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**The Relation Between Group-Level Characteristics
and Group Cohesion**

Mikael Salo
Finnish National Defence College



Force Stabilization Research Unit
Linnea Ruth, Chief

November 2006

**United States Army Research Institute
for the Behavioral and Social Sciences**

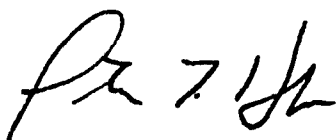
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THE RELATION BETWEEN GROUP-LEVEL CHARACTERISTICS AND GROUP COHESION

EXECUTIVE SUMMARY

Research Requirement:

Even though cohesion is considered a group level construct, most research on cohesion has been focused at the individual respondent level. The research described in this report examines cohesion from a group level perspective. However, data were of necessity collected at the individual Soldier level and then aggregated to the platoon level. This report on the research has three main objectives: a) to describe platoon differences on cohesiveness in the sample, b) to identify background variables that predict or seem to lead to platoon cohesion, and c) to determine the extent to which the degree of cohesiveness and other group-level characteristics are related to training performance and selected attitudinal and behavioral outcomes.

Procedure:

Two Finnish language questionnaires were administered to conscripts in the Finnish Defence Forces near the end of their conscript training period (English translations were done by the author). Most of the questionnaire items concerned opinions and attitudes and were responded to by using a 5-point Likert scale varying from a strongly negative answer to a strongly positive one (scored from 1 to 5) or vice versa. Prior to or during the service, background information was collected about the conscripts' education, mental and physical aptitude, rank, and period of service. The number of doctor appointments during service, the number of medical exemptions from training, and socio-economical data were also obtained through questionnaires and records.

All respondents were inducted in 2001 to an armored brigade in south-central Finland to serve their compulsory six months (minimum) to twelve months conscript service. The length of service depended on the type and amount of training received. The focus sample consisted of 514 conscripts from 21 platoons in seven units. Ninety percent of the conscripts were 19-20 years old, 2 percent were 18 year olds, and 8 percent were 21-28 year olds. Eight conscripts were female volunteers. All were White. At the end of conscript service, 55 percent of conscripts were still privates, 34 percent were lance corporals or corporals, 6 percent were sergeants, and five percent of conscripts had been promoted to platoon leader. The period of service for 45 percent of the conscripts was six months, for 5 percent it was nine months, and for 50 percent it was twelve months.

Findings:

At the group level, the means for the 21 platoons on the cohesion component scales (peer bonding, leader bonding, organizational bonding, and institutional bonding) were 3.6 - 3.7 on a five-point scale, with standard deviations from .4 - .5. A comparison of platoons low on the cohesion component scales with those high on the scales showed that the largest differences

between these two sets of platoons were in terms of expected group performance and instructor-rated average individual performance; the high cohesion platoons had means about .7 (on the five-point scales) higher than the low cohesion platoons on these two important performance criteria.

Overall, few demographic and background predictors correlated with the cohesion component scales. The major exceptions at the platoon level were that mean rank, length of conscript service selected, "intelligence" aptitude, and social skills aptitude were all significantly correlated to platoon mean peer bonding. Likewise, mean rank, physical fitness, age, and high school grade point average were correlated significantly with leader bonding. Mean platoon intelligence aptitude correlated with organizational bonding significantly, and age and social skills aptitude correlated well with institutional bonding.

At the platoon level, peer bonding was significantly correlated with expected group performance ($r = .49$), expected personal performance ($r = .56$), and instructor-rated average individual performance ($r = .64$) as well as good conduct ($r = .44$). Leader bonding was significantly correlated with expected group performance ($r = .58$), expected personal performance ($r = .82$), attitude towards future refresher training ($r = .61$), and good conduct ($r = .48$). Organizational bonding was correlated with expected group performance ($r = .54$), expected personal performance ($r = .44$), and instructor-rated average individual performance ($r = .50$) as well as receiving fewer disciplinary reprimands ($r = .47$). Finally, Institutional bonding was correlated with instructor-rated average individual performance ($r = .44$) as well as positive career intentions ($r = .49$), attitude towards future refresher training ($r = .60$), attitudes toward national defense ($r = .54$), and good conduct ($r = .46$). Generally, the peer bonding, leader bonding, and organizational bonding had strong correlations with the performance criteria while institutional bonding had strong correlations with the attitudinal criteria.

Utilization and Dissemination of Findings:

The description of group level characteristics and group cohesion in the Finnish Defence Forces sample, and the determination of the variables that relate to cohesion and appear affected by it, increases the understanding of cohesion and group structure, which can be of use in further designing programs to enhance cohesion and improve leadership. The U.S. Army will be able to use the research results primarily in comparison with its data, to increase understanding of the processes impacting on group cohesion and interpreting research results derived from data collected on its Soldiers at the group level.

THE RELATION BETWEEN GROUP-LEVEL CHARACTERISTICS AND GROUP COHESION

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The Relation Between Group-Level Characteristics and Group Cohesion

Even though cohesion is considered a group level construct, most research on cohesion has been focused at the individual respondent level. The research described in this report examines cohesion from a group level perspective. However, data were of necessity collected at the individual Soldier level and then aggregated to the platoon level. This report on the research has three main objectives: a) to describe platoon differences on cohesiveness in the sample, b) to identify background variables that predict or seem to lead to platoon cohesion, and c) to determine the extent to which the degree of cohesiveness and other group-level characteristics are related to training performance and selected attitudinal and behavioral outcomes. The results of the research are intended to provide information that might be used to foster and support primary and secondary group cohesion in platoon-sized military groups.

Military Unit Cohesion

Primary and Secondary Group Cohesion

Cohesion consists of several components based on different structural relationships—horizontal or peer bonding among members at the same hierarchical level (e.g., squad or group members), vertical bonding between those at different levels (e.g., between squad or group members and their leaders), organizational bonding (e.g., between Soldiers and their organizational units), and institutional bonding (e.g., between group members and their military branch of service as a whole). Each type of bonding has been considered to have two aspects: affective (an emotional / reactive side) and instrumental (a task / proactive side) (Griffith, 1988; Siebold & Kelly, 1988; Salo & Siebold, 2006).

Cohesion research has often examined only part of the set of components such as a focus on just primary group (peer and leader) bonding or only one aspect such as a focus on either affective or task cohesion. Generally, secondary group bonding (organizational and institutional) has been neglected in cohesion research designs. This report includes and makes use of a clear distinction between primary and secondary group cohesion. In the analysis for this report, then, military group cohesion is considered to be the bonding (i.e., positive social relationships, including both affective and instrumental aspects) a) among the service members and with their immediate leaders in their primary group (squads and platoons) and b) with their secondary group organization (i.e., company) and with their military service at the institutional level (i.e., Army/military service).

The *primary group* (Cooley, 1909/1962) in military service is usually a squad to platoon size unit which is typified by cooperative, holistic, supportive, face-to-face relationships involving particularistic criteria and that extend over time. The social relationships involved in peer group and vertical bonding are based on direct personal interactions in relatively closed networks and are controlled by a strong normative influence. On the other hand, in the immediate *secondary group*, outside of the primary group, members know each other typically by name and face but not necessarily in much depth beyond the role or position a member occupies. Over time in a relatively stabilized unit, the social horizon (i.e., knowledge and perspective) of a squad member extends beyond the primary group further into the higher and

wider levels of the secondary group. For most service members the immediate secondary group is usually represented by the company, somewhat by the battalion level, and to a lesser degree by the brigade or regimental level.

Organizational bonding refers to the social integration of service members in squads and platoons with the next higher level of military organization (i.e., company). The immediate secondary group provides a sense of purpose and meaningfulness by denoting specific directions, goals, and information, including scheduling prioritized activities and assigning the resources to carry them out. This level also sets the unit culture and climate under which service members live and operate while on and, to a lesser degree, off duty. The immediate secondary group provides the service members with housing, food, access to medical treatment, equipment, and supplies as well as a recognizable unit in which they can have pride and with which they can identify. In the secondary group, the organizational bonding or cohesion is based on formal and informal relationships that tend to be more impersonal and based on organizational goals and exchanges.

Institutional bonding relates to the social integration of service members with the larger military institution (e.g., the Army) (Gal, 1985; Gal, Fishof, & Geva, 1987; Henderson, 1985; Moskos, 1977) to which the primary and organizational level groupings belong. The institution represents a relatively stable structure of specialized positions, roles, groups, organizations, and social operations that carry out the major social function of national defense. The institution provides a general sense of purpose and meaningfulness that is linked to the larger (usually national) society and culture. This institutional level sets the general conditions under which the immediate secondary groups, primary groups, and service members live and function. The institution provides the service members with structures for pay and benefits, training progression, career patterns, and general standards of behavior besides allotting the funding and other resources to lower secondary groups. The institutional level is the largest meaningful military context for most service members.

Little research has included institutional bonding or the differential impact of different types of cohesion on different criteria. Also, there have been few efforts to distinguish primary group relationships from those at the secondary level. Furthermore, there are only a few studies comparing primary group cohesion in groups including secondary group factors in their research design. Therefore, this report tries to increase the knowledge about predictors of cohesion components in a military setting (in platoons) and to identify the impact of primary and secondary group cohesion and platoon differences on criteria.

Group-Level Predictors of Cohesion

Group composition and structure are argued to be important antecedents to cohesion (Griffith & Vaitkus, 1999). For instance, the appropriate whole mix of group members' individual traits (group personality composition) is shown to be required for successful group performance (Barrick, Stewart, Neubert, & Mount, 1998; Halfhill, Nielsen, Sundstrom, & Weilbaeher, 2005). The social aspect of groups (especially *social support*) may be the last fiber keeping fighting unit members together under excessive stress (Ingraham & Manning, 1981; Shils & Janowitz, 1948), and it is also a key predictor of cohesion (Griffith 1989, 2002). Social

support both protects against stressful conditions by helping a person to cope and adjust and enables creating further supportive interpersonal relationships (Griffith & Vaitkus, 1999).

Good (primary and secondary group) *leadership* has demonstrated itself to be a positive facilitator of organizational bonding, particularly in creating a meaningful context, sense of purpose, pride, and positive cultural infra-structure. Leaders articulate and model values, norms, and activities and act as links to the same or higher or lower hierarchical level groupings and may aid social integration of the group with the hierarchy (Bartone & Kirkland, 1991).

Well-rooted, shared organizational *goals* support peer bonding (Bartone & Kirkland, 1991) but, even more, provide a sense of purpose that increases organizational and institutional bonding (Gal, 1985; Griffith, 2002). An organization's *personnel management* (e.g., rewards, public recognitions, time-off, leave policies, and also punishment) influences cohesion and commitment (Bartone & Kirkland, 1991; Lindsay & Siebold, 1992). In military units not in combat, *training* is the main activity. Therefore when training tasks provide challenges, trainees are given information and feedback on their performance, and the training exercises are of high quality, training is positively related to cohesion (especially peer and leader bonding) and performance (Bartone & Adler, 1999; Bartone et al., 2002; Bartone & Kirkland, 1991). Overall, the *experiences* of Soldiers and groups moderate the extent to which Soldiers weigh different team behaviors (Baker & Salas, 1996). It is also argued that depersonalization, in-group formation, group *consensus*, and enhanced group *identification* would increase a group's cohesiveness (Hogg, 1992) and affect perceived combat readiness (Shamir, Branning, Zakay, & Popper, 2000). The positive effect of group identity on cohesion may rely on the process by which it directs and limits individual behavior (Brewer & Harasty, 1996) and creates a sense of commonality among members who share experiences.

Outcomes of Cohesion

The importance of cohesion, especially primary group bonding, is shown by many positive outcomes. The main argument for the importance of cohesion comes from its relation to performance. In meta-analyses combining several studies, cohesion was shown to be positively related to group performance (Evans & Dion, 1991 ($r = .42$); Gully, Devine, & Whitney, 1995 ($r = .27$); Mullen & Copper, 1994 ($r = .25$); Oliver, et al., 1999 ($r = .33$)), and even more related to group performance than to individual performance (Gully et al., 1995; Oliver et al., 1999).

Besides performance, cohesion is also related to several behavioral and attitudinal outcomes that are related especially with secondary group (organizational and institutional) bonding. Low job satisfaction, lack of performance motivation, disintegration, turnover intentions, social loafing, and discipline problems (e.g., Gal, Fishof, & Geva, 1987; Griffith, 2002) are present when group members do not have strong bonds with their organization or institution, although they may have good horizontal cohesion (cf. Little, 1964). Secondary group (organizational and institutional) bonding appears related to career intentions and turnover rates. In this current research, regarding criteria, the focus was on how the primary and secondary group cohesion components are related to performance, behavioral, and attitudinal criteria.

Method

Sample

All respondents were inducted in 2001 to an armored brigade in south-central Finland to serve their compulsory six months (minimum) to twelve months conscript service. The length of service depended on the type and amount of training received. The focus sample consisted of 514 conscripts from 21 platoons in seven units. Ninety percent of the conscripts were 19-20 years old, 2 percent were 18 year olds, and 8 percent were 21-28 year olds. Eight conscripts were female volunteers. All were White. At the end of conscript service, 55 percent of conscripts were still privates, 34 percent were lance corporals or corporals, 6 percent were sergeants, and five percent of conscripts had been promoted to platoon leader. The period of service for 45 percent of the conscripts was six months, for 5 percent it was nine months, and for 50 percent it was twelve months. After completing their 6 to 12 months conscript training, Soldiers were released from active duty and assigned to the reserves.

Questionnaire Administration

Two Finnish language questionnaires were administered near the end of the conscript training period (English translations were done by the author). Most of the questionnaire items concerned opinions and attitudes and were responded to by using a 5-point Likert scale varying from a strongly negative answer to a strongly positive one (scored from 1 to 5) or vice versa. Prior to or during the service, background information was collected about the conscripts' education, mental and physical aptitude, rank, and period of service. The number of doctor appointments during service, the number of medical exemptions from training, and socio-economical data were also obtained through questionnaires and records.

Measures

Based on the cohesion research literature and factor analyses of conscript responses to the questionnaires, scales measuring the main constructs of interest were developed. Specifically, in the factor analysis, items whose responses loaded strongly (e.g., $>.40$) on the same factor and which were thought to be related to one another by the literature and interviews, were utilized as measures of over-arching constructs. Items from the questionnaires that did not load significantly on a factor or did not seem logically related to other items in the factor were excluded from the scales. For the major questionnaire scales and the individual items within them, the authors computed item means, item standard deviations, Cronbach's alpha (a measure of reliability), item-scale total correlations, scale means, and scale standard deviations. Some item responses were reverse coded so that higher item and scale scores in each case reflected more positive responses. Also, some individual background items, not part of the scales or factor analyses, were used in various analyses. Confirmation of the relative independence of the scales and separate items and their relative dominance within the variable set was carried out by Bayesian dependency modeling and analysis (see <http://b-course.hiit.fi>).

The level of bonding was determined for four types of bonding: a) peer, b) leader, c) organizational, and d) institutional (see Table 1). Every bonding level, although conceptually

distinct, was considered to be partially related to each other, so that the strength of one type of bonding is associated with the strength in the other components. By definition, each bonding component has affective and instrumental aspects. Thus, organizational bonding is an index constructed by the atmosphere in the unit (affective), pride in being part of the organization (affective), the competency (instrumental) and support of instructors (affective), and the utility of official goals and information (instrumental).

The peer and leader bonding scales included perceptions about both affective and instrumental aspects of bonding. Leader bonding subscales included items about the closest conscript leaders (squad and platoon leaders) to the conscript Soldiers. The secondary group cohesion included scales measuring organizational and institutional bonding. As noted above, organizational bonding was assessed by items about unit atmosphere, instructors, and the information and feedback that were provided. Instructors were from the permanent career training cadre whereas the lower level squad and platoon leaders, for leader bonding, were selected and trained from the preceding six-month contingent of new Soldiers. The institutional bonding scale included items about affective, normative, and continuance commitment. Other cohesion related scales covered perceptions of sociability, friendship, hazing, training quality and challenges, positive experiences, and adjustment to the military service.

In this research, commitment is connected to institutional bonding, where its main effect in the military is found. More precisely, institutional bonding includes affective, normative, and continuance commitment as they are defined in the (organizational) commitment literature (Allen, 2003; Meyer & Allen, 1984, 1997) and are consistently used (e.g., Gade, Tiggie, & Schumm, 2003; Heffner & Gade, 2003; Heffner & Rentsch, 2001; Karrasch, 2003; Tremble, Payne, Finch, & Bullis, 2003). Indeed, in a military organization, commitment is not concerned as much with a particular immediate hierarchical organization like a company or battalion as with the military or army as a whole (institutional bonding) (cf. measures of organizational commitment such as Meyer & Allen, 1997). The current research emphasized the difference between organizational bonding and institutional bonding-commitment, noting where commitment is targeted and based on the *institutional* vs. *occupational* debate started by Moskos (1977); institutional bonding is the term that is the more appropriate. Even in communities where the institutional level is weak or non-existent, where commitment is "occupational", the institutional bonding conceptualization of commitment can be useful.

Conscripts' perceptions of their own performance were formed into two criterion scales: *Group Performance* and *Personal Performance*. The Instructor's two ratings of conscript capability for wartime duties were averaged to form a third criterion scale: *Performance Ratings*. Attitudes towards military were assessed using four criterion scales: *Career Intentions*, *Refresher Training intentions*, *National Defense Attitudes*, and *Personal Growth* and development during military service. Soldiers' psychological well-being issues were examined using the *Mental State* and *Exemptions* scales as well as archival information about doctor appointments (see Table 1).

Table 1

*Cohesion Components and Outcome Variables—Individual Level (n = 514)***I Cohesion Component Scales****A. Peer Bonding** $\alpha = .84$; item-total r range = .49 - .62; $M = 3.66$; $SD = .75$.

1. In my squad I get help when I need it. $M = 3.9$; $SD = 1.02$
2. I feel appreciated in my squad / barrack room. $M = 3.6$; $SD = 1.00$
3. I can influence decisions made in my barrack room / squad. $M = 3.8$; $SD = 1.05$
4. My squad emphasizes common goals. $M = 3.1$; $SD = 1.18$
5. My current squad has a really good esprit de corps. $M = 3.8$; $SD = 1.07$
6. My platoon has a good esprit de corps. $M = 3.8$; $SD = 1.14$
7. In war my squad members would help me even if it would set them in danger. $M = 3.7$; $SD = 1.08$
8. In case of war, I would like to be in my current squad. $M = 3.6$; $SD = 1.22$

B. Leader Bonding $\alpha = .86$; item-total r range = .54 - .65; $M = 3.73$; $SD = .78$.

1. My squad leader has dealt fairly and straightforwardly with me. $M = 3.8$; $SD = 1.09$
2. On the whole my squad leader is a good person. $M = 3.7$; $SD = 1.18$
3. My squad leader masters his or her duties (weapons, equipments, management). $M = 3.7$; $SD = 1.04$
4. During a crisis I would like to work with my current squad leader. $M = 3.5$; $SD = 1.22$
5. My platoon leader has dealt fairly and straightforwardly with me. $M = 3.9$; $SD = 1.10$
6. On the whole my platoon leader is a good person. $M = 3.8$; $SD = 1.12$
7. My platoon leader masters his or her duties (weapons, equipments, management). $M = 3.8$; $SD = 1.01$
8. During a crisis I would like to work with my current (conscript) platoon leader. $M = 3.8$; $SD = 1.07$

C. Organizational Bonding $\alpha = .78$; item-total r range = .35 - .57; $M = 3.57$; $SD = .66$.

1. The atmosphere in my company / battery is good. $M = 3.6$; $SD = 1.12$
2. I am proud of my unit (company / battery). $M = 3.4$; $SD = 1.34$
3. I have been aware of whether I have achieved the goals of training. $M = 3.4$; $SD = 1.05$
4. After training, we were told what went well and what did not. $M = 3.7$; $SD = 1.12$
5. After training, an instructor has told my squad how well we performed. $M = 3.7$; $SD = 1.00$
6. Instructor's feedback has helped me understand how to perform. $M = 3.4$; $SD = 1.05$
7. The closest instructor has been really interested in and enthusiastic about training. $M = 3.2$; $SD = 1.19$
8. My closest instructor masters his duties. $M = 4.0$; $SD = 1.06$
9. My closest instructor has dealt fairly and straightforwardly with me. $M = 3.8$; $SD = 1.13$
10. During a crisis I would like to work with my current instructor. $M = 3.6$; $SD = 1.23$

Table 1 (continued)

D. Institutional Bonding $\alpha = .86$; item-total r range = .52 - .64; $M = 3.61$; $SD = .89$.

- | | |
|---|-------------------------|
| 1. Military service is useless and unnecessary. | $M = 3.6$; $SD = 1.17$ |
| 2. I am not interested in military service. | $M = 3.1$; $SD = 1.40$ |
| 3. Being in military service is important and significant to me. | $M = 3.1$; $SD = 1.35$ |
| 4. The military training I have received is important. | $M = 3.5$; $SD = 1.19$ |
| 5. I would have joined the military if serving had been on a voluntary basis. | $M = 2.8$; $SD = 1.47$ |
| 6. All men should carry out military service as a part of total defense. | $M = 4.0$; $SD = 1.27$ |
| 7. Military service is every male citizen's duty. | $M = 4.2$; $SD = 1.36$ |
| 8. I have considered applying to [alternative] civilian service. | $M = 4.3$; $SD = 1.27$ |
| 9. I have considered dropping out of [military] service. | $M = 4.1$; $SD = 1.28$ |

II Outcomes of Cohesion Components

A. Performance Outcomes

Group Performance $\alpha = .83$; item-total $r = .71$; $M = 3.49$; $SD = 1.03$.

1. The squad which I belong to would do well in real combat.
2. The platoon that I belong to would do well in real combat.

Personal Performance $\alpha = .78$; item-total r range = .45 - .57; $M = 3.56$; $SD = .76$.

1. I have a clear picture of my duty during a war.
2. On the basis of my training I could do my duty during a war.
3. Training has given me the mental skills for battle situations.
4. In every circumstances, I master the weapons and equipment needed for my duty.
5. On the basis of my physical condition I could get through two weeks of battles and three to four days and nights of decisive battles.
6. On the basis of my mental health I could get through two weeks of battles and three to four days and nights of decisive battles.

Performance Ratings by Instructors $\alpha = .84$; item-total $r = .73$; $M = 3.66$; $SD = .78$.

1. Wartime field proficiency.
2. Military performance overall estimation.

B. Attitudes Toward the Military

Career Intentions $\alpha = .88$; item-total r range = .69 - .83; $M = 2.09$; $SD = 1.14$.

1. I would consider working in the Defence Forces after my conscript service.
2. Experiences in conscript service have increased my interest for staying in the service of the Defence Forces.
3. In my view the Defence Forces would be a good employer.

Refresher Training Intentions

1. I want to participate in refresher training in a couple of years. $M = 2.53$; $SD = 1.45$

Table 1 (continued)

Attitudes Toward National Defense $\alpha = .74$; item-total r range = .57 - .58; $M = 4.34$; $SD = .80$.

1. If Finland is attacked, the Finns must defend themselves with arms in all circumstances, no matter what the end result.
2. I am ready to participate in military national defense as part of national service duties.
3. Finland has to have functioning Defence Forces.

Personal Growth and Development $\alpha = .88$; item-total r range = .59 - .69; $M = 3.41$; $SD = .87$.

1. Due to military service I can take other people in to consideration as well.
2. My mental stamina has improved considerably during military service.
3. The rules and restrictions of the army have been an educational experience.
4. My independence has increased during military service.
5. In the army I have learned to take responsibility for myself and others.
6. The army has taught me self-control.
7. During my time in the army, I have learned to organize my schedule.
8. The army has a significant education purpose.

C. Soldier Well-Being

Mental State $\alpha = .81$; item-total r range = .45 - .69; $M = 4.21$; $SD = .83$.

1. I often feel depressed.
2. I have had suicidal thoughts.
3. I have often had feelings that life is not worth of living.
4. I am often anxious and tense.
5. If I could live my life all over again, I would do almost everything differently.

Exemptions $\alpha = .81$; item-total $r = .67$; $M = 3.92$; $SD = 1.33$.

1. I have applied for exemption from field exercise even though I was not ill.
2. I have applied for exemptions from the medical officer or doctor, because I could not care less about participating in military service.

Number of Doctor's Appointments (absolute number provided)

Results

Individual Level Correlations: Cohesion Components and Criteria

The individual level results are presented so that the reader can have a baseline comparison for the platoon level results. The cohesion components measured at the individual respondent level correlated moderately but significantly with each other ($r = .32 - .45$; see Table 2). The strongest correlation among the components was between *Peer* and *Leader Bonding* ($r = .45$). In terms of the criteria, the cohesion scales showed their highest correlations with performance criteria—*Peer Bonding* with expected group performance ($r = .50$), and *Leader*, *Organizational*, and *Institutional Bonding* with expected personal performance ($r = .46, .45, .47$, respectively). Data for all these variables came from the platoon members themselves. Correlations between the cohesion components and *Performance Ratings* made by instructors

were almost equal ($r = .30 - .35$). The strongest correlation was between *Organizational Bonding* and the *Performance Ratings*.

While the cohesion components correlated with the performance criteria about equally well, correlations with the attitudinal criteria varied quite a bit (refer to Table 2). Secondary group cohesion (i.e., organizational and institutional bonding) was most related to the attitudinal criteria, especially *Career Intentions*. *Institutional Bonding* was the component most clearly related to *Refresher Training* ($r = .51$), *National Defense Attitudes* ($r = .56$), and *Personal Growth* ($r = .57$). *Personal Growth* was a measure for assessing the attitude of how much Soldiers felt they were developed due to their service experience. All correlations with the attitudinal criteria were significant ($p < .001$) except that *Leader Bonding* was not significantly related to *Career Intentions*.

The cohesion components correlations with some other outcome criteria also were significant. All cohesion components were related to a conscript's *Mental State*, with *Peer* and *Institutional Bonding* having the highest correlations ($r = .39$ and $.41$, respectively). The components were also all related (negatively) to the number of times a conscript visited a doctor during military service (indicating probably problems with a conscript's psychological or physical well-being) and the number of medical *Exemptions* from military duty (*Exemptions* was reverse coded so that a positive number indicates fewer absences from duty). Overall, the cohesion components were modestly related to the "well being" criteria at the individual level.

Good Conduct was an index indicating that Soldiers did not "knock off the bar." Specifically, it was a dichotomous measure formed based on the numbers of penalties, reprimands, doctor appointments, exemptions, and rated military performance. This index correlated with all cohesion components showing that cohesion is also related to good service behavior. Secondary group cohesion (i.e., organizational and institutional bonding) was somewhat related to the (reversed coded) *Reprimands* criterion.

Information gathered from military records and archives correlated with cohesion. Conscript rank, length of service period, and the aptitude test of social skills were clearly measures related to *Institutional Bonding* ($r = .32-.39$). On the other hand, demographic items (i.e., age and gender) and socio-economical status (which is not shown in Table 2) were not meaningful for predicting later cohesion in military service, although some of them might be useful for selection purposes and related to retention or attrition. Success in civilian schools (i.e., grade point average and education level) had only a modest relation to *Leader Bonding* and no meaningful relation to the other cohesion components.

Platoon Level Correlations: Cohesion Components and Criteria

The aggregated scale means and standard deviations were computed at the platoon level for each of the 21 platoons in the sample. Among the cohesion components, *Institutional Bonding* at the platoon level showed a much stronger relation to *Peer* and *Leader Bonding* than at the individual level (see Table 3). The other correlations among the platoon means of the cohesion components were not significant. Likewise, most of the standard deviations (i.e., the

Table 2

Individual Level Correlations Between Main Measures

Main Measures		Peer Bonding	Leader Bonding	Organizational Bonding	Institutional Bonding
Cohesion Components	Peer Bonding	1	.45***	.43***	.39***
	Leader Bonding	.45***	1	.44***	.32***
	Organizational Bonding	.43***	.44***	1	.34**
	Institutional Bonding	.39***	.32***	.34***	1
Performance Criteria	Group Performance	.50***	.38***	.45***	.35***
	Personal Performance	.48***	.46***	.45***	.47***
	Performance Ratings	.30***	.30***	.35***	.30***
Attitudinal Criteria	Career Intentions	.15***	.05 ns.	.20***	.36***
	Refresher Training	.30***	.28***	.29***	.51***
	National Defense Attitudes	.31***	.26***	.27***	.56***
	Personal Growth	.38***	.32***	.36***	.57***
Well-Being	Mental State	.39***	.27***	.20***	.41***
	Doctor's Appointments	-.12**	-.19***	-.23***	-.12**
	Exemptions	.21***	.21***	.26***	.33***
Deviant Behavior	Good Conduct	.14***	.21***	.23***	.22***
	Reprimands	.03 ns.	.01 ns.	.13**	.11*
Measured during Service	Rank	.23***	.26***	.11*	.34***
	Length of Service	.23***	.24***	.05 ns.	.39***
	Aptitude test ("IQ-test")	.14***	.24***	.13**	.09*
	Aptitude Test (social skills)	.23***	.28***	.12*	.32***
	12-Minute Run Test	.13**	.28***	.07 ns.	.10*
Background Predictors	Age	-.01 ns.	.08 ns.	.04 ns.	.08 ns.
	Gender	.04 ns.	.02 ns.	.10*	.07 ns.
	Education Level	.08 ns.	.19***	.08 ns.	.08 ns.
	GPA in School	.13**	.24***	.13**	.10*

Note. $n = 511$. * = $p < .05$; ** = $p < .01$; *** = $p < .001$.

degree of consensus on the scale subject matter) of the cohesion components were not significantly related to the means of the other components. Usually the aggregated mean has the strongest correlation with the same scale's aggregated standard deviation (Bliese & Halverson, 1998). In this data and ignoring the sign, the correlations between each component mean and its

standard deviation were among the highest for a component. Generally, where there was less consensus in a platoon (i.e., a larger standard deviation), there were lower values for the cohesion components (i.e., a smaller mean), hence the many negative correlations. This was particularly true for *Institutional Bonding*. As another finding, the size of a platoon was not related to the cohesion components.

Table 3
Platoon Level Correlations Between Main Measures

Main Measures	Peer Bonding	Leader Bonding	Organizational Bonding	Institutional Bonding
Peer Bonding (<i>M</i>)	1	.37 ns.	.25 ns.	.60**
Leader Bonding (<i>M</i>)	.37 ns.	1	.24 ns.	.50*
Organizational Bonding (<i>M</i>)	.25 ns.	.24 ns.	1	.25 ns.
Institutional Bonding (<i>M</i>)	.60**	.50*	.25 ns.	1
Peer Bonding (<i>SD</i>)	-.31 ns.	.10 ns.	-.35 ns.	-.47*
Leader Bonding (<i>SD</i>)	-.14 ns.	-.24 ns.	.16 ns.	-.51*
Organizational Bonding (<i>SD</i>)	.00 ns.	-.01 ns.	-.59**	.00 ns.
Institutional Bonding (<i>SD</i>)	-.06 ns.	.30 ns.	.35 ns.	-.38 ns.
Platoon size (<i>n</i>)	-.08 ns.	-.04 ns.	.21 ns.	-.01 ns.
Group Performance	.49*	.58**	.54*	.34 ns.
Personal Performance	.56**	.82***	.44*	.40 ns.
Performance Ratings	.64**	.39 ns.	.50*	.44*
Career Intentions	.00 ns.	-.06 ns.	-.14 ns.	.49*
Refresher Training	.66**	.61**	.32 ns.	.60**
National Defense Attitudes	.42 ns.	.32 ns.	.37 ns.	.54*
Personal Growth	.52*	.76***	.16 ns.	.70***
Mental State	.48*	.34 ns.	.12 ns.	.47*
Doctor's Appointments	.04 ns.	-.11 ns.	-.29 ns.	.05 ns.
Exemptions	.22 ns.	.38 ns.	.53*	.45*
Good Conduct	.44*	.48*	.38 ns.	.46*
Reprimands	.20 ns.	.22 ns.	.47*	.39 ns.
Rank	.44*	.58**	-.34 ns.	.43 ns.
Length of Service	.50*	.30 ns.	-.19 ns.	.31 ns.
Aptitude test ("IQ-test")	.47*	.37 ns.	.44*	.30 ns.
Aptitude Test (social skills)	.69**	.43 ns.	-.06 ns.	.46*
12-Minute Run Test	.05 ns.	.46*	.16 ns.	.36 ns.
Age	.43 ns.	.44*	.03 ns.	.44*
Gender	-.03 ns.	-.10 ns.	.19 ns.	.41 ns.
Education Level	.41 ns.	.47*	.23 ns.	.22 ns.
GPA in School	.42 ns.	.50*	.32 ns.	.36 ns.

Note. *n* = 21 platoons. *M* = based on the mean; *SD* = based on the standard deviation. All column heading scales were based on the platoon means.

At the platoon level, the cohesion components were more strongly correlated with the expected and rated performance criteria than at the individual level. The correlation between

Leader Bonding and expected *Personal Performance* was especially high ($r = .82$). Of interest, platoon level *Peer Bonding* was the strongest correlate of the summary ratings of performance by the instructors ($r = .64$), suggesting that the instructors keyed in on primary group cohesion in rating the Soldiers within a platoon. Among attitudinal criteria at the platoon level, the cohesion components were especially related to attitudes toward *Refresher Training* attitudes and assessed personal growth and development during military service. Additionally, the platoon level cohesion components were positively correlated with the mean *Mental State* in a platoon, a reduced number of medical exemptions from training, and good military conduct. Among the demographic and background variables aggregated to the platoon level, *Peer Bonding* was particularly correlated with average platoon length of service and social skills aptitude. *Leader Bonding* was especially correlated with mean platoon rank, mean score on the 12-minute run (physical fitness), and civilian education factors.

Aggregated characteristics like rank or length of service did not refer to the individual level as much they displayed differences in platoon organizational structures. Therefore and since several of the aggregated individual characteristics had significant correlations with the cohesion components, they were controlled in partial correlations at the platoon level. This kind of approach (i.e., partial correlations) at the platoon level showed whether there were differences in correlations between the cohesion components and the criteria that were not due to platoon structural differences but more to platoon differences in their within-platoon social dynamics. See Table 4.

In the partial correlations at the platoon level, *Peer Bonding* was less related to *Leader Bonding* and more strongly related to *Organizational Bonding* than without controlling for the demographic and background variables. *Leader Bonding* was more related to *Organizational Bonding* and less related to *Institutional Bonding*. *Organizational Bonding* was more strongly related to the other three components, and *Institutional Bonding* was more related to *Organizational Bonding* and less related to *Leader Bonding* than without the controls. In other words, controlling for the background variables, *Organizational Bonding* was a stronger factor among the component components. This was to be expected since most of the demographic and background variables were weakly related to *Organizational Bonding* (refer back to Table 3).

In Table 4 with the demographic and background variables controlled to reduce the effect of platoon structure, the degree of consensus (i.e., standard deviations), except for *Organizational Bonding*, was highly related to the level of *Institutional Bonding*, suggesting that at the platoon level the degree of *Institutional Bonding* may be an important base for building consensus for a high level of bonding in general. Again, the number of people in a platoon (its size) had no relation to the cohesion measures. In terms of the performance criteria, with the background variables controlled *Organizational Bonding* had the strongest consistent correlation with the performance measures, although the highest correlation was between *Leader Bonding* and expected *Personal Performance* ($r = .85$; $p < .001$). The cohesion components showed no clear pattern of correlation with the other criteria or the mean discipline measures at the platoon level even though *Institutional Bonding* did have a number of significant correlations with them.

Table 4

Platoon-Level Partial Correlations Between Cohesion Components and Criteria

Main Measures	Peer Bonding	Leader Bonding	Organizational Bonding	Institutional Bonding
Peer Bonding (<i>M</i>)	1	.19 ns.	.34 ns.	.57*
Leader Bonding (<i>M</i>)	.19 ns.	1	.59*	.37 ns.
Organizational Bonding (<i>M</i>)	.34 ns.	.59*	1	.58*
Institutional Bonding (<i>M</i>)	.57*	.37 ns.	.58*	1
Peer Bonding (<i>SD</i>)	-.39 ns.	-.07 ns.	-.26 ns.	-.71**
Leader Bonding (<i>SD</i>)	-.34 ns.	-.32 ns.	-.09 ns.	-.70**
Organizational Bonding (<i>SD</i>)	-.06 ns.	-.33 ns.	-.30 ns.	-.17 ns.
Institutional Bonding (<i>SD</i>)	-.30 ns.	.30 ns.	.06 ns.	-.58*
Platoon size (<i>n</i>)	-.10 ns.	.11 ns.	-.13 ns.	.23 ns.
Group Performance	.55*	.49 ns.	.64**	.29 ns.
Personal Performance	.28 ns.	.85***	.72**	.35 ns.
Performance Ratings	.24 ns.	.30 ns.	.60*	.34 ns.
Career Intentions	.19 ns.	-.25 ns.	.15 ns.	.44 ns.
Refresher Training	.38 ns.	.37 ns.	.59*	.42 ns.
National Defense Attitudes	.33 ns.	.14 ns.	.37 ns.	.56*
Personal Growth	.52*	.65**	.46 ns.	.66**
Mental State	.14 ns.	.15 ns.	.30 ns.	.22 ns.
Doctor's Appointments	-.00 ns.	.04 ns.	-.23 ns.	.01 ns.
Exemptions	.41 ns.	.30 ns.	.46 ns.	.71**
Good Conduct	.49 ns.	.26 ns.	.37 ns.	.46 ns.
Reprimands	.45 ns.	.18 ns.	.33 ns.	.65**

Note. $n = 21$, $df = 13$. Controlled in the partial correlations were rank, length of service, aptitude test 1 ("IQ-test"), aptitude test 2 (leadership and social skills), educational level, and grade point average in school.

Low or High Level of Cohesion in Platoons and Their Differences on the Criteria

In order to see how the platoons differed with respect to the outcome criteria, the platoons that had high cohesiveness on the four cohesion components (i.e., mean values of 3.9 or more in

Peer Bonding, 4.0 or more in *Leader Bonding*, and 3.8 or more in *Organizational* and *Institutional Bonding*) were compared with those with low cohesiveness (i.e., means of 3.5 or lower in *Peer* and *Leader Bonding* and 3.4 or less in *Organizational* and *Institutional Bonding*) in terms of the criteria. The cut points between high or low levels of cohesion were based on the mean and standard deviation in the platoon level aggregated cohesion components. Typically only 10 of 21 platoons were different enough on their cohesion-component levels to be included in the analyses. The analyses were done separately for each cohesion component since they correlated differently with the other variables.

This comparison of the low and high cohesion platoons on the criteria was done by making several Scheffe tests and comparing the criteria means for each cohesion component (Table 5). For the three performance criteria, the spread between the low and high cohesion platoon means was substantial for each of the four cohesion components, with the differences all significant ($p < .001$). The results were similar for the criterion about how much the members of a platoon wanted to participate in refresher training in a couple of years. Looking down the column under *Refresher Training*, one can see that the spread between the low and high cohesion platoons on all four cohesion components was large and all significant ($p < .001$). The spreads between the low and high cohesion platoons was much smaller for *Career Intentions*, *National Defense*, and *Good Conduct*. Looking across the rows of the cohesion components, one can see that all the low-high spreads of the means on the criteria were significant for *Institutional Bonding*, indicating that low or high platoon cohesion on the *Institutional Bonding* component was consistently associated with differences in the level of the performance, attitudinal, and behavioral outcome criteria.

While the preceding analysis looked at how low and high cohesion platoons differed in terms of the performance, attitudinal, and behavioral outcome criteria, the next analysis dealt with what might be considered the reverse approach. Given the values for several outcome criteria for a set of platoons, how well could those criteria predict the platoons that were low or high on the cohesion components, and which criteria would be most useful in that prediction? This approach represents another view of cohesion and may be useful in determining how outcomes feed back into increasing or decreasing group cohesion over time. To accomplish this analysis, discriminant functions were developed using the outcome criteria to predict low or high cohesion platoons. Discriminant analysis is a statistical procedure that finds the predictor variables that maximally distinguish between the states of the "dependent" variable (i.e., peer, leader, organizational, and institutional bonding). The result of the procedure is a discriminant function which, among other things, provides the relative weight of each utilized variable for making the maximal distinction between, in this research, low and high cohesion platoons. The results are portrayed in Tables 6-9.

The overall results are surprising both technically and compared to the literature on military group cohesion. For three out of the four cohesion components, the mean instructor ratings of the end-of-training performance of the members of each platoon was the most discriminating criterion variable. From a technical point of view, one would expect that the best discriminator would be a criterion variable measured with the same instrument and utilizing

Table 5

Comparison of Means of Low and High Cohesion Platoons on the Criteria

Platoon Cohesiveness vs. Criteria Means		Group Performance	Personal Performance	Performance Ratings	Career Intentions	Refresher Training	National Defense	Good Conduct
		M =	M =	M =	M =	M =	M =	M =
		3.6	3.6	3.6	2.1	2.5	4.3	1.93
		SD =	SD =	SD =	SD =	SD =	SD =	SD =
		.39	.29	.35	.39	.54	.20	.05
Peer Bonding	Low	3.1	3.4	3.2	2.0	2.1	4.3	1.89
	High	3.9	3.9	3.9	2.2	3.2	4.5	1.95
	Sig.	.001	.001	.001	ns.	.001	.05	.001
Leader Bonding	Low	3.0	3.2	3.3	2.0	2.1	4.2	1.89
	High	3.8	3.9	3.8	2.2	3.1	4.5	1.95
	Sig.	.001	.001	.001	ns.	.001	.01	.001
Organizational Bonding	Low	3.3	3.4	3.4	2.0	2.2	4.3	1.91
	High	4.0	3.9	4.0	2.2	3.2	4.5	1.96
	Sig.	.001	.001	.001	ns.	.001	.01	.01
Institutional Bonding	Low	3.3	3.3	3.3	1.9	2.1	4.2	1.88
	High	3.9	3.9	4.0	2.3	3.3	4.6	1.97
	Sig.	.001	.001	.001	.05	.001	.001	.001

Note. Peer Bonding: $n = 308 / 9$ platoons; Leader Bonding: $n = 284 / 9$ platoons; Organizational Bonding: $n = 325 / 7$ platoons; and Institutional Bonding: $n = 247 / 6$ platoons. For the 21 platoons at the platoon level: Peer Bonding $M = 3.7$, $SD = .4$; Leader Bonding $M = 3.7$, $SD = .5$; Organizational Bonding $M = 3.6$, $SD = .4$; and Institutional Bonding $M = 3.6$, $SD = .4$.

answers from the same respondent as the dependent variable (i.e., due to common method and respondent biases). In this case, the discriminator was the average of two Soldier performance ratings made by instructors using standard training forms while the measures of cohesion were research questionnaire responses made by conscripts, all aggregated to the platoon level per cohesion component. In terms of the cohesion research literature, most of which is at the individual service member level of analysis, almost none shows results that predict low or high perceived (or otherwise measured) cohesion based on independently-rated performance (e.g., Mullen & Copper, 1994 or Oliver, et al., 1999; also see Table 2). In Tables 6, 8, and 9, *Performance Ratings by Instructors* is correlated with the discriminant function in the mid-.70s and the functions correctly classified platoons as low or high on the respective cohesion components from 73% to 78% of the time.

Table 6

Criteria Predicting Platoons with Weak or Strong Peer Bonding

Platoons Differed Most in These Criteria	Standardized Coefficients	Correlation with Discriminant Function
1) Performance Ratings by Instructors	.51	.74
2) Refresher Training Intentions	.60	.63
3) Group Performance	.42	.58
4) Personal Performance*	—	.54
5) Personal Growth*	—	.47
6) Good Conduct*	—	.41
7) National Defense Attitudes*	—	.33
8) Mental State*	—	.28
9) Exemptions*	—	.25
10) Career Intentions	-.38	.02

Note. Variables were ordered by absolute size of correlation within function. * = This variable was not selected for the best discriminant function. Wilk's Lambda = .70; Eigenvalue = .43; Canonical Correlation = .55; n = 298. 73.1% of original grouped cases were correctly classified.

The other performance criteria (i.e., expected group and personal performance ratings by the Soldiers) and *Refresher Training Intentions* were also consistent strong discriminators in the prediction of low or high cohesion platoons across the four components. *Leader Bonding* appears to be a particular component in which the expected performance ratings were the strong discriminators along with *Refresher Training Intentions*. Note in Table 3, at the platoon level, that *Personal Performance* and *Group Performance* were especially highly correlated with *Leader Bonding*, while the correlation between *Performance Ratings* (by instructors) and *Leader Bonding* was not significant (although $r = .39$).

In primary group bonding, Tables 6 and 7, the correlations of *Career Intentions* with the discriminant function were low and negative, although included in both models. It appears that strong primary group cohesion may not support career intentions and may even create norms during conscript service against a military career (see Table 3). Hence, there may be a conflict and resulting confusion between being positive towards a military career and supporting the primary group norm against such intentions. On the other hand, Soldiers who had positive career intentions in a less cohesive primary group were less influenced by their primary group about such intentions. These dynamics would explain the negative signs.

Only in secondary group cohesion (i.e., Tables 8 and 9 predicting *Organizational Bonding* and *Institutional Bonding*) was the behavioral criterion of *Exemptions* (reverse coded) part of the models classifying platoons on secondary group cohesion. This finding is consistent with Table 3 where, at the platoon level, *Exemptions* only significantly correlated with *Organizational Bonding* and *Institutional Bonding*, to a modest degree.

Table 7

Criteria Predicting Platoons with Weak or Strong Leader Bonding

Platoons Differed Most in These Criteria	Standardized Coefficients	Correlation with Discriminant Function
1) Personal Performance	.52	.79
2) Group Performance	.36	.66
3) Refresher Training Intentions	.56	.65
4) Performance Ratings by Instructors *	—	.40
5) Personal Growth*	—	.40
6) National Defense Attitudes*	—	.38
7) Mental State*	—	.35
8) Exemptions*	—	.35
9) Good Conduct*	—	.27
10) Career Intentions	-.28	.19

Note. Variables were ordered by absolute size of correlation within function. * = This variable was not selected for the best discriminant function. Wilk's Lambda = .73; Eigenvalue = .37; Canonical Correlation = .52; n = 275. 68.3% of original grouped cases were correctly classified.

Table 8

Criteria Predicting Platoons with Weak or Strong Organizational Bonding

Platoons Differed Most in These Criteria	Standardized Coefficients	Correlation with Discriminant Function
1) Performance Ratings by Instructors	.61	.77
2) Group Performance	.41	.60
3) Refresher Training Intentions	.43	.55
4) Personal Performance*	—	.52
5) Exemptions	.28	.48
6) Good Conduct*	—	.39
7) National Defense Attitudes*	—	.32
8) Mental State*	—	.23
9) Career Intentions*	—	.21
10) Personal Growth	-.38	.21

Note. Variables were ordered by absolute size of correlation within function. * = This variable was not selected for the best discriminant function. Wilk's Lambda = .73; Eigenvalue = .38; Canonical Correlation = .52; n = 278. 78.1% of original grouped cases were correctly classified.

Table 9

Criteria Predicting Platoons with Weak or Strong Institutional Bonding

Platoons Differed Most in These Criteria	Standardized Coefficients	Correlation with Discriminant Function
1) Performance Ratings by Instructors	.54	.74
2) Group Performance	.36	.57
3) Refresher Training Intentions	.33	.55
4) Personal Performance*	—	.54
5) Exemptions	.40	.53
6) Good Conduct*	—	.46
7) Personal Growth*	—	.41
8) Mental State*	—	.37
9) National Defense Attitudes*	—	.34
10) Career Intentions*	—	.23

Note. Variables were ordered by absolute size of correlation within function. * = This variable was not selected for the best discriminant function. Wilk's Lambda = .62; Eigenvalue = .61; Canonical Correlation = .61; n = 207. 78.6% of original grouped cases were correctly classified.

Discussion

Objectives

This report had three main objectives: a) to describe platoon differences on cohesiveness in the sample, b) to identify background variables that predict or seem to lead to platoon cohesion, and c) to determine the extent to which the degree of cohesiveness and other group-level characteristics are related to training performance and selected attitudinal and behavioral outcomes. To accomplish the first objective, the four cohesion component means and standard deviations at the individual level were presented in Table 1; those at the platoon level were provided in the note to Table 5. Although the respondents in this research were conscripts and from a non-English speaking country, the means and standard deviations of these cohesion components are similar to those statistics found using volunteer military subjects from the United States, with means in the 3.5-4.0 range on a 5-point response scale at both the individual and platoon levels and standard deviations in the .6-1.0 range at the individual level and about half that at the platoon level. Thus, at least on the surface, it appears that the results from these different (U.S. and Finnish) military samples may represent Western Soldiers and military units in general. The means and standard deviations for all four cohesion components at the platoon level were about the same even though they covered different subject matter and had mostly moderate inter-component correlations at the platoon level (Table 3). As noted at the start, there is a paucity of reported cohesion data at the group level. These results help fill in that gap.

The second objective of this report was to identify background variables associated with cohesion. Again, much research has been published in this regard at the individual Soldier level for the militaries from different countries, but little has been reported at the group level. In this Finnish sample (Table 3) as with many results at the individual level, there were not many significant correlations between demographic and background variables and the cohesion

components. Most of the significant correlations between the demographic and background variables and the cohesion components were in terms of the primary group components of *Peer Bonding* and *Leader Bonding*. The most notable of the significant correlations was the correlation between the platoon mean aptitude in social skills of the members and *Peer Bonding* ($r = .69$), suggesting that some factors service members bring to the military relevant to working as a team are important and these may be improved through training and encouragement. Thus overall, the findings with respect to background variables at the platoon level indicate, as also typical of individual level analyses, that cohesion is mostly the result of the experiences that Soldiers have in the military unit and working with each other and their leaders rather than their individual background characteristics (see Siebold & Lindsay, 1999).

The third objective of determining the extent to which the degree of cohesiveness and other group-level characteristics were related to training performance and selected attitudinal and behavioral outcomes consumed much of the analyses for this report. The most important finding perhaps is that at the platoon level, the correlations between the cohesion components and the performance criteria were quite strong, especially for *Peer*, *Leader*, and *Organizational Bonding* (Table 3) and compared to past findings at the individual Soldier level (in meta-analyses the correlations have been at the .3 level; Mullen & Copper, 1994 ($r = .25$); Oliver et al., 1999 ($r = .33$)). When controlling for platoon differences in structure and mission as reflected in mean platoon member rank, length of service, aptitude, and education, these results still hold but in a more select pattern. As shown in Table 4, *Peer Bonding* is most associated with expected *Group Performance* in combat; *Leader Bonding* is most associated with expected *Personal Performance* in combat; and *Organizational Bonding* is strongly related to both these expected performances and the mean *Performance Ratings* by the permanent instructors overseeing the platoons.

Also, it is noteworthy in terms of the third objective that the performance ratings (plus *Refresher Training Intentions*) were the strongest discriminators when a set of criteria were used to predict the platoons low or high in cohesion (Tables 6-9). As noted earlier, these findings imply that the perceived performance capability feeds back into the cohesion in a platoon, making the (somewhat costly) cohesive social relationships of value and worth investing in. In addition, if a platoon is good in performance, it is also makes it more worthwhile to participate in refresher training in the future (and for some, perhaps, less of a perceived waste of time). Lastly, while the other components are the most related to the performance criteria (refer again to Table 3), *Institutional Bonding* appears to be the cohesion component most associated with the attitudinal and behavioral outcomes, suggesting that *Institutional Bonding* forms a foundation for groups of Soldiers that is needed for them to become actively engaged in their training and upon which the other cohesion components of can be developed.

Limitations

While the report achieved its basic objectives, nonetheless it has raised some questions and has some limitations. The last set of tables (Tables 6-9) in which the *Performance Ratings by Instructors* came out as the top discriminator in predicting high and low cohesion in the platoons may simply be (or at least in part) a function of the instructors rating highly most Soldiers in a

platoon that appears cohesive and rating lower those in a platoon that does not appear cohesive rather than rating actual Soldier skills and performance during training.

In terms of the cohesion components, one can ask why there was a strong correlation at the platoon level between *Peer* and *Institutional Bonding* ($r = .60$, Table 3), when there was no correlation between *Peer Bonding* and a consensus (standard deviation) on *Institutional Bonding*? The meaning is not clear. Likewise what is the meaning of the fact that primary group (*Peer* and *Leader Bonding*) aggregated standard deviations had their highest correlations with the secondary group component of *Institutional Bonding*; does that indicate that *Institutional Bonding* is needed as a base for consensus on primary group peer and leader bonding?

The analyses in this report show the need for a follow-up multilevel analysis (e.g., hierarchical linear modeling) that could more convincingly assess the impact of platoon membership on cohesion and the criteria and help to identify the moderating character of cohesion. This would also reduce the problem of bias (increased correlations) as the data are aggregated from the individual level to the platoon level. In addition, the correlations computed in the analyses are measures of association that may suggest but do not establish causality. Further, although the main platoon types were represented in the sample, the 21 platoons were not enough in number for a comfortable generalization of results. Platoons should be selected from different battalions and brigades instead of from just one brigade as was used in this report.

Additionally, as usual, the measures used were not perfect. For example, the *Organizational Bonding* scale did not include enough of the affective aspect. The affective (climate and unit commitment) part of organizational bonding should be enlarged in future research. Also, the meaning of instrumental organizational bonding in conscript service is not clear cut since conscripts do not receive a salary (except a small allowance), do not have a programmed career path, and do not necessarily have lasting obligations to a unit. Further, organizational bonding may be the most difficult cohesion component to measure because it is perhaps the most sensitive to situational factors whereas social and task cohesion, or peer and leader bonding, or institutional bonding may have more universal, stable elements to compare in different military systems. Nonetheless, the results may be used, at least as a starting point, in comparison with the results from similar research in the U.S. Army and other militaries.

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