.

Please note that your participation is completely voluntary, and by returning the questionnaire you are giving your consent to be included in the study. In any event, questions, concerns or complaints may be directed to either Dr. Leandre Fabrigar (613-533-6492) or Dr. Alistair MacLean, Head of the Department of Psychology (613-533-2480).

If possible, please complete and return this questionnaire within two (2) weeks from the time that you receive it. Thank you in advance for participating in this research. Your involvement is appreciated.

Yours sincerely,

Allister T. MacIntyre
PhD Candidate

Leandre Fabrigar, Ph.D.
Assistant Professor

Air Command Unit Climate Questionnaire

Dear AIRCOM member:

You have been selected through a random stratified sampling procedure, to participate in an Air Command (I Canadian Air Division) wide survey.

The purpose of this letter is to stress the importance of your participation. I understand that you are all busy, and the time needed to complete the survey will be an inconvenience. However, I can offer you my assurance that your input is critical. This survey will provide invaluable information that will impact the future direction of Air Command. Through your participation, you can become a change agent in our ongoing effort to improve your quality of life.

This survey is just one part of a larger study examining critical factors that have an impact on climate, performance, and satisfaction in the workplace. At the request of the Director Air Personnel Management and Services (D Air PM &S), the Director Human Resources Research and Evaluation (DHRRE), has undertaken the responsibility for project coordination. The primary research organization for this project has been Queen's University; in Kingston, Ontario, who has developed both the research protocol and the items contained in the questionnaire.

Please understand that **your participation in this survey is voluntary and by completing and returning the survey, you are giving your consent to be included in this research. Please be assured that individual responses will** NOT **be made public. Producing only aggregate data of the responses provided will ensure confidentiality. The reporting of aggregate date will not permit identification of individual personnel. I** hope that you will agree that taking time to complete the survey is time well spent. **As acknowledgment of the importance if this endeavor, you are authorized to complete the survey during work hours, if you so desire.**

Your contribution to this research is extremely important. I extend my thanks, in advance, for your participation.

Lieutenant-General
Lloyd C. Campbell CMM, CD
Commander of Air Command and
Chief of Air Staff
NDHQ, Ottawa, Ontario

Unit Climate Profile Questionnaire - English

Dear AIRCOM member:

We are currently involved in a research project assessing a number of different factors within the workplace. This study has been endorsed by AIRCOM and has received technical and ethical approval from the Department of Psychology at Queen's University. The results obtained will form the basis for a PhD Dissertation, but the findings from this, and other administrations, will be used by AIRCOM as a guide for improving your work environment. For this purpose we request that you complete the enclosed questionnaire, it should not take more than a half hour.

Should you choose to complete the questionnaire, please be assured that individual responses will NOT be made public. Confidentiality will be ensured by only producing statistical summaries of the responses provided. A copy of the final report, in thesis format, will be made available at the Department of Psychology library for anyone wishing to read it. A separate report will be produced for AIRCOM and this report will be distributed throughout the CF.

Please note that your participation is completely voluntary, and by returning the questionnaire you are giving your consent to be included in the study. In any event, questions, concerns or complaints may be directed to: Allister MacIntyre (613-545-9699); Dr. Leandre Fabrigar (613-533-6492); or Dr. Alistair MacLean, Head of the Department of Psychology (613-533-2480).

If possible, please complete and return this questionnaire within two (2) weeks from the time that you receive it. Thank you in advance for participating in this research, your involvement is appreciated.

Yours sincerely,

Allister T. MacIntyre
PhD Candidate

Leandre Fabrigar, Ph.D.
Assistant Professor

I have read and understand the above. I choose to participate in this study.

_____
Signature

Air Command Unit Climate Questionnaire

Introduction and Instructions

During May and June of this year 24 focus groups were held in units throughout Air Command. The participants in these groups ranged from Private to Lieutenant Colonel and included a mix of Regular Force, Reserve, and civilian personnel. The groups also included members from both official language groups, both genders, and various members from visible minority groups. You may have heard about these groups, or even participated in one of the groups.

The items in this questionnaire were generated from these sessions and the issues addressed are those that emerge as being critical for Air Command members. By completing this questionnaire, your responses, in conjunction with responses from other members within Air Command, will allow us to provide Commanders at the Wing level within the Air Force with insights into a number of workplace factors. These factors include: the effectiveness of all levels of leadership; an indication of the level of cohesion and morale within working groups; indicators of a supportive work environment, including support to and effective management of diverse work teams; work effectiveness and satisfaction; and a better understanding of the impact that workplace factors may be having on your families.

Two things are of critical importance with respect to this questionnaire. First, **your participation is very important**. It is only through the involvement of people like yourself that changes can be implemented to improve your working conditions. Second, please be assured that your responses will be treated with **the utmost respect for confidentiality**. Results will only be released in an aggregate manner to ensure that the anonymity of all participants is protected.

This questionnaire is not a test, so there are no right or wrong answers. However, it is important that your answers reflect your experience and opinions as faithfully as possible, be they positive or negative. Read each statement carefully and answer directly on the questionnaire. Using an HB lead pencil, circle the response that corresponds to your answer or write your answer in the designated location. If you wish to change an answer, you may either completely erase your original response or place an **X** through the answer that you do NOT want recorded. When answering the items that pertain to your work (hours, responsibilities, supervision, etc.) please use your current job as your point of reference. It is understood that your answers will change from posting to posting, we are most interested in your present working conditions rather than a more global impression of the Canadian Forces.

It should not take more that 30 - 40 minutes to complete this questionnaire. To help us complete the questionnaire within the optimum time frame, please return your completed survey within two (2) weeks of receiving it (using the enclosed stamped and addressed envelope).

Once again, thank you for your cooperation.

Unit Climate Profile Questionnaire - French

Cher membre du Commandement aérien,

Nous sommes présentement impliqués dans un projet visant à évaluer divers facteurs reliés aux milieu de travail. Cette étude a été approuvée par le Commandement aérien (CAIR) et par le Département de Psychologie de l'Université Queen's à Kingston. Les résultats obtenus serviront de base à une dissertation de doctorat et de guide pour le CAIR dans le but d'améliorer l'environnement de travail. À cette fin, nous vous demandons de bien vouloir prendre environ 30 minutes de votre temps pour remplir le questionnaire ci-inclus.

Votre participation est volontaire et nous assurons la confidentialité de vos réponses. Cependant, en nous retournant le questionnaire dûment rempli, nous prendrons pour acquis que vous consentez à ce que vos réponses servent aux fins de cette étude. Les réponses serviront uniquement à produire un rapport statistique des résultats. Les lecteurs intéressés pourront consulter le rapport final soit à la bibliothèque du département de psychologie de l'Université Queen's ou par l'entremise du CAIR qui en fera circuler une copie à travers les Forces canadiennes.

Pour de plus amples renseignements, n'hésiter pas à vous adresser aux personnes suivantes: Allister MacIntyre (613-545-9699); Dr Leandre Fabrigar (613-533-6492); Dr Alistair MacLean, Chef du Département de Psychologie (613-533-2480).

Nous vous serions très reconnaissant de bien vouloir compléter ce questionnaire dans les deux semaines suivant la date de réception. Je tiens à vous remercier cordialement de votre participation à ce sondage.

Bien à vous,

Allister T. MacIntyre
Étudiant au doctorat en philosophie

Lee Fabrigar, PhD
Professeur associé de psychologie

J'ai lu et compris l'information ci-haut et je consens à participer à cette étude.

Signature _____

QUESTIONNAIRE SUR LE CLIMAT DE TRAVAIL DES UNITÉS DU CAIR

Introduction et instructions

Au cours des mois de mai et juin de cette année, 24 groupes furent formés à l'intérieur des unités du Commandement aérien. Le grade des participants variait de soldat à lieutenant-colonel. Les groupes étaient constitués d'un mélange des membres de la Force régulière, de la Réserve, ainsi que du personnel civil. Les deux langues officielles étaient représentées ainsi que les membres des deux sexes et des groupes minoritaires. Vous avez peut-être eu connaissance de l'existence de ces groupes ou même fait partie de l'un d'eux.

Suite à ces rencontres, nous avons élaboré le questionnaire ci-joint. L'objectif du questionnaire est d'identifier le climat de travail des unités du Commandement aérien. Les sujets abordés dans le questionnaire sont les plus importants selon les membres du CAIR qui ont participé aux rencontres. Les questions porteront sur les sujets suivants: l'efficacité au niveau de la direction; un indice du taux de cohésion et du moral dans les groupes de travail; indice du soutien dans le milieu de travail, incluant le support et l'efficacité des superviseurs envers les équipes de travail; la satisfaction et l'efficacité au travail; et une meilleure compréhension de l'impact que l'environnement de travail peut avoir sur vos familles. En remplissant ce questionnaire, vos réponses et celles des autres membres du Commandement aérien nous permettrons de fournir aux officiers commandants de l'Aviation un aperçu des différents facteurs affectant le milieu de travail.

Cette étude est très importance. Votre participation est donc essentielle et peut contribuer à améliorer votre milieu de travail. De plus, tel que cité plus haut, les résultats seront exprimés en termes généraux afin d'assurer l'anonymat des participants. Ce questionnaire n'est pas un examen et par conséquent, il n'y a pas de bonnes ou mauvaises réponses. Cependant, il est important que vos réponses reflètent véritablement votre expérience et votre opinion. En fait, nous sommes intéressés à vos conditions de travail actuelles plutôt qu'à une impression globale des Forces canadiennes.

Lisez chaque item attentivement et répondez directement sur le questionnaire en utilisant un crayon HB. Vous devez encercler le chiffre qui correspond le mieux à votre opinion ou écrire votre réponse à l'endroit désigné. Si vous désirez changer une réponse, vous pouvez l'effacer ou placer un X sur celle qui n'est pas bonne. Lorsque que vous répondez aux items ayant rapport à votre travail (heures, responsabilités, supervision, etc.), veuillez vous servir de votre emploi actuel comme point de référence.

Ce questionnaire peut généralement être complété en moins de 40 minutes. Vous trouverez ci-joint une enveloppe pré-affranchie. S'il vous plait, veuillez nous faire parvenir votre questionnaire complété dans une période de deux semaines suivant sa date de réception. Votre rapidité à nous faire parvenir vos réponses est grandement appréciée.

Appendix F

Questionnaires Used in the Current Study

Perception of Immediate Leadership

1. I respect my immediate supervisor.
2. I trust my immediate supervisor.
3. My immediate supervisor encourages us to do our best.
4. My immediate supervisor maintains high standards of performance.
5. My immediate supervisor puts suggestions into operation.
6. My immediate supervisor offers new ideas for solving job-related problems.
7. My immediate supervisor brings out the best in me.
8. My immediate supervisor gets results at work.
9. I know that I can count on my supervisor if I have a problem on the job.

Sample 1 alpha = .94 Sample 2 alpha = .93 Franco alpha = .93 Anglo alpha = .94

Respect for Senior Leadership

1. There is a real lack of leadership in the military today. (R)
2. It seems like someone has to die before our leaders notice that something needs to be fixed. (R)
3. The senior leaders don't really know about problems further down the chain because they are sheltered from a lot of the bad information. (R)
4. We don't have leaders anymore, we just have managers. (R)
5. Sometimes it is hard to figure out who is really in charge. (R)
6. The communication up and down the chain of command is excellent.
7. The middle managers know what is going on but that is where the information flow stops. (R)
8. We hear about decisions without anyone ever explaining why the decisions were made. (R)
9. There doesn't seem to be any long term planning in the military. (R)
10. The lower you go in the chain of command, the more dissatisfaction you are going to find. (R)

Sample 1 alpha = .86 Sample 2 alpha = .86 Franco alpha = .84 Anglo alpha = .87

Group Cohesion

1. In my unit we stick together no matter what.
2. The people in my unit encourage each other to work together as a team.
3. There is a lot of togetherness among the personnel where I work.
4. Unfortunately, the people in my unit do not really get along very well. (R)
5. I would never describe my unit as being like one big happy family. (R)
6. The people in my unit care about what happens to each other.
7. If we were going to war, I would rather go with my unit than any other.

Sample 1 alpha = .87 Sample 2 alpha = .89 Franco alpha = .87 Anglo alpha = .89

Individual Satisfaction

1. I enjoy working in my present unit.
2. I like the work in my current position.
3. My work is interesting.
4. It feels good to be part of my unit.
5. In general, I am happy with my work environment.
6. My work is exciting.
7. There are many things about my job that makes me happy.
8. I don't like going to work in the morning. (R)
9. I would rather work where I am than any other place.
10. In my current employment I use the full range of my abilities.
11. The people in my unit are proud of where they work.
12. My current posting utilizes my skills and training.
13. I was lucky to have received this posting.

Sample 1 alpha = .90 Sample 2 alpha = .91 Franco alpha = .90 Anglo alpha = .91

Institutional Satisfaction

1. Military careers are becoming shorter and shorter because people are getting frustrated. (R)
2. The only reason that there isn't a mass exodus from the CF right now is because people are hanging on until they are pensionable. (R)
3. It seems as though people are leaving the CF faster than we can replace them. (R)
4. During deployments, the CF ends up doing the lions share of the work with the least amount of tools. (R)
5. There are too many inequities built into our present system. (R)
6. People are saying I don't need this, my mental and physical health is not worth this job. (R)
7. It is discouraging that, because of downsizing, we have lost so many of our support personnel (R)
8. Pay raises in the CF are too few and far between. (R)
9. We are not paid enough for what we do. (R)
10. It is upsetting that different units seem to have different privileges (R)

Sample 1 alpha = .76 Sample 2 alpha = .77 Franco alpha = .73 Anglo alpha = .78

Role Overload

1. There just aren't enough hours in the day to do everything we have to do.
2. There is so much work right now that I have to give it everything I have just to keep my head above water.
3. The workload in my unit is quite reasonable (R).
4. The workload in my unit is quite manageable, so it is easy to take time off (R).
5. I don't mind taking leave because I know things will not pile up while I am away (R).
6. I can't remember the last time I felt like my work was all caught up.
7. I can usually get my job done without having to stay late or take the work home (R).
8. It often seems like I have too much work for one person to do.
9. We are fortunate in my unit because we have enough people to handle all the tasks we receive (R).
10. The workload has reached a point where people are just expected to work late.
11. I am given enough time to do what is expected of me on my job (R).
12. Where I work people are so busy that they take their annual leave but still go to work.
13. I don't know how much longer I will be able to handle the amount of work that I am faced with every day.

Sample 1 alpha = .93 Sample 2 alpha = .93 Franco alpha = .92 Anglo alpha = .94

Role Ambiguity

1. I know exactly what is expected of me. (R)
2. Explanation is clear of what has to be done. (R)
3. I know what my responsibilities are. (R)
4. Clear, planned goals and objectives exist for my job. (R)
5. It is easy to maintain a level of excellence in my unit because we are given the tools to do the job right. (R)
6. My job description does not reflect what I really do from day to day.
7. Our jobs in the military used to be well defined, that just isn't the case any more.
8. I work on unnecessary things.
9. I have never seen a job description for my position.
10. I have to buck a rule or policy to carry out an assignment.

Sample 1 alpha = .81 Sample 2 alpha = .82 Franco alpha = .78 Anglo alpha = .83

Perception of Group Performance

1. I am proud of the amount of work we get done in my unit.
2. The people where I work are competent, hard working, and productive.
3. Even during high stress situations the people in my unit are able to perform effectively.
4. The members of my unit have a knack for making things happen, no matter how badly things are screwed up.
5. If there was a prize in my Wing for "Most productive unit," my unit would win it hands down.
6. The work output in my unit is so low that if we were a civilian company we would go broke. (R)
7. The people in my unit work more efficiently than most other units.
8. I am often surprised by how quickly the people in my unit are able to work.

Sample 1 alpha = .84 Sample 2 alpha = .84 Franco alpha = .79 Anglo alpha = .85

Perception of Individual Performance

1. I find that I don't give the same service that I used to. (R)
2. In my unit it is difficult to maintain our operational capabilities because we have a fraction of the people we used to have. (R)
3. Every time you turn around in my unit, someone has developed a new system that doesn't work. (R)
4. In my unit we try to do good work but it is hard to hit the target when the target keeps moving. (R)
5. I no longer feel motivated to work as hard as I used to. (R)
6. It is hard for me to feel satisfied at the end of a work day because I never seem to get the things done that I want to get done. (R)

Franco alpha = .70 Anglo alpha = .74

Organizational Commitment Questionnaire (OCQ)

1. I am willing to put in a great deal of effort beyond that normally expected in order to help the Canadian Forces be successful.
2. I speak highly of the Canadian Forces to my friends as a great organization to work for.
3. I feel very little loyalty to the Canadian Forces.
4. I would accept almost any type of job assignment in order to keep working for the Canadian Forces.
5. I find that my values and the Canadian Forces's values are very similar.
6. I am proud to tell others that I am part of the Canadian Forces.
7. I could just as well be working for a different organization as long as the type of work was similar.
8. The Canadian Forces really inspires the very best of me in the way of job performance.
9. It would take very little change in my present circumstances to cause me to leave the Canadian Forces.
10. I am extremely glad that I chose the Canadian Forces to work for, over other organizations I was considering at the time I joined.
11. There's not too much to be gained by sticking with the Canadian Forces indefinitely.
12. Often, I find it difficult to agree with the Canadian Forces' policies on important matters relating to its employees.
13. I really care about the fate of the Canadian Forces.
14. For me this is the best possible of all organizations for which to work.
15. Deciding to work for the Canadian Forces was a definite mistake on my part.

Current study alpha = .90

Appendix G

Model Exogenous Correlations

Restricted Effects Model

Variable	Role Ambiguity	Role Overload	Group Cohesion	Direct Leader	Indirect Leader
Role Ambiguity	-	-	-	-	-
Role Overload	.49	-	-	-	-
Group Cohesion	-.54	-.15	-	-	-
Direct Leader	-.52	-.12	.54	-	-
Indirect Leader	-.68	-.34	.59	.50	-

Expanded Effects Model

Variable	Role Ambiguity	Role Overload	Group Cohesion	Direct Leader	Indirect Leader
Role Ambiguity	-	-	-	-	-
Role Overload	.49	-	-	-	-
Group Cohesion	-.55	-.14	-	-	-
Direct Leader	-.52	-.11	.55	-	-
Indirect Leader	-.68	-.37	.59	.49	-

Final Model

Variable	Role Ambiguity	Role Overload	Group Cohesion	Direct Leader	Indirect Leader
Role Ambiguity	-	-	-	-	-
Role Overload	.49	-	-	-	-
Group Cohesion	-.56	-.14	-	-	-
Direct Leader	-.52	-.11	.54	-	-
Indirect Leader	-.70	-.37	.58	.48	-

All correlations presented are significant $p < .01$.