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EXAMINING THE IMPACT OF PERSONALITY AND SITUATIONAL FACTORS ON DECISION MAKING AMONG MILITARY STAFFS

Key words

Staff, performance, stress reactions, personality, group dynamics, decision-making

Abstract

Military staff performance may be inferior due to several reasons. The purpose of the present survey was to study the impact of stress reactions, personality factors, situation awareness, and maladaptive group dynamics on the quality of the decision-making in Swedish high-level military staffs. Participants were mainly captains and majors, but also lieutenant colonels and colonels took part (n = 256, 61 % response rate). A mainly self-made questionnaire was administered in two staff exercises. Maladaptive group dynamics, stress exposure, lack of situation awareness, and negative stress reactions were the strongest predictors of poor staff performance, while personality had less impact.

Introduction

Military leadership at higher organizational levels has several specific characteristics, implying that knowledge and skills from lower-level leadership may not necessarily be applicable. While lower-level leadership often involves an individual commander giving orders face to face, higher-level leadership is often characterized by a more complex social interplay where the staff has an important function, and by a more complex and long-term decision-making process. The present study focuses on the latter level and on the question: what affects the decision-making quality in military staffs?

One problem with military decision-making relates to *stress exposure*, for instance time pressure, and that consequences of a mistake may literally be a question of life and death. According to most organization theories (e.g. Cameron, Kim & Whetten, 1987), top management tends to take a firmer grip in tough times, which

may not always be functional (Larsson, Haerem, Sjöberg, Alvinius & Bakken, 2007).

A large body of research has documented that moderate levels of stress exposure increase performance, while higher levels will decrease it. This pattern is also valid for groups (Kerr & Tindale, 2004), and for military officers, even if they are expected to have a good stress coping potential (Wallenius, 2001; Wallenius, Johansson & Larsson, 2002; Wallenius, Larsson & Johansson, 2004). Generally, stronger *stress reactions* are accompanied by a narrowed focus of attention. This implies that capacity for complex information-processing diminishes and the more complex the tasks involved the faster this will happen. When making decisions there will be a decrease in the number of alternative solutions that is considered, and an increase in the tendency to scan alternatives in a non-systematic fashion (for a review, see Wallenius, 2001). There is, accordingly, reason to believe that one cause of decision-making faults is stress reactions, when the optimal level of stress exposure is exceeded.

One classical way of approaching the quality of military leadership is to relate it to more general individual traits, like *personality* (Chidester, Helmreich, Gregorich & Geis, 1991; Jacobs & Jaques, 1991; Keegan, 1982). Referring to the Five Factor model of personality (McCrae & Costa, 2008), lower levels of Emotional Stability and Conscientiousness have been found to covary with poorer performance, while the results related to the other personality dimensions are less clear-cut (Barrick & Mount, 2005; Judge, Joyce, Ilies & Gerhardt, 2002). However, even if the correlation between general traits and performance may often be statistically significant, it still leaves a lot of the variation unexplained. The present approach is for that reason based on the impact of the interaction between individual trait-factors and situational factors related to the decision-making process and its context (cf. Endler & Magnusson, 1976).

A fourth potential reason for decision-making faults is inaccurate *situation awareness*, a problem frequently discussed in military psychological research (Matthews, Beal & Pleban, 2002). Especially as we move towards a distributed network organization, with less physical connections within a staff, the problem of different or unclear appraisals of situations is actualized. Situation awareness has been shown to be a significant indicator of operational readiness in senior staff military officers (Eid, Johnsen, Brun, Laberg, Nyhus & Larsson, 2004).

A fifth problem is that a staff may be affected by *maladaptive group dynamics*, like groupthink (Janis, 1972). This well-known concept is developed from case studies

on military decision-making. Janis' conclusion is that a decision group exposed to stress may fall victim to false cohesiveness. Single members will adapt to group norms and to high status members, instead of critically examining the decision alternatives. The staff may choose an alternative too fast, without flexibility for re-examination. This concept and model has been subject to criticism and empirical studies of the model have given mixed results (Kerr & Tindale, 2004). However, several researches have agreed that imperfect decision-making may be a result of false consensus, insensitive high status members, or lack of critical examination of the alternatives (see e.g., Orasanu & Salas, 1993). One possible theoretical explanation to these maladaptive group dynamics is given by evolutionary social psychology, which postulates a basic fear of exclusion from groups (Buss, 1999; Marks & Nesse, 1994). Exclusion implied less survival chances and less fitness in prehistoric hunter/gatherer groups. Accordingly, our present genes come from those in the past who feared exclusion, even if they had to pay with adaptation to group norms and submissiveness to dominating members.

Janis' assumption is, as concluded, that a cohesive group may strive towards a false consensus, instead of critically examining the decision alternatives. A common notion within military psychology is, in contrast, that group cohesiveness promotes good performance. We have to distinguish, however, between cohesiveness in an equal-status group and the false cohesiveness caused by submissiveness to high-status group members. There is reason to believe that a military staff may fall victim to the latter, due to the obvious hierarchy in the military organization.

Following from this brief overview, it is reasonable to assume that decision-making in military staffs are affected by the actors' personalities and situation awareness and by the quality of the group processes within the staff. This leads to the aim of this study, stated in the form of a hypothesis.

Higher level military staffs with poorer decision-making and performance quality are characterized by: (1) a higher exposure to stress, (2) members with more negative stress reactions, (3) members with lower levels of Emotional Stability and Conscientiousness, (4) members with lower levels of situation awareness, and (5) more maladaptive group dynamics.

Method

Participants

A questionnaire was administered to participants in two Swedish exercises in staff work. The respondents of the questionnaire were anonymous and no data on gender, age, or rank was obtained. The exercise participants in general were students from the two major programs at the Swedish National Defence College, complemented with external participants from other organizations related to the armed forces. The students in the Staff Program are typically captains around 35 years of age and the students in the Advanced Command Program are typically majors around 40 years of age. Consequently, the military ranks were mainly captains and majors, but also lieutenant colonels and colonels participated on higher positions.

On the *Tactical Staff Duty Exercise*, the total number of participants in the exercised staffs was 219. Returned questionnaires were obtained from 156 officers, implying a total response rate of 71%. On the *Maritime /Air Force Staff Exercise* the total number of participants in the exercised staffs was 204. Returned questionnaires were obtained from 100 officers, implying a total response rate of 49%. The total number of participants in the study is accordingly 256. Their position in the staffs were chiefs (n = 42), deputies (n = 17), members (n = 175), and assistants (n = 20).

Measures

Data were collected through a questionnaire covering six areas (see below). Two of these, *Personality* and *Situation Awareness*, were measured using scales from other studies. The remaining four areas were mapped with questions specifically designed for this study. The reason for preferring self-made measures is that we found existing scales poorly adapted to the specific context of the study (military staffs). All these newly constructed items were based on pilot trails made during the preceding year on similar exercises.

A dimensional analysis of the newly constructed items based on the covariance matrix was performed using structural equation modeling (SEM) with maximum likelihood estimates. A model resulting in the four factors *Stress Exposure, Stress Reaction, Maladaptive Group Dynamics,* and *Performance Failure* was obtained. The statistical goodness-of-fit of the model and the empirical outcome was

acceptable; a root mean square error of approximation (RMSEA) of 0.060 was found. Further details of the SEM analysis can be obtained from the authors.

1. ***Stress Exposure***: The scale has 3 items, e.g. "The work load is high" (α = .78).

2. Stress Reaction: The items were formulated to map effects on cognitive capacity shown in empirical research (see e.g., Wallenius, 2001). This included the assumption that stress exposure could have both positive and negative implications. Accordingly, this factor was divided in two scales: *Positive Stress Reaction* with 3 items, e.g. "I feel focused" (α =. 41) and *Negative Stress Reaction* with 5 items, e.g. "My thoughts go blank" (α = .78).

3. Personality: The items were based on the Big Five model of personality (Bäccman & Carlstedt, 2010). The items were selected from the International Personality Inventory Pool (IPIP, 2001) with the aim of assessing relevant personality aspects for the military population. The factors were *Emotional Stability* (reversed pole of *Neuroticism*) with 7 items, e.g. "I often feel inferior" (α = . 66), *Extraversion* with 4 items, e.g. "Often take initiative to conversations" (α = .67), *Openness to Experience* with 12 items, e.g. "Ask questions that no-one else does" (α = . 86), *Agreeableness* with 4 items, e.g. "Make others feel at ease" (α = .86), and *Conscientiousness* with 9 items, e.g. "I seldom make hasty decisions" (α = .61).

4. Situation Awareness: The scale is developed by Eid et al. (2004). It has 3 items, e.g. "The situation of our own forces is clear to me" (α =.64).

5. Maladaptive Group Dynamics: The formulations of these items, as well as the performance items, were mainly inspired by the symptoms of groupthink as formulated by Janis (1972). The scale has 6 items, e.g. "It is hard to express divergent views" (α = .59).

6. Performance Failure. The scale has 4 items: "The group fails to identify action alternatives", "The group fails to note information", "The group makes wrong decisions", and "The group failed a task" (α =. 80).

All items were answered on a 6-point response scale ranging from *Do not agree at all* (=1) to *Fully agree* (=6), except the personality items that had a response scale from *Never occurs* (= 1) to *Occurs all the time* (= 6).

Procedure

The first exercise, *Tactical Staff Duty Exercise*, took place at 1st Signals Regiment in Enköping, Sweden, in February 2005. The scenario included a Scandinavian conflict where Swedish territory was threatened. The exercise focused on army-related issues and the exercised level was the Army Tactical Command.

The second exercise, *Maritime /Air Force Staff Exercise*, took place at the Swedish National Defence College in Stockholm in April 2005. Focus was on air force- and navy-related issues. The scenario included a NATO led Peace Support Operation, where peace support and peace enforcement operations were planned and executed. The staff was organized according to the Combined Joint Task Force concept with the following components: Head Quarters, Maritime Component Command (MCC), Air Component Command (ACC), and Combined Air Operation Centre (CAOC). The Land Component Command (LCC), which corresponds to the Army Tactical Command at the *Tactical Staff Duty Exercise* above, was simulated.

The exercises primarily had the purpose of training staff methods and routines, with emphasis on the operational and tactical levels. The staffs and their different sections were, in both exercises, physically dispersed in different rooms. Communication was mainly by e-mail and telephone, while face-to-face contact between the staff sections was minimized. This was in order to simulate a real crisis situation, where the staff sections are more dispersed in the terrain. Both exercises lasted just under one week.

The questionnaire was administered during the first half of the exercise in paper form during the *Tactical Staff Duty Exercise* and in digital web-based form during the *Maritime /Air Force Staff Exercise*. The single participant was requested to complete the questionnaire during a self-chosen natural break in the exercise duties. The intention was to administer the questionnaires in a way that minimized any interruption or disturbance of the exercises.

Statistics and Analysis

Reliability was estimated through Cronbach's Alpha. Scale scores were computed by adding the raw scores of the items of a given factor scale and dividing this sum by the number of items. The impact of potential predictors on performance failure was analyzed through correlation and multiple regression analysis.

Results

A hierarchical regression analysis with *Performance Failure* as the dependent variable was done, where the personality scales were entered in the first step and the *Stress Exposure*, *Negative Stress Reaction*, *Situation Awareness*, and *Maladaptive Group Dynamics* variables in the second. The scale *Positive Stress Reaction* was left out due to low internal consistency. The result is presented in Table 1.

Table 1: Summary of Regression Analysis for Variables Predicting Performance Failure, Bivariate Correlations, and Descriptive Statistics

Predictor variables	*B* step 1	*B* step 2	Partial correlation	Bivariate correlation with Performance Failure	*M*[a]	*SD*
Step 1						
Emotional Stability	-.06**	.01	.02	-.23***	4.78	0.60
Extraversion	.01	.00	.01	-.04	4.13	0.79
Openness to Experience	.01	.00	.02	-.02	4.19	0.67
Agreeableness	-.03	-.01	-.02	-.12	4.52	0.77
Conscientiousness	-.01	.00	.00	-.13*	4.06	0.61
Step 2						
Stress Exposure		.18**	.22	35***	3.65	0.95
Negative Stress Reaction		.24**	.20	.44***	2.08	0.71
Situation Awareness		-.23***	-.31	-.30***	3.90	0.94
Maladapt. Group Dyn.		.53***	.46	.54***	2.20	0.67
R^2	.06	.48				
Adjusted R^2	.03	.46				
R^2 change	.06	.43***				

Note: For outcome variable Performance Failure $M = 2.67$ and $SD = 0.86$. [a] Scores could range from 1 (low degree) to 6 (high degree).
* $p \leq .05$ **$p \leq .01$ *** $p \leq .001$.

The regression equation was statistically significant ($p < 0.001$). The predictor variables explained (R-square) 48% of the variance. The contribution of the second set of predictor variables *Stress Exposure*, *Negative Stress Reaction*, *Situation Awareness*, and *Maladaptive Group Dynamics* was statistically significant ($p < 0.001$).

The personality scales added little in predicting the outcome. *Stress Exposure*, *Negative Stress Reaction*, *Situation Awareness*, and *Maladaptive Group Dynamics* all made significant contributions to the amount of explained variance.

Bivariate correlations (Pearson) were also computed between all independent variables used in the regression analysis and *Performance Failure*.

Discussion

The bivariate correlations between the different predictor scales and the outcome point to a complete confirmation of the research hypothesis. However, in the multiple regression case, the picture changed. Beginning with the personality scales, only weak associations with the performance score were found. A possible explanation is that higher military staffs are such complex arenas of social interaction that individual personality characteristics have limited importance. However, an alternative explanation follows from the fact that all measures are based on self-ratings. This means that if there should be a strong relationship between personality and poor performance, one would also have to give a negative picture of oneself on the personality scales. Continuing with the remaining scales, involving the performance measure, it could be argued that they all have a situation-related nature. Thus, the high correlations obtained should be interpreted with caution due to single soured bias and the cross-sectional design of the study (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

The multiple regression analysis indicates in sum that important predictors of decision failures in a staff were high stress exposure, negative stress reactions, (lack of) situation awareness, and maladaptive group dynamics. It is reasonable that stress exposure, stress reactions, lack of situation awareness, and maladaptive group dynamics have a causal effect on decision failures. It is, however, also reasonable that the causal connections are bidirectional. Decision failures can, for instance, besides being an outcome, also be a stressor that affect stress reactions and group climate. It is therefore not meaningful to claim that one variable causes another one. They rather reinforce or weaken each other during the staff exercise.

The exception is personality, which is not assumed to be affected during the exercise.

Theoretically, the present approach implies that several factors may affect staff performance and it is important to study their relative impact and how they interact with each other. While trait approaches historically have had great impact in understanding leadership performance, it is important to note the impact of situational factors. This impact may increase on higher organizational levels and with a more complex social context. Taken together, the results can be interpreted as supporting the person-by-situation interactional paradigm (Endler & Magnusson, 1976) also in this setting.

Since the study was done in an exercise context, there is the obvious question about external validity. The stress level of an exercise, even a realistic one, may be significantly lower compared with a real crisis. A real-life stressor which is hard to simulate is the consequences of a decision failure. On the other hand, it is possible that the stressor of being judged in the educational context to some extent will compensate for this. There is no life threat, but there may be more or less of a perceived threat to personal career and status. Concerning external validity, it may also be important to note that the population of high-level military officers is homogenous because of selection and socialization processes. This implies a restricted variation on almost all included variables.

The internal consistency of the *Maladaptive Group Dynamics* factor was low, otherwise the scales exhibited satisfactory reliability. An important aim of future research within this area is therefore to further develop these measures to be statistically more solid.

There was a higher response rate when the questionnaire was administrated in paper form rather than in digital web-based form. One reason may be that the paper form implied that the research team was in more direct contact with the exercise's participants. The response rate could also be affected by other circumstances, like the work load during the exercise, the respondents' understanding of the research purpose or the perceived support from the exercise management.

The use of self-made measures implies lack of reference data from other contexts and that we have less knowledge of the validity. Self-report data on outcome could preferably be complemented with independent judgments. There are, however, several problems with the attainment of objective performance data. First, as the staffs have complex tasks, there will be an element of personal judgment how to

optimally balance different performance criteria against each other. A second problem is that instructors occasionally interfere with the decision making processes in the staffs, due to the training purpose of the exercises. Still commander feedback could be a preferable complement.

It may also be an aim in future research to gain deeper understanding of the importance of the internal structure of the group, for instance, the importance of good and bad deviators. Inclusion of organizational conditions such as degree of specialization and formalization (Bolman & Deal, 2003; Hodgkinson, 1996) would also be desirable. Another subject for future research is to elaborate the fact that staff work implies a longer process and that future research approaches will benefit from repeated, rather than single, measures. This demands a questionnaire, like the one developed in this study, easy to administer in an exercise context. A staff performance questionnaire, like the present one, could also be further development to diagnose the functional level of the staff in an operational context.

Quality of staff work is of high importance to the military, and possibly also to other groups that brings in diverse expertise and plans in high stress and dynamic environments, such as first-responders. From a more practical view, this study highlights important weak links in staff work. Even with selected personnel, good tactical ambitions, and advanced technical equipment, there is obviously still risk that decisions will be inferior. One main problem is that the staff itself may be unaware of many of these processes, while in the situation. It is, accordingly, important in any training of personnel in collective decision-making during stress, to create awareness of these processes and the implications of them.

References

Barrick, M. R., & Mount, M. K. (2005). Yes, personality matters: Moving on to more important matters. *Human Performance, 18(4)*, 359-372.

Bolman, L. G., & Deal, T. E. (2003). *Reframing organizations: Artistry, choice and leadership.* New York: John Wiley & Sons, Inc.

Buss, D. M. (1999). *Evolutionary psychology: The new science of the mind.* Boston: Allyn and Bacon.

Bäccman, C., & Carlstedt, B. (2010). A construct validation of a profession-focused personality questionnaire (PQ) versus the FFPI and the SIMP. *European Journal of Psychological Assessment, 26(2),* 137-143.

Cameron, K. S., Kim, M. U., & Whetten, D. A. (1987). Organizational effects of decline and turbulence. *Administrative Science Quarterly, 32,* 222-240.

Chidester, T. R., Helmreich, R. L., Gregorich, S. E., & Geis, C. E. (1991). Pilot personality and crew coordination: Implications for training and selection. *The International Journal of Aviation Psychology, 1(1),* 25-44.

Eid, J., Johnsen, B. H., Brun, W., Laberg, J. C., Nyhus, J. K., & Larsson, G. (2004). Situation awareness and transformational leadership in senior military leaders: An exploratory study. *Military Psychology, 16,* 203-209.

Endler, N. S., & Magnusson, D. (1976). Toward an interactional psychology of personality. *Psychological Bulletin, 83,* 956-979.

Hodgkinson, C. (1996). *Administrative philosophy: Values and motivations in administrative life.* Oxford: Elsevier Science/Pergamon.

Jacobs, T. O., & Jaques, E. (1991). Executive Leadership. In R. Gal & A. D. Mangelsdorff (Eds.), *Handbook of military psychology* (pp. 431-477). New York: Wiley.

Janis, I. L. (1972). *Victims of groupthink.* Boston: Houghton Mifflin.

Judge, T. A., Joyce, E. B., Ilies, R., & Gerhardt, M. W. (2002). Personality and Leadership: A qualitative and quantitative review. *Journal of Applied Psychology, 87,* 765-780.

Keegan, R. (1982). *The evolving self: Problem and process in human development.* Cambridge, MA: Harvard University Press.

Kerr, N. L., & Tindale, R. S. (2004). Group performance and decision making. *Annual Review of Psychology, 55*, 623-655.

Larsson, G., Haerem, T., Sjöberg, M., Alvinius, A., & Bakken, B. (2007). Indirect leadership under severe stress: A qualitative inquiry into the 2004 Kosovo riots. *International Journal of Organizational Analysis, 15,* 23-34.

Marks, I. M., & Nesse, R. M. (1994). Fear and fitness: An evolutionary analysis of anxiety disorders. *Ethnology and Sociobiology, 15,* 247-261.

Matthews, M. D., Beal, S. A., & Pleban, R. I. (2002). *Situation awareness in a virtual environment: Description of a subjective assessment scale* (Research Report No. 1786). Alexandria, VA: U.S. Army Research Institute for Behavioral and Social Sciences.

McCrae, R.R., & Costa, Jr. P.T. (2008). The Five-Factor theory of personality. In O. P. John, R. W. Robins & L. A. Pervin (Eds.), *Handbook of personality: Theory and Research* (pp. 159-181). New York: The Guilford Press.

Orasanu, J., & Salas, E. (1993). Team decision making in complex environments. In G. A. Klein, J. Orasanu, R. Calderwood & C. E. Zsambok (Eds.), *Decision making in action: Models and methods* (pp. 327–345). Norwood, NJ: Ablex Publishing Corporation.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P. (2003). Common method biases on behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology,* 88(5), 879-903.

Wallenius, C. (2001). *Human adaptation to danger (Doctoral dissertation).* Lund: Lund University, Department of Psychology.

Wallenius, C., Johansson C. R., & Larsson, G. (2002). Reactions and performance of Swedish peacekeepers in life-threatening situations. *International Peacekeeping, 19,* 133-152.

Wallenius, C., Larsson, G., & Johansson, C. R. (2004). Military observers' reactions and performance when facing danger. *Military Psychology, 16,* 211-229.