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Perception of specific military skills – the impact of perfectionism and self-efficacy

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Abstract: We investigated the development of specific military skills in Norwegian cadets during the three-year military academy training as well as the impact of perfectionism and self-efficacy on the development of these skills. Latent growth-curve models were performed with perfectionism as a time-invariant predictor and with self-efficacy as a time-varying predictor. There were significant increases in the Individual Coping Capacity (ICC) and Cooperation in Difficult Situations (CDS) subscales but not in the Motivation to Achievement (MA) subscale. The initial skill levels were not related to the growth of the skills. Both adaptive and maladaptive perfectionism predicted initial values of ICC and CDS, explaining 5% of the variance in the initial ICC levels and 12% of the variance in the initial CDS levels. Perfectionism variables did not explain the development of the three types of military skills over time. Moreover, self-efficacy significantly predicted ICC at all time points and CDS and MA at all time points except at T3. We therefore concluded that cadets with high adaptive perfectionism scores are likely to have higher initial skill levels and that self-efficacious cadets are expected to show a greater development of military skills during military academy training.

1 Introduction

Identifying the personal determinants of performance and success as officers is a key challenge for the armed forces (Sellman et al. 2010) and is crucial in order to optimize recruitment and the overall outcome of military training programs (Fosse et al. 2015). For many years, the major focus in military psychological research has been the study of stressors and their impact on stress reactions and impaired performance (Moldjord et al. 2015), but some studies have also found that soldiers may increase their performance as a result of experienced stressors (Driskell et al. 2006). It has been documented that as a coping strategy, social support has had a positive impact on military performance (Hall 2009; Limbert 2004; Milgram et al. 1989; Moldjord et al. 2015; Overdale and Gardner 2012). The Big Five personality factors and hardiness are also factors that have been shown to predict leader performance in the military (e.g., Bartone et al. 2009).

Studies have further indicated that the relationship between personality factors and performance may be mediated by self-efficacy beliefs. Fosse et al. (2015) found that self-efficacy was a partial mediator for the relationship between the Big Five conscientiousness domain and military performance. Personality traits and self-efficacy have both been found to affect performance but are assumed to operate on different levels. Personality traits are regarded as describing the inherent character of a person (McCrae and Costa 1999), whereas self-efficacy describes how the person regulates his or her behavior when interacting with the environment (Bandura 1997). Self-efficacy is assumed to develop through perceived ability, feedback, and reflection, which then regulate behavior accordingly (Bandura 1994, 1997); self-efficacy

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may hence mediate and allow inherent personality traits to be expressed in specific behavior (Fosse et al. 2015).

1.1 Specific military skills and the development of military skills

The ideal conduct of military duties requires abilities such as being able to handle stress and bearing with uncertainty in different situations. The primary focus of military training is the building of confidence and high standards of military performance to endow the soldiers with the ability to cope with combat contexts and complete their missions (Driskell et al. 2006; Krueger 2008). In preparations for specific deployments, military personnel are trained in the skills needed to cope with that particular mission (Delahaj et al. 2006). Specific military skills are thus closely related to operational and combat tasks, which often demand coping with stress and decision-making skills under pressure, and specific military skills have thus been suggested to be the core elements of operational conduct (Johansen et al. 2014).

Solberg (2007) developed an instrument to measure specific military skills intended to measure the skills and abilities required under operational and combat circumstances. The instrument measures specific military skills by way of self-report and is more accurately a measure of perceived specific military skills. The instrument comprises three subscales: Individual Coping Capacity (ICC), Cooperation in Difficult Situations (CDS), and Motivation to Achievement (MA). These factors are all regarded as important skills in military operations. The enhancement of military performance and skills can be achieved by improving either selection procedures so that individuals who possess the desirable attributes and traits are selected for military training or the training of desirable skills and qualities.

Although research on military performance has expanded during the past few years, less research has been carried out on the specific military skills needed to obtain successful performance and especially what enhances the development of these military skills. A study on specific military skills found that operational identity predicted 6% of the variance in these specific military skills, whereas personality traits explained as much as 42% of the variance in specific military skills (Johansen et al. 2014). Emotional stability, intellect/openness, and hardiness were found to be significant individual predictors of specific military skills. Intellect/openness was the strongest predictor of specific military skills, and it has been suggested that this reflects the importance of the ability to use creative and perhaps unorthodox

approaches in ambiguous conditions with a high degree of uncertainty (Johansen et al. 2014). Since intellect/openness implies intellectual curiosity, openness to new ideas and a willingness to try new approaches (Costa and McCrae 1992), openness has been suggested to facilitate learning and adaptability, which are valuable qualities in military training (Johansen et al. 2014). Emotional stability may also contribute to the development of specific military skills because these skills are closely related to coping with stress and handling decision-making under stressful situations (Johansen et al. 2014). In addition to predict specific military skills, hardiness has also been found to be related to leadership skills and leadership performance in both theoretical and practical military contexts (Bartone et al. 2009; Eid and Morgan 2006). Because most studies in this field have been cross-sectional, longitudinal studies are warranted in order to make assumptions about the development of specific military skills.

Knowledge about factors affecting the training and development of military skills is of paramount importance for the armed forces in order to optimize the training in the military academies and subsequently enhance operational readiness. Several studies have identified both personality traits and self-efficacy beliefs as predictors of academic and work performance (Barrick and Mount 1991; Judge et al. 2007; Poropat 2009; Salgado 1998), and there are reasons to believe that these factors will also affect the development of military skills.

Realistic practical training, as well as exposure, has been shown to have a significant impact on cadets' skills and ability to cope with interrogation in a simulated prisoner-of-war exercise, in which those who participated in the practical training showed significantly better results compared to those with only theoretical preparations (Laberg et al. 2000). The positive effect of pretraining was explained by two mechanisms: the development of effective schemas (i.e., mental representations) for the situation and higher self-efficacy expectations that assisted them in coping. Self-efficacy beliefs have been suggested to play an important role in the actual coping ability in extreme situations in which expectations of success are highly related to the outcome in the specific situation (Bandura 1982, 1997, 2014).

Previous researches on personality traits in relation to military selection have primarily focused on personality variables such as the Big Five and hardiness (Hystad et al. 2011; Johansen et al. 2014), although other personality traits/variables may also have importance. One such factor could be adaptive perfectionism. Because adaptive perfectionism has been found to contribute to greater achievement and

motivation (Accordino et al. 2000; Hamachek 1978), and to be associated with personal control, resourcefulness, self-esteem, and adaptive learning strategies (Flett et al. 1994; Flett et al. 1991a, 1991b; Mills and Blankstein 2000), we assumed that adaptive perfectionism may be relevant in relation to the development of military skills.

1.2 Perfectionism

Perfectionism can be defined as “the striving for flawlessness” (Flett and Hewitt 2002, p. 5). This trait can be viewed as adaptive in a military context, where preciseness is emphasized as extremely important (The Norwegian Defence University College 2014). In military training, in which drilling is important in order to make certain behaviors automatic and rapid (Flin 1996), one may expect a perfectionist to strive for more precision and to show greater endurance in the pursuit of perfection (e.g., to train more) and hence be able to perform the drilled exercise with greater precision and less flaws compared to a non-perfectionist. Thus, perfectionism may be a particular adaptive trait within a military context. On the other hand, military skills often involve coping with stress and decision-making under high degrees of uncertainty in combat situations, so one may assume that perfectionism and striving for flawlessness could be maladaptive or counterproductive in such situations.

There has been little systematic study of perfectionism among military personnel. Among the general population, perfectionism has previously been viewed as a positive factor in adjustment or achievement (Hamachek 1978) but has also been linked to negative outcomes such as guilt, shame, feelings of failure, indecisiveness, procrastination, and low self-esteem (Flett et al. 1989; Pacht 1984). Most researchers in the field have now come to recognize that perfectionism is a multidimensional construct where the different dimensions have distinct prediction patterns, e.g., having positive or negative aspects (Bieling et al. 2004; Chang 2000; Enns et al. 2001; Terry-Short et al. 1995). Adaptive perfectionism is associated with (high) standards modified in accordance with the situation and matched to the person’s limitations and strengths, striving for success, a sense of self that is independent of performance, the timely completion of tasks, and balanced thinking. These attributes are also considered to be important in a military context. One type of adaptive perfectionism has been labeled as self-oriented perfectionism, which is defined as unrealistic high standards and perfectionistic motivation for the self (Hewitt and Flett 1991). Self-oriented perfectionism has shown a strong correlation with personality

traits such as achievement striving, dutifulness, and self-discipline (Hill et al. 1997). These factors are also considered to be important in military training. Adaptive perfectionism has further been identified as a likely antecedent of effective coping, in which the individual’s perfectionistic standards are assumed to lead to the effective regulation of one’s behavior and hence more effective coping (Gaudreau and Antl 2008).

Socially prescribed perfectionism refers to the belief that significant others expect oneself to be perfect (Hewitt and Flett 1991), and this dimension of perfectionism is associated with excessive concerns over mistakes and has also been linked to maladjustment (Slaney et al. 2002). Consequently, socially prescribed perfectionism is often denoted as maladaptive perfectionism. Higher levels of socially prescribed perfectionism is further associated with more severe forms of psychopathology, and socially prescribed perfectionism incorporates perceptions of disturbed social relations, as well as elements of learned helplessness and a-motivation (Hewitt et al. 1991). Maladaptive perfectionism is associated with inflexibly high standards, which are often beyond what is expected, such as fear of failure, a focus on avoiding errors, a sense of self-worth dependent on performance, and a black and white thinking pattern (perfection vs. failure) (Enns and Cox 2002). These attributes may be assumed as less adaptive in a military context.

Based on what is presented earlier and because self-oriented perfectionism is often associated with perseverance and effort and potentially with a consecutive performance, such an endorsement might be adaptive from the point of developing military competence. If high levels of self-oriented perfectionism are associated with striving for better quality on a training task and getting better at doing the task correctly without flaws, one may therefore assume adaptive perfectionism to have a positive impact on the development of specific military skills, whereas high levels of maladaptive perfectionism can be assumed to have a negative impact. However, for individuals characterized by high levels of adaptive perfectionism, there may still be a cost to well-being in the striving for perfection.

1.3 Self-efficacy

While perfectionism is viewed as a personality trait and is assumed to be relatively stable across time and situations, self-efficacy is a more situation-specific variable that has been shown to predict coping behavior when facing challenging situations and environmental demands (Bandura 1986, 1989; Jerusalem 1990). Self-efficacy refers to the

beliefs an individual holds in his or her own capability to organize, function and exercise control over events that affect his or her life (Bandura 1997). Self-efficacy has been found to play a key role in stress reactions and is related to the quality of coping in stressful and threatening situations (Bandura 1988, 1997; Lazarus and Folkman 1984). As military operations usually involve high degrees of stress and possibly threatening situations, the levels of self-efficacy will probably affect how soldiers handle and cope with stress in military combat.

Social cognitive theory has identified self-efficacy as the most powerful self-regulatory mechanism in affecting behavior (Bandura 1997), and several studies have demonstrated that task-specific efficacy beliefs are crucial in the prediction of performance in a given situation (Stajkovic and Luthans 1998). Self-efficacy has repeatedly been shown to be related to task performance in a variety of settings (Tannenbaum et al. 1991), e.g., leadership self-efficacy has been shown to mediate leader effectiveness in military contexts (McCormick 2001; Ng et al. 2008). As personality research has highlighted the importance of motivational processes and self-efficacy is a central motivational construct in behavioral prediction, Ng et al. (2008) proposed that leadership self-efficacy is a key motivational mechanism that links leaders' broad personality traits to leader effectiveness. Similarly, we may expect that military cadets' self-efficacy is a central motivational mechanism in the training of specific military skills, linking personality traits such as perfectionism to military skill performance. Consequently, one may expect that both levels of self-efficacy and perfectionism will affect the development of military skills, e.g., cadets with greater levels of self-efficacy and adaptive perfectionism will show a greater improvement of military skills during military academy training.

1.4 Aims and hypotheses

The aim of the present study was threefold. First, we wanted to explore the stability of specific military skills, i.e., how ICC, CDS, and MA develop during three years of training in a military academy. We hypothesized that three years of training in the academy will produce a positive increase in these skills over the three-year period. Second, we wanted to investigate whether the initial levels of adaptive and maladaptive perfectionism in cadets impact the development of military skills over time. We hypothesized that the cadets scoring high on adaptive perfectionism prior to training will show a greater positive development on military skills during the three years of training at the military academy.

Third, we wanted to investigate whether the cadets' levels of self-efficacy impact the levels of specific military skills. We hypothesized that levels of self-efficacy will predict levels of military skills over the three years.

2 Methods

2.1 Sample and procedure

The data for this study were collected as part of the Norwegian Military Academy Study, 2007–2011. Cadets attending the three different military academies in Norway (the Naval Academy, the Air Force Academy, and the Army Academy) were selected on both physical and psychological parameters, with the aim of the Norwegian Military Academy Study being to gain comprehensive knowledge about the cadet's development on a range of physiological and psychological measures during their three-year military academy education program. A total of 330 cadets from two different cohorts were asked to participate, and a total of 286 cadets (response rate of 86.7%) completed the self-report questionnaire at baseline (T1) during the first week of school. The majority of the cadets were men (258 men vs. 28 women), ranging in age from 19 to 37 years ($M = 23.2$ years, $SD = 2.92$). The cadets were asked to respond to the questionnaire on three subsequent occasions during their three-year education: at the end of the first year (T2), at the end of the second year (T3), and at the end of the third year (T4). At T2, 235 cadets had completed the questionnaire (17.8% dropout). At T3, 162 cadets completed the perfectionism measure (31.1% dropout from T2), and finally at T4, 159 cadets completed the perfectionism measure (1.9% dropout from T3).

The study was approved by the Norwegian Social Science Data Service, and participation in the study was voluntary.

2.2 Measures

Specific military skills were measured by the self-report instrument Military Skills and Ability (MSA) (Solberg 2007), which comprises measures of the particular skills and abilities required under operational and combat circumstances. The instrument contains 20 statements rated on a Likert scale ranging from 1 (very bad) to 5 (very good), in which respondents evaluate their handling of military challenges. The MSA comprises three subscales: ICC

(e.g., “Keeping a cool head in stressful situations” or “My ability to handle stress and difficult situations”), CDS (e.g., “Willingness to act on command in emergency situations” or “My ability to motivate and inspire others in difficult situations”), and MA (e.g., “My motivation to participate in peacekeeping operations abroad”). The analyses were based on the scores on the subscales, and former studies have revealed a satisfactory internal consistency, with a Cronbach’s alpha >0.70 (Laberg et al. 2002; Moldjord et al. 2015; Solberg 2007).

2.3 Perfectionism

Adaptive and maladaptive perfectionism was measured using two dimensions/subscales of the Multidimensional Perfectionism Scale (MPS; Hewitt and Flett 1991): self-oriented perfectionism and socially prescribed perfectionism. Each subscale contained 15 items, in which respondents were asked to indicate to what extent they disagree/agree on a 7-point Likert scale (1 – totally disagree and 7 – totally agree). Examples of items from the self-oriented subscale are “When I am working on something, I cannot relax until it is perfect” and “One of my goals is to be perfect in everything I do”, while examples from the socially prescribed subscale include “I find it difficult to meet others’ expectations of me” and “Anything that I do that is less than excellent will be seen as poor work by those around me”.

2.4 Self-efficacy

In order to measure self-efficacy, a 5-item self-efficacy scale specifically developed to measure self-efficacy in a military context was used (Buch et al. 2015). The use of general self-efficacy instruments was discouraged, with Bandura (2012, p. 15) arguing and stating that “there is no single all-purpose measure of self-efficacy with a single validity coefficient” and general decontextualized measures of self-efficacy usually bear a weak relationship to the domain-related self-efficacy beliefs and to behavior and are consequently less predictive, respectively. Hence, this specific self-efficacy measure was developed to capture self-efficacy beliefs regarding the ability to successfully complete the military training education at the military academy. Items were designed to measure the perceived capability to manage process activities likely to be of importance, such as managing tough times, making it through one’s studies and performing well. Sample items included “will manage to

complete the military training” and “will achieve a result I can be proud of”. Respondents indicated how much they agree/disagree on a 7-point Likert scale, ranging from 1 (totally disagree) to 7 (totally agree). Previous studies have reported a satisfactory internal consistency, with Cronbach’s alphas ranging from 0.83 to 0.89 (Buch et al. 2015; Fosse et al. 2015).

2.5 Statistical analyses

Latent growth-curve models (LGCMs) within a structural equation modeling (SEM) framework (Rabe-Hesketh and Skrondal 2012) were used to explore whether cadets’ specific military skills develop during their time at the military academy. Separate LGCMs were estimated for the three skill dimensions of ICC, CDS, and MA. Our starting point in each analysis was a simple growth-curve model that estimated latent intercept and latent slope growth factors. These are known as fixed effects, as they summarize the average initial level (intercept) and the overall growth trajectory (slope). To identify the intercept, all loadings from the latent variable to the observed skills variables were constrained to 1. The observed skill variables were also regressed on the latent slope variable, with loadings fixed to the time point t_i (where $i = 0, 1, 2, \text{ and } 3$).

LGCMs also estimate the variance of the fixed effects, known as *random effects*. These random effects summarize the individual differences from the overall growth trajectory and the average intercept. A significant variation around the fixed effects allows us to explore covariates that can help us explain the variation. In this study, we included self-oriented perfectionism and socially prescribed perfectionism as time-invariant predictors of both the latent intercept and slope. They are time invariant because we believe perfectionism to be a relatively stable characteristic that stays constant across time points. Conversely, self-efficacy was included as a time-varying predictor, thereby allowing self-efficacy to have a different effect at each time point.

Figure 1 presents a diagram of our full LGCM. The LGCM analyses were performed using Stata 13 with the full-information maximum likelihood estimator to be able to use all the available data (Arbuckle 1996). Stata does not give a z-value for the variance components that can be used for significance testing because of the boundary issue associated with the estimates (i.e., the variance cannot be less than zero) (Acock 2013). However, 95% confidence intervals (CIs) were computed, which were just as informative, if not more so, as a conventional *p*-value. CIs were used *in lieu* of *p*-values in all text and tables that describe the LGCM analyses.

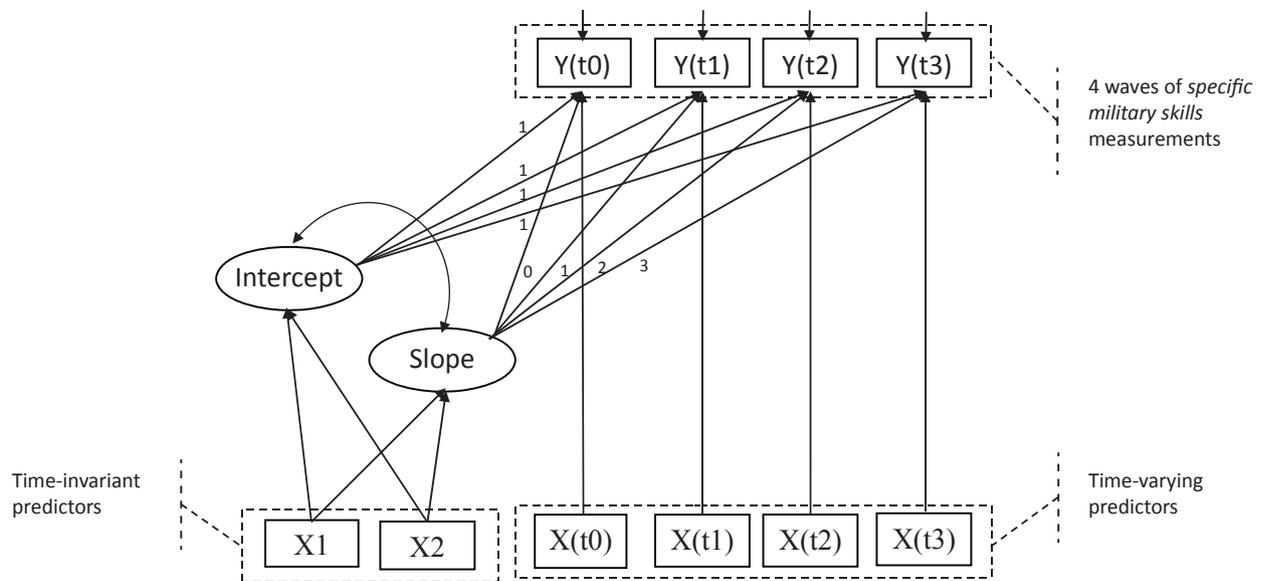


Fig. 1: Diagram of the proposed LGCM with time-invariant and time-varying covariates. The four waves of military skill measurements include ICC, CDS, and MA. Time-invariant predictors are self-oriented and socially prescribed perfectionism. Time-varying predictors are self-efficacy measured at each time point.

3 Results

3.1 Preliminary analyses

Confirmatory factor analyses (CFAs) were conducted on all measures and time points to check for construct validity. Specific military skills were treated as correlated three-factor models, perfectionism was treated as a two-factor model, and self-efficacy was treated as a one-dimensional factor model. A summary of the results from these factor analyses is presented in Table 1.

For specific military skills, all indicators loaded onto their parent factor at Time 1 (mean $\lambda = 0.60$, range: 0.32–0.91), Time 2 (mean $\lambda = 0.61$, range: 0.31–0.94), Time 3 (mean $\lambda = 0.60$, range: 0.35–0.92), and Time 4 (mean $\lambda = 0.62$, range: 0.25–0.95), and all loadings were statistically significant. The fit indices shown in Table 1 all point toward less than perfectly fitting models based on the usual recommendations of $RMSEA \leq 0.08$ and $CFI \geq 0.90$ (Kline 1998; McDonald and Ho 2002). The modification indices suggested that some improvements in model fit could be gained by removing some factor loadings or allowing for cross-loadings. Nevertheless, we chose not to do any changes, because there was no consistent pattern to the suggested modifications across measurement occasions. The reliability coefficients (Cronbach's alpha) for ICC at the four measurement points were 0.83, 0.83, 0.83, and 0.84; for CDS, they were 0.67, 0.69, 0.71, and 0.75 and for MA, they were 0.78, 0.82, 0.78, and 0.76.

One item belonging to the socially prescribed perfectionism dimension did not have a statistically significant factor loading. After removing this item, the two-factor model revealed an acceptable fit judged by $RMSEA = 0.079$ and an average factor loading of $\lambda = 0.51$ (range: 0.24–0.77). However, the comparative fit index (CFI) of 0.72 was less than optimal. The MPS is a well-established and much used instrument (Appelton et al. 2009; Frost et al. 1993; Kilbert et al. 2005), and for the sake of comparability to other studies, we decided not to do any further modifications. The Cronbach's alpha values were satisfactory, with $\alpha = 0.84$ for the self-oriented perfectionism subscale and $\alpha = 0.83$ for the socially prescribed subscale.

Lastly, the CFAs with self-efficacy revealed that one item consistently performed poorly on all measurement occasions (i.e., item 4: “My willingness to obey orders in a threatening situation is ...”). We therefore reran the analyses with this item excluded. The average factor loading at Time 1 was $\lambda = 0.79$ (range: 0.64–0.88), at Time 2 was $\lambda = 0.70$ (range: 0.48–0.93), at Time 3 was $\lambda = 0.79$ (range: 0.67–0.89), and at Time 4 was $\lambda = 0.74$ (range: 0.60–0.87). The CFIs suggested well-fitting models at all time points, although the RMSEAs were less than optimal. The Cronbach's alphas for the four-item measure in the present study were 0.87, 0.80, 0.87, and 0.82 at T0, T1, T2, and T3, respectively.

A one-way analysis of variance (ANOVA) was used to compare participants who contributed data on all

Tab. 1: Confirmatory factor analyses of specific military skills, self-efficacy and perfectionism.

Variables	χ^2	df	<i>p</i>	χ^2/df	CFI	RMSEA	90% CI	
							LL	UL
Specific military skills								
Time 1	284.396	117	<0.001	2.4	0.89	0.070	0.060	0.081
Time 2	320.053	117	<0.001	2.7	0.86	0.084	0.073	0.095
Time 3	276.700	117	<0.001	2.4	0.84	0.090	0.077	0.104
Time 4	231.126	117	<0.001	1.9	0.88	0.078	0.063	0.093
Self-efficacy								
Time 1	13.176	2	0.001	6.59	0.98	0.138	0.074	0.212
Time 2	8.477	2	<0.001	4.24	0.98	0.115	0.043	0.199
Time 3	1.775	2	0.41	0.89	1	0.000	0.000	0.148
Time 4	3.345	2	0.19	1.67	0.99	0.065	0.000	0.182
Perfectionism	1,066.934	376	<0.001	2.84	0.72	0.079	0.074	0.085

Note: CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; LL = lower limit; UL = upper limit.

measurement points (“completers”) with participants who participated at three, two, or one measurement point. The results indicated no statistically significant difference between completers and dropouts on age ($F[3, 291] = 0.30, p = 0.83$). A Pearson’s χ^2 test showed that a larger proportion of women (55%) than men (35%) were among the completers, $\chi^2(1, N = 295) = 4.78, p = 0.03$. It should also be noted that there were very few women altogether ($n = 29$).

The results from three one-way ANOVAs suggested that completers and dropouts differed on the initial ICC ($F[3, 269] = 3.11, p = 0.03$), CDS ($F[3, 244] = 4.01, p = 0.01$), and MA ($F[3, 283] = 6.33, p < 0.001$). Post hoc pairwise comparisons with Bonferroni corrections showed that completers had a higher initial ICC status than those who only participated at T0 (mean difference: 1.92, 95% CI: 0.11–3.37) but not those who participated at two or three measurement points. Completers also had higher initial scores on CDS than both participants who missed two (mean difference: 1.29, 95% CI: 0.09–2.49) or three (mean difference: 1.71, 95% CI: 0.03–3.39) measurement points but not those who missed only one. Finally, the post hoc tests showed that completers scored higher on initial MA than the participants who missed one (mean difference: 0.90, 95% CI: 0.08–1.72), two (mean difference: 1.07, 95% CI: 0.26–1.72), and three measurement points (mean difference: 1.34, 95% CI: 0.25–2.42).

3.2 Growth trajectories

Table 2 presents the results from the unconditional, simple growth-curve models for the three military skill

Tab. 2: Unconditional growth models of specific military skills.

Variables	Unconditional growth model			
	Point estimate	(SE)	95% CI	
			LL	UL
ICC				
Fixed part				
Latent intercept	25.48	(0.19)	25.11	25.84
Latent slope	0.80	(0.07)	0.65	0.94
Random part				
σ^2 intercept	7.91	(0.95)	6.25	10.01
σ^2 slope	0.49	(0.18)	0.24	1.01
$\sigma I - S$ (correlation)	-0.59	(0.35)	-1.28	0.09
				(-0.30)
CDS				
Fixed part				
Latent intercept	25.74	(0.17)	25.40	26.07
Latent slope	0.46	(0.08)	0.31	0.61
Random part				
σ^2 intercept	5.64	(0.84)	4.20	7.56
σ^2 slope	0.45	(0.17)	0.21	0.96
$\sigma I - S$ (correlation)	-0.42	(0.32)	-1.05	0.21
				(-0.26)
MA				
Fixed part				
Latent intercept	12.93	(0.12)	12.69	13.17
Latent slope	0.03	(0.05)	-0.06	0.13
Random part				
σ^2 intercept	3.157	(0.40)	2.467	4.04
σ^2 slope	0.12	(0.07)	0.04	0.37
$\sigma I - S$ (correlation)	-0.10	(0.14)	-0.38	0.18
				(-0.16)

Note: SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit; ICC = Individual Coping Capacity; *I* = intercept; *S* = slope; CDS = Cooperation in Difficult Situations; MA = Motivation to Achievement.

dimensions. Except for MA, the latent slope growth factors were statistically significant in all instances. For ICC, the average growth trajectory of 0.80 (95% CI: 0.65–0.94) means that the expected increase in the ICC for each year is 0.80 points. The associated likelihood ratio of our model of $\chi^2(5) = 6.735$, $p > 0.05$ suggests that this estimated linear trajectory describes our observed data well. The additional measures of fit for the unconditional growth-curve model are presented in the top row of Table 3 (ICC model 1). Similarly, the expected increase in CDS each year was 0.46 (95% CI: 0.31–0.61). The associated model likelihood ratio was $\chi^2(5) = 1.743$, $p > 0.05$ (see CDS model 1 in Table 3 for additional measures of model fit).

Table 2 also shows a statistically significant variance for the random intercepts and random slopes for all three military skill dimensions. The variances around the overall linear slopes are 0.49, 0.45, and 0.12 for ICC, CDS, and MA, respectively. To give this variation some context, consider that the $\sigma^2 = 0.45$ around the slope of 0.46 for CDS equals a standard deviation of 0.67. An approximate 95% CI on the slope will therefore be $0.46 \pm 2 \times 0.67$, an interval of -0.88 to 1.8 . Thus, some individuals are expected to have a negative slope, whereas others are expected to have a relatively steep positive slope.

The covariance between the intercept and slope was nonsignificant in all three simple growth-curve models, hence suggesting that initial levels of military skills are not related to the growth trajectories of the same military skills.

3.3 Perfectionism as a time-invariant predictor

Given the significant variance in the latent intercepts and slopes, we included self-oriented perfectionism and socially prescribed perfectionism as predictors to attempt to explain some of the variations. Both variables were centered on their means to make the intercept a meaningful value (i.e., as the initial skill level for individuals with average levels of perfectionism). The likelihood ratios and measures of the model fit presented in Table 2 (model 2) suggest a good fit to the data for all models. Both self-oriented and socially prescribed perfectionism significantly predicted the intercept for ICC and CDS but not for MA.

The estimates are presented in Table 4 and show that a one-unit increase in self-oriented perfectionism is associated with a 0.6 increase in the initial skill level for ICC, while a one-unit increase in socially prescribed perfectionism is associated with a 0.9 decrease. The estimated initial skill level for individuals' average in perfectionism was 25.5 (i.e., the intercept, which is not shown in Table 4). This means that individuals with a self-oriented perfectionism score one standard deviation (i.e., 0.76) above the mean are estimated to have an initial skill level of $0.6 \times 0.76 = 0.46$ above this value, thus holding levels of socially prescribed perfectionism constant. Similarly, individuals with a socially prescribed perfectionism score one standard deviation (i.e., 0.63) above the mean are estimated to have an initial skill level of

Tab. 3: Measures of model fit.

Models	χ^2	df	p	CFI	RMSEA	90% CI	
						LL	UL
ICC model 1	6.735	5	0.241	0.995	0.034	0.000	0.092
ICC model 2	10.637	9	0.301	0.995	0.024	0.000	0.071
ICC model 3	23.004	21	0.344	0.995	0.018	0.000	0.053
CDS model 1	1.743	5	0.883	1	0.000	0.000	0.039
CDS model 2	4.289	9	0.891	1	0.000	0.000	0.029
CDS model 3	23.469	21	0.319	0.990	0.020	0.000	0.054
MA model 1	5.581	5	0.249	0.998	0.019	0.000	0.084
MA model 2	12.620	9	0.397	.998	0.013	0.000	0.060
MA model 3	24.239	21	0.282	0.990	0.022	0.000	0.055

Notes: CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; LL = lower limit; UL = upper limit; ICC = Individual Coping Capacity; CDS = Cooperation in Difficult Situations; MA = Motivation to Achievement.

Model 1 is an unconditional linear growth-curve model. Model 2 includes time-invariant predictors of the latent intercept and slope. Model 3 includes time-invariant and time-varying predictors.

Tab. 4: Perfectionism as a predictor of the latent intercept and slope.

Regressions	Point estimate	(SE)	95% CI	
			LL	UL
<i>X</i> → <i>I</i>				
ICC				
Perfectionism: socially prescribed	-0.94	0.30	-1.53	-0.34
Perfectionism: self-oriented	0.62	0.26	0.13	1.14
<i>R</i> ²	0.05			
CDS				
Perfectionism: socially prescribed	-1.35	0.26	-1.85	-0.83
Perfectionism: self-oriented	0.46	0.23	0.02	0.90
<i>R</i> ²	0.12			
MA				
Perfectionism: socially prescribed	-0.10	0.20	-0.49	0.29
Perfectionism: self-oriented	0.14	0.17	-0.19	0.46
<i>R</i> ²	0.004			
<i>X</i> → <i>S</i>				
ICC				
Perfectionism: socially prescribed	-0.00	0.12	-0.23	0.23
Perfectionism: self-oriented	0.17	0.11	-0.03	0.38
<i>R</i> ²	0.03			
CDS				
Perfectionism: socially prescribed	0.16	0.12	-0.08	0.40
Perfectionism: self-oriented	0.07	0.11	-0.15	0.29
<i>R</i> ²	0.03			
MA				
Perfectionism: socially prescribed	-0.01	0.08	-0.15	0.14
Perfectionism: self-oriented	0.03	0.07	-0.10	0.17
<i>R</i> ²	0.01			

Notes: SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit; ICC = Individual Coping Capacity; CDS = Cooperation in Difficult Situations; MA = Motivation to Achievement. *X* → *I* denotes the effect of *X* on the latent intercept (*I*). *X* → *S* denotes the effect of *X* on the latent slope (*S*).

25.5 - 0.9 × 0.63 = 24.93, holding self-oriented perfectionism constant. As a result, neither self-oriented perfectionism nor socially prescribed perfectionism seems to have a particularly strong effect on initial ICC scores. This is also corroborated by the *R*² value of .05, showing that the perfectionism variables combined only explained 5% of the variance in the initial skill level.

For CDS, the estimated initial level for individuals' average in perfectionism was 25.7 (not shown in Table 4). A one-unit increase in self-oriented perfectionism is associated with a 0.46 increase in the initial skill level, while a one-unit increase in socially prescribed perfectionism is associated with a 1.35 decrease in the initial skill level. The two perfectionism dimensions combined explained 12% of the variance in the initial skill level (*R*² = 0.12).

None of the perfectionism variables significantly explained variance in any of the latent slopes.

3.4 Self-efficacy as a time-varying predictor

In the final set of models, we added self-efficacy as a time-varying predictor. Unlike perfectionism, self-efficacy was not modeled to influence the overall growth trajectory but instead was allowed to directly influence the military skill dimensions at each time point. In this manner, time-varying predictors were allowed to have a different effect at each wave. The likelihood ratios and measures of the model fit shown in Table 3 (model 3) again suggest good fit to the data for all models. The regression coefficients presented in Table 5 show that self-efficacy significantly

Tab. 5: Self-efficacy as a time-varying predictor of specific military skills.

<i>X</i> → <i>Y</i>	<i>n</i>	Point estimate	(SE)	95% CI		<i>R</i> ²
				LL	UL	
ICC						
Self-efficacy (t0)	286	0.74	0.18	0.40	1.09	0.77
Self-efficacy (t1)	235	0.77	0.13	0.51	1.03	0.63
Self-efficacy (t2)	162	0.75	0.14	0.49	1.02	0.68
Self-efficacy (t3)	159	0.73	0.19	0.36	1.10	0.84
CDS						
Self-efficacy (t0)	286	0.62	0.18	0.27	0.97	0.69
Self-efficacy (t1)	235	0.51	0.13	0.25	0.77	0.49
Self-efficacy (t2)	162	0.40	0.15	0.11	0.69	0.61
Self-efficacy (t3)	159	0.28	0.21	-0.14	0.70	0.71
MA						
Self-efficacy (t0)	286	0.35	0.11	0.14	0.56	0.72
Self-efficacy (t1)	235	0.31	0.08	0.15	0.47	0.68
Self-efficacy (t2)	162	0.27	0.09	0.08	0.45	0.68
Self-efficacy (t3)	159	0.24	0.13	-0.02	0.49	0.78

Notes: SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit; ICC = Individual Coping Capacity; CDS = Cooperation in Difficult Situations; MA = Motivation to Achievement. *X* → *Y* denotes the effects of self-efficacy (*X*) on specific military skills (*Y*) at the different time points (t0 to t3).

predicted ICC at all time points, with estimates ranging between 0.73 and 0.77. Self-efficacious cadets are therefore estimated to be higher in ICC at each time point than what is estimated by the linear growth curve. The effects of self-oriented perfectionism ($b = 0.41$, 95% CI: -0.10 to 0.91) on the latent intercept was rendered nonsignificant once the influence of self-efficacy on ICC at T0 was taken into account.

Self-efficacy also significantly predicted CDS and MA at all time points, with the exception for T3. Point estimates ranged between 0.28 and 0.62 for CDS and between 0.24 and 0.35 for MA (see Table 5), again suggesting that self-efficacious cadets are estimated to be higher in military skills than what is estimated by the linear growth curve. Similar to the analysis of ICC, the effect of self-oriented perfectionism ($b = 0.28$, 95% CI: -0.17 to 0.72) on the latent intercept was rendered nonsignificant once the influence of self-efficacy was taken into account.

4 Discussion

The results of the present study partly supported our hypothesis that perceived military skills improve over a three-year period of military academy training. There was an overall significant improvement in ICC and CDS, but not in MA during the three-year training period, with the greatest improvement found for ICC. The finding that perceived military skills improve after three years of training also confirms previous findings that the rating of military skills improves with experience (Laberg et al. 2002; Widing et al. 2002).

The greater improvement related to the ICC compared to the CDS in the present study may reflect that the development of individual skills is more easily facilitated during military exercises, as such skills do not depend as much on others as cooperation skills do. The fact that there were no significant increases in MA over the three years may reflect that MA is more difficult to facilitate, perhaps because ICC and CDS are more concrete skills compared to MA. The absence of improvement in the MA skills after three years of training may also reflect that the training of MA is not good enough in the military academies. Alternatively, one may assume that the cadets were already highly motivated to achieve when they started the military training, so that a ceiling effect could help explain the absence of improvement.

The results further showed that the initial levels of perceived military skills were not related to differences in the development of military skills over the three years;

those with higher scores on specific military skills at T0 did not show a greater (or less of an) increase in the development of these skills compared to those with lower initial values. This has implications for the selection and training of military personnel. Because those with lower initial skill values do not show a greater improvement in the skills over the three years of training, the initial skill level seems to be important for the end result. The ideal would be to select cadets with high initial scores on perceived military skills before starting at the military academy training.

The second hypothesis that cadets scoring high on adaptive perfectionism will have a greater improvement of perceived military skills over time was not supported. As perfectionism can be considered as a personality trait and such traits are assumed to be relatively stable across time, perfectionism is perhaps more relevant in relation to selection processes than training. Although levels of perfectionism did not significantly predict the slope (the development) of military skills over time, the levels of adaptive (self-oriented) perfectionism was related to the initial military skill level at T0, in which cadets scoring above average on self-oriented perfectionism were more likely to score higher on ICC and CDS (but not on MA). Similarly, cadets scoring high on maladaptive (socially prescribed) perfectionism were more likely to score lower on ICC and CDS. The levels of perfectionism explained 5% of the variance in the initial skill level of ICC and 12% of the variance in the initial skill level of CDS, which is not considered to be a particularly strong effect. Nonetheless, this finding also confirms that the initial skill level of military academy cadets is of high importance.

The third hypothesis that levels of self-efficacy will predict levels of perceived military skills was supported. For the military skill subscales, self-efficacy significantly predicted the ICC scores at all time points and CDS and MA at T0, T1, and T2. This finding is in line with a wide range of previous research confirming that efficacy beliefs are crucial in the prediction of performance (for an overview, see the meta-analysis of Stajkovic and Luthans 1998). According to social cognitive theory, a person's expectations of his or her ability to perform adequate actions in specific situations are believed to be essential to their performance (Bandura 1978, 1997).

Self-efficacy beliefs are assumed to affect performance through several intervening processes (Bandura 1990), e.g., affecting choices of activity or environments, affecting level of motivation, or affecting how much stress one experiences in a threatening situation (Wood and Bandura 1989). One possible explanation for why cadets with a greater self-efficacy exhibited a greater

development of military skills is that self-efficacious cadets expose themselves to a greater extent to new and challenging situations during training. People with a higher self-efficacy have been found to undertake more challenging activities comprising new and creative practices (Bandura 1997; Wood and Bandura 1989) and to approach problem solving in a more innovative way (Phelan and Young 2003). Consequently, self-efficacious cadets may challenge themselves to a larger degree and thus learn more and show a greater development of military skills during the three years of training at the military academy. Self-efficacious cadets may also be more motivated to train and hence achieve a greater skill level. If one also assumes that self-efficacious cadets experience less stress in threatening situations, which is in line with Wood and Bandura (1989), there may be a greater learning potential for cadets with a high self-efficacy, as high stress levels are assumed to negatively affect the level of functioning (Bandura 1988; Lazarus and Folkman 1984) and consequently the ability to learn (LePine et al. 2004).

For ICC, the effect of adaptive (self-oriented) perfectionism was no longer significant when the influence of self-efficacy was taken into account. These results indicate that levels of self-efficacy explain more of the variance in military skills than does perfectionism. The same was true for CDS, with the effect of adaptive perfectionism on the initial scores on CDS no longer being significant when self-efficacy was taken into account. The negative effect of maladaptive perfectionism, however, remained significant for both ICC and CDS. Even after the effect of self-efficacy levels were taken into account, higher levels of maladaptive perfectionism were still associated with lower scores on both subscales at T0. It may therefore not be surprising that socially prescribed (maladaptive) perfectionism, the belief that others have exceptionally high expectations of you, is related to a lower ability to cope with others in difficult situations. High scores on maladaptive perfectionism are related to a fear of failure and a focus on avoiding error and may contribute to excessive levels of stress. Prior studies have found that a balanced stress intensity experience is important for the performance of military skills (Driskell et al. 2006). Training that incorporates no stress or a too high intensity of stress is both likely to be counterproductive (Friedland and Keinan 1992). Stressful experiences can hence possess an opportunity for positive individual growth if they are balanced with stress intensity.

The theory of planned behavior (Ajzen 1991) can also be used to explain the link between maladaptive perfectionism, self-efficacy, and CDS. According to the theory of

planned behavior, an individual's behavioral intentions and behaviors are shaped by the individual's attitudes toward a behavior, along with subjective norms, and perceived behavioral control (Ajzen 1991). Subjective norms refer to the individual's perception of the behavior influenced by the judgments of significant others, whereas behavior control refers to the individual's beliefs about being able to perform the behavior (closely related to self-efficacy). A cadet with maladaptive perfectionism beliefs is likely to perceive that significant others have expectations that are too high (low perceived behavioral control), in combination with low self-efficacy beliefs (subjective norms), which affect their subsequent behavior (poorer CDS skills). Studies of self-fulfilling prophecies demonstrate the strong effect of expectations, as well as the fact that people tend to behave in accordance with the expectations that reference group members hold for them (e.g., Biggs 2009; Eden 1984; Eden et al. 2000). Accordingly, maladaptive perfectionism and the belief that others expect too much of you may result in lower performances and a lower ability to effectively cope with others in difficult situations.

Overall, the results from the present study showed that adaptive perfectionism is related to higher levels of self-reported military skills, whereas maladaptive perfectionism is related to lower levels of self-reported military skills when cadets start their training (at T0). Neither adaptive perfectionism nor maladaptive perfectionism explains any of the variations in the development of military skills. For this reason, perfectionism seems to have a limited effect on learning or the acquisition of new skills. On the other hand, self-efficacy helped explain some of the variations in skill development. With some exceptions, self-efficacious cadets are expected to have higher military skills at most time points than what was estimated as the overall growth curve. This may implicate that the stimulation of cadets' self-efficacy is an important component in developing military skills. Because self-efficacy is usually situation specific and may vary from time to time, it seems to be important to actively stimulate cadets' self-efficacy throughout the military academy training.

4.1 Strengths, limitations, and future directions

Most studies are cross-sectional and only measure subjects' responses at one time point. A strength of the present study is the longitudinal design, in which the cadets of three military academies were followed throughout the

military academy college and measured before starting the college, and subsequently after completing each of the three years, with four time points in total.

A possible limitation of the present study is that the measures of military skills in this study were based on self-report because self-reported skills may differ from “actual” military skills. The use of self-report measures may increase common method variance because the same rater responds to the items in a single questionnaire. However, in a study of US soldiers, a satisfactory concordance was found when self-reports were compared with unit records of soldier performance (Adler et al. 2005), which may indicate that the self-reported skills of soldiers can be trustworthy. In order to try to avoid socially desirable answers, participation in the present study was voluntary, the cadets were assured of the survey’s strict confidentiality, and the results were to solely be used for research purposes and not for future selection. Still, future studies should aim at including objective measures of military skills and performance in order to reduce the common-method variance.

As with most longitudinal studies, dropout was a significant problem in the present study, so attrition may be a possible limitation that affected the power of the analyses in the present study. Analyses of dropouts vs. completers showed no significant age differences but that a greater proportion of women were among the completers. Moreover, the dropout analyses showed that completers had higher initial scores on all military skill subscales compared to those who missed one, two, or three measurement points, which may have affected the results (e.g., the nonsignificant overall improvement in MA over the three years). The most pronounced dropout was from T1 to T2, in which 31.1% of cadets dropped out. After the first year of military training (T1), many cadets were transferred to other geographical locations for additional education, which may help explain the high attrition rates at this point (T2). Some cadets were also absent from the academies because they were on exercises at both sea and land; the attrition can therefore be attributed to some degree to difficulties in gathering respondents in time for testing. We would consequently recommend future research to include some means of follow-up for those who leave the academy or who are otherwise absent during the test periods.

The sample in the present study consisted of predominantly male cadets from three military academies in Norway, so the generalizability may be restricted and the findings may be specific for this population. Thus, the generalizability of the results should be tested in other cultures, countries, and contexts.

5 Conclusions

We conclude that training in a military academy is likely to increase specific military skills over a three-year period and that cadets with high scores on adaptive perfectionism are likely to have higher initial skill levels, while cadets with high scores on maladaptive perfectionism are likely to have lower initial skill levels. Levels of perfectionism do not seem to affect the development of the military skills over the three years of military academy training, although levels of self-efficacy not only predict initial levels of military skills but also skill levels at the end of each year at the military academy. The effect of self-efficacy was stronger for the ICC compared to the CDS and the MA.

Conflicts of interest

The authors declare no conflicts of interest.

References

- Accordino, D. B., Accordino, M. P., & Slaney, R. B. (2000). An investigation of perfectionism, mental health, achievement, and achievement motivation in adolescents. *Psychology in the Schools, 37*, pp. 535-545.
- Acock, A. C. (2013). *Discovering Structural Equation Modeling Using Stata*, Revised edn. Stata Press, College Station, TX.
- Adler, A. B., Thomas, J. L., & Castro, C. A. (2005). Measuring up: Comparing self-reports with unit records for assessing soldier performance. *Military Psychology, 17*, pp. 3-24.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, pp. 179-211.
- Appelton, P. R., Hall, H. K., & Hill, A. P. (2009). Relations between multidimensional perfectionism and burnout in junior-elite male athletes. *Psychology of Sport and Exercise, 10*, pp. 457-465.
- Arbuckle, J. L. (1996). Full information estimation in the presence of incomplete data. In: Marcoulides, G. A., & Schumacker, R. E. (eds.), *Advanced Structural Equation Modeling: Issues and Techniques*. Lawrence Erlbaum, Mahwah, NJ, pp. 243-277.
- Bandura, A. (1978). Reflections on self-efficacy. *Advances in Behavioral Research and Therapy, 1*, pp. 237-269.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), pp. 122-147.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Prentice Hall, Englewood Cliffs, NJ.
- Bandura, A. (1988). Self-efficacy conception of anxiety. *Anxiety Research, 1*(2), pp. 77-98.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*, pp. 1175-1184.
- Bandura, A. (1990). Reflections on nonability determinants of competence. In: Sternberg, R. J., & Kolligian, J. J. (eds.),

- Competence Considered*. Yale University Press, New Haven, CT, pp. 315-362.
- Bandura, A. (1994). Self-efficacy. In: Ramachandran, V. S. (ed.), *Encyclopedia of Human Behavior*, Vol. 4. Academic Press, New York, pp. 71-78.
- Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. W. H. Freeman and Company, New York.
- Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management*, 38, pp. 9-44.
- Bandura, A. (2014). Exercise of personal agency through the self-efficacy mechanism. In: Schwarzer, R. (ed.), *Self-Efficacy. Thought Control of Action*, 2nd edn. Routledge, New York, pp. 3-38.
- Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: a meta-analysis. *Personnel Psychology*, 44, pp. 1-26.
- Bartone, P., Eid, J., Johnsen, B. H., Laberg, J. C., & Snook, S. A. (2009). Big Five personality factors, hardiness and social judgement as predictors of leader performance. *Leadership & Organization Development Journal*, 30, pp. 498-521.
- Bieling, P. J., Israeli, A. L., & Antony, M. M. (2004). Is perfectionism good, bad, or both? Examining models of the perfectionism construct. *Personality and Individual Differences*, 36, pp. 1373-1385.
- Biggs, M. (2009). Self-fulfilling prophecies. In: Hedström, P., & Bearman, P. (eds.), *The Oxford Handbook of Analytical Sociology*. Oxford University Press, Oxford, pp. 294-314.
- Buch, R., Säfvenbom, R., & Boe, O. (2015). The relationship between academic self-efficacy, intrinsic motivation, and perceived competence. *Journal of Military Studies*, 6(1), pp. 19-35.
- Chang, E. C. (2000). Perfectionism as a predictor of positive and negative psychological outcomes: Examining a mediation model in younger and older adults. *Journal of Counseling Psychology*, 47(1), pp. 18-26.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual*. Psychological Assessment Resources, Odessa, FL.
- Delahaij, R., Gaillard, A. W. K., & Soeters, J. M. L. M. (2006). *Stress Training and the New Military Environment*. Retrieved from Neuilly-sur-Seine, France. Available at <http://www.nato.int/abstracts.asp>
- Driskell, J. E., Salas, E., & Johnston, J. H. (2006). Decision making and performance under stress. In: Britt, T., Castro, C., & Adler, A. B. (eds.), *Military Life: The Psychology of Serving in Peace and Combat (Vol. 1. Military Performance)*. Praeger, Westport, CT, pp. 128-154.
- Eden, D. (1984). Self-fulfilling prophecy as a management tool: Harnessing Pygmalion. *Academy of Management Review*, 9, pp. 64-73.
- Eden, D., Geller, D., Gewirtz, A., Gordon-Terner, R., Inbar, I., Liberman, M., et al. (2000). Implanting Pygmalion leadership style through workshop training: Seven field experiments. *The Leadership Quarterly*, 11, pp. 171-210.
- Eid, J., & Morgan, C. A. (2006). Dissociation, hardiness and performance in military cadets participating in survival training. *Military Medicine*, 171, pp. 436-442.
- Enns, M. W., & Cox, B. J. (2002). Perfectionism: A critical analysis. In: Flett, G. L., & Hewitt, P. L. (eds.), *Perfectionism: Theory, Research, and Treatment*. American Psychological Association, Washington DC, pp. 33-62.
- Enns, M. W., Cox, B. J., Sareen, J., & Freeman, P. (2001). Adaptive and maladaptive perfectionism in medical students: A longitudinal investigation. *Medical Education*, 35, pp. 1034-1042.
- Flett, G. L., & Hewitt, P. L. (2002). *Perfectionism: Theory, Research, and Treatment*. American Psychological Association, Washington DC.
- Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Dynin, C. (1994). Dimension of perfectionism and Type A behavior. *Personality and Individual Differences*, 16, pp. 477-485.
- Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Mosher, S. W. (1991a). Perfectionism, self-actualization and personal adjustment. *Journal of Social Behavior and Personality*, 6, pp. 147-160.
- Flett, G. L., Hewitt, P. L., Blankstein, K. R., & O'Brien, S. (1991b). Perfectionism and learned resourcefulness in depression and self-esteem. *Personality and Individual Differences*, 12, pp. 61-68.
- Flett, G. L., Hewitt, P. L., & Dyck, D. G. (1989). Self-oriented perfectionism, neuroticism, and anxiety. *Personality and Individual Differences*, 10, pp. 731-735.
- Flin, R. (1996). *Sitting in the Hot Seat: Leaders and Teams for Critical Incident Management*. John Wiley and Sons, Chichester, UK.
- Fosse, T. H., Buch, R., Sävenbom, R., & Martinussen, M. (2015). The impact of personality and self-efficacy on academic and military performance: the mediating role of self-efficacy. *Journal of Military Studies*, 6(1), pp. 1-19.
- Friedland, N., & Keinan, G. (1992). Training effective performance in stressful situations: Three approaches and implications for combat training. *Military Psychology*, 4(3), pp. 157-174.
- Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences*, 14, pp. 119-126.
- Gaudreau, P., & Antl, S. (2008). Athletes' broad dimensions of dispositional perfectionism: Examining changes in life satisfaction and the mediating role of sport-related motivation and coping. *Journal of Sport and Exercise Psychology*, 30, pp. 356-382.
- Hall, J. C. (2009). Utilizing social support to conserve the fighting strength: Important considerations for military social workers. *Smith College Studies in Social Work*, 79, pp. 335-343.
- Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology*, 15, pp. 27-33.
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, 60(3), pp. 456-470.
- Hewitt, P. L., Flett, G. L., Turnbull-Donovan, W., & Mikail, S. F. (1991). The Multidimensional Perfectionism Scale: Reliability, validity, and psychometric properties in psychiatric samples. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 3(3), pp. 464-468.
- Hill, R. W., McIntire, K., & Bacharach, V. R. (1997). Perfectionism and the big five factors. *Journal of Social Behavior and Personality*, 12, pp. 257-270.
- Hystad, S. W., Eid, J., Laberg, J. C., & Bartone, P. T. (2011). Psychological hardiness predicts admission into Norwegian Military Officer Schools. *Military Psychology*, 23, pp. 381-389.

- Jerusalem, M. (1990). *Personal Resources, Vulnerability, and Stress Experience*. Högreffe, Göttingen, Germany.
- Johansen, R. B., Laberg, J. C., & Martinussen, M. (2014). Military identity as predictor of perceived military competence and skills. *Armed Forces & Society, 40*(3), pp. 521-543. doi: 10.1177/0095327X13478405.
- Judge, T. A., Jackson, C. L., Shaw, J. C., Scott, B. A., & Rich, B. L. (2007). Self-efficacy and work-related performance: The integral role of individual differences. *Journal of Applied Psychology, 92*(1), pp. 107-127. doi: 10.1037/0021-9010.92.1.107.
- Kilbert, J. J., Langhinrichsen-Rohling, J., & Saito, M. (2005). Adaptive and maladaptive aspects of self-oriented versus socially prescribed perfectionism. *Journal of College Student Development, 46*, pp. 141-156.
- Kline, R. B. (1998). *Principles and Practice of Structural Equation Modeling*. The Guilford Press, New York, NY.
- Krueger, G. P. (2008). Contemporary and future battlefields: Soldiers stress and performance. In: Hancock, P. A., & Szalma, J. L. (eds.), *Performance Under Stress (Vol. 2 Operational)*. Ashgate, Aldershot, UK, pp. 19-44.
- Laberg, J. C., Eid, J., Johnsen, B. H., Eriksen, B. S., & Zachariassen, K. K. (2000). Coping with interrogations. In: McCann, C., & Pigeau, P. (eds.), *The Human in Command: Exploring the Modern Military Experience*. Kluwer Academic/Plenum Publishers, New York, pp. 333-344.
- Laberg, J. C., Johnsen, B. H., Eid, J., & Brun, W. (2002). *Mental preparedness during international operations*. KFOR Survey. Report 1. Naval Force Academy/University of Bergen.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. Springer, New York.
- LePine, J. A., LePine, M. A., & Jackson, C. L. (2004). Challenge and hindrance stress: relationships with exhaustion, motivation to learn, and learning performance. *Journal of Applied Psychology, 89*(5), pp. 883-891.
- Limbirt, C. (2004). Psychological well-being and job satisfaction amongst military personnel on unaccompanied tours: the impact of perceived social support and coping strategies. *Military Psychology, 16*(1), pp. 37-51.
- McCormick, M. J. (2001). Self-efficacy and leadership effectiveness: applying social cognitive theory to leadership. *The Journal of Leadership Studies, 8*(1), pp. 22-33.
- McCrae, R. R., & Costa, P. T. Jr. (1999). The Five-Factor Theory of Personality. In: John, O. P., Robins, R. W., & Pervin, L. A. (eds.), *Handbook of Personality*, 3rd edn. The Guilford Press, New York, pp.159-181.
- McDonald, R. P., & Ho, M.-H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7*, pp. 64-82.
- Milgram, N. A., Orensten, R., & Zafir, E. (1989). Stressors, personal resources and social support in military performance during war. *Military Psychology, 1*, pp. 185-199.
- Mills, J. S., & Blankstein, K. R. (2000). Perfectionism, intrinsic versus extrinsic motivation and motivated strategies for learning: a multidimensional analysis of university students. *Personality and Individual Differences, 29*, pp. 1191-1204.
- Moldjord, C., Laberg, J. C., & Rundmo, T. (2015). Stressors, social support and military performance in a modern war scenario. *Journal of Military Studies, 6*(1), pp. 1-18.
- Ng, K. Y., Ang, S., & Chan, K. Y. (2008). Personality and leader effectiveness: a moderated mediation model of leadership self-efficacy, job demands, and job autonomy. *Journal of Applied Psychology, 93*(4), pp. 733-743.
- Overdale, S., & Gardner, D. (2012). Social support and coping adaptability in initial military training. *Military Psychology, 24*, pp. 312-330.
- Pacht, A. R. (1984). Reflections of perfection. *American Psychologist, 39*, pp. 386-390.
- Phelan, S., & Young, A. M. (2003). Understanding creativity in the workplace: An examination of individual styles and training in relation to creative confidence and creative self-leadership. *Journal of Creative Behavior, 37*, pp. 266-281.
- Poropat, A. E. (2009). A meta-analysis of the five factor model of personality and academic performance. *Psychological Bulletin, 135*(2), pp. 322-338. doi: 10.1037/a0014996.
- Rabe-Hesketh, S., & Skrondal, A. (2012). *Multilevel and Longitudinal Modeling Using Stata. Volume 1: Continuous Responses*, 3rd edn. Stata Press, College Station, TX.
- Salgado, J. F. (1998). Big five personality dimensions and job performance in army and civil occupations: A European perspective. *Human Performance, 11*(2/3), pp. 271-288.
- Sellman, W. S., Born, D. H., Strickland, W. J., & Ross, J. J. (2010). Selection and classification in the U.S. military. In: Farr, J. L., & Tippins, N. T. (eds.), *Employee Selection*. Routledge, New York, pp. 679-699.
- Slaney, R. B., Rice, K. G., & Ashby, J. S. (2002). A programmatic approach to measuring perfectionism: The Almost Perfect Scales. In: Flett, G. L., & Hewitt, P. L. (eds.), *Perfectionism: Theory, Research, and Treatment*. American Psychological Association, Washington, DC, pp. 63-88.
- Solberg, O. A. (2007). FN-observatøren: Stressorer og reaksjoner hos norske FN-observatører i det tidligere Jugoslavia (The UN-Observer: Stressors and Reactions in Norwegian UN-observers in the former Yugoslavia). Master thesis, Norwegian University of Science and Technology, Trondheim.
- Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: a meta-analysis. *Psychological Bulletin, 124*, pp. 240-261.
- Tannenbaum, S. I., Mathieu, J. E., Salas, E., & Cannon-Bowers, J. A. (1991). Meeting trainees' expectations: the influence of training fulfillment on the development of commitment, self-efficacy, and motivation. *Journal of Applied Psychology, 76*(6), pp. 759-769.
- Terry-Short, L. A., Owens, R. G., Slade, P. D., & Dewey, M. E. (1995). Positive and negative perfectionism. *Personality and Individual Differences, 18*(5), pp. 663-668.
- The Norwegian Defence University College. (2014). *Norwegian Armed Forces Joint Operational Doctrine*. Norwegian Armed Forces Defence Staff, Oslo.
- Widing, H., Davøen, L. M., Laberg, J. C., Johnsen, B. H., Brun, W. & Eid, J. (2002). Soldiers assessment of their military skills in international operations. In B.H. Johnsen (ed.), *Rapportserie fra prosjektet Militærpsykologi og Ledelse, Kosovostudien [Reports from the project Military Psychology and Leadership. The Kosovo Study]*. Report 1/2002 (ISSN 15).
- Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review, 14*(3), pp. 361-384.

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