

# **Master Thesis**

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## **Effects of self efficacy, positive outcome beliefs and hardiness on Psychological health**

**-A study on Norwegian military cadets-**

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## Introduction

According to a recent report from The Norwegian Health Institute poor psychological health is a common problem in the population. The report found that half of the Norwegian population will experience a psychological disorder during their lifetime and about one third during a year (Mykletun, Knutsen, & Mathiesen, 2009). This report found that anxiety and depression disorders are the two larger groups of psychological disorders. About a fourth of the population will experience an *anxiety* disorder during their lifetime, and about 15% within one year. One in five will experience *depression* during their lifetime and 10% within 12 months. From the research reviewed, the authors found that psychological disorders were highly hereditary, the prevalence being higher among women than men and the same trend throughout all western countries together with an explosive increase in the use of antidepressants over the last 10 years.

However, it is questionable whether antidepressants are the appropriate treatment to the extent applied today. According to a study published in January it is warned against the use of drug-treatment of mild and moderate psychological problems and prevention (Fournier et al., 2010). Therefore, Norwegian politicians want to strengthen the work on *prevention* of poor psychological health (Samhandlingsreformen, 2009) and encourage research on prevention of poor psychological health. This is also the objective of the present study, aimed at a selected and specific group of future military leaders; cadets at Norwegian war academies.

That being in the military can be a stressful form of employment related to relatively high levels of traumatic stress is well established, noting: “...*military operations are often characterized by extremes in arousal and stress levels, i.e. utter boredom vs. extreme physical and affective stress*” (Goodwin, 2008, p.151). Therefore, in times of uniform and consistent recruitment, the military has since WW1 developed increasingly better methods to select psychologically healthy soldiers (Bartone, Roland, Picano, Williams et al., 2008). Still, PTSD has been referred to as one of the “*signature injuries*” of the active duty service men and women who are deployed to Afghanistan or Iraq (Altmire, 2007). Selecting soldiers without major proneness can probably reduce the problem a great deal, but even with the best selection methods, healthy military personnel may still experience severe mental disorders during their career. According to Kennedy & Zillmer (2006) the need for mental health care is today an essential part of high-stress military

environments. This study will therefore contribute to finding out how cadets on war academies can be properly prepared in order to experience maximum degrees of health as future military leaders, despite having a career where they spend much of their time in potentially stressful environments. This is especially important considering previous research on various preventive actions show lacking results (e.g. mass debriefing, see Van Emmerik, Kamphuis, Hulsbosch, & Emmelkamp, 2002), and some interventions even have adverse effects on later psychological health (Wessely, 2005).

The degree of poor psychological health among military cadets is not documented. In a study of a comparable group of Norwegian university students, it has been documented that they have lower than average psychological health. 13% of the students have poor psychological health compared to 8% in the total population (Ugreninov & Vaage, 2006; Hougen & Gløboden, 2004). The study situation was found to be the major cause of students' poor psychological health. One could argue that cadets face similar problems and challenges as students starting university. Many have to move to a new place, trying to fit into a new environment, dedicated to perform and pass the education with good results. Hystad, Eid, Laberg, Johnsen, & Bartone (2010), found after reviewing the literature on academic stress, that the education context was associated with a variety of negative outcomes such as physical illness and deteriorating mental health.

Cadets face additional demands specific to their military profession and are exposed to diverse physiological and psychological challenges as individuals and in teams. Based on the curriculums one could assume that the education is infused with expectations and performance demands that beget self-devaluations, lowered peer status, and unhappiness if they are not fulfilled. The accompanying stress, disappointment, sadness, or frustrations caused by such unfulfilled aspirations would be psychologically demanding. Still, it is a general attitude that the education on a war academy must be physically, socially and psychologically demanding in order to prepare cadets becoming future leaders in extreme environments. Brown (2000) concluded from reviewing research on military cadets that the life on war academies is of great importance for cadets' psychological development.

Measuring heartbeat on Norwegian cadets performing parachute-jumps, Boe (2006) found cadets performing well, while experiencing extreme somatic stress. While Boe was interested in the ability to master during transient high levels of stress, the present study is preoccupied with the sustained long term SPPH. The objective is to document levels and changes in psychological health on the war academies, but also clarifying and explaining some of the psychological mechanisms in action when cadets are continuously challenged during their education. Specifically, investigate the effects of a general psychological Hardiness construct and having optimistic Self beliefs. Reviewing the literature, this seems the first time Hardiness, Self beliefs and psychological health have been addressed together in such a comprehensive way.

In the present study a brief summary of the literature is presented before describing the methods and analyses used to investigate the level and changes in the study variables. The results from the analysis are presented; highlighting interesting findings. The findings are discussed; offering some possible explanations; before finally addressing the practical implications.

## Theory

In the present study of military cadets it is proposed that a stable psychological Hardiness (Kobasa 1979) forms a preventive basis with respect to future SPPH, and that Social cognitive theory (Bandura, 1997) opens for further development of a preventive structure. Ursin & Eriksen's (2004) Cognitive Activation Theory of Stress (CATS) is offered as a framework to understand why positive Self beliefs can prevent development of SPPH. Skinner's (1995) agent-means-ends model and the concept of control are introduced to clarify two different types of Self beliefs (i.e. Self efficacy and Positive Response Outcome Expectancy). Finally, it is proposed that psychological Hardiness and cognitive Self beliefs are parts in a common core confidence. First of all, there is a need to define the psychological health, its symptoms, prevalence and how it is commonly prevented.

### ***Defining Psychological health***

Nordenfeldt (2001) suggests that people's health depends on mental and physical ability to deal with life's challenges in reaching their own vital goals. Consequently, cadets and military leaders can experience *degrees of health* despite chronic illness or dysfunction as long as they reach personal goals. This is in line with recent critique suggesting that much of what is currently classified as depressive disorder represents normal psychological functioning (e.g. Horwitz & Wakefield, 2007).

The two larger groups of mental disorders; anxiety and depression is generally highly correlated (Kessler, Chiu, Demler, & Walters, 2005), suggesting they are parts in a general psychological health term. Instead of addressing the specific psychological disorders (i.e. anxiety, depression etc.), the term psychological health and symptoms of poor psychological health (SPPH) is used throughout this study. Although, the conception of psychological disorder could be defined in terms of biological dysfunction, recent theorists suggest that most SPPH have a continuous dispersion in any population, ranging from minor complaints to chronic disorder (Andrews & Thomson, 2009). They suggest the mechanisms in action when someone has mild symptoms are similar to those when someone suffers from chronic disorder. Therefore, even small changes in mood and psychological health among healthy cadets are interesting, offering important

information when designing empowering future interventions before, during and after military operations.

Goldberg & Goodyer (2008) emphasize that poor psychological health has complex causes, and describe the development of poor psychological health by three components:

1. **Resilience** is the first of three study variables in the current study. Genetic predisposition, important childhood life experiences and a resilient personality can influence an individual's proneness towards developing poor psychological health.
2. **Releasing incidents:** When exposed to life's chronic and acute demands, individuals with a genetic proneness can develop a psychological disorder. *Protective factors* are 'good genes', high intelligence, social-support, health-promoting lifestyle and response strategy. The second study variable optimistic Self beliefs can therefore be addressed as a protective factor.
3. **Restitution:** SPPH is the dependent variable in present study. Most SPPH such as aches, bodily sensations and sad feelings are transient. They vary, pass and are quite normal: 96% of Norwegians reported having experienced at least one type of health complaint in the last 30 days (Ihlebaek, Eriksen, & Ursin, 2002).

### ***Preventing poor psychological health***

Research shows that groups with high socioeconomic position have the best general health (Krokstad, Kunst, & Westin, 2002), and psychological health (Muntaner, Eaton, Miech, & O'Campo, 2004). A recent Norwegian study showed that populations with higher education offer some protection against SPPH (Bjelland, Krokstad, Mykletun, Dahl, Tell, & Tambs, 2008). This indicates that because cadets are paid and receive higher education during their time at the war academy may itself be preventive to poor psychological health.

Furthermore, the timing of preventive action seems to be important. Evidence from American studies suggests preventive action should be taken in early adulthood, because the debut of psychological disorders in the general population was earlier than other common and serious somatic illnesses such as cancer and heart disease (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). Regardless of timing of an intervention, it is a general observation that



individuals respond differently to the same social situation or challenge. Early findings suggested that Navy personnel starting out with a high subjective stress level became ill more often than those having lower initial stress levels (Rahe, 1974). To explain such findings, Kobasa, Maddi, & Courington (1982) suggested that some individuals who have the tendency to perceive stressful situations as positive, challenging, enjoyable and developing, could be called "hardy". A psychological Hardiness is suggested a starting point for the direction and methods used in the present study.

### ***Hardiness***

Although the term Hardiness has its roots back in existential psychology (Maddi, 1967), the term was described for the first time in research literature by Kobasa (1979). She described the construct as organized around three relatively stable factors: *control*, *challenge*, and *commitment*. *Commitment* describes how dedicated people are to themselves and their surroundings. *Challenge* describes whether people view new experiences as interesting and exiting. *Control* refers to how much they believe they can influence their course of life. Having these specific characteristics helps an individual to evaluate a situation as controllable or uncontrollable, challenging or threatening, and is decisive to whether a person will be dedicated to the task or feel alienated (Kobasa, Maddi, Puccetti, & Zola, 1985). These dimensions are thought to work in concert, making people less prone to stressors. According to Maddi (2002) Hardiness contributes in turning potentially demanding experiences into individual experiences that can generate personal growth and development. Since Kobasas (1979) original evidence on executives, Hardiness' preventive effects against poor physiological and psychological health has been confirmed for military personnel, such as Gulf War soldiers (Bartone, 1993; 1999; 2000) U.S. Army casualty assistance workers (Bartone, Ursano, Wright, & Ingraham, 1989), peacekeeping soldiers (Bartone, 1996; Britt, Adler, & Bartone, 2001), Israeli soldiers in combat training (Florian, Mikulincer, & Taubman, 1995), Israeli officer candidates (Westman, 1990), Norwegian Navy cadets (Bartone, Johnsen, Eid, Brun, & Laberg, 2002) and recently for a comparable group of Norwegian university students (Hystad et al., 2010).

Although the term Hardiness is used throughout the present study, recent theorists argue that Hardiness resembles the concept of resilience (Leipold & Greve, 2009). Resilience is not

described as a personality trait, but rather as the phenomena of a normal, stable or successful developmental course under potentially endangering circumstances. Resilient or hardy cadets can be described as persons with the capacity to bounce back when things go awry (Coutu, 2002). This general ability to bounce back and even respond with positive developmental traits to serious adversities and traumas seems to be very common. Bonanno (2004) argue that the human capacity to thrive from adversity is underestimated, and there is convincing evidence that he is right. People experiencing extremely severe or traumatic experiences recover and even thrive in the aftermaths. For example, most survivors of the September 11, 2001, attack on the Pentagon appear to have adjusted surprisingly well to this extreme event (Ritchie, Leavitt, & Hanish, 2006). Wessely (2005) found that the majority of Londoners did not respond with psychopathology to the July 2005 terrorist strikes on the London public transport system. Furthermore, during WW II the population in general did not respond with a breakdown in the face of the Nazi German bombings of London that killed 40,000 people (Jones, Woolven, Durodie, & Wessely, 2004). However, there is a dose-response relationship between severity of exposure and onset of PTSD (Dohrenwend et al., 2006). Even though military personnel have the ability to bounce back after one deployment, an increasing deployment rate and more severe operations could increase mental health problems before, during and after military operations. The question is to what extent psychological Hardiness can be changed and improved?

There is evidence that Hardiness can be learned and developed (Kobasa et al, 1985; Maddi 2002; Coutu, 2002). Leipold & Greve (2009) suggest that Hardiness appearing outwardly as the expression of stability, inside the person is probably the result of dynamic and interacting regulating processes, that constantly change throughout the lifespan. Thus, only small explicit changes in SPPH are interesting, because the changes would be a result of important implicit cognitive processing. If the pathways that lead to Hardiness were better understood, perhaps some factors could be developed to improve or sustain cadets' Hardiness. So far the perspective has been heavily cast in reactive terms and it is time to introduce a perspective proposing that cadets are not just reactive organisms.

## ***Social cognitive theory (SCT)***

Bandura (1999) has argued against the importance of stable individual differences, noting;

Given the highly conditional nature of human functioning, it is unrealistic to expect personality measures cast in non-conditional generalities to shed much light on the contribution of personal factors to psychosocial functioning in different task domains under diverse circumstances across all situations. (p. 160)

Bandura (1997) proposes that all stimuli are filtered in the brain, and through self-reflection people can evaluate and alter their own thinking and behaviour. With intention, cadets can regulate motivation, thoughts, feelings, actions and even aspects outside themselves. Bandura claim it is not past performance itself that determines future behaviours, but what is psychologically made out of it. Within academic research it is argued that the beliefs that individuals create and develop about themselves, are the vital forces in success or failure during education (Pajares, 2006). In a SCT perspective, cadets are continually enabled by beliefs, rather than merely buffered by genes, competencies or other protective factors. However, as suggested by Judge, Jackson, Shaw, Scott, & Rich (2007) students probably bring with them to the learning situation certain Hardiness characteristics that can be further boosted by their Self beliefs. Clarifying the relationship between SPPH, Hardiness and cadets' Self beliefs is central in the present study.

However, taking such a person centred approach, involves a risk of underestimating the role of external factors (situation, context variables). In believing that only attributes in the person are decisive, the study may be highly inclined to neglect the fundamental interactive nature of developmental processes. To minimize these pitfalls, the present study presents a theoretical framework that embraces both psychobiological explanations, cognitive evaluations and the actual stress activation. The framework herein to be presented moves past a pure description and offers an explanation of the health benefits of fostering positive beliefs.

## **Cognitive Activation Theory of Stress (CATS)**

CATS as outlined in Ursin & Eriksen (2004) is a comprehensive model that explicitly defines coping as a *positive response outcome expectancy* (PROE); indicating whether people expect they will be able to handle the situation with positive result or not. Building on the recent work of Endresen, Eriksen & Ursin (2008) and Ursin & Eriksen (2009), it is offered 3 main reasons why CATS is appropriate to explain the relationship between individual differences, cognitive attributions and SPPH.

### **REASON 1: CATS gives a psychobiological explanation for the assumed relationships between health and external and internal events referred to as “stress”**

SPPH can be caused by biological dysfunction, but also by a normal involuntary stress response. Reviewing the literature, theories of SPPH differ in the particular determinants they feature, but it is generally suggested that external stressors constitute risk factors that act on personal predispositions to produce SPPH. According to CATS, the internal stress response is normal and occurs in all species at all ages in all cultures and is an essential part of our adaptive system. On the contrary, threats and challenges can be reconstructed into discrepancies between a current “*is-state*” and an intended or desirable alternative “*should be-state*”, and a discrepancy between the states creates stress. It is not the distaste for the alarm that is a health threat, but the sustained stress response. According to Stubhaug, Tveito, Eriksen, & Ursin (2005) it is a negative spiralling effect: CATS suggests a lasting discrepancy between the *is-* and *should-be* states involve sustained activation leading to a psychobiological sensitization where mild SPPH produce more symptoms, developing into serious levels of SPPH.

### **REASON 2: CATS is a cognitive theory since physiological and psychological consequences depend on cognitive evaluations of the situation and what a person can do about it.**

There is consensus about there being no linear relationships between the load (“stressors”) and the resulting response (Levine & Ursin, 1991). It is the person’s experience of the demands and the expectancies of the outcome that determines the response. The response is based on the psychological appraisals one makes, not actual knowledge, skills or abilities. Lazarus (1991) differentiated between knowledge and appraisals. *Knowledge* refers to the generalized truth about something (e.g. I am a cadet). Looking for knowledge about something (e.g. one’s education),

focusing on determining a certain factual property of it (e.g. grades or a degree), that is not relative. *Appraisals* refer to a cognized view about something in a certain context. Making an appraisal focuses on making a relative assessment of an aspect of a person in a context (e.g. I can handle to be a cadet on this war academy). Lazarus' appraisals are tied to the filters in the brain where all stimuli must pass.

According to CATS, PROE are developed when people learn what responses give the (subjective) desired outcome. The 'filters' in the brain rank priorities which according to CATS emphasize expectancies quantified by:

- Acquisition strength: The strength of an expectancy depend on the properties of the events (saliency), contiguity in the presentation, number of presentations, and how often the events occur together (the predictive value).
- Perceived probability: Probability based on learning may differ considerably from the objective probability.
- Affective value: reward value of the expected event.

In all species examined, PROE in threatening situations leads to low somatic stress levels, measured as subjective feelings, hormone levels, muscle tension, or immunological responses (Ursin & Eriksen, 2004). Boe (2006) found that cadets having lower positive self beliefs had higher stress levels between parachute jumps, than those with higher positive Self beliefs. This illustrates that positive appraisals have positive effects on sustained SPPH in high stress environments.

**REASON 3: CATS is an activation theory and the psychobiological consequences of cognitive activity are explained by increases in activation and not coping strategy.**

Brandst dter (2006) suggests that responses to problems can be divided into 3 categories. Either one can actively try to solve the problem (problem-focused), reactively avoid or modify how one views the problem (emotion-focused), or ignore and deny the problem. Research on the effects of different response strategies is ambiguous. At the most challenging levels of sport participation, the use of active coping strategies has been associated with a higher degree of perceived control and satisfaction (Pensgaard & Roberts, 1995; Pensgaard & Ursin, 1998). Further, Sandal (1996) found emotion-focused coping to be maladaptive among polar explorers and space-aviators. An

explanation offered by her was that group members failed to inform about important issues and/or contradict the decisions of the leader due to emotional outbursts. However, it is claimed far too simplistic to assume that problem-focused strategies are adaptive and emotion-focused strategies are always maladaptive. Problem-focused strategies depend on perceived control and available time, which is not always a surplus source. Ursin & Eriksen (2004) argue that strategy chosen does not predict health effects, because it does not predict the result or the internal state; and can be executed in high, as well as low, arousal. In a CATS perspective, a search for a general reaction to certain types of problems would seem fruitless or even counterproductive.

CATS propose PROE is related to psychophysiological activation and therefore acquires predictive power for physiology, pathophysiology, and health. Thus, cadets with positive beliefs about future outcomes would be predicted to have less SPPH. In this context, PROE is a positive belief that seems to have much in common with Bandura's (1997) self-efficacy concept.

### ***Self-efficacy (SE)***

*Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments* (Bandura, 1997, p.3). Research shows that SE has positive influence on SPPH, health and injuries in military personnel (Hadid, Evans, Yanovich, Luria, & Moran, 2008). Recent developments of SCT suggest that positive beliefs in capacity help people to overcome difficulties arising after exposure to traumatic event (Benight & Bandura, 2004). This is confirmed in a recent review concluding that SE relates to lower levels of posttraumatic SPPH (Luszczynska, Benight, & Cieslak, 2009). Bandura (1997) claims the satisfactions people derive from what they do are largely determined by their appraisals. Therefore, it is plausible that unless cadets believe they can produce desired effects by their actions tied to the education on a war academy, they have little incentive to act or to persevere during tough times. Accordingly Bandura, would agree that cadets with a strong sense of SE towards the education are motivated by failures, attributing failure to insufficient effort, while cadets with low SE are uninspired. Cadets, who do not believe they 'can', would believe things are tougher than they really are, view challenges as threats to be avoided and lower their standard.

Bandura (1997) defined SE as a task- and context-specific variable that vary over time. However, it has been found to have domain effects (Multon, Brown, & Lent, 1991), suggesting that cadets' strong academic SE could be beneficial to other areas in their life. For example, from primary school through secondary school, academic SE is found to reduce involvement in problem behaviour and beneficial to building social relations (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). However, is this suggesting that actual knowledge and skills is insignificant?

The answer to that would be no, because in the longer run the impact of low academic SE on SPPH has been found to be mediated through academic performance (Bandura, Pastorelli, Barbaranelli, Caprara, 1999). This suggests that sufficient skills and abilities to perform seem important for SE's long term effects. The reason offered was that the satisfaction students experience when performing well has positive impact on their SPPH. Bandura's (1997) comprehensive research confirms a positive link between SE and performance across various disciplines. In the educational domain, SE is reported to correlate with grades on homework, exams, quizzes, essays and reports (Pintrich & De Groot, 1990). In Multon et al.'s (1991) meta-analysis SE accounted for approx. 14% of the variance in academic performance. There is also evidence of long term effects. Research on postgraduate students found that SE towards the academic work had effects on performance on a complex task 13 weeks later (Lane & Lane, 2001), and on exams after a 15 weeks course (Lane, Lane, & Kyprianou, 2004) and 24 weeks course (Lane, Lane, & Cockerton, 2003). This can count as indirect evidence for SE having positive long term effects on SPPH, but there is a word of caution.

On one side, SE may have positive influence on SPPH, because cadets with high positive SE may study relatively less because they are relatively more prepared. On the other side, they could have an inflated sense of preparedness. Although there may be stories of overconfident soldiers temporarily charging successfully without fear, because the enemy was "paralyzed" by surprise, overconfidence may also be counterproductive. In a learning context "some self-doubt about one's performance efficacy provides incentives to acquire the knowledge and skills needed to master the challenges" (Bandura and Locke, 2003, p. 96). Vancouver and Kendall (2006) found that SE was a positive function of past performance, but that it negatively related to subsequent performance. They suggested that part of the problem could be miscalibrations of what was

required to meet one's goal and that SE could have important influence on this miscalibration. Consequently, high academic SE among cadets who lack skills and abilities may offer short term relief from SPPH because they probably worry less, but in the long run they could be stressed, disappointed, frustrated or sad from not reaching their desired goals.

One should think that cadets soon would learn to calibrate and internalize a sense of academic expertise or at least professionalism. Lynch (2008) found the opposite in his recent study on university students. He found a drop in SE with a subjects increasing difficulty for first-year students as well as for final-year students, suggesting that university students do not internalize a sense of expertise during the education. Since the education on a war academy is mostly preparatory; attempts to raise SE on cadets who do not see the importance of all subjects and have not internalized a professional attitude towards what it takes to perform well, may adversely affect performance through a lack of motivation to study hard. Thus, the relationship between positive personal beliefs and performance is only potentially positive. To clarify why some "self doubt" could be beneficial and explore the subtle difference between PROE and SE we turn to the concept of control.

## **Control**

People who continuously experience a lack of control were found to have more SPPH than those who felt they could regain control (Sanne, Mykletun, Dahl, Moen, & Tell, 2005). Recent research found that the combination of high demands and low control had the worst effect on long term SPPH (Dalgard et al., 2009). Assuming that even a perceived loss of control can create stress, it is subjectively and objectively important for humans to control their relationship to their surroundings (Heckhausen & Schulz, 1995). According to SCT, perceived self efficacy mirrors a sense of control over one's environment and reflects the belief of being able to master adversity and its aftermath. Thus, positive Self beliefs can influence people's perceived control.

Furthermore, Bandura (1997) claims that the satisfactions cadets derive from what they do are dependent on the standards against which they evaluate their attainments and that goals should be challenging but realistic. This is in line with the research finding that SPPH were most likely to increase when personal standards of merit were set well above one's perceived efficacy to attain them. Kanfer & Zeiss (1983) Pensgaard & Hollingen (2006) claim challenging and realistic goals



ensure mastery and increases motivation. In both a SCT and CATS perspective, the perceived loss of control when there is a discrepancy between the “is” and “should be” state can increase motivation to regain control, resulting in a feeling of mastery and less SPPH. As a result, some “self doubt” could be stimulating for cadets’ development, but cadets who continuously experience a lack of control would be more prone to SPPH than those who feel they can regain control.

### **Difference between SE and PROE**

Finally, Skinner’s (1995) agent-means-ends model relates the concept of control to SE and PROE, clarifying the subtle difference between PROE and SE:

- The agent-means connection involves expectations the cadet (agent) has regarding the means to produce a response (e.g., a cadet believes that studying hard will lead to a desired outcome).
- The agent-end connection involves expectations the cadet (agent) has regarding the capability to obtain a desired outcome (e.g., how strongly a cadet believes he or she will reach a desired goal).

Bandura (1997) indicates that SE originally was conceptualized as an agent-means belief. Although high PROE may be a result of the use of certain strategies, (e.g., working hard, practice) it is categorized as an agent-end belief. Some may have positive capacity beliefs, but not necessarily believe it will produce the desired outcome. It is hard to decide if strong agent-ends beliefs (e.g., “I will end up being among the best at the school”) should be more likely to predict successful development than strong agent-means beliefs (e.g., “I have confidence that I can mobilise the power to work hard with the studies”). However, it is argued that PROE incorporates a capacity and strategy belief and, therefore reflects a stronger total belief than SE beliefs (Pensgaard & Duda 2002). Assuming cadets expect the outcome to be positive and they believe they can do what it takes, PROE should prevent SPPH better than SE beliefs. In support of PROE being a “larger” concept, there is evidence that PROE is a more important predictor of lower levels of SPPH than only high levels of perceived control (Eriksen & Ursin, 1999). However, when SE is generalized and related to an event with high affective value, it becomes close or even identical to PROE. General SE is reviewed and discussed in detail by Bandura (1997) and Stajkovic & Luthans (1998).

In conclusion, both agent-mean and agent-end beliefs are interesting perspectives in the present study and can offer valuable insight into how cadets cope with discrepancies between an “is-” and “should-be-state” in daily life. SE and PROE are both powerful motivation constructs that can influence SPPH in important ways. Furthermore they may have promising applied consequences because they can be readily manipulated, changed and learned, possibly preventing mild SPPH developing into more serious problems.

Bandura (1997) suggests people interpret information from experience and develop SE beliefs about their capacity to engage in subsequent behaviours in similar domains, and act according to the beliefs created. This is very similar to PROE which is gained through response outcome learning, or instrumental conditioning: learning that one type of action (response) leads to a consequence (Endresen et al., 2008). The evidence presented on the long term effects of positive personal beliefs suggests that dealing with stressors is a learning process, where cadets cognitively develop SE and PROE based on information in the situation. Bandura (1997) claims there are at least 4 sources of information: 1) *Personal mastery experience*: Individuals gauge the effects of their actions, and their interpretations of these effects help create their beliefs. Success raises the beliefs - failure lowers it. 2) *Vicarious experience produced by the action of others*: People make social comparisons with others, which can influence the development of self-perceptions of competence. Experiencing a significant model in ones life can help instil self-beliefs that will influence the course and direction life will take. 3) *Verbal persuasion received from others*: Successful persuaders cultivate people’s beliefs in positive outcomes and their capabilities while at the same time ensuring that the envisioned success is attainable. Empty inspirational homilies and negative persuasions can weaken self-beliefs. Regarding education, Pajares (2006) claims it is easier to weaken self beliefs through negative appraisals than to strengthen such beliefs through positive encouragement. 4) *Anxiety, stress, arousal, fatigue, and mood states*: Emotional reactions experienced prior or during an action can easily affect the confidence, by providing cues about the anticipated success or failure of the outcome. The typical nervousness or “butterflies in the stomach” phenomenon that most people experience before important events will not necessarily weaken self beliefs, but intense physiological states can be “read” as though something is amiss, even when it is not.

Based on the theory presented, Positive beliefs and Hardiness are important psychological resources regarding cadet's SPPH. In a SCT perspective, cadets are not merely buffered by positive Self beliefs and Hardiness. Instead cadets can learn to be hardy through experiencing that adopting Self beliefs together with a "tool box" of response strategies may improve their ability to improvise, adapt and overcome future challenges without sustained high levels of SPPH. It could be proposed that Hardiness and Self-beliefs are parts in "*a common core confidence*".

### ***A common core confidence***

The same adjectives are commonly used in SE research to describe being self-efficacious as they are used in Hardiness research to describe being resilient: strong, malleable, resistant despite obstacles, adaptable, in control and determined (e.g. Bandura, 1997; Bartone, 1999; Stajkovic & Luthans, 1998, 2003). Judge et al.(2007) found that stable factors in the person work in concert with positive self beliefs, and a recent study of climbers found a significant interaction between hardiness and SE on behavioural "disengagement" (Chroni, Hatzigeorgiadis, & Theodorakis, 2006). In other words, Self beliefs (i.e. Can I study in this context and succeed?) and Hardiness (i.e. Can I bounce back from this misfortune?) seem to relate positively to situations in need of successful personal adaption. SE, PROE and self-perceptions of control are found to be facilitating conditions for problem-focused strategies in university students (Hall, Smith, & Chia, 2008). Although CATS would not predict SPPH by response strategies, they are obviously part of the mechanisms in action. Borkowski, Chan, & Muthukrishna (2000) propose a positive spiral effect - those who perceive themselves hardy, having high social and academic competence uses suitable coping strategies, gets motivated and continue their positive behaviour. In the present study it is therefore hypothesized that this *common core confidence* would influence cadets' SPPH in positive ways on a war academy.

## Aims and hypothesis:

The scope of the present pre-post study is to go beyond description and closer to which processes facilitate or create the ability to overcome difficulties. The present study integrates research on Hardiness (Kobasa, 1979) with research on Self efficacy (Bandura 1997). In addition, Bandura's SCT and CATS (Ursin & Eriksen, 2004) are used as an encircling theoretical frameworks to explain how the constructs influence SPPH. Engaging a sample of 295 military cadets, the study tested an 8 month longitudinal model where the relationships between Hardiness, positive Self beliefs and SPPH during cadets' daily life were investigated.

*First*, it was hypothesized that Self beliefs relate to Hardiness suggesting they are parts of a common core confidence. *Second*, it was hypothesized that Hardiness and Self beliefs prevent an increase in SPPH, suggesting the cadets are enabled to successfully respond to stressors. *Third*, it was hypothesized that changes in SPPH explain changes in Hardiness and Self beliefs, suggesting that increasing these constructs will lower SPPH. *Finally*, it was hypothesized that changes in Self beliefs could explain changes in Hardiness, suggesting that by increasing Self beliefs it will increase Hardiness. Figure 1 shows a graphic depiction of a model combining these hypotheses. Hardiness is placed first in the model, because it can be thought of as a more stable psychological basis than SE and PROE.

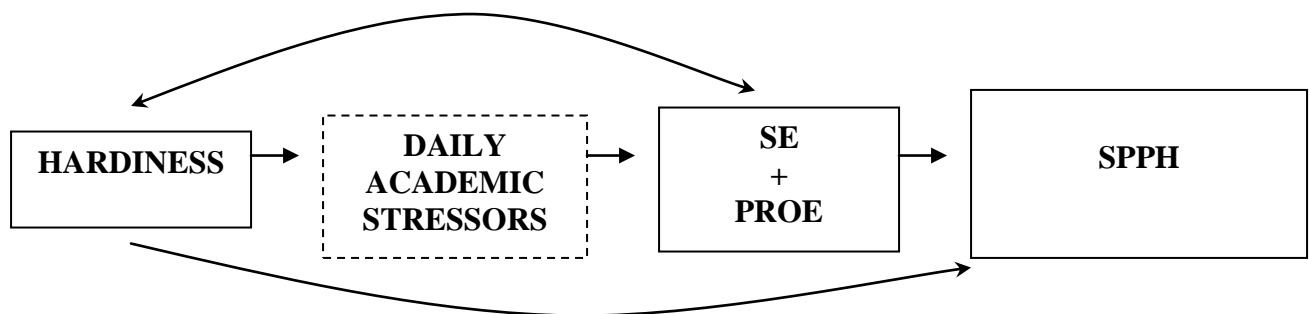


Figure 1. Directions of Relationship between the Study Variables

## Methods

### *Participants*

The population in this study consisted of 295 military cadets. In the initial phase of this longitudinal study, there were 266 males and 29 females. The cadets attended on one of 3 Norwegian war academies, located near Oslo (N=119), Trondheim (N=71) or Bergen (N=105). It is to be expected that the education institutions and cadets attending a war academy would change, and the population is only representative for cadets belonging to this community, not all cadets on war academies. This group is not merely a sample, but all cadets enrolled into Norwegian war academies in august 2007 and 2008 (i.e. the total population). Thus, odd cases and even small changes in percent are of interest. Cadets are selected on both physiological and psychological parameters and selected for inclusion on a war academy (Forsvaret, 2010). Consequently, the group can be expected to be homogenous. However, a pilot-study on the three schools in august 2006 (n=75) revealed relatively large variance in physiological variables such as age, oxygen uptake and lean body mass. Although it may be difficult to get normal distributed data, one could also expect to find similar variance in the psychological measurements.

### *Procedure and drop out*

This community adheres to a stringent consent procedure for the conduct of research on the war academies. A research proposal had to gain approval from a national council (Appendix C) and a council on every academy composed of; the principal, head of the academic department and teacher representatives. Cadets were free to decline to take part and informed consent was obtained from all cadets. The larger study “Kadettutviklingsstudien 2007-2014” was presented to the staff and cadets as a project designed to gain better understanding of how cadets develop during the education. All cadets (N=295) in two cohorts, enrolling in august 2007 and 2008, participated in the study. The cadets were reassessed on all parameters 1 academic year later, with 84% of the cadets also participating at this second time point.

There could be numerous reasons for the loss of participants at the second time point. From the information received from the academies a group of 15 cadets either quit the education or pulled out of the project from pre to post test. It was obtained no information about the remaining 33

dropouts, and according to Williams & Wragg (2004) this loss of participants can be based in unspecific reasons such as cadets choosing not to participate in the study, or other natural reasons such as being absent.

### ***Administration***

Two experimenters administered the sets of scales measuring the variables of theoretical interest in plenary sessions in auditoriums on the respective schools. The aim was to investigate development over an academic year and the first time point was in august just after the start of the first year. The second time point was between late April and early June. The dates were carefully chosen in order to run the tests during average weeks, without major happenings such as exams, major leadership exercises etc. Due to the parallel physiological measurements and the geographical distance between the three academies, the collection of data at both time points stretched over a period of approx 1 month. The collected data are kept safe and according to regulations.

### ***Design***

The present study followed two cohorts on 3 war academies in the period 2007-2009 and can be described as a prospective longitudinal study. Longitudinal investigations often use questionnaires as a method for collecting data on different time points (Williams & Wragg, 2004). Receiving information over time with more than one assessment makes this a powerful design. It gives important information about how the education on a war academy influences cadets. Because of the time- span of this study, a possible downside to this research is possible dropouts. It is a quantitative study using different statistical analyses, searching for trends and patterns in the data on all variables. Changes in a variable may be caused by changes in the surroundings of an individual. The changes could either be by chance (individual and therefore not statistic) or caused by a more or less intentional action from the environment and can be traced by statistical analyses. The repeated measure design of this study is a further strength, because when measuring the same individual on different time points one can control for individual differences in SPPH that may confound the effects of the study variables.

## **Measurements**

### **Hardiness**

To measure the level of Hardiness it was used a 15-item scale that; a) includes both positively and negatively keyed items; b) covers Kobasa's (1979) three Hardiness facets; commitment, control, and challenge, and c) has been used in other studies with cadets in training to be military officers, showing excellent validity and reliability (Bartone, 1995), also on a Norwegian population (Johnsen, Eid & Bartone, 2004). This measure is a shortened version of the Dispositional Resilience Scale (DRS; Bartone, Ursano, Wright & Ingraham, 1989). DRS was identified by Funk (1992) in his review of Hardiness research as the best available tool for assessing Hardiness. Cadets rated how well every item suited how they would describe themselves from 1 (not suitable) to 4 (very suitable). For the use in the present study it was not differentiated between commitment, challenge and control. Thus, the mean score of all items represented cadets' total Hardiness with min/max score still being 1 and 4.

### **Self efficacy**

Cadets' beliefs in their academic self efficacy towards the education on a war academy were measured by 7 items. For each item cadets rated their beliefs in their level of capability to execute the designated activities, using a 7-point response format. Pajares (2006) claim that all-purpose or general self-efficacy instruments of the type used in self-concept research are neither developed nor encouraged by self-efficacy theorists. Conversely, Judge et al. (2007) suggest that given the movement away from jobs defined by narrowly defined job descriptions, very specific efficacy may not be the optimal way, and found evidence for a more global measure being valid in modern work contexts.

However, Bandura (1997) claim it is important that SE is more than a hope. A cadet must know something about the education on a war academy to have SE beliefs towards it. Furthermore, the time between measurements and to what degree the content in the items reflects the task will influence effect-sizes. Lane & Lane (2001) claim that complex tasks with high demands to knowledge, cognitive processing and endurance may lead to unreliable measurements. The instrument (Appendix B) in this study is tailored to fit the academic domain on a war academy,

and is in line with the presented criteria for sufficient specificity and correspondence in Self efficacy research.

The scale was meant to be one-dimensional, but a PCA with promax rotation suggest a two factor structure. The first factor, academic SE, included high loading on items measuring perceived capability to manage process activities that are likely of importance for academic performance such as handle tough times. PROE constituted the second factor. The items loading on this factor included perceived capability for making it through the education and performing well.

Uncovering these two factors is interesting because they confirm Skinner's (1995) division into agent-means and agent-ends connections. In the initial descriptive analysis a calculated mean score of the first factor-items represented cadets' SE beliefs. The mean score of the second factor-items measured cadets PROE. For the objective of this study the two factors were combined in the regression analysis and a calculated mean score of all 7 items represented cadets' total Self beliefs - 1 and 7 being the min/max score for all measures.

### **Symptoms of poor psychological health (SPPH)**

Among numerous questionnaires developed to measure SPPH and psychological health a much used method is Hopkins Symptom Checklist containing 25 questions about psychological problems and suffering, (HSCL-25; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). The Survey of Living in 1998, 2002, 2005 and 2008 conducted by Statistics Norway used HSCL-25 (e.g. Hansen, D, 1999). The present study used a Norwegian short version with excellent reliability and validity HSCL-10 (Strand, Dalgard, Tambs, & Rognerud, 2003) and some items from HSCL-25, in sum 14 items (HSCL-14). The cadets rated every item based on how they had felt the last 14 days on a scale ranging from 1: not a problem, to 4: very much troubled. A calculated mean score represented cadets' level of SPPH.

A PCA with promax rotation uncovered two factors:

*The first factor, low mood and negative thoughts*, was represented by items measuring hopelessness, uselessness, worthlessness, feeling down, low on energy and problems sleeping.

*The second factor, nervousness and unease*, included high loading on items measuring fear,



anxiety, nervousness and worry. For the scope of this study, the two factors were combined to one measure of psychological health, named SPPH.

There was no direct measure of physiological activation in this study. However, physiological activation would only be one manifestation of cadets' poor psychological health. Psychological health is manifested in numerous ways - some cadets may respond with becoming nervous and worked up because of the education, others may be sad and low. SPPH was used as an *indicator* for sustained stress or hardship in much the same way as Subjective Health Complaints (SHC) (Eriksen & Ursin, 2004). Consequently, HSCL-14 is considered a valid and reliable measure, representing cadets' general psychological health.

### ***Internal consistency:***

There are no correct or wrong answers to the questions in the questionnaire, and there are numerous individual combinations within every construct, which in itself could be interesting. However, some degree of internal consistency is important. Nunnally & Bernstein (1994) suggest measuring Chronbach's alpha for all scales and that  $\alpha = .70$  should be a limit for the psychological domain. Lower values should be deemed questionable. The Chronbach's alpha coefficients for all scales were calculated, and all scales passed the .7 criterion, ranging from .70 to .85, except for the Short Hardiness Scale at Time 1 ( $\alpha = .62$ ). The scale was still accepted considering it is a relatively short scale, and in line with values found in recent Short versions used on American samples (e.g. Bartone et al., 2008).

### ***Statistics***

To test the present research questions, the data in this study was analysed by using Statistical Package for Social Science (SPSS) 15.0. The data was checked for out of range values and missing values. There was no out of range values, but 9 respondents with missing values at T1 and 15 respondents at T2. Missing values is normal in quantitative research (Pallant, 2007). There can be numerous reasons for respondents not answering all questions in a survey. Some forget to answer, while other do not want to. Tabachnick & Fidell (2007) suggest that as long as the values are *missing completely at random* they would not be a problem for the reliability. It is only when missing data creates a pattern it is problematic. Analyzing the data there was found no

signs of patterns in the missing values. Based on Tabachnick & Fidell's (2007) assumption, the missing values found in the present study would not be problematic. The missing values were *excluded pair wise* in the analysis, meaning that the respondent is part of the dataset, but excluded from the specific variable not answered. This is a recommended method preventing excluding many respondents (Pallant, 2007), and prevents diminishing an already small variance in the population by replacing the missing values with mean.

*Outliers* are values that can make the group data non-representative and should be removed from the data. During the initial analysis there was found outliers, which was expected when investigating psychological health. If the hypotheses are correct, cadets with high levels of SPPH will differ on Self beliefs and on Hardiness from those with low levels of SPPH. These cadets will be marked as outliers by SPSS because they differ from the group mean. To check the relative effect the extreme values have on the Mean, Pallant (2007) suggest comparing Mean and 5 % trimmed mean, which is the mean after excluding the upper and lower 5% of the values. This revealed only minor differences, and there was found no reason to exclude any of the values in the current study.

Cadets being a selected and homogenous group, it was no surprise that the data did not meet the criterion for normality on Kolmogorov-Smirnov and Shapiro-Wilk tests. According to Tabachnick and Fidell (2007) this is not a problem with relatively large samples and rather the rule than the exception. However, they suggest that for analysis sensitive to normality, the data could be transformed into standardized residuals. *Standardized residuals* corrects for a lack of normality, skewness in data and difference in scales, because they have a known central tendency and variance (Tabachnick and Fidell, 2007). To secure the findings in the current study, reducing the chances of error, the data were transformed prior to the regression analysis.

## Results

Table 1 presents the means and variances for the different sets of variables. It also includes the matrix of relationships among the various variables at both longitudinal time periods. One-way MANOVA was run to test for significant differences between genders, but no significant differences emerged and the data was analyzed across gender. Paired sample *t*-tests showed that the changes from pre to post tests on Total Self beliefs, SE beliefs, hardiness and SPPH were significant. However, the calculated effect sizes in terms of percentage change showed that Total Self beliefs declined 2,79%, Hardiness 2,48% declined and SPPH increased by 7,24%. However, there was no significant change in PROE. It should also be noted that the variance on both pre and post test on SPPH and Hardiness was only between .20 and .30. Based on Strand et al.'s (2003) definition of poor psychological health ( $>1,75$ ); the number of cadets with poor psychological health increase from 5 cadets to 16 during the academic year.

### Network of Relationships

In line with hypothesis SE, PROE and Hardiness at both Time 1 and Time 2 significantly positively correlate. The exception being that there was not found significant correlation between Hardiness at T1 and Total Self beliefs or with PROE at T2. Also in line with hypothesis, all the Self belief dimensions at both T1 and T2 were significantly negatively related with SPPH at T2, along with Hardiness at T2. Again Hardiness at T1 was the exception, where no significant correlation was found with SPPH T2. Due to the relative high correlations between SE- and PROE-dimensions the merged factor was used in the further analysis, and named Self beliefs.

It could be hypothesized that the effects of a relatively stable Hardiness factor on SPPH could be mediated by more varying Self beliefs. Following the procedures suggested by Baron & Kenny (1986) to test for mediation one of the criteria is that there is significant correlation between the independent and the dependent variable. As illustrated in Figure 2, there was not found significant relationship between Hardiness and SPPH T2 in the present study, and therefore not tested for mediation effects.

Table 1:

*Mean-, Correlation- and Change Scores for the Study Variables - on Military Cadets*

		N	Mean (SD)	95% CI	1	2	3	4	5	6	7	8	9	Change T1->T2
1	SPPH T1	291	1.18 (.25)	[1.14, 1.20]										P<.01**
2	SPPH T2	245	1.26 (.28)	[1.23, 1.30]	.42**									
3	Hardiness T1	293	3.14 (.25)	[3.13, 3.19]	-.19**	ns								p<.01**
4	Hardiness T2	246	3.07 (.29)	[3.03, 3.10]	-.16*	-.25**	.55**							
5	Self beliefs T1	295	5.43 (1.60)	[5.36, 5.56]	<b>-.24**</b>	<b>-.19*</b>	.33**	.20**						p<.05*
6	Self beliefs T2	247	5.34 (1.89)	[5.22, 5.46]	ns	<b>-.22**</b>	ns	.31**	<b>.44**</b>					
7	SE T1	295	5.97 (.77)	[5.89, 6.08]	-.29**	-.20**	.35**	.23**	.84**	.32**				p<.01**
8	PROE T1	295	4.89 (1.04)	[4.79, 5.05]	-.15**	-.14*	.25**	.14*	.92**	.44**	.55**			
9	SE T2	247	5.80 (.78)	[5.69, 5.89]	ns	-.25**	.17**	.38**	.42**	.85**	.43**	.32**		ns
10	PROE T2	247	4.88 (1.29)	[4.71, 5.03]	ns	-.18**	ns	.22**	.39**	.95**	.20**	.44**	.64**	
	Valid N (listwise)	232												

Note. CI = confidence interval. \*\*: p < .01 level. \*: p < .05, ns: non-significant.

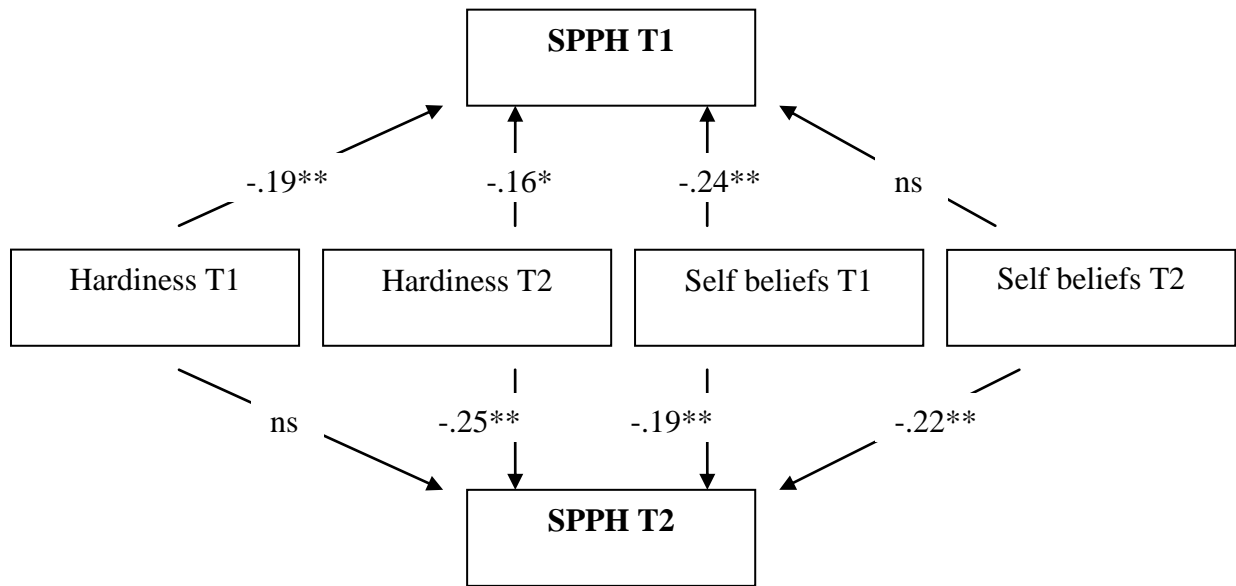


Figure 2.

Pearson product correlation-model of the Study variables used in the further analysis

### Initial SPPH and Self beliefs influence later SPPH?

The hypothesis was tested in a regression analysis. An assumption for regression analysis is evidence of significant common variance between the DV and an IV (Tabachnick and Fidell, 2007). As seen in figure 2, there was no evidence for common variance in Hardiness T1 and SPPH T2. Furthermore one could assume that there would be an interaction effect, but tests showed no evidence for an interaction effect between Hardiness and Self beliefs. Thus, Hardiness was left out of the current prospective analysis. As mentioned, the scores were transformed to standardized Z-scores before the regression analysis, in line with the recommendation of Tabachnick and Fidell. The stepwise method was used to correct for T1 measurements in SPPH.

Table 2:

*Hierarchical Regression Analyses Predicting Military Cadets' SPPH T2 from their initial SPPH and Self-beliefs.*

<b>Variables</b>	<b><math>\beta</math></b>	<b><i>T</i></b>	<b><i>F</i></b>	<b><math>R^2</math></b>	<b><math>\Delta F</math></b>	<b><math>\Delta R^2</math></b>
<i>Step 1</i>			50,46**	.17		
SPPH T1	.42	7,10**				
<i>Step 2</i>			27,08**	.18	3,23 (p = .07)	.01
SPPH T1	.39	6,59**				
Self beliefs T1	-.11	1,80				

*Note.* \*\*: p < .01 level.

In line with theory, SPPH T1 is the most important predictor explaining approx 17% of the variance in SPPH T2. Initial levels of Self beliefs are going towards being a significant factor, but add only one percent.

### **Changes in cadets' Hardiness and Self beliefs explain changes in SPPH.**

Despite the small changes found in Self beliefs and Hardiness during an academic year at a war academy they were still significant, and should be investigated further. To reduce chances of Type 2 error and get information about how changes in Self beliefs and Hardiness are linked to cadets' initial reported SPPH, their scores at SPPH T1 must be controlled for statistically. To test this hypothesis, a method outlined in Aiken and West (1991) was used. This method involves performing a series of hierarchical regression analyses to test whether changes in Self beliefs and Hardiness explained changes in SPPH. The T1 measures of SPPH, hardiness and Self beliefs were regressed on their respective T2 measurements separately, using the "enter"-method. Finally, the saved standardized residuals of Hardiness and Self beliefs were regressed on the saved standardized residuals of SPPH. This method controls for initial levels of SPPH, helps correct for the lack of normality, the skewness in the data and the differences in scales.

Table 3:

*Regression Analysis Predicting Changes in Military Cadets' SPPH from Changes in their psychological Hardiness and Positive Self beliefs.*

<b>Variables</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>F</math></b>	<b><math>R^2</math></b>	<b><math>\Delta F</math></b>	<b><math>\Delta R^2</math></b>
			10.72**	.082		
$\Delta$ Hardiness	-.20	-3,14		.044	11.15**	.044
$\Delta$ Positive academic self-beliefs	-.15	-2,39		.082	9.87**	.038

*Note.* \*\*:  $p < .01$  level.

Overall, the model is significant indicating that changes in Self beliefs and Hardiness together explains about 8% of the variance in SPPH. The unique contribution of changes in Hardiness is about 4 %. Similarly, the unique contribution of changes in Self beliefs is about 4.5 %.

### **Can changes in Self beliefs during an academic year explain changes in Hardiness?**

From an applied perspective it was interesting to investigate whether enhancing cadets more immediate Self beliefs, in the long run would affect their more stable Hardiness construct.

This final hypothesis was tested by regressing the standardized residuals of changes in Self belief on changes in Hardiness. The model was significant indicating that the changes in Self-beliefs explains 8% of the variance in changes in Hardiness ( $R^2 = .081$ ;  $t = 4.62$ ;  $p < .01$ ).

## Discussion

In the present study it was found support for Self-beliefs and Hardiness being parts in a common core confidence construct, but it was only found weak indications of Self beliefs having a long term influence on SPPH. Another finding was that changes in Self beliefs and Hardiness can explain positive changes in SPPH. Finally, there was found evidence for Self beliefs influencing Hardiness in positive ways during an academic year.

### The Level and Changes in the Variables

Compared to the level of SPPH in the general Norwegian population (Hougen & Gløboden, 2004), and university students (Ugreninov & Vaage, 2006), the current results show that cadets are psychologically healthy as a group. The level of Hardiness was also higher than a comparable sample of university students (Hystad et al., 2010), and similar to findings of prior studies on Norwegian cadets (Bartone et al, 2002). Whether the level of Self-beliefs was high or low, is more difficult to judge, since it requires unique tailored instruments specific to every context (Bandura, 1997). However, based on a general observation of the mean values being at the top end of the Self-beliefs scale, one could assume that cadets' level of Self-beliefs was high. Cadets are especially selected into a war academy, and that cadets were found to be psychologically healthy was no surprise. Yet, all study variables changed significantly during an academic year, implying that cadets are not unaffected by life on a war academy. This is in line with Brown's (2000) conclusion after his review of the literature on military cadets. He found that life on war academies were of great importance for the cadets' psychological development.

Identified changes in Hardiness, were contrary to theory supporting that Hardiness can be addressed as a personality trait (Kobasa et. al., 1982). Although, Hardiness is probably more stable than Self-beliefs, recent theorists claim the perceived ability to bounce back when things go awry can be developed and readily changed (e.g. Coutu, 2002). Identified changes in Self-beliefs and SPPH during an academic year were according to theory and evidence suggesting these constructs readily vary and change over time (Bandura, 1997; Ihlebæk et al., 2002). Referring to the magnitude of the effects in the current findings, only the changes in SPPH were of great practical significance. However, there are at least two important reasons to investigate even small significant changes in the current study. *One*, recent theory proposes that dramatic changes in emotion always start with small changes in mood (Andrews &



Thomson, 2009). *Two*, the population in this study included all cadets enrolling at Norwegian war academies in 2007 and 2008 and is not merely a sample (i.e. the whole population).

Anyway: Why these high levels of psychological health among cadets?

According to Goldberg & Goodyer (2008) SPPH have complex causes and there are several evidence based unexplained factors that could influence cadets' SPPH. Evidence states a positive relationship between psychological health and high *socioeconomic position* (Muntaner et al., 2004). Recent research also suggests that *higher education* is positive for psychological health (Bjelland et al., 2008). Existential *economical worry* was considered a major cause for university students having higher level of SPPH (Ugreninov & Vaage, 2006). The fact that cadets are paid during their education may eliminate this major worry. Finally, there are two factors that need further commenting. First, the development of psychological health in the Norwegian population from 1998 to 2005 suggests that *physical activity* is an important protective factor towards SPPH in the Norwegian population (Johansen, Rognerud, & Sundet, 2008). Second, a study on the Norwegian population found that low *social support* is an important risk factor for SPPH (Myklestad, Rognerud, & Johansen, 2008; Sanne et al., 2005). A Norwegian longitudinal study on life stress also confirms this for this age cohort (Ytsgaard, Tambs, & Dalgard, 1999). Why there is reason to believe that these two factors would not influence cadets' SPPH in important ways, needs further commenting.

Based on curriculums cadets' *physical activity* is ensured in different ways: a) Voluntary daily sports- and physical activity on campus; b) Compulsory physical activity twice a week with qualified instructors; c) Practical leadership exercises sometimes involve strenuous physical activity. Moreover, as long as there is time for restitution, physical activity is likely to be an important factor influencing cadets' SPPH in positive ways. However, vulnerability to future SPPH is not only a personal challenge, but also a social one. *Social support* is ensured in many different ways on a war academy: a) Cadets are organized in groups/classes throughout the year; b) Cadets must be present on campus most of the day despite not always having compulsory lectures; c) Cadets have regular individual meetings with staff; d) Leadership exercises are constructed to encourage that cadets cooperate, support and involve everyone, and e) There are numerous and diverse social gatherings. In sum, as long as cadets can manage interpersonal relationships, they do not seem to have much chance to be excluded, or time to feel lonely. Bearing in mind these possible unexplained factors influencing cadets' SPPH, it is time to move on discussing the four hypotheses.

*Hypothesis 1: Self beliefs and Hardiness are part of “a common core confidence”.*

In general, the results in the present study showed that Hardiness and Self beliefs are significantly related both prior and after an academic year suggesting they are elements in a common core confidence. The relationship being that the cadets who believe in positive outcomes and their capacity to master the educational challenges are also those who will bounce back when things go awry.

Considering the unambiguous evidence supporting that the two constructs are part of a common core confidence, the current results were not surprising, and in line with the hypothesis. However, there was one exception. It was not found evidence of common variance between initial Hardiness and cadets Self beliefs after one academic year. There are a few plausible explanations to the controversy. It could be that some cadets do not tie their general Hardiness specifically to the educational domain. This is unlikely considering that a large proportion of a cadets' life is tied to the education, together with convincing evidence of domain effects of psychological Hardiness (e.g. Bartone et al., 2002). There are two more plausible reasons for the lack of common variance.

*One*, there is a chance of a Type 2 error; not identifying an actual common variance. This is highly possible since Hardiness is considered a stable construct (Kobasa, 1982) while Self beliefs readily vary (Bandura, 1997). This fits with the slightly lower variance found in Hardiness compared to what was found in Self beliefs, together with the fact that cadets are selected and form a relatively homogeneous group. Thus, collecting more information of the changes during an academic year may have captured a common variance. *Two*, the instrument used to measure Hardiness had questionable internal reliability. A recent critique published subsequent to this research, suggests changing a few of the items in the instrument to better match the Norwegian culture and this age cohort (Hystad et al., 2010). Moreover, the current findings can count as convincing evidence for a common core confidence, and a likely explanation for the *one* controversy is that a real common variance was not captured. In the further analysis, the aim was to find evidence of whether cadets' level of Hardiness and Self-beliefs at the beginning of the education enabled them to constructively face challenges – predicting low levels of SPPH after an academic year.

## *Hypothesis 2: Initial Hardiness and Self beliefs influence SPPH.*

After controlling for prior levels of SPPH, this prospective analysis did not identify evidence for long term effects of cadets' strong Self-beliefs on SPPH. However, Self beliefs leaned towards being a significant predictor, and were therefore considered an interesting finding. It was hypothesized that cadets' initial beliefs in capacity and desired outcomes would have an enabling effect, preventing later SPPH. This would be in line with research stating long term effects of Self-beliefs in the educational domain (e.g. Lane et al, 2003), and further that people with strong Self beliefs approach difficult tasks as challenges to be mastered rather than avoided (Bandura, 1997). It was hypothesized that cadets with strong Self beliefs would anticipate fewer educational stressors and substandard performances and would tend to override the smaller set-backs and temporary disappointments they experience. Therefore, it was a surprise not finding stronger evidence for long term effects on SPPH.

One explanation could be that Self beliefs are relatively time- and context specific (Bandura, 1997). Only having two measurements waves, separated by 8 months, may not have been enough to capture the more subtle variations through the academic year. The items used in the current study had to be quite general and measure capacity and desired outcomes towards an entire education context, not only towards specific academic tasks and subjects. Although there is evidence of domain effects (Bandura et al., 1999; Multon et al., 1991), cadets Self beliefs towards the education may still have been too fragile and specific to have a powerful influence on the general and long term level of SPPH. Thus, the items had to be quite general in order to be valid, one could assume that collecting more information during the 8 months might have captured more variation.

### **Overconfidence**

Vancouver & Kendall (2006) suggest that a lack of effect from positive Self beliefs could have to do with overconfidence. It could be assumed that cadets with high levels of Self beliefs sometimes study relatively less because they are relatively more prepared (i.e calibrated self regulation), but it could also be because they have an inflated sense of preparedness (i.e miscalibrated self regulation). The latter would hamper academic performance, which has been found to increase SPPH in the long run (Bandura et al., 1999). Thus, using Lazarus' (1991) terminology; both the "appraisals" and "knowledge", plays important parts in how Self beliefs towards the education influence SPPH. Initially, cadets

would be stressed, saddened, disappointed or frustrated by their “appraisals” of their capacity, but in the long run this seems to be caused by a lack of sufficient “knowledge” to ensure the satisfaction of reaching desired academic goals. Consequently, academic expertise and a sense of professionalism would help cadets calibrate and see the value of tough times and challenging subjects. One would assume this to have developed to some extent for this age cohort, but Lynch (2008) found no increase in academic expertise during three years in university. Hence, one should not take for granted that every cadet has inherited academic expertise or professionalism.

Although highly speculative, one could argue on the basis that cadets are different. Not only do they have similar academic experience as other university students, they are also selected based on prior academic achievements. They have made a choice to become military leaders which involves a long term commitment. Therefore, one could argue that cadets would already have, or quickly inherit sufficient professionalism and academic expertise to see the importance of every subject and difficult challenge. This brings us to another plausible explanation for Self beliefs not being a more powerful predictor.

### **Self beliefs are more than a hope**

Whether the cadets knew enough about the education, or whether they valued the abilities and outcomes in question is of importance according to Bandura (1997). Self beliefs must be more than merely a hope, for cadets to have Self beliefs towards the education. Cadets must know what the education is, what it takes to perform, know how to reach the outcomes, and value getting there. To exemplify; working hard, learning more or performing well becomes less valued means and ends for those who neither know anything about the education nor see the value of the capacities or outcomes in question. Therefore, trying to improve Self-beliefs towards something cadets lack knowledge of or do not desire, will probably not work. In much the same way it will not influence long term SPPH, because it is unlikely that people are saddened, frustrated or disappointed by not reaching means or ends they do not value.

Although it may be hard to foresee how exhausting and difficult some things will be on a war academy, there are at least four reasons to assume that the cadets did in fact have enough prior academic experience and information about the education to have powerful Self beliefs related to it. *First*, just applying to a war academy involves a fair amount of research. *Second*, a criterion to be accepted into a war academy is one year of basic military leader training

similar to what they face at a war academy. *Third*, everyone has prior academic experience from secondary school, high school, and basic military leader training to have knowledge of what it takes to perform in a general academic context. *Fourth* cadets receive information about the education during basic military leader training, during the selection period and the introductory period in August.

It is hard to judge whether the cadets *value* and desire the capacities and outcomes in question, without having measured it. However, it can be assumed that it takes a minimum of motivation to even apply to the education, getting through the introductory course and more so the academic year itself. Should motivation vary, it is likely to assume cadets appreciate that their academic results will impact their social status, later choices of service and life in general. Moreover, there are reasons to believe that cadets both value and have enough information about the capacity and outcomes currently in question.

Not finding Self-beliefs to be a powerful predictor of long term SPPH would not come as a surprise to Hardiness researchers. They would claim that long term influence on how people respond to stressors is a matter of personality (e.g. Kobasa et al., 1985). In their perspective, cadets' level of Hardiness determines whether stressors are perceived as positive, challenging, enjoyable, developing or make them feel unstable and out of balance. Hardiness was not included in the present prospective analysis, for specific reasons (see the methods section). For the same reasons, following Baron & Kenny's (1986) recommendations, tests of mediation were not performed. In addition, the present study did not identify significant interaction effect between initial Self beliefs and Hardiness on SPPH. Within the scope of this study, this is not further commented, and should be investigated further in future. However, the strong evidence supporting a common core confidence still suggests that Hardiness and Self beliefs work in concert, but in what ways remains unclear. The concept of *control* is appropriate to clarify how these two constructs possibly relate to influence SPPH in important ways.

### **Control on a war academy**

According to Heckhausen & Schulz (1995) it is subjectively and objectively important for humans to control their relationship to their surroundings. One can imagine that too many simultaneous, problematic situations can create personal overload and instability by threatening order and predictability. Research suggests that a continuous perceived lack of

control is linked to increases in SPPH (Sanne et al., 2005). Pointing to aspects in the objective situation, there are aspects on a war academy that possibly influence the agent-means-ends connection, to use Skinner's (1995) terminology. Although, cadets get regular wages and should not suffer from a general lack of money, a military war academy is organized in a strict hierarchy with rules governing degrees of objective control. All classes are mandatory and cadets are on the lowest level with limited power to influence their objective situation. Furthermore, cadets sign contracts restricting them to withdraw in future military operations and war. Cadets' ability to produce means and ends is systematically challenged during a number of mandatory leadership exercises. In sum, there is a range of aspects implicit in the situation that can decrease cadets' sense of control.

Bartone (2006) sums up the aspects of modern military operations into six primary stressor dimensions: Isolation, ambiguity, powerlessness, boredom, danger and workload. While the main objective on a war academy being to prepare cadets for modern military operations, it is very likely to assume a similar range of dimensions forms the basis for the curriculums. Elements such as academic excellence, initiative, pushing limits and large workloads are aspects emphasized in the curriculums. Moreover, the education as a whole is demanding, and it is not surprising if cadets feel pressured and a loss of control - increasing SPPH.

However, there is a general consensus that it is not the objective situation, but how it is perceived that matters (Levine & Ursin, 1991). As mentioned previously, it seems reasonable to expose cadets to realistic training in order for them to practice and learn. However, the situational demands on a war academy during peacetime should not be underestimated, because the combination of high demands and low control is found to have the worst effect on psychological health (Dalgard et al., 2009). Research does in fact not only show that people can recover from major trauma (e.g. Ritchie, et. al., 2006), but people can even grow from adversities (e.g. Aldwin, 1994, Davis & Mc Kearney, 2003).

Despite the weak evidence for the long term effects of a strong agent-mean-end connection, it does not mean that Self beliefs are not important to maintain and regain control in this context. Unless cadets believe they can produce desired effects by their own actions during the education on a war academy, they have little incentive to act or to persevere in the face of difficulties, making them prone to SPPH. Cadets' Self beliefs are probably weakened and strengthened through an academic year, but is continually important to spark cadets' positive

inherent mood spiral during tough times on a war academy. Although the common fluctuations in Self beliefs and SPPH were not fully captured in the initial analysis, there is another way to analyse the data in order to uncover the relationship. This is further discussed when addressing the next hypothesis.

### *Hypothesis 3: Change in Hardiness and Self beliefs can explain change in SPPH.*

Previously the changes in group means were discussed giving important information about general trends, but gave no information concerning changes on the individual level. Another way to explore the relationship between the study variables is to investigate how the changes interrelate on an individual level, again controlling for the most important confounder, prior SPPH.

The findings suggest SPPH are influenced in important ways by both Hardiness and Self beliefs, adding evidence to the existence of a common core confidence. The relationship being that the cadets who strengthened their ability to bounce back and believing in capacity and desired outcomes had also the lowest level of SPPH. As mentioned previously, it was no surprise that Hardiness was found to influence SPPH in a positive direction during the education. This was in line with this hypothesis and confirms Kobasa's (1979) theory suggesting hardy individuals interpret stressors as facilitating rather than debilitating. It is also consistent with recent research finding that Hardiness predicted low levels of SPPH despite experiencing high stress (Hystad et al., 2010). The present findings support such a positive spiral effect: Hardy cadets with strong Self beliefs flexibly adapt by perceiving challenging situations as controllable. They increase perceived ability to do what it takes in tough times and confident in reaching their desired goals. One would assume that the stable characteristics of the Hardiness construct could influence SPPH beyond an academic year, which was also recently confirmed by research finding Hardiness predicted success in US Special Forces (Bartone et al., 2008). However, there is an important factor that may influence hardy cadets' level of SPPH.

#### **Setting the goals too high**

As previously mentioned, skills, and abilities determine performance and probably influence SPPH in important ways. Furthermore, it is argued that the satisfactions people derive from what they do, are largely determined by the standards against which they evaluate their

attainments (Bandura, 1997). SPPH is found to rise when personal standards of merit are set well above one's perceived efficacy to attain them (Kanfer & Zeiss, 1983). Although hardy cadets are flexible and adaptive, they may nevertheless be influenced by their own set standards or goals. The current study could not control for skills or performance, but it is plausible that Hardiness could have fading or even adverse effects on cadets' SPPH if it is combined with a lack of skills and abilities, or if goals are set too high. Whether it is caused by a lack of goal-setting skills or as a result of miscalibration is hard to decide. The point is that hardy cadets exposed to a potentially stressful education would probably also experience being exhausted, disappointed, saddened and frustrated if they never experience the satisfaction of reaching their highly desired goals. Additionally, that hardy cadets also will experience high levels of SPPH should not come as a surprise, considering how common SPPH is in the population (Ihlebaek et al., 2002).

According to CATS, high levels of SPPH are not problematic, because they would pass. In a military perspective, it would be important not letting unfulfilled expectations stop cadets wishing to be offensive and taking initiative. The lost experience and learning from the challenges avoided is small compared to a slight and normal increase in SPPH. According to CATS it is the sustained high levels of SPPH that could be problematic. Then it becomes a question of what would be an appropriate response to dampen the effects of the stressors; lowering the level of SPPH. To exemplify; if a cadet's active problem-solving efforts appear fruitless due to a lack of skills or acceptance to apply a response suited to the situation, the situation can become a permanent source of stress, frustration, disappointment or sadness. Response strategy was not measured in this study, but is further discussed because it is important when looking at the practical implications of the findings.

### **A range of Response strategies – a basis for adaptive flexibility.**

The education on war academy leaves cadets with no choice but to face extreme demands and contextual unpredictability. According to CATS, a response strategy can dampen or elicit the effects of stressors. It depends on the fit between the agent and the context. Problem-focused responses are most appropriate when the probability of reaching the goal or regaining the status quo is promising (Ursin & Eriksen, 2004). Remembering Bartone's (2006) range of primary stressor dimensions in modern military operations, the nature of modern military operations is unpredictable and problematic situations cannot always be changed or avoided by problem-focused responses. When modern military operations are in need of personnel



with a range of strategic capabilities, so will a modern war academy ask the same of its cadets. As part of cadets' education to become flexible and adaptive future military leaders, they are faced with situations when there is not always time or much that can be "done" to eliminate the stressors. Cadets always being preoccupied with some problem-focused strategy or technique for instant relief from normal and transient SPPH, may not be mindful of which response is appropriate in different situations. This is in line with findings of elite level athletes in sports applying a range of response strategies (Kristiansen, Roberts, & Abrahamsen et. al, 2008; Pensgaard & Duda, 2002). Thus, future military leaders should have available a "tool-box" of response strategies, to mindfully improvise adapt and overcome future challenges. However, there are indications suggesting this "tool-box" is not in place and can readily be applicable by cadets.

Even if cadets have the skills to apply a range of strategies it is plausible that like Sandal's (1996) polar explorers and space aviators, the problem-focused response strategies may be the most accepted response in a military environment. Although the academies' curriculums no longer proclaim an ideal proactive cadet, striving for problem oriented solutions, there are at least two indications suggesting that this is still what cadets do. *First*, active problem-focused strategies are found to be favoured by this age-cohort, more than adaption (Mykletun et al., 2009). *Second*, it is claimed that the focus up until today has been on high intensity military operations asking for soldiers' problem focused responses, and it is hard to change the culture (Kennedy & Zillmer, 2006). It is in the centre of this "inflexibility", strong beliefs in capacity and positive outcomes could play an important role, preventing sustained high levels SPPH.

Instead of staying frustrated by failing to apply a suitable response strategy, a person believing "I can", would possibly be inspired by the failure, and apply a different response, learn more, or even challenge a lack of acceptance. In this perspective, whether the spiral is positive or negative, it depends on a common core confidence, not on the type of response strategy. Therefore the question remains: Will the improving of cadets' perceived ability to reach desired means and ends build a more stable and robust ability to bounce back over time? Based on the strong evidence of a common core confidence, it may not be farfetched. If so, it would have important applied implications, because changing Self beliefs is thought to be far easier than directly influencing the more stable Hardiness. Trying to answer this question, the final analysis investigated whether changes in cadets Self beliefs relate to changes in Hardiness.

#### *Hypothesis 4: Changes in Hardiness explain changes in Self beliefs.*

The present study found strong support for this hypothesis. The relationship being; the cadets who improve their beliefs in academic capacity and desired outcomes during the education also improve their general ability to bounce back when things go awry. These results are noteworthy because it is contrary to theory suggesting that Hardiness is a trait (Kobasa et al., 1985). It was even more striking to find that easily manipulated Self beliefs explained changes in a stable psychological Hardiness construct. Therefore, the present findings not only add to the evidence of a common core confidence, but also support that a general hardiness can actually depend upon proactive Self beliefs. The findings suggest that without strong Self beliefs, cadets have no incentive to keep trying, learning more, apply another strategy, or change aspects in their environment. With regard to SPPH, Bandura (1997) claim Self beliefs are important in how people feel and suggest that hardy cadets who experience exhaustion, disappointment, sadness and frustration, regain control and a better mood by believing: “*I can*”. This was recently confirmed in research indicating that in the face of increased terrorism salience, longitudinal changes in emotional states are mediated by a sense of self-efficacy (Fisher, Greitemeyer, Kastenmueller, Jonas, & Frey, 2006).

#### **It's a learning process**

According to SCT and CATS, the development of Self beliefs is a learning process. Learning to regain *perceived control* can again improve a long term Hardiness. Based on information from the environment and the uniqueness of every situation, cadets can learn to let tough times trigger their strong Self beliefs. Again, learning to spark an inherent positive mood spiral would not make cadets immune to experiencing high levels of SPPH, but may prevent chronic levels develop and prevail through *sensitization*. Whether it is caused by decreased sensitization or regaining control, may be a subtle difference which may not make a big difference in applied terms. The point is that over time cadets can learn to become more adaptive, flexible and psychologically hardy - less prone to future sustained levels of SPPH.

It is a portrayed picture of a dynamic, flexible and adaptive cadet becoming less prone to future SPPH. A cadet who figures out what is to be done and how to do it develops a belief that he or she can handle the important specific tasks related to the education, forms a positive outcome outlook towards the desired goals, and works on the belief that he or she can bounce back if things go awry.

## **Applied implications**

Before presenting the specific guidelines, a controversy in the results should be highlighted. In table 1, it was left the impression of a weak, but significant decrease in Total Self beliefs during an academic year. However, a closer look on the Self beliefs measurements (Appendix A), reveals that cadets did in fact develop stronger beliefs towards their capacity to handle, get through and pass the education. Conversely, they became much less certain they could handle tough times, mobilize energy to work hard or get results to be proud of. An interpretation of such findings could be that cadets are saddened and disappointed specifically by their perceived inefficacy to handle tough times and produce energy to reach their highly valued goals; however, not because of a lack in studying skills. Well aware of the weaknesses of interpreting single items, this detailed information is useful when bolstering confidence towards the education on a war academy. Targeting the Self beliefs which decrease the most, would likely prove most effective.

When designing future interventions the main aim should be to create as many learning situations as possible so that cadets' develop their faith in the possibility to reach desired goals. Bandura's (1997) four sources of information are important to a Self belief-path to long term psychological Hardiness on a war academy:

### **1) Mastery experiences:**

According to Bandura (1997) personal mastery is the best source to improve Self beliefs. A review of 25 randomized control trials using the "Coping with Depression Course" shows that a common risk factor for developing SPPH is a lack of mastery in the situation (Cuijpers, Munoz, Clarke, & Lewinsohn, 2009). Therefore, preventive interventions with the purpose of increasing the feeling of mastery on tests, exams, different response strategies and other difficult and valued challenges tied to the education are likely to have effect.

### **2+3) Modelling and verbal persuasion:**

When cadets have limited prior experience, lack personal mastery and are uncertain about their own capabilities, the effects of models are particularly relevant. Cadets spend much of their time together observing and communicating with each other and staff. They continuously experience fellow cadets, whom they identify closely with, facing new and challenging tasks. Thus, the general level of mastery and academic expertise among fellow

cadets, teachers and staff, what they value, what is honoured, and how these models behave and communicate, should be targeted because it is likely to be an important source for cadets' Self beliefs. E.g. Setting an example by being mindful to the situation, proclaiming the importance of using a wide spectre of responses, ensuring acceptance in the team, class and at the academy in general.

#### **4) Physiological state and mental training**

Affective reactions tied to negative Self beliefs could lead to long term stress, and ensure the low level of performance that was initially feared. Based on the detailed information in Appendix A, it is likely that cadets do not lack a general confidence in their studying skills, but rather in their ability to handle tough times, mobilize energy to work hard or get a result to be proud of. Interventions aimed at these specific areas are likely to have effect. If cadets do not believe they can handle tough times, mobilize energy to work hard or get results to be proud of, it could become a negative spiral – experiencing loss of perceived control, hampering performance, quality of life by sustained levels of SPPH.

Considering the continuous nature of psychological health (Andrews & Anderson, 2009), these guidelines could prove potent both before, during and after military operations.

## Limitations

This study has several limitations: *First*, cadets, curriculums and education models change through the years, and the conclusions cannot be generalized to all cadets. *Second*, apart from prior SPPH, several important unexplained factors not controlled for have required caution when interpreting the findings. For example; not controlling for performance, it is speculative claiming that Hardiness and Self beliefs has positive influence on cadets' performance. From what has already been mentioned, also seasonal changes could influence the results. *Third*, since the study only had two measurement waves separated by a relatively long time span, important variance during the academic year could have been missed. *Fourth*, the direction of influence are somewhat speculative, and only studies applying experimental designs with interventions strengthening Self-beliefs by means of mastery, vicarious experience, persuasions, and enhancing positive emotions would allow for causal conclusions. Randomized controlled trials testing the effects of Self-belief enhancement among cadets are necessary.

## Future research

Given the results observed in the present study, one clear area for future research is to integrate individual differences into existing models of motivation and psychological health. Existing models need to be revised to take more stable psychological constructs such as Hardiness into account. *Two*, Regehr, Hill, Knott, & Sault, (2003), found protective factors such as Self-efficacy to diminish with time, among a comparable group of experienced firefighters. Therefore, to see whether the level of the study variable remains high through the whole education and revisiting the current population later during their career, would offer valuable information. *Three*, the present analysis of the Self beliefs pathway to SPPH was confined to cadets' beliefs in their capabilities to manage academic demands. Beliefs of personal efficacy for self regulation of affect could probably explain more of the variance in SPPH, because affect regulation is an important aspect of people's emotional life (Lazarus, 1991). The same would go for beliefs of personal efficacy to manage interpersonal relationships, by bringing satisfaction to people's lives and enable them to manage chronic stressors (Bandura et al., 1999). *Four*, taken the collective focus on a war academy, an examination of the effects of collective efficacy could also prove fruitful. *Five*, an additional direction for future research concerns the conceptual role of Self beliefs in predicting SPPH. Only the direct and moderating effects of Self efficacy were examined in the present study. Since Self beliefs traditionally have been examined as a mediator of individual differences, and this study failed to test for mediation; it should be further examined. Finally, it would be interesting to confirm whether skills, ability or performance mediates the effects Self beliefs have on SPPH.

## Summary

Investigating changes in Hardiness and Self beliefs and their influence on psychological health during cadets' demanding education proved to be a tough test on theory. The group was a homogenous group with good psychological health. Even so, significant negative changes were found in Self beliefs, psychological Hardiness and psychological health, the latter being the only one of any practical significance. Although the present findings is only weak evidence for Self beliefs having important long term effects, a series of regression analysis found strong evidence that changes in Self beliefs and Hardiness could explain positive changes in SPPH. The present study's most striking finding was the strong evidence showing changes in Self beliefs explaining positive changes in Hardiness.

Regardless of its limitations, the present study is strong support for a claim that hardy cadets with strong Self beliefs are less prone to SPPH. Not because of responses or techniques, but mainly because cadets continually experience being enabled; experiencing a positive personal development faced with problems and challenges. Whether sustained levels of SPPH are prevented by a lack of sensitization or by learning to regain control may in terms of an applied perspective be two of the same.

The present findings bear promising applied consequences. By manipulating and influencing cadets' Self beliefs towards the education over time, the staff on a war academy can improve cadets' psychological Hardiness. This would enable them as future military leaders, becoming less prone to future chronic SPPH, that could hamper performance and quality of life.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Aldwin, C. M. (1994). *Stress coping, and development: An integrative perspective*. NY: Guilford.
- Altmire, J. (2007, April 26). *Testimony before Subcommittee on Health of the House Committee on Veterans' Affairs*. Retrieved May, 2010, from <http://veterans.house.gov/hearings/schedule110/may10/05-10-10/5-10-10altmire.shtml>
- Andrews, P. W., Anderson J. T. (2009). The Bright Side of being Blue: Depression as an Adaption for Analyzing Complex Problems. *Psychological Review*, Vol 116 (3) 620-654.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. NY: Freeman.
- Bandura, A. (1999). A social-cognitive theory of personality. In L. Pervin & O. John (Eds), *Handbook of personality* (2<sup>nd</sup> ed., pp. 154-196). NY: Guilford Press.
- Bandura, A., Barbaranelli, C., Caprara, G., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development*, 67, 1206-1222.
- Bandura, A. & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology*, 88, 89-99.
- Bandura, A., Pastorelli, C. Barbaranelli, C., & Caprara, G.V. (1999). Self-efficacy pathways to childhood depression. *Journal of Personality and Social Psychology*, 76, 258-269.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51 (6), 1173-1182.



- Bartone, P. T. (1993, June). *Psychosocial predictors of soldier adjustment to combat stress*. Paper presented at the Third European Conference on Traumatic Stress, Bergen, Norway.
- Bartone, P. T. (1995). *A short hardiness scale*. Paper presented at the Annual Convention of the American Psychological Society, New York.
- Bartone, P. T. (1996, August). *Stress and hardiness in U.S. peacekeeping soldiers*. Paper presented at the annual convention of the American Psychological Association, Toronto, Ontario, Canada.
- Bartone, P. T. (1999). Hardiness protects against war-related stress in Army reserve forces. *Consulting Psychology Journal, 51*, 72–82.
- Bartone, P. T. (2000). Hardiness as a resiliency factor for United States forces in the GulfWar. In J. M. Violanti, D. Paton, & C. Dunning (Eds.), *Posttraumatic stress intervention: Challenges, issues, and perspectives* (pp. 115–133). Springfield, IL: Thomas.
- Bartone, P. T. (2006). Resilience under military operational stress: Can leaders influence hardiness? *Military Psychology, 18* (Suppl), 131-148.
- Bartone, P. T., Johnsen, B. H., Eid, J., Brun, W., & Laberg, J. C. (2002). Factors influencing small unit cohesion in Norwegian Navy officer cadets. *Military Psychology, 14*, 1–22.
- Bartone, P. T., Roland, R. R., Picano, J. J. & Williams, T. J. (2008). Psychological hardiness predicts success in US Army Special Forces candidates. *International Journal of Selection and Assessment, 16*, 78–81.
- Bartone, P. T., Ursano, R. J., Wright, K.W., & Ingraham, L. H. (1989). The impact of a military air disaster on the health of assistance workers: A prospective study. *Journal of Nervous and Mental Disease, 177*, 317–328.

- Benight, C. C., & Bandura, A. (2004). Social cognitive theory of posttraumatic recovery: The role of perceived self efficacy. *Behavioral Research and Therapy*, 42, 1129-1148.
- Bjelland, I., Krokstad, S., Mykletun, A., Dahl, A. A., Tell, G. S. & Tambs. (2008). Does a higher educational level protect against anxiety and depression? The HUNT study. *Social Science & Medicine*, 66 (6), 1334-1345.
- Boe, O. (2006). *Mestring fallskjermkurs*. Internal report, The Royal Norwegian war academy.
- Bonanno, G. A. (2004). Loss, trauma and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59, 20–28.
- Borkowski, J.G., Chan, L.K.S., & Muthukrishna, N. (2000). A process-oriented model of metacognition: Links between motivation and executive functioning. In G. Schraw, &
- J. Impara. (Eds.) *Issues in the Measurement of Metacognition*. Lincoln, NE: University of Nebraska Press, (pp. 1–41).
- Brandst dter, J. (2006). Action perspectives on human development. In R. M. Lerner (Ed), *Theoretical models of human development* (Handbook of child psychology, Vol. 1, 6<sup>th</sup> ed., pp. 516-568, NY: Wiley.
- Britt, T. W., Adler, A. B., & Bartone, P. T. (2001). Deriving benefits from stressful events: The role of engagement in meaningful work and hardiness. *Journal of Occupational Health Psychology*, 6, 53–63.
- Brown, R. (2000). *Group Processes, 2nd Edition*. Oxford : Blackwell Publishers, 2000.
- Chroni, S., Hatzigeorgiadis, A., & Theodorakis, Y. (2006). Onsite Coping in Novice Climbers as a Function of Hardiness and Self.efficacy. *Annals of Leisure Research*, 9, 3.
- Coutu, D. L. (2002). How resilience works. *Harvard Business Review*, 80 (5), 46-50.

- Cuijpers, P., Munoz, R., F., Clarke, G., N., & Lewinsohn, P. M. (2009). Psychoeducational treatment and prevention of depression: The “coping with depression” course thirty years later. *Clinical Psychology Review, 29*, 449-458.
- Dalgard, O. S., Sørensen, T., Sandanger, I., Nygård, J. F., Svensson, E., & Reas, D. L. (2009). Job demands, job control, and mental health in an 11-year follow-up study: Normal and reversed relationships. *Work & stress, 23* (3), 284 – 296.
- Davis, C. G., & McKearney, J. M. (2003). How do people grow from their experience with trauma or loss? *Journal of Social and Clinical Psychology, 22*, 477-492.
- Derogatis, L. R., Lipman, R. S., Rickels, K., Uhlenhuth, E. H., & Covi, L. (1974). The hopkins symptom checklist (HSCL): A self-report symptom inventory. *Behavioral Science, 19*
- Dohrenwend, B., Turner, J., Turse, N., Adams, B., Koenen, K., & Marshall, R. (2006). The psychological risks of Vietnam for U.S. veterans: A revisit with new data and methods, *Science, 313*, 979-982.
- Endresen, S., E, Eriksen, H., R, & Ursin, H. (2008). Cognitive activation theory of stress – how are individual experiences mediated into biological systems? *Scandinavian Journal of Work, Environment & Health, Suppl (6)*, 177-183.
- Eriksen, H., & Ursin, H. (1999). Subjective health complaints: is coping more important than control? *Work & Stress, 13*(3), 238-252.
- Eriksen, H., & Ursin, H. (2004). Subjective health complaints, sensitization, and sustained cognitive activation (stress). *Journal of Psychosomatic Research, 56*, 445-448.
- Fisher, P., Greitemeyer, T., Kastenmueller, A., Jonas, E., & Frey, D.(2006). Coping with terrorism: The impact of increased salience of terrorism on mood and self-efficacy of intrinsically religious and nonreligious people. *Personality and Social Psychology Bulletin, 32*, 365-377.

- Florian, V., Mikulincer, M., & Taubman, O. (1995). Does hardiness contribute to mental health during a stressful real life situation? The role of appraisal and coping. *Journal of Personality and Social Psychology*, 68, 687–695.
- Forsvaret.(2010) *Kunngjøring for opptak til krigsskolene*. Retrieved from [http://www.mil.no/multimedia/archive/.../Kunngj\\_ring\\_for\\_opp\\_130096a.doc](http://www.mil.no/multimedia/archive/.../Kunngj_ring_for_opp_130096a.doc).
- Funk, S. C. (1992) Hardiness: A review of theory and research. *Health Psychology*, 11 (5), 335-345.
- Goldberg, D., & Goodyer, I. (2005). *Restitution, in the origins and course of common mental disorders*. Routledge: London and New York
- Goodwin, G., F. (2008). Psychology in Sports and the Military: Building Understanding and Collaboration Across Disciplines. *Military Psychology*, 20 (1), 147-153.
- Hadid, A., Evans, R. K., Yanovich, R., Luria, O., & Moran. (2008). Motivation, cohesion, satisfaction, and their relation to stress fracture among female military recruits. *European Journal of Applied Psychology*, 104, 329-335.
- Hall, C., Smith, K. & Chia, R. (2008) Cognitive and Personality factors in Relation to timely Completion of a College degree. *College Student Journal*, 42 (4), 1087-1099.
- Hansen, D. R. (1999). *Samordnet levkårsundersøkelse 1998 – tversnittundersøkelsen, Dokumentasjonsrapport*. SSB Notater 99/40.
- Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review*, 102, 284-304.
- Horwitz, A. V. & Wakefield, J. C. (2007). *The loss of sadness: How psychiatry transformed normal sorrow into depressive disorder*. New York: Oxford University Press.

- Hougen, H. C. (2006). *Samordnet levekårsundersøkelse 2005 – tverrsnittsundersøkelsen*, Dokumentasjonsrapport, SSB Notater, 2006/39.
- Hougen, H., & Gløbøden, M. A. (2004). *Samordnet levekårsundersøkelse 1998 – tverrsnittsundersøkelsen*, Dokumentasjonsrapport, SSB Notater 2004/22.
- Hystad, S. W., Eid, J., Laberg, J. C., Johnsen, B. H. & Bartone, P. T. (2010). Academic stress and health: Exploring the moderating role of personality hardiness. *Scandinavian Journal of Educational Research*,
- Ihlebaek, C., Eriksen, H. R., Ursin, H., (2002). Prevalence of subjective health complaints (SHC) in Norway. *Scandinavian Journal of Public Health*, 30, 20-29.
- Johansen, R., Rognerud, M, & Sundet, J. (2008). *Levekårsundersøkelsene 1998, 2002 og 2005. Utvikling i psykisk helse*, Rapport 2008:4, Oslo: Nasjonalt folkehelseinstitutt.
- Johnsen, B. H., Eid, J. & Bartone, P. T. (2004). Psykologisk «hardførhet»: Kortversjonen av The Short Hardiness Scale. *Tidsskrift for Norsk Psykologforening*, 41, 476–477.
- Jones, E., Woolven, R., Durodie, W., & Wessely, S. (2004). Public panic and morale: A reassessment of civilian reactions during the Blitz and World War 2. *Journal of Social History*, 17, 463–479.
- 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), 107-127.
- Kanfer, R. & Zeiss, A. (1983). Interpersonal standard-setting and self-efficacy expectations in depression. *Journal of Abnormal Psychology*, 92, 319-329.
- Kennedy, C. H. & Zillmer, E. A. (2006). *Military Psychology: Clinical and Operational Applications*. Guilford Press: New York, NY

- Kessler, R. C, Berglund, P., Demler, O., Jin, R., Merikangas, K. R. & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National comorbidity survey replication. *Archives of General Psychiatry*, 62 (6), 593-602.
- Kessler, R.C, Chiu, W.T., Demler, O. & Walters, E.E. (2005) Prevalence, Severity, and Comorbidity of 12-Month DSM-IV Disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62 (6), 617-627.
- Kobasa, S., C. (1979). Stressful Life events, Personality and Health: An Inquiry into Hardiness. *Journal of Personality and Social Psychology*, 37 (1)
- Kobasa, S., C, Maddi, S., R. & Courington, S. (1982). Personality and constitution as mediators in stress-illness relationship. *Journal of Health and Social Behaviour*, 22, 368-378.
- Kobasa, S. C., Maddi, S. R., Puccetti, M. C., & Zola, M. A. (1985). Effectiveness of hardiness, exercise, and social support as resources against illness. *Journal of Psychosomatic Research*, 29, 525-533.
- Kristiansen, E., Roberts, G. C., & Abrahamsen, F. E. (2008). Achievement involvement and stress coping in elite sport. *Scandinavian Journal of Medicine & Science in Sports*, 18 (4), 526-538
- Krokstad, S., Kunst, A. E., & Westin, S. (2002). Trends in health inequalities by educational level in a Norwegian total population study. *Journal of Epidemiology and Community*, 56 (5), 375-380
- Lane, J., & Lane, A.,M. (2001). Self-efficacy and Academic Performance. *Social Behaviour and Personality*, 29(7), 687-694.
- Lane, J., Lane, A.,M., & Cockerton, T. (2003). Prediction of academic performance from self-efficacy and performance accomplishments among master's degree students. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 2, 113-118.

- Lane, J., Lane, A.,M., & Kyprianou, A. (2004). Self-efficacy, Self-esteem and their impact on academic performance. *Social Behaviour and Personality*, 32(3), 247-256.
- Lazarus, R. S. (1991). *Emotion and adaptation*. NY: Oxford University Press.
- Leipold, B., & Greve, W. (2009). A conceptual bridge between coping and development. *European Psychologist*, 14 (1), 40-50.
- Levine, S., & Ursin, H. (1991). What is stress? In M.R. Brown, G. F. Koob, & C. Rivier (Eds), *Stress: Neurobiology and neuroendocrinology* (pp. 1-21). NY: Marcel Dekker, Inc.
- Luszczynska, A., Benight, C. C., & Cieslak, R. (2009). Self-efficacy and health-related outcomes of collective trauma: A systematic review. *European Psychologist*, 14 (1), 51-62.
- Lynch, D. (2008). Confronting Challenges: Motivational beliefs and Learning strategies in difficult college courses. *College Student Journal*, 42 (2), 416-422.
- Maddi, S. R., (2002) The Story of Hardiness: Twenty Years of Theorizing, Research and Practice. *Consulting Psychology Journal*, 54, 173-185.
- Multon, K., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytical investigation. *Journal of Counselling Psychology*, 38, 30-38
- Muntaner, C., Eaton, W. W., Miech, R & O'Campo, P. (2004). Socioeconomic position and major mental disorders. *Epidemiologic Reviews*, 26, 53-62.
- Mykletun, A., Knudsen, A. K., Mathiesen, K. S. (2009). *Psykiske lidelser i Norge: Et folkehelseperspektiv*. Folkehelseinstituttet, rapport 2009:8.

- Myklestad, I., Rognerud, M., & Johansen, R. (2008) *Levekårsundersøkelsene 2005: Utsatte grupper og psykisk helse*, Rapport 2008:8, Oslo: Nasjonalt folkehelseinstitutt.
- Nordenfelt, L. (ed.) (2001). *Health, science, and ordinary language*. Rodopi: Amsterdam; NY.
- Nunnally, J. & Bernstein, I. (1994) *Psychometric Theory*, NY: McGraw Hill, 3rd ed.
- Pajares, F., & Urdan, T. (2006). *Self-Efficacy Beliefs of Adolescents*. Information Age Publishing, Inc. ISBN 1593113676.
- Pallant, J. (2007). *SPSS A Survival Manual*, Crows Nest, N.S.W, Australia: Allen & Unwin.
- Pensgaard, A.M., & Duda, J.L. (2002). "If we work hard, we can do it" A tale from an Olympic (Gold) medallist. *Journal of applied Sport Psychology*, 14, 219-236.
- Pensgaard, A. M & Hollingen, E. (2006). *Idrettens mentale treningslære*. Oslo: Gyldendal Norsk Forlag AS.
- Pensgaard, A. M., & Roberts, G. C. (1995). *Competing at the Olympics: Achievement goal orientations and coping with stress*. IXth European Congress on Sport Psychology Proceedings: Integrating Laboratory and Field Studies (pp. 701–708). FEPSAC, Brussels, PART II.
- Pensgaard, A. M., & Ursin, H. (1998). Stress, control, and coping at an elite level. *Scandinavian Journal of Medicine and Science in Sports*, 8, 183–189.
- Pintrich, P.R. & De Groot E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82(1), pp. 33-50.
- Rahe, R. H. (1974). The pathway between subjects recent life change and their near future illness reports: Representative results and methodological issues. In B. S. Dohrenwend & B. P. Dohrenwend (Eds), *Stressful life events: Their nature and effects*. NY: Wiley.



- Regehr, C., Hill, J., Knott, T., Sault, B. (2003). Social support, self-efficacy and trauma in new recruits and experienced firefighters. *Stress and Health*, 19, 189-193.
- Ritchie, E. C., Leavitt, F., & Hanish, S. (2006). The mental health response to the 9/11 attack on the Pentagon. In Y. Neria, R. Gross, R. Marshall, & E. Susser (Eds.), *9/11: Mental health in the wake of a terrorist attack*. NY: Cambridge University Press.
- Samhandlingsreformen (2009). *Rett behandling – på rett sted – til rett tid*. Stortingsmelding nr 47, Det Kongelige Helse og omsorgsdepartement.
- Sandal, G. (1996). *Coping in extreme environments: The role of personality*. Doctoral dissertation, Department of biological and Medical Psychology, Faculty of psychology, University of Bergen, Norway.
- Sanne, B., Mykletun, A., Dahl, A. A., Moen, B. E., & Tell, G. S. (2005). Testing the job demand-control-support modell with anxiety and depression as outcomes: The Hordaland Health Study. *Occupational Medicine-Oxford*, 55 (6), 463-473.
- Skinner, E. (1995). *Perceived control, motivation, and coping*. Thousand Oaks, CA: Sage.
- Stajkovic, A., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, 124, 240-261.
- Stajkovic, A.D., & Luthans, F. (2003), "Behavioral management and task performance in organizations: conceptual background, meta-analysis, and test of alternative models", *Personnel Psychology*, Vol. 56 pp.155-94
- Strand, B. H., Dalgard, O. S., Tambs, K., & Rognerud. (2003). Measuring the mental health status of the Norwegian population: A comparison of the instruments SCL-25, SCL-10, SCL-5 and MHI-5 (SF-36). *Nordic Journal of Psychiatry*, 57, 113-118.
- Stubhaug, B, Tveito, T. H, Eriksen, H. R., & Ursin, H. (2005). Neurasthenia, subjective health complaints and sensitization. *Psychoneuroendocrinology*, 30, 1003-1009.

- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*, 5th ed. Boston: Allyn and Bacon.
- Ugreninov, E., & Vaage, O. F. (2006). *Samordnet levekårsundersøkelse*. Dokumentasjonsrapport. SSB Rapporter, 2006/22.
- Ursin, H. & Eriksen, H. R. (2004). The cognitive activation theory of stress. *Psychoneuroendocrinology*, 29, 567-592.
- Ursin, H. & Eriksen, H. R. (2009). Article in press: Cognitive activation theory of stress (CATS). *Neuroscience and Biobehavioral Reviews*, doi:10.1016/j.neubiorev.2009.03.001.
- Vancouver, J. B. & Kendall, L., N. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology*, 91 (5), 1146-1153.
- Van Emmerik, A. A., Kamphuis, J. H., Hulsbosch, A. M., & Emmelkamp, P. M. (2002). Single session debriefing after psychological trauma: A metaanalysis. *Lancet*, 360, 766-771.
- Wessely, S. (2005). Victimhood and resilience. *New England Journal of Medicine*, 353, 548-550.
- Westman, M. (1990). The relationship between stress and performance: The moderating effect of hardiness. *Human Performance*, 3, 141-155.
- Williams, C. & Wragg, C. (2004). *Data analysis and research for sport and exercise science: a student guide*, NY: Routledge

## APPENDIX A

### *Mean- and Change Scores on the Self-beliefs Instrument*

<b>Item</b>	<b>T1</b> M (SD)	<b>T2</b> M (SD)	<b>Change</b> T1->T2 (%)
<b>Med rimelig stor sikkerhet kan jeg si at jeg:</b>			
- Er en person som takler det å gå på krigsskole	6.09 (.95)	6.21 (.93)	0.12
- Vil greie å fullføre krigsskolen	6.45 (.73)	6.60 (.83)	0.15
<i>Sum:</i>	<i>6.31 (.80)</i>	<i>6.40 (.75)</i>	<i>0.09 (1.43)</i>
- Vil takle tunge stunder i forbindelse med studiene	5.68 (.84)	5.45 (1.15)	-0.23
- Vil greie å mobilisere krefter til å jobbe hardt med studiene	5.83 (.89)	5.42 (1.18)	-0.41
- Vil oppnå et resultat jeg kan være stolt av	5.76 (1.00)	5.35 (1.13)	-0.41
<i>Sum:</i>	<i>5.77 (.82)</i>	<i>5.40 (.98)</i>	<i>-0.37 (-6.41)</i>
- Ved fullført krigsskole vil oppnå resultater over gjennomsnittet på mitt kull	4.90 (1.13)	4.86 (1.48)	-0.04
- Ved fullført krigsskole vil få en tjenesteuttalelse som er over gjennomsnittet på mitt kull	4.87 (1.10)	4.92 (1.34)	0.05

Table 1 show a decrease in Total Self-beliefs during the first year (2.79%). Table 4 uncovers a greater decrease of their high, but specific beliefs such as: handling though times, mobilizing energy to work hard and getting a result to be proud of (-6.41%). Furthermore, the cadets do in fact maintain, or slightly increase their high beliefs towards handling and getting through the education and that they will receive results that are among the top half of the group. This is important information when structuring an intervention; aiming at the areas with the greatest decrease is probably where one can gain the most.

APPENDIX B: Scales and Items

HARDINESS SCALE

Seksjon 2

I denne seksjonen spør vi en del spørsmål om hvordan du har det; Om helse og om din livskvalitet. Først ber vi deg imidlertid respondere på noen påstander om hvordan du tenker i forhold til arbeid og rutiner. Mot slutten av seksjonen ber vi deg vurdere noen påstander omkring hva som skal til for at du er fornøyd med det du holder på med. Helt til slutt fremmer vi mange påstander om hva du liker/ikke liker eller foretrekker/ikke foretrekker.

17) Om arbeid og rutiner

Nedenfor finner du en del påstander om hvordan du tenker i forhold til arbeid og rutiner. Kryss av for de påstandene som er riktig for deg. Svarene angis på en skala fra 1 (ikke riktig) til 4 (svært riktig).

	Ikke riktig			Svært riktig	
	1	2	3	4	
Mesteparten av mitt liv blir brukt til å gjøre ting som lønner seg .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Langsiktig planlegging kan bidra til å hindre de fleste fremtidige problemer .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Jeg liker ikke å gjøre endringer i mine daglige rutiner .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SM
Å arbeide hardt spiller ingen rolle, siden det bare er ledelsen som vil ha fordel av det .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SM
Endringer i rutinene er interessante for meg .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ved å arbeide hardt kan du alltid nå dine mål .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Jeg ser virkelig frem til mitt arbeide .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hvis jeg arbeider med en vanskelig oppgave, vet jeg når jeg skal spørre om hjelp .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Mesteparten av tiden hører andre oppmerksomt på hva jeg har å si .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Å gjøre sitt beste på jobben vil absolutt lønne seg i lengden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Det plager meg når mine daglige rutiner blir avbrutt .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SM
De fleste dager er livet virkelig interessant og givende for meg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Jeg trives med utfordringen når jeg må gjøre mer enn en ting om gangen .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Jeg liker å ha en daglig rutine som ikke endrer seg for mye	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SM
Når jeg legger planer er jeg sikker på at jeg kan få dem realisert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

SELF EFFICACY BANDURK

34) Hvor stor tro har du på deg selv?

Med rimelig stor sikkerhet kan jeg si at jeg	Fullstendig uenig					Fullstendig enig	
	1	2	3	4	5	6	7
Er en person som takler det å gå på krigsskole .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vil greie å mobilisere krefter til å jobbe hardt med studiene .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vil takle tunge stunder i forbindelse med studiene .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vil greie å fullføre krigsskolen .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vil oppnå et resultat jeg kan være stolt av .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ved fullført krigsskole vil oppnå resultater over gjennomsnittet på mitt kull .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ved fullført krigsskole vil få en tjenesteuttalelse som er over gjennomsnittet på mitt kull .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27) Hvordan har du det?

Under finner du en liste over ulike problemer. Har du opplevd noe av dette den siste uken (til og med i dag)? (Sett ett kryss for hver plage)

	Ikke plaget overhodet	Litt plaget	Ganske mye plaget	Veldig mye plaget
1 Plutselig frykt uten grunn .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 Føler deg redd eller engstelig .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Matthet eller svimmelhet .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Føler deg ansent eller oppjaget .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 Lett for å klandre deg selv .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Søvnproblemer .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Nedtrykt, tungsindig .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Følelse av å være unyttig, lite verd .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Følelse av at alt er et slit .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Følelse av håpløshet mht. framtida .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Anklager deg selv for ting .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Nervøs eller urolig .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Nedfor .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 Bekymrer deg for mye .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Meldeskjema<sup>i</sup>

for forsknings- og studentprosjekt som medfører meldeplikt eller konsesjonsplikt  
(jf. personopplysningsloven og helseregisterloven med forskrifter)

Meldeskjema sendes per post,  
e-post eller faks, i ett eksemplar, til:

Norsk samfunnsvitenskapelig datatjeneste AS  
Personvernombudet for forskning  
Harald Hårfagres gate 29  
5007 BERGEN

[personvernombudet@nsd.uib.no](mailto:personvernombudet@nsd.uib.no) / Telefaks: 55 58 96 50 / Telefon: 55 58 21 17

Vennligst les veiledning bakerst

<b>Kadettutviklingsstudien 07-11</b>			
Institusjon: <b>Norges idrettshøgskole, Forsvarets institutt</b>			
Adresse: <b>Postboks 4014, Ullevål stadion</b>		Postnr. <b>0806</b>	Poststed: <b>Oslo</b>
Navn (fornavn - etternavn): <b>Reidar Säfvenbom</b>			
Institusjon: <b>Norges idrettshøgskole</b>			
Arbeidssted (avdeling/seksjon/institutt): <b>Forsvarets institutt</b>		Akademisk grad/utdanning <b>Dr.Scient</b>	Stilling <b>1. amanuensis</b>
Adresse – arbeidssted: <b>Postboks 4014, Ullevål stadion</b>		Postnr.: <b>0806</b>	Poststed: <b>Oslo</b>
Telefon: <b>23262425</b>	Telefaks:	Mobil: <b>99092343</b>	E-postadresse: <b>reidar.sefvenbom@nih.no</b>
Navn (fornavn - etternavn) på studenten:			
Stuedsted (avdeling/seksjon/institutt):		Akademisk grad/utdanning:	
Adresse – privat:		Postnr.:	Poststed:
Telefon:	Telefaks:	Mobil:	E-postadresse:

Problemstillinger, forskningsspørsmål, eller lignende.	<b>Prosjektet skal</b> <ul style="list-style-type: none"> <li>• dokumentere hvilke individuelle kvaliteter som er vesentlig for at kadetter på krigsskolen skal oppnå høye skårer på sentrale kompetanseindikatorer</li> <li>• dokumentere effekten av fysisk trening og fysisk form på disse individuelle kvalitetene, og på kompetanseindikatorene</li> <li>• dokumentere hvordan fysisk fostring som fag på best mulig måte kan påvirke de individuelle kvalitetene og de sentrale kompetanseindikatorene</li> </ul>
<input type="checkbox"/> Enkelt institusjon <input checked="" type="checkbox"/> Nasjonal multisenterstudie <input type="checkbox"/> Internasjonal multisenterstudie Angi øvrige institusjoner som skal delta: <b>Krigsskolen, Sjøkrigsskolen, Luftkrigsskolen</b>	
<u>Skrivelse av utvalget</u> Gi en kort beskrivelse av hvilke personer eller grupper av personer som inngår i prosjektet (f.eks. skolebarn, pasienter, soldater, personer med redusert eller manglende samtykkekompetanse).	<b>Samtlige kadetter som starter sin utdanning ved de tre krigsskolene i Norge, høsten 2007 og høsten 2008</b>
<u>Rekruttering og trekking</u> Oppgi hvordan utvalget rekrutteres og hvem som foretar rekrutteringen/ trekkingen.	
<u>Førstegangskontakt</u> Oppgi hvem som oppretter førstegangskontakt med utvalget.	<b>Medlemmer av prosjektgruppe ved den enkelte skole</b>
Oppgi alder på utvalget	<input type="checkbox"/> Barn (0-15 år) <input type="checkbox"/> Ungdom (16-17år) <input checked="" type="checkbox"/> Voksne (over 18 år)
Antall personer som inngår i utvalget.	<b>Ca 250</b>
<u>Informasjon</u> Oppgi hvordan informasjon til respondenten gis. <b>NB. Se veiledning for krav til informasjon.</b>	<input checked="" type="checkbox"/> Det gis skriftlig informasjon (legg ved kopi av informasjonsskriv). <b>Se vedlegg 2</b>  <input type="checkbox"/> Det gis muntlig informasjon. Beskriv hva det informeres om.  <input type="checkbox"/> Det gis ikke informasjon. Forklar hvorfor det ikke gis informasjon.

<p><b>Samtykke</b> Innhentes samtykke fra den registrerte? <b>NB. Se veiledning for krav til samtykke.</b></p>	<p><input checked="" type="checkbox"/> Ja Oppgi hvordan samtykke innhentes (legg ved ev. kopi av samtykkeerklæring).</p> <p style="text-align: center;"><b>Jfr Informasjonsskriv med samtykkeerklæring</b></p>		
	<p><input type="checkbox"/> Nei Gi en redegjørelse for hvorfor det anses nødvendig å gjennomføre prosjektet uten samtykke fra respondenten.</p>		
PERSONOPPLYSNINGER			
<p>Gi en kort beskrivelse av alle datainnsamlingsmetoder og datakilder som skal benyttes.</p>	<p><b>Datakilder ved siden av den enkelte kadett</b></p> <ol style="list-style-type: none"> <li>1) Utskrift av karakterprotokoll fra skolenes studieavdelinger</li> <li>2) Kopi av tjenesteuttalelse gitt av overordnet offiser</li> </ol> <p><b>Metoder for data fra den enkelte kadett</b></p> <p>Tredemølletest Styrketest Bioimpedansmål Aktivitetsmål (selvrapportert) Aktivitetsmål (Armband aktivitetsmonitor) Spørreskjema</p>		
<p>Gjør kort rede for hvilke opplysninger som skal samles inn. Legg ved spørreskjema, intervjuguide, registreringsskjema e. a., som foreligger ferdig utarbeidet eller som utkast.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;"> <p><b>Militære kompetanseindikatorer: Skolekarakterer</b> <b>Militærspesifikke ferdigheter, hardiness</b></p> <p><b>Voluntært maksimalt oksygenopptak</b> <b>Utholdende styrke</b> <b>Kroppssammensetning</b> <b>Fysisk aktivitetsnivå</b> <b>Motiver for akt</b> <b>Motivasjon for trening</b> <b>Motivasjonelt klima</b> <b>Selvbestemmelse</b> <b>Iver etter å trene</b></p> </td> <td style="width: 33%; vertical-align: top;"> <p><b>Opplevelse av skolen</b> <b>Helseindikatorer</b> <b>Livskvalitet</b> <b>Selvoppfattelse</b> <b>Personlighet</b> <b>Self-efficacy</b> <b>Perfeksjonisme</b> <b>Risikosøking</b> <b>Sosial støtte for trening</b> <b>Barrierer for trening</b></p> <p><b>Kohesjon</b> <b>Sosial loffing</b> <b>Tilfredshet med innsatsen på laget</b></p> </td> </tr> </table>	<p><b>Militære kompetanseindikatorer: Skolekarakterer</b> <b>Militærspesifikke ferdigheter, hardiness</b></p> <p><b>Voluntært maksimalt oksygenopptak</b> <b>Utholdende styrke</b> <b>Kroppssammensetning</b> <b>Fysisk aktivitetsnivå</b> <b>Motiver for akt</b> <b>Motivasjon for trening</b> <b>Motivasjonelt klima</b> <b>Selvbestemmelse</b> <b>Iver etter å trene</b></p>	<p><b>Opplevelse av skolen</b> <b>Helseindikatorer</b> <b>Livskvalitet</b> <b>Selvoppfattelse</b> <b>Personlighet</b> <b>Self-efficacy</b> <b>Perfeksjonisme</b> <b>Risikosøking</b> <b>Sosial støtte for trening</b> <b>Barrierer for trening</b></p> <p><b>Kohesjon</b> <b>Sosial loffing</b> <b>Tilfredshet med innsatsen på laget</b></p>
<p><b>Militære kompetanseindikatorer: Skolekarakterer</b> <b>Militærspesifikke ferdigheter, hardiness</b></p> <p><b>Voluntært maksimalt oksygenopptak</b> <b>Utholdende styrke</b> <b>Kroppssammensetning</b> <b>Fysisk aktivitetsnivå</b> <b>Motiver for akt</b> <b>Motivasjon for trening</b> <b>Motivasjonelt klima</b> <b>Selvbestemmelse</b> <b>Iver etter å trene</b></p>	<p><b>Opplevelse av skolen</b> <b>Helseindikatorer</b> <b>Livskvalitet</b> <b>Selvoppfattelse</b> <b>Personlighet</b> <b>Self-efficacy</b> <b>Perfeksjonisme</b> <b>Risikosøking</b> <b>Sosial støtte for trening</b> <b>Barrierer for trening</b></p> <p><b>Kohesjon</b> <b>Sosial loffing</b> <b>Tilfredshet med innsatsen på laget</b></p>		
<p>Behandles det sensitive personopplysninger?</p>	<p><input checked="" type="checkbox"/> Ja Hvis ja, oppgi hvilke:</p> <p><input type="checkbox"/> Nei</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Rasemessig eller etnisk bakgrunn, eller politisk, filosofisk eller religiøs oppfatning.</li> <li><input type="checkbox"/> At en person har vært mistenkt, siktet, tiltalt eller dømt for en straffbar handling.</li> <li><input checked="" type="checkbox"/> Helseforhold.</li> <li><input type="checkbox"/> Seksuelle forhold.</li> <li><input type="checkbox"/> Medlemskap i fagforeninger.</li> </ul>		
<p>Behandles det opplysninger om tredjeperson?</p>	<p><input type="checkbox"/> Ja Hvis ja, hvordan blir tredjeperson informert om behandlingen?</p> <p><input checked="" type="checkbox"/> Nei</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Får skriftlig informasjon.</li> <li><input type="checkbox"/> Får muntlig informasjon.</li> <li><input type="checkbox"/> Blir ikke informert.</li> </ul>		



Merk av identifikasjonsopplysninger.	<input checked="" type="checkbox"/> Direkte personidentifiserende opplysninger	Oppgi hvilke: <input checked="" type="checkbox"/> Navn, adresse, fødselsdato <input type="checkbox"/> 11-sifret fødselsnummer
	<input type="checkbox"/> Indirekte personidentifiserende opplysninger	Oppgi hvilke:
Dersom datamaterialet behandles elektronisk, oppgi hvordan direkte personidentifiserbare opplysninger (navn, 11-sifret fødselsnummer) registreres.	<input checked="" type="checkbox"/> Direkte personidentifiserende opplysninger ( <i>spesifiser hvilke over</i> ) erstattes med et referansenummer som viser til en manuell/elektronisk navneliste som oppbevares atskilt fra det øvrige datamaterialet.	Oppgi hvordan koblingsnøkkelen lagres og hvem som har tilgang til denne. <b>Koblingsnøkkel lagres på beskyttet personlig område på annet nettverk (militært nett) enn nettverk der data behandles (beskyttede personlige områder på Norges idrettshøgskoles nett). Kun prosjektleder har tilgang til koblingsnøkkel.</b>
	<input type="checkbox"/> Direkte personopplysninger lagres sammen med det øvrige materialet.	Oppgi hvorfor det er nødvendig med oppbevaring av direkte identifikasjonsopplysninger sammen med det øvrige datamaterialet:
	<input type="checkbox"/> Annet	Spesifiser:
Hvordan skal datamaterialet registreres og oppbevares?  Sett flere kryss dersom opplysninger registreres flere steder.	<input type="checkbox"/> Fysisk isolert pc tilhørende virksomheten <input checked="" type="checkbox"/> Pc i nettverksystem tilhørende virksomheten <input type="checkbox"/> Pc i nettverksystem tilknyttet Internett tilhørende virksomheten <input type="checkbox"/> Isolert privat pc <input type="checkbox"/> Privat pc tilknyttet Internett <input type="checkbox"/> Videooptak/fotografi	<input type="checkbox"/> Lydopptak <input type="checkbox"/> Manuelt/papir <input type="checkbox"/> Annet: Hvis annen lagring, beskriv nærmere:
Sikring av konfidensialitet.	Beskriv hvordan datamaterialet er beskyttet mot at uvedkommende får innsyn i opplysningene? <b>Brukernavn og passord på pc som står på låst kontor.</b>	
Er prosjektet ha prosjektarbeidere som skal ha tilgang til datamaterialet på lik linje med daglig ansvarlig/ student?	<input checked="" type="checkbox"/> Ja	Oppgi hvilke: <b>Forsker Anders Aandstad, Norges idrettshøgskole</b>
	<input type="checkbox"/> Nei	
Innhentes personopplysninger ved hjelp av e-post/Internett?	<input type="checkbox"/> Ja	Hvis ja, beskriv hvilke opplysninger og hvilken form de har.
	<input checked="" type="checkbox"/> Nei	
Overføres personopplysninger over eksterne nettverk (som Internett)?	<input type="checkbox"/> Ja	Hvis ja, beskriv i hvilken situasjon dette gjøres og hvilken form opplysningene har.
	<input checked="" type="checkbox"/> Nei	
Vil personopplysninger bli utlevert til andre?	<input type="checkbox"/> Ja	Hvis ja, til hvem?
	<input checked="" type="checkbox"/> Nei	
Er prosjektet fremleggelsespliktig for Regional komité for medisinsk forskningsetikk?	<input checked="" type="checkbox"/> Ja	Hvis ja, legg ved eller ettersend kopi av tilråding/tillatelse. <b>Under behandling: Ettersendes</b>
	<input type="checkbox"/> Nei	
Dersom det anvendes biologisk materiale, er det søkt Regional komité for medisinsk forskningsetikk om	<input type="checkbox"/> Ja	Hvis ja, legg ved eller ettersend kopi av tilråding/tillatelse.
	<input checked="" type="checkbox"/> Nei	

oppretteise av forskningsbiobank?	
Er det nødvendig å søke om dispensasjon fra taushetsplikt for å få tilgang til data?	<input type="checkbox"/> Ja Hvis ja, legg ved eller ettersend kopi av tilråding/tillatelse. <input checked="" type="checkbox"/> Nei
Er det nødvendig med melding til Statens legemiddelverk?	<input type="checkbox"/> Ja Hvis ja, legg ved eller ettersend kopi av tilråding/tillatelse. <input checked="" type="checkbox"/> Nei
Andre	<input type="checkbox"/> Ja Angi hvem. <input checked="" type="checkbox"/> Nei
<b>PROSJEKT</b>	
Oppgi tidspunkt for når datainnsamlingen starter – <u>prosjektstart</u> samt tidspunkt når behandlingen av personopplysninger opphører – <u>prosjektstutt</u> .	Prosjektstart (ddmmåååå): <b>20.07.2007</b> Prosjektstutt (ddmmåååå): <b>31.12.2014</b>
Gjør rede for hva som skal skje med datamaterialet ved prosjektstutt.	<input checked="" type="checkbox"/> Datamaterialet skal anonymiseres. Gi en redegjørelse for hvordan datamaterialet anonymiseres.  <input type="checkbox"/> Datamaterialet skal oppbevares med personidentifikasjon Hvor skal datamaterialet oppbevares?  Gi en redegjørelse for hvorfor datamaterialet skal oppbevares med personidentifikasjon.
<b>ANSER</b>	
<b>Norges idrettshøgskole</b> <b>Krigsskolen</b> <b>Sjøkrigsskolen</b> <b>Luftkrigsskolen</b>	
I det vedlagte spørreskjema er alle spørsmål som vil bli stilt i løpet av studien inkludert. Enkelte spørsmål vil kun bli stilt ved baseline og enkelte spørsmål vil kun bli stilt seinere.	
Oppgi hvor mange vedlegg som legges ved meldeskjemaet	<b>Vedlegg 1: Prosjektbeskrivelse</b> <b>Vedlegg 2: Informasjonsskriv med samtykkeerklæring</b> <b>Vedlegg 3: Spørreskjema</b> <b>Vedlegg 4: Registreringsskjema for fysisk trening</b>

## **Abstract**

**Purpose** – The purpose of this study was to explore level and changes in symptoms of psychological health (SPPH) during an academic year on a war academy, and further to evaluate the influence of psychological Hardiness and cognitive Self beliefs on SPPH in such contexts.

**Methods** – Using questionnaires, a number of Norwegian military academy cadets in Bergen, Oslo and Trondheim were studied at the beginning and at the end of an academic year. Cognitive activation theory of stress (CATS) (Ursin & Eriksen, 2004) and Social Cognitive Theory (SCT) (Bandura, 1997) was used as conceptual frameworks.

**Findings** – Cadets were found to have above average psychological health, high levels of general Hardiness and high levels of Self beliefs towards the education. The trend persisted throughout an academic year, but significant negative changes were found in all study variables, the effect sizes suggest that only the change in SPPH was of practical significance. After controlling for prior SPPH, the hierarchical regression results showed that initial Self beliefs went towards being a significant predictor of SPPH after an academic year. Again controlling for prior SPPH, the study found that changes in Self beliefs and Hardiness positively influenced changes in SPPH, and that increases in Self beliefs significantly related to increases in Hardiness.

**Implications** – The study identified psychological Hardiness and Self-beliefs as vital elements of a common core confidence, influencing SPPH in positive ways. The study offers a Self belief-way to stable psychological Hardiness, and is a contribution in the development of empowering interventions preventing future chronic SPPH.

**Originality/value** – To my knowledge, this is the first study on psychological health examining the influence of psychological Hardiness together with Self beliefs; using both CATS and SCT as encompassing theoretical frameworks. The study adds important information about the mechanisms involved during changes in mood and SPPH.

**Keywords** - Self-efficacy, Hardiness, psychological health, military

## Forord

Jeg valgte å skrive denne oppgaven på engelsk, men velger å avrunde med å skrive forordet på morsmålet mitt.

Dette har vært den mest inspirerende faglige perioden i min akademiske karriere. Jeg har vært inspirert fra dag 1. Valg av tema for denne studien fikk jeg på bakgrunn av min egen sterke selvtillit og troen på et "jeg kan".

Denne oppgaven markerer slutten på 2 års masterutdanning på Norges Idrettshøgskole. Allikevel vet jeg at det markerer begynnelsen på en lang karriere som forsker innenfor temaet anvendt psykologi.

Takk til:

Alle kadetter som velvillig stilte opp og svarte på spørreskjema.

Stab og ansatte på Krigsskolen, Sjøkrigsskolen og Luftkrigsskolen for samarbeid, økonomisk støtte og faglige bidrag.

Idrettshøgskolen og Forsvarets institutt for økonomisk støtte og ledelse for hele "Kadettutviklingsstudien 2007-2014".

Anders Aandstad og Reidar Savfenbom for prosjektledelse, praktisk hjelp og faglige bidrag.

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Resten av familien for barnevakter, middager og korrekturlesing.

Fars hjemmetrykkeri.

Sætre i Hurum, 30. mai, 2008.

## Abbreviations

The following abbreviations are used throughout the study and may prove useful for the reader:

**SPPH-** Symptoms of Poor Psychological health

**CATS-** Cognitive Activation Theory of Stress

**SCT-** Social Cognitive Theory

**SE-** Self-efficacy

**PROE-** Positive Response Outcome Expectancy

**T 1-** Time point one

**T 2-** Time point two