

Is established knowledge about cross-cultural differences in individualism-collectivism not applicable to the military?

A multi-method study of cross-cultural differences in behavior

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Abstract

Preparing for international military collaboration includes raising knowledge about cultural differences. The differences in individualism-collectivism between countries are one of the most central aspects likely to impact collaboration. However, are the differences in individualism-collectivism between countries as documented in a significant amount of civilian research (e.g., Hofstede, 2001) generalizable to a military context? Or are the differences not the same in a military context, as suggested by Soeters (1997) on the bases of a values survey?

Quasi-experiments were conducted in a distributed collaborative computer game environment. The study is multi-method, employing self-reporting, observer ratings and direct behavioral measures, and it is the first study of cross-cultural differences in individualism-collectivism in behavior in a military context. By studying differences in collectivist-type behaviors in a sample of military officers ($N = 154$) in four different countries (the USA, the Netherlands, Sweden and Norway), this study seeks to determine whether the cross-cultural differences in values found by Soeters from a military context are reflected in behavior. The study also includes a values survey using Hofstede's (2007) measurement tool, the Values Survey Module (VSM), consistent with Soeters' study. The study is considered exploratory due to a somewhat limited sample.

The results from the six different measures of collectivist behaviors provide no support for the suggestion that cross-cultural differences in individualism-collectivism are not the same in military organizations as in civilian organizations. Although not conclusive, the results raise doubt concerning the appropriateness of using the VSM in military samples. The implications are discussed.

Keywords: Military, behavior, values, individualism-collectivism, cross-cultural.

Public Significance Statement

The behavior observed in an experimental situation conducted in four countries indicated no support for the suggestion proposed by Soeters in 1997 that cross-cultural variations in individualism-collectivism are different in military organizations compared to civilian organizations. The findings gave no contraindications to using the literature based on results from civilian samples in military education and preparation for international work. However, the study raised doubt concerning the appropriateness of using Hofstede's Values Survey Module-94 survey instrument in military samples.

Introduction

Military organizations are becoming increasingly collaborative-intensive organizations operating across national boundaries facilitated by collaborative technologies (e.g., Alberts & Hayes, 2003; Bjørnstad, 2013; Connaughton, Shuffler, & Goodwin, 2011). Cultural differences can challenge that collaboration across national boundaries (Trejo, Richard, Driel, & McDonald, 2015). This makes for instance the well-functioning and effectiveness of NATO Headquarters (HQs) heavily dependent upon officers collaborating across national cultural divides. One of the most central aspects of cultural differences likely to impact collaboration within and across different cultures is the cultural construct of *individualism-collectivism* (e.g., Earley, 1994, 1989; Hofstede, 2001; Oyserman Coon, & Kimmelmeier, 2002; Triandis, 1995). Cultures that are high on collectivism have values and work activities that are relatively more group-oriented than individually oriented (e.g., Hofstede, 2001). Understanding the level of individualism-collectivism may thus be an aid to better understanding and organizing military collaboration both within and across different cultures. In the same vein, Trejo et al. (2015) argue that cultural knowledge is a key cross-cultural competency for military personnel.

The shared values, meaning systems, and patterns of behavior that are learned from other members of a society are understood to define a *culture* (e.g., Earley, 1997; Hofstede, 2001; Triandis, 1995). *Culture* is for our purposes defined as *national culture*, concurring with the field of cross-cultural psychology (e.g., Aycan, 2000; Earley, 1994; Hofstede, 2001; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Inglehart, Basáñez, Díez-Medrano, Halman, & Luijckx, 2004; Matsumoto, 2007; Oyserman et al., 2002; Triandis, 1995).

To use individualism-collectivism to understand collaboration in military organizations, we first need to identify the differences in individualism-collectivism between the different

countries. Soeters (1997) studied a sample from military academies in thirteen different countries using Hofstede's self-report framework (Hofstede, 1980, 2001) for measuring cultural differences in values. Hofstede's scales and theoretical framework have been the most influential in cross-cultural organizational research and have also withstood the test of time, at least in civilian cohorts of society (e.g., Kirkman, Lowe, & Gibson, 2006; Lee, Park, & Koo, 2015; Taras, Roney, & Steel, 2009). Soeters found virtually no relationship between the countries' scores or rank orders on the individualism-collectivism dimension in his study and those in the civilian study by Hofstede (1980), leading him to conclude that people in the military are different from other cohorts of society in regard to individualism-collectivism.

However, there is a lack of convincing evidence for why cross-cultural differences between people working in the military should be different from cross-cultural differences between people working in civilian organizations. Rather, Hofstede (1991) found national cultural differences to be much more profound than organizational cultural differences. We therefore question Soeters' conclusion and ask – are cross-cultural differences in a military context really different from those found in civilian contexts?

Focusing only on differences in values and attitudes through the use of self-report measures, Soeters is consistent with the main tradition in cross-cultural psychology (e.g., Aycan, 2000; Earley, 1997; Hofstede, 2001; House et al., 2004; Inglehart et al., 2004; Matsumoto, 2007; Oyserman et al., 2002; Triandis, 1995). However, such self-report measures may not be equally valid in all contexts (e.g., Van de Vijver & Leung, 1997), potentially leading to inaccurate conclusions. Correspondingly, there is a call for more multi-method strategies in cross-cultural research (e.g., Leung & Van de Vijver, 2008; Van de Vijver & Leung, 2000). In accordance with this literature and to further explore whether members of the military really are different from

civilians in terms of cross-cultural variations in individualism-collectivism, we have a main focus on behaviors that in previous research have been interpreted to be manifestations of collectivism and not only values and attitudes.

Individualism-collectivism: Behaviors and values

Individualism-collectivism is understood as a bipolar dimension ranging from individualism at one end to collectivism at the other end (e.g., Hofstede, 2001). Collectivists, compared to individualists, have been found to value cooperation more (Triandis, Leung, Villareal, & Clack, 1985), to be more cooperative (Eby & Dobbins, 1997; Kirkman & Shapiro, 2001; Oetzel, 1998; Thomas, 1999), to cooperate more in groups (Taras, Kirkman, & Steel, 2010), and to be more inclined to work in groups both at work and at home (e.g., Hofstede, 2001; Bochner & Hesketh, 1994). In experimental situations, collectivists have also demonstrated more cooperative and less competitive behaviors than individualists (Cox, Lobel, & McLeod, 1991; Oetzel, 1998).

Individualism-collectivism has furthermore been found to affect how people allocate rewards; collectivists tend to divide more equally than individualists, who tend to divide more by merit (e.g., Knight, 1981; Leung & Bond, 1984; Leung & Iwawaki, 1988; Taras et al., 2010). Research on language by Kashima & Kashima (1998, 2005) demonstrated a first person pronoun drop to be common in the languages spoken in collectivist cultures, indicating that the first person pronoun has less significance and may be used less by collectivists than individualists. In the same vein, Twenge, Campbell & Gentile (2012) linked individualism to the use of “I” and collectivism to the use of “we”.

Based on Hofstede’s values findings (2001), we would expect people from the USA, whether military or civilian, to be lower on collectivist behaviors than people from any other

nation. Based on Soeters' (1997) findings, however, we would expect Norwegians to demonstrate the least collectivist behaviors in an international military sample. In Hofstede's survey, Norway scored distinctly more towards the collectivism end of the dimension than the USA. The survey results of Soeters and Hofstede are displayed in Table 1. The table shows that the USA, Norway, and the Netherlands — three countries that often collaborate in NATO — scored rather differently in the two surveys. Sweden is not a NATO-country, but as a Partnership for Peace (PfP) nation Sweden also often collaborates with the above mentioned countries. Because Sweden scored very similarly to Norway in Hofstede's study, we would expect similar behavior from personnel from Norway and Sweden.

[Insert Table 1 about here.]

Study aim

Our main research question is thus: Will differences in collectivist behaviors across cultures in a military sample be consistent with Soeters' values findings, indicating civilian-military differences, or Hofstede's values findings, indicating no civilian-military divide? Moreover, will cross-cultural differences in collectivist type behaviors in a military context be most comparable to values previously indicated in one military sample (Soeters) or to values previously indicated in civilian contexts (Hofstede)?

Based on the above presented research, we will interpret cooperation, group work strategies, equality-based reward strategy, more use of use the pronoun "we" as opposed to "I" in communication, and low competition as behavioral indicators of collectivism.

The study of cultural differences in individualism-collectivism in behaviors related to cooperation and group work in the military suggests studying behavior within teams of military personnel from different countries. Consistent with the often-used definitions of a team provided

by, for example, Salas, Dickenson, Converse, & Tannenbaum (1992), and Kozlowski & Ilgen (2005), a team is understood in the present research to be two or more individuals working interdependently toward a common goal.

Cross-cultural studies of behavior have most often used secondary data on values, although this has been deemed a source of inaccuracy because variations in the sample characteristics risk influencing the results (e.g., Kirkman, Lowe, & Gibson, 2006; Van de Vijver & Leung, 1997; Taras et al., 2010). Hence, collecting both values and behavioral data from the same sample at the same time maximizes the possibility of finding a concurrence between values and behavior.

Method

Participants and procedures

To study individualism-collectivism in behaviors in teams in a military sample of countries that often collaborate in a controlled environment, a quasi-experimental design was employed. Because nationality represented the experimental condition and cannot be randomized, the design had to be quasi-experimental by default. *Experimental* is henceforth used to mean quasi-experimental.

To facilitate this study and reflect the increasingly digital nature of collaboration in military organizations (e.g., Alberts & Hayes, 2003; Bjørnstad, 2013; Connaughton et al., 2011), the experimental sessions were conducted using a net-based computer game that was adapted for our research purposes using the Situation Authorable Behavior Research Environment (SABRE) (Sutton et al., 2008; Warren, Diller, Leung, Ferguson, & Sutton, 2006). The SABRE allowed for a direct and automatic computer-based recording of behaviors and ensured the same conditions for all, leaving only the nationality of the teams to vary.

There was a total of 156 participants from Norway, Sweden, the Netherlands, and the USA. Thirty nine experimental sessions were conducted with four participants from the same country in each experimental session. Due to missing values, two cases were excluded, bringing the *N* to 154 for the analyses.

The four participant nations represent common collaborative partners in the NATO military organization, as well as a PfP nation (Sweden). The participants from each of these countries were all born, raised and living in the country of reference.

All participants were military, and almost all were officers (93.5 %); additionally, the samples were drawn from comparable populations in the different countries noted above. The participants were partly recruited from military academies, making the sample comparable to that in Soeters' study (1997). The high percentage of officers aimed to both make this study comparable to Soeters' study and make this study relevant for the military personnel who are most heavily involved in cross-cultural collaboration in international NATO HQs. Table 2 provides an overview of the participant demographics within each country.

[Insert Table 2 about here]

The participants were recruited independently from each of the participating countries on a voluntary basis. They were informed that they could leave the experiment at any time if they were inclined to do so. The experimental set-up, the SABRE environment, and the questionnaires used were ethically approved by the Human Use Committee at the U.S. Army Research Laboratory. No information that could identify the participants was collected, and the information rendered by the participants was treated with confidentiality.

In each experimental session, four participants came into a lab in their respective country and received a short briefing. They were able to see each other upon arrival, but did not interact.

They were subsequently assigned to one computer each and then started the game learning sessions (tutorials). First, the participants learned how to operate their game character (avatar), and then they learned how to communicate with the other participants through the game interface. The experimental game session was timed to exactly one hour, after which a quick debrief was given. Computerized surveys were administered before the experimental game session. The protocol was exactly the same for all the participants in all the countries.

In the game scenario, the four participants in each session represented a team whose task was to find caches of weapons in a modern urban environment. Team points were accrued by finding the hidden weapons. To execute their mission, the participants had access to a set of tools in the game. These tools were scarce to promote cooperative behaviors between the players. The group tasks in the game can be defined as a hybrid of coordinative, computational, and creative tasks (Hambrick, Davison, Snell, & Snow, 1998), making the game well-suited for studying behaviors related to cooperation and team work.

Communication between the participants was accomplished via a chat function in the game; they could not see or hear each other during the experiment. There were two different chat functions: one short-range and one long-range. In the short-range chat, the participants could communicate with all the other participants in their close vicinity, who would simultaneously receive the messages sent. In the long-range chat, the participants were not limited by distance to the other game characters, but they could communicate with only a single participant at a time. Reflecting the language of military collaboration in NATO coalitions, English was used for all communication.

Measures

Individualism-collectivism in behaviors. The measures were based on the literature presented in the introductory chapter. High scores indicate collectivism for all the behavioral measures.

Building on the work of Hofstede (2001) and Bochner & Hesketh (1994), *group work* (as opposed to individual work) was measured in the SABRE environment in two different ways: by the degree to which the participants' game characters were geographically co-located in the game – called *group work 1* (collective work strategy) and by the percentage of the total communication that was sent to nearby team members in the game, indicating whole-team communication as opposed to one-to-one communication – called *group work 2* (percent near communication). Both of these measures were direct counts of game behaviors retrieved from the game log. *Group work 1* was a team-level measure, whereas *group work 2* was an individual-level measure.

In line with the work of Kirkman and Shapiro (2001), and Jarvenpaa, Shaw, & Staples (2004), *cooperation* was operationalized as the amount of communication and was measured by the total number of communicative utterances made by each participant in the experimental game. This was a direct quantitative measure retrieved from the game log, measured at the individual level.

Competition was measured by observer ratings on a 5-point scale of how team members related to each other. The ratings were completed based on printouts of each team's chat messages retrieved from the game log. Hence, ratings were based on an overall evaluation of all communication within each team in the course of the experiment. Building on the work of Cox and colleagues (1991) and Oetzel (1998), competition was rated from *not at all* (1) to *all the time* (5). An example of competition within a team was a team where two or more team members

expressed that they wanted the same tools. Another example is team members competing to collect the hidden weapons which gave the team points. Competition ratings were completed by two researchers, including one who was unfamiliar with the hypothesis, and the average scores from the raters were used in the analyses. The inter-rater reliability (ICC) was .73. The average score was reversed before further analysis, resulting in a team-level measure in which high scores indicate little competition.

Based on the work of Twenge and colleagues (2012), *collectivist pronoun use* was measured by the relative use of the pronoun “we” as opposed to “I” (measured in percent) in the communication utterances made by the participants. This was a direct count of communication behavior at the individual level retrieved from the game log.

Equality-based reward strategy was assessed by the self-report item “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?” The response choices were *divide equally* (2), and *divide by merit* (1). This was an individual-level measure developed within the NATO HFM RTG-138 research group (Sutton et al., 2008), building on the research by Knight (1981), Leung & Bond (1984), and Leung & Iwawaki (1988), also in line with Taras et al., (2010).

Individualism-collectivism in values. We collected survey data on individualism-collectivism in values using Hofstede’s tool of measurement, the *Value Survey Module* (VSM-94: Hofstede, 2007), which is a somewhat modified version of Hofstede’s original tool, modified in order for it to be valid for use in a variety of different samples and contexts (Hofstede, 2001). Hofstede (2013) reported a Cronbach’s alpha of .77 of his extended measure, which includes six items; there has been reported no reliability of the shorter four-item version of the measure used in the VSM-94. The scale contains four items regarding how important a person rates an ideal

job in terms of the following: 1) time for personal or family life, 2) good physical working conditions, 3) security of employment, and 4) having an element of variety and adventure in the job (Hofstede, 2007, 2001). The lead stem was “Please think of an ideal job, disregarding your present job if you have one. In choosing an ideal job, how important would it be to you to...”, and a sample item was “...have an element of variety and adventure in the job?” The response choices were: *of utmost importance* (1), *very important* (2), *of moderate importance* (3), *of little importance* (4), and *of very little or no importance* (5). The country-level scores were calculated using Hofstede’s formula for the individualism-collectivism dimension: $-50(\text{mean } q1) + 30(\text{mean } q2) + 20(\text{mean } q3) - 25(\text{mean } q4) + 130$ (Hofstede, 2007). High scores indicate individualism, and low scores indicate collectivism. Because Hofstede’s individualism-collectivism measure is at the country level ($N = 4$), it did not make sense to calculate a reliability score. Additionally, because this measure is at the country level, and conforming to the demands in the literature (Hofstede, 2001), differences in collectivist behaviors will correspondingly be analyzed at the country level.

Covariates. *English language ability* and *computer game experience* were included in the analyses as covariates because these factors were expected to influence the ability of team members to communicate (Bjørnstad, 2008). There was, however, no reason to expect these covariates to influence the other measures.

English language ability was estimated by 3 items answered on 5-point bipolar scales developed within the NATO HFM RTG-138 research group (Bjørnstad, 2008; Sutton et al, 2008). A sample item was “How would you rate your ability to read and write English?” This item’s response choices were *very poor* (1), *poor* (2), *functional* (3), *fluent*, and *very fluent* (5). Cronbach’s alpha indicated good reliability of the measure ($\alpha = .88$).

Computer game experience was an index score based on the average of four items relating to different types of game experience, developed within the NATO HFM RTG-138 research group (Bjørnstad, 2008; Sutton et al, 2008). A sample item was “Approximately how many hours per week, if any, do you spend playing computer games?” The answers were recoded into a 5-point scale as follows: 0-0,9 hours = 1; 1-1,9 hours = 2; 2-2,9 hours = 3; 3-3,9 hours = 4; 4 hours and up = 5. Cronbach’s alpha indicated acceptable reliability of the measure ($\alpha = .73$).

The demographic variables of age, gender, education level, and military rank were also initially included as covariates, but because they had no influence on the results, they are not included in the subsequent analyses as presented.

Statistical analysis

Analysis of Variance (ANOVA) was used as the main statistical analysis for examining the differences between the countries. However, the 154 participants were nested within 39 teams, and members within a team may tend to have scores on the behavioral variables that are more similar than non-members. Consequently, the assumption of independence of errors can be violated, making the tests for significance too liberal (see, e.g., Hox, 2002). To consider this potential source of systematic error, multilevel modeling (MLM) was employed as a follow-up analysis in case of a significant country difference found in the ANOVA. Hence, a two-level hierarchical model was employed (i.e., the first-level units were the 154 participants; the second-level units were the 39 teams), with the country entered as dummy-coded predictors. Only fixed effects were estimated since the number of participants within each team (i.e., four) was regarded as too low for random effects to be estimated (Hox, 2002). The data were analyzed using IBM SPSS version 24.0.

Results

Country differences on individualism-collectivism in values

Table 3 shows each country's mean individualism-collectivism score on the VSM-94. In accordance with Hofstede's rank-order procedure (Hofstede, 2001), the countries were ranked from the most collectivistic (the Netherlands) to the most individualistic (Sweden) on the basis of their mean scores on the VSM-94. An ANOVA indicated significant differences in the mean scores between the countries. Post hoc tests using the Bonferroni correction showed that the Netherlands had a significantly lower mean score on the individualism-collectivism scale than Norway, Sweden and the USA ($p < .05$), indicating more collectivism in the Netherlands than in the other three countries. The differences between the other three countries were non-significant. Overall, the current values scores on individualism-collectivism seemed to be more consistent with Soeters' military results than Hofstede's civilian results, lending credibility to Soeters' findings.

Country differences on individualism-collectivism in behaviors

A(C)OVAs and a Chi-square analysis were performed to examine country differences on the behavioral variables (Table 3). Significant differences were found on two measures – group work 1 (collective work strategy) and group work 2 (percent near communication). For the team-level measure group work 1, *post-hoc* analyses (Bonferroni correction) showed that the Norwegian teams scored higher than the teams from both the Netherlands ($p < .05$) and the USA ($p < .05$), indicating more collectivism in Norway than in the Netherlands and the USA.

[Insert Table 3 about here]

To consider the nesting of the 154 individuals within the 39 teams, multi-level modeling was used as a *post hoc* analysis. Each country was included as a dummy-coded predictor of group work 2, with the Netherlands serving as the reference category. The MLM showed that the

participants from Norway scored significantly higher ($b = 19.4, p < .05$) on group work 2 than the participants from the Netherlands, indicating more collectivism in Norway than in the Netherlands. Using the USA as reference category, only non-significant differences between the countries emerged. The difference from Norway, however, was nearly significant ($b = 19.0, p = .06$). The model explained 0.1 % of the variance at the individual level and 8.7 % at the team level.

In sum, the results indicated significant differences between the countries on two of the six behavioral measures. The differences found were not in the direction predicted by the current or Soeters' (1997) individualism-collectivism values scores from military samples, but were more consistent with Hofstede's (1980) individualism-collectivism values scores from a civilian sample.

Discussion

Based on the results from Soeters' (1997) study of cross-cultural differences in a military sample, the current study asked whether members of the military really are different from their civilian counterparts in terms of variations in individualism-collectivism across cultures. Our results from six different measures of collectivist behaviors in teams from four different countries provide no support for this suggestion. It was revealed that the behaviors observed were more consistent with the values results from Hofstede's civilian sample than the current study's or Soeters' values results from military samples. However, the results were somewhat inconclusive in that only two of the six behavioral measures provided significant results.

Overall, the Norwegian participants displayed the greatest tendency towards collectivist behavior, although this behavior was, except for group work 1 and 2, not significantly different from the behavior of any of the other nationalities on each of the other four behavioral measures.

The Swedish participants were similar to the Norwegian participants in terms of scoring relatively high on the collectivist behaviors. The participants from the USA, exhibited the greatest tendency towards individualism in their behavior; these behaviors were also, except for group work 1, not significantly different from the behavior of any of the other nationalities on each of the behavioral measures. The behavioral results for the Netherlands were rather mixed.

Practical, theoretical and future research implications

The fact that the current behavioral results provide no support for suggesting that members of the military are different from their civilian counterparts in regard to differences in individualism-collectivism across cultures has implications for how we think about military personnel in general and how military personnel think about themselves. This means, for instance, that also in military cross-cultural collaboration, we can expect personnel from the USA to be the most individualistic and personnel from the Netherlands to be more individualistic than those from Sweden and Norway. Sweden and Norway can still be expected to be very similar in regards to collectivism. Being culturally more or less group oriented can affect cooperation both within and across different countries in both positive and negative ways (e.g., Cox et al., 1991; Earley, 1989; Hofstede, 2001; Triandis, 1995). The point is that understanding these differences can help in preparing personnel for cooperation across borders and in making good decisions about how to best organize the work. For instance, individualism involves a preference for work organized around the individual, whereas collectivism involves a preference for work organized in groups (e.g., Hofstede, 2001). Because of their stronger group ties, people from collectivistic societies also tend to associate more with their preexisting in-groups, whereas people from individualistic societies tend to associate more with the task (e.g., Hofstede, 2001). This finding implies that when organizing military personnel from individualistic societies for a

task group, one need not consider group ties, as one should when organizing personnel from collectivistic societies. Because group ties are more important to collectivists, they also make more ingroup-outgroup distinctions (Gudykunst et al., 1992; Hofstede, 2001), which can make it more difficult for collectivists to work across differences, including cultural differences.

Coupling this knowledge with the finding that collectivists tend to prefer to work in groups more than individualists can make it difficult to decide whether individualists or collectivists will be better at working in internationally composed military teams – they both have their advantages and disadvantages. In summary, if leading an international military operation, it may increase the functioning and effectiveness of the operation to know that leading individualists is more about the management of individuals whereas leading collectivists is more about the management of groups (Hofstede, 2001). Collectivists also tend to be less comfortable with confrontations than individualists (Hofstede, 2001), which may be very useful to know for someone in an international military operation, whether as a leader, subordinate or peer.

The current values results provided a near replication of the results from Soeters' study, implying that Soeters' results were not accidental. However, the lack of predictive validity in relation to the behavioral measures suggested that the VSM scale may be less suited for measuring individualism-collectivism in military samples. This interpretation is consistent with Hofstede's (2001b) contention that the best proof of both the reliability and validity of a dimensional score is its ability to explain related phenomena, such as behavior. In order for the VSM scale to better measure individualism-collectivism in a military context, there may be items in the scale that are not well suited to this context and hence should be modified or omitted, and there may be other items that should be added.

Hence, there is a need for future studies to further research the validity of the VSM scale and investigate whether it, in some modified form, can also be used to measure individualism-collectivism in military samples, preferably including different and/or a greater number of countries in the sample. Future studies should also test the validity of other individualism-collectivism measures in military samples.

Until a measure of individualism-collectivism is provided that demonstrates predictive validity, previous results based on civilian samples, such as Hofstede's study, seem to provide better grounds for understanding the cross-cultural differences in military settings. Consequently, when educating military personnel in cultural differences in individualism-collectivism to improve cross-cultural collaboration, the best solution at the present seems to be the use of previous civilian research results.

Limitations and future directions

As indicated above, the results raised some questions regarding the validity of Hofstede's VSM instrument in measuring individualism-collectivism in a military sample, which adds to the discussion regarding the psychometric properties of the VSM scale (e.g., Spector, Cooper, & Sparks, 2001). The low number of countries ($N = 4$) in the present study precluded an investigation of the scale's reliability, suggesting more research is needed to establish the psychometric properties of the VSM scale in a military context. The argument for using Hofstede's scale is that it has shown very good predictive validity in previous research (Hofstede, 2001b; Taras et al., 2009, 2010), an argument with which even the critics agree (Spector & Cooper, 2002). However, the current results failed to demonstrate predictive validity of the scale when used in a military sample, suggesting that more research is also needed to establish whether the VSM scale can be used in a modified form in military contexts.

Because the focus is on the differences between countries, ensuring that the samples are matched across countries is of primary importance in cross-cultural research, (e.g., Hofstede, 2001; Van de Vijver & Leung, 1997). The present study used matched military samples to meet this requirement. However, Table 2 revealed some differences between the countries in age, education and rank, but these demographic variables were not related to the behavioral variables and therefore did not influence the results when entered as covariates. No differences in gender between the countries were found, and gender did not influence the results when entered as a covariate. This result is in line with cross-cultural research that has not found gender to affect cross-cultural differences in individualism-collectivism (e.g., Hofstede, 2001; Triandis, 1995). We did not collect data on ethnicity, which may be viewed as a limitation. However, to be included in the study, the participants had to be born and raised in the country of their nationality. Additionally, the current survey results were in line with those of Soeters (1997) from a military sample, and the behaviors recorded were rather consistent with civilian research (Hofstede (2001), which makes it less plausible that ethnicity should have compromised the results. Ethnicity is not typically controlled for in cross-cultural research, although doing so may be a suggestion for future research.

Although cultures are not always equivalent to countries, countries are an approximation used in cross-cultural research (e.g., Triandis, 1995), which also fits our scope of studying collectivist behaviors between military personnel in countries that often collaborate in a military organization. Based on previous research on individualism-collectivism, the four countries included in our study were expected to represent high individualism to moderate individualism. Finding significant differences between these countries in regard to collectivist behaviors is more difficult than finding significant differences between countries at the most extreme ends of the

individualism-collectivism continuum. Hence, the lack of extreme differences in individualism-collectivism in our sample should not discredit the findings but, rather, should strengthen them. However, one could hypothesize that if a sample of countries with greater differences in individualism-collectivism is used in future studies, then the ability to detect significant differences in behavior is increased.

The current sample, mainly consisting of officers and partly drawn from military academies, is comparable to the sample studied by Soeters, which was from military academies only. This meets our aim of being able to compare our results, in regard to both behaviors and values, with the values found by Soeters. Additionally, military officers are central because they often have to collaborate closely with personnel from other nations in international NATO operations, for instance in international NATO HQs. And the effectiveness of international NATO HQs is dependent on the good collaboration between nations.

However, the samples from the four countries included in our study are not representative of the entire military population in their respective countries, nor are all nations in NATO represented; therefore, this study may be understood as being more exploratory in nature. Moreover, this study does not claim representativeness in terms of estimating the absolute level or the population value of individualism-collectivism in the military in each country; it was designed to simply research the relative differences between four countries. The implication is that although the differences in behaviors are similar to the value differences between countries found in civilian organizations, the personnel in military organizations across these countries may nonetheless be more or less collectivistic than their civilian counterparts in each country. To be able to compare civilian and military populations within a country, future research should include a broader representative military sample along with a matched civilian sample.

In addition, to be able to both calculate the psychometric properties of the scale and make cross-cultural comparisons of behavior, future research should preferably include larger samples, including both more countries and more participants. However, there is a reason why, to date, no such research has been conducted; it requires vast resources to organize a large number of participants from different countries in an experimental situation. Additionally, this study is the first of its kind – a cross-cultural experimental study including behavioral measures from a military sample.

Although the present study did not use established measures of collectivism in behavior, all measures were thoroughly based on existing research. Behavioral measures must always be closely adapted to the study situation and are therefore not easily reused in their precise form, unless one performs an exact replication. Because this study is the first to explore collectivism in behavior in a military context, there were no “off the shelf” behavioral measures available. Additionally, as indicated above, the same pattern of results was found across different behavioral measures using different methods of measurement. This situation makes measurement issues a less probable explanation of the behavioral results, adding credibility to the results. Moreover, the present study has attempted to answer the call for using multiple methods of measurement in studies of individualism-collectivism and related constructs (e.g., Leung & Van de Vijver, 2008; Van de Vijver & Leung, 2000). Our results also suggest that other research that has reported societal subgroup differences in individualism-collectivism based on questionnaires only (e.g., House et al., 2004; Marshall, 1997) may benefit from verifying their conclusions regarding subgroup variability in future studies of behavior.

Some may argue that a computer game is not an ideal method to study human behavior. Previously, however, this method has been successfully employed in research on human

behavior (e.g., Aidman & Shmelyov, 2002; Bainbridge, 2007; Devine, Martin, Bott, & Grayson 2004; Dickinson, Gentry, & Burns, 2004). This method is also made relevant because collaboration is increasingly mediated by technology – especially in multinational collaboration (Connaughton et al., 2011; Han & Beyerlein, 2016). Additionally, equality-based reward strategy was a self-report measure, and although the results for equality-based reward strategy were not significant, this measure still showed the same pattern of results as the game behaviors; a concurrence of results that adds strength to the results from the game environment. Finally, Hofstede’s previous civilian individualism-collectivism values scores for the countries involved were rather consistent with the behaviors currently observed.

Conclusion

The present results suggest that military personnel are not different from their civilian counterparts in the countries studied in terms of cross-cultural differences in individualism-collectivism, thus contradicting the interpretation by Soeters (1997). The direct, observer rater, and self-report measures of behavior in the current study were more consistent with Hofstede’s (1980) findings of country differences in individualism-collectivism in values from a civilian sample than either the current study’s or Soeters’ findings of country differences in individualism-collectivism in values from military samples. The results raised important questions regarding the validity of Hofstede’s VSM instrument in measuring individualism-collectivism in a military sample. However, because of a limited sample and because only two of the six behavioral measures demonstrated significant differences between the countries, the results are not deemed conclusive. More testing is needed, preferably with different and a greater number of countries, before any conclusions can be drawn.

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Tables

Table 1. Raw scores and rank order of individualism from Hofstede's IBM study (1980) and Soeters' study of undergraduate level military academies (1997).

	Individualism raw scores		Individualism rank order	
	Hofstede	Soeters	Hofstede	Soeters
USA	91	63	1	4
UK	89	44	2	8
Canada	80	53	3	6
Netherlands	80	52	3	7
Italy	76	25	5	13
Belgium	75	41	6	10
Denmark	74	54	7	5
France	71	66	8	2
Sweden	71	-	8	-
Norway	69	75	10	1
Germany	67	37	11	12
Spain	51	65	12	3

Note. Due to some slight modifications of the scale between its use in Hofstede's and Soeters' studies, the raw scores are not directly comparable; however, the countries' scores relative to one another are comparable, as is the rank order (Soeters, 1997).

Table 2. Overview of participant demographics by country.

	<i>Total</i>	<i>%</i>	<i>USA</i>	<i>Netherlands</i>	<i>Sweden</i>	<i>Norway</i>
<i>Number of participants</i>	154	100	27 (17.5 %)	32 (20.8 %)	36 (23.4 %)	59 (38.3%)
<i>Age</i>	<i>M = 30.2</i> <i>SD = 7.8</i>		<i>M = 30.6</i> <i>SD = 6.6</i>	<i>M = 23.2</i> <i>SD = 3.3</i>	<i>M = 32.4</i> <i>SD = 5.7</i>	<i>M = 32.5</i> <i>SD = 9.0</i>
<i>Gender</i>						
Male	147	95.5	100%	93.7%	97.2%	93.2%
Female	7	4.5	-	6.3%	2.8%	6.8%
<i>Highest degree completed</i>						
High school or equivalent	35	22.7	0%	34.3%	11.4%	54.3%
Associate degree or 2 years after high school	29	18.8	0%	12.5%	50.0%	11.9%
Bachelor's degree or equival.	59	38.3	40.7%	34.4%	38.9%	39.0%
Master's degree or equivalent	30	19.5	55.6%	15.6%	16.9%	0%
PhD or doctorate equivalent	1	0.6	3.7%	0%	0%	0%
<i>NATO military rank</i>						
Officers: OF 1	76	49.4	18.5%	84.4%	55.6%	40.7%
Officers: OF 2	22	14.3	37.0%	0%	33.3%	0%
Officers: OF 3	39	25.3	44.4%	12.5%	8.3%	33.9%
Officers: OF 4	7	4.5	0%	0%	10.2%	2.8%
Other ranks: OR 1-9	10	6.5	0%	3.7%	0%	15.3%

Note. *N* = 154 corrected for missing values.

Table 3. AN(C)OVAs and a Chi-square test for country differences on individualism-collectivism in values and behavioral measures.

Mean values with standard deviations in parentheses.

Country	N	Values		Individual behavioral measures				Team behavioral measures		
		VSM-94	Ind. rank	Cooperation ^a	Group work 2 (Pct. near comm.)	Collectivist pronoun use	Equality-based reward strategy	N	Group work 1 (Collective work strategy)	Competition ^b
Netherlands	32	88.7 (37.0)	4	54.7 (31.7)	41.3 (32.1)	30.0 (24.1)	81.3%	8	35.2 (15.7)	2.9 (0.7)
Norway	59	108.9 (33.7)	3	50.8 (27.3)	60.7 (22.9)	38.7 (22.7)	94.7%	15	48.8 (11.8)	3.3 (0.3)
USA	27	115.2 (39.4)	2	36.6 (32.4)	42.1 (27.9)	37.8 (22.7)	81.5%	7	33.0 (13.1)	2.6 (0.9)
Sweden	36	123.9 (35.6)	1	51.0 (19.4)	53.9 (17.2)	40.3 (23.4)	91.7%	9	42.4 (14.3)	2.9 (1.1)
<i>Total</i>	<i>154</i>	<i>109.4 (37.5)</i>		<i>49.1 (27.7)</i>	<i>51.8 (26.0)</i>	<i>36.4 (24.9)</i>	<i>88.8%</i>	<i>39</i>	<i>41.7 (14.5)</i>	<i>3.0 (0.8)</i>
<i>F-value</i>		<i>5.73***</i>		<i>1.62</i>	<i>5.90***</i>	<i>1.30</i>	<i>χ² = 5.61</i>		<i>3.01*</i>	<i>1.44</i>

Notes. High scores on the VSM-94 indicate individualism. High scores on all the other variables indicate collectivism.

^a Mean score adjusted for language ability and computer game experience. ^b Reversed scoring.

* $p < .05$, ** $p < .01$, *** $p < .001$.