

Pre-deployment training, coordination and obstacles to information sharing

The influence of pre-deployment training on coordination in multinational headquarters: The moderating role of organizational obstacles to information sharing
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Abstract

Coordination is critical to the success of multinational military operations and may be fostered by pre-deployment training. We argue that whether such training is related to a high degree of perceived coordination at the individual level is likely to depend on whether individuals experience a low degree of organizational obstacles to information sharing. We examined this using data from the NATO Kosovo Force (KFOR) headquarters (HQ) (survey: $n=131$). We controlled for whether it was the participants' first deployment, the participants' background (e.g., military or civilian), the amount of time spent in the HQs by participants, whether differences pertaining to culture and opinions were valued by the organization, the quality of supervisor/subordinate relationships, and the degree of national cultural obstacles to information sharing. The results showed no significant direct effects on coordination from three different training configurations: national training, multinational training, and a combination of national and multinational training. However, we found a negative direct effect from organizational obstacles to information sharing on coordination, and support for organizational obstacles to information sharing as negatively moderating the multinational pre-deployment training and coordination relationship. Qualitative interviews ($n=14$) indicated that informal information sharing, and the problems exchanging information from tactical to operational levels could hinder coordination. Interventions to foster coordination could benefit from a focus on multinational training and lowering organizational obstacles to information sharing. Our findings contribute to more precisely pinpointing the types of training that are useful in multinational operations, as well as the factors upon which such transfer is contingent.

Keywords: Combined joint military operations, pre-deployment training, organizational obstacles to information sharing, coordination

Introduction

Many current military operations are multinational and dynamic in nature, and are tasked with achieving strategic goals that require integration of effort and expertise from different nations (e.g., Kosovo Force (KFOR) and Inherent Resolve). Central to integrating these efforts is coordination, defined as enabling concerted action of interdependent units (definition based on: Thompson, 1967). In this article, we focus on the joint aspect of coordination within a multinational headquarters between different branches of service that include: Air-, Land-, Sea- and Special Operations Forces, as well as between different functions, such as: intelligence, long-term planning, and current operations. The branches of service and units diverge in terms of their expertise areas, and they focus on their core tasks which creates different perspectives on how to conduct joint operations (Te'eni, 2001). These differences create challenges in terms of coordination of joint tasks, such as coordinating air force reconnaissance for land force maneuvers, or prioritization of intelligence information relevant to current operations. Coordinating such tasks consists both in the way work is carried out, for example, how and when can an aircraft be used and the knowledge of the different role requirements, or what capacity for information gathering and analysis do the intelligence units possess. Lack of such coordination can lead to fratricide, collateral damage on civilians, and/or lack of optimal and focused resource utilization (Snook, 2000; Wilson et al., 2007).

In order to enhance the knowledge of joint procedures and roles in a multinational headquarters, as well as create a shared operational awareness, many military officers and civilian employees receive specialized training defined as the systematic acquisition of attitudes, concepts, knowledge, rules, and/or skills that can improve coordination in multinational headquarters (Marks, Zaccaro & Mathieu, 2000; Salas, Wildman & Piccolo, 2009). Such training is held either at a national or multinational level.

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National training covers some aspects of NATO procedures but focuses primarily on the operational specialties of the military officer and/or civilian members, and is less comprehensive compared to multinational training (Holt & Berkman, 2006).

Multinational pre-deployment training, on the other hand, is comprised of courses addressing individual skills, key leadership training, and mission rehearsal training that contains specific information on updated NATO procedures (NATO School, 2015a; NATO, 2015). Drawing on the cognitive affective theory of communication proposed by Te'eni (2001), both national and multinational training can contribute to clarifying crucial aspects related to coordination within a multinational headquarters by providing shared knowledge of procedures. Furthermore, in line with Marks et al. (2000), multinational training (i.e. training that encompasses knowledge of common procedures), can be particularly essential to coordination in a multinational headquarters. Some research suggests that such task-specific training has a positive effect on coordination (Leedom & Simon, 1995). There has also been research conducted on the influence of training on coordination in national units lending support to this view (Vestraeten, Kyndt & Dochy, 2014).

However, one of the central influences on coordination is the ability of the team or organization to communicate on task critical issues during operations (Burke et al., 2006). Thus, it may not only be a direct effect of training on coordination, but rather, pre-deployment training interacts with obstacles to information sharing in the headquarters to influence coordination. We argue that for coordination to be effective, low levels of organizational obstacles to information sharing (i.e., obstacles to accurately share information among organizational members with different expertise) can be particularly important. Specifically, we argue that even though organizational members have received pre-deployment training, individual perceptions of obstacles to information sharing in the

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headquarters related to procedural inefficiencies, time constraints and differing priorities, possibly stemming from differences in roles and background, could have a detrimental effect on the transfer of both national and multinational training to coordination (Boland & Tenkasi, 1995; Lidy, 2003; Wilson et al., 2007; Danielsen, 2008; Ekman, 2012; Lichacz & Bjørnstad, 2013). Procedural inefficiencies stemming from obstacles to information sharing have been found to be related to lack of adherence to, for example, knowledge management business rules, where time constraints could relate to lack of timely answers to knowledge requests, and differing priorities can arise due to individuals lack of involvement in a knowledge request process (Farrell et al., 2006, p. 25-26).

In other words, training before deployment may not necessarily translate to higher coordination if obstacles to information sharing exist in the headquarters. The literature on transfer of training – the generalization and maintenance of trained skills and knowledge of the job - suggests that the influence of training on coordination is highly dependent on aspects of both the individual, and the organization in which the individual is employed (Kozlowski et al., 2000; Ellington et al., 2015). Prior empirical research has also indicated that information sharing is important to training transfer (Grossman & Salas, 2011). Examining whether there is such an interaction effect is, therefore, crucial to extending the knowledge of training transfer in this domain. It has been found that pre-deployment training could influence coordination positively in a military setting (Leedom & Simon, 1995; Johnston et al., 2013), yet less is known about whether organizational obstacles to information sharing moderate the pre-deployment coordination relationship. This leads us to our research question: To what extent do organizational obstacles to information sharing moderate the relationship between pre-deployment training and coordination?

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While we argue that organizational obstacles have a unique effect on the pre-deployment coordination relationship, its influence should be placed in context with other obstacles to information sharing and other variables that could influence coordination. In particular, perception of information sharing with other groups, and cultural barriers to information sharing, can be important additional influences beyond those related to organizational barriers within the headquarters. We, therefore, controlled for whether differences pertaining to culture and opinions were valued in the headquarters. Prior research has documented the difficulties in sharing of information among groups working jointly on security (Lidy, 2003; Weick, 2005). With respect to cultural barriers, different political caveats restricting military actions, and different military cultures, have been identified as important obstacles to information sharing (McCrystal, 2009). These types of barriers may complicate coordination and we, therefore, specifically controlled for national cultural obstacles to information sharing. In addition, the quality of the supervisor and subordinate relationship, and differences between civilian and military members, can influence information sharing relevant to coordination, for example with respect to trust in sharing information.

Reluctance to share information between civilian to military members, as it may be used as intelligence, has been examined previously (Davidson, Hayes & Landon, 1996). Although civilian and military members work in the same headquarters, such problems in information sharing may be present due to differences in background that can shape the perspective on what is the mission goal, for example a military focus on security versus a civilian focus on staying neutral (Wishart, 2008). In addition to controlling for being civilian versus military, we controlled for a factor that could affect familiarity among the respondents: their length of deployment in the KFOR HQ. In

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addition, we also controlled for a factor that may influence their proficiency in working in an HQ: whether or not it was their first deployment.

Empirically, we examined survey and interview responses from personnel serving in a NATO-led multinational headquarters overseeing a peacekeeping mission – KFOR (NATO, 2015). In 1999, NATO intervened through Operation Allied Force in an ongoing large-scale violent conflict in order to force withdrawal of Serbian forces from Kosovo (van Willigen, 2013). KFOR was responsible for overseeing, and leading, several military tasks related to both the internal and external security of Kosovo, as well as the demilitarization of the region, supporting the humanitarian effort, and coordinating operations with other international organizations present in Kosovo. The headquarters was comprised of military and civilian personnel from 30 different nations and we focused our analysis on coordination among all military units as well as civilians. We used a mixed-methods research design to provide insight into our hypotheses, as well as to provide a deeper understanding of the constructs and their relationships (Creswell & Plano Clark, 2007). We focused on individual perceptions of organizational obstacles to information sharing and of coordination. Although group-level phenomena play a crucial role in determining training transfer, as argued by Kozlowski et al. (2000), individual perceptions are important building blocks with respect to a transfer of training to the individual (Kozlowski et al., 2000).

By investigating whether organizational obstacles to information sharing moderate the training coordination relationship, we aim to contribute to the discussion of how to better prepare for combined and joint operations. At the theoretical level, our study highlights the dual influence of both formal training programs and actual information sharing as antecedents of managing interdependencies. This extends our knowledge of the mechanisms through which people bridge the gap between different

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perspectives, thus addressing calls for research on studying the interaction of formal procedures and training with actual information sharing, as well as potential obstacles to information sharing (Te'eni, 2001; Majchrzak Jarvenpaa & Hollingshead et al., 2007; Katz & Te'eni, 2014). Our study also addresses calls for research on how to prepare for coordination in multinational operations, and provides research on training effectiveness and influence of individual factors (Foster & Fletcher, 2013; Ellington et al., 2015). With respect to these calls for research, we specifically include individual perceptions of organizational obstacles to information sharing and coordination (Boland & Tenkasi, 1995; Majchrzak et al., 2005; Lichasz & Bjornstad, 2013; Wolters et al., 2014).

Theoretically, our study also seeks to contribute to the understanding of how training and the actual information sharing in emergent organizations interact to influence coordination (Majchrzak et al., 2007; Choi, Lee & Yoo, 2010; Davison et al., 2012). This can provide grounds for training interventions (Dierdorff & Surface, 2008). Based on these areas of interest, and calls for research, we have focused on the relationships depicted in Figure 1:

Insert Figure 1 about here

Theory

Coordination

One of the key coordination challenges in multinational military operations is the integration of diverse expertise in dynamic situations. When unplanned tasks occur, integration through mutual adjustment can be essential (March & Simon, 1958;

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Thompson, 1967). Faraj and Xiao (2006) have emphasized the usefulness of integration of different contributions of expertise in highly complex work through dialogue and communication. Such communication can develop accountability, predictability, and a shared conception of work enabling adaptive action (Burke et al., 2006; Okhuysen and Bechky, 2009). The KFOR headquarters implemented new coordination mechanisms, such as instructions on how to manage interdependencies in joint teams when changing from organizing in a J structure (services) to a more interdisciplinary team structure, as well as how to synchronize different military expertise within joint teams. In some respects, these characteristics of the headquarters resemble an emergent organization in that task definitions are unstable, and group members are highly diverse (Majchrzak et al., 2007). This means that the personnel need to both employ their learned procedures, as well as to resolve possible challenges in managing interdependencies as they carry out multinational operations (Stachowski, Kaplan & Waller, 2009). Stachowski et al. (2009) also suggest that coordination is highly dependent upon applying procedures, and elements of procedures, that are relevant to the situation. Prior research suggests that managing interdependencies in such organizations is dependent upon dynamically identifying the actors that are most critical in the task resolution, and that these become central to information transfer (Davison et al., 2012).

In addition to managing the task interdependencies, managing personalities is also important. This requires knowing and understanding the different roles and expertise areas of the people in the headquarters and is an essential part of coordination. We now delineate how pre-deployment training may influence coordination.

Influence of pre-deployment training on coordination

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The personnel of the KFOR headquarters had three possible ways of receiving training before arriving at the headquarters: national training, multinational training, or a combination of national and multinational training. We argue that whether the three training configurations contribute to coordination within the KFOR may rest on both how comprehensive the training programs are at building a comprehensive mental model of the task (Marks et al., 2002; Lewis, Lange & Gillis, 2005; Burke et al., 2006), and the degree to which they are aligned with current procedures (Salas et al., 2009). If personnel are trained, not only in their specific area of expertise but also in the wider array of tasks and procedures of a multinational headquarters, they may recognize procedures and see similarities of tasks across situations (Lewis et al., 2005). Specifically, national pre-deployment training involved specialized training in the officer's own areas of expertise, while the training offered in the multinational NATO program focused on training in procedures as well as the current organization of the KFOR multinational headquarters (NATO School, 2015a: 2015b; NATO, 2015).

Multinational pre-deployment training involves both collective and individual training. Collective training is defined as "Procedural drills and the practical application of doctrine, plans and procedures to acquire and maintain tactical, operational and strategic capabilities" (NATO School, 2015 b, p. 9). Three areas of collective training are: 1) Key leader training: Develops and enhances the senior leadership team for current operations. Key leaders are required to lead, manage and operate in a multinational environment. 2) Mission rehearsal exercises: Specific training for the operation. 3) In-theater specialized training: Training during operations for emergent training needs (NATO School 2015 b, p. 41). One particular procedure trained in these collective trainings is the procedure of crowd riot control, which is particularly important in the KFOR mission (Parady, 2012). Multinational pre-deployment training also covers

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individual skills related to current NATO procedures in areas such as: joint targeting procedures, planning procedures, and information operation procedures. Such training includes group exercises (NATO School, 2015 c).

National pre-deployment training primarily involves preparation for the specific role one has in the headquarters and, to a lesser extent, gives specific training for the specific mission or updated procedures of the headquarters to which one will be deployed (Ekman, 2012). This may be problematic because national training may vary as to what aspects of the NATO procedures are emphasized (Holt & Berkman, 2006). In this sense, we suggest that such training is not necessarily conducive to the flexible use of procedures to coordinate (Stachowski et al., 2009; Majchrzak et al., 2007). Based on these arguments we, therefore, hypothesize that:

Hypothesis 1: Receiving only national training will relate negatively to coordination.

Multinational pre-deployment training involves training in the current, and specific, procedures utilized in NATO headquarters (NATO School, 2015). Multinational pre-deployment training is conducted by the NATO school in Oberammergau, Germany, and is specifically set up to provide education on the latest procedures that are implemented within NATO, as well as key leadership training at the KFOR headquarters (NATO School, 2015). As mentioned above, the crowd riot control procedures are particularly important. Crowd riot control requires integration of activities both with Kosovo authorities, but also among the different assets available in the KFOR mission (Parady, 2012). What kind of battalions to use, and whether or not additional reinforcements and surveillance assets are needed, such as helicopters, has to be coordinated. Having trained these procedures would presumably increase coordination. On this basis, we argue that receiving multinational training only will help in enabling a

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comprehensive understanding of the most current procedures in the headquarters and thus enable coordination (Lewis et al., 2005). Being trained in NATO procedures that are aligned, such as joint targeting and information operations would presumably further clarify the information requirements for staff as well as clarify how the headquarters can make use of the tactical asset. Furthermore, Leedom & Simon (1995) found that training in the military that focuses on specific operationally relevant, team-related behaviors, increases coordination. This could be especially true when there are rapid changes in task definition and membership, and we suggest that a more generalized training that enables recognition of expertise is central (Majchrzak et al., 2007). On this basis, we hypothesize that:

Hypothesis 2: Receiving multinational training only will relate positively to coordination.

When personnel receive both national and multinational training before deployment, we argue that this may lead to a conflicted view on what are appropriate ways of coordinating. We suggest that receiving both national and multinational training prior to deployment may be conflicted, in that, what is learned at the national level may not be synchronized with the multinational training program (Holt & Berkman, 2006; Majchrzak et al., 2007). On this basis, we suggest the following hypothesis:

Hypothesis 3: Receiving, both national and multinational training will relate negatively to coordination.

Organizational obstacles to information sharing as a moderator of the pre-deployment training coordination relationship

Organizational research suggests that coordination of joint tasks and roles is crucially influenced by information sharing (Burke et al., 2006; Argote, 2010; Lewis & Herndon,

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2011), and that information sharing is related to organizational conditions (Daft & Lengel, 1986; Boland & Tenkasi, 1995; Carlile, 2004; Majchrzak et al., 2005; Choi et al., 2010). In addition, the training transfer literature suggests that transfer of training is dependent on individual and organizational factors such as individual perceptions of the organization (Kozlowski et al., 2000; Blume et al., 2010; Ellington et al., 2015). Boland and Tenkasi (1995) proposed that organizational aspects of information sharing concern the degree to which interdependence among the organizational and collaboration practices are enabled through translation among the different organizational members' expertise. Empirically, Kotlarsky, van den Hooff & Houtman (2015) found that pragmatic boundaries to knowledge negatively affected coordination.

In particular, the obstacles to information sharing relating to priorities, time constraints and procedures within the headquarters, could negatively affect coordination. Given our focus on interdependence of different units: priorities would be key, in that, different units could have differing priorities as well as time horizons of their tasks. For example, the differences in priorities of air forces versus land forces, as well as timing cycles between air and land forces that could lead to information sharing barriers (Wilson et al., 2007). Procedural differences could limit the degree to which agreed upon notions of how to carry out work and communicate exists, and hence negatively affect coordination (Lidy, 2003). Empirical investigations in a military context also suggest that such organizational obstacles to information sharing negatively affect coordination (Snook, 2002; Wilson et al., 2007). Given the emergent nature of the headquarters, situated information sharing could also be a particularly important influence on coordination (Majchrzak et al., 2007; Kotlarsky et al., 2015). Based on this theorizing and empirical research, we thus argue that:

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Hypothesis 4: The perception of high organizational obstacles to information sharing is negatively related to an individual's perception of coordination.

We suggest that organizational obstacles to information sharing moderate the relationship between pre-deployment training and coordination. Although the relationship between national training and perceived coordination may be negative, perceived coordination will be even more hindered by high organizational obstacles to information sharing when individuals have undergone national training. We suggest this is due to the lack of development of situated practice for transferring information across expertise boundaries (Carlile, 2004). Conversely, if personnel experience low organizational obstacles to information sharing, this may increase their ability to coordinate. Theoretical and empirical research on training transfer also highlight that information sharing is central to transfer (Awoniyi, Griego & Morgan, 2002; Majchrzak et al., 2007; Grossman & Salas, 2011). For the same reasons, we expect a similar moderating effect from organizational obstacles to information sharing on the relationship between a combination of national and multinational training and coordination. Summarized we suggest that:

Hypotheses 5 and 6: Perceiving high organizational obstacles to information sharing will negatively moderate the relationship between (H5) national pre-deployment training and coordination, and (H6) a combination of national and multinational training and coordination. With perceived high organizational obstacles to information sharing, those in these training configurations will experience lower coordination; versus when these obstacles are perceived as low, those in these training configurations will experience higher coordination.

Although there may be a positive direct relationship from multinational pre-deployment training only on coordination, in line with the training transfer literature, we

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also suggest that how people perceive their context is an important moderating factor as to the degree to which the training actually transfers to the organization (Kozlowski et al., 2000; Sitzman & Weinhardt, 2015). If the personnel perceive a high degree of organizational obstacles to information sharing, the maintenance of the multinational training may suffer, particularly with respect to coordination that relies on information sharing (Majchrzak et al., 2007). However, if the obstacles are perceived as low, the pre-deployment training and actual information sharing in the headquarters are aligned, which will be conducive to coordination. Based on this reasoning we argue that:

Hypothesis 7: Individuals' perceived organizational obstacles to information sharing negatively moderates the positive relationship between multinational pre-deployment training and individuals' perceived coordination: Specifically, when individuals perceive these obstacles to be high they will perceive less coordination when in a multinational training condition. Individuals who perceive the obstacles to be low will perceive higher coordination when in a multinational training condition.

Theoretical control variables

While we focus on organizational obstacles to information sharing, it is also important to take into account other constructs that concern information sharing. Such influences can relate both to the information sharing among the groups within a headquarters, possibly reflected in whether differences pertaining to culture and opinions were valued, as well as in whether there were obstacles to information sharing related to national cultural differences, and we therefore controlled for these factors.

Method

Design and Participants

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A total of 131 personnel responded to a survey, and 14 senior officers took part in semi-structured interviews. In the survey, 82 percent of the respondents were male (rated: male=0, female=1) with ages ranging from 25-61, with a mean age of 41 years. Of the survey respondents 76 percent had prior military experience and 24 percent civilian (rated: military=0 and civilian=1). Fifty-two percent of the respondents were responsible for supervising others (rated: no=0 and yes=1), and 52 percent had been deployed in a multinational operation before versus 48 percent that had never been deployed in a multinational operation (rated: no=0 and yes=1). Of the military personnel, 58 percent were commissioned officers with rank from OF-1 to OF-5, and 31 were non-commissioned with ranks from OR-5 to OR-9, 11 percent reported no rank. For the semi-structured interviews, all participants were male, with ages ranging from 36-59, with a mean age of 50 years. Of the interview participants 93 percent had been in the military, and all were responsible for supervising others. Additionally 79 percent had been deployed in multinational operations before, and the military personnel had a rank from OF-3 to OF-5.

Quantitative Measures

Measures of dependent variable.

Coordination. In line with Summers, Humphrey and Ferris (2012), we utilized coordination items from the Transactive Memory System (TMS) scale developed by Lewis (2003) to investigate coordination. The items were: “We do not know what each other’s roles are in relation to accomplishing joint tasks” and “We are unsure about how to accomplish joint tasks.” The scoring of items was from 1 (strongly disagree) to 5 (strongly agree), with an additional “I don’t know” option. The items were reversed scored in the analysis. After conducting exploratory and confirmatory factor analyses,

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presented in detail below, we retained two items that formed a coordination scale with a Cronbach's alpha of .749.

Measures of independent variables.

Pre-deployment training. Type of pre-deployment training was first measured by yes/no questions on two items, one item asking whether they had participated in multinational training, and the other whether they had participated in national training. In order to measure the influence of each training configuration in the regression analysis we then used these alternatives as the basis for three dummy variables that indicated whether (value=1) or not (value=0) they were in the following training configuration: national, multinational, and a combination of national and multinational. Additionally, a "No training" dummy variable was created to examine this conditions influence on coordination in the correlation matrix.

Organizational obstacles to information sharing. The scale on organizational obstacles to information sharing used three items from Lichacz & Bjørnstad (2013) set of items on obstacles to information sharing in a military context. The scoring of items was from 1 (never) to 5 (very often) with an additional "I don't know" option. We retained three items that had a Cronbach's alpha of .746.

Control variables. Whether differences pertaining to culture and opinions were valued were measured using two items having a Cronbach alpha of .78. These items asked about "whether cultural differences are valued," and whether "diverse opinions are valued." A measure of the quality of supervisor and supervised relationship was included using one item "My superior consistently helps subordinates produce high quality work." The scoring of items was from 1 (strongly disagree) to 5 (strongly agree), with an additional "I don't know" option. National cultural obstacles to information sharing were measured with a one item measure "In this HQ obstacles to information sharing are:

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Differences in national culture” ranked similarly to the organizational obstacles items (Lichacz and Bjørnstad, 2013). Whether it was the first deployment to a multinational headquarters was measured to capture the degree of prior experience working in similar headquarters, with alternatives yes or no. Whether the respondents were civilian and military, and the length of being deployed in the KFOR headquarters (selfreport in months) were also included as control variables.

Construct validity.

We investigated convergent and discriminant validity of our perceptual constructs in the context of the other TMS items (Lewis, 2003) adapted to a military context, with trust items from a study by Blais & Thompson (2009). To determine item retention, we first conducted an exploratory factor analysis (principal component analysis with varimax rotation) using SPSS version 22, reported in Table 1, below. We retained items with loadings of .50 or higher on target constructs, cross-loadings of less than .35, and a differential of about .20 between factors (Dysvik, Buch & Kuvaas, 2015). We also did not include “Approachability of commander” and “political constraints/control” in the measure of organizational obstacles as these related to leaders specifically, and external aspects. We then did confirmatory factor analysis using MPLUS version 7.1 using the mean structure of covariance. For our final confirmatory factor analysis, we did not include “technical difficulties” as it loaded below the minimum requirement of .50. The model represented in Table 2 below, had a good fit: χ^2 84.93, $df=59$, $p=.02$; CFI=0.96; TLI 0.95 RMSEA=.06 (.03-.08); SRMR=.06. The convergent validity, was assessed by examining the average variance extracted (AVE), and it was above .50 for all constructs. The indicators had loadings at or above .50, and composite reliability (CR) was above .70 for all factors, as shown in Table 2, in line with criteria suggested by Fornell and Larcker (1981) and Hair et al. (2006). Regarding discriminant validity, item loadings were high

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(i.e., all exceeding .50), and the square roots of the AVE values were above the level of the correlations among constructs, as shown in Table 3 below. This suggested that the constructs in our model had the required convergent and discriminant validity to conduct regression analysis.

Insert Tables 1, 2 and 3 about here

Qualitative Methods

We conducted, recorded and transcribed 14 semi-structured interviews, lasting 30-60 minutes. We asked: What kind of pre-deployment training did you receive? How does information sharing work in this HQ? To what extent is there a shared awareness of tasks and responsibilities in the HQ? By asking such questions, we sought to get the respondent to express their own interpretation of the core study variables and their relationship (Corbin & Strauss, 1990; Blatt et al., 2006). First, we conducted a detailed examination of the topics from each interview. Then generic themes that emerged from all interviews were analyzed, and based on this analysis, the categories presented in the results section were developed.

Results

Quantitative results

Organizational obstacles to information sharing and national cultural obstacles to information sharing correlated significantly and negatively with coordination, while quality of supervisor and subordinate relationship correlated positively and significantly to coordination as shown in Table 4, below. None of the training configurations, as well any of the other control variables correlated significantly with coordination. We tested our hypotheses using hierarchical linear regression analysis using SPSS version 22. We

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centered the independent variables in order to avoid multicollinearity. Multicollinearity statistics did not show any values for our independent variables that were approaching 0 for tolerance or above 10 for VIF (Hair et al., 2006). As seen in Table 5 below, our results from the full model did not indicate support for hypotheses 1-3, as there were no significant direct effects of training on coordination. In line with hypothesis 4, organizational obstacles to information sharing exerted a significant and negative effect on coordination ($b=-.32, p<.01$). None of the control variables were significantly related to coordination in the full model. Neither hypotheses 5 nor 6 were supported. However, the results indicated support for hypothesis 7 stating that multinational pre-deployment training and coordination is negatively moderated by organizational obstacles to information sharing ($b=-.27, p<.01$; slope difference test: $t=-2.60, p<.01$). In accordance with the procedure recommended by Aiken and West (1991), we plotted the interaction effect to interpret it (Figure 2). Coordination is highest when people perceive low organizational obstacles to information sharing, and received only multinational pre-deployment training (slope gradient= $2.80, p<.01$). However, for those who experience high organizational obstacles to information sharing, the perceived coordination is lower (slope gradient= $-1.76, p<.05$). The full model explained 13 percent of the variance.

Insert Tables 4 and 5, and Figure 2 about here

Qualitative results

The quantitative analyses focused on organizational obstacles to information sharing operationally defined with the items: procedural inefficiencies, time constraints and differing priorities. The qualitative analysis however captured other important category

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themes of organizational obstacles to information sharing: 1) the obstacles from getting information from tactical sub-units to the operational level, and 2) the informal cohesive communication among the staff which could create a barrier for others to know what was important information. These two categories were the main themes emerging from our qualitative analysis.

With respect to the obstacles from getting information between subunits to the operational level a quote from the interviews illustrate this category:

“There is only a problem with operational information from the theater to facilitate our assessment. Information sharing for the staff is working ok. Problems are mainly between the staff, and where the information is collected. Processing needs to be done in order to change raw information into processed information.”

The qualitative analysis further indicated that informal meetings of high-ranking officers after briefings created a setting for information sharing among the attendants but hindered information exchange to all members of the headquarters. One interview highlighted the motivation for making barriers as to who accessed what information:

“The problem is to control the information and get the right one (information) when so much info is available.”

For both the obstacles concerning exchange of information with subunits, and obstacles created by informal information sharing groups, an overarching theme was the control of information. The semi-structured interviews underscored the quantitative results in that the information exchange within the headquarters could suffer because of organizational aspects, however the interviews went beyond the items in that it indicated that the organizational structure of the headquarters could be particularly problematic.

Information exchange could suffer because of the hierarchy between units, and the

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problem of informal subgroups exchanging information easily with each other, but not with the whole headquarters.

Discussion

Our results indicated no direct effects from training to coordination. The results indicated support for the hypothesis that obstacles to information sharing affected coordination negatively. We also found that multinational training influenced coordination more positively when there were low levels of organizational obstacles to information sharing. The qualitative analysis highlighted the challenges of informal information sharing, and from the exchange of information between the operational to tactical levels.

Theoretical implications

In line with previous research (Ellington et al., 2015), we found that a positive effect of training is conditional on individual factors, specifically how individuals perceive organizational obstacles to information transfer. In particular, the perception of a low degree of organizational obstacles was favorable for coordination for those receiving multinational training only. This expands on the research that looks at the direct effect of training on coordination (e.g., Veestraeten, Kyndt & Dochy, 2014), and is in line with Blume et al. (2010) and Grossman and Salas (2011), which suggest that perception of aspects of the work environment can have an impact on the transfer of training. While multinational pre-deployment training provides skills for coordination, the use of these skills seems to be highly dependent on an individual's perception of organizational obstacles to information sharing. The qualitative analysis suggests that informal work meetings, only attended by higher-ranking officers, were important for information sharing in this group. However, this also posed a problem for broader information exchange in the headquarters. The high-ranking officers had such a forum for exchanging this type of information, but for others, such informal coordination may have been less

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available. Also, we identified problems with information sharing from subunits to the operational level. Taken together, organizational obstacles seem to be an important influence, controlling for important other possible constraints and influences on coordination such as national cultural differences, value of culture and other opinions as well as whether respondents were civilian or military.

Prior theoretical work (e.g., Majchrzak et al., 2007) has suggested that in emergent organizations responding in crisis situations, it is essential to communicate about how members could contribute to task resolution. We pinpoint the kind of obstacles to such communication that could be especially relevant in emergent military organizations: procedural inefficiencies, time constraints and differing priorities, as well as hierarchies and informal communication. The two latter categories were based on qualitative analysis. An implication for theorizing on emergent organizations could be to further explore whether these different organizational obstacles could affect coordination differentially.

Limitations and future research

The KFOR multinational military headquarters shares properties with other military emerging organizations in that it is continuously undergoing changes and adaptations to the environment, as well as being comprised of many nationalities. However, future research should investigate training for work in multinational operations that are even more ad hoc. Future research could also explore the implications of having, and not having, specific types of training over time, including distributed training, and specifically study the transfer of other aspects of the pre-deployment training, as well as training reactions (Lewis, et al., 2005; Kanawattanachai & Yoo, 2007; Blume et al., 2010; McIntyre, Smith, & Goode, 2013). Dierdorff and Surface (2008) also suggest that personnel differ significantly as to their assessments of training needs due to their actual

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capability, and thus may vary as to whether they focus on learning-specific skills.

Complementing criteria for determining training transfer to coordination could be important (Ellington et al., 2015). Future research may, for example, find different effects using measures of behaviors related to coordination (Burke et al., 2006).

Although obstacles to information sharing related to national cultural barriers, and whether differences pertaining to culture and opinions were valued, seemed to play less of a role for coordination when taking into account organizational obstacles to information sharing and the different training configurations, future research could examine in more detail whether such influences on coordination could be important for other types of criterion variables, such as communication efficiency. Whether different individuals from different countries spend more or less time on training, and the degree to which they train together, can influence its relationship to coordination, as well as whether civilians spend more or less time than military members on training. We did not examine these issues in our data collection and analysis, but future research can investigate this by having a more precise measurement of the time and quality of training for different groups. Taken together, a multilevel design that captures the role of unit levels and organizational levels can be particularly relevant as an extension to the findings in this article (Kozlowski et al., 2000).

Practical implications

Based on our findings, multinational training could increase coordination if there are low organizational obstacles to information transfer. Identifying whether there are such obstacles could be important as a background for deciding whether to take interventions in the headquarters, and crucial to assessing training needs (Dierdorff & Surface, 2008).

Aligning national and multinational training could be particularly important, however, it

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may be unrealistic to assume that all participants in multinational headquarters undergo similar and comprehensive education in the current NATO procedures (Majchrzak et al., 2007). Practical interventions could thus focus on aligning procedures, developing shared priorities and agreed upon time limits, as well as informal meetings where knowledge of each other's capabilities is fostered, and increase information transfer between the tactical and operational levels.

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Figures and Tables

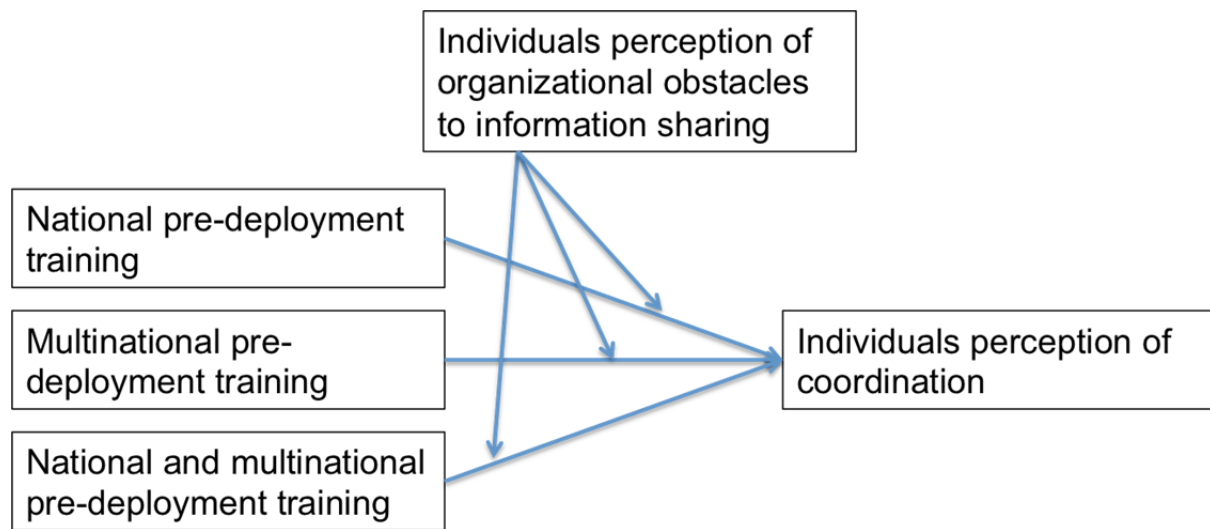


Figure 1. Research model

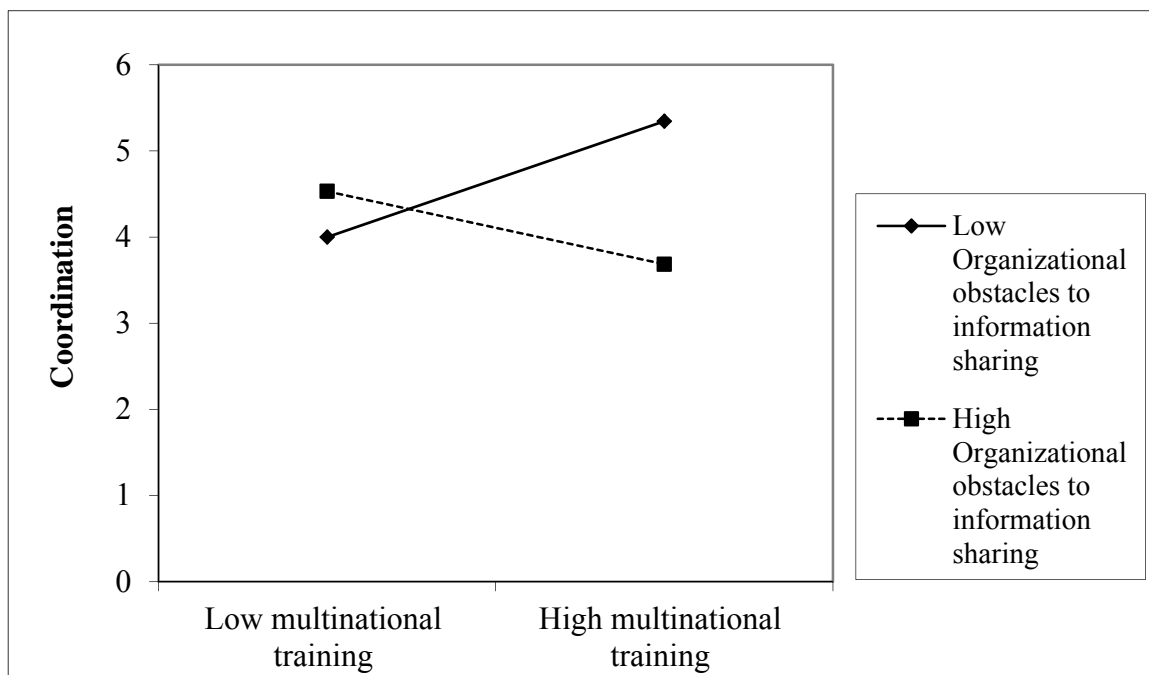


Figure 2. The moderating effect of organizational obstacles to information sharing on the relationship between multinational training and coordination.

Table 1
Exploratory factor analysis

	Component					
	1	2	3	4	5	6
Everyone has specific specialization for the assigned tasks.	-.161	.247	-.109	<u>.852</u>	.065	.023
Everyone has specific specialization for the occupied position.	-.151	.240	-.068	<u>.815</u>	.036	.114
Everyone has broad specialization to occupy different positions.	-.078	.096	-.036	.097	.009	.805
Everyone has broad specialization to implement as many tasks as possible.	-.080	.098	-.168	.145	.092	.800
Tasks are carried out by specialized teams.	-.068	.145	-.388	.601	.006	.257
We trust each other.	.008	<u>.812</u>	-.030	.127	.056	.073
Coalition partners keep their word.	-.081	<u>.773</u>	-.198	.152	.152	.056
Coalition partners are capable of doing their job.	-.189	<u>.735</u>	-.040	.182	.172	.165
Coalition partners know what to expect from each other.	-.168	<u>.674</u>	-.221	.159	.132	.097
We frequently experience misunderstandings.	-.497	.306	-.290	.123	.376	-.034
We are aware of each other's responsibilities.	-.218	.273	-.005	-.025	.372	.424
We do not know what each other's roles are in relation to accomplishing joint tasks.	-.149	.194	-.115	.019	<u>.835</u>	.137
We are unsure about how to accomplish joint tasks.	-.046	.086	-.224	.146	<u>.786</u>	.006
Technical difficulties.	.047	.106	.574	-.269	-.197	-.140
Language barriers due to non-native speakers.	.195	-.187	<u>.828</u>	-.108	-.107	-.026
Cultural differences in language use and interpretation.	.215	-.313	<u>.777</u>	-.074	-.159	-.009
Differing priorities.	<u>.686</u>	-.201	-.024	-.322	-.376	-.055
Procedural inefficiencies.	<u>.649</u>	-.202	.223	-.123	-.160	-.112
Time constraints.	<u>.585</u>	-.026	.058	-.502	-.165	-.004
Approachability of commander.	.773	.123	.000	-.054	.033	-.101
Political constraints/control.	.713	-.104	.143	-.085	.003	-.005
Differences in organizational culture.	.621	-.153	.470	-.094	-.118	-.174
Differences in national culture.	.548	-.219	.524	.073	-.120	-.243
Lack of knowledge about who needs the information.	.454	-.268	.213	.097	-.459	-.090

Note. Item loadings in bold and underlined were used as indicators of factors in the confirmatory factor analysis

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Table 2
Confirmatory factor analysis for TMS and Obstacles to information sharing

Latent variable	Standardized factor loading	CR	AVE
TMS			
Specialization		.881	.767
Everyone has specific specialization for the assigned tasks.	.970		
Everyone has specific specialization for the occupied position.	.773		
Trust		.770	.556
We trust each other.	.725		
Coalition partners are capable of doing their job.	.706		
Coalition partners keep their word.	.787		
Coalition partners know what to expect from each other.	.752		
Coordination		.823	.657
<u>We are unsure about how to accomplish joint tasks.</u> (reverse coded)	.666		
<u>We do not know what each other's roles are in relation to accomplishing joint tasks.</u> (reverse coded)	.931		
Obstacles to information sharing			
Language Obstacles to information sharing		.873	.748
Language barriers due to non-native speakers.	.849		
Cultural differences in language use and interpretation.	.879		
Organizational obstacles to information sharing		.781	.580
<u>Procedural inefficiencies.</u>	.567		
<u>Time constraints.</u>	.800		
<u>Differing priorities.</u>	.881		

Notes. N=131. Items used in regression analysis are underlined. TMS=transactive memory system; CR= composite reliability; AVE=average variance extracted.

Table 3
*Correlations and Square Roots of AVE Values for TMS
 and Obstacles to information sharing factors*

	1.	2.	3.	4.	5.
1. Specialization	.87				
2. Trust	.44**	.75			
3. Coordination	.18*	.28**	.81		
4. Language obstacles ^a	-.25**	-.32**	-.22*	.87	
5. Organizational obstacles ^b	-.31**	-.39**	-.32**	.41**	.76

Notes. N=131. AVE = average variance extracted. Values on the diagonal (in boldface) are square roots of AVEs. a) Language obstacles to information sharing b) Organizational obstacles to information sharing.

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Table 4
Descriptive Statistics and Correlations

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. First deployment ^a	.54	.50												
2. Military or civilian ^b	.24	.43	.09											
3. Length in KFOR HQ	18.60	28.70	.05	.77**										
4. Differences pertaining to culture and opinions were valued	3.89	.78												
5. Quality of Supervisor and subordinate relationship	3.69	.88	.03	-.02	.07	.78								
6. National cultural obstacles to information sharing	2.62	1.06	.01	-.10	-.02	.29**								
7. Organizational obstacles to information sharing	2.79	.83	-.08	-.12	-.11	-.18*	-.12							
8. No training	.04	.49	-.05	.18*	.03	-.25**	-.39**	.49**	.75					
9. Multinational training	.06	.24	.27**	.43**	.37**	-.03	-.02	-.07	.09	-.21*				
10. Multinational and national training	.23	.42	.11	.01	-.11	.04	.05	-.05	.02	-.45**	-.14			
11. National training	.31	.46	-.06	-.22**	-.16 [†]	-.09	-.09	.15 [†]	-.03	-.55**	-.17 [†]	-.36**		
12. Coordination	4.15	.95	-.29**	-.26**	-.19*	.10	.08	-.04	-.08	-.07	.05	-.09	.13	.75

Notes. N=131. a) First deployment: yes=0, no=1. b) Military or civilian: military=1, civilian=0.

Cronbach alphas on the diagonal.

[†]p<.10, *p<.05, **p<.01, ***p<.001.

Table 5
Regression analysis

	Coordination		
	Model 1	Model 2	Model 3
First deployment ^a	-.12	-.11	-.10
Military or civilian ^b	-.18	-.11	-.19
Length in KFOR HQ	.17	.17	.21
Differences pertaining to culture and opinions were valued	-.05	-.07	-.07
Quality of Supervisor and subordinate relationship	.19*	.13	.11
National cultural obstacles to information sharing	-.24*	-.15	-.15
National training		.08	.07
Multinational training		.08	.15
National and multinational training		-.01	-.04
Organizational obstacles to information sharing		-.20 [†]	-.32**
National training x organizational obstacles to information sharing			.04
Multinational training x organizational obstacles to information sharing			-.27**
National and multinational training x organizational obstacles to information sharing			-.06
R^2	.13	.16	.22
Adjusted R^2	.09	.09	.13
ΔR^2	.13	.03	.06
ΔF	2.94*	1.03	2.60 [†]

Notes. $N=131$ Standardized regression coefficients are shown. a) First deployment: yes= 0, no=1. b) Military or civilian: military =1, civilian =0.

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.