

## **Chapter 3 – ASSESSMENT OF ORGANIZATIONAL AND INTERPERSONAL FACTORS IN A SIMULATED MISSION AND IN AN OPERATIONAL ENVIRONMENT**

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### **3.1 ASSESSMENT #1: ORGANIZATIONAL AND GROUP PROCESSES, INFORMATION SHARING, DECISION MAKING, LANGUAGE, GROUP GOALS/PROCESSES, SOCIAL IDENTITY, AND CULTURE IN AN OPERATIONAL ENVIRONMENT**

#### **ABSTRACT**

This chapter presents the analysis of the organizational processes in a NATO Headquarter (HQ), based on the data collected at the NATO exercise Allied Warrior 2004 (AW04). Data was mainly collected through questionnaires and interviews.

Topics covered in the analysis are: information-sharing, decision-making, language, organization, group roles and processes, social identity, and culture. There are analyses of both quantitative and qualitative data included. The results of the analysis provide some preliminary insights into the organizational processes linked to the cooperation in a multinational headquarter as well as some preliminary insights into the cultural influence on organizational processes linked to cooperation in a multinational headquarter.

#### Sum of results:

There had been a reorganization of the Deployable Joint Task Force (DJTF), aiming to achieve a more Effects Based Operations (EBO)-type structure. In line with this, 87% of the responding personnel reported that they found the organization to be changed in this exercise. A majority also found their tasks and responsibilities to be different from usual. Those who were given increased responsibilities in this exercise were found to like it better as well as rate the organization as better.

In terms of organization, most personnel perceived the organization to be flatter, but also more centralized than what they were used to. This could indicate a higher work-load on the top leadership, which may not be optimal for the efficiency of the organizational processes. It was found that perceived flexibility was connected to perceived decentralization, in line with the expectations of NATO Network Enabled Capabilities (NNEC). Results indicated that respondents from cultures scoring low on Hofstede's Power distance (Pd) dimension<sup>1</sup>, tended to rate the organization more positively if they perceived it to be decentralized. This is in line with the finding that organizations in low Pd cultures tend towards flatter and more decentralized structures.

English language competency turned out to be an important factor to include in order to understand the organization processes and the influence of culture. Almost all respondents reported that native English speakers (NES) dominated the cooperation in the organization, and there were indications that three out of four non-native English speakers (NNES) had a handicap in the organization due to language.

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<sup>1</sup> Indicating someone who feel there is little difference between people in a hierarchy, in terms of power and worth.

Contrary to expectations, language and culture were seen as greater obstacles by the NES than the NNES; compared with NNES, NES found both language and culture to hinder them more in sharing information, as well as understanding messages from NNES.

It was found that time shortage was the most important hindrance for personnel to share information. It also seemed that culture affected communication; those from a low Pd culture reported to communicate more with peers and subordinates than did those from a high Pd culture.

The self-reports indicated that the team and the assignment meant most in creating a sense of belonging and identity for our respondents. Age and gender were reported to be the least important.

### **3.1.1 Background [AW04 Study]**

This chapter will present the organizational analysis from the Deployable Joint Task Force (DJTF) at the Allied Warrior 2004 (AW04) exercise. The personnel at the DJTF from HQ Naples were the focus of our study.

Organizational changes had been introduced in a preceding exercise in 2004, making this the second time the personnel in the DJTF exercised the new organizational structure. The reorganization of the DJTF aimed to approach a structure in line with Effects Based Operations (EBO)<sup>2</sup>. This included a change from the formerly used J-structure into to a cellular “EBO structure”, a change from separate services into a joint structure, and increased focus on the commander’s goals.

This study aimed to research what this reorganization meant for the personnel, in terms of their individual perceptions of organizational and group processes, decision-making, and information-sharing, and how these variables interacted with language skills and culture.

The study has been reported in more detail in Bjørnstad, 2005 [51] and 2006 [52].

### **3.1.2 General Aims**

Even though the study was exploratory, we had some ideas and a few hypotheses built on previous research and theory that we wanted to explore. The main focus areas are presented here, but the more detailed theoretical basis will be presented where it is appropriate in the results and discussion chapters (3.1.4 and 3.1.5). The organizational areas of focus were partly chosen for their expected relationship to culture.

#### *Information-sharing*

As information is crucial to any organization, and especially to an HQ’s functioning, we aimed to get a better understanding of how information is shared in a multinational HQ and how language and culture may affect this. Areas of focus included information push/pull, communication in the hierarchy and obstacles for information-sharing.

#### *Organizational and group processes*

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<sup>2</sup> EBO is e.g., described in the “NATO networked enabled capability (NNEC) foundation document” (NATO HQ SACT, 2004 [79]).

Organizational and group processes were at the core of our focus. Areas include: decision-making (who makes decisions), timeliness, speed and quality of decisions, organizational change, hierarchy, centralization and flexibility, change in tasks and responsibilities, cooperation and control. We also wanted to better understand what formed the personnel's identity and trust in the organization, as these may be important factors influencing organizational processes. The possible influence of language and culture was considered for all areas of focus.

### *Language skills and culture*

There are ample indications from multinational military settings that language proficiency (English) may be affecting organizational processes. We wanted to understand this better as well as control for this, to avoid confusing language proficiency with culture in the analyses. Cross-cultural organizational studies also indicate that culture is a very important variable to consider for research on multinational organizations [53][54],[55],[56].

### **3.1.3 Method**

The study was exploratory in kind and used both qualitative and quantitative measures and methods of analysis. More specifically, a combination of observation, semi-structured interviews and questionnaires were employed for the data collection. Observation played a secondary role.

Although the results reported are primarily based on statistical analyses, qualitative analyses also play an important role. The latter has helped us achieve a better understanding and context-sensitive analysis of the quantitative findings, as well as having been critical to the development and evaluation of the new survey tool.

#### **3.1.3.1 Participants**

The military personnel at the DJTF from HQ Naples were the focus of our study. They counted approximately 90 persons and were from 12 different nations; the majority of whom had their daily work at the NATO HQ in Naples.

We had two key informants, who gave us an overview of the exercise and the organization. 13 persons from the DJTF were interviewed<sup>3</sup> and 15<sup>4</sup> filled out the questionnaire on organization-related topics, rendering a total of 28 respondents. 11 out of these also answered a computerized questionnaire on culture.

#### **3.1.3.2 Materials**

##### *ORGANIZATION*

This was considered the pilot work in the development of an organization-focused questionnaire. The questionnaire endeavours to measure organization and organization-related variables anticipated to be of importance for the cooperation and decision-making in a military multicultural setting like a NATO headquarter. The questionnaire covers the topics of: Group roles and processes, Organization, Decision-making, Information-sharing, Language, Identity and Culture.

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<sup>3</sup> The interviews were semi-structured and had the same questions in the base as the organizational questionnaire (the main tool for the quantitative data collection).

<sup>4</sup> 5 of these questionnaires were mailed to us and arrived after the main part of the organizational analyses had been conducted (Bjørnstad, 2005 [51]). N=23 for most of the organizational analyses.

*Evaluation of the organizational tool of measurement*

On the basis of the AW04 data (both qualitative and quantitative) analyses, the questionnaire was revised for later use. For more details on this methodological process, please be referred to Bjørnstad, 2005 [51]. The content validity of the form should have been satisfactorily established by the measures taken. The feedback given by the respondents, primarily in the interviews, but also through comments that were made in writing, gave indications of good face validity.

*CULTURE*

The cultural data was collected through Meridian Global's "Globesmart" Self-Assessment Profile tool (SAP) developed in cooperation with David Matsumoto [53][49],[57];[60]. The SAP contains 36 questions on culture-related topics and behaviors essential in business relations across cultures [53]. These questions give scores on six dimensions of cultural values and attitudes considered to be relevant in a business context. In addition, data were collected on demographics.

The dimensions are called: Independence/Interdependence, Egalitarian/Status, Risk/Restraint, Direct/Indirect Communication, Task/Relationship, and Short-term/Long-term Orientation.

- Independence/Interdependence (I/I) refers to whether people are primarily oriented towards and organized around the individual or the group. Group orientation is linked to tight ties between people, whereas individual orientation is linked to loose ties between people. High scores indicate interdependence (Int).
- The Egalitarian/Status (E/S) dimension refers to differences in status orientation, i.e. to which degree the people in an organization find status differences important for how they act and perceive other members of the organization. High scores indicate status (S) orientation.
- The Risk/Restraint (R/R) dimension refers to differences in willingness to engage in risk-taking behavior. People from restraint oriented cultures are more rule oriented. High scores indicate restraint (Re).
- Direct/Indirect Communication (D/I) refers to the degree to which people prefer to communicate a message in a direct or indirect manner. High scores indicate indirect (Indir) communication.
- The Task/Relationship dimension pertains to differences in whether people tends to focus on the task at hand or on the relationships in the organization in order to get the work done. High scores indicate Relationship (Rel) orientation.
- Short-term/Long-term Orientation (St/Lt) refers to differences in time orientation; i.e. the degree to which people focus on today or the distant future when for instance making decisions. High scores indicate long-term orientation (Lt).

The dimensions have been validated through studies of industry and business teams in different countries ([www.meridianglobal.com](http://www.meridianglobal.com)). There is no research publication on all the dimensions collectively, i.e. the SAP tool of measurement, but there are separate publications establishing the basis from which five of the dimensions have been developed (Egalitarian/Status: [49]; Independence/Interdependence<sup>5</sup>: [57]; background

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<sup>5</sup> Adapted from the IC Interpersonal Assessment Inventory [57].

for Short-term/Long-term Orientation: [60]; background for Risk/Restraint<sup>6</sup>: [58],[59]; background for Task/Relationship<sup>7</sup>: [61]).

It is important to be aware that different cultural dimensions developed by different researchers in the field both have differences and similarities that can easily be confused when they use the same or similar name for a dimension which may have the same core meaning, but differ in important other aspects. For instance, the Individualism/Collectivism (I/C) dimension of Hofstede and Triandis carry the same name and reflect the same in the core, i.e. to which degree a culture has group or individual orientation [56],[55]. However, Triandis' dimension is a much more inclusive dimension than Hofstede's dimension, in that it for instance also refers to variations in power orientations (i.e. the subcategories, vertical/horizontal), which in Hofstede's system is defined as variations within a different dimension, Power distance (Pd). Thus, using both Triandis' I/C dimension and Hofstede's Pd dimension, would lead to a considerable overlap in meaning of the two measurements and procure the tool's discriminate validity. The risk of using overlapping dimensions has previously been identified by many researchers in the field (see e.g., [56],[62]). It is a problem that may apply to the SAP dimensions from the Globesmart tool. The definitions that are used seem to be somewhat overlapping, as well as there currently being no overall validation of the dimensions used together in one tool (discriminate validity).

The SAP dimensions have much in common with the most well-established and empirically tested cross-cultural work in the field; Triandis' cultural dimension of Individualism/Collectivism [56], and the work related value-dimensions developed by Hofstede [55]: Individualism/Collectivism, Power distance, Uncertainty avoidance, Masculinity/Femininity, Short-term/Long-term Orientation.

Hofstede's dimensions can in short be explained as follows [55]:

- Individualism/Collectivism (I/C) refers to a cultural difference in group as opposed to individual orientation. Group orientation is linked to tight ties between people, whereas individual orientation is linked to loose ties between people. High score indicate individualism (I).
- Power distance (Pd) is defined as a difference in the actual and experienced distribution of power between people in a hierarchy. High scores indicate high Pd.
- Uncertainty avoidance (Ua) refers to a difference in need for predictability and rule orientation. High scores indicate high Ua.
- Masculinity/Femininity (M/F) refers to whether the culture values toughness, assertiveness and a focus on material success as opposed to modesty, concern for others and a focus on the quality of life. High scores indicate masculinity (M).
- Short-term/Long-term Orientation (St/Lt) refers to a difference in focus; the present versus distant future. The former indicates a propensity for action whereas the latter indicates a propensity for planning. High scores indicate long-term orientation (Lt).

Three of the SAP dimensions are, deducted from the information available, somewhat similar to three of Hofstede's dimensions; Independence/Interdependence (I/I) seem to equal Individualism/Collectivism (I/C),

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<sup>6</sup> Adapted from Matsumoto et al.'s tool for measuring adaptability, the ICAPS [58],[59].

<sup>7</sup> Developed from Schwartz' Value scale [61].

Egalitarian/Status (E/S) seem to equal Power distance (Pd), and Short-term/Long-term Orientation (St/Lt) shares both name and much of the content with Hofstede's dimension. The Risk/Restraint (R/R) dimension has some in common with Hofstede's Uncertainty avoidance dimension (Ua)<sup>8</sup>, and the Task/Relationship (T/R) dimension seem have some overlap with both Hofstede's Masculinity/Femininity (M/F) and Individualism/Collectivism (I/C) dimensions. The content of the Direct/Indirect Communication (D/I) seems to some extent to be covered in both Hofstede's and Triandis' Individualism/Collectivism dimension, especially pertaining to the subcategories High/Low context and Tight/Loose society of Triandis' dimension [56].

### *Challenges of measurements*

Unfortunately the data collected on culture with the SAP matches less than half of the sample that we have organizational data on<sup>9</sup>. This has obviously made analyses difficult, and it was deemed useful to explore other sources of cultural data. Since we had information about the nationality of almost the whole sample, we were able to match this with Hofstede's cultural data for the subjects from these nationalities. In other words, Hofstede's national scores were employed in order to provide a supplementary basis for the cultural analysis. The use of such national scores is quite customary within cross-cultural research.

The choice of Hofstede's data and research to complement the SAP-data is based on this being the most well-established and researched cross-cultural data we have – especially as concerns organizational and work related issues. His work has been corroborated and expanded through numerous other studies, also with military samples (e.g., [63],[64][65],[66], [67]).

### *Evaluation of the cultural tools of measurements*

As indicated earlier in this chapter, it seemed that three of the dimensions of Matsumoto and Hofstede were similar enough for us to expect them to correlate. These were the St/Lt dimensions of Matsumoto and Hofstede, Matsumoto's I/I dimension and Hofstede's I/C dimension, as well as Matsumoto's ES and Hofstede's Pd dimensions; St/Lt pertaining to a variation in focus (present/distant future), I/I and I/C pertaining to a variation in group-individual orientation, ES and Pd pertaining to a variation in power distribution. Even though carrying the same name, the St/Lt dimensions of Matsumoto and Hofstede did not prove to be related in this sample. For the other two dimensions there were found relationships, however, in the opposite direction of what was expected; I/I was negatively related to I/C ( $r=-.291$ ,  $p=.415$ )<sup>10</sup> and ES was negatively related to Pd ( $r=-.434$ ,  $p=.210$ ). Of course, these relationships were not significant, and with such a small sample there could be numerous sources to this irregularity. But if the tendencies reflect some accuracy, it could either indicate a coding error or that at least one of the measurements is less than valid or reliable in this context. The fact that Hofstede's tool is by far the most corroborated and researched, speaks in favor of his tool. However, the fact that we have individual scores on Matsumoto's dimensions instead of aggregated scores, speaks in favor of the scores from his tool.

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<sup>8</sup> The definition of the R/R dimension seems to have some elements in common with Hofstede's Uncertainty avoidance (Ua) dimension, i.e. the rule orientation part ([www.meridianglobal.com](http://www.meridianglobal.com) [47]). However, Hofstede is very clear about his dimension referring to uncertainty and not risk (Hofstede, 1991 [55]). Hence, the differences seem to be more prominent than the similarities. All in all the definition of this dimension seems somewhat unclear; in the descriptions, risk orientation is for instance both linked to decision-making by consensus and by authority.

<sup>9</sup> This is true also for the demographic data; these data matches only for the same respondents as the SAP.

<sup>10</sup> These dimensions were scored in the opposite direction, thereby giving the positive correlation opposite meaning.

This confusion, together with a very small sample (N=11 for the SAP, Matsumoto's cultural tool of measurement), has made interpreting the results difficult at times.

The Risk/Restraint (R/R) dimension did not show much variance for this sample, thus making it difficult to use. Therefore, there are no analyses reported that have used this dimension. This adds to the previous reservations, as to whether this is a good measure.

The last two dimensions in the SAP (CSQ), D/I and T/R, did not show any relationship to Hofstede's dimensions.

### **3.1.3.3 Procedure**

The data-collection was carried out in the course of 6 days, November 2004. As indicated above, observation, semi-structured interviews and questionnaires were employed for the data collection. Observation was primarily carried out in the Combined Joint Operations Centre (CJOC) of the DJTF during and in connection with a "walk-through" with one of our key informants and during a brief held by the Commander. The organizational questionnaires and the interviews were completed on site towards the end of the exercise. The cultural questionnaires were filled in from the beginning of the exercise and continued throughout. The organizational questionnaires were pen & paper while the cultural were computerized.

The subjects were recruited on the basis of free willingness. LTAMC made a presentation of the project and the exercise commander made an appeal for the personnel to participate. The subjects would then at their own convenience drop by our "office" within the exercise quarters.

## **3.1.4 Results**

### **3.1.4.1 Information Sharing and Culture**

#### *Information push-pull related to Rank and Culture (I/C, I/I, Pd, ES)*

There were two questions in the questionnaire measuring whether the respondents primarily pushed or pulled information. These questions were significantly correlated ( $r=-.45$ ,  $p<0.05$ ,  $N=23$ ); individuals who indicated that they mostly pushed information to *many* persons, tended to indicate that the information was pushed *to* them, and those who indicated that they only pushed information to *a few* persons, tended to indicate that they pulled information *themselves*.

Qualitative data suggest that the choice between these strategies might depend on the position the person had in the exercise. Controlling for the effect of rank gave a non-significant and weaker relationship between the two variables ( $r=-.311$ ,  $p=.382$ ,  $N=8$ ). It seems that some of the covariance in the push-pull behavior is explained by a difference in rank; there is less connection between the variables for personnel higher in the hierarchy. However, as sample size is very small, this can only be viewed as tendencies. Controlling for culture (I/C and Pd) did not affect the relationship much.

Theory and empirical research on the effects of culture on cooperative behavior has indicated that there is a difference in willingness to cooperate with others depending on their culturally defined predispositions. Collectivistic cultures have been found to emphasize cooperation more than individualistic cultures (e.g., [68],[69]); Diaz-Guerrero, 1984 in [68]). Diaz-Guerrero found that individualistic cultures rather emphasized competition. However, while some researchers (e.g., [70]) have suggested that collectivism mainly predisposes to show cooperative behavior towards people from one's own group or team ("in-group"), later research [68] have shown that this tendency also extends to relations with people from other groups. The sharing of information with other members of an organization is deemed to be an example of cooperative

behavior, and we hypothesized that people from collectivistic cultures would be more willing to share information (i.e. “push”) than people from individualistic cultures.

The data from AW04 seems to support this supposition, even if the sample is too small to provide any significant numbers. There was found a small tendency for people from a collectivistic culture to report that they push information to more people than those from individualistic cultures ( $r=-.255$ ,  $p=.241$ ,  $N=23$ ).

However, confusing the results somewhat, the SAP measurement, I/I, showed the opposite ( $r=-.343^{11}$ ,  $p=.301$ ,  $N=11$ ); that people from an independent culture push information to more people. This is in line with the finding presented in chapter 3.1.3.2, of I/I and I/C being negatively related<sup>12</sup>. This is of course only a pilot study, and it is our hope that further research will clarify such discrepancies.

Based on previous research it was also anticipated that a culture’s degree of Pd might affect the degree to which people pull the information themselves. Low Pd has been linked to less leader supervision and more initiative from people lower down in an organization’s hierarchy (see e.g., [55];[71];[56]).

There was no relationship with the Pd scores. However, the ES dimension was found to correlate negatively with the degree to which a person reported to seek out the information him/herself ( $r=-.662$ ,  $p=.027$ ,  $N=11$ )<sup>13</sup>. This result would confirm the hypothesis, that an equality orientation is linked to more initiative to seek out information.

#### *Information-flow in the hierarchy and Culture (Pd)*

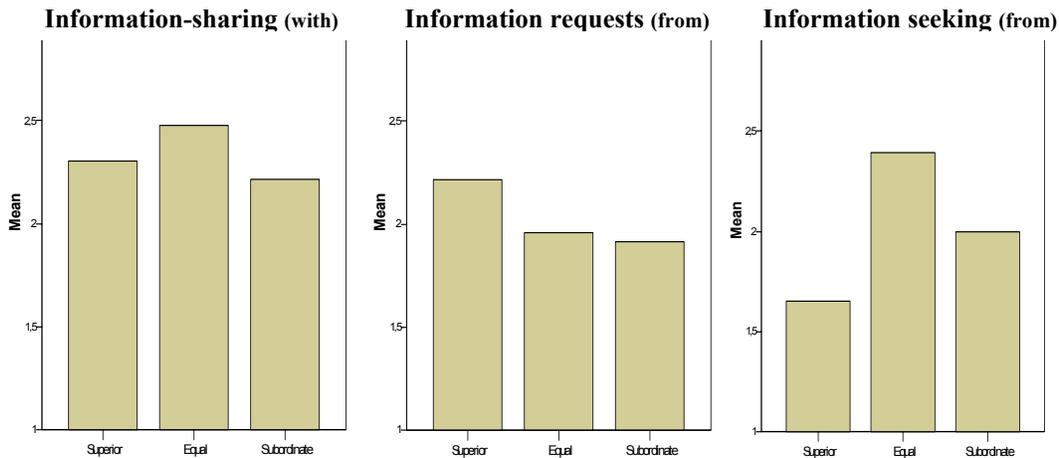
Different information-sharing behaviors between superior, equal and subordinate were compared (Figure 4). It was found that that the respondents tended to both share information with, and seek information from, equals most of the time, while information requests were most often received from superiors. The only significant difference in mean score was found between information seeking from superior versus equal ( $t = -3.51$ ,  $p =.002$ ); the personnel tended to seek more information from equals.

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<sup>11</sup> Low I/I indicates the opposite of low I/C. See chapters 3.1.3.2 for more on this.

<sup>12</sup> I.e. positively correlated while carrying the opposite meaning.

<sup>13</sup> Controlling for rank did not affect the relationships much.

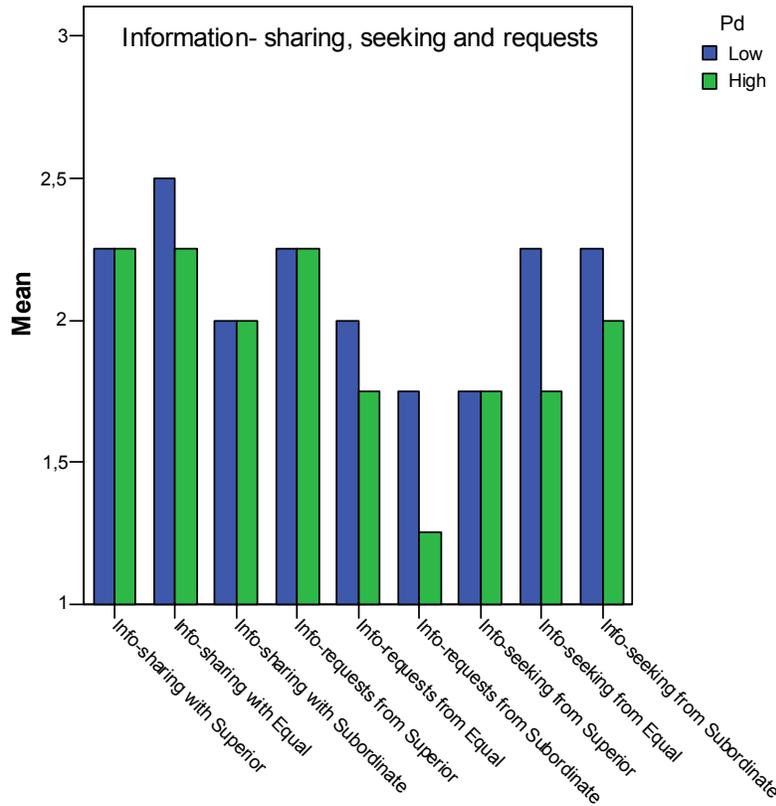


**Figure 4: Differences in information-sharing, requests and seeking, between superior, equal and subordinate (1=min.score, 3=max.score).**

We wanted to find out whether this communication pattern related to culture. Offermann & Hellmann [72] found Pd to be negatively related to leader delegation and communication with subordinates, i.e. low Pd indicating higher leader communication. The question was whether our findings of different types of communication in the hierarchy related to Pd.

The difference between information seeking from superior and equal was not found to be significantly related to Pd. Nevertheless, as Figure 5 shows, there were some differences in the communication pattern depending on Pd<sup>14</sup>. In general, lower Pd scores seemed to be related to: more information- sharing, requests and seeking with/from equal, and more information- requests and seeking from subordinate. These differences were not significant, which may be as expected from such a small sample.

<sup>14</sup> Results have been controlled for rank; i.e. the two enlisted (who had no subordinates to communicate with) were cut from the sample in these analyses, as well as all those we had no rank information available for (n=14).

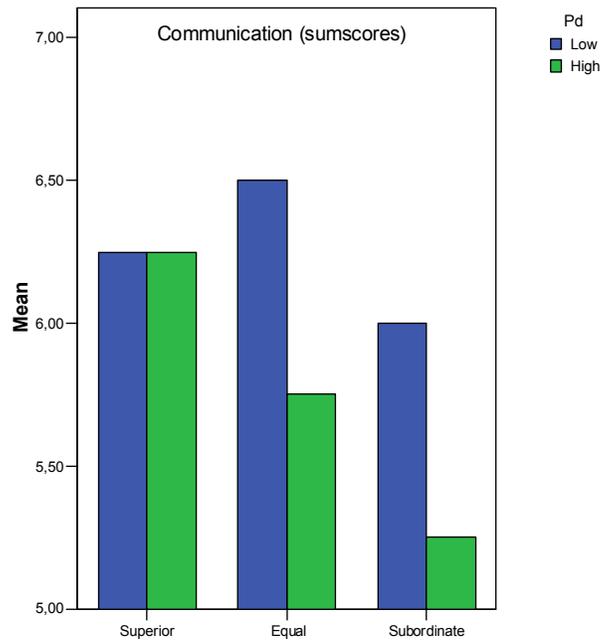


**Figure 5: Differences in information-sharing, requests and seeking, between superior, equal and subordinate (1=min.score, 3=max.score) depending on degree of Pd (low [n=4] vs high [n=4]: blue=low, green=high.)**

We used sumscores<sup>15</sup> to see whether the *general* communication pattern would be related to Pd. As indicated above, Offermann & Hellmann [72] found Pd to be negatively related to leader communication with subordinates. Results seem to corroborate this finding; those with low Pd report more communication both with equals and subordinates (Figure 6)<sup>16</sup>. These differences are, however, not significant, and should only be looked upon as tendencies<sup>17</sup>.

<sup>15</sup> Factor analysis demonstrated a pattern of reported sharing, receiving requests for, and seeking information, which indicated that the respondents may not have differentiated much between the different types of communication they were rating (see Bjørnstad, 2005[51]). A high score means a high degree of communication. <sup>16</sup> Results have been controlled for rank; i.e. the two enlisted (who per definition had no subordinates to communicate with) were cut from the sample in these analyses as well as those we had no rank information available for (n=14).

<sup>17</sup> The difference in communication with subordinates depending on degree of Pd had a p-value of 0.675.

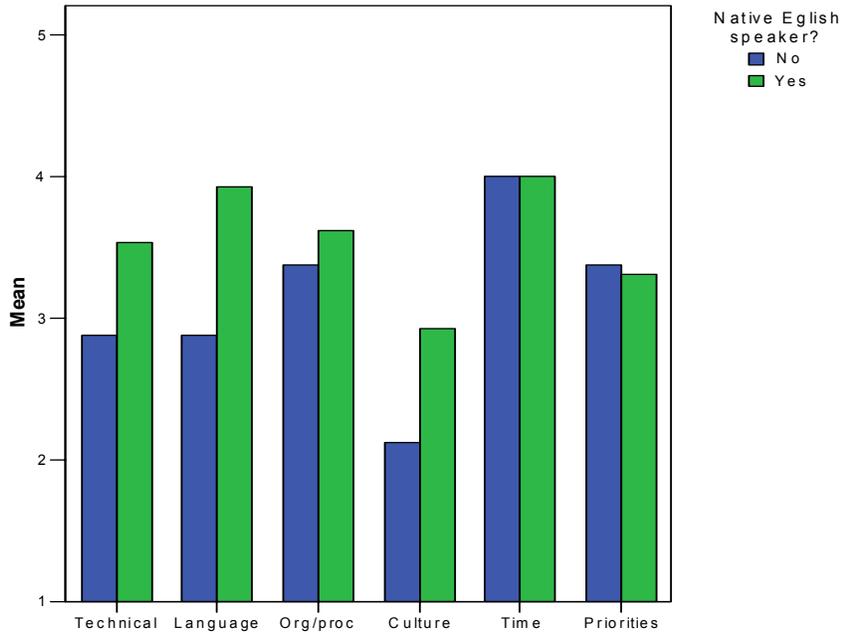


**Figure 6: Sumscore for amount of communication (sharing, seeking, and receiving requests for information) (3=min.score, 9=max.score) with superior, equal and subordinate, depending on degree of Pd (low vs high: blue=low, green=high).**

*Obstacles for information-sharing, Language and Culture (Ua)*

Time constraints were rated as the most important obstacle for a person to share information, while culture was rated as the least important obstacle.

Native English-speakers were found to perceive language and culture to be a greater problem for their information-sharing than did non-native English-speakers. This is shown in Figure 7.



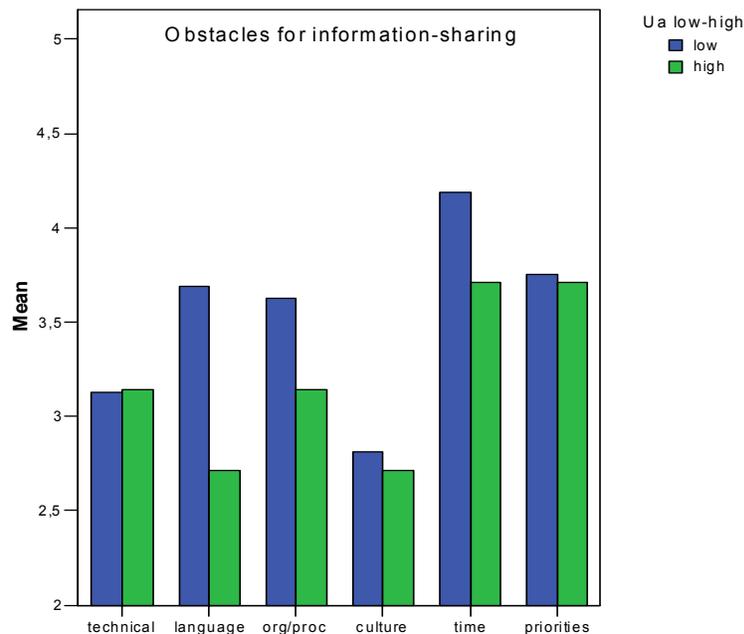
**Figure 7: Obstacles for information-sharing: native English-speakers (n=15) and non-natives (n=12) (min.score=1, max.score=5).**

Language is the one obstacle for information-sharing where people differed significantly depending on whether they were native English-speakers or not ( $t=-2.08, p=.05$ ). The differences in the ratings of culture were not significant.

Ua is the cultural dimension that primarily would be expected to cause a difference in the rating of obstacles for information-sharing. Since high Ua is indicating a culture where what is different is considered dangerous [55], one would have expected that people high in Ua find differences in language and culture to be more difficult than those with low Ua. However, the data here does not support this expectation (Figure 9). Figure 8 rather shows that people with low Ua rate language, organization & processes, and time as more important obstacles for information-sharing than do those with high Ua.

In other words, Ua does not seem to influence whether people find language and culture to be a problem when sharing information, while language<sup>18</sup> does. However, due to the small sample, no conclusions can be made at this stage.

<sup>18</sup> I.e. native compared to non-native English speakers.



**Figure 8: Obstacles for information-sharing: low Ua (n=17) and high Ua (n=7) (min.score=1, max.score=6).**

### 3.1.4.2 Decision-Making

#### *Who makes decisions?*

73,9% of the respondents reported that their superior made most of the decisions in their environment, while the remaining 26,1% reported that they made the decisions themselves. None said that a subordinate made most decisions. These data reflect a traditional hierarchic organization. Qualitative data also indicate traditional hierarchic processes and a largely centralized decision-making process in the organization (see also chapter 3.1.4.3 for more on this).

34,8% reported that decisions were made by one person (leader), while 47,8% reported that decisions were made by one person (leader) in cooperation with a team. The remaining 17,4% report that most decisions were made by a team.

#### *Timeliness, speed, quality and success*

The analysis showed that around 60% of the respondents rated the decision-making as timely, speedy, of good quality, and successful in some degree. Respondents tended to rate the quality of decisions somewhat higher than the success of decisions.

Qualitative data revealed that the quality ratings tended to be based on the respondents' understanding of the decision-making process, while the success ratings tended to be based on the feedback they had received on the outcome. This means that the quantitative results referred to above, indicate that people tended to rate the decision-making process (quality) somewhat more favorable than its outcome (success). On the positive side, explanations of decision quality could look like this: "Most decisions here are done very well, based on appropriate team-work in a correct and timely manner", or like this: "There is strong leadership and guidance,

better communication than usual, and a very accessible general.” On the negative side, respondents said things like: “Decision quality is often ridiculous – a lot of impulsiveness on the leadership, it seems to me”, and: “Input to decisions is not as complete as it could be. Input to decisions is shaped by what the boss will want. Intermediate leaders are not guiding the process”.

### *Culture*

Analyses of decision-making in relation to culture did not provide any results.

### **3.1.4.3 Organization and Culture (Pd and Ua)**

#### *Organizational change*

87% of the respondents rated this organization as different from what they were used to. A moderate majority (54,6%) rated the organizational changes to have been for the better. In the interviews, people who were positive to the organizational changes linked this to an increase in the speed of decision-making and information-flow, flatter organization and more effective team processes. Those who felt the changes had been for the worse, pointed to NATO bureaucracy, micromanagement, and a lack of time and manning.

The personnel had been confronted with this organizational structure only once before in this series of NRF 4 DJTF exercises. In the interviews, most of the personnel said that it was chaotic in the first exercise as well as in the beginning of this one, as it took some time for them to learn and remember how to work in this structure. We were informed that the organizational changes also meant that many people were put in positions where they did not possess the expertise they felt they needed in order to do the work. As they were experienced higher officers, they had many years of experience working within the traditional structure and underlined how important it was to train together to have at chance at making a new one work.

#### *Organizational change and Culture*

According to previous findings it was hypothesized that people with high Ua would be more negative to organizational change than those with low Ua [55]. Splitting the file in low and high Ua showed that for those from low Ua cultures, there were no relationship between the experienced degree of organizational changes and the rating of the organization. However, for those from high Ua cultures, there was found an almost significant negative relationship ( $r=-.718$ ,  $p=.069$ ). This means that, the type of organizational change experienced here tended to be understood as negative for those from high Ua cultures. Hence, the data seems to support the hypothesis of high Ua predisposing people to perceive organizational changes as negative. This makes sense. As indicated above, there were reports of chaos linked to the organizational changes implemented, indicating that the environment is less predictable and more ambiguous. According to theory, people from high Ua cultures will have more difficulties dealing with this [55].

#### *Hierarchy, centralization and flexibility*

Three questions were asked in order to decide some of the details of the organizational changes introduced, pertaining to the respondents’ perception of the hierarchy, centralization/decentralization, and flexibility of this organization compared to what they were used to.

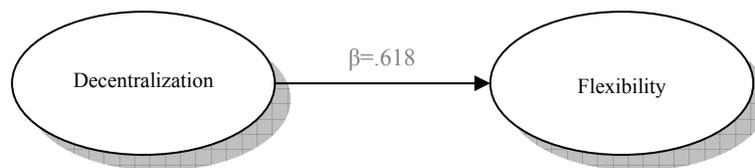
Responses indicated that hierarchy may have been flattened in this organization (48% said the organization was flatter, 22% that it was more hierarchic), but also that this was not accompanied by an equal amount of decentralization (39% said the organization was more decentralized, 35% that it was more centralized). Indeed, there was found no relationship between degree of hierarchy and decentralization<sup>19</sup>. One of the

<sup>19</sup>  $r=.062$ ,  $p=.778$ .

respondents explained increased centralization like this: “Intermediate leaders are not empowered to make decisions, so sometimes there is a chokepoint from the top for guidance.” Another one saw it from the other side; he thought the problem was that subordinates forwarded too many questions to their superior out of convenience. Such comments indicate, from two different standpoints, negative consequences when centralization accompanies a flattening of the hierarchy (see also the discussion, chapter 3.1.5.3).

56,5% found the organization to be more flexible, while 26% found it to be less flexible. Regression analysis was conducted and there was found a significant relation between perceived decentralization and flexibility ( $\beta=.618$ ,  $p=.002$ ,  $R^2=.036$ ), indicating that people who found the organization to be flexible also tended to find the organization to be decentralized.

The current findings suggest a relationship between decentralization and flexibility as portrayed in the model below, Figure 9.



**Figure 9: Relationship between decentralization and flexibility.**

Stepwise regression analysis was conducted in order to check how well the variables (hierarchy, centralization, flexibility)<sup>20</sup> explained why people rated the organization as changed in this exercise. Degree of decentralization turned out to explain 29,4% of the variance (adjusted  $R^2=26,1\%$ ,  $p=.007$ ). See table 3 below. Adding the other variables (hierarchy and flexibility) to the model did not increase its explanatory value. Indeed, it turned out to explain less of the variance (Adjusted  $R^2=22,6\%$ ,  $p=.050$ ).

**Table 3: Regression analysis: Ability of the variable, degree of centralization, to explain why people rated the organization as changed in this exercise.**

	<i>B</i>	<i>SE b</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Constant</i>	.442	.428	-	1.033	.313
<i>Degree of centralization</i>	.580	.196	.543	2.959	.007

<sup>20</sup> The independent variables were recoded for this analysis, so that high scores represented change in any direction (in line with the scoring of the dependent variable).

### *Hierarchy, centralization, flexibility, and Culture*

We also expected that Pd would affect how the respondents rated the organizational changes. Low Pd has been linked to liking to work in flatter and more decentralized organizations [55]. Thus, we expected that those with low Pd would look more positively on the organization changes if they perceived that the organization had become flatter and/or more decentralized. There was found a positive relationship between perceiving this organization as more decentralized and rating the organization as better for those from low Pd cultures ( $r=.595$ ,  $p=.091$ ) For those with high Pd, there was found no relationship between centralization and rating the organization as better or hierarchy and rating the organization as better.

#### **3.1.4.4 Group Roles and Processes and Culture (Ua, Pd, ES and M/F)**

##### *Changes in tasks and responsibilities, and Culture (Ua)*

70% of the respondents reported that their tasks and responsibilities were different from usual in this exercise. In the interviews, many of the personnel expressed that they found the changes in their roles and responsibilities in this DJTF to be bewildering. However, those who were given increased responsibilities in this organization tended to like it ( $r=.477$ ,  $p=.025$ ) as well as rate the organization positively ( $r=.559$ ,  $p=.007$ ). Regression analysis revealed that the amount of responsibility explained 31,2% of the variance (adjusted  $R^2=27,8\%$ ) in the rating of the organization.

The question is whether these findings can be related to culture. As previously indicated (chapter 3.1.4.3), Ua could predispose for handling change less well.

The link made between increased responsibilities and liking the change (increase) in responsibilities, was only found for those from low Ua cultures ( $r=.513$ ,  $p=.042$ ,  $n=16$ ). This could mean that, in line with the findings in the previous chapter (3.1.4.3); a propensity for disliking change in high Ua cultures may have affected how change was rated.

However, the link between increased responsibilities and rating the organization positively was found for both low and high Ua personnel. Seen together, these findings may indicate that those with high Ua may not like the change per se (increased responsibility), but producing a secondary effect; improving their insight into the organizational processes and thereby making the organization more predictable, less ambiguous, and thus more likable for persons from a high Ua culture. This interpretation is reinforced by the finding that increased responsibilities seemed to have a bigger effect on those with high Ua than on those with low Ua for their rating of the organization (high Ua:  $r=.785$ ,  $p=.037$ ; low Ua:  $r=.520$ ,  $p=.039$ ). This is of course hypothetical at this time; we had a small sample and will need further research clarify such interpretations.

##### *Cooperation, organization and Culture (Pd, ES, M/F)*

45% reported that the changes in tasks and responsibilities had affected cooperation in some degree, and 46,2% of these reported that it was for the better. Thinking the change was for the better for how they cooperated with their colleagues, related significantly to reporting that they had more responsibility than usual ( $r=.593$ ,  $p=.033$ ), liked having more responsibility ( $r=.691$ ,  $p=.009$ ), and were integrated into central processes ( $r=.610$ ,  $p=.027$ ; see also next headline). This indicates that there is a link between having more responsibility, being more integrated into central processes, and better cooperation. It seems that having a more central role in the organization (more responsibility and more included in central processes), may influence the perception of group processes (in terms of cooperation) positively.

The relationship (correlations) between these variables were re-estimated, to decide the effects of culture (Pd, M/F). Partial correlation showed that these relationships were not affected much by culture (Pd, M/F).

Correlations with organizational variables were conducted in order to see whether organization could have an effect on cooperation. It was found that decentralization was significantly correlated with how the person liked the changes in cooperation ( $r=.698$ ,  $p=.008$ ). Indeed, a regression analysis revealed that decentralization explained 48,7% of the variance (adjusted  $R^2= 44,1\%$ ) in how the person liked the changes in cooperation. Thus, it seems that more decentralization may bring on more contentment with cooperation.

Using partial correlation, it was controlled for culture (Pd and ES); it did not have much effect on the relationship between decentralization and contentment with cooperation.

On a question of which nationalities the respondents cooperate with, the majority reported that they cooperated most with people from the US and the UK. Our respondents explained that this was due to the general make-up of the organization, indicating that these nationalities simply outnumbered other nationalities in the organization. However, some reported that they also, to a certain degree, choose whom to cooperate with based on whom they felt most similar to and most at ease with, and that this sometimes had a root in cultural similarities. Several interviewees pointed to that similarities in language, ways of thinking/understanding, and values, guided their choice of interaction with other people.

#### *Inclusion into organizational processes and Culture (I/C & I/I)*

Three questions aimed to measure to what degree the respondents were included into the organizational and team processes. These were questions on how well they felt integrated, their activity level, and the amount of things they had to do in their position. 71%<sup>21</sup> of the respondents reported that they were well included into the organizational and team processes.

There was found no significant relationship between culture and inclusion into organizational and group processes.

#### **3.1.4.5 Language**

##### *English language proficiency level*

9 out of 23 in the sample were non-native English speakers. To evaluate their level of English proficiency, the personnel answered questions on comfort, stress and tiredness experienced when speaking English.

44,4% said they either sometimes or often became more stressed when working in English, and 75% said they either sometimes or often became more tired when working in English. The question on comfort showed very little variance, respondents all rated themselves as “quite” or “very comfortable”, and confirmed our expectations of this possibly being a poor measure due to the social desirability of answering the question positively.<sup>22</sup> The respondents’ answers to the question about tiredness came closest to how they saw it from the outside. Respondents claimed that their colleagues either sometimes (83,3%) or often (16,7%) had problems understanding or making themselves understood in English.

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<sup>21</sup> I.e., 71% is the average on the three questions on integration, activity level, and amount of things to do (for more details, see Bjørnstad, 2005 [50]).

<sup>22</sup> For more details on these measurements, please be referred to Bjørnstad, 2005 [51].

*Language and the choice of medias of communication*

A question on preference for the use of oral versus written medias of communication seemed to indicate a slight inclination towards written medias of communication for non-English speakers. This is shown in the crosstabulation below (table 4).

**Table 4: Personal preference for the use of oral versus written medias of communication and whether the person is a native English speaker or not.**

		Comm. preference			Total
		<i>Oral</i>	<i>No preference</i>	<i>Written</i>	
Native English speaker?	<i>No</i>	3	4	2	9
	<i>Yes</i>	9	5	0	14
<b>Total</b>		12	9	2	23

The interviews revealed that the choice of oral or written medias of communication may depend on several circumstances, such as language (of both the receiver and the sender: native/non-native English speaker), hierarchy (message to superior or subordinate), time (shortage), and familiarity (how comfortable with the person). Except when the choice was due to time shortage, people’s preference for oral communication was generally based on face-to-face interaction.

People said they to chose oral communication first of all because they could get immediate feedback on the other party’s understanding and could, if necessary, clarify the message. This was especially understood to be an advantage when communicating with non-native English speakers. However, several interviewees experienced that the telephone was the least well functioning medium when communicating with non-native English speakers. Furthermore, the choice of oral means of communication was deemed to depend on whether or not they felt comfortable with the person they were communicating with.

Written medias of communication were often chosen by the interviewees if the message was of high importance, so that the receiver could keep it for reference. The possibility of keeping the message for reference was deemed to be of even greater importance when communicating with non-native English speakers. The written communication allowed the non-natives more time and the option to consult co-workers if they should need a clarification of meaning. This would explain the slight tendency found in the quantitative data for non-native English speakers with a lower English language proficiency level to choose written medias of communication.

Making sure that the receiver had understood the message, seemed to be the most obvious concern for the people I spoke with. This was the reason given by both people who preferred written and oral communication. However, on a personal level, some individuals appeared to be more comfortable in a face-to-face situation, while others preferred the computer.

*Language and power relations*

It was expected that language proficiency might influence power relations. There were four questions aiming to measure language-related power relations. These focused on: persuasion, understanding of another person’s point of view, domination in cooperative situations, and the act of interrupting. 66,6% of non-native English speakers said that they sometimes or often found it harder to persuade their colleagues of their ideas in English than in their native language, but only 22,2% said that they sometimes or often were interrupted more when communicating in English than in their native language. 81,8% of the respondents found it harder to understand non-native English speakers point of view than native English speakers. 95,5 % of the respondents found native English speakers to dominate cooperative situations more than others<sup>23</sup>.

From this, we understand that a great majority of the respondents found it harder to understand non-native English speakers’ point of view than native English speakers, as well as finding native English speakers to dominate cooperative situations in this organization. This seems like a logic connection. Indeed, these two variables (finding it hard to understand non-native English speakers and finding native English speakers to dominate) were significantly correlated ( $r=.543$ ,  $p=.009$ ).

There also appears to be a tendency for native English speakers to find non-native English speakers’ point of view to be more difficult to understand than what non-native English speakers do. This is shown in the crosstabulation below (table 5). There was found a significant correlation of ( $r=.428$ ,  $p=.047$ ) between the two variables. This is in line with the findings reported in chapter 3.1.4.1; native English speakers were also found there found to rate language as a more important obstacle to information-sharing than did non-native English speakers.

**Table 5: Relationship between being a native English speaker and finding that non-native English speakers often have problems making themselves understood.**

		Finding Non-native English Speakers to have Problems Making Themselves Understood					Total
		Never	Seldom	Sometimes	Often	Very often	
Native English speaker?	No	1	3	3	1	1	9
	Yes	0	0	6	6	1	13
Total		1	3	9	7	2	22

*Culture*

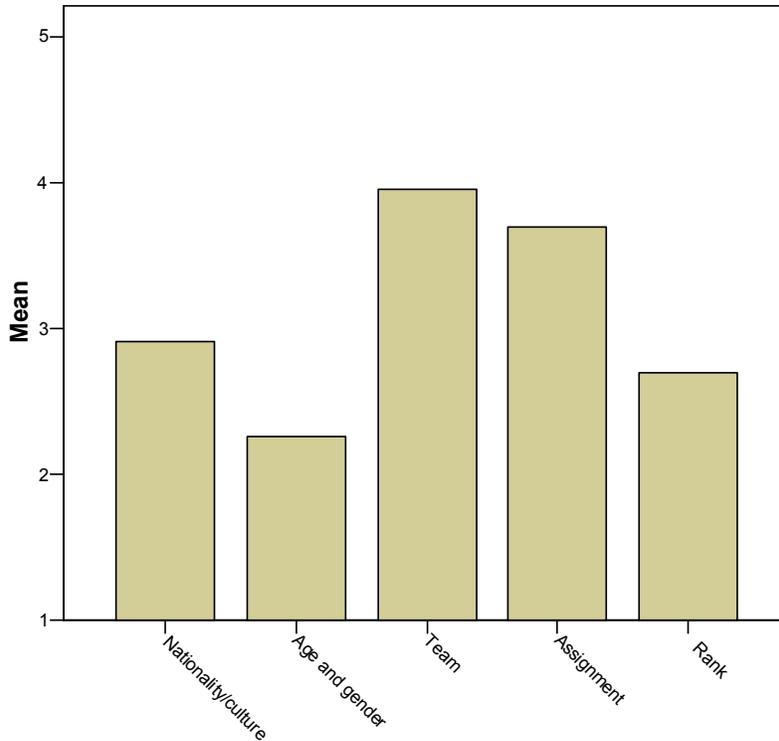
Analyses of language in relation to culture did not provide any results.

<sup>23</sup> There were not found any significant differences between native English speakers and non-native English speakers on their responses to this question.

**3.1.4.6 Identity and Culture (I/C)**

*Affinity*

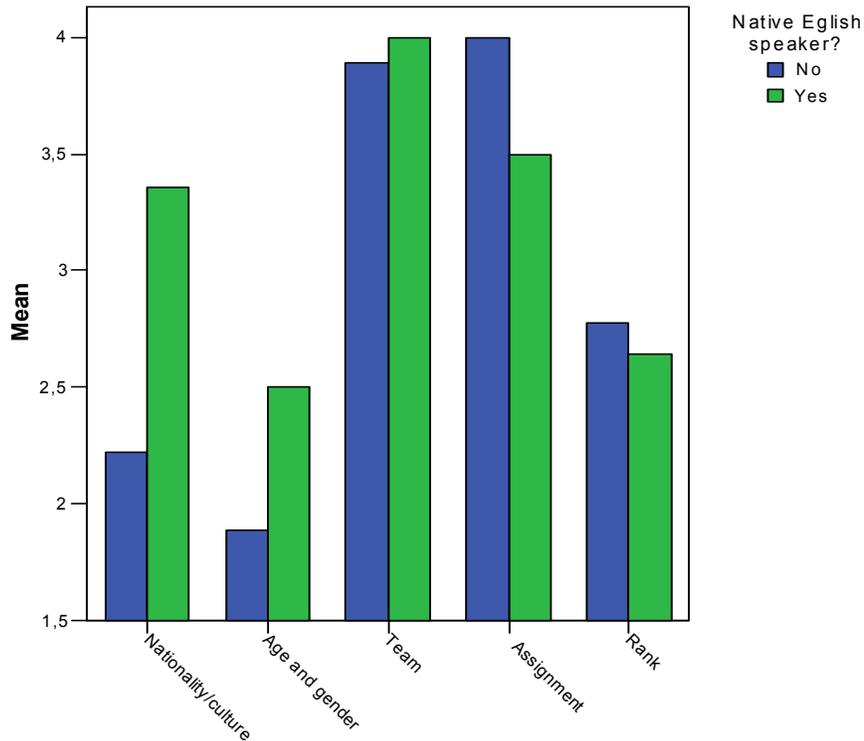
It was found that the team and the assignment meant most in creating a sense of belonging for our respondents. Age and gender was found to be the least important. This is portrayed in Figure 10.



**Figure 10: Ratings of what gives a sense of belonging (min.score=1, max.score=5).**

*Affinity and Language*

Further analysis was conducted in order to see if there were any differences between native and non-native English speakers in what created a sense of belonging. This is presented in Figure 11.



**Figure 11: Differences between native English speakers and non-natives in ratings of what gives a sense of belonging.**

A t-test demonstrated that there was a significant difference between native English speakers and non-natives in their ratings of nationality/culture ( $t=-2.446$ ,  $p=.023$ ). Native English speakers found nationality/culture to be significantly more important for their sense of belonging in this environment than did non-native English speakers.

#### *Affinity and Culture*

Relating the findings on belonging to culture, it was found that assignment was the only affinity which seemed to be related to culture; I/C was related to rating assignment as important ( $r=-.386$ ,  $p=.062$ ,  $N=24$ ). This means that the respondents from collectivistic cultures tended to rate common assignment as more important for their sense of belonging than what the respondents from more individualistic cultures did.

It was furthermore checked whether culture (I/C) had an effect on how important the respondents rated affinity. There did not seem to be any difference in how they rated the importance of the affinity.

#### *Meaning of affinity, and culture (I/C, I/I)*

Three questions aimed to measure the meaning of the personnel's affinities. These questions asked them to rate the importance of belonging, whether it is an aid in doing their job and whether it is an obstacle for them in doing their job. Descriptive statistics show that affinity was deemed to be important by 87% of the respondents. 92,3% found it to be important for them to do their job while only 4,3% found it to be an obstacle.

Both finding affinity to be important and an aid in doing the job were related to finding assignment to give a sense of belonging ( $r=-.525$ ,  $p=.01$ ;  $r=-.394$ ,  $p=.063$ ). This indicates that a sense of belonging can help people working on the same assignment to get the job done. Culture (I/C, I/I) did not seem to affect this relationship much. It appears that this is valid for both individualists and collectivists.

#### **3.1.4.7 Controlling Behavior, Trust and Culture (Pd, Es, Ua, I/C and I/I)**

##### *Controlling behavior, and Culture*

One question aimed to obtain a rating of the use of controlling behavior. Descriptive statistics show that there were an approximate equal number of people who reported that they often, sometimes, or never found it necessary to increase downward control. There was no significant difference between native English speakers and non-natives.

In order to find out whether there were any cultural differences in how people answered this question we explored both qualitative and quantitative data. From the interviews we found that people from low Power distance (Pd) cultures seemed more often to rely on the ability of their subordinates to manage on their own, while people from high Pd cultures were more liable to indicate that the subordinates had to be guided in order for them to "get it right". People from low Pd cultures also tended to reveal more positive attitudes to their subordinates than did people from high Pd cultures. An example of a statement from a low Pd representative: "The members of the organization are generally rather experienced, so I don't feel a strong need to exercise an increased control." Interviews with high Pd representatives, on the other hand, left us with statements like this: "Some people tend to escape their tasks when they realize that the superior control is insufficient."

We also wanted to find out whether this could be supported by the quantitative data; was there a link between the self reported controlling behavior and the Pd, ES and Ua dimensions of culture? There was found no such relations in our data.

##### *Trust and Culture*

There were two questions pertaining to how the respondents generally related to people from different cultures and how they trusted them. 36,4% reported that there were differences in how they related to people from different cultures, while 50% said that there were no differences. Qualitative data indicated that whether people chose to treat people the same, independent of culture, or differently, depending on culture, they did it because they believed it was the "right thing to do". Some found it most correct to treat everyone the same (independent of culture), while others argued that there were advantages to "being sensitive to different cultures".

Very few (13,6%) said that they trusted people from other cultures less than people from their own culture.<sup>24</sup> Qualitatively, on this question, interviewees generally said that trust depended more on person than on nationality. However, some also specified that they more readily trusted someone from a culture or group that they knew normally performed well on the task at hand, and that others first had to prove themselves. One said it like this: “There is more of a need to get to know people from different cultures for you to trust them; to know what to expect, etc.” Some furthermore linked trust to understanding, “You trust those you understand”. In other words, it seems that trust has a lot to do with familiarity, in terms of ability to understand and knowing what to expect.

Quantitative data demonstrated no relationship between the direct question on trust and the cultural dimensions of Individualism/Collectivism (I/C, I/I) and Uncertainty avoidance (Ua). However, the question on whether the respondents related differently to people from other cultures, revealed correlations with both the I/C and the Ua dimensions; I/C was almost significantly negatively related ( $r=-.366$ ,  $p=.078$ )<sup>25</sup> and Ua was significantly positively related ( $r=.408$ ,  $p=.048$ ). This indicates that respondents from individualist and low Ua cultures tended to report that the culture of the other person influenced how they related to them. Collectivists and high Ua persons, on the other hand, reported to distinguish less between how they related to people from different cultures.

### **3.1.5 Discussion**

#### **3.1.5.1 Information Sharing and Culture**

There was found a small tendency for people from collectivistic cultures to report that they push information to more people than those from individualistic cultures. This was in line with expectations; collectivism has previously been linked to more cooperative behavior, while individualism has been linked to competitive rather than cooperative behavior.

It was also checked for a link between information-sharing in the hierarchy and culture (Pd). It was found that those from a low Pd culture reported more total communication both with peers and subordinates than did those from a high Pd culture. This was in line with previous research having found Pd to be negatively related to leader communication with subordinates.

As high Ua may predispose for handling the unknown less well, it was found plausible that Ua would influence how people rated certain obstacles for their sharing of information. However, our results indicated no link between Ua and whether people find language and culture to be a problem when sharing information. But due to the small sample, no conclusions can be made at this stage.

On the other hand, there was found an important difference between native English-speakers and non-natives in how they saw language and culture as a potential problem; contrary to our expectations, native English-speakers perceived language and culture to be greater obstacles for their information-sharing than did non-native English-speakers<sup>26</sup>.

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<sup>24</sup> Due to a lack of variance in responses and indications in the interviews of this being a sensitive question (people generally will not admit to distrusting other nationalities, as this may appear racist), this low number may be somewhat misleading. The question has been rephrased in the revised questionnaire

<sup>25</sup> Due to the small sample, it is difficult to get significant numbers. As this was almost significant we chose to include the analysis, but ask the reader to be aware of uncertainties.

<sup>26</sup> The difference in the ratings of language was significant, while the difference in the ratings of culture was almost significant.

This finding is in line with the findings on language (chapter 3.1.4.5); native English speakers also perceived it as more difficult to understand non-native English speakers' point of view than did non-native English speakers. Thus, it seems that native English speakers find it more difficult both to understand non-native English speakers as well as to trust them to understand a message.

The notion that native English speakers may hesitate to share information because they are afraid that the non-native English speakers may not understand the message is supported by the qualitative data from the interviews. Native English speakers often reported that they were unsure of non-native English speakers understanding.

### **3.1.5.2 Decision-Making**

Both qualitative and quantitative data support the finding of traditional hierarchic processes and a largely centralized decision-making process in the organization (see also chapter 3.1.4.3 for more on this). About three quarters of the respondents indicated that their superior made most of the decisions. Over one third reported that decisions were made by the leader alone, while almost half reported that the leader also included a team in the process. Only some, about one in 6, indicated that most decisions were made by a team.

The analysis showed that a relatively stable majority (around 60%) of the respondents rated the decision-making as timely, speedy, of good quality, and successful. People tended to rate the decision-making process (quality) somewhat more favorable than its outcome (success).

There were found no relations to culture.

### **3.1.5.3 Organization and Culture**

87% of the respondents rated this organization as different from what they were used to. It is very possible that this could influence the effectiveness of the organization. The optimal situation is that there is congruence between the organization one is used to and the organization one is to work in during an exercise or real operation. What has been practiced daily for years will evidently form a person's basic understanding of how the organization works and how he/she should do his/her work within it, in time becoming automatic and less subject for conscious evaluation. Especially in situations of high mental demand (stress), people increasingly depend on their most salient mental models, i.e. what they are most used to doing (e.g., [73]). Changing the organizational structure and processes is therefore a difficult and long process (see also [55]); people's basic understanding, or existing mental models, will continue to influence their behaviour until new mental models become more salient. One cannot really expect a change in organizational structure and processes to become efficient until this has become the norm for the people working in it.

On the other hand, a moderate majority did rate the organizational changes to have been for the better. One has to start somewhere in order to make changes, and it takes time and experimentation to change the NATO organization and processes. Thus, the organizational and procedural changes introduced in this DJTF, can be understood more like a step on the way than being final or complete in any way (i.e. the organizational changes aiming for EBO). Hopefully, what studies like this may contribute to, is to increase the understanding of the effects of the changes and learn from the experiences of people who are in the middle of it.

High Ua predisposes for handling change (especially chaos and ambiguity) less well, and it was anticipated that Ua could affect the rating of organizational change. For those with high Ua there was found an almost significant negative relationship between the experienced degree of organizational change and the rating of the organization. High Ua seemed to predispose people to perceive organizational change as negative.

The respondents tended to rate this organization as more centralized than what they were used to. This was reflected both in relation to the questions on organization and to the questions in relation to tasks and responsibilities (see chapter 3.1.4.4). At the same time, the organization tended to be rated as flatter. This is in line with other empirical findings from the field; decentralization and flattening of the hierarchy do not always go hand in hand (e.g., [74]). Indeed, new technology and flattening the hierarchy often mean a centralization of decision-making rather than decentralization (see e.g., [75]). However, this is not optimal for the efficiency of organizational processes, as the top end of the hierarchy easily gets overloaded when too many decisions are routed upwards (see e.g., [76],[75]). This latter interpretation was further supported by the qualitative data. Such organizational processes make personnel lower down in the hierarchy less able to make decisions. This may be linked to the process of learned helplessness<sup>27</sup>; there is a risk that people become passive in systems where they get used to having insufficient authority to achieve their goals. If the person gets used to not being able to make a difference, it is a natural consequence to stop trying.

Decentralization and flexibility were found to be closely related; people who found the organization to be flexible also tended to find the organization to be decentralized. This confirms the classic finding of a link between centralized organization and inflexibility (see e.g., [77],[78],[75]) and supports the theory proposed in the concept of Network Enabled Capabilities (NEC)<sup>28</sup> (e.g., [79],[75]). This is in line with organizational studies by e.g., Morgan[77], describing bureaucratic type organizations as hierarchic, centralized and inflexible - indicating a link between these variables. A later study with a larger sample (N=55) from a tactical level at a NATO exercise (Battle Griffin 2005), confirmed this relationship further [80].

Hence, both theory, current, and later findings indicate that there may be a causal relationship where decentralization predicts/explains flexibility.

On culture, it was found that respondents from a low Pd culture who perceived the organization to be more decentralized, tended to rate the organization positively (almost significant positive relationship). This was in line with expectations; low Pd should make it more natural to work in flatter and more decentralized organizations. However, there was found no relationship for high Pd cultures. Is it possible that people from low Pd cultures find it harder to adapt to a more centralized organization than people from high Pd cultures find it to adapt to a more decentralized organization? This is of course only a very small sample, making it risky to read too much into the results, but it could be interesting to follow up on this in later research.

#### **3.1.5.4 Group Roles and Processes and Culture**

It was found that a majority of the respondents perceived their tasks and responsibilities to be different from usual in this exercise. Those who were given increased responsibilities in this exercise/organization were found to like it better as well as rate the organization as better.

The significant link between increased responsibilities and liking it was only found for those from low Ua cultures. This could mean that, in line with the findings in chapter 3.1.4.3; a propensity for disliking change in high Ua cultures may have affected how change was rated. However, there were indications that those with high Ua did not like the change per se (increased responsibility), but that the increased responsibility had a

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<sup>27</sup> A classic psychological finding [81]; people learn quickly to stay passive when they previously have learned that their actions are unsuccessful. This knowledge is furthermore transferable to different situations than where it was learned.

<sup>28</sup> Comparable to the previously used terms: Network Centric Warfare (NCW) and Network Based Defense (NBD – used in Norway, e.g., [75]).

secondary effect - improving their insight into the organizational processes and thereby making the organization more predictable, less ambiguous, and thus more likable for persons from a high Ua culture.

There were found significant positive relationships between responsibility and contentment with cooperation, and integration and contentment with cooperation. Culture did not seem to influence these relationships.

Results indicated a link between decentralization and contentment with cooperation. This could indicate that teamwork is ameliorated by decentralized control. Such an interpretation is supported by research on team decision-making; democratic leadership has been found to be more effective and advantageous in many respects (e.g., [82],[83],[84]). The other positive links to contentment with cooperation, responsibility and integration, support this interpretation; high responsibility for all and high integration into central processes are characteristics of a decentralized organization. There was found no link between culture and how the respondents rated cooperation.

A majority reported that they cooperated most with US and UK due to the make-up of the organization. However, qualitative data revealed that similarities in language, ways of thinking/understanding, and values, may influence the personnel's choice of whom to interact with. This may influence the cooperative processes, in terms of who cooperates with whom.

Most respondents reported that they were well included into organizational and group processes. There was found no significant relationship between culture and inclusion.

### **3.1.5.5 Language**

The results indicated that three quarters of the non-native English speaking personnel were negatively influenced by having to work in English instead of in their native language. Increased tiredness and stress were such factors. This means that non-native English speaking personnel are subject to a larger cognitive load relative to what natives experience, and that they consequently may be more vulnerable to additional stressors (see e.g., [73],[85]). The poorer the language proficiency, the higher the cognitive load. This will have an impact on their function in the organization, especially in times of high demands.

When it comes to the choice of means of communication, there seemed to be a very slight preference for written means of communication when the receiver and/or the sender were a non-native English speaker. However, quite a lot of respondents also preferred face-to-face interaction. The telephone was the least preferred medium, perceived to augment the risk for misunderstandings.

It was found that almost all of our respondents (96%) perceived native English speakers to dominate cooperative situations more than others. Native English speakers also tended to find it more difficult to understand non-native English speakers' point of view than what non-native English speakers did. These findings indicate that non-native English speakers clearly have a disadvantage in the organization and in cooperation compared to native English speakers. This is understood to be due to the language advantage native English speakers have. Seen together with the results presented in chapter 3.1.4.4, native English speakers may not only dominate cooperative situations, they may also outnumber the non-native English speakers in the organization. Another possibility is that they may have more leading positions.

### **3.1.5.6 Identity and Culture**

It was found that the team and the assignment meant most in creating a sense of belonging for our respondents. Age and gender was found to be the least important.

Both language and culture were found to affect some of the ratings. Native English speakers rated nationality/culture significantly more important for their sense of belonging in this environment than did non-native English speakers. In chapter 3.1.4.1, it was also found that native English speakers rated culture as more of a hinder for their information-sharing than did non-native English speakers. This may indicate that native English speakers focus more on culture than non-native English speakers do, both as something positive (giving a sense of belonging) and as something negative (an obstacle for sharing information).

Assignment was the only social affinity which turned out to be related to culture. Respondents from collectivistic cultures tended towards rating common assignment as more important for their sense of belonging than what their colleagues from individualistic cultures did. There did, however, not seem to be any cultural difference in how the respondents rated the importance of the affinity in general. Previous research have found that group belonging is more emphasized in collectivistic than in individualistic cultures (e.g., [55],[56]). This difference did not show up in our material.

Almost all respondents found affinity to be important and an aid to get the job done. This was further related to finding the assignment to give a sense of belonging, indicating that a sense of belonging can help people working on the same assignment to get the job done. From another angle, this may also indicate that having a common goal (in terms of assignment) bring people closer (in terms of cooperation and group belonging/identity). This is in line with classic research on group processes; common goals and mutual dependency has the ability to create a common identity (i.e. psychological sense of belonging; see e.g., [86]) and to bring people even from conflicting groups together in cooperation [87]. Culture was not found to affect these ratings and relations much; it was valid for individualists and collectivists alike.

### **3.1.5.7 Controlling Behavior, Trust and Culture**

There was found no link between self reported tendency for controlling behavior and culture (Pd, ES and Ua) in the quantitative data. However, in the qualitative data there was found a tendency for people from low Pd cultures to expect their subordinates to manage on their own, while people from high Pd cultures were more liable expect their subordinates to need close guidance. People from low Pd cultures also tended to reveal more positive attitudes to their subordinates than did people from high Pd cultures. These qualitative data supports findings from cross-cultural organizational research (e.g., [71],[88],[55],[72]). Bochner & Hesketh, for instance, found that high Pd was related to a preference for closer supervision and a belief in the necessity of having to *make* people work hard. Clegg found high Pd to be linked to controlling behaviour on the leader's part.

About half of the respondents said that they did not differentiate between people from different nationalities/cultures while just over one third said that they did. Respondents from both individualist and low Ua cultures tended to report that the culture of the other person influenced how they related to them. Persons from collectivistic and high Ua cultures, on the other hand, tended to report to distinguish less between how they related to people from different cultures. The finding that respondents from high Ua cultures tend to report that they do not make any differences in how they relate to people from various cultures may reflect an effect of them being more rule oriented; they may believe it is correct not to make any difference and report their behavior accordingly. Minding the sample size, this is little more than speculations. Based on high Ua indicating that people are more uncomfortable in ambiguous situations [55], and interpreting the relating to people from other cultures to be an example of an ambiguous situation, we had more readily expected the opposite effect. The problem with self-reporting is of course that the representatives may not be aware of their own actual behavior and thus unknowingly give biased self-ratings founded more on what they think is correct

than what they really did.<sup>29</sup> As far as the link with I/C is concerned, it is interesting to note that even though collectivists are more group oriented and therefore also more aware of, and sensitive to, differences between groups, in our sample they did not report to differentiate more, rather less. A question for further research would be to check whether this is found in larger samples, and if so, why it is that individualists may differentiate more.

Qualitative data revealed that trust may have a lot to do with familiarity, both in terms of ability to understand and knowing what to expect. The respondents pointed to being able to understand and knowing what to expect as important factors to trust in other people. This is in line with research on trust, which have shown that similarity and time to get to know one another, are important factors in the building of trust (e.g., [89],[90],[91],[92]). Trust has in turn been found to be essential for the cooperation and flow of knowledge in organizations [93], [94],[90], hence an essential prerequisite for information-sharing.

There was no relationship found between the direct question on trust and the cultural dimensions of Individualism/Collectivism (I/C, I/I) and Uncertainty avoidance (Ua) in the quantitative data. Previous research has, however, indicated that the cultural dimensions I/C and Ua may affect people's tendency to trust people from different cultures [68],[55].

### **3.1.6 Conclusions**

This pilot study has provided some initial analyses of the organizational changes introduced in a multinational NATO Headquarter (DJTF). It has given some preliminary insights into organizational processes linked to cooperation and culture in this setting. The results presented here are, due to its exploratory nature and the small sample, seen as preliminary. They do, however, give us an indication of the many influences that culture and language can have on the processes in such an organization. It is expected that follow-up studies<sup>30</sup>, will amend some of this and allow some wider and more generalizable results.

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<sup>29</sup> Indeed, this is a tendency that may be strengthened by high Ua. Because high Ua means more attention to rules, it makes it logic that high Ua people also may focus more on what they perceive to have been the correct behaviour rather than what was the actual behaviour. This supposition was strengthened through some of the interviews. We experienced that some individuals from high Ua cultures had a difficulty answering questions on their own and others' actual behaviour – they insisted on describing only how things should be done (rules). It appears high Ua indicates that people are more focused on ideal states than actual states.

<sup>30</sup> Studies include data and analyses from Battle Griffin 2005 (BG05) and Multinational Experiment 4 (MNE4). The BG05 study is reported in Bjørnstad (2006b[80]) while the MNE4 analyses have not yet been completed.

### **3.2 ASSESSMENT #2: ORGANIZATIONAL AND GROUP PROCESSES, COMMUNICATION, TRUST INFORMATION SHARING, DECISION MAKING, LANGUAGE, GROUP GOALS/PROCESSES, SOCIAL IDENTITY, AND CULTURE IN A SIMULATED MISSION**

Ms. Anne Lise Bjornstad, Research Psychologist, Norwegian Defence Research Establishment (FFI)

#### **ABSTRACT**

This chapter presents the initial analyses of the data from the LTAMC experiments on organization, culture, communication, trust, language and group processes. Both experimental and survey data was collected.

It was shown that the VSM/Hofstede measurement of culture gave more variance between national cultures than the GCS/Matsumoto measurement, and was found the most useful for analyses. When comparing the participating nations' scores on the cultural dimensions, some of them were rather surprising compared to previous research on this; on the Individualism/Collectivism dimension the current scores as well as the rank order were quite different from what Hofstede found in his original IBM study. In the original study, the USA and the Netherlands scored the most individualistic, while Sweden and Norway scored the most collectivistic. In the current study this was the other way around; Sweden and Norway scored the most individualistic and the USA and the Netherlands the most collectivistic. Reasons suggested were sample differences (military versus civilian/IBM), and/or that one or more questions in the survey may be less suited for military samples.

There was found higher levels of trust within the national than within the international teams. This result supports existing research, and suggests a need to invest more time and training in order to build trust within culturally diversified teams in NATO coalitions. The more culturally different the team composition, the higher will the need be to focus on this.

Amount of communication varied greatly between the groups. Some of the variation was linked to English language capability; the better in English, the more they communicated. This underlines the importance of language proficiency for personnel in NATO work.

Flat organizational structure was shown to be related to flexibility. In this game environment, respondents also seemed to have a more positive view of the team organization when they experienced it as more hierarchic and centralized. Suggested reasons for this finding: simple task situation (has previously been linked to making a centralized organization advantageous), game communication and information management systems (e.g. it took more time to communicate and share information with all in a decentralized manner than in a centralized manner if the team was dispersed), and military and cultural sample preference (people tend to prefer and work most efficiently in systems to which they are accustomed). These findings implicates the importance of having the organization fit both the task and the personnel (both in terms of their cultural make-up and what they are trained for), as well as the information management and collaborative systems being aligned to support the organizational structure and processes.

Subjects from low Pd cultures tended to rate the team organization more positively than those from high Pd cultures. There was no relationship found between rating the organization and Uncertainty avoidance (Ua).

### **3.2.1 Background [LTAMC SABRE Study]**

In the following, there is a brief description of background, theory, method, participants, materials and procedure; please be referred to chapter 2 and 3.1 for a more comprehensive presentation of these subject areas.

The LTAMC project members collected experimental data in the period April 2006 – May 2007. Cross-cultural cooperation was the main focus in the experiments. This chapter presents the initial descriptive analyses of the data from these experiments on organization, culture, communication, trust, language and group processes<sup>31</sup>.

A total of 56 experiments were conducted and 5 nations contributed. The experiments were conducted in Norway (16+6)<sup>32</sup>, Sweden (9+6), Bulgaria (8+6), the Netherlands (8+8) and the USA (7+6). 48 experiments (the national experiments) were conducted using local networks while 8 experiments (the international experiments) were conducted on the internet.

Many researchers in the field of cross-cultural psychology have shown how nations vary across various aspects of culture, e.g. [54][55][56][49][61]. The most well-established and researched theory of cross-cultural differences that we have are Hofstede's dimensions of culturally based values – especially as concerns organizational and work related issues. His work has been corroborated and expanded through numerous other studies, also with military samples (e.g., [63] [64] [65] [66] [67]). The culturally based value-dimensions developed by Hofstede [55] are called: Individualism/Collectivism, Power distance, Uncertainty avoidance, Masculinity/Femininity and Long-term/Short-term Orientation. Individualism/Collectivism (I/C) refers to a cultural difference in group as opposed to individual orientation. Group orientation is linked to tight ties between people, whereas individual orientation is linked to loose ties between people. High score indicate individualism (I). Power distance (Pd) is defined as a difference in the actual and experienced distribution of power between people in a hierarchy. High scores indicate high Pd. Uncertainty avoidance (Ua) refers to a difference in need for predictability and rule orientation. High scores indicate high Ua. Masculinity/Femininity (M/F) refers to whether the culture values toughness, assertiveness and a focus on material success as opposed to modesty, concern for others and a focus on the quality of life. High scores indicate masculinity (M). Long-term/ Short-term Orientation (Lt/St) refers to a difference in focus; the present versus distant future. The former indicates a propensity for action whereas the latter indicates a propensity for planning. High scores indicate long-term orientation (Lt).

But there are also newer developments in the field, like MeridianGlobal and Matsumoto's six dimensions of culture [47], which nevertheless bare some resemblance to Hofstede's dimensions. They have built on existing research in the field and developed the dimensions: Independence/Interdependence, Egalitarian/Status, Risk/Restraint, Direct/Indirect Communication, Task/Relationship, and Short-term/Long-term Orientation.

Two of the many areas culture affects are organizational and team behavior. As also indicated in 3.1, organization structure as well as culture, have an impact on team processes. For instance, how is organizational and team structure affecting processes as well as being interpreted differently in different

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<sup>31</sup> The Norwegian focus has mainly been on organizational and social factors, team cooperation and culture. This reflects the focus in the FFI projects NBD in operations and Collaboration in Networks, within which the Norwegian LTAMC work has been conducted.

<sup>32</sup> The first number in the parenthesis indicate the number of national experiments in each country, with a nationally homogenous subject composition, while the latter number indicate the number of international experiments, with a nationally heterogeneous subject composition, that each country participated in. In Norway, there were conducted a total of 16 Norwegian national experiments, with samples from two different Norwegian military populations, plus 6 international experiments.

cultures? Does English language ability affect cooperative processes? And is the level of trust the same in national and international groups? We wanted to explore such themes in the experiments conducted.

For more theoretical aspects, please be referred to chapter 2 and 3.1.

### **3.2.2 Method**

#### **3.2.2.1 Participants**

There were a total number of 224 subjects participating in the experiments, 4 in each experiment. The experiments were conducted with participants from 5 nations; 48 of the groups were culturally homogenous (i.e. same nationality) while 8 of them were culturally heterogeneous (i.e. different nationalities). All participants were military officers, 52 male and 4 female. In Norway, there were conducted two series of national experiments, with samples from two different Norwegian military populations (one from a graduate and one from an undergraduate military college), which are also intended to function as a control when making comparisons across national cultures.

#### **3.2.2.2 Materials**

In order to study the different issues related to cooperation in multinational teams in a controlled environment, the LTAMC chose to employ a computer based role play (NeverWinter Nights, NwN), adapted for our research purposes (Situation Authorable Behavior Research Environment, SABRE), as the main instrument, the method being both explorative and innovative.

In addition, there were 6 computerized surveys distributed before, under and after the experimental game session. 4 pre-game computerized surveys were administered on background<sup>33</sup>, personality (NEO-PI<sup>34</sup>) and culture (GCS<sup>35</sup> and VSM-94<sup>36</sup>). During the experiment session, the subjects were at three different times in the game interrupted by a prompt to answer questions measuring their Situation awareness (SA). 2 surveys were administered after the experimental game session was over, called debriefing questionnaires 1<sup>37</sup> and 2. These were constructed for the purpose of the LTAMC experiments. Debriefing questionnaire 2<sup>38</sup> is an organization questionnaire containing 36 organization related questions constructed on the basis of the organizational survey employed in the field studies (AW04, BG05, presented in chapter 3.1). The questions covered topics such as organization (hierarchy, centralization, leader behavior), decision-making, work-load, trust, information-sharing, communication and language.

#### **3.2.2.3 Procedure**

In the experimental set-up, the 4 subjects in each experiment were randomly assigned to a role in the game. In the game scenario, the subjects were given an assignment as a team and could cooperate to solve the

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<sup>33</sup> Including demographics, language and computer use/knowledge.

<sup>34</sup> Short version of Costa & Mc Crae's NEO Personality Inventory [44], [45].

<sup>35</sup> MeridianGlobal and Matsumoto's Globesmart Commander Survey [47].

<sup>36</sup> Hofstede's Value Survey Module [55]. The VSM survey does not measure culture at an individual level – it has been validated to measure culture at the level of countries or regions. The GCS, on the other hand, is intended to be used on an individual level, but has not yet been validated.

<sup>37</sup> Debriefing questionnaire 1 is a general survey asking 51 questions from the game.

<sup>38</sup> Questions were reviewed by peers and revised on the basis of feed-back from the subjects in two pilot studies conducted in Norway prior to the first experiments.

assignment. They communicated through “chat”. The national experiments there were conducted within local networks while the international experiments were done over the internet. The experiments were timed to one hour, but subjects were in for 5-6,5 hours on the experiment day. This included: getting an introductory brief, game learning and planning sessions, completing surveys, and receiving a debrief in the end. (For more details, see chapter 2).

### **3.3 ASSESSMENT #3: CULTURE AND TEAMWORK IN AN OPERATIONAL ENVIRONMENT**

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#### **3.3.1 Background [AW05 Study]**

The original purpose of the AW05 research initiative was to extend development of: (1) the model of organizational and interpersonal factors (Chapter 4), (2) the model of cultural adaptability (Chapter 4), and (3) training cultural adaptability (Chapter 5). Allied Warrior 05 (AW05) was a SHAPE/Allied Command Operations (ACO) Computer Assisted Exercise designed to certify the NATO Response Force VI (NRF-6) capability, under the command of Joint Force Command Lisbon (JFC Lisbon), for the six month period starting January 2006. The planned experimental design was based on the whole headquarters concept with the intent of studying J2 and J3 staffs. Similar to AW04, AW05 data collection was expected to take place with the same participants in two waves; at two different times and two different sites. Objectives 1 and 2 were addressed in a first wave of data collection at the Joint Force Command Headquarters in Lisbon before the actual AW05 exercise. The first wave results are reported in Chapter 4.

The second wave of data collection with the same participants was expected to take place at the AW05 exercise (CPX) at Montijo, Portugal Air Base. The plan was to collect anecdotal data from the wave 1 participants for: 1) content development of the GlobeSmart® Commander culture and teamwork training tool, the primary deliverable for the LTAMC project, and 2) assessing the impact of three GlobeSmart® Commander training modules on multicultural teamwork at the operational level. However, two external events resulted in a completely revised data collection plan at the CPX. First, a natural disaster in Pakistan resulted in deployment for many of the AW05 DJTF before the CPX, who therefore could not participate in the second wave. In addition, inadequate internet bandwidth at the CPX resulted in the inability of researchers to present the computer-based GlobeSmart® training. Therefore, the first objective was revised to provide a presentation to a new group of participants on the GlobeSmart training program and obtain their observations and feedback on the potential for using GlobeSmart with DJTF staff.

The second objective also had to be revised. The extensive national diversity of NATO officers in this study enabled us to explore, through semi-structured interviews, propositions based on a model for understanding cultural diversity in cognition and teamwork developed by Sutton and Pierce (see Chapters 2 and 5 for further discussion). Past research has found that normative scores on the GlobeSmart® cultural dimensions strongly distinguish country of origin or nationality. Past research has also established that effective communication strategies for teamwork (e.g., information exchange, initiative, and support), are considered important for successful team performance outcomes. Therefore, we proposed that this widely diverse sample of experienced NATO officers would be expected to have extensive knowledge about what makes multi-cultural teams effective. Therefore, based on the Sutton and Pierce model's expectations for effective teamwork, we proposed the NATO officers would tend to describe important teamwork behaviours with:

a) An egalitarian perspective (e.g. being "self-directed," using "flexible roles," and "challenging opinions of others in power") vice a "status" perspective (e.g., team members follow and enforce rules/guidelines, expect to use appropriate behaviours for specific roles, and respect status and position power) (Proposition 1);

b) A "low need for certainty" perspective (e.g., demonstrate quick results, value flexibility and initiative, and speed is valued more than thoroughness) vice a "high need for certainty (e.g., spend time on background research, establish proper processes and systems, and take time before making a change) (Proposition 2); and

c) an "interdependent" perspective (e.g., focus more on cooperation and group goals, use group decision making styles, and reward and recognize the group) vice an "independent" perspective (e.g., take more individual initiative, use individual decision making styles, and reward/recognize individuals) (Proposition 3).

### **3.3.2 Method**

The study was exploratory in kind and used both qualitative and quantitative methods of analysis. A semi-structured interview strategy was designed to identify trends in NATO officer attitudes about teamwork in the context of the GlobeSmart<sup>®</sup> culture dimensions.

#### **3.3.2.1 Participants**

Twenty-two NATO officers volunteered to answer a series of interview questions on the three dimensions of teamwork. These officers represented a good diversity in NATO countries: Canada, Denmark, France, Germany, Greece, Netherlands, Norway, Portugal, Romania, Spain, Turkey, and the United Kingdom.

#### **3.3.2.2 Materials**

Interview questions were created to elicit officer attitudes toward three dimensions of teamwork that have been found to be effective team member behaviors. The interview questions were designed to take an unobtrusive approach to gaining insight out the potential influence of the cultural dimensions. Therefore, we attempted to avoid obtaining opinions about cultural biases or effective teamwork. The questions were designed to obtain responses about how officers did their job in the context of teamwork dimensions that were known to be effective. The officers were asked the following questions about how they expected to work with other people, both at their NATO Headquarters and during the Allied Warrior exercise:

##### Information Sharing

- How do you share information with others?
- Do you modify your approach depending on the nationality of the person you are dealing with?

##### Initiative/Leadership

- How do you provide guidance? For example, directing someone to take action or instruct them on how to perform a task. How does that change depending on nationality of the individual?
- How do you communicate your priorities for others? Does it change depending on nationality?

##### Backup/Support

- How do you bring an error to a team member's attention and see that it is corrected?
- How does this procedure change depending on nationality of the team members?
- What do you do when you see that a team member is overloaded or is having difficulty performing a task?

### **3.3.2.3 Procedure**

The Montijo command post was established in an air craft hanger with dividers separating work groups and teams as designated by the commander. LTAMC experimentation was conducted in an eight foot by four foot area enclosed on three sides by dividers. Privacy was not an option. The area contained two tables, two unclassified computers, and several chairs. Observation of the command post was unobtrusive and occurred constantly throughout the day and some evenings.

On the afternoon of 28 Nov, we identified 30 individuals for training based on their role in the CPX, specifically individuals playing FOPs, JMC, SYNK, COM, and J 2. Survey feedback was available to all participants who completed the surveys at Joint Force Command Lisbon, but not all persons who completed the surveys were members of the DJTF and not all members of the DJTF had completed the surveys.

That afternoon and the following morning, the experiment coordinator went to each of the identified players individually and let them select an available 30-minute training time from 0830 to 1500 on 28 or 29 Nov. These training dates had been agreed upon at the FPC in July 05. Two researchers were available to train on each of those dates, and except time off for lunch, DJTF staff had 40 time slots from which to choose. It was the intent of the researchers to administer the GlobeSmart<sup>®</sup> Commander prototype cultural awareness training to select DJTF staff. Unfortunately, there was insufficient unclassified bandwidth at the Montijo site to support the on-line training venue. Therefore, researchers had to make do by providing 30 minutes of verbal cultural/teamwork training on an individual basis to experiment participants. Feedback and reactions to the presentation were obtained from the participants. It is likely that receiving training in this manner frustrated the staff. All training was completed as planned by 1500 on 30 Nov.

Planned follow-up interviews were conducted on 4-5 Dec. Four researchers conducted the approx. 1-hour interviews between the hours of 1200 and 1700 on the 4th and 0900 to 1500 on the 5th, giving targeted interviewees (i.e., those individuals who had received cultural/teamwork training) 44 time slots from which to choose. Again, the experiment coordinator went to each of the interviewees individually to schedule their interviews. Each interview was conducted with the interviewer asking the questions for each of the teamwork dimensions. In addition participants were asked whether or not they modified their approach based upon the nationality of the person they were speaking to. Specifically, they were asked if there were any workarounds in which the participants modified their approach based upon the nationality and language ability of the person they were dealing with. Interviewers hand wrote interviewee responses to each question. Each interview was begun with the questions about information exchange, but in keeping with the natural flow of the interview, the progress of the remaining interview questions depended on the direction the interviewee's answers took. In the end, however, each interviewer addressed all of the questions.

Two raters, blind to interviewee nationality, independently reviewed transcripts of each of the participant interviews. They each rated the interview responses to the teamwork dimensions using a six-item Likert-type scale for each cultural dimension (egalitarian/status; risk/restraint; independent/interdependent; direct/indirect; task/relationship; and short-term/long-term. The scales were provided by Aperian Global © with their permission and have been used extensively in prior work within the GlobeSmart<sup>®</sup> Commander training they built. Each scale item allowed for a single rating of 1, 2, 3, 4, or 5. For example, a score of 1 or 2 on the egalitarian/status scale indicated the interviewee's response had phrases that supported a somewhat (2) or strong (1) egalitarian perspective. Whereas, a score of 4 or 5 on the same scale indicated the interviewee's response was had phrases that supported a somewhat (4) or strong (5) status perspective. A "3" indicated the interview response had equal numbers of phrases that supported a "balanced" egalitarian *and* status perspective. A rating of "Not Applicable" ("N/A") was applied if no response was given or when a response did not include sufficient detail to allow for a rating. For responses in which there was initial disagreement

between raters, a discussion led to a consensus rating. The first type of rater disagreement occurred when a number of responses did not provide very much information and were subsequently rated by one rater (but not the other) as "N/A." Upon discussion, it was often the case that one rater was able to provide an adequate description of the observed behaviour to the second rater, and consequently a consensus rating was made. The second type of rater disagreement occurred when one rater suggested, for example, a rating of "3" and the other suggested a rating of "4." The raters then discussed the interview response in detail and came to a consensus on a single rating.

### **3.3.3 Results**

The purpose of the analyses in this section was exploratory and not subjected to statistical analysis due to the small dataset. Therefore, propositions, rather than hypotheses were tested to identify if trends in the results would justify further analyses.

Frequency analyses were converted to percentages for the cultural ratings on each of the three teamwork dimensions. For each culture dimension, the rating frequencies were reduced to three categories. For example, a score of 1 or 2 was converted to a percentage representing an "egalitarian orientation," a score of 3 was converted to a percentage representing a balanced egalitarian/status orientation, and a score of 4 or 5 was converted to a percentage representing a "status orientation."

Results of cultural dimension ratings for each teamwork dimension are presented as percentages in Tables 6, 7, and 8 the tables are formatted with the percent rating results listed in the shaded columns under the headers "orientation." Percentages are listed in the columns next to each of the six pairs of cultural dimensions. The "balanced" orientation percentages are listed between each dimension. Results will be described as a tendency toward an orientation, but significance tests have not been made. Therefore, the findings are descriptive rather than confirmatory. The response rate is listed in the last column and was calculated as the sum of the response rates for the teamwork category. The total number of interviews included in the analysis is listed in parentheses. A high response rate might indicate a cultural dimension has some relevance to the officer's perception of a particular teamwork dimension. Conversely, if a low response rate was obtained from the ratings, then it might indicate the cultural dimension had little relevance to the teamwork dimension.

Table 6 presents the percent of the leadership/initiative interview responses rated for degree of orientation toward the six culture dimension. The response rate was very good for the majority of the ratings except it was fair (57%) for the short term/long term dimension. Proposition 1 was partially supported. The ratings tended toward an egalitarian (32%) and interdependent (27%) orientation, but there was also a tendency toward the balanced orientation on both, 23% and 32%, respectively. In contrast, the responses were almost evenly split on the risk (27%)/restraint (32%) orientation, with only a few "balanced" (9%) responses. For the remaining cultural dimensions, the responses tended to have a direct (67%), task (42%), and short-term (33%)/balanced (19%) orientation.

**Table 6: Percent of Leadership/Initiative interview responses rated for degree of orientation on the six culture dimensions.**

	Orientation	Balanced	Orientation		Response Rate (N)
Egalitarian	31.82	22.73	18.18	Status	73 (22)
Risk	27.27	9.09	31.82	Restraint	68 (22)
Independent	13.64	31.82	27.27	Interdependent	73 (22)
Direct	66.67	4.76	9.52	Indirect	81 (21)
Task	42.86	14.28	23.81	Relationship	81 (21)
Short-Term	33.33	19.05	4.76	Long-Term	57 (21)

Table 7 presents the percent of the backup/support interview responses rated for degree of orientation toward the six culture dimensions. The response rate ranged from fair (57%) to good (73%) across the dimensions. Proposition 1 was supported. The responses tended toward an egalitarian (45%), restraint (38%), and interdependent (41%) orientation. For the remaining dimensions, the responses tended to have a direct (45%) and relationship (33%) and short-term (29%) orientation.

**Table 7: Percent of Backup/Support interview responses rated for degree of orientation toward the six culture dimensions.**

	Orientation	Balanced	Orientation		Response Rate (N)
Egalitarian	45.45	18.18	9.09	Status	73 (22)
Risk	14.28	4.76	38.09	Restraint	57 (21)
Independent	9.09	13.64	40.91	Interdependent	64 (22)
Direct	45.45	4.54	22.73	Indirect	72 (22)
Task	19.05	14.28	33.33	Relationship	67 (21)
Short-Term	28.57	9.52	19.05	Long-Term	57 (21)

Table 8 presents the percent of the information sharing interview responses rated for degree of orientation toward the six culture dimensions. The response rate was fair (57%) on two dimensions, but very low on the remaining dimensions. Therefore, any conclusions drawn from these results are very questionable. Proposition 1 was partially supported. The responses tended toward an egalitarian (23%) and interdependent (23%) orientation, but were evenly split on risk (24%)/restraint (24%) orientation. For the remaining dimensions, the responses tended to have a direct (23%) and short-term (24%) orientation. The responses for the task-relationship dimension were mainly balanced (24%), with the remaining responses split between task (19%) and relationship orientation (14%).

**Table 8: Percent of Information Sharing interview responses rated for degree of orientation toward the six culture dimensions.**

	Orientation	Balanced	Orientation		Response Rate (N)
Egalitarian	22.73	13.64	9.09	Status	45 (22)
Risk	23.81	9.52	23.81	Restraint	57 (21)
Independent	4.54	0	22.73	Interdependent	27 (22)
Direct	22.73	0	4.54	Indirect	27 (21)
Task	19.05	23.81	14.28	Relationship	57 (21)
Short-Term	23.81	14.28	9.52	Long-Term	48 (21)

### 3.3.3.1 Language

English language proficiency level is deemed to affect team processes. It was measured through the average of 4 questions in the background questionnaire. An internal consistency test of these questions showed very good reliability; Cronbach's Alpha = .895. See table 9 for details.

**Table 9: Language ability scale items: Item reliability.**

Questions	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Is English your native language?	,754	,886
How would you rate your ability to read and write in English?	,729	,897
How often do you feel that you get more easily stressed when working in an English-speaking environment rather than in your native language?	,860	,831
How often do you become more reserved about presenting your point of view in English than in your native language?	,842	,836

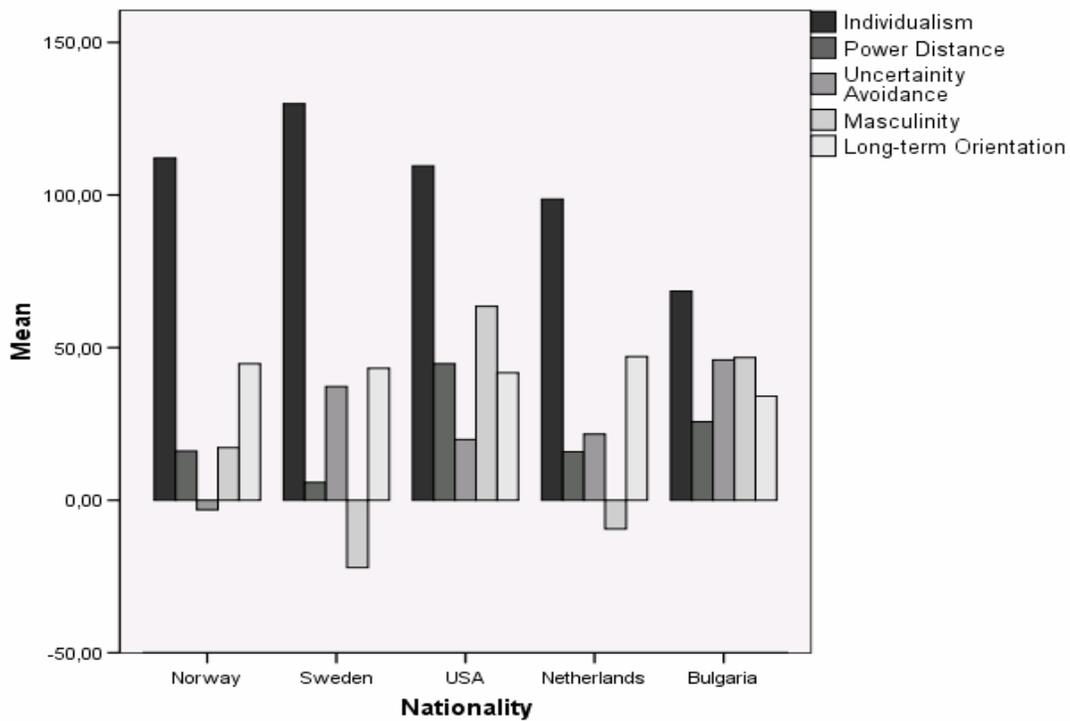
N=223.

35 out of 224 subjects were native English speakers, the rest having Norwegian, Swedish, Dutch and Bulgarian as their native languages.

Language ability was expected to have an effect on team cooperation and processes. We therefore wanted to be able to better understand, as well as control for this, in order to more correctly interpret for instance the effects of culture.

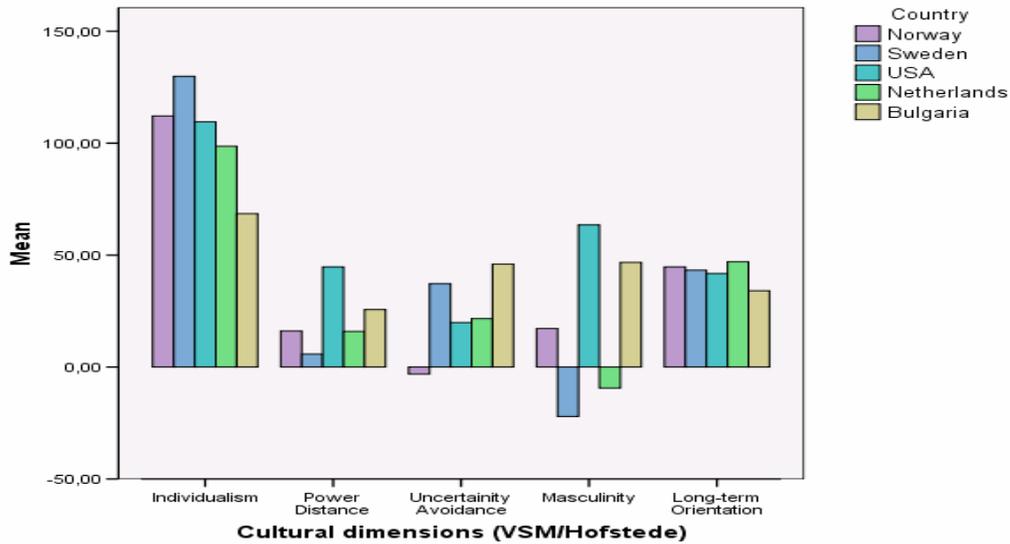
**3.3.3.2 Culture**

As indicated above (chapter 3.2.2.3), culture was measured using the VSM (Hofstede) and the GCS (Matsumoto). Figure 12 shows the VSM/Hofstede cultural scores by nationality, while Figure 13 shows the scores by dimension. The latter demonstrate the most variance between the countries on the masculinity dimension, while the long-term/short-term orientation dimension has the least variance.



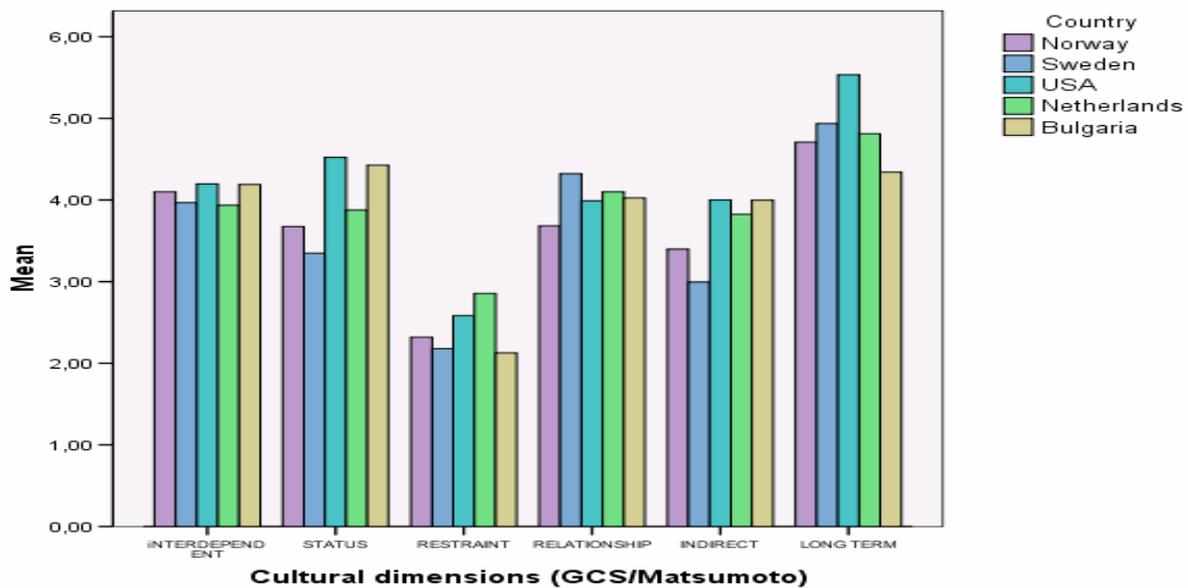
**Figure 12: Culture scores (Hofstede) by country (N=221).**

As anticipated from previous studies, Figures 12 and 13 indicate some obvious similarities between the cultural make-up of Norway, Sweden and the Netherlands. Bulgaria seems to be the most different.



**Figure 13: Culture scores (VSM/Hofstede) by dimension (N=221).**

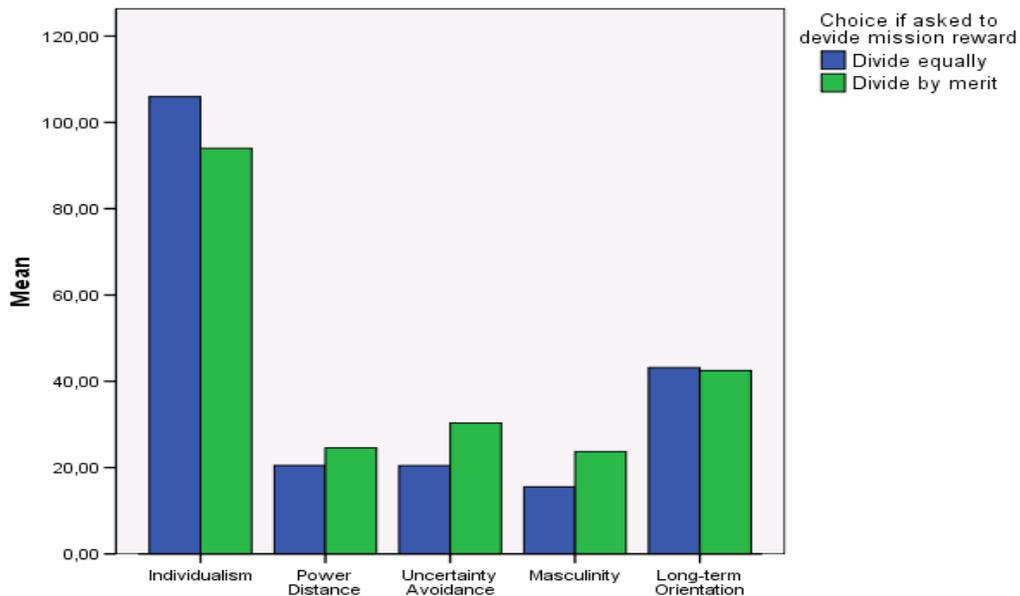
Figure 14 below shows the GCS/Matsumoto cultural scores by dimension. It becomes clear when comparing with Figure 13 above that the VSM/Hofstede scores demonstrate the most variance between the countries on the dimensions. This should make it more applicable in the subsequent analyses.



**Figure 14: Culture scores (Matsumoto) by country (N=221).**

As anticipated, due to the low variance in the GCS, there were found no correlations with any of these cultural dimensions and the choice of reward strategy. With the VSM, on the other hand, there seemed to be some relationships to culture (Figure 15).

Surprisingly, persons from nationalities scoring high on individualism tended towards the choice “divide equally” ( $r=-.212, p=.002$ ). The strengths of the relations are shown in table 10.



**Figure 15: Reward strategy by culture (VSM).**

**Table 10: Correlations: Reward strategy with culture (VSM). 1=divide equally, 2=divide by merit.**

<b>VSM Dimensions</b>	If you were asked to divide up a mission reward the team was given between the team members, how would you prefer to divide it?	
Individualism	Pearson Correlation	-,212(**)
	Sig. (2-tailed)	,002
Power Distance	Pearson Correlation	,123
	Sig. (2-tailed)	,067
Uncertainty Avoidance	Pearson Correlation	,174(**)
	Sig. (2-tailed)	,010
Masculinity	Pearson Correlation	,098
	Sig. (2-tailed)	,146
Long-term Orientation	Pearson Correlation	-,199(**)
	Sig. (2-tailed)	,003

\*\* Correlation is significant at the 0.01 level (2-tailed). N=222.

### 3.3.3.3 Trust

Trust, defined as task related confidence in team-members, was expected to affect team processes, and possibly also be linked to culture. Team trust was measured through 3 questions in the background questionnaire<sup>39</sup>. Internal consistency test shows satisfactory reliability of the measure; Cronbach's Alpha = .714. See table 11 for details; mean score was computed on the basis of the items listed.

**Table 11: Team trust: Items and reliability of measure. N=133.**

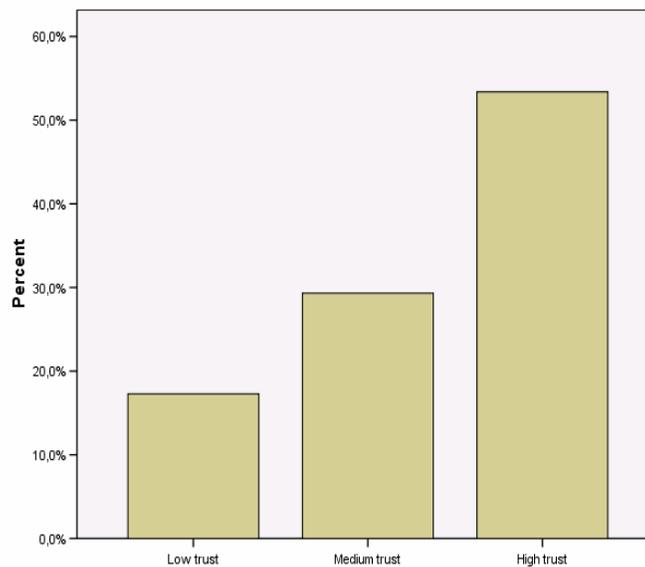
Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
How confident were you that team members would assist you if you needed help?	,548	,610
How confident were you that team members would fulfill their responsibilities?	,490	,676
How confident were you that your team members would share important information with you?	,569	,579

Answer categories: 5-point scale from very confident to very doubtful.

Figure 16 below shows the distribution of answers on trust in all<sup>39</sup> the experiments while Figure 17 shows the distribution of answers on trust split in national and international experiments<sup>40</sup>. The latter indicates higher

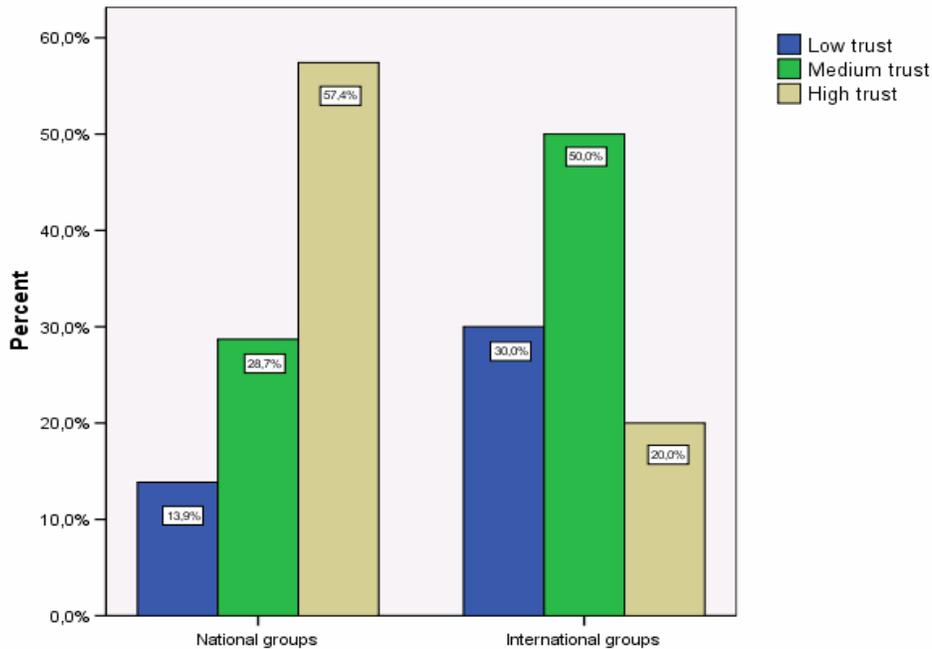
<sup>39</sup>As the Debrief 2 questionnaire had failed to be activated in the Bulgarian, Swedish and approximately half of the Dutch national experiments, we lack data on the measurements of trust from these. Therefore, N=133.

trust within the national than within the international groups. The difference in mean scores was 0.7 on a five-point scale,  $p < .001$ . The lack of answers from all countries in the national experiments was controlled for<sup>40</sup>.



**Figure 16: Distribution of answers on team trust in all experiments. N=133.**

<sup>40</sup> As we had no data from the Bulgarian and Swedish national experiments, the data from the Bulgarian and Swedish participants in the international experiments were excluded when comparing the national and international groups, in order to have matched samples for comparison purposes. Therefore, N=121.

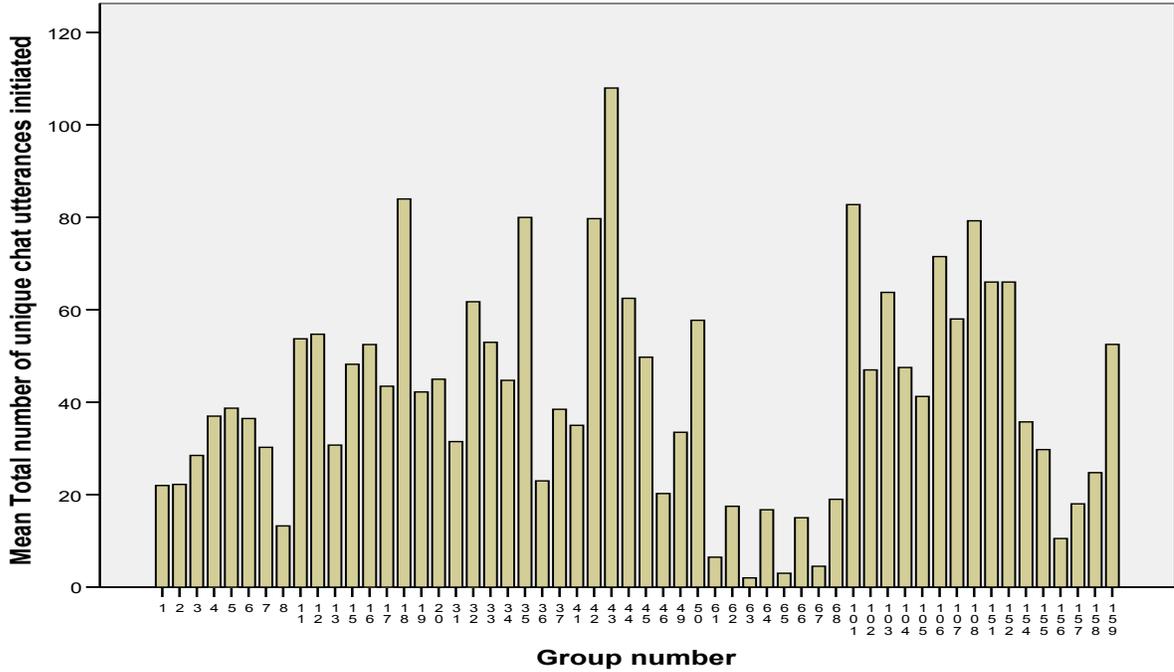


**Figure 17: Trust within nationally homogenous groups and nationally heterogeneous groups. N=121.**

Trust was not found to be related to the choice of reward strategy (“divide by merit/equal”). It was expected that trust may be related to the Individualism/Collectivism (I/C) dimension of culture, but there was found no such relationship in our data.

### 3.3.3.4 Communication

Team-members communicated through chat. This was also the main tool for information-sharing. The total number of chat messages written per group varied greatly. This is shown in Figure 18 below.



**Figure 18: Group-wise mean number of chat messages written.**

The table below, 12, shows the relationship between language ability and chat messages written. As expected, language ability did influence the number of chat messages written, but explains only just over 3% of the variance.

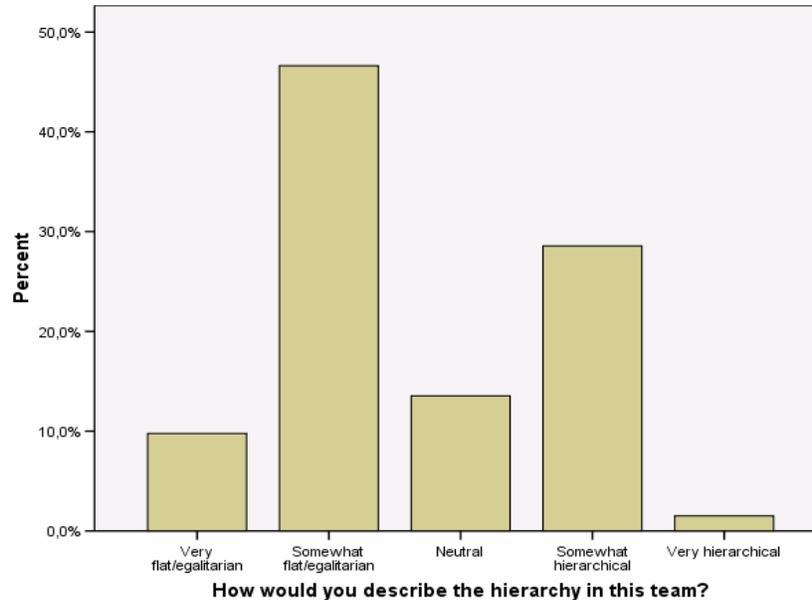
**Table 12: Correlations: Language ability and chat messages written.**

		Average Language ability
Total number of chat messages	Pearson Correlation	,180(**)
	Sig. (2-tailed)	,007

\*\* Correlation is significant at the 0.01 level (2-tailed). N=223.

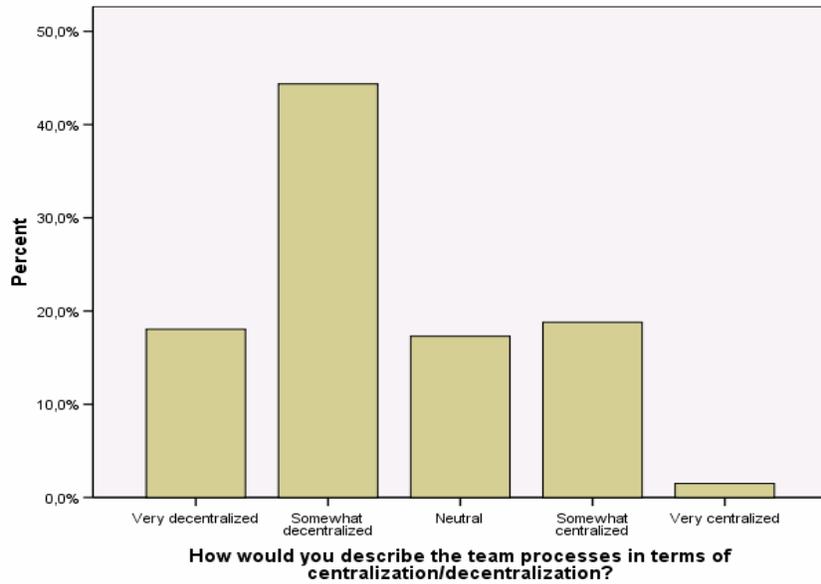
### 3.3.3.5 Organization (Hierarchy, Centralization, Leader Behaviour)

In the Debrief 2 questionnaire, we asked questions on perceived hierarchy and centralized/decentralized processes. Figure 19 and 20 show the distribution of answers to these questions from all groups<sup>41</sup>. As can be seen from these figures, a majority of subjects found the team structure to be flat and the team processes to be decentralized.



**Figure 19: Perceptions of hierarchy in national and international groups. N=133.**

<sup>41</sup> As previously indicated, we were lacking data on the Debrief 2 questionnaire from Sweden and Bulgaria on the national experiments; hence, N=133.

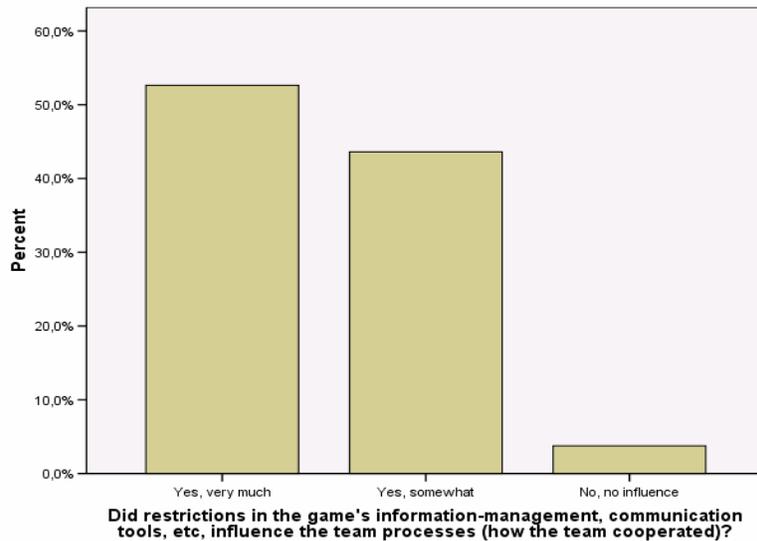


**Figure 20: Perceptions of centralization/decentralization in national and international groups. N=133.**

There were found significant correlations between perceptions of hierarchy, centralization, rating the organization, and Pd, including both national and international groups (N=133)<sup>42</sup>. Flat structure & decentralization was positively related ( $r=.439, p=.000$ ). In turn, flat structure & decentralization were each related to flexibility (flat structure & flexibility:  $r=.243, p=.005$ ; decentralization & flexibility:  $r=.252, p=.004$ ). Flat structure as well as decentralization were, however, negatively related to rating the organization positively in our experiments ( $r=-.340, p=.000$ ;  $r=-.365, p=.000$ ). In other words, respondents seemed to have a more positive view of the team organization when they experienced it as more hierarchic and centralized. The same tendency was found both for those who had previously spent a lot of time playing computer games as well as for those that had played little or nothing. But the correlations were somewhat stronger for those who had played more games.

Qualitative and quantitative data indicated that the game may have had an influence on the team-processes. Figure 21 shows that almost all respondents indicated that the game tools did influence group processes.

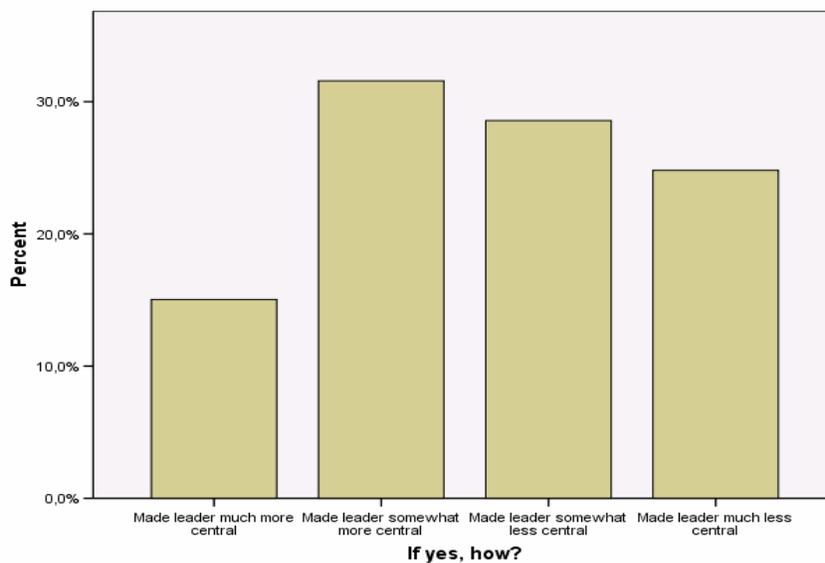
<sup>42</sup> Looking at the same for the international groups only, gave the same relations, just a bit stronger.



**Figure 21: Game influence on group processes. N=133.**

In the game, communication could for instance only take place to all other players at the same time if they were standing in each others vicinity, otherwise they would have to type the same message repeatedly to all.

The quantitative data were very mixed when it came to *how* the game affected the process. As Figure 22 shows, there were no overweight of subjects finding the game to induce more centralized processes.



**Figure 22: Game influence on group processes and its effect on leadership. N=133.**

Qualitative comments indicate that subjects often found the communication through chat and the information management system to be cumbersome and take too much time: *“Not being able to communicate with everybody at the same time while not within range of sight slowed things down.”* and *“The information management system was difficult (...)”*.

Subjects also pointed to that there was some confusion: *“Without clear tasks, I was not sure who to send the information too, or request help from.”* and *“Information overload and poor communication/planning made everyone run around solving individual tasks with no clear plan.”*

But finally, many indicated that it was advantageous to have hierarchic/centralized organization in the game: *“Power goes up because the game implicates having a leader”, “It was cumbersome to cooperate decentralized in the game (...) it favors hierarchy.”* and *“Command and control was needed, but not present.”*

The comments suggest that playing may have been more time efficient, as well as less chaotic and confusing if the team organization was more hierarchic and centralized. The very last comment could also indicate that our subjects interpreted the game organization in light of what they are used to in their military organization.

In terms of relationship to culture, it was expected that perceptions of hierarchy, centralization, and rating the organization might be related to Power distance (Pd). There were found correlations only between Pd and rating the organization:  $r=-.193$  and  $p=.026$ . This means that there was a tendency for subjects from low Pd cultures to rate the team organization more positively than those from high Pd cultures. There was found no relationship to between rating the organization and Uncertainty avoidance (Ua).

### **3.3.4 Discussion**

Although very diverse in national origin, experienced NATO officer opinions tended toward an egalitarian, interdependent, direct, and short-term orientation for leadership/initiative and backup/support. In addition, a good percentage of ratings indicated officers had a "balanced" orientation, giving support for the notion of adaptation of attitudes and behaviours. The finding for the risk/restraint orientation tended to be split with the balanced orientation. For leadership/initiative, the officers tended to be task oriented, but for backup/support they tended to be relationship oriented.

Caution should be taken in drawing any strong conclusions from this dataset. Such methodological issues as non random selection of officers, low response rate, and the employment of just two raters to evaluate the interviews must be considered. Low response rate in particular can lead to skewed results based on a small sample of officers. For example, in reviewing the low response rate for information sharing, the researchers think the interview questions may have been inadequate in eliciting more detailed responses from the officers. Also, all the interviews began with the question about information sharing, therefore, the low response rate may have been due to the initial interaction between the interviewer and interviewee, as English was a second language for many of the officers. Also, English as a second language may have resulted in less information being recorded by the interviewer, thus skewing the interview results in favour of those officers with better English speaking skills.

Nevertheless, with response rates on many of the cultural dimensions greater than 70%, this topic is fruitful for further study. The findings described above satisfy the need to test hypotheses to determine if they hold up under the scrutiny of statistical analysis.

### 3.3.4.1 Culture

It was shown that the VSM/Hofstede measurement of culture gave more variance between national cultures than the GCS/Matsumoto measurement, and was found the most useful for analyses.

When comparing the participating nations' scores on the cultural dimensions, some of them were rather surprising compared to previous research on this. One of the reasons for the somewhat different scores is that the VSM-94 that we used is a revised version of the questionnaire Hofstede used in his IBM-study. However, as Hofstede indicates, even though the numbers may not be directly comparable, the relative relationship between the countries (rank order) on how they score should largely be maintained [55].

Some of the most interesting scores are found on the Individualism/Collectivism dimension; the current scores on this dimension as well as the rank order were quite different from what Hofstede found in his original IBM study. In general, the scores are all higher than Hofstede's original scores, and with the exception of Bulgaria, the rank order seems to have shifted between the countries. In the current study, Sweden and Norway scored the most individualistic, while the USA and the Netherlands scored the most collectivistic (i.e. when not counting Bulgaria). In the original study, on the other hand, the USA and the Netherlands scored the most individualistic, while Sweden and Norway scored the most collectivistic.

There could be many reasons for this. One possible explanation is the samples. Military officers may have chosen this occupation for different reasons in the various countries, given societal differences in opportunities, educational system, etc, and hence constitute a source of systematic differences in the selection. The same could of course be said for any matched samples across nations, also the IBM study; there are probably always some differences across countries as to why people have chosen the same job<sup>43</sup>. A study by Netland comparing women's reasons for joining the army in the US and Norway supports this explanation. In addition to pointing at societal differences in education and health care as possible motivators, it indicated that women in the Norwegian army may be more inclined to join in a search for challenge than women in the US army. If this is true also for our predominantly male sample, this could mean that one of the questions measuring the I/C dimension, regarding the importance of having an element of variety and adventure in the job, could make the Norwegians score relatively more individualist and the US relatively more collectivist than previous studies. The data seem to support this explanation in some degree: Norway score over average while the US score under average on this question. Furthermore, a replication study by Soeters [66], also with a military population, found the same rank order as we did. However, as he was using the original IBM-survey, the scores are generally lower.

Another possibility is that the national cultures simply have evolved in different directions since Hofstede's original study. Hofstede found the I/C dimension to correlate positively with a country's GNP (gross national product); i.e., individualism correlates with high GNP. Since the IBM study, there has been a relative increase in GNP in Norway compared to the other countries in the study, which could explain a shift in an individualist direction.

However, as individualism means being more individually rather than group oriented, we would have expected this to show in a question the subjects answered on how they would divide a reward within their group. As shown in the results section, this relationship was quite the opposite of what was expected;

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<sup>43</sup> The USA is also a culturally heterogeneous country, where there may be different subgroups represented in the IBM as opposed to the military. Such subgroups have been shown to potentially have different cultural values [68].

individualism was negatively correlated with the individualist strategy (dividing by merit) while positively correlated with the collectivist strategy (dividing equally). This finding supports the first explanation of sample differences, but also indicates that there may be a problem with at least one question on the I/C dimension when using the VSM on military samples.

#### **3.3.4.2 Trust**

It was indicated in the results section that there were quite large and significantly higher levels of trust within the national than within the international teams. This supports the findings from AW04, reported in 3.1, as well as previous research [89][90][91], indicating that it is harder to build trust in heterogeneous than in homogeneous groups. The lesson from these studies is that one needs to invest more time and training together in order to build trust in international work groups, like NATO coalitions, as compared to national work groups, and the more culturally diversified at the outset, the more time needed.

There was found no links, neither between the I/C dimension of culture and trust, nor between choice of reward strategy and trust.

#### **3.3.4.3 Communication**

There was found great variation between the groups in terms of how much they communicated. This was also found to be linked to English language capability; the better in English, the more they communicated. Even though the relationship was not very strong, this underlines the importance of language proficiency in cooperative situations, and supports findings from AW04, reported in 3.1.

#### **3.3.4.4 Organization**

There were found significant correlations between perceptions of hierarchy, centralization, rating of the organization, and Pd. The finding that flat structure is related to flexibility supports the results from AW04, reported in chapter 3.1.

However, contrary to what was found in the AW04 analysis, respondents seemed to have a more positive view of the team organization when they experienced it as more hierarchic and centralized. The question is why this is so. We know already from ample research on organization and problem-solving [96], [97] that simple tasks tend to make a centralized organization advantageous. Could this be the reason also in this case; that the experiment situation could be deemed a simple task situation? Certainly, a military operative organization is both more complex and deals with more complex issues than what a small controlled lab experiment can be. Nevertheless, qualitative data indicated that many subjects experienced the game as a complex environment, and possibly more so the subjects with less experience playing computer games. But as indicated in the results chapter, even though the correlations were somewhat stronger for the gamers, the same relationships were found both for gamers and non-gamers.

As presented in the results chapter, in the game, long distance communication was restricted to sending messages to only one other player at the time. Hence, it would take more time to communicate and share information with all in a decentralized manner than in a centralized manner if the team was dispersed. This could explain why the subjects seemed to prefer a hierarchic/centralized organization. It simply saved time and effort in the game.

Qualitative data also indicated that playing may have been more time efficient, as well as less chaotic and confusing for the subjects, if the team organization was more hierarchic and centralized. Some comments also indicated that our subjects interpreted the game organization in light of what they were familiar with in their

jobs in a military organization. In other words, if the organization was less hierarchic and centralized in the game than in the teams subjects were used to working in, they could interpret this as being the problem if there was confusion. What we know is that people work most efficiently in systems to which they are accustomed. Please see chapter 3.1 for a discussion on this topic.

The finding that subjects from low Pd cultures tended to rate the team organization more positively than those from high Pd cultures, strengthens the above assumptions of the game's team organization being less hierarchic than what many subjects were used to. Since organizations in low Pd cultures typically are flatter and more decentralized, subjects from these cultures are naturally more inclined to liking such organizations.

There were found no relationship between rating the organization and Uncertainty avoidance (Ua). Considering that there were reports of confusion and ambiguity in the game, one could have expected there to have been a relation here. This was not found.

In sum, these organizational findings implicates the importance of having the organization fit both the task and the personnel (both in terms of their cultural make-up and what they are trained for), as well as the information management and collaborative systems being aligned to support the organizational structure and processes.

### **3.3.5 Conclusions**

This study of cultural, organizational and team variables, has provided some initial analyses of the team processes in the experimental setting of a simulated mission. It has given some additional insights into organizational processes linked to cooperation and culture in addition to the former analyses from an operational environment (AW04), reported in chapter 3.1. As there are still unexplored questions and details to look into, we expect there to be further analyses going more in depth into the data and analyses in the time to come. However, the insights reported to date should add valuable understanding to the topics treated.

