

# Competence for the Unforeseen – The Importance of Human, Social and Organizational Factors

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**Abstract:** This study examines self-assessment of preparedness for unforeseen events and how it varies between groups and individuals according to roles and functions within an organization. The study has two objectives. The first is to analyse the relationship between general self-efficacy, perceived competence in demanding situations and social support, and based on this, to assess the efficiency of interaction (*samhandling*) in organizations and preparedness for the unforeseen. The second aim is to examine how these factors vary according to professional experience. A survey questionnaire was completed during winter 2016/2017. All 624 respondents were male or female employees of the Norwegian Armed Forces, based in different units, with different levels of competence, and included commissioned and non-commissioned officers, officer cadets and conscripts. The response rate was 77 percent, and a total of 810 personnel were approached. This study incorporates central concepts of individual and social resources that could permit the prediction and understanding of resilient behaviors in complex and demanding situations. Interaction was found to be the most important predictor of preparedness for the unforeseen. This study also shows that interaction combined with general self-efficacy and social support can account for a considerable proportion of the variance in preparedness for the unforeseen. The results indicate that it is possible to prepare for unforeseen events by implementing measures that improve social factors in particular.

**Keywords:** *Samhandling*, interaction, preparedness, social support, competence, leadership, organizational learning, unforeseen.

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## Introduction

Organizations rely increasingly on their ability to adapt to and manage multifaceted, demanding situations (Brozus, 2016; Roux-Dufort, 2007; Weick, 2015), particularly when facing sudden and unexpected risk events (Barnett, 2004; Bechky & Okhuysen, 2011; Cunha, Clegg, & Kamoche, 2006; Fornette, Bourgy, Jollans, Roumes, & Darses, 2016). These types of events accentuate the importance of identifying the individual, social, and organizational factors and their capacity to promote or reduce preparedness for unforeseen events.

The crises of our time entail high risk organizations, such as the Armed Forces, investing substantial levels of resources in preparation for these complex challenges. The future cannot, however, be predicted and the real outcomes of this preparation are very uncertain (Cunha et al., 2006). An unforeseen event is “a relatively unknown event or situation that occurs relatively unexpectedly and with relatively low probability or predictability to the individual, group or community that experience and manage the event.” (Kaarstad & Torgersen, 2017:1). Unforeseen events cannot be controlled (Tsoukas, 2005). Little is also known about how an organization can methodically identify relevant factors that influence the outcome of an event (Kaarstad & Torgersen, 2017). How individual humans in organizations manage the unforeseen will, on the one hand, depend on factors that relate to the individual (Larsen, Buss, Wismeijer, & Song, 2017; Staw & Ross, 1985). On the other hand, the individual is also affected by the dynamics between social and organizational factors, which are strong (Davies-Blake & Pfeffer, 1989; Smith, Benight, & Cieslak, 2013).

Interaction between people, groups and organizations is reported to be of great significance in demanding and complex situations (Griffith & Vaitkus, 1999; Kramar, 2014; Delahaij, Kamphuis, & van den Berg, 2016). Interaction (*samhandling*) has therefore been introduced as a factor that can be a valuable antecedent to adaption to unforeseen events (Kaarstad & Torgersen, 2017). The term “interaction” is often used when referring to traditional notions of collaboration, coordination, interplay and cooperation. Interaction has, however, a different qualitative meaning, emphasizing open and equal communication, development, competence complementarity, common goals, trust and knowledge. A collective

definition of interaction is “an open and equal communication and development process between parties whose competencies complement each other, who exchange competence directly face-to-face, via technology or manually, who work towards a common goal and whose relationship is based on trust, involvement, rationality and industry knowledge.” (Torgersen & Steiro, 2009:130).

Perhaps the key lesson that has emerged from multivariate studies is that there is no single dominant determinant that can predict the outcome of demanding and unexpected events (Bonanno, Brewin, Kaniasty, & La Greca, 2010; Milgram, Orenstein, & Zafir, 1989). It is therefore important to study the interplay of those risk and resource factors that are considered to have the potential to predict outcomes, such as self-efficacy (Aizen, 1991; Bandura, 1997; Delahaj et al., 2016; Schwarzer & Jerusalem, 1995; Shuffler, Pavlas & Salas, 2012), and social support (Procidano & Heller, 1983; Ryan & Burrell, 2012; Schwarzer & Luszczynska, 2012). People who are highly self-efficacious have a strong belief in their ability to manage challenges and threatening situations. Self-efficacy is usually understood as being either task-specific or domain-specific (Bandura, 1997; Leganger, Kraft & Røysamb, 2000). However, several researchers have developed the notion of self-efficacy as a general construct, which refers to a broad and stable sense of personal competence to perform across a range of challenging situations (Judge, Erez, & Bono, 1998; Leganger et al., 2000; Scherbaum, Cohen-Charash, & Kern, 2006). Social support, on the other hand, refers to the impact that networks of people have on the individual. Perceived social support is defined as the extent to which someone believes that their support, information, and feedback needs are met (Cobb, 1976; Procidano & Heller, 1983). Specific competencies for demanding situations – personal experience, age, gender and realistic training, could also be potential predictors of preparedness for unforeseen events (Gal & Jones, 1995; Holen, Sund, & Weisæth, 1983; Solberg, Laberg, Johnsen, & Eid, 2005). However, results of the existing research of socio-demographics are less conclusive (Leganger et al., 2000; Scholz, Doña, Sud, & Schwarzer, 2002).

The aim of this study was, therefore, to examine differences in how groups and individuals in the Armed Forces view preparedness for unforeseen events based on their role and function within the organization. The

main objective was to examine the effect of interaction, social support, general self-efficacy and competence in demanding situations on perceived preparedness for the unforeseen. We also examine differences in these factors due to professional experience, age and gender.

## Organizations and competence

The effective utilization of people in an organization has, for several decades, been an important field of interest (Schein, 1980). Organizations are understood to be open and complex social systems in which the people and the organization itself affect each other and interact with the environment (Daft, 2015; Jacobsen & Thorsvik, 2014; Kaufmann & Kaufmann, 2015). Many academics believe that human resources are of strategic importance to an organization's success (Armstrong, 2011; Kramar, 2014; Noe, Clark, & Klein, 2014). This is based on the view that an organization's people are a unique internal resource and that this resource can represent a competitive advantage (Barney, 1991; Salaman, Storey, & Billsberry, 2005; Wright, Dunford, & Snell, 2001). The competence of the employees is a resource that can enhance an organization's performance (Wright, Warner, Moynihan, & Allan, 2005), thus making competence a particularly important factor (Delary, 1998).

Knowledge is, in general, important for the sustainable development and growth of an organization (Law & Chuah, 2015; Nonaka & Takeuchi, 1995). The ability of an organization to maintain knowledge and skills that are up to date, both at the individual, group and organization level, therefore represents a significant challenge (Noe et al., 2014). Continuous learning, interaction and sharing of knowledge between employees is required in a knowledge society, in which knowledge and technology develop quickly (Armstrong & Taylor, 2017; Von Krogh, Ichijo, Nonaka, 2000). Knowledge management, resilience, self-leadership, empowerment, team building and creating flexible and network-based forms of work are examples of measures and concepts that can be implemented to meet these challenges (Armstrong & Taylor, 2017; Linkov et al., 2013a). Organizations and individuals must not only be skilled at utilizing the full potential of existing knowledge, but also be skilled at creating

new knowledge and questioning basic premises (Argyris, 1977; Argyris & Schön, 1996; March, 1991; 2006). Peter Senge (1990) highlights three important elements of this: the ability to develop personal self-efficacy, to develop complex understandings of how organizations function and to develop learning in groups and teams. Social learning in communities of practice is characterized by closeness, trust and active participation (Wenger, McDermott, & Snyder, 2002). Consequently, the understanding of interaction between people, groups and organizations is becoming increasingly important (Kaufmann & Kaufmann, 2015:59). Much of the research into interaction is, however, based on more predictable and known preconditions (Torgersen, 2015).

The high degree of unpredictability and complexity associated with unforeseen events increases the need to prepare for the full spectrum of stressors (Linkov et al., 2013b). An individual's response to an unforeseen event depends on the individual's appraisal, interpretation, and coping behaviors, as in any other stress-response process (Lazarus & Folkman, 1984). Individual psychological resources, such as self-efficacy, and social resources, such as social support, appear to be beneficial when dealing with challenges and adversity (Delahaij et al., 2016; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003).

Self-efficacy has been linked to performance (Chen, Gully, & Eden, 2001; Eden, 2001; Shuffler et al., 2012), decision making (Hepler & Feltz, 2012), training, adjustment to new tasks (Robbins et al., 2004; Saks, 1997), coping behavior when facing challenges, environmental demands and collective traumatic events (Liang & Su, 2011; Luszczynska, Benight, & Cieslak, 2009; Schwarzer, 1999; Solberg et al., 2005). Most of the research on self-efficacy has focused on the expectancy to succeed in a particular domain or task in a given situation (Leganger et al., 2000). The context of unforeseen events is characterized by being less situation-specific (Kaarstad & Torgersen, 2017; Scherbaum et al., 2006). Hence, it might be adequate to extend the operationalization of task-specific self-efficacy to explain a broader range of competence beliefs (Luszczynska, Scholz, & Schwarzer, 2005; Schwarzer & Jerusalem, 1995). Perceived general self-efficacy can therefore be considered to be competence-based, prospective and action-related in less specific contexts (Luszczynska, Gibbons, Piko, & Tekozel, 2004; Luszczynska et al.,

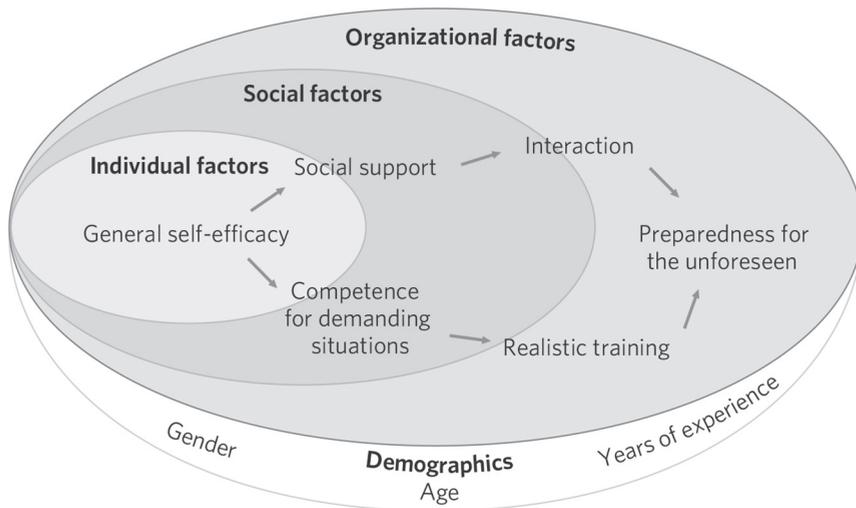
2005). On the other hand, the ability to deal with difficult situations based on personal experience, realistic training and individual task-focused coping capacities may be operationalized as domain-specific self-efficacy.

In addition, personnel who must deal with uncertainty and demanding situations often seek support from their supervisors and colleagues. So, when there's a threat to which one must respond, information or help is needed to adequately deal with the threat, and aid is perceived to be available within one's support network (Procidano & Heller, 1983). Previous research has shown that military units and garrison social environments and leadership foster social support, and that this social support helps individuals to cope with stressors, manage high job demands and adverse conditions (Bliese & Britt, 2001; Cohen, 2004; Delahaij et al., 2016; Stetz, Stetz, & Bliese, 2006). It has also been found that there is a positive relationship between social support and readiness, performance and personal well-being (Armistead-Jehle, Johnson, Wade, & Ecklund, 2011; Griffith, 1989; 2002; Ryan & Burrell, 2012). Both social support and self-efficacy are resources that have been studied for many years in military organizations (Andres, Moelker, & Soeters, 2012; Bartone, Snook, & Tremble, 2002; Delahaij, Theunissen, & Six, 2014; Weins & Boss, 2006). They have, however, not often been studied concurrently. Nevertheless, several scholars argue that these factors may have a buffering effect (Delahaij et al., 2016).

The above outcomes show that more research is needed into factors associated with preparedness for the unforeseen. Preparing and learning from highly infrequent and unknown events represents a contradiction (Barnett, 2004; Lampel, Shamsie & Shapira, 2009). How can you train and prepare for something when you do not know what it is? Existing research indicates that there is a lack of a conceptual framework (Bundy, Pfarrar, Short, & Coombs, 2016; Lampel et al., 2009), that a semantic escalation exists (Roux-Dufort, 2007), that there is an educational challenge when dealing with the unknown (Barnett, 2004; Torgersen & Saeverot, 2016), and that there is a need to rework the senses and grasp ambiguity (Weick, Sutcliffe & Obstfeld, 2005; Weick, 2015). Furthermore, most organizations learn from repeated successes rather than from exceptional events or failure (Starbuck, 2009). Rare events may, however, trigger learning through exposing weakness and revealing unrealized behavioral

potential (Christiansson, Farkas, Sutcliffe, & Weick, 2009). Unforeseen events therefore represent a challenge that requires numerous levels of competence to be mobilized for the challenge to be met (Argyris & Schön, 1996; Mathieu, Maynard, Rapp, & Gilson, 2008).

The enmeshment of individual, social and organizational factors highlights the need to explore and understand the consequences of their interaction. To our knowledge, few or no empirical studies have been carried out on this topic. Investigations that examine the joint role of interaction, general self-efficacy, perceived competence in demanding situations, and social support are important, as combinations of these factors may have a protecting and effect on preparedness for the unforeseen. Based on this reasoning, the main research question was: Do individual differences in general self-efficacy, belief in military skills and abilities, social support, personal experience and interaction predict the evaluation of preparedness for the unforeseen? In addressing this, we assume that interaction plays a key role in preparing for the unforeseen, with the potential to enhance an organization’s capacity to optimize their performance.



**Figure 15.1** The Predictive Model of Preparedness for the Unforeseen, showing selected indicators at each competence level.

The Predictive Model shown in Figure 15.1 integrates our main research question of how interaction directly affects preparedness for the unforeseen. This is substantiated by the social resources of social support

affecting interaction, the individual resources of general self-efficacy affecting competence for demanding situations and social support, and the competence in demanding situations affecting emergency exercises and social support.

## Method

### Participants and procedures

The study data was collected using a self-completion questionnaire, answered by male and female employees of the Norwegian Armed Forces. Personnel from all branches of the military, including commissioned and non-commissioned officers, military academy students and conscripts participated in the study. The study results are based on a survey carried out over a three-month period during winter 2016/2017. The questionnaire was distributed to 16 units, departments and military academies throughout Norway. Study participants held a range of competence levels, were responsible for a range of functions and were based in a range of units. A total of 624 personnel participated in the study and the response rate was 77%. The sample consisted of 525 male (85%) and 92 female (15%) respondents, with a mean age of 25.7 years (standard deviation (SD) = 8.2). Average military experience was 5.5 years (SD = 6.9). Most of the questionnaires were completed in plenum with the researcher present. Some questionnaires were supervised by a dedicated department contact. All participants were, however, given the same introduction to the survey. The study was advised by the Norwegian Centre for Research Data (NSD).

### Measures

General self-efficacy (GSE) was measured using a Norwegian translation of the General Perceived Self-Efficacy Scale (GSE) (Leganger et al., 2000; Schwarzer & Jerusalem, 1995). The scale is uni-dimensional and consists of 10 items. It taps information about the respondents' perceived capability to handle new and difficult tasks in a variety of domains (Scherbaum,

et al., 2006). Sample items include: “I am confident that I could deal efficiently with unexpected events,” and “If I am in trouble, I can usually think of a solution.” Respondents responded using a 4-point scale, from 1 = “not true at all” to 4 = “completely true”. The scale is reported to have satisfactory psychometric characteristics, high levels of internal consistency ( $\alpha = .76-.91$ ), and cross-cultural and criteria validity (Scholz et al., 2002). The scale had a Cronbach’s alpha (internal consistency) of  $\alpha = .83$  in the current study.

Competence in demanding situations (CDS) was measured using 17 items from the Military Skills and Ability Scale (Moldjord, Laberg & Rundmo, 2015). Studies have used this scale to measure individual coping capacity, cooperation in demanding situations, and general knowledge and skills when handling difficult and stressful situations (Moldjord et al., 2015; Solberg et al., 2005). This scale could be argued to measure domain-specific self-efficacy. Items include: “My ability to act whilst feeling threatened is ...”, “My ability to cooperate in difficult situations is ...”, and “My skills at the individual level are ...”. A Likert type scale, ranging from 1 (very good) to 5 (very weak) and 6 (do not know), was used to record responses. Previous studies have revealed satisfactory internal consistency with Cronbach’s alpha above .70 (Moldjord et al., 2015, Solberg, 2007). The internal consistency of the scale was  $\alpha = .85$ , and for each dimension, the results being  $\alpha = .84$  for individual coping capacity,  $\alpha = .63$  for cooperation in demanding situations, and  $\alpha = .81$  for general knowledge and skills.

Social support (SS) was measured using a Norwegian translation of the Perceived Social Support (PSS) Scale by Procidano and Heller (1983). It was designed to assess the functions of social networks in which an individual perceives that his/her needs for support, information, and feedback are fulfilled by colleagues and leader, especially emotional support. The scale is comprised of two 10 item self-reported measures. Examples are: “I rely on my colleagues for emotional support”, “My colleagues give me the moral support I need”, and “My leader is sensitive to my personal needs”. Respondents used a 5-point scale, from 1 = “strongly disagree” to 5 = “strongly agree”. The scale is reported to have demonstrated good internal consistency ( $\alpha = .83-.90$ ) (Eskin, 1993). The scale had a

Cronbach's alpha of  $\alpha = .84$ , and for the dimension social support colleagues  $\alpha = .78$  and social support leader  $\alpha = .78$ .

Interaction (I) and preparedness for the unforeseen was measured by UN-ORG (UNforeseen Organization questionnaire). The scale consists of 98 items, where the component Interaction is represented by 7 items. It was developed within the Strategic Institute Initiative at IFE (Institute for Energy Technology), IO EPO (Integrated Operations in Emergency Preparedness Organization). The purpose of the questionnaire is to allow employees in an organization to assess to what extent their organization has emergency preparedness that can handle the unforeseen (Kaarstad & Torgersen, 2017). The entire UN-ORG scale was not analyzed in this study. Items in the Interaction component include: "My organization has developed good faith in the employees", "My organization has the ability to exchange and complement the staff's competence during training", and "My organization creates a mutual sense of understanding internally within the organization during an exercise or event". An analysis of Cronbach's alpha of the UN-ORG scale has resulted in a value of .90, which indicates a rather high degree of internal consistency between the items (Kaarstad & Torgersen, 2017). The scale for Interaction had a Cronbach's alpha of  $\alpha = .78$ .

## Statistical analysis

The data was optically read and transferred to SPSS (version 24.0) and LISREL 8.72 for statistical analyses. The inter-correlations of all independent variables were calculated to test the significance of the correlation coefficients. Confirmatory factor analysis (CFA) was performed to evaluate the fit of the internal and dimensional structure of general perceived self-efficacy (GSE), competence for demanding situations (CDS), perceived social support (PSS) and interaction (I) and to test whether measured items reflect the latent constructs they were designed to measure (Hair, Black, Babin, Anderson, & Tatham, 2006). The fit between the model and data was assessed using the  $\chi^2/df$  (df-ratio) and root-mean-square-error of approximation (RMSEA), with a 90% confidence interval (CI) (Boosma, 2000). RMSEA values up to .08

correspond to an “acceptable” fit (McDonald & Ho, 2002). Adaptability was tested using comparative fit index (CFI), critical N (CN), standardized-root-mean-squared residual (SRMR) and goodness-of-fit index (GFI). Traditionally, most authors who use an index scaled up to unity for “perfect” fit regard these fit indices as acceptable if they are greater than .90 (Jackson, Gillaspay & Purc-Stephenson, 2009; McDonald & Ho, 2002), and SRMR less than .06 (Hu & Bentler, 1999). Cronbach’s alpha was also calculated to examine scale reliability and the internal consistency of the indices (Cortina, 1993). Average corrected item-to-total correlation and factor-loading range were determined to provide important information on the scales’ factorial structures (Boomsa, 2000).

A multivariate analysis of variance and covariance (MANOVA/MANCOVA) was conducted to examine differences in general self-efficacy, competence for demanding situations, social support and interaction, due to demographic variables such as gender, age and years of professional experience (Tabachnick & Fidell, 2012; Warne, 2014). From this, we can obtain a multivariate F value and adjust for differences in one or more covariates (Mehmetoglu & Jakobsen, 2016).

A hierarchical multiple regression analysis was carried out to identify factors that can explain individual variations in preparedness for the unforeseen. Predictive values were reported with  $R^2$  values. The five proposed predictors were entered block-wise in the following order: (a) demographic variables (gender, age, years of experience), (b) general self-efficacy (GSE) and competence for demanding situations (CDS), (c) social support (SS), (d) training and exercise, and (e) interaction (I). Gender, age and professional experience may also be related to preparedness for the unforeseen. They were therefore entered first, to rule out alternative explanations for the observed findings. The other predictors were grouped into blocks and entered on the basis of competence level: individual, social and organizational.

A structural equation model (SEM) was finally used to assess whether the specified model “fits” the data (Yuan, 2005). Single dependent measures rarely capture the phenomenon being studied completely. The SEM approach, however, estimates the variables in the study simultaneously

rather than assuming independent equations (Boomsma, 2000; Jöreskog & Sörbom, 2004).

## Results

### Reliability, fit indices and parameter estimates of measures

The confirmatory factor analysis (CFA) results are given in Table 15.1. They show that the internal structure of general self-efficacy, competence for demanding situations, social support and interaction were consistent with respondent data (Leach et al., 2008). This fit indicates support for the measurement model. The parameter estimates in Table 15.1 of Average Corrected Item-Total Correlation and Factor Loading Range were reasonable and in support of the predicted model. The results also confirm that each component was well defined by its items. However, when determining the number of factors that best describe the underlying relationship among the variables, some items were taken out. The cut-off value was set at .40. First, three items from the Military Skills and Ability Scale were left out, due to fit and low rotated factor loadings. Second, two items from the Perceived Social Support (PSS) Scale were removed on each of the dimensions, due to low factor loadings and factor structure (Costello & Osbourne, 2005).

The reliability and internal consistency of the psychological and social variables are also shown in Table 15.1. The reliability and internal consistency of all scales are shown to be satisfactory. One dimension of the competence in demanding situation scale showed  $\alpha = .63$ . This value is considered to be satisfactory, based on the small number of items (four) in the scale (Cortina, 1993; Panayides, 2013).

A series of Pearson product-moment correlation coefficients were computed (Table 15.2) to assess the relationship between study variables. Overall, most of the dependent variables were positively correlated with each other in the moderate and weak range (Mehmetoglu & Jakobsen, 2016). The two demographic variables, age and years of experience, were strongly correlated,  $r = .75$ ,  $p < .01$ . However, no symptoms of multicollinearity or very high inter-correlations among the variables were detected (Boomsma, 2000).

## Differences in psychological variables and social variables due to demographic variables

A multivariate analysis of covariance (MANCOVA) examined the eight latent variables being dependent variables, years of professional experience being an independent variable, and age and gender as covariates. Years of experience was recoded into three groups: novice, intermediate and experienced. Table 15.3 shows a statistically significant overall difference in years of experience on general self-efficacy, competence for demanding situations, interaction and preparedness for the unforeseen. Wilks' Lambda = .95,  $F(16,1134) = 2.04$ ,  $p < .01$ ,  $\eta^2 = .03$ . The multivariate effect was significant on the individual factors of general perceived self-efficacy  $F(4,574) = 9.65$ ,  $p < .001$ ,  $\eta^2 = .06$ , and on all the three components of competence for demanding situations (CDS); individual coping capacity  $F(4,574) = 22.34$ ,  $p < .001$ ,  $\eta^2 = .14$ , cooperation  $F(4,574) = 3.88$ ,  $p < .01$ ,  $\eta^2 = .03$ , knowledge and skills  $F(4,574) = 13.29$ ,  $p < .001$ ,  $\eta^2 = .09$ . There was, however, no significant effect between years of experience and social support colleagues  $F(4,574) = 0.90$ ,  $p > .05$ ,  $\eta^2 = .01$ , and social support leader  $F(4,574) = 1.12$ ,  $p < .05$ ,  $\eta^2 = .01$ . On the other hand, the effect of years of experience on interaction  $F(4,574) = 4.46$ ,  $p < .01$ ,  $\eta^2 = .03$ , showed significant differences. Years of experience finally demonstrated a significant effect on preparedness for the unforeseen  $F(4,574) = 2.86$ ,  $p < .05$ ,  $\eta^2 = .02$ . Only the covariate gender significantly influenced the combined dependent variables, Wilks' Lambda = .91,  $F(8,567) = 7.45$ ,  $p < .001$ ,  $\eta^2 = .10$ .

However, a multivariate analysis of variance (MANOVA), including the three demographic variables, demonstrated significant interaction effects between gender and age, Wilks' Lambda = .95,  $F(16,1116) = 2.06$ ,  $p < .01$ ,  $\eta^2 = .03$ , gender and years of experience, Wilks' Lambda = .94,  $F(16,1116) = 2.20$ ,  $p < .01$ ,  $\eta^2 = .03$ , and age and years of experience, Wilks' Lambda = .91,  $F(24,1619) = 2.30$ ,  $p < .01$ ,  $\eta^2 = .03$ , and between gender, age and years of experience, Wilks' Lambda = .95,  $F(8,558) = 3.67$ ,  $p < .01$ ,  $\eta^2 = .05$ .

Univariate testing (ANOVA) and post hoc tests were conducted as follow-up tests. ANOVA results in Table 15.3 indicated significant differences in the effect of years of experience on competence – individual coping capacity,  $F(2,574) = 4.85$ ,  $p < .01$ ,  $\eta^2 = .02$ , interaction  $F(2,574) = 5.80$ ,  $p < .01$ ,  $\eta^2 = .02$ , and preparedness for the unforeseen,  $F(2,574) = 5.64$ ,

$p < .01$ ,  $\eta^2 = .02$ . Tukey HSD and Bonferroni post hoc results for general self-efficacy and all dimensions of competence for demanding situations indicated that novice individuals significantly differ from intermediate skilled and experienced personnel. Results for interaction showed that novices differ from intermediates, and that experienced people differ from both novices and intermediates on preparedness for the unforeseen. Finally, Table 15.3 presents the group means of the dependent variables by years of experience. A comparison of the three levels of experience indicated that years of experience increased the level of general self-efficacy and competence for demanding situations. A similar analysis of social support colleagues, social support leader, interaction, and preparedness for the unforeseen suggested that years of experience decreased the levels or made them more inconsistent.

## Predictors of evaluation of preparedness for the unforeseen

A multiple hierarchical regression analysis was carried out to examine whether preparedness for the unforeseen is predicted by general self-efficacy, dimensions in competence for demanding situations, social support, training and exercise, and interaction. Gender, age and professional experience were entered as demographic variables. Table 15.4 shows that the predictor variables in Block 5 (Block 1: Demographic variables, Block 2: Individual resources, Block 3: Social support, Block 4: Exercise and training, Block 5: Interaction) explain a significant amount (43% – respectively .00, .03, .09, .02, .29) of the variance in preparedness for the unforeseen,  $R^2 = .43$ ,  $F(11, 564) = 38.77$ ,  $p < .001$ . Interaction ( $\beta = .61$ ,  $p < .001$ ) was the component which significantly added most variance to preparedness for the unforeseen.

Experience with emergency exercises ( $\beta = .13$ ,  $p < .001$ ), social support colleagues ( $\beta = -.14$ ,  $p < .001$ ), and social support leader ( $\beta = .12$ ,  $p < .01$ ) did significantly predict the variance in preparedness for the unforeseen. The analysis shows that neither gender ( $\beta = .00$ , ns), age ( $\beta = .01$ , ns), years of experience ( $\beta = -.02$ , ns), general self-efficacy ( $\beta = .07$ , ns), competence – individual coping capacity ( $\beta = -.04$ , ns), competence – cooperation

( $\beta = -.02$ , ns) nor competence – knowledge and skills ( $\beta = .03$ , ns), displayed any significant relationship to preparedness for the unforeseen.

We expected interaction to be positively related to preparedness for the unforeseen, controlled for gender, age and experience. The regression analysis supports this expectation. Gender, age and years of experience, general self-efficacy and competence in demanding situations did not, however, explain the variance shown in preparedness for the unforeseen. We therefore turned to SEM to examine the relations of relevant variables in the context of our predictive model.

## Structural Equation Model (SEM) for predicting preparedness for the unforeseen

Structural equation modelling is presented in Figure 15.2. Gender, age and experience were left out, in view of the fact that they did not obtain any significant effect. The results of the structural equation model ( $\chi^2 (24) = 107.16$ ,  $p < .001$ ; RMSEA = .076, 90% CI [.062, .091]; CFI = .95; Critical N = 235.07; SRMR = .055; GFI = .96.) indicate a good fit with the data (Hu & Bentler, 1999).

The total explained variance percentage of preparedness for the unforeseen was 41%, and Figure 15.1 shows two positive and significant paths. General self-efficacy positively affected both social support ( $\beta = .35$ ,  $p < .001$ ) and competence in demanding situations ( $\beta = .59$ ,  $p < .001$ ). The percentage of explained variance for social support was 17%, and it was 35% for competence in demanding situations. Social support was positively associated with interaction ( $\beta = .54$ ,  $p < .001$ ) and the explained variance was 29%. The other pathway, competence in demanding situations, contributed to emergency exercises ( $\beta = .15$ ,  $p < .001$ ). The explained variance was at the ratio of 2%. Furthermore, interaction demonstrated a positive and significant effect on preparedness for the unforeseen ( $\beta = .61$ ,  $p < .001$ ). Emergency exercises were also positively and significantly connected to preparedness for the unforeseen ( $\beta = .17$ ,  $p < .001$ ).

The explained variance in preparedness for the unforeseen therefore essentially depends on interaction. We also found support for the predicted relationships between general self-efficacy, social support and

competence in demanding situations. Likewise, for social support and interaction, and between competence in demanding situations and participation in emergency exercises. This indicates that social resource factors have a direct and resilient effect on preparedness for the unforeseen, and that individual factors play an indirect role. The results of the indirect, direct and total effects are shown in Figure 15.2, and suggest that an integrative approach to preparedness for the unforeseen is a valid one.

## Discussion

The purpose of this study was to identify the individual, social and organizational factors that are associated with preparedness for unforeseen events. The study examined the effect of interaction, social support, general self-efficacy and competence in demanding situations on preparedness for the unforeseen. It also examined differences in these factors due to professional experience, age and gender. The results are based on responses from individuals with different roles and functions in the Norwegian Armed Forces. We expected, based on previous research, that interaction would play a key role in preparing for the unforeseen (Delahaj et al., 2016; Kaarstad & Torgersen, 2017; Kaufmann & Kaufmann, 2015; Kramar, 2014). This expectation was confirmed by the results. SEM analyses showed that interaction was the most important predictor of preparedness for the unforeseen, and that social support was a significant predictor of interaction. General self-efficacy and competence in demanding situations and social support also showed a significant positive relationship. Experience with emergency exercises, though low in effect, also contributed to the explained variance in preparedness for unforeseen events.

In summary, our findings suggest that there is no single dominant determinant that predicts outcomes of demanding and unexpected events (Bonanno et al., 2010). The results, however, indicate that it is possible to prepare for unforeseen events by implementing improvement measures, particularly measures aimed at the improvement of social factors. The results therefore represent a positive contribution to preparedness knowledge.

The authors are not aware of any previous studies that have concurrently examined the factors investigated in this study. This study uncovers

relations and factors which might explain preparedness for the unforeseen and therefore clarifies and supplements existing research.

## Implications

The results may have implications for predicting and enhancing preparedness for unforeseen events. They show, for example, that interaction between people, groups and organizations is the most significant antecedent of adaption to disruptive incidents. The results also suggest that interaction is an essential factor in explaining preparedness for an event that occurs unexpectedly, is unknown, and has a low probability of occurrence. Individuals and social processes are considered to play an important and active role in preparedness, particularly when organizations and people are confronted with an unfamiliar event that is unexpected and confusing and that must be interpreted in the context of the strategic environment (Weick, 1995; 2015; Weick & Sutcliffe, 2015). This indicates that interaction can be used to predict future military performance at the individual, group and organization level, where interaction is viewed as a generic core competence that is found at several levels in an organization. This is particularly appropriate where the sum of the competencies at these levels determines the Armed Forces response time, combat power and sustainability when facing unforeseen events (Mathieu et al, 2008).

Weick (2015) argues that organizations faced with ambiguous information tend to look for assurance in what they already know. All organizational capabilities are relatively rigid when facing unfamiliar problems, despite the prevalence of the concept of change (Ritala, Heiman, Hurmelinna-Laukkanen, 2016). There is, furthermore, no large body of theory and research on organizational effectiveness and organizational learning in abnormal events, such as crises and unforeseen events (Lampel et al., 2009; Roux-Dufort, 2007). Recent incidents of terror and crises have, however, demanded that high risk organizations such as the Armed Forces invest substantial resources in preparing for these very complex challenges. The future cannot be foreseen. Such investments are therefore associated with great uncertainty (Cunha et al., 2006). The Armed Forces may, even so, see the findings of this study as a basis for developing and

adjusting their recruitment and selection process, and their educational, exercise and training programs, and as a basis for focusing on ways to enhance interaction and the organization's resulting performance.

The results also show how the interplay of risk and resource factors, including factors such as general self-efficacy, social support, competence in demanding situations and experience with emergency exercises, directly and indirectly contributed to explaining interaction and preparedness for unforeseen events (Delahajj et al., 2016; Ryan & Burrell, 2012; Solberg et al., 2005). It was, nonetheless, surprising that personal and military experience had little value as a predictor of preparedness for the unforeseen. This questions the traditional military assumption that there is a close relationship between experience (number of years of professional service) and increased coping capacity (Solberg et al., 2005). Self-evaluation of general self-efficacy and competence in demanding situations did, however, prove to be indirectly associated with preparedness for unforeseen events. This indicates that officers and soldiers primarily base their evaluation of preparedness for unforeseen events on their evaluation of social factors, such as social support and interaction. Establishing suitable settings for social learning and communities of practice, where personnel can feel confident about meeting and sharing experience and knowledge, may be required to facilitate preparedness (Wenger et al., 2002). Leadership that shows a willingness and ability to organize such venues is also essential (Moldjord et al., 2015).

Perceived personal efficacy and competence in demanding situations indicates coping skills that might be generalized across different stressors and situations (Scherbaum et al., 2006; Schwarzer & Jerusalem, 1995). General self-efficacy and competence in handling demanding situations should therefore enhance preparedness, even in situations involving a high degree of unpredictability. It seems reasonable, given the uncertainty associated with unforeseen events, that a belief in one's personal resources, skills and abilities represents a readiness indicator and a sense of having faith in oneself.

Those who believe in their own ability to handle difficult situations, increase their ability to seek social support, which in turn explains their ability to interact socially. This represents an interplay between essential

factors in the ability to handle unforeseen events. From a competence perspective, this shows the relevance of focusing on the interaction between different competencies. How unforeseen events manifest in each organization may depend on personnel differences and social factors within the framework of an organization's structure and culture (Cunha et al., 2006). However, the complex nature of unforeseen events requires knowledge, skills and abilities beyond those of single individuals (Shuffler et al., 2012). The results of this study show that social dimension factors directly explain the ability to handle unforeseen events, while individual factors indicate an indirect effect. Future research should, therefore, further investigate these relationships.

## Strengths and limitations

This study has significant strengths and limitations. The sample size (N=624) should be sufficient to detect large effects (Cohen, 1992). The respondents represent a varied sample of Armed Forces personnel, within a range of units, functions and roles and with a range of experience, ages and genders. However, the use of self-reported data is susceptible to common method bias and social desirability (Podsakoff, MacKenzie, & Podsakoff, 2003). This may introduce a degree of uncertainty into the results and limits generalizability, especially to other populations.

The assessment of general self-efficacy, competence in demanding situations, social support and ability to interact could reflect general and biased intentions, rather than real perceived capacity, when confronted with an unforeseen event. Global measures, like general self-efficacy, often have weak predictive power on specific behaviors due to their high generality. Thus, self-efficacy measured at a more task and domain-specific level might have revealed other results. Competence in demanding situations, though, can be reckoned as a kind of domain-specific self-efficacy. However, certain types of performance may well be related to multiple aspects and levels of self-efficacy (Leganger et al., 2000). The fact that the respondents are selected, trained and experienced should, nonetheless, contribute to a realistic evaluation of preparedness for unexpected, complex and demanding situations.

This study examined the effect of personal, social and organizational factors on preparedness for the unforeseen and the relationships between these factors. These determinants might influence each other bidirectionally. A future study may conduct a longitudinal survey to examine the interactive relationship among these competence levels and determinants. Another possible methodological approach could be a qualitative study to explore these phenomena and relations. Such explorations could uncover how organization members classify, prioritize and understand unforeseen events before responding to them.

## Conclusion

In conclusion, this study incorporates central concepts of individual and social resources that could permit the prediction and understanding of resilient behaviors in complex and demanding situations. This study also shows that interaction combined with general self-efficacy and social support can account for a considerable proportion of the variance in preparedness for the unforeseen. Interaction was the most important predictor of preparedness for the unforeseen. The results indicate that it is possible to prepare for unforeseen events by implementing measures that improve social factors, in particular. Organizations can apply these findings by developing a work environment where managers and colleagues provide moral and emotional support and listen to each other. We also suggest building trust between employees and nurturing good forms of communication. Furthermore, we believe it is important to create a common understanding of the situation and to have well-functioning routines with partners. Finally, a focus on exchange and the complementation of employee skills and knowledge may be of benefit to organizations. The results therefore make a positive contribution to preparedness knowledge. There are, however, many issues that remain unresolved. There is plenty of evidence of significant relations between these concepts, but the exact form of these relations is still uncertain.

In a world of rapidly-changing activities and unpredictable events, it is neither possible nor sufficient for individuals, groups and organizations to prepare for every potential incident. Organizations, rather than insisting

on the prediction of unexpected events, should therefore investigate how resilience to deal with unanticipated events can be developed. A change in focus and mind-set should highlight the relevance of interaction as a basic and generic core competence. In line with previous research, the results for gender, age and experience were inconclusive. The results showed significant differences between men and women, different age groups and levels of experience, due to the outlined individual factors: general self-efficacy and competence in demanding situations. On the contrary, this was not the case for the indicated social and organizational factors: social support, interaction and preparedness for the unforeseen. The existing findings should therefore encourage more research, that may help to clarify why and when gender, age and experience differences emerge. Future research could also include the investigation of other promising and relevant elements such as trust, decision making, improvisation, organizational learning, structuring and dynamic adaptive capabilities. This study may be particularly relevant to those involved in acquiring, mobilizing and developing competence at different levels in educational, crisis and military organizations.

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## Appendixes

**Table 15.1** Confirmatory factor analysis including maximum likelihood estimation, Cronbach's alpha, Average Corrected Item-Total Correlation and Factor Loading Range for dependent variables

<b>Variables</b>	<b><math>\alpha</math></b>	<b>C-ITC</b>	<b>FLR</b>	<b><math>\chi^2/df</math></b>	<b>RMSEA</b>	<b>CFI</b>	<b>CN</b>	<b>SRMR</b>	<b>GFI</b>
General self-efficacy	.825	.51	.36,.71	162.30/35	0.077	0.96	233.99	0.044	0.95
Competence in demanding situations	.847	.50		340.27/74	0.077	0.95	188.66	0.062	0.93
Competence - individual coping capacity	.837	.57	.49,.76						
Competence - cooperation	.629	.56	.26,.74						
Competence - knowledge and skills	.812	.68	.73,.92						
Social support	.841	.46		550.04/103	0.084	0.95	163.21	0.046	0.90
Social support colleagues	.775	.51	.56,.77						
Social support leader	.780	.51	.47,.82						
Interaction	.767	.51	.51,.73	28.05/8	0.064	0.98	425.55	0.035	0.98

Note.  $N = 603$ ,  $\alpha$  = Cronbach's alpha, C-ITC = Corrected Item-Total Correlation, FLR = Factor Loading Range, RMSEA = Root-mean-square error of approximation, CFI = Comparative fit index, CN = Critical N, SRMR = Standardized-root-mean-square residual, GFI = Goodness-of-fit index.

**Table 15.2** Correlations for study variables

Variables	1	2	3	4	5	6	7	8	9	10	11
Demographic variables											
1 Gender											
2 Age	.14**										
3 Years of experience	.13**	.75**									
Predictor variables											
4 General self-efficacy	.21**	.19**	.17**								
5 Competence – individual coping capacity	.27**	.26**	.27**	.54**							
6 Competence – cooperation	-.01	.15**	.15**	.23**	.42**						
7 Competence – knowledge and skills	.21**	.22**	.22**	.35**	.53**	.29**					
8 Social support colleagues	-.04	-.01	-.03	.34**	.19**	.27**	.09*				
9 Social support leader	.08	.07	.04	.30**	.20**	.26**	.12**	.50**			
10 Participated in emergency exercise	-.00	.29**	.29**	.10*	.12**	.02	.19**	-.08	.10*		
11 Interaction	-.01	-.11	-.10*	.15**	.12**	.20**	.07	.34**	.44**	-.01	
Outcome variable											
12 Preparedness for the unforeseen	.01	.03	-.02	.14**	.09*	.10*	.09*	.13**	.34**	.17**	.62**

Note. N = 597-617, \*\*Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed). Gender was coded 1 = female, 2 = male.

**Table 15.3** Group means and differences in general self-efficacy, competence in demanding situations, social support, interaction and preparedness for the unforeseen due to years of experience

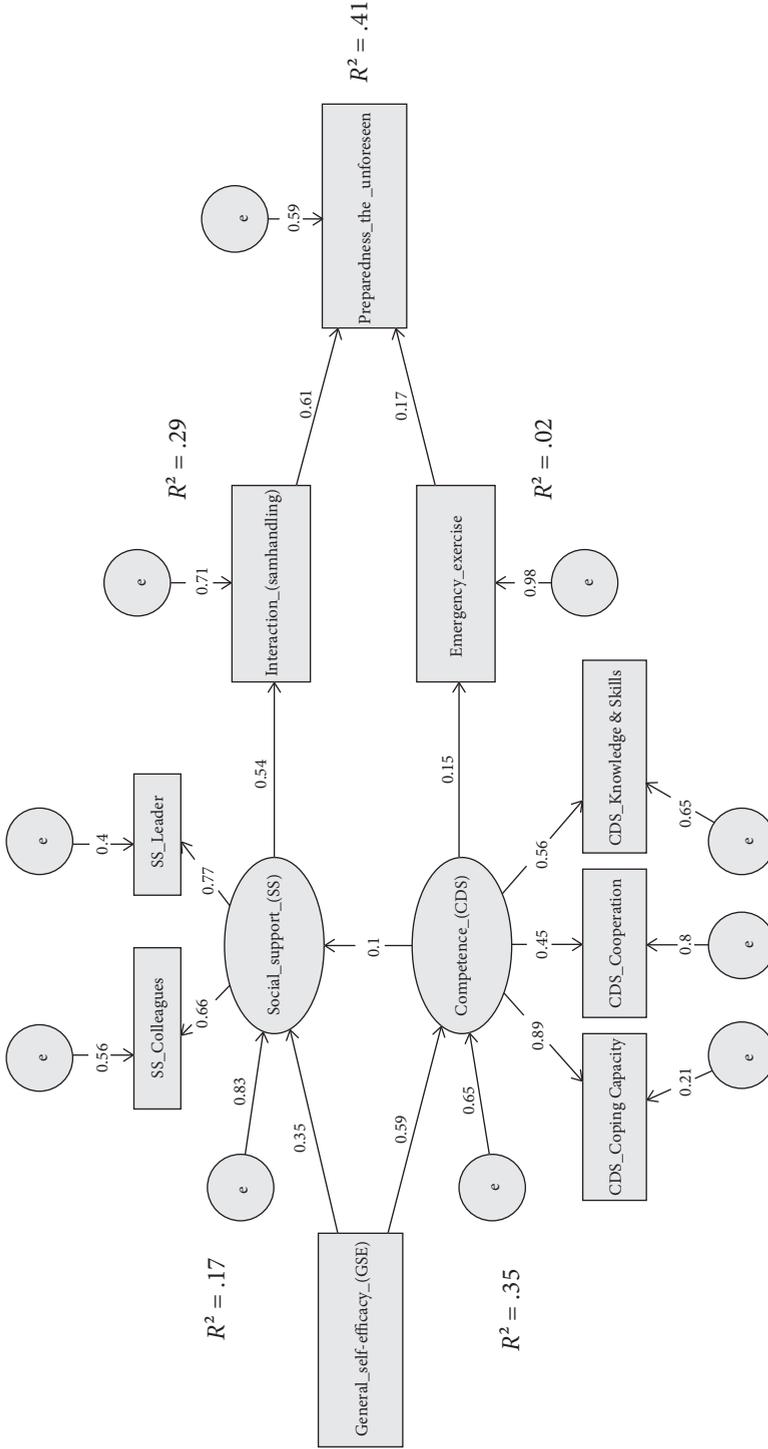
	Mean (SD)			F value (corr. model)	F value (exp.)
Years of experience	Novice	Intermediate	Experienced		
General self-efficacy	3.18 (.39)	3.24 (.33)	3.34 (.35)	9.65***	0.81
Competence - individual coping capacity	3.47 (.71)	3.60 (.59)	3.91 (.51)	22.34***	4.85**
Competence - cooperation	3.52 (.76)	3.62 (.59)	3.77 (.48)	3.88**	2.42
Competence - knowledge and skills	3.61 (.83)	3.75 (.54)	3.98 (.64)	13.29***	1.68
Social support colleagues	3.76 (.52)	3.78 (.46)	3.71 (.49)	0.90	0.61
Social support leader	3.32 (.61)	3.28 (.53)	3.39 (.59)	1.12	0.93
Interaction	3.80 (.54)	3.60 (.54)	3.69 (.51)	4.46**	5.80**
Preparedness for the unforeseen	6.28 (1.80)	5.72 (1.80)	6.22 (2.10)	2.86*	5.64**

Note. N = 579, Novice; N = 182, Intermediate; N = 236, Experienced; N = 162, \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ , Wilks' Lambda = .95,  $F(16,1134) = 2.04$ ,  $p < .01$ ,  $\eta^2 = .03$ . Standard deviations (SD) appear in parentheses besides unadjusted means. Listwise deletion.

**Table 15.4** Prediction of preparedness for the unforeseen

	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$
Predictor	Block 1	Block 2	Block 3	Block 4	Block 5
Block 1: Demographic variables					
Gender	.01	-.01	-.02	-.01	.00
Age	.01	-.02	-.03	-.06	.01
Years of experience	.02	-.04	-.03	-.04	-.02
Block 2: Individual resources					
General self-efficacy		.14**	.07	.06	.07
Competence - coping capacity		-.03	-.02	-.02	-.04
Competence - cooperation		.09*	.02	.03	-.02
Competence - knowledge and skills		.05	.06	.04	.02
Block 3: Social support					
Social support colleagues			-.06	-.04	-.14***
Social support leader			.35***	.33***	.12**
Block 4: Exercise and training					
Emergency exercise				.14**	.13***
Block 5: Interaction					
Interaction					.61***
R <sup>2</sup>	.00	.03	.13	.14	.43
R <sup>2</sup> change / $\Delta R^2$	.00	.03	.09	.02	.29
F change	.09	4.76**	30.30***	11.80**	83.60***

Note. N= 576, \*= $p < .05$ , \*\*= $p < .01$ , \*\*\*= $p < .001$ .



**Figure 15.2** Structural equation model (SEM) for predicting preparedness for the unforeseen. Results for the structural equation model. Standardized solution.  
 Note:  $N = 603$ ;  $\chi^2(24) = 107.16$ ,  $p < .001$ ; root-mean-square error of approximation (RMSEA) = .076, 90% CI [.062, .091]; comparative fit index (CFI) = .95; critical  $N = 235.07$ ; standardized-root-mean-square residual (SRMR) = .055; goodness-of-fit index (GFI) = .96.

