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THE RELATIONSHIPS BETWEEN ACADEMIC SELF-EFFICACY, INTRINSIC MOTIVATION, AND PERCEIVED COMPETENCE

Keywords

Self-efficacy, self-determination theory (SDT), intrinsic motivation, military competence

Abstract

This study investigated the moderating role of intrinsic motivation for military studies on the relationship between academic self-efficacy and change in perceived military competence. We present two concurrent hypotheses based on theoretical interaction effects of intrinsic motivation. Data from 245 cadets from three military academies revealed a positive relationship between self-efficacy and an increase in perceived military competence only for cadets with lower levels of intrinsic motivation. This suggests that, with lower intrinsic motivation, beliefs about one's capabilities to organize and take courses of action to attain certain goals may make a crucial difference in cadets' compliance to exert effort to increase their military competence. In contrast, self-efficacy seems less important for increased perception of military competence in cadets with higher intrinsic motivation. These cadets probably increase their military competence mainly as a result of the pleasure they gain when engaging in educational activities. Implications for theory and practice are discussed.

Introduction

Perceived competence is seen as a major factor in all types of educational processes, and prior research in a military context have found satisfactory concordance between self-reported military competence and demonstration of effort and expertise in military personal (Adler, Thomas and Castro 2005). Thus, perception of military competence as an indicator of military performance is seen as one major aim in military education. A study performed on an American Stryker brigade revealed that soldiers with well-developed psychological skills performed better on physical tests than soldiers with less-developed psychological skills (Hammermeister et al. 2010). However,

research on perceived military competence seems to be lacking. As a consequence, more research on psychological variables predicting perceived military competence is needed.

Although different lines of research have supported the relationship between self-efficacy and various performance dimensions in general (e.g., Stajkovic and Luthans 1998; Moritz et al. 2000) and academic performance in particular (e.g., Moritz et al. 2000; Multon, Brown and Lent 1991), the process through which academic self-efficacy leads to perceived military competence has received less empirical attention. Previous research has shown that academic self-efficacy is linked to desired student outcomes such as persistence (Lent, Brown and Larkin 1986; Skinner, Wellborn and Connell 1990), academic achievement (Marsh and Yeung 1997), and the adoption of achievement and task goals (Bong 2001; Skaalvik and Skaalvik 2005). On the other hand, several studies have shown that self-efficacy does not always relate positively to performance (e.g., Vancouver and Kendall 2006; Vancouver, Thompson and Williams 2001; Vancouver et al. 2002), thus suggesting potential moderating influences.

Academic self-efficacy, that is, the degree to which an individual believes that he or she will complete one's educational choice, rests upon the assumption that the belief in one's academic skills and abilities predetermines the following motivation and feelings through a self-regulating mechanism (Bandura 1986; Pajares and Miller 1994; Schunk and Zimmermann 1997). This study examines the relationship between academic self-efficacy, intrinsic motivation for military studies, and perceived military competence. To be more precise, the study examines how any effects of academic self-efficacy on increased perception of military competence among military cadets (i.e., academic performance) are modified by intrinsic motivation, understood as engagement in the military study program because of the inherent pleasures and satisfactions it provides (Deci and Ryan 1985). It has been shown that the education in a military academy is socially, physically, and psychologically demanding (Brown 2000). Brown's (2000) conclusion from reviewing research on military cadets was that the life in military academies is of great importance for the cadets' psychological development. In an integration of the self-determination theory (SDT) and self-efficacy literature, we develop new theoretical insights on how intrinsic motivation can either have an accentuating or attenuating effect on the self-efficacy–performance relationship. Specifically, although academic self-efficacy (“I can do...”) has the potential to result in increased military competence, the extent to which it actually does so may depend on the cadets' level of intrinsic motivation (“I want to...”) toward their military education. An interesting parallel can be drawn to Schmitt, Cortina, Ingerick, and Wiechmann (2003: 78), who argued that “one must be both able and motivated to perform well, and if either of these characteristics is low or absent, performance will be inadequate.” Similarly, in a study of a very physically demanding selection program in the US Special Forces, researchers found that self-efficacy had a significant impact as to whether the soldiers completed the hard physical selection or not (Gruber, Kilcullen and Iso-Ahola 2009).

On the one hand, it is possible that academic self-efficacy beliefs are more likely to predict increased perceived military competence when they are accompanied by intrinsic motivation for military studies. Cadets with high levels of intrinsic motivation are more self-driven, persistent, and autonomous (Deci and Ryan 2000). Thus, with increasing levels of intrinsic motivation, cadets may be more inclined to act on their self-efficacy beliefs, resulting in increased perception of military competence. If this is correct, intrinsic motivation should accentuate the relationship between academic self-efficacy and increased perception of military competence. On the other hand, it is also possible that academic self-efficacy is increasingly less important for cadets' military competence with higher levels of intrinsic motivation for military studies, since intrinsically motivated cadets should attain greater military competence because they derive more meaning and enjoyment from the education itself (Vallerand 1997; Deci and Ryan 2000) without the need for higher levels of self-efficacy to compensate. Accordingly, higher levels of intrinsic motivation for military studies could also attenuate the relationship between academic self-efficacy and increased perception of military competence. The research reported here empirically tests these two competing hypotheses. By investigating the interaction between academic self-efficacy and intrinsic motivation, we therefore aim to contribute to a better understanding of the motivational mechanisms behind increased perception of military competence.

Theory and Hypotheses

Self-efficacy beliefs are beliefs about one's capabilities to organize and take courses of action to attain certain goals (Bandura 1977). According to Bandura (1991), individuals' self-efficacy beliefs influence the choices they make (e.g., increased probability of choosing difficult goals), their perseverance in the face of setbacks and difficulties (i.e., goal persistence), whether their thought patterns are self-aiding or self-hindering, their effort, the amount of stress they experience, and their vulnerability to depression. Whereas several meta-analyses have suggested a positive relationship between self-efficacy and performance (Multon, Brown and Lent 1991; Moritz et al. 2000; Stajkovic and Luthans 1998; Sadri and Robertson 1993; Gully et al. 2002), we investigate whether such a relationship is affected by individuals' intrinsic motivation. On the one hand, it is possible that self-efficacy promotes intrinsic motivation since SDT proposes that the satisfaction of the need for competence (which has some resemblance to self-efficacy) is one core element in the enhancement of intrinsic motivation. On the other hand, self-efficacy and intrinsic motivation are conceptually distinct. An individual can thus be low in both self-efficacy and intrinsic motivation, or high in both, or high in one and low in the other. In that which follows, we develop two competing hypotheses suggesting that the level of intrinsic motivation will either (1) increase or (2) decrease the relationship between self-efficacy and military competence.

Intrinsic Motivation for Military Studies as an Intensifier

In our model of intrinsic motivation as an intensifier we propose that intrinsic motivation for military studies accentuates the relationship between academic self-efficacy and perceived military competence because individuals who have high (versus low) intrinsic motivation may be more inclined to act on their self-efficacy beliefs. Intrinsically motivated persons are, for instance, found to be more self-driven and autonomous than their less intrinsically motivated counterparts (e.g., Ryan and Deci 2000; Thomas 2002), which suggests that they will be more inclined to take responsibility for acquiring the necessary military skills and competencies when believing in their academic ability to do so (i.e., high academic self-efficacy). Research reviewed by Deci and Ryan (2000) demonstrated that intrinsically motivated students are more persistent when acquiring learning content and perceive the learning content more constructively than less intrinsically motivated students. Furthermore, research in organizational settings suggests that employees high in intrinsic motivation demonstrate greater goal attainment and are more involved in their jobs than those less intrinsically motivated (Gagné and Deci 2005). Hence, intrinsically motivated cadets may be more active and involved in response to self-efficacy and therefore learn more with respect to military competence. Accordingly, the relationship between academic self-efficacy and increased perception of military competence should be greater for higher than for lower levels of intrinsic motivation:

Hypothesis 1: *The relationship between academic self-efficacy and increased perception of military competence is accentuated by intrinsic motivation for military studies.*

Intrinsic Motivation for Military Studies as a Detensifier

Self-efficacy beliefs may not be equally important to all individuals in terms of increasing their military competence. In our competing model we propose that intrinsic motivation for military studies attenuates (rather than accentuates) the relationship between academic self-efficacy and perceived military competence. Specifically, it might be that academic self-efficacy beliefs are less important for the increased perception of military competence of cadets with higher intrinsic motivation, as they are intrinsically motivated to perform well so as to experience the pleasure and satisfaction inherent in the activity itself (Deci, Connell and Ryan 1989). Furthermore, intrinsically motivated cadets may be inclined to pursue exactly the things they experience not being that good at (lower self-efficacy) because it offers a challenge. Accordingly, cadets with higher (versus lower) levels of intrinsic motivation for military studies might benefit less from stronger academic self-efficacy beliefs to motivate them to increase their military competence. Conversely, the lower their intrinsic motivation, the more influential their self-efficacy would probably be in increasing their military competence. That is, academic self-efficacy beliefs may counterbalance the lack of interest in and enjoyment from their military training and education.

This is consistent with recent findings by Dysvik, Kuvaas, and Buch (2010), which suggested that perceived favorable trainee programs, at least to some extent, compensate for lower levels of intrinsic motivation with respect to influencing performance. Finally, in the absence of intrinsic motivation, because cadets do not enjoy their training and education, they may feel pressured to perform, which may threaten their feelings of autonomy (Gagné and Deci 2005) and result in stress (Weinstein and Ryan 2011). Hence, with lower levels of intrinsic motivation for military studies, higher levels of academic self-efficacy may represent a means to deal more effectively with stress due to taxing environmental demands—for instance by way of a more self-aiding thought pattern (Bandura 1991). Accordingly, we hypothesize:

Hypothesis 2: *The relationship between academic self-efficacy and increased perception of military competence is attenuated by intrinsic motivation for military studies.*

Method

Participants and Procedure

Data for this study were collected from cadets in the three Norwegian military academies (Navy, Air Force, and Army) at two points in time (referred to here as T1 and T2). T1 data were collected at the start of the first year at the academy, whereas T2 data were collected at the end of the cadets' first year at the academy. The respondents were informed that the survey had been approved by the Norwegian Social Science Data Services (NSD) and they were assured strict confidentiality. Two hundred and ninety-five cadets participated at T1. Of these, 245 (83.1%) cadets also participated at T2. Our sample at T1 comprised 89.4% men and 10.6% women, with a mean age of 23 years ($SD = 2.65$).

Measures

Self-efficacy. In order to measure academic self-efficacy at T1 we developed a seven-item scale designed to capture self-efficacy beliefs regarding the ability to successfully complete the military training education. We did so because individuals differ in self-efficacy across domains and activities, and consequently “there is no single all-purpose measure of self-efficacy with a single validity coefficient” (Bandura 2012: 15). Bandura (2012) specifically argued that decontextualized general measures of self-efficacy are less predictive and “usually bear weak relation both to domain-related self-efficacy beliefs and to behavior” (16). Self-efficacy theorists thus generally discourage the use of all-purpose or general self-efficacy instruments (e.g., Pajares and Urdan 2006). To have self-efficacy beliefs, cadets must have contextual knowledge about the military education at the academy. Accordingly, we tailored the instrument in the present study to fit the academic domain on a war academy. The items were designed to measure the

perceived capability to manage process activities that are likely of importance for academic performance such as managing tough times, making it through the studies and performing well. The stem we used for each item (presented in Appendix A) was “With reasonable certainty, I can say that I...” and sample items included “...am a person who can handle being a military-academy person” and “...am able to be a hard-working student.” Respondents indicated their responses on a 7-point scale (1 = totally disagree, 7 = totally agree). The internal consistency (Cronbach’s $\alpha = .89$) was relatively large (above .70 for exploratory measures; Nunnally 1978) which provides an “indication of strong item covariance and suggests that the sampling domain has been captured adequately” (Hinkin 1998: 113).

Intrinsic motivation. To measure intrinsic motivation for military studies at T1 ($\alpha = .80$), we used the situational motivation scale (SIMS; Guay, Vallerand and Blanchard 2000). Preceding the items we used the following stem: “I take this education...” Sample items included “...because I think that this education is interesting” and “...because this education is fun.” The respondents recorded their responses on a 7-point (1 = strongly disagree, 7 = strongly agree).

Perceived military competence. For the measurement of general military competence at T1 ($\alpha = .75$) and T2 ($\alpha = .80$) cadets scored themselves on scale covering domains such as: general leadership, responsibility, judgment, cooperation/communication, technical skills, creativity, writing/oral skills, coping, and perspective (Johansen, Laberg and Martinussen 2013). These domains were evaluated with ten items. This scale is also used as an officer evaluation scale by the Norwegian Armed Forces to rate a broad range of necessary military competencies and skills. Responses were recorded on a 5-point scale (below average, slightly below average, average, slightly above average, and above average).

Control variables. We regarded it as important to control for extrinsic motivation for military studies ($\alpha = .79$) at T1 using the situational motivation scale (SIMS; Guay, Vallerand and Blanchard 2000) because of its potential relationship with the variables under investigation. In addition, we controlled for the level of prior civilian education since this could affect both academic self-efficacy beliefs and perceived military competencies. Finally, to rule them out as alternative explanations for the observed findings, we controlled for age, gender (men = 1; women = 2), and military academic affiliation (represented by dummy variables).

Data Analysis

To find out whether the items reflected the constructs they were designed to measure, we followed recommended practice (e.g., Hinkin 1998) and randomly split the data in two and performed a confirmatory factor analysis (CFA) on one half, and an exploratory factor analysis (EFA) on the other half. While the use of CFA is often recommended for testing “whether the newly written items conform to the hypothesized structure the scale architect had in mind”

(Hurley et al. 1997: 672), the use of EFA is typically recommended for purposes of examining discriminant and convergent validity (e.g., Hurley et al. 1997) because it reveals how well the items load on the non-hypothesized factors (Kelloway 1995). We performed the CFA using the WLSMV estimator and used cluster robust standard errors (at the academy level) because the observations in the dataset were not independent (i.e., individuals clustered within different academies). In addition, we included appropriately correlated disturbance terms, that is, items in the perceived military competence scale at T2 were allowed to correlate with the corresponding items in the perceived military competence scale at T1. To test the hypotheses, we used hierarchical moderated regression (Cohen et al. 2003). Before computing the interaction terms, we centered the predictors to avoid multicollinearity problems (see Aiken and West 1991). To probe the form of the interactions, we followed recommended practices (Aiken and West 1991) and plotted low versus high scores on academic self-efficacy at T1 and intrinsic motivation for military studies at T1 (one standard deviation below and above the means using nonstandardized scores).

Results

The CFA we conducted (using a randomly selected half of our initial sample) was performed on a five-factor model representing academic self-efficacy at T1, intrinsic motivation for military studies at T1, extrinsic motivation for military studies at T1, perceived military competence at T1, and perceived military competence at T2. The results of the CFA provided good fit with the data ($\chi^2 [540] = 736.75$, $p < 0.01$; RMSEA = 0.055; CFI = 0.91; TLI = 0.90) according to frequently used rules of thumb (Bollen 1989; Fan, Thompson and Wang 1999; Steiger 1989). To further examine discriminant and convergent validity of the newly written items (self-efficacy) in relation to more established scales (intrinsic motivation for military studies at T1, extrinsic motivation for military studies at T1, perceived military competence at T1, and perceived military competence at T2), we performed an EFA (principal axis factoring with Promax rotation; Fabrigar et al. 1999) on the other, randomly selected half of our initial sample. The results of this EFA showed that all the self-efficacy items loaded on the appropriate factor with factor loadings ranging from .59 to .87. Furthermore, no cross-loadings above .30 (Ford, MacCallum and Tait 1986) were observed between the self-efficacy items and the other included factors. Accordingly, discriminant and convergent validity was supported.

We present the means, standard deviations, reliability estimates, and bivariate correlations among the study variables in Table 1. With respect to reliability estimates, the coefficient alpha's ranged from $\alpha = .75$ to $\alpha = .89$, thereby providing evidence of a reliable measurement model.

Table 1: Descriptive Statistics, Scale Reliabilities, and Correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Academy A	.43	.50										
2. Academy B	.32	.47	-.59**									
3. Academy C	.26	.44	-.51**	-.40**								
4. Age	22.95	2.64	.10	.00	-.12							
5. Gender a	1.11	.31	-.19**	.14*	.07	-.07						
6. Civilian education	2.49	.91	-.09	.02	.08	.49**	-.13*					
7. Extrinsic motivation for mil studies at T1	2.44	1.24	-.02	-.09	.12	.11	-.05	.01	(.79)			
8. Academic self-efficacy at T1	5.45	.79	.17**	-.20**	.02	-.03	-.13*	-.03	-.17**	(.89)		
9. Intrinsic motivation for mil studies at T1	5.54	.99	.26**	-.21**	-.07	-.16*	-.04	-.19**	-.23**	.20**	(.80)	
10. Perceived military competence at T1	3.67	.40	.17**	-.12	-.06	.14*	-.25**	.09	-.06	.43**	.08	(.75)
11. Perceived military competence at T2	3.76	.47	.04	.00	-.05	.18**	-.17**	.09	-.06	.33**	.01	.65** (.80)

Note: $N = 245$. ^a Male = 1; female = 2. Coefficient alpha's are displayed on the diagonal.

* $p < .05$ ** $p < .01$

The results of the hierarchical moderated regression analysis are reported in Table 2. In Step 1, we entered the control variable, and in Step 2, we entered academic self-efficacy at T1. Next, we entered the moderator intrinsic motivation at T1 in Step 3, and the interaction term (academic self-efficacy at T1 \times intrinsic motivation for military studies at T1) in Step 4. The significant interaction term ($\beta = -.13$, $p < .05$) added to the explained variance in perceived military competence at T2 ($\Delta R^2 = .02$, $p < .01$) and showed that the relationship between academic self-efficacy at T1 and increased perceived military competence at T2 is moderated by intrinsic motivation at T1. Specifically, the results displayed in Figure 1 demonstrate a positive relationship between academic self-efficacy at T1 and increased perceived military competence at T2 only for individuals with a low intrinsic motivation for military studies at T1 ($b_{low} = .12$, $p < .01$, vs. $b_{high} = -.01$, $n.s.$), suggesting that academic self-efficacy only increases military competence among cadets with lower intrinsic motivation. A supplemental t -test revealed significantly different slopes for high versus low levels of intrinsic motivation ($t = 2.28$, $p < .05$). Accordingly, Hypothesis 2 was supported, while Hypothesis 1 was not.

Table 2: Results of Hierarchical Moderated Regression Analyses

	Perceived military competence at T2			
	Step 1	Step 2	Step 3	Step 4
<i>Control variables</i>				
Age	.10	.11	.11	.13*
Gender ^a	-.03	-.03	-.03	-.02
Civilian education	-.03	-.03	-.03	-.03
Academy A	.10	.12*	.11	.13*
Academy B	.05	.05	.05	.05
Extrinsic motivation for military studies T1	-.02	-.01	-.01	-.00
Perceived military competence T1	.64***	.61***	.61***	.60***
<i>Independent variable</i>				
Academic self-efficacy T1		.09	.09	.10
<i>Moderator</i>				
Intrinsic motivation for military studies T1			-.02	-.02
<i>Interaction term</i>				
Academic self-efficacy at T1 × Intrinsic motivation for military studies at T1				-.13*
R^2	.44	.44	.44	.46
ΔR^2		.00	.01	.02**

Note. $N = 245$. * $p < .05$. ** $p < .01$. *** $p < .001$. Male = 1; female = 2.

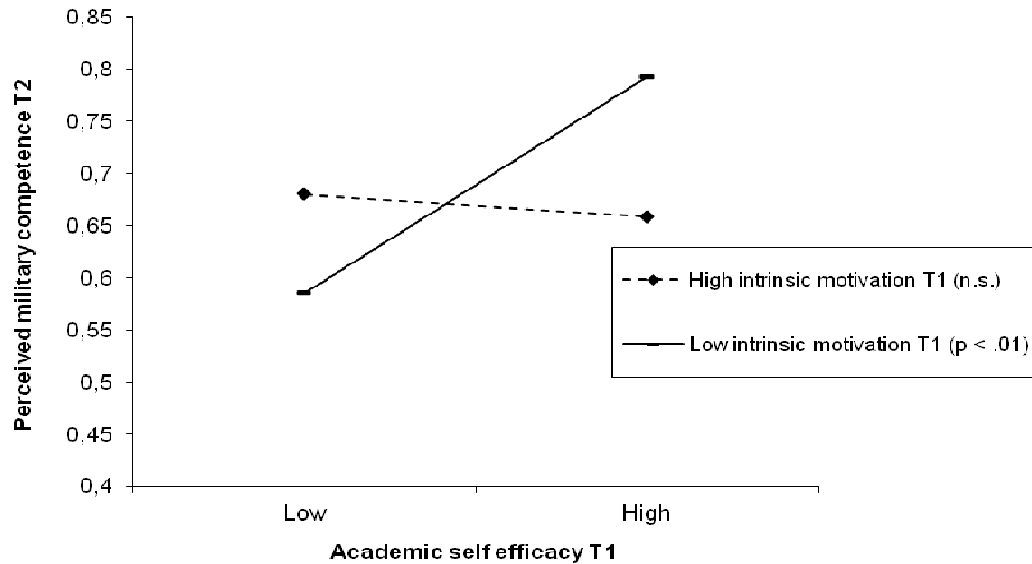


Figure 1: The moderating role of intrinsic motivation for military studies on the relationship between academic self-efficacy and increased perceived military competence.

Discussion

In the current study, we sought to improve our understanding of the relationship between academic self-efficacy and increased perception of military competence by examining the moderating role played by intrinsic motivation. We presented two competing interactions between self-efficacy and intrinsic motivation: one where intrinsic motivation accentuates the relation between self-efficacy and increased perceived military competence (intensifying-hypothesis), and one where intrinsic motivation attenuates the relation between self-efficacy and increased perceived military competence (detensifying-hypothesis).

In support of the detensifying-hypothesis, the results of our longitudinal study suggest that the relationship between academic self-efficacy and increased perceived military competence is attenuated by intrinsic motivation. Specifically, the results indicate that the higher the level of cadets' intrinsic motivation for military studies, the less positive the relationship. Support for the detensifying-hypothesis over the intensifying-hypothesis implies that highly intrinsically motivated cadets increase their perception of military competence mainly as a result of the pleasure they gain when engaging in educational activities. Accordingly, academic self-efficacy beliefs seem more effective in increasing perceived military competence among cadets with lower intrinsic motivation for military studies compared with their more intrinsically motivated counterparts. That is, with fewer intrinsic reasons to acquire military skills and competencies, cadets low in intrinsic motivation seem to benefit more from stronger beliefs about their capabilities to produce designated levels of academic performance (i.e., self efficacy; Bandura 1994) with respect to military competence, perhaps because such beliefs counterbalances cadets' lack of interest in and enjoyment of the education itself. These findings contributes to the self-efficacy and SDT literature by clarifying the interactive impact of motivation stemming from self-efficacy beliefs and the motivation stemming from task characteristics in relation to general military competence.

The observation that self-efficacy only increases military competence among cadets with lower intrinsic motivation aligns well with recent research suggesting that self-efficacy is not always beneficial in terms of increasing performance. Prior research has for instance suggested that certain conditions may change the sign in the relationship between self-efficacy and performance since "self-efficacy may decrease, not increase, the amount of resources allocated to performance" (Vancouver, Thompson and Williams 2001: 605). In this respect, the present study complements prior research by demonstrating a condition under which self-efficacy is less likely to result in higher perceived competence. Still, the positive relationship between academic self-efficacy and intrinsic motivation for military studies ($r = .20$, $p < .01$) may also imply that academic self-efficacy increases the inherent satisfaction and pleasure that cadets get from their education, which in turn increases their perceived military competence.

Finally, we note that we also observed a relatively strong positive correlation between perceived military competence at T1 and perceived military competence at T2 ($r = .65, p < .01$). This suggests that cadets who perceived a high level of military competence at the end of the first year at the academy were those who started the first year at the academy with a higher level of perceived military competence.

Limitations, Strengths, and Research Directions

The methodological advantages as well as limitations of the present study should be acknowledged. The main strength of our study is that it is based on a longitudinal design. The longitudinal research design allowed us to establish temporal relationships between academic self-efficacy, intrinsic motivation for military studies, and perceived military competence, and by controlling for past perceptions of military competence we were able to predict *increased* military competence perceptions. Still, even though we utilized a longitudinal design, our data were correlational, and causal inferences need to be treated with caution. Experimental studies with control groups and randomization are needed to disentangle the causal nature of the relationships observed in the present study.

A second limitation is our reliance on self-reported data, which are susceptible to potential common method bias and inflated ratings (Podsakoff et al. 2003). However, in this respect we have attempted to minimize common method bias by following some of the procedural remedies suggested by Podsakoff et al. (2003). For instance, emphasizing confidentiality should reduce potential common method variance by decreasing the likelihood that respondents “edit their responses to be more socially desirable, lenient, acquiescent, and consistent with how they think the researcher wants them to respond” (Podsakoff et al. 2003: 888). In addition, the psychological separation of the independent and dependent variables in the survey instrument time is a valid approach to reduce the potential influence of common method variance (Podsakoff et al. 2003). Besides, recent research showed that statistically significant interactions are unlikely to be the artifact of common method variance (Harrison, McLaughlin and Coalter 1996; Siensen, Roth and Oliveira 2010). Finally, research has revealed satisfactory concordance between self-reported data and unit records along performance domains in a military context such as the one in the present study (Adler, Thomas and Castro 2005). Nevertheless, future research should strive to collect data pertaining to different variables and from different sources—for instance, from peers (Zazanis, Zaccaro and Kilcullen 2001).

Third, the generalizability of the results may be restricted by the sample used to test the hypotheses, which consisted of predominantly male cadets from three military academies in Norway. It may be that, in other countries and cultures, a similar study may produce different results. Accordingly, the generalizability of our results should be tested in other cultures, countries, and contexts.

Practical Implications and Conclusions

Notwithstanding its potential limitations, the current study offers some potentially important practical implications. The findings imply that academic self-efficacy beliefs are particularly crucial for the increased perception of military competence in cadets low in intrinsic motivation for military studies. That is, with fewer intrinsic reasons to increase their competence, beliefs about one's capabilities to organize and take courses of action to attain certain goals may make a crucial difference in cadets' willingness to exert effort to increase their military competence. Military academies may draw on this finding and seek to aid the development of academic self-efficacy beliefs among their military cadets. In this respect, research reviewed by van Dinther, Dochy, and Segers (2011) suggested that cadets' self-efficacy beliefs can be enhanced through higher education intervention programs. Prior research has also shown that teachers may play a crucial role, as self-efficacy is responsive to changes in instructional experience (Pajares and Schunk 2001; Robbins et al. 2004). Teachers may, for instance, tailor and individualize classroom instruction to each cadet's academic abilities and encourage the cadets to evaluate their progress according to their own internal standards (see Pajares 2002).

Finally, our study suggests that academic self-efficacy beliefs are less important for the development of perceived military competence among cadets with higher intrinsic motivation for military studies. Academies may draw on this finding and seek to design contexts to cultivate cadets' intrinsic motivation for military studies. In this respect, SDT maintains that intrinsic motivation is a function of the satisfaction of innate needs for autonomy, competence, and relatedness (Deci and Ryan 2000). Accordingly, intrinsic motivation may be facilitated by providing cadets with a sense of volition, a sense of competence, and possibilities to develop interpersonal attachments with other cadets. Furthermore, the work characteristics model (Hackman and Oldham 1976) suggests that intrinsic motivation may be facilitated by work designs that provide skill variety, feedback from the tasks, autonomy, and task significance. Indeed, recent results from a meta-analysis of 259 studies and 219,625 participants (Humphrey, Nahrgang and Morgeson 2007) showed that the five work characteristics strongly relate to intrinsic work motivation. Finally, a recent study of 10,000 West Point cadets over the period of a decade demonstrated that motivation internal to the military service itself predicted "whether they would become commissioned officers, extend their officer service beyond the minimum required period, and be selected for early career promotions" (Wrzesniewski et al. 2014: 10990).

References

- Adler, AB, Thomas, JL & Castro, CA 2005, "Measuring Up: Comparing Self-Reports With Unit Records for Assessing Soldier Performance", *Military Psychology*, vol. 17, no. 1, pp. 3-24.
- Aiken, LS & West, SG 1991, *Multiple regression: Testing and interpreting interactions*, Sage, Thousand Oaks, CA.

- Bandura, A 1977, *Social learning theory*, Prentice-Hall, Englewood Cliffs, NJ.
- Bandura, A 1986, *Social foundations of thought and action: A social cognitive theory*, Prentice-Hall, Inc., Englewood Cliffs.
- Bandura, A 1991, "Social cognitive theory of self-regulation", *Organizational Behavior and Human Decision Processes*, vol. 50, no. 2, pp. 248-287.
- Bandura, A 1994, "Self-efficacy", in *Encyclopedia of human behavior*, vol. 4, ed. VS Ramachaudran, Academic Press, New York, pp. 71-81.
- Bandura, A 2012, "On the Functional Properties of Perceived Self-Efficacy Revisited", *Journal of Management*, vol. 38, no. 1, pp. 9-44.
- Bollen, KA 1989, *Structural equations with latent variables*, Wiley, New York.
- Bong, M 2001, "Between- and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task-value, and achievement goals", *Journal of Educational Psychology*, vol. 93, pp. 23-34.
- Brown, R 2000, *Group Processes*, 2nd edn, Blackwell Publishers, Oxford, UK.
- Cohen, J, Cohen, P, West, SG & Aiken, LS 2003, *Applied multiple regression/correlation analysis for the behavioral sciences*, 3rd edn, Erlbaum, London, UK.
- Deci, EL, Connell, JP & Ryan, RM 1989, "Self-Determination in a Work Organization", *Journal of Applied Psychology*, vol. 74, no. 4, pp. 580-590.
- Deci, EL & Ryan, RM 1985, *Intrinsic motivation and self-determination in human behavior*, Plenum, New York.
- Deci, EL & Ryan, RM 2000, "The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior", *Psychological Inquiry*, vol. 11, no. 4, pp. 227-268.
- Dysvik, A, Kuvaas, B & Buch, R 2010, "Trainee programme reactions and work performance: The moderating role of intrinsic motivation", *Human Resource Development International*, vol. 13, no. 4, pp. 409-423.
- Fabrigar, LR, Wegener, DT, MacCallum, RC & Strahan, EJ 1999, "Evaluating the use of exploratory factor analysis in psychological research", *Psychological Methods*, vol. 4, no. 3, pp. 272-299. Available from: pdh.
- Fan, XB, Thompson, B & Wang, L 1999, "Effects of sample size, estimation method, and model specification on structural equation modeling fit indices", *Structural Equation Modeling: A Multidisciplinary Journal*, vol. 6, pp. 56-83.
- Ford, JK, MacCallum, RC & Tait, M 1986, "The application of exploratory factor analysis in applied psychology: A critical review and analysis", *Personnel Psychology*, vol. 39, pp. 291-314.
- Gagné, M & Deci, EL 2005, "Self-determination theory and work motivation", *Journal of Organizational Behavior*, vol. 26, no. 4, pp. 331-362.
- Gruber, KA, Kilcullen, RN & Iso-Ahola, SE 2009, "Effects of Psychosocial Resources on Elite Soldiers' Completion of a Demanding Military Selection Program", *Military Psychology*, vol. 21, pp. 427-444.

- Guay, F, Vallerand, RJ & Blanchard, CM 2000, "On the assessment of state intrinsic and extrinsic motivation: The situational motivation scale (SIMS)", *Motivation and Emotion*, vol. 24, pp. 175-213.
- Gully, SM, Incalcaterra, KA, Joshi, A & Beaubien, JM 2002, "A meta-analysis of team-efficacy, potency, and performance: Interdependence and level of analysis as moderators of observed relationships", *Journal of Applied Psychology*, vol. 87, no. 5, pp. 819-832.
- Hackman, JR & Oldham, GR 1976, "Motivation through the design of work: Test of a theory", *Organizational Behavior and Human Performance*, vol. 16, no. 2, pp. 250-279.
- Hammermeister, J, Pickering, MA, McGraw, L & Ohlson, C 2010, "Relationship between psychological skill profiles and soldier physical fitness performance", *Military Psychology*, vol. 22, no. 4, pp. 399-411.
- Harrison, DA, McLaughlin, ME & Coalter, TM 1996, "Context, cognition, and common method variance: Psychometric and verbal protocol evidence.", *Organizational Behavior and Human Decision Processes*, vol. 68, no. 3, pp. 246-261.
- Hinkin, TR 1998, "A Brief Tutorial on the Development of Measures for Use in Survey Questionnaires", *Organizational Research Methods*, vol. 1, no. 1, pp. 104-121.
- Humphrey, SE, Nahrgang, JD & Morgeson, FP 2007, "Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature", *Journal of Applied Psychology*, vol. 92, no. 5, pp. 1332-1356.
- Hurley, AE, Scandura, TA, Schriesheim, CA, Brannick, MT, Seers, A, Vandenberg, RJ & Williams, LJ 1997, "Exploratory and confirmatory factor analysis: Guidelines, issues, and alternatives", *Journal of Organizational Behavior*, vol. 18, no. 6, pp. 667-683.
- Johansen, RB, Laberg, JC & Martinussen, M 2013, "Military Identity as Predictor of Perceived Military Competence and Skills", *Armed Forces & Society*.
- Kelloway, EK 1995, "Structural equation modeling in perspective", *Journal of Organizational Behavior*, vol. 16, no. 215-224.
- Lent, RW, Brown, SD & Larkin, KC 1986, "Self-efficacy in the prediction of academic performance and perceived career options", *Journal of Counselling Psychology*, vol. 33, pp. 265-269.
- Marsh, H, W. & Yeung, AS 1997, "Causal effects of academic self-concept on academic achievement: Structural equation models of longitudinal data", *Journal of Educational Psychology*, vol. 89, pp. 41-54.
- Moritz, SE, Feltz, DL, Fahrback, KR & Mack, DE 2000, "The relation of self-efficacy measures to sport performance: A meta-analytic review", *Research Quarterly for Exercise and Sport*, vol. 71, no. 3, pp. 280-94. Available from: ProQuest Health & Medical Complete; ProQuest Medical Library; ProQuest Nursing & Allied Health Source.
- Multon, KD, Brown, SD & Lent, RW 1991, "Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation", *Journal of Counseling Psychology*, vol. 38, pp. 30-38.

- Nunnally, JC 1978, *Psychometric theory*, 2nd edn, McGraw-Hill, New York.
- Pajares, F 2002, "Gender and Perceived Self-Efficacy in Self-Regulated Learning", *Theory Into Practice*, vol. 41, no. 2, pp. 116-125. [2014/06/25].
- Pajares, F & Miller, MD 1994, "Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis", *Journal of Educational Psychology*, vol. 89, pp. 193-203.
- Pajares, F & Schunk, DH 2001, "Self-beliefs and school success: Self-efficacy, self-concept, and school achievement", in *Perception*, eds R Riding & S Rayner, Ablex Publishing., London, pp. 239-266.
- Pajares, F & Urdan, T (eds) 2006, *Self-Efficacy Beliefs of Adolescents*, Information Age Publishing, Greenwich, CT.
- Podsakoff, PM, MacKenzie, SB, Lee, J-Y & Podsakoff, NP 2003, "Common method biases in behavioral research: A critical review of the literature and recommended remedies", *Journal of Applied Psychology*, vol. 88, no. 5, pp. 879-903. Available from: pdh.
- Robbins, SB, Lauver, K, Le, H, Davis, D, Langley, R & Carlstrom, A 2004, "Do Psychosocial and Study Skill Factors Predict College Outcomes? A Meta-Analysis", *Psychological Bulletin*, vol. 130, no. 2, pp. 261-288.
- Ryan, RM & Deci, EL 2000, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being", *American Psychologist*, vol. 55, no. 1, pp. 68-78.
- Sadri, G & Robertson, IT 1993, "Self-efficacy and Work-related Behaviour: A Review and Meta-analysis", *Applied Psychology*, vol. 42, no. 2, pp. 139-152.
- Schmitt, N, J. , Cortina, M, Ingerick, MJ & Wiechmann, C 2003, "Personnel selection and employee performance", in *Handbook of psychology*, vol. 12, eds WC Borman, DR Ilgen & RJ Klimoski, Wiley, Hoboken, NJ, pp. 77-105.
- Schunk, DH & Zimmermann, BJ 1997, "Social origins of self-regulatory competence", *Educational Psychology*, vol. 32, pp. 195-208.
- Siemsen, E, Roth, A & Oliveira, P 2010, "Common Method Bias in Regression Models With Linear, Quadratic, and Interaction Effects", *Organizational Research Methods*, vol. 13, no. 3, pp. 456-476.
- Skaalvik, S & Skaalvik, EM 2005, "Self-concept, motivational orientation, and help-seeking behavior in mathematics: A study of adults returning to high school", *Social Psychology of Education*, vol. 8, pp. 285-302.
- Skinner, EA, Wellborn, J & Connell, J 1990, "What it takes to do well in school and whether I've got it: a process model of perceived control and children's engagement and achievement in school", *Journal of Educational Psychology*, vol. 82, pp. 22-32.
- Stajkovic, AD & Luthans, F 1998, "Self-efficacy and work-related performance: A meta-analysis", *Psychological Bulletin*, vol. 124, no. 2, pp. 240-261.
- Steiger, JH 1989, *Causal modeling: a supplementary module for SYSTAT and SYSGRAPH*, SYSTAT, Evanston, IL.

- Thomas, KW 2002, *Intrinsic motivation at work: Building energy & commitment*, Berrett-Koehler Publishers, San Francisco, CA.
- Vallerand, RJ 1997, "Toward a hierarchical model of intrinsic and extrinsic motivation", in *Advances in Experimental Social Psychology*, vol. 29, ed. MP Zanna, Academic Press, San Diego, pp. 271-360.
- van Dinther, M, Dochy, F & Segers, M 2011, "Factors affecting students' self-efficacy in higher education", *Educational Research Review*, vol. 6, no. 2, pp. 95-108.
- Vancouver, JB & Kendall, LN 2006, "When self-efficacy negatively relates to motivation and performance in a learning context", *Journal of Applied Psychology*, vol. 91, no. 5, pp. 1146-1153.
- Vancouver, JB, Thompson, CM, Tischner, EC & Putka, DJ 2002, "Two studies examining the negative effect of self-efficacy on performance", *Journal of Applied Psychology*, vol. 87, no. 3, pp. 506-516.
- Vancouver, JB, Thompson, CM & Williams, AA 2001, "The changing signs in the relationships among self-efficacy, personal goals, and performance", *Journal of Applied Psychology*, vol. 86, no. 4, pp. 605-620.
- Weinstein, N & Ryan, RM 2011, "A self-determination theory approach to understanding stress incursion and responses", *Stress and Health*, vol. 27, no. 1, pp. 4-17.
- Wrzesniewski, A, Schwartz, B, Cong, X, Kane, M, Omar, A & Kolditz, T 2014, "Multiple types of motives don't multiply the motivation of West Point cadets", *Proceedings of the National Academy of Sciences*, vol. 111, no. 30, pp. 10990-10995.
- Zazanis, MM, Zaccaro, SJ & Kilcullen, RN 2001, "Identifying motivation and interpersonal performance using peer evaluations", *Military Psychology*, vol. 13, no. 2, pp. 73-88.

Appendix A: The Self-Efficacy Scale

With reasonable certainty, I can say that I...

...am a person who can handle being a military-academy student

... am able to mobilize the energy needed to work hard with my studies

... am able to handle dark moments in the life of studying

...will manage to complete the military academy

...will achieve a result I can be proud of

...after completing the military academy will achieve results above average among my peers

...after completing the military academy will receive a service report above average

Note. Respondents indicated their responses on a 7-point scale (1 = totally disagree, 7 = totally agree). The internal consistency (Cronbach's alpha) for this scale was .89.