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# A Study of Cohesion and Other Factors of Major Influence on Soldiers' and Unit Effectiveness

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Israeli Defense Forces

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# A Study of Cohesion and Other Factors of Major Influence on Soldiers' and Unit Effectiveness

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## Abstract

Information about cohesion and other psychological variables affecting soldier and unit performance is of major importance to all military organizations. The present research focuses on the issue of small unit cohesion based on organizational bonding, horizontal bonding and vertical bonding, in relation to unit effectiveness. The study analyzes the intervening effects of professionalism, confidence in the commander, commander tenure, morale, motivation and stress, on the relationship between cohesion and effectiveness. A questionnaire - set composed of the ARI, "platoon cohesion index", and of IDF questionnaires was administered to 18 infantry platoons and 7 armor companies. Higher commanders of the units evaluated the units with regard to the research variables.

The results indicate significant correlations between cohesion and unit effectiveness. Differences were found in the relationship of the cohesion dimensions to effectiveness and to the other variables. The results also revealed differences between soldiers and commanders in their preception of the relationship between cohesion and personal effectiveness. Morale and stress were found to be intervening variables, effecting the relationship between cohesion and effectiveness. The implications of the results to unit processes and further research directions are discussed.


Keywords: cohesion, bonding, effectiveness, commander, proffesionalism, morale, motivation, stress.

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## Overview

What motivates soldiers to fight? Among the many sociological explanations given to this question (Moskos, 1969), the importance of processes occuring within small groups stand out prominently. Variables such as bonding among soldiers, their relations with their immediate commanders, morale and cohesion in the unit are some of the relevant facets of the group's dynamics

First-hand accounts of combatants clearly point out the importance of peer groups in motivating soldiers to fight (for quotations see Griffith, 1988). Solidarity among members of small groups of soldiers was the primary factor contributing to the successes of the German Wermacht in WWII (Shils and Janowitz, 1948). These soldiers were more likely to continue fighting if they were members of units with high positive identification, mutual caring and affection. Furthermore, primary group solidarity raised the group's ability to maintain organizational structure, when in extreme duress. In contrast, ideology, political and cultural symbols had only secondary importance as sources of support for the Wermacht soldiers. The American soldier in WWII also relied on his primary group for support in coping with combat stresses (Stouffer et al., 1949) and for maintaing high combat morale (Shils, 1950).

It seems that mutual social support within the group is a major determinant of cohesion or bonding (Griffith, 1989). Lott & Lott (1965) found that mutual acceptance among group members and group member characteristics like warmth, egalitarianism, sensitivity and helpfulness of members were associated with greater cohesiveness. Shaw (1981) reports that: "Compared to less cohesive groups, more cohesive groups engaged in more positive social interactions, and the members were more friendly, cooperative, democratic satisfied and more effectively accomplished their goals". Accordingly, 'satisfying interpersonal relations' has been a component of operational definitions of group cohesion (Gal, 1986; Little, 1964; Motowildo & Borman, 1978; Nelson & Berry, 1968). Furthermore, a recent study that examined the relationship between social support and cohesion (Griffith, 1989) found significant and positive relationships between these variables.

The mutual social support provided by the soldier's primary unit and the cohesiveness of his peer group strongly influence the soldier's health and well-being. According to Shils and Janowitz (1948), military unit cohesion does not directly enhance performance but rather buffers the individual from the harmfull effects of stress on the individual's health and upon group performance. Thus, cohesion enables performance in rough situations. This is further supported by the finding that Israeli soldiers in highly cohesive units were less likely to incur combat stress casualties than soldiers in units with low levels of cohesion (Solomon, Mikulincer & Hobfoll, 1986; Even -Hen & Hadas, 1983; Steiner & Neumann, 1978). Even in times of peace, unit cohesion provides considerable protection from the stresses of military life (Manning and Fullerton, 1988). Specifically, members of

highly cohesive. Special forces A-teams reported greater physical and psychological well-being and greater satisfaction with job and carreer than soldiers in conventionally organized units. Among the variables most closely associated with this pattern of results were relatively higher ratings of social support from, and confidence in one's army unit (Manning and Fullerton, 1988).

Cohesion has been defined in various ways (for an extensive literature review, see stewart, 1987). Some stress the forces influencing a member to stay in the group (e.g. Festinger, 1950). Others define cohesion in terms of social support, as discussed above (Manning and Fullerton, 1988). Still others stress its association with morale and commitment to one's unit and friends (Gal, 1983, 1986).

Griffith (1988) claims that there are clear differences between cohesion and commitment. He reports that "Cohesion is a group-level attribute, where as commitment is an individual-level characteristic. The concept of cohesion is based on properties of small groups while commitment refers to the extent to which group members value the group and subordinate their goals to it. There is also a similarity between these concepts, in that commitment also serves instrumental and affective needs, and can refer to different groups, horizontal (peers) and vertical (commanders and the organization).

The concepts of morale and cohesion have been used to describe both individual and group characteristics. According to Henderson (1985), although the concepts are similar, morale is on the individual level and cohesion is on the group level. However, empirical studies that examined the interactions between these concepts in Israeli soldiers by correlation and factor analysis found that morale and cohesion merged together to form one integrated factor (Gal, 1986; Gal and Manning, 1987). Another related concept is motivation. According to Henderson (1985), when the motivating incentives are mainly economical, as is the case with many soldiers in the U.S. Army, little personal commitment develops, leading to low levels of cohesion. In contrast, when the main motivation to succeed (and fight) is loyalty to one's friends in the unit, who have become the primary peer group, cohesion leads to higher motivation. This may be the case in the IDF and may have been true for the South Vietnamese army during the Vietnamese war (Henderson, 1985).

In addition to interacting with morale, cohesion is greatly affected by the group's interaction with their leader, and the style of leadership in command. A capable leader can manipulate the level of cohesion through organizational mechanisms, psychological techniques as well as by his or her formal authority. Interviews with American soldiers showed that the type of leadership and the nature of the interaction with leaders were some of the major components of positive bonding (Siebold, 1987a). Henderson (1985) notes that leadership is the most significant factor in the creation of a cohesive unit. Leaders of highly cohesive units were characterized as highly professional and were percieved by their soldiers as so, and as charismatic, maintaining personal relations with the soldiers and

sharing the hardships and dangers with them (Henderson, 1985). The absence of leadership of the type that provides a positive role model may have been one of the factors underlying the U.S. Army's crisis in Vietnam, which was expressed by low unit cohesion in many cases (Gabriel & Savage, 1978). Regarding types of leadership, a positive correlation was found between a command style that provides a positive role model and both horizontal and vertical cohesion (Smith, 1983a,b). Furthermore, command style and group cohesiveness interact in affecting the performance of Israeli tank crews (Tziner and Vardi, 1982).

The group's leader controls, among other things, the level of stress in his group and this may in turn influence the group's cohesion. According to Pereira and Jesuino (1988) the level of stress should be under control and within clearly defined limits. When the pressure is too intense, the primary group (and any cohesion within) may disintegrate. Indeed, Seaton (1960) showed that under the stress of starvation, groups of soldiers disintegrated into cliques comprised of only two soldiers each.

Following the interactions of cohesion, morale and leadership, Gal (1986) proposes considering a higher order concept which he calls "unit climate". This concept includes 'confidence in senior commanders', 'confidence in one's self, team and weapons' and other factors (a total of 8). In this scheme, both morale and cohesion are regarded as two aspects of the same factor, in following with the results of factor analysis.

The above interactions notwithstanding, the concept of cohesion clearly has a unique meaning. Although it has been used to describe both individual and group characteristics, some researchers say that it may be proper to regard cohesion as a group rather than an individual characteristic (Gal, 1986). In addition, recent empirical investigations and theoretical elaborations of the concept strongly support the multidimensionality of group cohesion.
Siebold (1987b) proposes a complex definition of unit cohesiveness which is based on unit social integration: "the degree to which mechanisms of social control operant in a unit maintain a structured pattern of social relationships between unit members, individually and collectively, necessary to achieve the unit's purpose". This definition clearly sets cohesiveness at the level of the group or the unit rather than at the level of the individual or an aggregate of individual characteristics. Siebold (1987a) further conceptualizes cohesion "as being of two dimensions- affective and instrumental, and at three levels: horizontal (among soldier peers), vertical (soldiers with leaders) and orginizational (soldiers with heir units and with the army).

In addition to the three levels described above, a fourth level has been proposed: cultural cohesion (Harries- Jenkins, 1988; Stewart, 1988). This refers to the relationship of the military and the individual to society at large. Factors related to this are the willingness of a society to support the military system which it has established and the extent of the individual's acceptance of society's values.

Siebold's two-dimensional concept developed from research utilizing both questionnaires and interviews with American soldiers (Siebold, 1987a). These studies showed that bonding among peers seems to be built through proximity, over time, enhanced by communalities among them, derived from success at joint tasks, and defined by sharing liking and trust. Positive bonding between soldiers and their leaders appeared to result from leaders who acted as good role models, watched out for their soldiers, were open and honest, were competent technically, were fair, and participated in activities along with their troops. 'Organizational bonding' seemed to occur strongly when following conditions ccured: asoldiers supported the purposes, goals and values of their units and the Army the policies of the unit facilitated soldiers' quality of life and individual goal attainment the environment of the unit emphasized unit traditions, clear rules and communications, and room for soldiers' growth and development.

Griffith (1988) reports the results of a different study that shows group cohesion in military units "is a complex social-psychological construct involving both group and individual characteristics". The results also point to a two dimensional concept of military-unit cohesion: a) the direction of cohesion - vertical cohesion (superior-subordinate relations) contrasted with horizontal cohesion (peer relations) and b) the functions of cohesion - instrumental cohesion (task performance) contrasted with affective

cohesion (interpersonal support). According to Griffith (1988), the two dimensional concept of cohesion is consistant with social psychological studies of group dynamics. This work shows that the nature and quality of affective and task relationships maintain group membership in small groups (e.g. Lott & Lott, 1965; Cartwright, 1969).

In summary, unit cohesion seems best described in multidimensional terms. The major dimensions reflect the type of relationship (i.e. instrumental or affective) and various levels of interactions: among group members and between them and their leaders, the army as an organization and society in general.

In order to illustrate the use of such complex definitions of cohesion, the results of a study which examined different levels of interactions will now be described. Siebold (1989) studied longitudinal patterns in combat platoon cohesion. He first reports that platoons may vary in cohesion at any given time and that any given platoon may vary in cohesion over time. There may be U-shaped curves in cohesion over time. Platoons filled with 'high-quality' two-year enlistees appeared to develop and maintain high levels of cohesion while training under compressed schedules.

Influences on levels of cohesion or bonding are summarized as follows. "Vertical bonding increases with positive, quality leadership and decreases to the extent that leaders are primarily interested in their own careers or if they do not get along among themselves. Horizontal bonding increases when soldiers are required to work together in the field to get the job done. The bonding decreases when soldiers get tired with working with the same people, get jealous over promotions, or think that others are rewarded for nothing. Organizational bonding

increases when soldiers get needed support or time off and decreases when soldiers spend too much time in the field or percieve themseselves slighted by the system. Imminent hostilities increase cohesion (Siebold, 1986) while extensive garrison time and work details decrease cohesion".

The determinants of organizational cohesion and the potential detriments when this type of cohesion is lacking have been clearly described by Siebold (1987a). For strong positive cohesion to occur at the small combat unit level, he writes, "soldiers must support both the goals, missions, and values of the army as well as those of their specific unit within the army. If there is not this congruence, ... some possible results are alienation -- withdrawal of energy from the social order, anomie -- anxiety from inadequate normative clarity or consistency (Hilbert, 1986) and deviant behavior (Nisbet, 1970)".

The two-dimensional concept of cohesion was developed from studies on soldiers in the USA Army. There are a number of significant differences between the American and Israeli armies, which suggest that cohesion may be conceptualized differently in the IDF. Gall and Manning (1987) compared the morale and cohesion of U.S. and Israeli combat units. There were a number of common characteristics, including the three major components of morale and the close relationship between morale and cohesion. National differences found were interpreted by the authors to mean that "the Israeli soldier, in contrast to the U.S. soldier, percieves his unit morale and cohesion as attributes that are distinguishable and separable from other attributes that shape his overall perception of his unit. It seems that the American soldier tends to view his unit's

climate in a more holistic, less differentiated fashion than his Israeli counterpart" (pp 388-389).

Another Israeli-American comparison of cohesion was reported by Henderson (1985). The results suggest that in the IDF group cohesion is higher. One of the differences found between the armies, is the extent to which the military unit is the soldier's primary and significant peer group. Although logistical support is high in the U.S. Army, the military unit is not necessarily the soldier's primary peer group. Personal needs like security and sources of identification and affection are provided by civilian groups. This social pattern is in sharp contrast to the situation in the IDF, where the military unit is the soldier's primary peer group, providing most of his physical, social and personal needs. Another variable related to cohesion is the soldier's percieved ability to desert, or quit the service. It is relatively easy for an American soldier to leave, and the American society does not have negative social norms or sanctions against deserters. In contrast, attempting to evade service is met with erious sanctions both within the IDF and in the Israeli society.

According to Henderson (1985), for a unit to be cohesive it should be stable and the commanders should have maximal control over the soldier's conditions. This is not the case in most American army units, which employ the Individual Replacement System (Griffith, 1988, 1989; Siebold, 1989). In addition, the immediate commander of a U.S. Army unit has less control of some important aspects of his soldier's life, such as vacations and promotion. In contrast, in the IDF, soldiers usually stay in one unit for most of their service duration and vacations and other benifits are controlled by the immediate

commander. It may be important to note here that the system for selecting and training Israeli officers strives to maximize the ability of the officer to contribute to his unit's cohesion (Gabriel & Gal, 1984).

## COHESION AND PERFORMANCE

The relationship between the cohesion and the performance of military units has been studied, with equivocal results. This is also the case in the civilian literature on cohesion and productivity (Stogdill, 1972). Nevertheless, in most cases it seems that there is a positive correlation between these two variables. Thus, a common finding is that highly cohesive units exhibit better performance and highly efficient units are very cohesive. The direction of causality has not been well established, and some results suggest that efficiency can produce cohesion, in addition to the reverse, expected effect (for references, see Gal, 1986, p.559). It has been proposed that these variables have cyclical influences on each other (Oliver, 1987).

Oliver (1987) attempted to integrate the cohesion-performance literature which employed 'real-world' groups, using a meta-analytical approach. Of 26 studies found, 14 were coded. The median effect size, expressed as a correlation coefficient was 0.36, and after adjusting by the number of groups involved became 0.32. According to Oliver's calculations, this implies that increasing cohesion from low levels (below median) to high levels (above median) could increase performance eficiency from 34 percent to 66 percent.

An example of research on cohesion and performance, included in the above meta-analysis, is a study by Goodacre (1951). Performance was assessed in teams of soldiers performing 12 different tactical manuvers, such as responding to an airborn attack. A correlation coefficent of 0.77 was found between group cohesion and performance. Other studies not reviewed by Oliver (1987) will be briefly summarized here.

Siebold and Kelly (1987) found that group cohesion assessed a week before a military move predicted the unit's success. A positive correlation (0.32) was found between cohesion and performance efficiency in Israeli tank crews (Tziner and Vardi, 1983). Guberman (1983) examined the relationship between many variables and combat efficiency during the Lebanon war. One of the multiple regression equations reported included mutual helping during combat, confidence in one's commanders and in crew members, as predictors of combat efficiency, resulting in a coeficient of 0.48. Although cohesion was not specified, the predictor variables are frequently regarded as components of group cohesion, as discussed above. Another related finding in this study was that the highest correlation observed (0.42) was between mutual helping during combat and combat efficiency (Guberman, 1983). As discussed above, mutual social support is a major determinant and component of cohesion and according to some researchers actually defines the concept of cohesion (Manning & Fullerton, 1988).

In the 1982 South Atlantic conflict between Argentina and England, unit cohesion has been reported to be a major contributor to military success and to endurance of deprivation and climate hardships. Stewart (1988) claims that the British units were more cohesive than the Argentinian units and that this partially accounts for England's victory. There were also some highly cohesive Argentinian units, and these gave the toughest fights (Stewart, 1988).

There are cases in the literature where no correlation was found between cohesion and performance. The above mentioned integration of the experimental literature on "real" groups, by means of meta-analysis, while finding a positive median effect size, actually included studies reporting low correlations or non at all (correlations ranged from -0.4 to 0.9; Oliver, 1987). In addition, reports of negative correlations exist too. In the civilian literature there are reports of cases where strong primary-group cohesion had adverse effects (see Griffith, 1988, p. 168 for examples). Another example is from the clinical literature: therapeutic efficacy decreased in a group of Vietnam veterans when group cohesion was very high (Parson, 1985). Finally, qualitative reports tell of highly cohesive military units operating in a negative, counter-productive manner. In some cases American units in Vietnam engaged in anti-military behavior, while being cohesive and working together (Lang, 1980; Smith, 1983a,b). In addition, during WWII there were units of black Americans that showed high group cohesion in facing the military organization, while showing low military effectiveness (Janowitz and Little, 1965). The former two examples actually point to a state of conflict between the different levels of cohesion: horizontal and organizational. It seems therefore that when the military authority

looses its legitimacy and its norms are not consistant with the unit's norms, the conditions are ripe for a negative relationship between cohesion and performance. In fact, Smith (1983a,b) uses this logic to explain the paucity of disintegrated U.S. Army units in the Korea war, as opposed to their abundance during the Vietnam war. It seems that in Korea, most soldiers accepted the military authority's legitimacy. Along this line, Siebold (1987a) warns that because of the hardships in the field and their potential exposure to acute peril, there is a tendency in units for communal norms and principles to conflict with hierarchical norms and principles (cf. Sciulli, 1986).

There are a few types of explanations attempting to clarify the cases where positive correlations between cohesion and performance are not found. The culprits are: inadequate and inconsistent conceptualizations of the two concepts (Griffith, 1988; Manning and Fullerton, 1988; Siebold, 1988), difficulties of measurement (Siebold, 1988), and interactions with various intervening variables (Griffith, 1988) such as the group's social norms (e.g. Anderson, 1975), the ability level of the group (Tziner and Vardi, 1983) and the leader's command style (Tziner and Vardi, 1982).

The complications in defining and conceptualizing cohesion have been addressed above.

Performance can be measured either by individual member performance or by collective performance, although both are clearly inter-related (Siebold, 1988). While many measures of group performance are possible, most studies attempted to evaluate performance in combat, during manuvers or during routine military activities by ratings of commanders and soldiers, as the studies reviewed above suggest the

relationship between cohesion and performance is clearly modulated by various intervening variables. The social norm prevailing in the group modulates the attainment of goals by cohesive groups (e.g. Anderson, 1975). If the members of a cohesive group identify strongly with the organization (i.e. high 'organizational cohesion'), they are likely to be productive.; if they do not, cohesion may lead them to be counter-productive, harmful, or even toward sabotage (Berkowitz, 1954; Stogdill, 1972; Tziner, 1982; all quoted in Tziner and Vardi, 1983). The latter pattern has been described above as a conflict between horizontal and organizational cohesion.

The group's ability to perform its expected duty is another such intervening variable. In a study on the performance of self-selected Israeli tank crews, Tziner and Vardi (1983) found positive correlations between cohesion, ability and performance. After removing the variance associated with group ability from cohesion (but not from performance), the correlation between cohesion and performance was reduced from 0.32 to 0.19. The researchers claim that this difference reflects the moderating effect of ability upon the cohesion-performance relationship.

Leadership style and group cohesion interact to affect performance (Tziner and Vardi, 1983). This interaction was studied in self selected tank crews. Command style was assessed by questionnairres and performance-by commander's ratings. The results showed that performance effectiveness was high under two combinations: low cohesion and a people oriented command style; and high cohesion with a command style emphasizing both people and task orientations (Tziner and Vardi, 1983).

In conclusion, most studies find a positive relationship between group cohesion and the performance efficiency of military units. Cases where this relationship is not evident may be explained by the influence of intervening variables or by conflict between horizontal and organizational cohesion.

<u>The goals of the study:</u>

1. Replication of the ARI cohesion dimensions in the IDF.

2. Examination of the relationship between cohesion and unit effectiveness from various aspects:
   a. The individual level and the unit level.
   b. Comparison between the armor and the infantry.
   c. Various command levels.
   d. The relationship between self effectiveness evaluations and cohesion.

3. Examination of the potential mediation of the relationship between cohesion and effectiveness by six related variables:
   a. Professionalism.
   b. Motivation.
   c. Morale.
   d. Stress.
   e. Confidence in the commander.
   f. Commander tenure.

## Method

Subjects: 377 soldiers and commanders from 18 Infantry platoons, and 170 soldiers and commanders from 7 armor companies.

Measures:

1. A brief version of the "Platoon Cohesion Index", (PCI) developed by the A.R.I, including 20 items.

   The PCI was translated to Hebrew by several senior Israeli psychologists whose native language is English, and then, the questionnaire was translated to English. The English version was examined for it's verbal quality, and retranslated into Hebrew, Finally, the original English version and the translated one were compared, and unidentical items were modified until all the items in the two versions were identical.

2. Items included in previous I.D.F questionnaires, measuring the following variables:

   a. Cohesion - 5 items.

   b. Effectiveness - 5 items.*

   c. Professionalism - 5 items.

   d. Motivation - 8 items.

   e. Morale - 4 items.

   f. Stress - 5 items.

   g. Confidence in the commander - 16 items.

   The variable of commander tenure was assessed by the commander's report.

3. A questionnaire measuring a higher commander's evaluations of the unit, on all the research variables.

   All the questionnaires are presented in Appendix 1. The reliabilities of the questionnaires as measured by Cronbach's Alpha are presented in Appendix 2.

<u>Procedure:</u> The questionnaires were administered by two investigators to the soldiers and the commanders at the unit bases. The respondants were told that the questionnaires deal with various aspects of the unit's functioning. The duration of questionnaire administration was 20-40 minutes.

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* Since there are no clear-cut objective measures of effectiveness, it was assessed by the evaluations of soldiers and commanders. It is assumed that the sum of these evaluations reflect the objective unit effectiveness.

## Results

The results will be presented according to the following subjects:

a. Analyses of the cohesion variable.

b. Analyses of the effectiveness variable.

c. The relationship between cohesion and effectiveness.

d. The relationship between cohesion, effectiveness, and the other research variables.

### Technical remarks:

1. Analyses at the unit level refer to the mean scores of the variables in the units.
2. Due to security classification restrictions, the results would be presented only in the form of pearson correlations between the variables.
3. The distributions of all the variables are skewed due to a small N in the low categories of the response scales (categories 1 and 2). However, the correlations were calculated on the the entire range of the response scales.

## Specification of the variables

### Cohesion:

The data related to the cohesion variable are presented in two ways:

1) An index of cohesion - A mean score of all the items measuring cohesion.
2) The cohesion dimensions - Mean Score of the PCI items include in the four dimensions developed by the ARI - organizational cohesion, vertical cohesion, horizontal cohesion among soldiers and horizontal cohesion among commanders (Siebold & Kelly, 1988).

### Effectiveness:

The effectiveness variable was analyzed in three ways:

1) An index of effectiveness - a mean score of all the items measuring effectiveness.
2) An index of unit effectiveness - a mean score of the 3 items refering to unit preformance under stress, general unit effectiveness, and unit effectiveness in combat.
3) An index of personal effectiveness - a mean score of the 2 items refering to personal performance in combat and to the quality of job performance.

### Other research variables:

Professionalism, confidence in the commander, motivation, morale and stress are presented by mean scores of the items measuring each variable.

## Cohesion

The following analyses were carried out with regard to the cohesion variable:

a. Reliability analyses of the items included in the 4 dimensions composing the "Platoon Cohesion Index", according to Cronbach's Alpha.

b. Factor analysis of the "Platoon Cohesion Index" items.

c. Intercorrelations among the cohesion dimensions.

d. Comparison of the level of cohesion in units with different membership tenure.

Relibility analysis of the "Platoon Cohesion Index" items: Table 1 presents Cronbach's alpha reliabilities of the PCI dimensions (the dimensions are composed according to the ARI classification of items into dimensions - Siebold & Kelly, 1988).

Table 1

Cronbach's alpha reliabilities of the cohesion dimensions

| Items included in the index | cohesion dimension | cronbach's Alpha |
|---|---|---|
| 1. First termers support army values<br>2. Leaders set example for army values<br>3. First termers know what is expected of them<br>4. The behaviors that will get you into trouble are well known<br>5. First termers feel they play an important part in accomplishing the unit's mission<br>6. First termers are proud to be members of the unit<br>7. First termers' satisfaction with free time<br>8. First termers' satisfaction with social events<br>9. First termers feel they are serving their country<br>10. First termers have opportunities to better themselves | organizational cohesion | .84 |
| 1. First termers get help from leaders<br>2. Leaders and first termers care about each other<br>3. Leaders and first termers train well together<br>4. Leaders can lead first termers into combat | vertical cohesion | .88 |
| 1. First termers trust each other<br>2. First termers care about each other<br>3. First termers work together<br>4. First termers perform as a team | horizontal cohesion soldiers- | .89 |
| 1. Leaders trust each other<br>2. Leaders care about each other | horizontal cohesion-commanders | .75 |

The data presented in Table 1, indicate that all the cohesion dimensions succesfully replicated in the IDF population, showing a high level of reliability.

Factor analysis of the PCI items: The factorial pattern of the PCI items in the IDF was examined through principal componants factor analysis, with the varimax rotation method. The results are presented in Table 2.

Table 2

Factor analysis of the PCI items

| Items | Factors 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| * First termers trust each other | .11 | .67 | .41 | .08 |
| * First termers care about each other | .08 | .75 | .30 | .05 |
| * First termers work together | .18 | .70 | .30 | .20 |
| * First termers are proud to be members of the unit | .31 | .44 | .40 | .27 |
| * First termers perform as a team | .24 | .71 | .31 | .15 |
| * Leaders set examples for army values | .65 | .08 | .31 | .19 |
| * Leaders trust each other | .73 | .19 | .16 | .06 |
| * Leaders care about each other | .78 | .17 | .11 | -.04 |
| * First termers get help from leaders | .76 | .05 | .14 | .20 |
| * Leaders and first termers care about each other | .80 | .22 | .14 | .16 |
| * Leaders and first termers train well together | .74 | .13 | .13 | .16 |
| * Leaders can lead first termers into combat | .70 | .02 | .29 | .10 |
| * First termers support army values | .09 | .30 | .53 | .20 |
| * First termers know what is expected of them | .20 | .26 | .61 | .07 |
| * The behaviors that will get you into trouble are well known | .17 | .16 | .46 | .03 |
| * First termers feel they play an important part in accomplishing the unit's mission | .24 | .33 | .53 | .18 |
| * First termers feel they are serving their country | .12 | .28 | .60 | .15 |
| * First termers have opportunities to better themselves | .27 | .22 | .51 | .09 |
| * First termers' satisfaction with free time | .19 | .08 | .20 | .61 |
| * First termers' satisfaction with social events | .12 | .18 | .17 | .58 |

Variance explained by each factor:

| Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|
| 39% | 26% | 24% | 11% |

The factorial pattern of the PCI items is similar to the pattern identified in the U.S.A army (Siebold and Kelly, 1988).

The factors represent the dimensions of vertical cohesion and horizontal cohesion among commanders (factor no.1), horizontal cohesion among soldiers (factor no.2) and organizational cohesion (factors no.3 and no.4).

Interestingly, all the items related to the commander belong to the same factor (including the item "leaders set examples for army values", which is supposed to be related to organizational cohesion).

This might indicate a strong distinction between the concept of leadership, and other variables. This possibility is supported by a factor analysis of all the research variable indice, presented in Table .3. Of the various measures of cohesion and effectiveness used in this study, the 4 dimensions of cohesion and the overall average effectiveness score were used in this analysis.

Table 3
Factor analysis of the research variables indice

| variables | factors | |
|---|---|---|
| | 1 | 2 |
| morale | .72 | .21 |
| motivation | .61 | .04 |
| effectiveness | .59 | .22 |
| professionalism | .48 | .35 |
| stress | .31 | .01 |
| confidence in the commander | .12 | .66 |
| organizational cohesion | .67 | .46 |
| horizontal cohesion-soldiers | .66 | .32 |
| horizontal cohesion-commanders | .19 | .68 |
| vertical cohesion | .14 | .82 |

variance explained by the factors:

| factor 1 | factor 2 |
|---|---|
| 54% | 46% |

The results in Table 3 indicate that the research variables are divided into two factors: one factor (factor no.2) includes the cohesion dimensions related to commanders, and the variable of confidence in the commander. The other factor (factor no.1) includes all the remaining variables.

The variables included in the first factor are rather different from one another, and they certainly do not measure the same concept. The fact that they all belong to the same factor, while the leadership variables belong to the other, reveals the intensity of the distinction between the leadership variable and other variables related to the unit, in the IDF.

This distinction is even stronger than for example, the distinction between professionalism and stress or morale and effectiveness, which are all included in the same factor when analyzed together with leadership variables.

Intercorrelations among the cohesion dimensions:

The intercorrelations among the four cohesion dimensions, at the individual level and the unit level are presented in tables 4 and 5, respectively.

Table 4

Intercorrelations among the cohesion dimensions - individual level

(N=553)

| | organizational cohesion | vertical cohesion | horizontal cohesion-soldiers | horizontal cohesion - commanders |
|---|---|---|---|---|
| organizational cohesion | 1.00 | | | |
| vertical cohesion | .48 | 1.00 | | |
| horizontal cohesion-soldiers | .61 | .34 | 1.00 | |
| horizontal cohesion-commanders | .40 | .64 | .33 | 1.00 |

All the correlations are significant at $p<.01$.

The results presented in Table 4 show that organizational cohesion is highly related to horizontal cohesion, while the leadership cohesion dimensions (vertical cohesion and horizontal cohesion among commanders) are highly correlated to each other. However, the relationship between organizational cohesion, horizontal cohesion and the leadership cohesion dimensions is not very high. This is more clearly revealed at the level of the unit.

Table 5

Intercorrelations among the cohesion dimensions - unit level

| | organizational cohesion | vertical cohesion | horizontal cohesion-soldiers | horizontal cohesion - commanders |
|---|---|---|---|---|
| organizational cohesion | 1.00 | | | |
| vertical cohesion | .35* | 1.00 | | |
| horizontal cohesion-soldiers | .74 | .05* | 1.00 | |
| horizontal cohesion-commanders | .39 | .88 | .04* | 1.00 |

* Nonsignificant correlations
The other correlations are significant at $p<.05$.

At the level of the unit, the relationships between horizontal cohesion and the leadership cohesion dimensions, and between vertical cohesion and organizational cohesion become nonsignificant. These results suggest a different pattern of intercorrelations between the cohesion dimensions in the IDF and in the U.S. army. While Siebold and Kelly (1988) found high and significant correlations among the cohesion dimensions, the present data indicate that the relationships among the soldiers are not necessarily related to the quality of their relationship with the unit's commanders.

Table 6 presents the intercorrelations among the cohesion dimensions in the armor and in the infantry.

Table 6

Intercorrelations among the cohesion dimensions in the armor* and in the infantry**

| | organizational cohesion | vertical cohesion | horizontal cohesion-soldiers | horizontal cohesion - commanders |
|---|---|---|---|---|
| organizational cohesion | 1.00 | | | |
| vertical cohesion | infantry .53<br>armor .46 | 1.00 | | |
| horizontal cohesion-soldiers | infantry .61<br>armor .54 | infantry .37<br>armor .44 | 1.00 | |
| horizontal cohesion-commanders | infantry .41<br>armor .42 | infantry .69<br>armor .56 | infantry .31<br>armor .39 | 1.00 |

All the correlations are significant at $p<.01$.

* N=170
** N=377

The results presented in Table 6 indicate that the pattern of the correlations among the cohesion dimensions in the two corps is rather similar. However, the distinction between the leadership cohesion dimensions and the other two dimensions, seems to be stronger in the infantry than in the armor. This is indicated by the higher correlations between the two leadership cohesion dimensions, and between the other two dimensions, in the infantry.

Cohesion in units with different membership tenure:

Security classification restrictions do not premit the presentation of the cohesion means in the units. These results however, indicate that cohesion is most high in units with low membership tenure, both in the armor and in the infantry. In the infantry, units with medium and high membership tenure were characterized by similar levels of cohesion. In the armor the relationship between cohesion and membership tenure is u-shaped: cohesion decreases at the medium level of membership tenure, and increases again at the high level of membership tenure.

The correlation between cohesion and effectiveness increases from $r= .35$ ($p< .01$) and $r=.33$ ($p<.01$) for subjects with low and medium tenure in the unit (1- 3 months and 4-6 months respectively), to $r=. 51$ ($p< . 01$) for subjects with high tenure in the unit (7 months and above).

## Effectiveness

Due to the complexity of the effectiveness variable, unit effectiveness was measured through the evaluations of three command levels:

a. The soldiers in the units.

b. The unit commanders (platoon commanders in the infantry and company commanders in the armor).

c. Higher commanders of the units (company commanders in the infantry and battalion commanders in the armor).

The effectiveness evaluations of the unit commanders were positively correlated (though they did not reach significance) to the evaluations of the soldiers (r=.39), and to the effectiveness evaluations of the units' higher commanders (r=.51). Therefore, the general data regarding effectiveness will be presented jointly for soldiers and unit commanders.

## The relationship between cohesion and effectiveness

The analyses of the relationship between cohesion and effectiveness refer to the following issues:

a. The individual and the unit level.

b. Differences between the two corps.

c. The relationship between unit effectiveness, personal effectiveness and cohesion, assessed separately at different command levels.

The relationship between cohesion and effectiveness in the general sample: The correlations between cohesion and effectiveness, in the general sample are presented in Table 7.

Table 7

Correlations between cohesion and effectiveness at the individual level and at the unit level

| | individual level (N=553) | unit level (N=25) |
|---|---|---|
| cohesion index | .45 | .77 |
| organizational cohesion | .46 | .73 |
| vertical cohesion | .25 | .08* |
| horizontal cohesion-soldiers | .44 | .74 |
| horizontal cohesion-commanders | .24 | .09* |

* Nonsignificant correlation
The other correlations are significant at $p<.01$

The data presented in Table 7 show a high correlation between cohesion and unit effectiveness at the individual level. Among the cohesion dimensions, organizational cohesion and horizontal cohesion are more highly related to effectiveness than the leadership cohesion dimensions.

The analyses at the unit level reveal more extreme correlations: High correlations at the individual level become even higher at the unit level while low correlations become very low and nonsignificant.

The relationship between cohesion and effectiveness in the two corps: Table 8 presents the correlations between cohesion and effectiveness, separately for the armor and the infantry.

**Table 8**

Correlations between cohesion and effectiveness in the armor and in the infantry

| | armor (N=170) | infantry (N=377) |
|---|---|---|
| cohesion index | .35 | .48 |
| organizational cohesion | .38 | .48 |
| vertical cohesion | .27 | .28 |
| horizontal cohesion-soldiers | .31 | .52 |
| horizontal cohesion-commanders | .25 | .24 |

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

The correlation between cohesion and effectiveness is higher in the infantry than in the armor. This difference between the corps results from a higher correlation between effectiveness and the organizational and horizontal cohesion dimensions in the infantry. The correlations between effectiveness and the leadership cohesion dimensions are similar in the two corps, and are relatively low.

The relationship between unit effectiveness, personal effectiveness and cohesion, at different command levels * : The measure of effectiveness is composed of unit effectiveness evaluations and of personal effectiveness evaluations. The relationships between cohesion and those two kinds of effectiveness evaluations, were analyzed separately for soldiers and for unit commanders. The correlations between cohesion and unit effectiveness are presented in Table 9.

**Table 9**

Correlations between cohesion and unit effectiveness at the level of soldiers and at the level of unit commanders

| | soldiers (N=495) | commanders (N=58) |
|---|---|---|
| cohesion index | .52 | .55 |
| organizational cohesion | .49 | .43 |
| vertical cohesion | .26 | .29 |
| horizontal cohesion - soldiers | .50 | .44 |
| horizontal cohesion - commanders | .24 | .26* |

* Nonsignificant correlation.
The other correlations are significant at $p<.01$.

* The higher commanders of the units gave only general evaluations, and therefore their evaluations will be presented separately.

The data in table 9 show that the relationship between unit effectiveness and cohesion is similar among soldiers and commanders. Interestingly, soldiers and commanders alike percieve organizational and horizontal cohesion as more strongly related to effectiveness than the leadership cohesion dimensions.

The relationship between cohesion and personal effectiveness evaluations: The correlations between cohesion and the evaluations of soldiers and commanders of their own effectiveness are presented in tables 10.

**Table 10**

Correlations between cohesion and personal effectiveness at the level of soldiers and at the level of unit commanders

| | soldiers (N=495) | commanders (N=58) |
|---|---|---|
| cohesion index | .27 | .45 |
| organizational cohesion | .28 | .31 |
| vertical cohesion | .16 | .43 |
| horizontal cohesion - soldiers | .29 | .33 |
| horizontal cohesion - commanders | .19 | .28 |

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

The data in Table 10 show that among commanders the correlation between vertical cohesion and effectiveness is much higher, compared to soldiers. It seems then, that the quality of the relationship between soldiers and commanders is percieved by the commanders, and less so by the soldiers, as related to their personal effectiveness.

The correlation between unit effectiveness and personal effectiveness was also measured separately for soldiers and for commanders. This correlation is higher for commanders ($r=.53$, $p<.01$) than for soldiers ($r=.32$, $p<.01$). These results indicate that commanders percieve unit effectiveness as more highly related to their effectiveness in performing their job, compared to soldiers.

<u>Higher commander of the unit:</u> The correlation between cohesion and unit effectiveness assessed at the level of the unit's higher commanders is: $r=.50$ ($p<.09$).

The relationship of cohesion and effectiveness with the other variables

The relationship of cohesion and effectiveness with the other research variables was examined with regard to the individual and the unit level, and separately in the two corps.

The correlations at the individual level and at the unit level are presented in Table 11 and Table 12, respectively. (the correlations between the cohesion dimensions and the other variables are presented in Apendixes 3 and 4).

**Table 11**

Correlations between cohesion, effectiveness and the other variables, at the individual level

(N=533)

| | professionalism | confidence in the commander | motivation | morale | stress |
|---|---|---|---|---|---|
| effectiveness | .60 | .23 | .30 | .44 | .07* |
| cohesion index | .47 | .45 | .39 | .56 | .13 |

* Nonsignificant correlation
The other correlations are significant at p<.01.

**Table 12**

Correlations between cohesion, effectiveness and the other variables, at the unit level

(N=25)

| | professionalism | confidence in the commander | motivation | morale | stress |
|---|---|---|---|---|---|
| effectiveness | .77 | .01* | .50 | .76 | .39 |
| cohesion index | .68 | .31* | .61 | .7[illegible] | .63 |

* Nonsignificant correlation
The other correlations are significant at p<.01.

The data presented in Tables 11 and 12 show that professionalism, morale and to a lesser degree motivation, are highly related to both cohesion and effectiveness. Stress is highly related to cohesion at the unit level.

The relationships between cohesion effectiveness and the other variables in the two corps are presented in Tables 13 and 14, respectively (the correlations between the cohesion dimensions and the other variables, are presented in Appendixes 5 and 6).

Table 13

correlations of cohesion and effectiveness with the other variables, in the armor

(N=170)

| | professionalism | confidence in the commander | motivation | morale | stress |
|---|---|---|---|---|---|
| effectiveness | .67 | .20 | .22 | .33 | .-10* |
| cohesion index | .40 | .46 | .43 | .57 | .-01* |

* Nonsignificant correlation
The other correlations are significant at p<.01.

Table 14

correlations of cohesion and effectiveness with the other variables, in the infantry
(N=377)

| | professionalism | confidence in the commander | motivation | morale | stress |
|---|---|---|---|---|---|
| effectiveness | .57 | .29 | .32 | .48 | .10 * |
| cohesion index | .52 | .50 | .34 | .53 | .13 |

* Non significant correlation
The other correlations are significant at $p<.01$.

The data presented in Tables 13 and 14 reveal some differences between the two corps in the relationships among the variables: In the armor, effectiveness is more highly correlated to professionalism than in the infantry. On the other hand, the correlation between effectiveness and motivation is higher in the infantry. The infantry soldiers also percieve cohesion to be more highly related to professionalism (and also to effectiveness, as indicated by the data presented in Table 8). It seems that in the armor, which is a more technical corps, there is a sharper distinction between the "instrumental" variables (i.e. professionalism, effectiveness) and the social variables (i.e. cohesion, motivation). The armor soldiers percieve the unit effectiveness as mainly related to the unit's professional level, while the infantry soldiers percieve both their professionalism and the effectiveness of the unit, as more highly related to cohesion.

Commanders tenure: Due to technical problems the data about the commander's tenure in the unit includes only nine units (278 soldiers). The unit were divided into two groups according to the commanders tenure. No significant differences were found between the groups, with regard to the means of cohesion and effectiveness.

## The relationship between cohesion and effectiveness at various levels of the other variables

The influence of various unit variables on the relationship between cohesion and effectiveness is a plausible explanation for the wide range of correlations between the two variables, which was discovered in previous studies.

In order to study the influence of the other research variables on the relationship between cohesion and effectiveness, we examined the relationship between the two variables at high and low levels of these variables.

The correlations are presented in Table 15.

**Table 15**

correlations between cohesion and effectiveness at different levels of the other variables*

| | professionalism | confidence in the commander | motivation | morale | stress |
|---|---|---|---|---|---|
| very high level | .19 | .44 | .36 | .24 | .75 |
| high level | .24 | .41 | .40 | .25 | .39 |
| low medium level | 0.32 | 0.38 | 0.39 | 0.40 | 0.36 |

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

The differences between the correlations at the three levels of each variable, were assessed by z-test for examining the significance of differences between pearson correlations. Significant differences between the correlations were found with regard to two variables:

1. Morale - A significant difference between the correlation at the very high level and the correlation at the low-medium level ($p<.05$).

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* Due to the narrow range of the distributions, the levels were defined as follows:

very high level - category 5 of the response scale.

high level - category 4 of the response scale.

Low - medium level - categories 1-3 of the response scale.

2. Stress - significant differences between the correlations at the high level ($p<.01$) and at the low-medium level ($p<.01$).

The data in Table 15 show that the correlation between cohesion and effectiveness increased at a higher level of stress, and decreases at a higher level of morale.

The correlations between the cohesion dimensions and effectiveness, at different levels of the other variables, are presented in Table 16.

Table 16

<u>correlations between the cohesion dimensions and effectiveness at high, and low levels of the other variables</u>

| | professionalism | | confidence in the commander | | motivation | | morale | | stress | |
|---|---|---|---|---|---|---|---|---|---|---|
| | L-M | VH | L-M | VH | L-M | VH | L-M | VH | L-M | VH |
| organizational cohesion | .36 | .30 | .43 | .50 | .44 | .48 | .38 | .31 | .37 | .71 |
| vertical cohesion | .04* | .-09* | .15 | .19* | .12 | .28 | .24 | .08* | .24 | .45 |
| horizontal cohesion-soldiers | .36 | .29 | .40 | .48 | .36 | .35 | .35 | .44 | .38 | .69 |
| horizontal cohesion-commanders | .14* | .-06* | .08* | .43 | .23 | .26 | .22 | .10* | .18 | .40 |

* Nonsignificant correlations

The other correlations are significant at $p<.01$.

The z-test for examining the significance of the differences between pearson correlations indicates significant (or nearly significant) differences between the following correlations:

1. The correlations between vertical cohesion and effectiveness at low-medium and at very high levels of morale ($p<.08$).
2. The correlations between all the cohesion dimensions and effectiveness, at low-medium and at very high levels of stress ($p<.05$).

The correlations in Table 16 show a decrease in the relationship between vertical cohesion and effectiveness with the increase in morale.

The relationships between the cohesion dimensions and effectiveness increase with the increase in stress.

## Discussion

In previous researches studying the relationship between cohesion and unit effectiveness, a rather wide range of correlations was found. This was attributed mainly to the inconsistent definitions of both cohesion and effectiveness, and to the existance of intervening variables, influencing the relationship between the two variables.

The major purpose of the present research was to study the relationship between cohesion and unit effectiveness, with regard to different aspects of cohesion and effectiveness, and other variables which might effect the relationship between the two variables.

The results show a strong positive relationship between cohesion and effectiveness, when analyzed as overall average measures.

This relationship was maintained at different command levels (i.e. soldiers, unit commanders, higher commanders of the units), and when the correlations were analyzed separately for the two corps. The intensity of the correlation between cohesion and effectiveness is similar to the intensity of the correlation between professionalism and effectiveness. This finding indicates that the building of unit cohesion might be as important as the improvement of the unit's professional level.

The positive relationship between cohesion and effectiveness was already discovered in previous studies. However, analyses refering to the dimensions comprising these variables, reveal some interesting results.

In the U.S. army, cohesion is defined as a multidimensional variable, including cohesion among soldiers, cohesion between commanders and soldiers and organizational cohesion. In the IDF the theoretical definition of cohesion is much narrower, refering only to the cohesion among the unit soldiers. Accordingly, it might have been expected that the intercorrelations among the cohesion dimensions and their relationship to other variables, would be different in the IDF than in the U.S. army.

Although the relibilities of the cohesion dimensions (measured by the PCI) were replicated in this research, their pattern is different from the pattern revealed in studies conducted in the U.S. army (for example, Siebold and Kelly 1988).

In the IDF, there seems to be a sharp distinction between cohesion related to the commanders (i.e. vertical cohesion and horizontal cohesion among commanders) and other kinds of cohesion (i.e. organizational cohesion and horizontal cohesion among soldiers).

In other words, the results indicate that in the IDF the variables related to the commander belong to a separate concept. Leadership is a very central concept at all the levels of the Israeli army, and this might lead to it's perception as being separate from the other variables related to the unit.

Vertical cohesion and horizontal cohesion among commanders were found to be less related to unit effectiveness, than the other two cohesion dimensions. It should be noted that the evaluation of vertical cohesion and horizontal cohesion among commanders, was rather high. Possibly, at high levels of these cohesion dimensions, their influence on effectiveness is less meaningful; the relationship between the soldiers and commanders are not less important than the relationship among the soldiers, but they seem to

be influential only at their lower level. It is possible that when the relationship between commanders and soldiers, or among commanders, are problematic, effectiveness is damaged.

The high correlations between horizontal cohesion, organizational cohesion and effectiveness suggest that these types of cohesion should be especialy fostered. Good relationships among the soldiers and satisfaction with and commitenent to the organization are related to higher levels of effectiveness.

The relationship between cohesion and effectiveness was also analyzed with regard to two effectiveness dimensions: personal effectiveness and unit effectiveness. The results indicate that both commanders and soldiers percieve unit effectiveness as more highly related to organizational and horizontal cohesion than to the commander cohesion dimensions. However commanders percieve their personal effectiveness as highly related to the commander cohesion dimensions. These results suggest that the relationship between soldiers and commanders are percieved to be relatively less important for unit effectiveness, by soldiers and commanders alike. Nevertheless, commanders believe that it is part of their duty to maintain good relationship with their soldiers, and regard the quality of the relationship as a criterion of their effectiveness in performing their job.

In conclusion, although the general relationship between cohesion and effectiveness, was found to be strong, the results suggest that the measurement of the relationship between the two variables must be done with regard to the multidimensional nature of both effectiveness and cohesion.

Since cohesion is only one of the variables influencing the unit's effectiveness, cohesion, effectiveness and the relationship

between them were studied with regard to other unit variables.

Professionalism was found to be highly related both to cohesion, and to effectiveness. The relationship between professionalism and cohesion might be cyclic: As professionalism demands a high level of team-work, cohesive units are able to attain a high level of professionalism. Additionally, members of units with high level of professionalism are proud to be part of the unit, and this might elevate the unit cohesion.

The relationship between professionalism and effectiveness is almost self - evident, since a high level of professionalism is a necessary condition for unit effectiveness. Units with a high professional level are bound to be more effective than less professional units, all other things being equal.

Morale and motivation, like professionalism, are highly correlated with effectiveness and with cohesion. The relationship between morale, motivation and effectiveness, might also be cyclic: morale and motivation influences the ability and the willingness of the soldiers to preform effectively, and soldiers that evaluate their unit as effective are more content and more highly motivated.

The finding indicating that at a higher level of morale, the relationship between effectiveness and vertical cohesion decreases, suggests that the quality of the relationship between soldiers and commanders is mainly important when morale is low.

Stress is highly related to cohesion (at the unit level). Apparently, units experiencing high levels of stress become more cohesive, because cohesion is a "buffer" aganinst stress.
This process is positive, since the relationship between cohesion and effectiveness increases at high levels of stress. It seems that cohesion has a major influence on the unit's ability to function in stressful situations. Thus, in times stress (which might occur not only in combat, but also during routine activities), the building of unit cohesion should be especially emphasized.

With regard to the relationship between membership tenure and unit cohesion, the findings of the present study replicate the findings of siebold (1988), indicating that cohesion is most high when membership tenure is low. However, it was also found in the present study, that the relationship between cohesion and effectiveness increases with the increase in membership tenure. The reasons for the decline in cohesion with the increase in membership tenure, and the relationship between cohesion and effectiveness at different level of membership tenure, should be explored in further studies. These studies might examine the variales in varions types of units focusing on group processes which could effect the level of unit cohesion and it's relation to unit effectiveness over time.
Another issue that should be further studied is the type of unit cohesion which characterizes units in various situations. The A.R.I model of cohesion is supposed to be univerasal to all units. However, it is possible that there is a variation in the types of cohesion which are develop in different units. For example, "temporal" units (i.e. units in military courses which are disbanded at the end of the course) might be expected to develop a different

kind of cohesion than permanent units. This difference might be expressed by differences in the intensities of the cohesion dimensions, the salience of instrumental vs. Affective cohesion etc.

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# APPENDIX

# Appendix 1

## Items included in the questionnaires

### Cohesion

* First-termers in this platoon uphold and support army values.

  A. Strongly agree
  B. Agree
  C. Borderline
  D. Disagree
  E. Strongly disagree

* Leaders in this platoon set the example for army values.

  A. Strongly agree
  B. Agree
  C. Borderline
  D. Disagree
  E. Strongly disagree

* First-termers trust each other in this platoon.

  A. Strongly agree
  B. Agree
  C. Borderline
  D. Disagree
  E. Strongly disagree

* First-termers in this platoon pull together to perform as a team

  A. Strongly agree
  B. Agree
  C. Borderline
  D. Disagree
  E. Strongly disagree

* Leaders in this platoon trust each other.

  A. Strongly agree
  B. Agree
  C. Borderline
  D. Disagree
  E. Strongly disagree

* Leaders in this platoon care about each other.

  A. Strongly agree
  B. Agree
  C. Borderline
  D. Disagree
  E. Strongly disagree

* First-termers in this platoon care about each other.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* How well do first-termers in your platoon work together to get the job done?

A. Very well
B. Well
C. Borderline
D. Poorly
E. Very poorly

* Leaders and first-termers in this platoon train well together.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* First-termers in this platoon can get help from their leaders on personal problems.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* Leaders and first-termers in this platoon care about one another.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* First-termers are proud to be members of this platoon.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* Leaders in this platoon have the skills and abilities to lead first-termers into combat.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* first-termers in this platoon know what is expected of them.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* In this platoon the behaviors that will get you in trouble are well known.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* How satisfied are the first-termers in this platoon with the time available for family, friends and personal needs?

A. Very satisfied
B. Slightly satisfied
C. Borderline
D. Slightly dissatisfied
E. Very dissatisfied

* How satisfied are the first-termers in this platoon with the unit.

A. Very satisfied
B. Slightly satisfied
C. Borderline
D. Slightly dissatisfied
E. Very dissatisfied

* First-termers in this platoon feel they are serving their country.

A. Strongly agree
B. Agree
C. Borderline
D. Disagree
E. Strongly disagree

* First-termers in this platoon feel they play an important part in accomplishing the unit's mission.

A. Strongly agree

B. Agree

C. Borderline

D. Disagree

E. Strongly disagree

* First-termers in this platoon have opportunities to better themselves.

A. Strongly agree

B. Agree

C. Borderline

D. Disagree

E. Strongly disagree

* The social relations between soldiers and the commanders in the company/platoon are:

  A. Very good

  B. Good

  C. Moderate

  D. Not so good

  E. Bad

* To what extent is your company/platoon cohesive ?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* To what extent do the soldiers in your company/platoon help one another ?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* To what extent do the soldiers get along well together ?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* Are there incidents of quarreling between soldiers in your company/ platoon ?

  A. There are many incidents

  B. There are few incidents

  C. There are no incidents at all.

* To what extent do you agree with the following statement about yourself:

  "I am an integral part of this company/platoon"

  A. Strongly agree

  B. Agree

  C. Moderately agree

  D. Disagree

  E. Strongly disagree

## CONFIDENCE IN THE COMMANDER

* How well acquainted are you with your commander ?

  A. Very well

  B. Well

  C. Moderately

  D. Not well

  E. Not at all

* To what extent do you have confidence in your commander ?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* To what extent are the following statements true about yourself:

| | | to a very large extent | to a large extent | to a moderate extent | to a small extent | not at all |
|---|---|---|---|---|---|---|
| * | I am willing to follow my commander to any mission | A | B | C | D | E |
| * | I am skeptic about things that my commander tells me | A | B | C | D | E |
| * | I will try to perform any task that my commander tells me to do | A | B | C | D | E |
| * | I can't depend upon my commander's promises | A | B | C | D | E |
| * | I am willing to tell my commander blunders that I made | A | B | C | D | E |

* To what extent are the following descriptions accurate regarding your commander ?

| | | very accurate | accurate | moderately accurate | not so accurate | not accurate at all |
|---|---|---|---|---|---|---|
| * | responsible | A | B | C | D | E |
| * | couldn't care less | A | B | C | D | E |
| * | reliable | A | B | C | D | E |
| * | a model commander | A | B | C | D | E |
| * | truthful | A | B | C | D | E |
| * | inconsiderate | A | B | C | D | E |

* Here is a list of behaviors and traits. To what extent does each of them describe your direct commander ?

| | | to a very large extent | to a large extent | to a moderate extent | to a small extent | not at all |
|---|---|---|---|---|---|---|
| * | The commander takes care of his soldiers (enough sleep, changing clothes, etc.) | A | B | C | D | E |
| * | Your commander gives a true and correct report to the soldiers of what is happening | A | B | C | D | E |
| * | Your commander runs the unit efficiently | A | B | C | D | E |

PROFESSIONALISM

* To what extent does your company/platoon stand up to the professional level required in combat situations ?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* In your opinion, how efficient would your company/platoon be in a change-over from peace-time to stand-by ?

  A. Very efficieint

  B. Efficient

  C. Moderately efficieint

  D. Inefficient

  E. Very inefficieint

* To what extent is your company/platoon ready for war ?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* How would you rate the professional level of your company/platoon ?

A. Very high

B. High

C. Moderate

D. Low

E. Very low

* How would you evaluate your professional level as a soldier?

A. Very high level

B. High level

C. Medium level

D. Low level

E. Very low level

## Motivation

* To what extent are the soldiers in your company/platoon willing to put effort into their tasks beyond what is expected of them ?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* To what extent do you want to be an officer in the army?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* How important is it for you to contribute to the army missions?

  A. Very important

  B. Important

  C. Moderately important

  D. Not so important

  E. Not important at all

* To what extent do you want to be an officer in the army?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* How important is it for you to perform your job well?

  A. Very important

  B. Important

  C. Moderately important

  D. Not so important

  E. Not important at all

* To what extent do you want to remain in a combat unit?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* To what extent are you willing to put effort into your tasks beyond what is expected of you?

  A. To a very large extent

  B. To a large extent

  C. To a moderate extent

  D. To a small extent

  E. Not at all

* How important is it for you to demonstrate competence in the military service?

A. Very important

B. Important

C. Moderately important

D. Not so important

E. Not important at all

## MORALE

* How is the morale in your company/platoon ?

A. Very high

B. High

C. Mederate

D. Low

E. Very low

* How is your personal morale ?

A. Very high

B. High

C. Mederate

D. Low

E. Very low

* How satisfied are yor with:

| | very satisfied | satisfied | moderately satisfied | not so satisfied | very dis satisfied |
|---|---|---|---|---|---|
| * Your military service in general | A | B | C | D | E |
| * The position that you hold | A | B | C | D | E |
| * The unit that you serve in | A | B | C | D | E |

## STRESS

* What degree of stress do you experience with regard to the activity you are doing now ?

A. Very high

B. High

C. Moderate

D. Low

E. Very low

* How often do the following events occur in your job:

| | Very often | Often | Sometimes | Rarely | Almost never |
|---|---|---|---|---|---|
| * Demands to perform tasks on a short scheduale | A | B | C | D | E |
| * Unplanned tasks which make it difficult for me to perform my job thoroughly | A | B | C | D | E |
| * Commanders adress me with contrasting demands | A | B | C | D | E |
| * Work overload | A | B | C | D | E |
| * Few sleeping hours | A | B | C | D | E |
| * Continious physical efforts | A | B | C | D | E |

* How succesfuly do you cope with the everyday hardships and stresses of your jobs?

A. Very successfuly

B. Successfuly

C. Moderately

D. Unsuccessfuly

E. Very unsuccessfuly

## UNIT EFFECTIVENESS EVALUATIONS

* The following scale is representing effectiveness. Where would you place this company/platoon ?"

| A | B | C | D | E |
|---|---|---|---|---|
| Very high effectiveness | High effectiveness | Moderate Low effectiveness | Low effectiveness | Very low effectiveness |

* How would you eveluate your effectiveness as a soldier?

  A. Very effective

  B. Effective

  C. Moderate

  D. Uneffective

  E. Very uneffective

* In your opinion how successfully would your company/platoon perform under the stress of a combat situation ?

  A. Very successfuly

  B. Successfuly

  C. Moderetaly

  D. Not so successfuly

  E. Not successfuly at all

* How well do you perform your job?

  A. Wery well

  B. Well

  C. Moderately

  D. Not so well

* In your opinion, how succesfully would you perform in a combat situation?

  A. Very succsesfuly

  B. Succesfuly

  C. Moderatly

  D. Unsuccesfuly

  E. Very unsuccesfuly

## Commander evaluation questionnaire

You are asked to evaluate the units under your command with regard to the following issues:

| | unit 1 | unit 2 | unit 3 |
|---|---|---|---|
| * General effectivity | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * General performance | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * Mission performance | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * Expected performance in combat | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * Performance under stress | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * Proffesionalism | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * Cohesion | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * Morale | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * Motivation | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| * The functioning of the unit | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |
| commanders | 1 2 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 |

5-very high level

4-high level

3-moderate level

2-low level

1-very low level

## Appendix 2

Cronbach's alpha reliability of the indexes

| Index Name | Cronbach's alpha reliabilities | Items included in the index |
|---|---|---|
| cohesion | .92 | *The "Platoon Cohesion Index" items<br>*Social relations betweem soldiers and commanders<br>*Unit cohesion<br>*soldiers help each other<br>*Soldiers get along well toghether<br>*Incidents of quarreling in the unit |
| profesionalism | .81 | *Unit's proffesional level<br>*effeciency in change-over from peace time to stand-by<br>*Unit's readiness for combat<br>*proffesional level required in combat situations<br>*personal proffesional level |

**Appendix 2**
Cronbach's alpha reliabilities of the indexes (cont.)

| Index Name | Cronbach's alpha reliabilities | Items included in the index |
|---|---|---|
| motivation | .78 | * willingness to put effort into the tasks<br>* precieved importance of contributing to the army<br>* desire to be an officer<br>* the importance of doing the job well<br>* desire to continue the service in a fighting force<br>* doing beyond the expected in the job<br>* the importance of proving one's personal ability<br>* the importance of demonstrating competence |
| Morale | .78 | * unit's morale<br>* satisfaction with the military service<br>* satisfaction with the job<br>* satisfaction with the unit |
| Stress | .70 | * personal performance under combat stress<br>* stress experienced with regard to the present activity<br>* work overload<br>* few sleeping hours<br>* physical efforts |

| Index Name | Cronbach's alpha reliabilities | Items included in the index |
|---|---|---|
| Effectiveness | .69 | * unit effectiveness<br>* personal level of performing the job<br>* unit effectiveness in combat<br>* personal effectiveness in combat<br>* unit effectiveness under stress |
| | .90 | * willing to follow the commander<br>* willingness to perform tasks the commander orders to do<br>* the commander is responsible<br>* the commander is a model commander<br>* the commander runs the unit efficiently<br>* confidence in the commander<br>* not trusting the commander's promises<br>* the commander is reliable<br>* the commander is truthful<br>* the commander gives true and correct reports<br>* uncaring<br>* inconsiderate<br>* cares for the soldiers<br>* tell the commander blunders |

## Appendix 3

Correlations between the cohision dimensions and the other variables, at the individual level

| | professionalism | confidence in the commander | motivation | morale | stress |
|---|---|---|---|---|---|
| organizational cohesion | .43 | .38 | .42 | .59 | .14 |
| vertical cohesion | .37 | .61 | .17 | .30 | .-01* |
| horizontal cohesion-soldiers | .41 | .27 | .33 | .55 | .16 |
| horizontal cohesion-commanders | .32 | .49 | .22 | .30 | .07* |

## Appendix 4

Correlations between the cohesion dimensions and the other variables, at the unit level.

| | professionalism | confidence in the commander | motivation | morale | stress |
|---|---|---|---|---|---|
| organizational cohesion | .71 | .20* | .61 | .83 | .64 |
| vertical cohesion | .35* | .82 | .09* | .08* | .25* |
| horizontal cohesion-soldiers | .52 | .04* | .66 | .84 | .62 |
| horizontal cohesion-commanders | .41 | .73 | .21* | .14* | .36* |

* Non significant correlation
The other correlations are significant at $p<.01$