Mind over matter

Non-cognitive assessments for the selection of the Swedish voluntary soldier of peace

Charlotte Bäccman

Faculty of Arts and Social Sciences

Psychology

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To Lucas and Miriam –

You hold my Heart and Mind

Doctoral dissertation: *Mind over matter. Non-cognitive assessments for the selection of the Swedish voluntary soldier of peace.*

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Abstract

The purpose of this thesis was firstly, to investigate if the current selection system mirrors the task of international deployment and voluntariness. Secondly, to investigate if and how non-cognitive assessments of personality and resilience, individual aspects, underrepresented in the current selection system, may increment validity to the current selection system. Since 2012 the Swedish Armed Forces is an All-volunteer Force where young men and women voluntarily can apply for military service. In contrast to conscription, military service today includes compulsory international deployments that may pose different demands on the personnel's range of possible abilities and skills, as well as the selection process. Yet the current selection system may not sufficiently correspond to the changes.

The thesis comprises four studies (**Study I-IV**) with relevant military samples, and aside from **Study I**, a validation of a short version personality questionnaire (PQ) being used in two of the subsequent studies, **Study II-IV** had a longitudinal design. **Study II** shows that the former selection system lacked prognostic value of soldiers' performance during international deployment, and of their ability to readjust at homecoming. Additionally, **Study II** shows that non-cognitive assessments can be used as predictors for readjustment. **Study III** indicates that international deployment does not need to be harmful for the psychological well-being, and that good psychological health seems to be a stable factor across time and situations. Thus, selection of "good health" and resilience may prove fruitful. **Study IV** suggests that high motivation to serve may have serious consequences for selection decisions and, in the long run, the recruits' psychological well-being.

In sum, this thesis suggests that the current selection system needs adaption to the task of repeated international deployments and to the voluntary applicant pool, and that non-cognitive assessment may increment validity.

Keywords: Personnel selection, personality, resilience, stress adjustment, readjustment, psychological well-being, validation, military, international operations

Doktorsavhandling: *Tankens kraft. Användandet av icke-kognitiva egenskaper i urvalet av Sveriges frivilliga fredssoldater.*

Charlotte Bäccman, Inst. för sociala och psykologiska studier, Karlstads Universitet

Sammanfattning

Syftet med den här avhandlingen var: dels att undersöka om det nuvarande urvalssystemet motsvarade kraven på internationella insatser och frivillighet. Dels att undersöka hur icke-kognitiva skattningar av personlighet och resiliens (*ung*. motståndskraft), aspekter som inte fokuseras i dagens urval, kan bidra till urvalsprocessens validitet. Försvarsmakten är sedan 2012 ett frivilligförsvar dit både män och kvinnor kan ansöka för militärtjänstgöring. Till skillnad från värnplikten är dagens militärtjänst inriktad mot internationella insatser där andra krav ställs på såväl personalens förmågor som urvalssystemet. Dock är det osäkert om dagens urvalssystem motsvarar de förändringar som skett.

Avhandlingen består av fyra studier (**Study I-IV**) gjorda på militära sampel med en longitudinell design. Undantaget från den longitudinella designen är **Study I** som var en valideringsstudie av ett personlighetsformulär (PQ) som användes i två av de efterföljande studierna. **Study II** visar att det tidigare urvalssystemet varken kunde förutse hur bra soldaterna presterade under en internationell insats, eller deras förmåga att återanpassa sig vid hemkomsten; samt att icke-kognitiva skattningar kan användas som indikatorer för återhämtningsförmågan. **Study III** visar, till skillnad från majoriteten av studier på internationella insatser, att deltagandet inte behöver medföra risker för den psykologiska hälsan, samt att god psykologisk hälsa tycks vara stabil över tid och situationer. Med andra ord tycks det som att självskattad hälsa och resiliens är möjliga urvalskriterier. **Study IV** antyder att hög motivation till att göra militärtjänst kan medföra allvarliga konsekvenser för urvalet, och i förlängningen, för rekryternas psykologiska hälsa.

Sammantaget visar avhandlingen att det nuvarande urvalssystemet behöver anpassas till behovet av internationella insatser och frivillighet samt att icke-kognitiva skattningar kan förbättra urvalets validitet.

Nyckelord: Personalurval, personlighet, resiliens, stresshantering, återhämtningsförmåga, psykiskt välmående, validering, militär, internationella insatser

This thesis is based on the following four studies:

I. Bäccman, C., & Carlstedt, B. (2010). A construct validation of a profession-focused personality questionnaire (PQ) versus the FFPI and the SIMP. European *Journal of Psychological Assessment, 26*(2), 136-142. http://psycnet.apa.org/doi/10.1027/1015-5759/a000019

II. Bäccman, C., Berggren, A. W., & Norlander, T. (2012). Military Capacity and Civil Adjustment: Assessments of the "re-usable" peacekeeping soldier for development of a selection system. *International Journal of Selection and Assessment, 20*(2), 171-181. doi: 10.1111/j.1468-2389.2012.00590.x

III. Bäccman, C., Hjärthag, F., & Almqvist, K. *Improved resilience and well-being in a Swedish Naval Force after a counter piracy operation off the coast of Somalia*. Manuscript under preparation.

IV. Bäccman, C., Sjöberg, L., & Almqvist, K. (2015). Comparison between applicants' and incumbents' mean scores on health constructs and personality constructs. A follow-up study of military recruits in a selection setting. *International Journal of Selection and Assessment, 23*(2), 120-130. http://dx.doi.org/10.1111/ijsa.12101

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Charlotte Bäccman

Karlstad, September 2015

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Close brutal combat puts a callous layer on each individual who undergoes the experience. With some men, their souls become trapped inside those accrued layers and they stay tightly bound up within themselves, unable or unwilling to reach outside that hard protective shell. For others, the effect is just the opposite. That coating becomes like a looking glass, highlighting and magnifying the things that are really important in life. Every sensation becomes precious and delicious. Even the painful ones.

Command Sergeant Major (ret.), Haney (2002; p. vii)

1. Introduction

Since the end of the Cold War, the Swedish Armed Forces (SAF) have undergone several changes regarding both task and personnel system. The globalization with the Global War on Terror and where intra-state conflicts may lead to worldwide consequences has refocused the SAF's main task from territorial defense (e.g., defend the nation from enemy invasion) to international operations. International engagement is by no means new. Sweden has participated in different types of conflict resolutions abroad since 1849, and the active involvement in the United Nations (UN) has led to continuous participation in international operations since 1948 (Sveriges militärhistoriska arv [Sweden's Military Historical Heredity], 2013). Ever since, the Swedish involvement has become increasingly perilous, and Swedish troops have cooperated not only with the UN and the European Union's Common Foreign and Security Policy (CFSP), but also with the North Atlantic Treaty Organization (NATO), as in the cases of Bosnia (i.e., IFOR) and Afghanistan (i.e., ISAF; Försvarsmakten [Swedish Armed Forces], 2013). Thus, the SAF may increasingly become engaged in a wide range of military operations encompassing military observations as well as peace support operations (PSO) ranging from traditional peacekeeping operations (PKO) to peace enforcement and counterinsurgency (COIN). This demands a variety of capabilities and competences, both military and non-military.

Due to this development of international operations, the SAF is an all-volunteer force (AVF) as of July 1st, 2010. The transition from conscription to voluntariness has prompted extensive reorganizations of the officer system (now a two-level system of commissioned and non-commissioned officers) and the educational structure for both officers and soldiers/sailors. However, the main difference concerns the focus of international operations where participation in international operations is mandatory, regardless of rank; and, as the new service periods may vary from 6–16 years depending on type of contract, the majority of personnel may be deployed repeatedly. Deployment in the former organization of compulsory military service was optional, and both officers and former conscripts would voluntarily apply for participation in a specific operation. In addition, the SAF has committed to a more extensive care program for its personnel, for example, a lifelong rehabilitation responsibility (e.g., Statens Offentliga Utredningar [State Public Investigations], SOU, 2013). Thus, the em-

phasis on international deployment has led to important changes both at the organizational level and the individual level, where enlistment may be fraught with risks to a different extent than previously.

Several organizational adjustments regarding recruitment, training, and staffing policies have been made to meet the new demands on the SAF. However, the actual content of the selection system appears to have remained fairly similar to that of compulsory military service. The former selection system aimed at the selection and classification of young men likely to complete conscription (Mårdberg & Carlstedt, 1998), and it may be debated if the present selection system has been adjusted to meet the new requirements posed by the AVF. For example, research developments regarding non-cognitive abilities may deserve to be thoroughly investigated (Rumsey & Arabian, 2014a, 2014b) as personality has been related to a variety of important life outcomes ranging from subjective well-being, physical health, and resilience to occupational commitment, and criminality (Ozer & Benet-Martínez, 2006), as well as performance (Barrick, 2005). The need for a valid selection system that takes into consideration all aspects of the individual's capacities and limitations may have become more important than ever, not only as a response to societal changes where the focus on the individual has become more pronounced (*cf.* Bauman, 2001), but also due to development in weaponry and warfare (Matthews & Laurence, 2012; Rumsey & Arabian, 2014a). Thus, a thorough evaluation and validation of the current selection system seems warranted in order to re-establish that the SAF is still able to select suitable individuals to perform increasingly complex tasks (*cf.* Koffman, 2006; Matthews & Laurence, 2012). In addition, as the goal is no longer to select conscripts but soldiers who can help create and maintain peace, the validation process needs to include both new selection criteria as well as new task-relevant outcome variables. This implies that selection criteria should not only be able to identify individuals apt for military performances from combat to peacekeeping, but also individuals who are resilient and can persevere repeated deployments. In the end, the goal must be that all personnel have been selected with high probability of completing an increasingly perilous and complex service in good health.

The outline of this thesis will begin by presenting a short historical background and the most basic assumptions in personnel selection, along with commonly used predictors (sections 1.1. to 1.5.). Although military selection systems may be considered

as predecessors to all selection systems (Rumsey & Arabian, 2014a), they will initially be given a more peripheral role. After this, the military task and some different types of international peace operations will be presented, as will some of the more typically studied psychological consequences of international deployment (section 1.6.). Section 1.6. will also discuss known risk factors for long-term stress reactions as well as the increasingly studied phenomenon of resilience. The next section (section 1.7.) will give a brief presentation of the former and current status of the SAF's selection system, as well as the aim and scope of this thesis (section 1.8.). The second part of this thesis (section 2. and forward) will present a summary of the four papers included in the present investigation. The last part (section 3.) is a general discussion regarding the main results and conclusions.

1.1. Theoretical background

The complexity of designing and sustaining a valid selection system becomes evident in the *Handbook of Employee Selection* (Farr & Tippins, 2010a) and *The Oxford Handbook of Personnel Assessment and Selection* (Schmitt, 2012), where almost a thousand pages, respectively, are devoted to different aspects of this matter. These extensive reviews of personnel selection elucidate that the aim of any selection system is to identify suitable (or unsuitable) candidates for the job or, in other words, to predict future job performance. Suitability may comprise both cognitive and non-cognitive abilities. Hence, the design, development, and maintenance of the selection system require a comprehensive work analysis of the job they are intended for, and although an actual work analysis lie outside the scope of this thesis, its importance for both selection and task performance cannot be emphasized enough.

As reflected in the titles of the two handbooks above, there are two terms often used: *employee selection* (Farr & Tippins, 2010a), and *personnel selection* (Schmitt, 2012). In this thesis, *personnel* will be used as this denotes a wider meaning (i.e., "people employed in an organization or engaged in an organized undertaking such as military service") than *employee*, which is more limited to a paid underling workforce (i.e., "a person employed for wages or salary, especially at non-executive level"; Oxford dictionaries Online, 2013).

1.1.1. The origins and rise of personnel selection

Individual differences and psychometrics are the antecedents of personnel selection as a psychological field—a field that can be traced back to Sir Francis Galton and his attempts to measure intelligence by means of senses and sensorimotor functions such as reaction time, eye sight, hearing, and muscular strength (e.g., Anastasi, 1954; Vinchur & Koppes Bryan, 2012; Winter & Barenbaum, 1999). The means of measure were (obviously) only partly valid, but Galton's work contributed to assessments of *individual differences* per se (both intelligence and personality) as well as to the use of both mathematical and lexical analysis (e.g., Anastasi, 1954; Goldberg, 1992; Sternberg, Lautrey, & Lubart, 2003; Vinchur & Koppes Bryan, 2012). Until then, individual differences had mainly been viewed as measurement errors—an approach influenced by Wilhelm Wundt who aimed at finding universal laws of psychology similar to those of medicine (Cronbach, 1990). Galton's ideas of individual differences and intelligence soon became a frequently studied phenomenon in the late 19th century, both in Europe (Spearman, 1904) and in the USA (Cronbach, 1990).

The first "real" intelligence test (the Binet–Simon test) was accredited to Alfred Binet and Theodore Simon in the beginning of the 20th century. Binet argued for the study of cognitions, memory, and reasoning—in contrast to the contemporary studies on physical sensations—as he had discovered that individual differences would be greater on these more complex levels (Nicolas & Levine, 2012). The Binet–Simon test was adapted to several languages, but is perhaps better known as the Stanford–Binet scale after the adaption by Terman at Stanford University (Anastasi, 1954). The test is still in use today (Sternberg et al., 2003). Thus, testing for intellectual capacity, intelligence, or cognitive ability has a long history within psychology.

The focus on individual differences also led to the development of non-cognitive tests, or personality tests, that is, assessments of, for example, temperament and emotional traits. The first known personality inventory is the "Personal Data Sheet", developed by Robert Woodworth who was commissioned by the American Psychology Association (APA) to investigate the phenomenon of shell-shock, or war neurosis, during the First World War (WWI; e.g., Winter & Barenbaum, 1999). The Personal Data Sheet was adapted to civilian editions after WWI (Anastasi, 1954) and is not only considered to be the first personality test, but also the first self-report inventory and a predecessor of the so-called Big Five dimension *Neuroticism* or *Emotional stability*

(Winter & Barenbaum, 1999). The other four dimensions are usually named *Agreeableness, Conscientiousness, Extraversion,* and *Openness to experience* (e.g., Costa & McCrae, 1992; Hough & Dilchert, 2010; John & Srivastava, 1999; Peeters, van Tuijl, Rutte, & Reymen, 2006). The first core of the Big Five model of personality traits was presented by Thurstone in 1936 (Digman, 1990; see also Digman, 1996), but Tupes and Christal (1961/1992) are often accredited the present five factors. Tupes and Christal's (1961/1992) famous study on US Air Force pilots in 1961 is considered to be one of the first studies to show five stable and replicable factors (Digman, 1990; Goldberg, 1992). The Big Five has since become the most applied and studied personality theory (e.g., Hough & Oswald, 2000; Winter & Barenbaum, 1999) and will be presented more in depth later in this thesis (see section 1.4.2. Personality).

Thus, the pioneering works of Galton started a new field of psychology that led to an upsurge of psychological tests and test methods in the beginning of the 20th century, both in Europe and the USA (Salgado, Anderson, & Hülsheger, 2010). In a book from 1911, *Increasing Human Efficiency in Business*, Walter D. Scott turned to businessmen and described the psychological elements in work life, such as loyalty, intimidation, and salary, and how these elements could contribute to greater efficiency and profit (from Starch, 1912; Strong, 1912). This book was pioneering in the field of industrial and organizational psychology, a field that thrived after WWI and the following two decades after the Second World War (WWII; Digman, 1996; Salgado et al., 2010; Vinchur & Koppes Bryan, 2012). The development of personnel selection was then fostered into a new era converging with the increased interest in individual differences, the industrialization, and the functionalistic scientific approach epitomized by Taylorism.

1.1.2. The beginning of military selection systems

Although personnel selection has been a part of military organizations long before WWI (Vinchur & Koppes Bryan, 2012), the onset of WWI triggered a wide recognition of psychometrics. The technological advances in both weaponry and communications prompted a cognitive classification system for the enlisted soldiers not necessary for earlier wars (Matthews & Laurence, 2012). Terman (1918) adapted the Stanford–Binet intelligence test to the "Army Alpha" and "Army Beta" and argued for the necessity of testing all enlistees to organize the US Army, comparing the US Army to

the well-organized German army. The Army Alpha was designed for educated American citizens; the Army Beta for illiterates or immigrants, and was therefore non-verbal. The purpose of the testing was to improve efficiency in both training and performance by selecting and placing the new recruits within the organization (*ibid.*).

In addition, Woodworth's Personal Data Sheet (1919) was introduced for mass testing of the American draftees. The personality test aimed at identifying those who were unfit for service and comprised 116 questions regarding abnormal fears, obsessions and compulsions, sleep disturbances, and psychosomatic symptoms (Anastasi, 1954). Woodworth created cut-off scores to screen out unsuitable individuals. It is, however, unclear what cut-off scores were used: Woodworth (1919) reports that the average college student answers "Yes" on approximately 10 of the questions, whereas "screened neurotics" scored over 40, and "cases of shell-shock" over 30; yet he does not say if he recommends a limit of 30 or 40.

Another line of testing during WWI was Scott's "Man-to-Man rating scale", in which a superior officer rated an applicant's appearance, experience, vigor, stability, and so on (Vinchur & Koppes Bryan, 2012). In an article by Achilles and Achilles (1917), the military value of certain characteristics are estimated (e.g., energy, courage, domination, control of emotion)—characteristics similar to those of both Scott's Man-to-Man scale and to the predictors in the much later Project A, for example athletic abilities/energy, dominance/self-esteem, and cooperation/emotional stability (Peterson et al., 1990). Thus, the acknowledgment of the importance of both cognitive and non-cognitive abilities on military performance dates back almost a century.

The growing field of psychology and psychologists were not only useful for measuring psychometric competences, but also for the re-education of returning personnel (Kennedy, Boake, & Moore, 2010). Postwar, the competences of the WWI psychologists were transferred to civilian organizations (Driskell & Olmstead, 1989). By the onset of WWII, the psychologists' work in civilian organizations and the general advances in psychology had prepared them for their role in the recruitment process to war (Kennedy et al., 2010).

The field of military psychology has continued to develop the field of psychology itself. Applied experimental psychology is one example, and the work of Milgram (1963) on obedience to authority, seemingly irrespective of consequences, has at-

tracted attention ever since. As evidence of the merger between the military and psychology, the APA introduced its 19th subdivision, the Division of Military Psychology, in 1945 (Matthews & Laurence, 2012). Evidently, military selection and military psychology have had a great impact on personnel selection and psychology in general ever since WWI. Apart from some fluctuations, the interest for the use of non-cognitive assessments has increased since the 21th century (Rumsey & Arabian, 2014a).

1.1.3. The postwar stagnation

The development of personnel selection came to a halt in the 1960s, and the only cross-Atlantic exchange on this topic seems to have been between psychologists in military settings (e.g., Salgado et al., 2010). According to Vinchur and Koppes Bryan (2012), one reason for this stagnation in the USA was the civil rights movement that put legal constraints on personnel selection (see also Carlstedt, 2000). In addition, personnel selection was accused of being reductionistic and having a top-down perspective (Vinchur & Koppes Bryan, 2012). According to Digman (1990), another reason might have been the revival of the behavioristic view on personality, where all mental processes were discarded as non-scientific were they not measurable through stimuli-response theories. Yet, perhaps the most important line of critique was the lack of evidence for the validity of personnel selection. At the time situational factors seemed to be a more determining factor for job performance than individual differences (Schmidt & Hunter, 1998). Thus, the reasons for the stagnation may have been several; not only shifting theoretical and political focal points, but also critique regarding the purpose of selection systems—especially as they did not prove very valid at this point in time.

The revival of personnel selection began in the second half of the 1970s (Salgado et al., 2010; Vinchur & Koppes Bryan, 2012). Perhaps because the researchers were now able to show that validity inconsistencies were products of inadequate statistical methods and of sampling errors due to small samples rather than of the selection itself (Schmidt & Hunter, 1998). Indeed, despite the stagnation in application during the 1960s, there were important developments regarding test methods, for example meta-analysis (see e.g., Schmidt & Hunter, 1998; Vinchur & Koppes Bryan, 2012; Winter & Barenbaum, 1999). Although improvements of the organization's efficiency

and performance remain the purpose of selection systems (Farr & Tippins, 2010b; Murphy, 2010), it seems that there have been substantial changes in both theory and practice since the revival, some of which will be presented in the following section.

1.2. Personnel selection in the 21st century—A holistic approach

Although many aspects have remained the same since the beginning of personnel selection, for example the aim of the selection system and the predictors and criteria used for selection, there have been considerable changes in how they can be interpreted (Vinchur & Koppes Bryan, 2012). One rather new approach is the view of holistic assessments dating back to WWII. The concept of holistic assessment does not seem to reappear again until McPhail and Jeanneret's (2012) review of the utility for psychological assessments. Ployhart and Schneider (2012) also use the term holistic, but on the basis of the effects that the situation or context can have on performance. Until now, the holistic perspective has only implicitly been reflected in the changes of predictors and criteria, and was foremost referred to as consequences of the increased complexity of work life (see e.g., Hough & Oswald, 2000; Sackett & Lievens, 2008).

This holistic approach and its effect on personnel selection can be illustrated by the fact that work analysis of today should include all areas of work life—not only the actual work tasks. A holistic work analysis includes the physical and psychological conditions under which work is performed, such as cooperation demands, adaptability, and responsibilities (e.g., Brannick, Cadle, & Levine, 2012; Hough & Oswald, 2000; Pearlman & Sanchez, 2010). In addition to looking at the traditional outcome variable of task performance, outcomes such as contextual performance and counterproductive work behavior are included (Penney, David, & Witt, 2011; Rotundo & Sackett, 2002). Counterproductive work behavior includes any behavior that either is harmful to coworkers or the organization in terms of absence, theft, or purposefully performing a task incorrectly (Rutondo & Spector, 2010). In many cases, work analyses also include the prospect and degree of team performance as many jobs are performed in teams or in close cooperation with others (Mohammed, Cannon-Bowers, & Foo, 2010; Mount, Barrick, & Stewart, 1998; O'Neill & Allen, 2011; Peeters et al., 2006;). Yet, the advantages of a holistic selection system may be even subtler, such as keeping and developing talents (Hausknecht & Wright, 2012; Ryan & Delaney, 2010), or

measured in terms of reduced costs for faulty hiring or attrition (e.g., Cascio & Fogli, 2010; Schmitt, Arnold, & Nieminen, 2010). Thus, outcome variables have multiplied, and task performance is only a part of all possible outcomes where early attrition is a large cost for several organizations, not the least for the armed forces.

Alongside this development of outcome variables, there has also been a substantial development of personality inventories. Personality inventories today encompass not just traits, but also emotions, cognitive style, motivations, values, and so on (e.g., Fernández-Ballesteros, 1999; Hough & Oswald, 2000; McPhail & Jeanneret, 2012; Winter & Barenbaum, 1999). The increased knowledge of how these different personality aspects can affect and enhance validity of work performances and behaviors has given personality inventories an important place in selection systems (e.g., Dorsey, Cortina, & Luchman, 2010; Hough & Dilchert, 2010; Murphy, 2010; Rotundo & Spector, 2010; Sackett & Lievens, 2008; Schmidt & Hunter, 1998; Schmidt, Shaffer, & Oh, 2008). Yet, the full effect of multiple predictors—especially the non-cognitive abilities—still remains to be discovered as a broader work analysis comprising both organizational context and more diverse work criteria is still in its cradle (Hattrup, 2012; Pearlman & Sanchez, 2010; Ployhart, 2012). Nevertheless, the need for a holistic assessment of individual differences cannot be mistaken and may, according to McPhail and Jeanneret (2012), have become more important than ever as the complexity of work life has increased.

The consequences of this holistic approach seem to go beyond the variety of predictors and work criteria, and Cleveland and Colella (2010), as well as Michel, Clark, and Jaramillo (2011) provide some illustrations. Cleveland and Colella (2010) dispute the customary term *success* claiming that it resides some obsolete conditions (e.g., white male, sole family supporter) and that success today can be more than vertical career climbing, for example good health. Furthermore, as the boundaries between work life and personal life have become more blurred, owing to technological advances that can put us within reach regardless of time or place, having a balance between work and personal life may also be considered success (*ibid.*). The study of Michel and colleagues (2011) showed that all of the Big Five personality dimensions were related to the balance or unbalance between work and family situation, with work affecting non-work and vice versa. Thus, the complexity of work life criteria increases, as they may need to include aspects outside work performance.

Another theoretical change that may have influenced the way we think about selection is positive psychology. Since the end of WWII, researchers as well as practitioners have come to interest themselves in individuals' different abilities to grow and strive for happiness—even in the face of adversity (Seligman & Csikszentmihalyi, 2000). This interest in individuals' health has been reflected in the personnel selection literature on individual differences that may promote both adaptive behaviors in the workplace (e.g., handling crisis, stress, social contexts) and sustainable health (Baker & Gebhart, 2012; Dorsey et al., 2010; Gebhart & Baker, 2010). As the selection of healthy individuals can be fraught with legal ramifications, this has seldom been an explicit selection criterion; instead, organizations have provided different wellness programs as part of their personnel policies (Tetrick, Perrewé, & Griffin, 2010). While the increased interest in individuals' resilience has not yet become an explicit selection criterion, the field of research does not lack knowledge nor instruments for its assessment, or aspects thereof, for example *Sense of coherence* (SOC; Antonovsky, 1993), *Hardiness* (Britt, Adler, & Bartone, 2001), and *Posttraumatic growth* (PTG; Tedeschi & Calhoun, 1996). The outline of these instruments will be presented below, with the use of resilience as possible selection criterion (see section 1.4.).

It should, however, be noted that also leaders and organizational climate are important factors that may affect performance (Avolio & Gardner, 2005; Ployhart & Schneider, 2012). In a military context, both the leader and the team are renowned factors of importance, and the military team's social climate is often referred to as *cohesion*. Cohesion is considered important both for performance and for psychological well-being (see e.g., Ahronson & Cameron, 2007; Bartone & Wright, 1990; Griffith, 2002; Oliver, Harman, Hoover, Hayes, & Pandhi, 1999; Siebold, 2006; Tyler & Grifford, 1991). According to Wong, Bliese, and McGurk (2003), the leader and his/her military unit are basically one and the same, regardless of hierarchical level and proximity. According to Avolio and Gardner (2005), the selection and placement of leaders in the organization are important instruments to accomplish the full effect of authentic leaders who can "lead by example". However, although Wong and colleagues (2003) agree that military leaders may be identified early in the selection process, the authors stress that leaders' success and career will be an ongoing progress throughout their service years. While of utmost importance, military leaders and cohesion should not be considered selection issues, even if both may very well be

affected by selection (see also Ozer & Benet-Martínez, 2006). Thus, besides selection, there are other aspects to consider for task performance and psychological well-being.

Taken together, although in its cradle, a holistic approach to personnel selection where all aspects of work and performance are considered—including aspects that cannot be considered merely individual abilities or skills, that is, leadership and work climate—may have positive effects beyond overall work performance at an organizational level. At the individual level, a holistic selection system may affect not only job success, but also aspects of work–life balance, life satisfaction, and long-term health.

1.2.1. The criterion problem

The holistic approach stresses the importance of not only valid predictors, but also of relevant criteria (e.g., Borman Bryant, & Dorio, 2010; Kehoe & Murphy, 2010; Sackett & Lievens, 2008), or as Cronbach (1990) puts it, "a bad criterion may make inappropriate tests look good" (p. 414). The complexity of formulating distinctive work criteria that operationalize different aspects of job performance, efficiency, counterproductive work behaviors, and so on, seems to have been a well-known fact throughout the history of personnel selection and has often been referred to as the "criterion problem" (Rodger, 1965; see Austin & Villanova, 1992, for a review).

The criterion problem revolves around how different outcomes should be defined and specified (Cronbach, 1990; Austin & Villanova, 1992). Schmitt and colleagues (2010) argues that work criteria should be as carefully designed and tested as the predictors, for example comprising visible and measurable behaviors. It may for example prove difficult to assess direct performances in regard to objective criteria: Sales and production quantities may sound objective, but these are often contaminated by a third variable such as dependence on coworkers or overall market rises and falls (Borman et al., 2010; Sturman, 2012). Despite being a well-known problem, little seems to have changed over time. Different criteria are still no more than subjective assessments, for example superiors' ratings of employees' performance (Kehoe & Murphy, 2010), infected by different bias such as the *Halo effect* (Thorndike, 1920). That is, if an individual is considered to be good in one aspect, this will spill over to other aspects regardless if they are connected or not (*ibid.*). The criterion problem is a relevant issue that is crucial to any predictive study as it may render good predictors in-

valid. Likewise, overlooking important outcomes may invalidate an otherwise valid selection system.

Overall, the increased task complexity calls for a thorough work analyses for most military positions. For example, at the risk of repeated international deployments, the SAF should include sustained psychological health as criterion when designing the selection system.

1.2.2. Technical advances and legal aspects of personnel selection

The changes have not only been theoretical, but also practical where, for example, equal job opportunities, discrimination, and the widespread use of Internet recruitment have led to changes in legislative issues. Since the 1960s, selection systems and selection programs need to take into account the adverse impact and the effect they may have on subgroups or minorities (e.g., religion, ethnicity, sex, age). Moreover, the use of Internet testing has also forced redefinitions of what constitutes a job applicant in contrast to someone who is just conveying an interest in a particular job (Landy, Gutman, & Outtz, 2010). Although outside the scope of the present thesis, this may have implications for how diligently selection systems are designed regarding cut-offs and other scores that will impact selection decisions.

The technical development during the past decades has been one of great complexity, posing both practical and methodological implications for selection systems: For example, are the answers from a paper-and-pencil test are equivalent to those of a computerized test (Buchanan, Johnson, & Goldberg, 2005)? However, despite some newly posed problems, the technical development has also led to substantial progress (Scott & Lezotte, 2012). Firstly, technical advances have led to more advanced testing systems, such as Computer Adaptive Testing (CAT), where the preceding answer will determine the subsequent question, thus requiring less time to assess the individual's abilities (Carlstedt, Gustafsson, & Ullstadius, 2000; Reynolds & Dickter, 2010). Secondly, the use of computerized testing has led to the possibility of testing more applicants at a lower cost than earlier. A total applicant pool can be screened through an online application at an early stage of the recruitment process (Cascio & Fogli, 2010; Sackett & Lievens, 2008). Thirdly, the "computerization" has provided the ability both to handle large amounts of data by means of software statistical programs and to develop new validation strategies and statistical analyses (Hough & Oswald, 2000;

Kehoe & Murphy, 2010; MacCallum & Austin, 2000; Putka & Sackett, 2010; Schmidt et al., 2008; Zickar, Cortina, & Carter, 2010). Technical advances have enhanced the ability to understand how different individual characteristics are associated both with different criteria and between themselves (Sackett & Lievens, 2008).

Taken together, the new era of personnel selection that emerged after the regression in the 1960's seems to have been faced with an array of challenges (e.g., work life structure, different types of employment, legislations, and globalization), but also opportunities. Technical and statistical advances have led to a better understanding of the relationship between different predictors and between different criteria, thus enabling a better prediction of a particular selection system.

1.3. Some aspects to consider before designing a selection system

There are two questions that seem fundamental for the design of the selection system. The first one regards if the selection system and the overall recruitment strategy build on a work-oriented or person-oriented analysis. According to Murphy (2010), the answer to this question depends on what type of organization the selection system is meant for. Yet, the person-oriented analysis, where an individual first is hired and then placed, seldom occurs outside the armed forces (*ibid.*). When it comes to organizations like the armed forces that provides on-the-job-training, and where no prior job experience is likely to exist, the selection system will by necessity look slightly different, focusing more on abilities than skills (Sellman, Born, Strickland, & Ross, 2010). One reason for this is, of course, the legal aspect, where a work analysis ascertains the relevance of the selection criteria (Landy et al., 2010). However, any valid selection system, including the armed forces', needs to be preceded by a thorough work analysis, as it would otherwise be impossible to infer the usefulness of a particular construct (e.g., Kehoe & Murphy, 2010; Pearlman & Sanchez, 2010; Sackett & Lievens, 2008; Schmitt et al., 2010; Vinchur & Koppes Bryan, 2012). Undeniably, a thorough work analysis is key to any valid selection system, regardless of recruitment strategi. Yet, the predictors will look different for different organizations. For the SAF, which mainly rely on a person-oriented analysis where on-the-job-training is provided, the selection system will by necessity be focusing more on abilities than skills.

The second question regards the population at hand, and concerns the applicant pool—who and how many will be able and willing? If there is an abundant amount of possible applicants (i.e., a large applicant pool) but the organization only needs a few, the selection system can be designed differently from if they need many, or if the applicant pool is small. The main two selection strategies are usually called "screen-in" and "screen-out". The former, screen-in, uses a top-down selection and selects the recruits from the highest scoring applicants, whereas screen-out is a bottom-up strategy that excludes the lowest scoring applicants (Sackett & Lievens, 2008). At their initial selection, most armed forces use a screen-out strategy focused on identifying unsuitable applicants as they usually have a large applicant pool in addition to wanting many recruits.

The selection ratio, that is, the relationship between applicants and incumbents, will also pose different demands on the validity of tests. If only a few individuals are needed from a large applicant pool, even tests with only moderate validity may be effective, whereas when most of the applicant pool is accepted, even the most validated test will have little effect (Schmitt et al., 2010). Yet, a highly validated test would be more useful and legitimate in most situations both from societal and legal perspectives (*ibid.*). Validated tests are perhaps especially important for the armed forces as their position in society and tasks are both unique and extreme.

The validity of the selection system and its selection strategy will affect the quality of incumbents, both in terms of false positives and false negatives. The former, false positives, concerns the faulty selection decisions where either unsuitable or unqualified individuals are hired; the latter, false negatives, refers to suitable and qualified individuals being overlooked (Tippins, Papinchock, & Solberg, 2010; Schmitt et al., 2010). The effect of faulty selection decisions will always be costly, yet the consequences can vary considerably depending on the organization's task (Schmitt et al., 2010). The possible negative consequences of a hiring error in the armed forces can have far more serious consequences than a hiring error to a retailer. For example, military leaders can constitute the difference between life and death at the operational and tactical level and be crucial for the survival of a nation at the strategic level (Wong et al., 2003). One way of reducing the risk of false positive hiring is by a sequential recruitment process where internship and probationary periods may lessen the cost of hiring errors (Cascio & Fogli, 2010; Schmitt et al., 2010). The selection

system should thus not only consider the task, but also the consequences of erroneous selection results, that is, if the individuals who are selected fail at performing the job they were hired to do.

After the design and strategy, the actual content of the selection system is to be filled, that is, the instruments that are to be included, the criteria they should be validated against, and lastly, how the resulting scores should be used (Kuncel, Klieger, Connelly, & Ones, 2013; Tippins et al., 2010). Each of these aspects covers a wide area of concerns regarding the particular organization and job, costs and administrative effectiveness, as well as legal implications (Tippins et al., 2001), sometimes with conflicting demands (Kehoe & Murphy, 2010; Tippins et al., 2010). Ponder for example, an organization's goal of increased efficiency, that is, finding the best candidates for each position, but also goals of diversity and equal job-opportunities, in addition to societal norms and/or national laws against discrimination.

Taken together, the endeavor of designing a selection system will require: a) a comprehensive work analysis, including an awareness of the consequences of inaccurate selection decisions as exemplified by false positives and false negatives; b) some knowledge of the possible recruitment population (i.e., applicant pool and selection ratio); and c) a strategy for assessing and applying the individual characteristics—cognitive as well as non-cognitive—that may affect job performance in the particular organization. Any change regarding these three aspects (i.e., the task, population, and/or criteria) may necessitate changes in the selection system (Ployhart & Weekley, 2010). For example, the changes from territorial defense to international operations, from compulsory military service to an all-volunteer force (AVF), and/or from men to both men and women, may demand changes in the SAF's selection system.

1.4. An overview of commonly used predictors

This section will cover both traditional predictors in personnel selection (i.e., general mental ability, GMA; and personality) as well as more unusual selection predictors, such as assessments of physical capacity, which mainly have been used in military, police, or emergency service organizations. In addition, this section will present the phenomenon of resilience as well as the possibility of introducing assessments for psychological health in selection systems.

1.4.1. General mental ability

There seem to be several ways of understanding intelligence, and the debate on the structure and content of intelligence (e.g., whether intelligence is a unitary or multiple concept and/or a static or a dynamic phenomenon) is unresolved; in the end, the outcome of this debate will affect how intelligence is assessed and interpreted (Lang, Kersting, Hülsheger, & Lang, 2010; Sternberg et al., 2003). Although still rather unconfirmed, the view of intelligence as an executive tool (practical intelligence) ought not to be overlooked: It is a concept that accounts for the discrepancy when two equally intelligent people differ in their execution of a specific task (Gardner, 2003). Practical intelligence may also be revealed by the fact that an individual with lower intelligence (at least as assessed by a test) may outperform an individual with higher intelligence scores under certain conditions, perhaps due to motivational aspects (Stankov, 2003). For the sake of this thesis, the focus will be on intelligence as an individual characteristic that differentiates one individual from another, emphasizes an ability that is stable across time and situations (Weinert & Hany, 2003), and includes both ability to reason and mental adaption (Stern, 1911; from Ones, Dilchert, Viswesvaran, & Salgado, 2010).

Most intelligence tests are based on the concept of general intelligence, or general mental ability (GMA), that is, the notion that each individual have a certain level of cognitive ability which can be observed in the correlations of different cognitive aspects (Spearman, 1904). The intelligence tests used for personnel selection in most western countries build on GMA derived from a hierarchical model (Ones et al., 2010). The hierarchy's top is the GMA; the second level comprises broad abilities, such as knowledge acquisition, visual perception, and creativity; and at the lowest level it is made up of specific abilities, such as verbal understanding, mathematical understanding, and so on (*ibid.*). Frequently used terms for the broader abilities derived from the works of Cattell and Caroll (from Carlstedt, 2000) are *fluid intelligence* (often referred to as Gf), which is the ability for reasoning and pattern detection; *crystallized intelligence* (often referred to as Gc), which is knowledge acquisition; and *visualization ability* (often referred to as Gv), which is the ability to manipulate and visualize geometric forms and complex patterns. Within the realm of personnel selection, the most frequently used predictor is the broad concept of GMA as

this concept both captures the more specific factors, and seems to be the most stable over time (Ones, Dilchert, & Viswesvaran, 2012).

GMA has been shown to have validity for training across jobs and organizations. There is a linear relationship between GMA and performance, that is, the higher the scores on a cognitive test, the better the performance (e.g., Kuncel, Ones, & Sackett, 2010). Although moderated by job complexity, individuals' GMA will affect their knowledge acquisition, speed and ease of learning, training outcome, and overall job performances (Bertua, Anderson, & Salgado, 2005; Borman et al., 2010; Hunter, 1986; Lindqvist & Vestman, 2009; Ones et al., 2012; Ones et al., 2010; Schmidt & Hunter, 1998). In fact, according to Schmidt and colleagues (Schmidt et al., 2008; Schmidt & Hunter, 1998), the predictive validity of GMA goes beyond that of most other cognitive assessments (e.g., level of education, interests, assessment center testing). On the other hand, integrity tests, structured interviews, and work samples test may provide incremental validity to GMA (Schmidt & Hunter, 1998). Thus, the conclusion of Ones and colleagues (2012) is that "the best way to select employees is to recruit, identify, and hire the brightest individuals for all jobs, under all circumstances" (p. 204) and that GMA may be even more important today than it was half a century ago as work life has become more complex. Despite differences regarding theoretical standpoints between intelligence scholars, and practitioners of intelligence tests, the evidence of the validity for testing and selecting on basis of GMA seems indisputable.

1.4.2. Personality

Personality is defined as an individual's unique, relatively enduring patterns of thoughts, ideas, emotions, and behaviors that are relatively consistent across time and situations (Barrick & Mount, 2012). In contrast to GMA, which provide information about the individual's ability or "can-do" factors, personality provides information about the individual's "will-do" factors, for instance, the individual's willingness and ability to persevere and follow norms (Barrick & Mount, 2012; Penney et al., 2011). However, much research is still needed to understand not only how the combination of different personality factors and situational factors interact to affect performance (Penney et al., 2011; Darr, 2011), but also the effect of time. According to Beier and Ackerman (2012; see also Ployhart, Lim, & Chan, 2001), the importance of

personality may increase as a function if the task characteristics changes from maximal to typical performance, but personality may itself undergo some changes over time as "[R]epeated experience of states eventually will result in changes in traits" (Hampson, 2012, p. 327). Despite some varying results, there seem to be no doubt about the usefulness of personality instruments for personnel selection.

The most frequently used concept of personality is the Big Five (or the Five Factor Model, FFM), that is, the five factors: *Extraversion* (or Surgency), *Agreeableness*, *Conscientiousness*, *Neuroticism* (or Emotional stability), and *Openness to experience* (or Mental openness) (e.g., John & Srivastava, 1999; Hampson, 2012; Hough & Dilchert, 2010). The five factors can either be shortened by the first letter of the name or numbered by Roman numerals (e.g., E or I, A or II, C or III, N or IV, and O or V) (Goldberg, 1992; John & Srivastava, 1999). In this thesis, however, the full name of the factors will be used.

The Big Five were first coined by Goldberg in 1981 to symbolize the abundance of each factor (from John & Srivastava, 1999) and has its roots in the lexical theory of personality (Evans & Rothbart, 2007). The lexical theory builds on the work of Allport and Odbert (1936), who extracted almost 18,000 words from the English dictionaries that could be used to describe a person. These words were categorized into four major categories: a) stable and neutral trait-names; b) temporary, infused by the situation states; c) censorial and evaluative descriptions; and d) physical abilities and descriptions (*ibid.*). And although the first category of more than 4,500 trait-names has probably produced the most attention, all four categories have been further elaborated (John & Srivastava, 1999). The other name, FFM signifies a slightly different framework, and stems mainly from the research by Costa and McCrae (e.g., Evans & Rothbart, 2007). For example, one difference is that the FFM, as defined by Costa and McCrae (1992) in their instrument Neuroticism Extraversion Openness Personality Inventory-Revised (NEO PI-R), includes values as an aspect of the factor Openness to Experience, whereas values do not constitute a trait according to the Big Five (John & Srivastava, 1999). Another difference is that warmth is an aspect of Extraversion in the NEO PI-R (Costa & McCrea, 1992), whereas it is an aspect of Agreeableness in Big Five (John & Srivastava, 1999).

A summary definition of the five factors seems rather difficult to come by as scholars seem to define the factors somewhat differently, sometimes constrained to a specific instrument (e.g., Goldberg, 1993; Costa & McCrae, 1992; Saucier, 1994, 2009). Digman (1990) presented a table of how the different factors have been defined from the middle to the end of the 20th century, which in many ways captures the essence and width of each factor. The first definitions by Tupes and Christal from 1961 were Surgency for Extraversion, Dependability for Conscientiousness, Emotionality for Neuroticism, and Culture for Openness to Experience; Agreeableness was the same (Digman, 1990). Costa and McCrae presented the present predominant names in 1985, at the same time as the first version of their NEO PI (*ibid.*). The following definitions of the factors are aggregates of, for instance, John and Srivastava (1999), Murphy (2010), and Peeters and colleagues (2006): Extraversion is an individual's level of sociability, outgoingness, and enthusiasm, as well as his/her activity level and need for external stimuli and attention; Agreeableness is the dimension of how compliant, compassionate, and affectionate the individual is, but also how much he/she trusts others and sees them as benevolent; Conscientiousness is the individual's level of deliberation and self-control, how disciplined, reliable, and achievement striving he/she is; Emotional stability refers to the individual's ability to stay calm and poised, to have low levels of negative affect and high ability to adapt to different circumstances; and Openness to experience is an individual's overall curiosity in life, appreciation for aesthetics, creativity, and independence or originality of thought. This latter factor has also been connected to an individual's sensitivity to both external and internal stimuli.

At the most general level, the Big Five is more of a framework than a theory; hence, it is merely a structure for understanding the phenomenon of personality and does not offer any explanation as to why and how one individual differs from another (Digman, 1990; Hampson, 2012; John & Srivastava, 1999; McCrae & Costa, 1999; see also Hogan, Hogan, & Roberts, 1996). As a result different scholars use this framework differently, some use it to explain the origins of behavior whereas others use it to explain more complex behavior. For example, Evans and Rothbart (2007) argue that the Big Five originate from five broad temperament constructs: Extraversion from *Positive affect* (e.g., sociability, pleasure, social closeness); Agreeableness from *Affiliativeness* (e.g., empathy, concern for others, aggression control, social closeness);

Conscientiousness from *Effortful control* (e.g., activation control, effortful attention, inhibitory control); Neuroticism from *Negative affect* (e.g., frustration, aggression, social anger, fear, discomfort), and Openness to experience from *Orienting sensitivity* (e.g., sensitivity to both internal and external stimuli, even when very weak). Other scholars look at its components to understand work behavior and organizational behavior (e.g., Barrick & Mount, 2012; Kuncel et al., 2010). In personnel selection, the origin of personality is of less importance as the focus lies on their predictive validity of different performance outcomes (e.g., Kehoe & Murphy, 2010; Putka & Sackett, 2010; Spector, 2012). Having said that, an understanding of the underlying processes behind the factors and traits is, of course, of importance as more complex criteria emerge.

Regardless of their origin, the Big Five dimensions seem related to most areas in life. A review of Ozer and Benet-Martínez (2006) showed that the Big Five was ubiquitous and affected an individual's life positively or negatively in three broad areas: individual, interpersonal, and social. Individual outcomes refer to outcomes like health, happiness, and identity, whereas interpersonal outcomes refer to relationships. Social outcomes refer to occupational choices and performances, but also values and criminality. Thus, it seems as the Big Five can be applied to most areas in life.

The Big Five has proved to be consistent across time and languages, and although some differences can be noted for non-Germanic languages and non-western countries, the five factors are surprisingly similar across instruments (John & Srivastava, 1999; Saucier, 1994, 2009). Yet, the five-factor structure has been questioned, and alternative structures of, for example, more factors have emerged (e.g., Ashton & Lee, 2005; Hough, 1992; Jackson, Ashton, & Tomes, 1996; Jackson, Paunonen, Fraboni, & Goffin, 1996). However, the Big Five still seems to prevail. At the broadest level, the factors' predictive validity seems rather limited, and several scholars argue for the use of more narrow content-specific aspects and/or compounds of two or more factors (Alessandri & Vecchione, 2012; Ashton, Jackson, Paunonen, Helmes, & Rothstein, 1995; Dudley, Orvis, Lebiecki, & Cortina, 2006; Hough & Dilchert, 2010; Kehoe & Murphy, 2010; Ones & Viswesvaran, 2001; Ozer & Benet-Martínez, 2006; Peeters et al., 2006; Penney et al., 2011) as some behaviors will be more typical in some situations than others. For example, feelings and behaviors as professionals may not always correspond to feelings and behaviors in private.

The idea that the width of the predictor should correspond to the width of the criteria is old (Dudley et al., 2006), and is further validated in the results from the broader factors and their relation to different job criteria. For example, Conscientiousness and Emotional stability have been the most validated broad factors for job training and overall job performance (e.g., Alessandri & Vecchione, 2012; Barrick & Mount, 1991; Barrick & Mount, 2012; Barrick, Mount, & Judge, 2001; Darr, 2011; Hurtz & Donovan, 2000; Judge & Bono, 2001; Morgenson, Humphrey, & Reeder, 2012; Schmidt et al., 2008). The remaining three factors seem to be more context-specific and will affect other, but equally important, work criteria besides performance, for example attrition: Extraversion seems positive when the job requires social skills, high energy, and status strivings (e.g., sales, leadership, job satisfaction); Agreeableness seems positive for jobs were getting along is important (e.g., customer service, public service, team work), and it generally decreases attrition; Openness to experience seems useful when work is complex, ambiguous, and autonomous (e.g., training performance, creativity and innovation, leadership), but will also increase the likelihood for attrition (see Barrick & Mount, 2012; Larson, Booth-Kewley, Merrill, & Stander, 2001; Ones & Viswesvaran, 2001; Woo & Maertz, 2012). The broad factors do seem to be relevant for different kind of jobs, but also for different aspects of work criteria.

In sum, personality seems to have become an equally important selection tool as GMA (see e.g., Stark et al., 2014; White, Rumsey, Mullins, Nye, & LaPort, 2014), but there is still need to figure out how the different factors may influence performance and other important work criteria. Besides, as the more narrow aspects seem to have more influence on work criteria than the broader factors (Dudley et al., 2006), it is of importance that this line of work continues to further validate the use of personality assessments. In addition to work-related aspects, personality has a long proved history of correspondence to psychological well-being (e.g., DeNeve & Cooper, 1998; Diener, Oishi, & Lucas, 2003; Steel, Schmid, & Shulz, 2008). A recent study on veterans by Clarke and Owens (2012) showed that *Posttraumatic stress disorder* (PTSD) symptom severity was related to four of the Big Five dimensions. Yet, only Neuroticism yielded significant variance with PTSD severity in a regression model (together with combat exposure and attachment style; *ibid.*). Another study on military personnel (Skomorovsky, 2013), found that both personality in terms of low Neuroti-

cism, problem solving, and active coping were related to better psychological well-being. In a previous study, Skomorovsky and Sudom (2011) found that Big five contributed to both stress perceptions and life satisfaction. Although more research is needed regarding specific effects on mental health problems, the use of personality aspects in selection may prove to be positive both for performance and health aspects.

1.4.3. Physical capacity

For some jobs (e.g., fire and law enforcement), testing for physical capacity is considered a necessity—especially if the job requires preparatory and continuous training. However, this type of testing can be fraught with political and legal complications if the testing is not clearly linked to a job analysis (Baker & Gebhardt, 2012). In addition, when it comes to selection based on health factors, any prejudice against for example, overweight or obese individuals need to be inhibited (e.g., Niebuhr et al., 2009; Tetrick et al., 2010). Nonetheless, several studies show that individuals with high physical capacity run a reduced risk for work related injuries, fewer days of work loss, and lower attrition rates for a variety of jobs (see Baker & Gebhardt, 2012, for a review). In other words, physical health seems to be as important for the organization as for the individual.

According to Baker and Gebhardt (2012; Gebhardt & Baker, 2010), physical tests can be divided into two major categories. The first category consists of basic ability tests such as muscular strength, muscular endurance, and aerobic capacity. These types of tests are assessments of a basic characteristic of one or more job tasks and are considered safe for the test-taker but not necessarily valid for the job. The second category consists of job simulation tests, or work sample tests, requiring the individual to perform a specific work task or a series of tasks considered essential for the job. For this, time (task duration), environment, and equipment should be as real as possible. Generally speaking it seems as if both test types, basic and work sample, are valid and can be conducted safely, and the choice of type of test should be considered in regard to reliability and adverse impact on any subgroup (Baker & Gebhardt, 2012). The basic ability tests are probably most suitable for person-oriented selection strategies as they assess ability and not skill.

In a military organization the physique and medical status of the personnel is fundamental, and will therefore stand out in comparison to most other organizations in regard to physical and medical tests. As noted by Thomas, Adler, and Castro (2005), physical fitness and its relation to military performance is unparalleled in the literature and has been considered both a performance criterion (Campbell, McHenry, & Wise, 1990) and an important selection criterion (Peterson, Park, & Castro, 2011; Rosendal, Langberg, Skov-Jensen, & Kjær, 2003). In addition, a study by Hammermeister, Pickering, McGraw, and Ohlson (2010) showed that individuals who were physically fit also had stronger psychological attributes comparison to those with poorer physical fitness. Castro and Adler (1999) reported a similar result: Soldiers who reported several psychological symptoms were twice as likely to report physical symptoms too, compared to those who reported few psychological symptoms. Furthermore, physical fitness seems to be correlated with job satisfaction (Thomas et al., 2005). Thus, the importance of physical fitness plays an important role in a military setting with connections to both performance and psychological aspects.

1.4.4. Resilience and Sense of coherence

Since the end of the 20th century, positive psychology and the salutogenic approach have dominated our view on health, that is, the focus on the aspects that promotes health (see e.g., Seligman & Csikszentmihalyi, 2000). Although not a psychologist, Aaron Antonovsky's (1979) studies on Holocaust survivors leading to his theory of salutogenesis and Sense of coherence (SOC) have had great impact on today's definition of health (e.g., Almedom, 2005, Lazarus & Folkman, 1984). The former concept, salutogenesis, is per se a focus on aspects that promotes health—in contrast to pathogenesis, which focus on the factors that underlie ill-health. The latter, SOC, can be described as a general approach to life that seems to foster an individual's ability to overcome hardships as well as extreme stress (e.g., Almedom, 2005; Antonovsky, 1979). The operationalization of SOC led to an inventory made up by three subdimensions: *Comprehensible*, life(-events) is viewed as predictive and as sensible; *Manageable,* a feeling of self-efficacy and the ability to deal with arising life stressors; and *Meaningful*, the belief that life has meaning and value (Antonovsky, 1993). Although fraught with some fluctuation over time, the SOC seems to be well underpinned and related to both physical and psychological well-being (Antonovsky, 1993;

Eriksson & Lindström, 2006; Richardson & Ratner, 2005; Surtees, Wianwright, & Khaw, 2006). For example, SOC correlates positively with optimism, self-efficacy, and hardiness, and correlates negatively with anxiety, burnout, and depression (e.g., Eriksson & Lindström, 2006). Originally, Antonovsky (1987) included a range of different factors, the so-called general resistance recourses, such as socio-economic status, social support, and coping strategies that buffer against stress. Thus, Antonovsky recognized that individuals' different amounts of resources were only in part due to psychological aspects, and that social structures were of great importance (Antonovsky, 1996). Today, focus seems to be on individual differences in terms of cognitive appraisal and coping strategies.

Contemporaneous with SOC was Maddi and Kobasas' concept of *Hardiness* (see e.g., Kobasa, 1979; Maddi, 2007), which also looked at an individual's ability to cope with adversity. Hardiness is an individual's predisposition to find meaning in stressful events and, in the long run, to derive benefits from adverse experiences (Britt et al., 2001). The operationalization of SOC and Hardiness are strikingly similar. Antonovsky's (1993) dimensions of Comprehensible, Manageable, and Meaningful correspond to Kobasa's three hypotheses (1979) that hardy people have a subjective feeling of being in control, see challenges in contrast to threats, and have a meaningful life—later operationalized as *Control*, *Challenge*, and *Commitment* (e.g., Hystad, Eid, Johnsen, Laberg, & Bartone, 2010). According to Adler, Litz, and Bartone (2003), hardiness seems to be influenced by personality, personal history, social support, appraisal, and coping strategies. Another contemporary theory was that of *Resilience,* that is, an individual's ability to adapt despite adversity (Luthar, Cicchetti, & Becker, 2000). The theory has its origin in the discovery of resilient children, formulated when psychiatrists discovered some protective factors in children with schizophrenic parents (*ibid.*). Nowadays resilience is acknowledged both as an individual characteristic, and a process of appraisal and coping (e.g., Cornum, Matthews, & Seligman, 2011; Litz, 2007; Skomorovsky, 2013). A study by Riolli, Savicki, and Cepani (2002) connected resilience to several personality aspects: optimism and the Big Five dimensions Extraversion, Openness to experience, Conscientiousness, and Mental stability. Whether SOC, Hardiness, and resilience are the same, or which came first, can be debated. Regardless, the interest for protective factors in individuals facing adversity

has been a growing field of study in the past decades where individual differences seem pronounced.

Another influential theory regarding individuals' ability to stay healthy was Lazarus and Folkman's theory on coping (1984), in which an individual's ability to cope with stress is dependent on how he/she interprets and deals with the situation in order to adapt. According to Lazarus and Folkman (1984), an individual's coping strategies are features that may help the individual deal with stress, and it is the individual's appraisal, interpretation, and evaluation of the stressor that determine the how stressful the situation is, not the stressor itself. This primary appraisal is followed by a secondary appraisal during which the individual assesses his/her abilities and capacities to overcome the stressor (*ibid.*). Tedeschi and Calhoun (1996) take the idea of subjective coping even further in their theory of *Posttraumatic growth* (PTG), stating that some individuals may grow beyond adaptation after struggling with a trauma. Some studies have showed positive, but weak, connections between PTSD and PTG (see Zoellner & Maercker, 2006, for a review). It should be noted that Tedeschi and Calhoun (2004) use the term "trauma" less restrictively than clinicians. In PTG literature, trauma is about a subjective perception, in contrast to a clinical or factual change (Zoellner & Maercker, 2006). However, Janoff-Bulman (2004) does not explain PTG as growth, but as a coping strategy where the bad becomes incorporated with the good; nor is PTG about becoming stronger, but about becoming more aware and more prepared. Regardless of how PTG is interpreted, PTG is related to personality aspects such as religiousness, positive affect, and optimism, as well as to the Big Five factors Extraversion, Openness to experience, Agreeableness, and Conscientiousness (Linley & Joseph, 2004; Tedeschi & Calhoun, 1996).

Analogous with PTG is the so-called *Inoculation theory* stating that moderate exposure to adverse life-events is likely to strengthen the individual's well-being in terms of less psychological problems and higher life satisfaction, whereas no or too much adversity can be detrimental (Seery, Holman, & Silver, 2010). The authors (*ibid.*) also found that this inoculation showed the same effect on current adversities, that is, individuals with no lifetime adversities were more negatively affected by recent adversities than individuals with previous, but moderate, life adversities. Taken together, despite differences in origin and framework concepts like SOC, Hardiness, PTG, and

the Inoculation theory are all aspects of personal resilience that may influence whether an individual overcomes or succumbs to life adversities (Almedom, 2005).

1.4.5. Conclusively regarding these predictors

To sum up, the predictors in this section represent four broad areas of selection criteria (i.e., GMA, Big Five, physical capacity, and resilience), but can by no means cover the area of all common predictors. It is an area that seems to be continuously developing, perhaps as a response to the growing field of work and performance criteria. For example, the range of possible predictors within the personality field is vast, and although the trait taxonomy of Big Five was built on the first category of words that Allport and Odbert (1936) retracted from the dictionaries, all four original categories have been further elaborated (e.g., states, and values and attitudes; Boyle, Matthews, & Saklofske, 2008; John & Srivastava, 1999). Within the field of intelligence, possible predictors other than the traditional tests include different aptitude tests, that is, tests assessing an individual's talent for a specific profession or task (e.g., McManus, Dewberry, Nichols, & Dowell, 2013). Regarding resiliency, there are numerous tests for assessing different aspects of the phenomenon, that are not covered in this brief introduction, for example coping strategies, self-efficacy, and life orientation tests, just to mention a few. Further, in a military setting, the interest of individual resilience has increased substantially over the past decade (e.g., Cornum, et al., 2011; Maddi, 2007; Meredith et al., 2011; Van Breda, 2001). Yet, introducing resilience as a selection criterion—in addition to the general suitability tests for psychological stability and the absence of pathology—is opposed for several reasons. Some of these reasons will be presented and discussed later in this thesis (see section 1.6.3. Critique against screening for psychological vulnerability). What seems undisputable is the development towards both a more holistic and salutogenic approach to selection where not only the instrumental aspects of the task can be considered, but also the psychological consequences of the task and overall work conditions must be included.

1.5. Test bias, response bias, and the issue of Social desirability

After having decided what individual characteristics should be assessed, the question of how these should be assessed remains (Tippins et al., 2010). Almost all types of assessment methods are linked to some sort of bias, either in the operationalization of the criterion or in the actual assessment method. Operationalization bias can, for

example, be found in intelligence tests, and some scholars (see e.g., Neisser et al., 1996) have argued that the way intelligence has been operationalized is biased towards western men. As an example, women in general score lower on spatial ability and higher on crystallized ability (*ibid.*), and as long as the selection criterion is the overall GMA this will have an adverse effect on women as the correlation between spatial ability and GMA is very strong (r = 0.85; Mårdberg & Carlstedt, 1998). Thus, women will fare less well in these tests as long as this bias is not amended or corrected for. Interestingly, no studies seem to have looked at the predictive validity of this sex difference, that is, the practical implications of sex differences in intelligence scores have not yet been established.

When it comes to bias in the actual assessment method, two methods deserve mentioning as they probably are the most common assessments methods: interviews and self-reports. In the interview situation, the interpersonal meeting poses a possible risk of wrongful evaluation of "the other" due to, for example, prejudice. Variations of prejudice can be explained by classical social-psychological concepts and theories, such as the Halo effect, where most individuals are unable to discretely estimate independent characters of another individual (Thorndike, 1920). Furthermore, this tendency will be pronounced when the assessed individual is considered to be similar to the assessor, as similarity attracts (Byrne, 1961). Another source of error is the *Fundamental attribution error* (Andrews, 2001; Jones & Harris, 1967) where an observing individual tends to ascribe the observed individual attributes and behaviors to dispositional traits without consideration of situational context—even when this is unjust. In other words, the interpersonal meeting is fraught with different types of social bias that need to be properly addressed in selection situations.

In addition, when different interviewers assess different applicants, the aforementioned biases make it hard to safeguard reliability, that is, that all applicants are evaluated on the same terms—regardless if the interviewers have the same training and follow a structured interview schedule (Zickar et al., 2010). Put differently, interviews are embedded with risk for bias due to the interpersonal meeting and all the personal disparities brought into it.

In the second method, self-reports or self-ratings, the sources of error can roughly be distributed into three main areas: item effects, context effects, and rater effects (Pod-

sakoff, MacKenzie, Lee, & Podsakoff, 2003). The first, item effects, refers to the validity and quality of the instrument and its items (e.g., item ambiguity, item demand characteristics, item wording). One way of coming to terms with item effects, or item biases, are presented by Rasch-analysis, which allows for a thorough investigation of a set of items in regard to their invariance and differential item functioning across populations, contexts, and so on, in order to examine any item bias (e.g., Andrich, 1988; Rasch, 1960/1980). In general, context effects concern synthetic covariance (i.e., false covariance) between instruments due to the fact that they are measured at the same time (Podsakoff et al., 2003), but context effects can also be about different situational conditions for different test-takers, which may systematically effect their answers. Synthetic covariance may also apply for rater effects, that is, the fact that the test-taker's response pattern creates an artificial common variance between instruments, which may be due to the consistency motif, that is, test-takers try to remain consistent in their responses), or to *Social desirability*, that is, test-takers' inclination to respond to items depends on how socially acceptable they conceive them (*ibid.*). Hence, there are several sources of error to consider in the test situation—some being more serious threats to validity and reliability than others.

1.5.1. Social desirability and applicant self-enhancement strategies

In selection settings, Social desirability is probably the most well-known and investigated possible source of error. Awareness that responses on personality tests can be edited dates back to the 1930's (Hendrickson, 1934). In the 1950s, Edwards coined the phrase Social desirability (Zickar & Gibby, 2006). Social desirability has been investigated ever since under different names with somewhat varying meanings (see e.g., Furnham, 1986; Nederhof, 1985; Ones, Viswesvaran, & Reiss, 1996; Viswesvaran & Ones, 1999; Uziel, 2010), and is considered either a liability to validity that needs to be controlled for, or an important trait of its own (Zickar & Gibby, 2006). A review of Schlenker and Weigold (1992) traces the antecedents of Social desirability to the early symbolic interactionism, and later to Goffman's theory of dramaturgical analysis of social behavior. At this early stage the concept was considered a process of self-regulation where the subject not only wanted to regulate the reaction of others, but also, at least according to the symbolic interactionism, regulate his/her own view of the self. This complex process of self-regulation, wherein we consciously or unconsciously manage how we present ourselves to others, real or imagined, will also affect

how we see ourselves, and is referred to by Schlenker and Weigold (1992) as self-presentation and self-identification, respectively. The authors (*ibid.*) conclude that self-presentations are ever present in social interactions, and that it serves to support both own *and* others' interests and identities. Indeed, some scholars even claim that self-enhancement may be a coping strategy that can shield from stress and trauma (Gupta & Bonnano, 2010). Taken together, Social desirability is a complex phenomenon that may serve as protection and creation of the self in most social contexts. Although an oversimplification, the term *self-enhancement* will henceforth be used in a literally manner to refer to an individual's tendency to give a more flattering picture of the self, including augmenting positive aspects and disclaiming negative aspects. Particularly in different evaluative situations, such as selection settings, but the tendency to self-enhance may be conscious or unconscious.

The complex and multiphasic phenomenon of self-enhancement is described in work and organizational psychology as either an adaptive and normal behavior (Schlenker & Weigold, 1992), often described in terms of Social desirability or socially desirable responding (see also Barrick & Mount, 1996; Griffith, Malm, English, Yoshita, & Gujar, 2006; Mueller-Hanson, Heggestad, & Thornton III, 2003; Ones et al., 1996; Uziel, 2010), or as calculating, deceitful, and intentional misinformation about the self in order to make personal gains, often described in different terms of deliberate faking (e.g., Griffith, Chmielowski, & Yoshita, 2007, Schmitt & Oswald, 2006; Zickar & Robie, 1999). Another view, that perhaps can be seen as a synthesis of these two views, is that of Paulhus and colleagues' (Paulhus, 1984; Paulhus & Reid, 1991), who describe Social desirability as consisting of both self-deception, that is, an unawareness of own negative aspects, and deliberate enhancement of positive aspects (i.e., impression management). According to Paulhus (1984) self-deception will be constant across situations whereas impression management, or 'other-deception', will vary depending on the situation (see also Birkeland, Manson, Kisamore, Brannick, & Smith, 2006; Nederhof, 1985). Hence, within the field of work and organizational psychology the phenomenon of self-enhancement tends to be somewhat oversimplified, focusing on the selection effects.

Over the years, researchers and practitioners have tried to address the problem of self-enhancement by means of either identifying or measuring self-enhancement, or with different attempts of preventing it (Nederhof, 1985). Several researchers have

developed scales or methods for the purpose of capturing and measuring self-enhancement (e.g., Crown & Marlow, 1960; Edwards, 1957; Paulhus, 1984). Despite extensive use and validity of these scales across both time and cultures, there is still disagreement on how they ought to be used as scholars dispute the foundation for self-enhancement (e.g., Griffith & Peterson, 2008; Mesmer-Magnus & Viswesvaran, 2006). In addition, some personality dimensions may be more susceptible to self-enhancement than others (e.g., Birkeland et al., 2006; Viswesvaran & Ones, 1999), thus needing to be individually adjusted. According to Zickar and Gibby (2006), there seems to be little hope for a valid method of detection as most tests can be faked by motivated test-takers, and as social desirability processes work differently for different individuals and different situations.

The literature on self-enhancement is divided, and scholars report results varying from extensive degrees of self-enhancement (e.g., Lievens, Klehe, & Libbrecht, 2011; Schmit & Ryan, 1993; Stark, Chernyshenko, Chan, Lee, & Drasgow, 2001), to more limited degrees of self-enhancement (e.g., O'Brian & LaHuis, 2011; Ellingson, Sackett, & Connelly, 2007; Ellingson, Smith, & Sackett, 2001; Hogan, Barrett, & Hogan, 2007; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Smith, Hanges, & Dickson, 2001). In their meta-analysis, Viswesvaran and Ones (1999) showed that one reason for this inconsistency may be the difference in design between studies. The authors (*ibid.*) showed that effect sizes from within-subjects designs were larger than studies using between-subjects designs (ranging from .47 to .93, and .48 to .65, respectively), and that different faking scales were almost twice as sensitive to self-enhancement than the Big Five dimensions. Yet, it seems as if Emotional stability and Conscientiousness are more susceptible to self-enhancement than Extraversion, Openness, and Agreeableness (Birkeland et al., 2006; Viswesvaran & Ones, 1999). Whether the respondent self-enhance or not—and to what extent—is, however, of less importance than how this may affect the predictive validity of the selection process.

Several studies claim that the effect of self-enhancement on the predictive validity is negligible (e.g., Barrick & Mount, 1996, Ones et al., 1996; Schmitt & Oswald, 2006), whereas others claim the opposite (e.g., Griffith et al., 2007; Lievens et al., 2011). Yet, others (Mueller-Hanson et al., 2003) claim that self-enhancement would have greater effect on the predictive validity in a select-in process than in a select-out process. However, until there are several studies using a longitudinal design where the same

subjects are followed across time (i.e., within-subjects design), any conclusions regarding the effects of self-enhancement on the predictive validity should be made with caution (Schmitt et al., 2010). Studies using real applicants and incumbents—but with a between-subjects design—have, however, shed some light on the phenomenon in real settings. One study showed that applicants did self-enhance more than incumbents if items that were subjective, for example prior success and other self evaluations, but not on items that were factual, such as previous work experience, and economic motivation (Stokes, Hogan, & Snell, 1993). Another study found that applicants adjusted their answers to suit the relevant job, thus changing their pattern for self-enhancement (Birkeland et al., 2006). These studies serve to show that applicants' self-enhancement is a complex phenomenon, both regarding occurrence and degree.

Conclusively, if and how self-enhancement may pose a threat to predictive validity remains unsolved, and more longitudinal studies from real selection situations are needed. While several studies have looked at if and how personality scales are affected by a selection situation, very few have actually been made with a within-subjects design. An even larger knowledge gap concerns other types of instruments, for example health instruments used for screening. Much remains yet to be discovered about how applicants self-enhance in a real selection setting.

1.6. From war to peace: The transformation of the military task(s)

Since the end of the Cold War, peace support operations (PSO), counterinsurgency (COIN), and the Global War on Terror seem to have become the new "great wars". Wars between nations, that is, inter-state conflicts, are rare. The adversaries are no longer plain and distinct uniformed troops, but paramilitaries and terrorists—often in the shape of civilians, sometimes no more than children.

According to Matthews and Laurence (2012), the Global War on Terror put a stronger emphasis than ever on psychology and other behavioral sciences. This type of conflict is more than kinetics and fighting down the adversary: It is a conflict that entails winning the "hearts and minds" of the people (*ibid.*). Additionally, the technological advances, for example communication equipment, weaponry, and unmanned vehicles, have put new demands on the soldiers as they are able to induce damage without being present themselves (*ibid.*). Hence, military operations seem to have become

extremely intricate, and as the expression "hearts and minds" suggests, today's warfare is much more complicated than implied by the weaponry.

Traditionally, the UN has classified their operations into three primary categories: a) conflict prevention and peace-enforcement, b) peacekeeping, and c) peace-building (Brahimi, 2000). During the past decade the UN has, however, recognized an increased complexity and a need for increased military force in some operations. The so-called Capstone Doctrine includes four primary categories: a) conflict prevention and mediation, which involves refrain two hostile parities (intrastate or interstate) from reverting into violent conflict, mainly by the use of diplomatic contacts; b) peacemaking, which encompasses diplomatic efforts to bring hostile parties to negotiate agreement when a conflict is already in progress; c) peacekeeping, which aims to preserve and build sustainable peace by assisting in implementing agreements during periods of cease-fires, but also during the separation of forces after inter-state conflicts; and d) peace-enforcement—the most forceful operation during which a range of coercive measures may be taken to restore international peace and security. A fifth category is that of peace-building, which involves a range of methods to build a sustainable peace and is a complex, long-term process that goes beyond military force (United Nations, 2008). All operations are decided by the UN Security Council and are, regardless of category, aimed at securing peace by undertaking various tasks—everything from helping "to build sustainable institutions of governance, to human rights monitoring, to security sector reform, to the disarmament, demobilization and reintegration of former combatants" (United Nations, 2013).

As the span of PSO in the Capstone Doctrine shows, the peacekeepers are often required to take part in a variety of peace supportive actions, working both with military and civilian tasks as well as with civilian organizations (United Nations, 2008). In addition, several studies have shown that one military operation may look very different from another, despite similar mandates and tasks, and that the character of a PSO may change over time (e.g., Litz, Orsillo, Friedman, Ehlich, & Batres, 1997; Weisæth, 2003). Indeed, the ambiguous and unpredictable nature of PSO was epitomized in the Balkan war, where the green helmets of NATO replaced the blue berets of UN in 1995. The UN-led operation went from a peace*keeping* operation (PKO) to a NATO-led peace-enforcement operation, where the latter is more similar to the traditional military task of combat (e.g., Adler et al., 2003; Weisæth, 2003). This instable

nature of PSO has confused the terminology used, and PKO has been used to describe an array of very different types of PSOs, sometimes nothing short of unceasing war, which have made it difficult to compare studies (e.g., Litz, 2007; Thomas & Castro, 2003). Henceforth, PSO will be used as a more general descriptor for different peace operations acknowledged by the UN, whereas PKO will only be used for the traditional UN operations, that is, third party neutrality with the consent from the conflicting parties, and the use of force only in self-defense or defense of the mandate (Brahimi, 2000; United Nations, 2008). The officers and soldiers taking part in any type of PSO will be referred to as peacekeepers, and in more general terms veterans—signify officers and soldiers with experience from combat, or any type of deployment.

1.6.1. Psychological aspects of peace support operations (PSO)

The increased complexity and ambiguity of today's PSO is described in General Krulak's expression "the three-block war", that is, an urban military operation comprising peacekeeping, perpetual combat, and humanitarian operations—all within three blocks (1999; from Koffman, 2006). Further, General Krulak argues for the prominence of the "strategic corporal" who has "unwavering maturity, judgment and strength of character" (from Koffman, 2006; p. 29). This paints a picture of preparedness, for everything at once, where the qualities of a senior ranked soldier plays a crucial part (in Sweden, the corporal may command a team or squad). Where life and death—and even national survival—might be at stake, the importance of having military leaders at lower operational levels can thus involve leaders on even lower levels than implied by Wong and colleagues (2003).

Despite the complexity of PSO, there seems to be a common ground for the stressors the peacekeepers might be facing, most of which can be divided into two broad categories: deployed environment and peacekeeping duty (Adler et al., 2003). The former category, deployed environment, includes aspects of being away from family, leadership issues, climate, boredom, living conditions, et cetera. The latter category, peacekeeping duty, deals with the possible traumatic and non-traumatic events the soldiers might experience during deployment, that is, life-threatening events, witnessing suffering among the local civilians, being restrained from action by Rules of engagement (ROE), rejection by local population, and so on (Adler et al., 2003; Lundin & Otto, 1996). Note that peacekeeping duty refers to the wider concept of peacekeeping than

the traditional UN definition (Britt & Adler, 2003), and includes both PSO and PKO as defined in the Capstone Doctrine (United Nations, 2008). Both the deployed environment and the peacekeeping duty contain stressors that are no different from the stressors of combat or war (e.g., Adler et al., 2003; Litz, 2007; Mehlum & Weisæth, 2002; Thomas & Castro, 2003). Lundin and Otto (1996) divide the stressors into emotional or cognitive, where the former includes bereavement, fear/anxiety for death and injury, moral conflicts; and the latter includes too much/little information, ambiguity, unpredictability, and ROE. Again, most stressors seem to be no different from those in traditional combat and war. Interestingly, very little research seem to be made on the act of actual killing during combat, and Litz (2007) speculates if this may entail stress reactions other than the frequently studied PTSD, for example guilt, self-loathing, and self-destructive behaviors, to mention a few.

The perhaps unique stressor for PKO seems to be the peacekeepers' possibility to react to threats, or rather lack thereof (e.g., Dirkzwager Bramsen, & van der Ploeg, 2005; Egge, Mortensen, & Weisæth, 1996; Litz, 1996, 2007; Mehlum & Weisæth, 2002; Moldjord, Fossum, & Holen, 2003; Weisæth, Mehlum, & Mortensen, 1996). The traditional soldier is permitted, if not instructed, to use force when needed, whereas the peacekeeper often is restrained by his/her role as a neutral and non-violent part (Brahimi, 2000). The peacekeepers' role is to act as shields between belligerent parties in order to prevent conflict, or conflict escalation (Moldjord et al., 2003). Mehlum and Weisæth (2002) paints a picture of almost inhumane self-control, where the peacekeepers need to be able to control their natural fight or flight impulses even at the face of injury or death; and failure of self-control may result in political implications endangering the whole operation. In some studies, this need of extreme self-control has been called *peacekeepers stress syndrome*, where the peacekeepers have a pathological fear of loss of self-control, experience moral guilt and frustration, and resort to second-guessing when not being able to intervene in situations for which they were trained to act (e.g., Egge et al., 1996; Pearn, 2000).

Taken together, military operations have become more diverse and complex over the past decades. While the task is no longer to conquer or defend territory by spending months in trenches fighting both enemies and disease, the tasks of accomplishing peace and preventing acts of terrorism seem to be plagued by similar stressors. In some aspects peacekeeping seem to demand more in terms of psychological abilities,

such as the ability to handle frustration, role-conflict, or intelligence ambiguity, and, not the least, the ability to maintain self-control regardless of situation. Dag Hammarskjöld, a former UN Secretary-General, summed it up in one sentence: "Peacekeeping is not a job for soldiers, but only soldiers can do it."

1.6.2. Deployment-related stress reactions and positive psychological outcomes

The range of stressors present during deployment may be of temporary or more permanent character, and some will be more devastating than others. Some of the more permanent and serious stress reactions will be described in the sections below, together with some of the documented positive psychological outcomes from deployment. It should be noted that many of the existing studies on deployment stress reactions focus on PTSD, and although outside the scope of this thesis, the accumulated knowledge of PTSD have led to a greater understanding of deployment stress reactions in general. Thus, it was deemed necessary to cover this area of research despite its more extreme nature and peripheral role in this thesis.

1.6.2.1. Posttraumatic stress disorder (PTSD) and its prevalence in military populations

The psychological consequences of combat have long been recognized and documented. Jones and Wessely (2005) give a historical description from the diffuse somatic symptoms (e.g., disordered action of the heart, irritable heart, nostalgia) or lack of character (e.g., wind contusions) that prevailed in the 17th century, to the present PTSD. The first "official" combat related stress reaction appeared during the Korean war, and was referred to as "gross stress reaction" in the first Diagnostic and Statistical Manual of Mental Disorder (DSM-I) (Friedman, Resick, & Keane, 2007). The diagnosis disappeared during the Vietnam War, and did not reappear until the DSM-III, now categorized as an anxiety disorder (e.g., Friedman et al., 2007; Jones & Wessely, 2005; Pearn, 2000). Despite being one of the most studied stress reactions in military populations (e.g., Hoge, 2011; Litz, 2007; Litz, Gray, & Bolton, 2003; Maguen et al., 2006), the causes for PTSD seem to remain as imprecise as they were for shell-shock according to Jones and Wessely (2005). PTSD is by no means restricted to military population, but can befall anyone who is subjected to interpersonal vio-

lence or natural disasters, be it direct or indirect in terms of witnessing suffering, and especially women and children are at risk (Friedman et al., 2007; Litz, 2007).

In DSM-5, PTSD has again been outlined as a reaction to severe stress, such as exposure to death or life-threatening situations, serious injury, or sexual violence at one or several occasions (American Psychological Association, 2013). The exposure can be direct or indirect, where the latter includes, for example, witnessing or being informed that a family member or close friend have been subjected to a traumatic event. The stress reactions are characterized of four clusters of symptoms: 1) repeated involuntary re-experiences of the trauma (intrusion), 2) persistent negative thoughts, 3) avoidance, and/or 4) hyper-arousal (*ibid.*). Thus, the prerequisites of PTSD, that is, the type of stressors specified in the DSM-5, may be considered frequent stressors during deployment of both PSO and PKO.

Vogt and colleagues (Vogt, King, & King, 2007) address the possibility of multiple causalities for PTSD, where several different factors seem to be operating before, during, and after the onset of a trauma, that is, pretraumatic, peritraumatic, and posttraumatic factors (Friedman et al., 2007). Pretraumatic factors may regard genetic vulnerabilities (*ibid.*), but also an individual's personal characteristics and resources prior to the trauma, such as gender, age, marital status, and intelligence (Keane, Niles, Otis, & Quinn, 2011; Litz, 2007; Richardson, Naifeh, & Elhai, 2007; Vogt et al., 2007). The peritraumatic factors regard the circumstances of the actual trauma, and according to the *Dose-response theory* the more life-threatening and malicious the trauma, the higher the probability that the individual will suffer from stress reactions (Vogt et al., 2007). Lastly, the posttraumatic factors regard what happens after the trauma: Where social support seems to be key to recovery both in preventing the outbreak of, as well as speed up the recovery from PTSD (e.g., Friedman et al., 2007; Iversen & Greenberg, 2009; Riviere, Kendall-Robins, McGurk, Castro, & Hoge, 2011; see also Vogt et al., 2007). Hence, both personal and situational factors seem to affect how an individual reacts to life stress, where type of event and social support seem of utmost importance.

In military literature, the social support from both leaders and peers has been given a perhaps unique status. Not least as described in the literature where the military unit not only promotes performance but also well-being (e.g., Ahronson & Cameron,

2007; Brailey, Vasterling, Proctor, Constans, & Friedman, 2007; Griffith, 2002; Griffith & Vaitkus, 1999). Several studies on military social support have shown positive effects on stress reactions and recovery post-deployment (e.g., Laffaye, Cavella, Drescher, & Rosen, 2008; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009; Price, Gros, Strachan, Ruggiero, & Acierno, 2013; Tsai, Harpaz-Rotem, Pietrzak, & Southwick, 2012). The so-called military family, including leaders, seems to have the influence to create a positive psychological climate for recovery and self-disclosure (Castro & McGurk, 2007; Greenberg & Jones, 2011; Greenberg et al., 2003; Litz, 2007; Tyler & Gifford, 1991). It should also be noted that the importance of the military unit as a recovery context seems to be unique for deployment-related trauma (Ozer, Best, Lipsey, & Weiss, 2003). Social support in a military context has thus been extensively studied, and the importance of the military unit seems undisputable for veterans' recovery after stress and trauma.

The prevalence of PTSD among peacekeepers varies considerably between nations. But variations within national studies may also be substantial, partially due to what type of deployment theaters the investigated peacekeepers have experience from (e.g., Pietrzak, Pullman, Cotea, & Nasveld, 2013). For example, studies on US forces report a prevalence ranging from 1 to 31%, depending on type of military branch, personnel category, and deployment theater (e.g., Lane, Hourani, Bray, & Williams, 2012; Maguen et al., 2006; Sundin, Fear, Iversen, Rona, & Wessely, 2010; Thomas et al., 2010). Prevalence rates seem the highest if the studies included, or were based on, data from Iraq and Afghanistan, also known as Operation Iraqi Freedom, OIF, and Operation Enduring Freedom, OEF (e.g., Hoge, Auchterlonie, & Milliken, 2006; Hotopf et al., 2003; Rona et al., 2009; Seal et al., 2009; Smith et al., 2008; Thomas et al., 2010). Litz (2007) describe OIF and OEF as "the most sustained combat operations since the Vietnam War /…/ [and] that the frequency and intensity of exposure to combat experiences is linearly associated with risk for chronic PTSD /…/" (p. 218). Thus, it can be debated whether these types of PSO are comparable to other PSOs, not to mention PKOs.

However, prevalence rates seem to be affected by more than deployment theater, and a large cohort study of UK forces being deployed to OIF and OEF (i.e., the same operations as US forces), showed remarkably lower PTSD rates, 2–4%, than their US counterparts, 11–18% (Fear at al., 2010). The authors (*ibid.*) point to a number of fac-

tors that may have affected the difference. One factor was deployment length, where UK troops are deployed only 6 months compared to US troops' 12–15 months deployments. A second factor was age, where the UK troops were older. A third factor was the man-to-leader ratio, where UK troops were smaller with a lower man-to-leader ratio than the US troops. Lastly, a fourth factor was personnel category, where the UK troops had more active personnel than the US troops. Differences due to deployment length, deployment frequency, leader quality, and military branch have also been found in studies solely on US armed forces (Castro & McGurk, 2007). A systematic review of Buckman and associates (2010) showed that deployments longer than six months, and especially longer than expected, or particularly arduous deployments, increased the prevalence of stress reactions. The reasons were not only related to deployment theaters, but to deployment per se, where being away from family and worrying about their well-being seemed to cause the most stress. Thus, apart from the conflict itself, or in other words the dose-response theory, it appears that structural, and perhaps even national aspects might explain some of the variation in PTSD prevalence rates.

Another factor investigated is motivation, where Kaplan and colleagues (2002) found that differences in intellectual capacity and scholastic performances disappeared when motivation to serve was controlled for in PTSD veterans. This may serve as an indication that motivation moderates stress reactions in a similar manner as meaningfulness and engagement (e.g., Bartone, 2005; Britt, Castro, & Adler, 2005; Britt et al., 2001; Dirkzwager et al., 2005; Litz et al., 1997; Maguen et al., 2006; Sareen et al., 2010).

Irrespective of deployment theater, PTSD prevalence rates in other European countries, including Scandinavia, are in line with the rates in UK: around 3 to 5% in Dutch (Dirkzwager et al., 2005), Danish (Berntsen et al., 2012; Bramsen, Dirkzwager, & van der Ploeg, 2000; Proctor et al., 2003), and Norwegian forces (Mehlum & Weisæth, 2002); and 1 to 3% in Swedish forces (Larsson, Michel, & Lundin, 2000; Lundin & Otto, 1989; SOU, 2008; SOU, 2013). Thus, the European and Scandinavian PTSD rates among military personnel are fairly low compared to US rates, which in part may be due to deployment theater and conflict severity, limiting the extent to how experiences can be compared across nations. For example, both OIF and OEF stand out in regard to PTSD rates, and should perhaps not be compared in the PSO litera-

ture as both OIF and OEF may more properly be described as regular war and combat operations (Litz, 2007). In addition, PTSD prevalence rates (and rates of anxiety and depression) among US forces are the same for those serving in low conflict areas and those never deployed (Castro & McGurk, 2007), further complicating cross-national comparisons.

Taken together, the complexity of any stress reaction seems to be epitomized in the PTSD literature where both personal and situational factors pose potential risk factors not only for PTSD but also for an overall vulnerability to stress and adversity. However, there are some risk factors, apart from the dose-response theory, that deserve extra attention: previous trauma, especially childhood trauma and sexual abuse (Friedman et al., 2007; Maguen et al., 2007). These are personal factors that can and need to be unraveled in a selection process. Social support plays a crucial role in recovering from stress—especially in a military context. Irrefutably, the importance of providing the right social support for peacekeepers is crucial to their ability to sustain and recover from stress and trauma.

1.6.2.2. Negative stress-reactions besides PTSD, and possible risk factors

Although PTSD poses a momentous problem, it is widely recognized that this is far from the only threat to the peacekeepers (e.g., Jones & Wessely, 2005; Walker, 2010). As mentioned in the section regarding the psychological aspects of PSO (section 1.6.1.), the unique stressor of PKO seems to be the demand for extreme self-control (Brahimi, 2000; Dirkzwager et al., 2005; Egge et al., 1996; Litz, 1996, 2007; Mehlum & Weisæth, 2002; Moldjord et al., 2003; Weisæth et al., 1996). This so-called peacekeepers stress syndrome is a consequence of the extreme constrained conditions, and the obsessive fear of losing self-control is often combined with guilt and second-guessing (e.g., Egge et al., 1996; Pearn, 2000). Second-guessing may become even worse once the peacekeepers have left the military context; when ROE is unimportant, and only the feeling of guilt lingers.

Other serious stress reactions range from depression, anxiety, domestic violence, and substance abuse (see e.g., Fear et al., 2010; Larson, Booth-Kewley, Highfill-McRoy, & Young, 2009; Litz, 2007; Maguen, Litz, Wang, & Cook, 2004; Schnurr, Green, & Kaltman, 2007; Walker, 2010; Warner, Appenzeller, Breitbach, Mobbs, & Lange, 2011), to problems that may not be pathological, but still in need of attention, such as

confusion, family disruptions, and alienation (Fertout et al., 2011; Katz, Cojucar, Davenport, Pedram, & Lind, 2010; Marquez, 2012). This postdeployment disorientation is described by Weibull (2012) as an emotional confusion likely to appear when the peacekeepers return home, regardless of conflict intensity. According to Iversen and Greenberg (2009), the most common psychological health problems in the US and UK forces are (in order of prevalence): adjustment disorders, alcohol misuse, depressive disorders, personality disorders, PTSD, and drug misuse. These problems are manifested in sleep problems and nightmares, interpersonal relationships, mood and anger issues, intrusive recollections of an event, or rumination of ditto (Iversen & Greenberg, 2009; see also Wright, Adler, Bliese, Hoge, & Prayner, 2005). Thus, when it comes to more clinical problems, some seem more common than others, seemingly regardless of nation. Yet, there are also other types of problems that are more invisible, or easier to hide, but still harmful for both the veteran and his/her family (e.g., alcohol and substance abuse, domestic violence, and alienation).

However, it should be noted that several studies (e.g., Iversen & Greenberg, 2009; Fear et al., 2010; Hotopf et al., 2006; Riviere et al., 2011) have found that mental health problems seem to be related to type of military personnel (i.e., regular/active duty vs. reserve/National Guard). In general, reservists seem more at risk for all mental health diagnoses than active duty veterans (e.g., Fear et al., 2010; Lane et al., 2012; Seal et al., 2009), and especially for more severe health problems. Iversen and Greenberg (2009) reported that the more severe consequences of deployment for reservists and members of the National Guard seem to be related to the dose-response theory. Despite the fact that the reservists' tasks and duties during deployment are less exposed and threatening than the active personnel's duties, reservists perceived their experiences as more life threatening. As a consequence, the subjective aspect of stress perception, or to use Lazarus and Folkman's (1984) concept of threatening appraisal, could cause higher arousal levels for reservists, which eventually may lead to more persistent and serious stress reactions. In addition to a more threatening interpretation, the reservists also reported more friction with family, both during and after deployment (Iversen & Greenberg, 2009). However, family friction both during and after service may lead to more severe stress reactions regardless of professional background (see e.g., Doyle & Peterson, 2005; Green, Buckman, Dandecker, & Greenberg, 2010; Lane et al., 2012; Riviere et al., 2011; Seal et al., 2009). Although unrelated to

selection issues, professional background seems to be an important issue to consider when it comes to stress reactions.

Another issue that may influence stress reactions is the temporal aspect of assessment, that is, the severity of reported stress reactions depends on when the assessments are made. Several studies (e.g., MacDonald, Chamberlain, Long, & Mirfin 1999; Maguen et al., 2006) have shown that the highest rates of reported stress are just before deployment, and several months after homecoming. In other words, the predeployment uncertainty and nervousness as well as relief of returning home and reuniting with family will, at certain points, be prominent. In the study of Maguen and colleagues (2004), the result revealed that some aspects of ill-health could be referred to predeployment characteristics such as hostility and drinking problems, behaviors the authors (*ibid.*) speculate are chronic. Thus, data just before, and right after deployment may not represent a true baseline or outcome assessments, as there are other more situational factors at play.

Some of the personal characteristics that frequently are mentioned as predictors of stress reactions, both among military and civilian populations, are gender, age, socioeconomic status, marital status, and intelligence (Hourani, Williams, & Kress, 2006; Keane, Niles, Otis, & Quinn, 2011; Litz, 2007; Richardson et al., 2007; Vogt et al., 2007; Walker, 2010). Another category that seems to fare worse from deployment are those who are repatriated, that is, those individuals who are forced to return home earlier than planned. The reasons for repatriation vary from purely external (i.e., accidents or death within the family), to physical injuries, or personal issues (including both social and psychological aspects). Despite the wide range of reasons for repatriations, there are some personal factors that seem to be in effect: troublesome home life during childhood, several pre-service life stressors, and a difficulty relating to other people (Egge et al., 1996). However, it should be noted that the repatriation in itself might cause (or augment) stress reactions, as the premature separation deprives the repatriated peacekeeper of the social support from his/her “military family”. Seemingly, whether the stress reaction concerns PTSD, depression, or alcohol misuse, the personal predictors seem to be the same, where age, previous stress, and social support seem to stand out.

Outside the scope of this thesis, and dealing with another extreme type of problem, is the risk for suicide. Mastroianni and Scott (2011) shows that the psychological aspects of military service may be more complex than the direct conditions of an operation, and that societal structures may play a part in why suicide rates are increasing in the US forces. The authors (Mastroianni & Scott, 2011) point to the institutions in which the soldiers operate: namely the all-volunteer force (AVF) and the political system. Armed conflict and the use of armed force used to be a societal burden; since the AVF, it has become the burden of a "few" volunteers. In addition, our political leaders are allowed to involve the nation in conflicts that society may not approve of, especially at a supranational level (i.e., the EU, NATO, and the UN). Thus, the returning peacekeepers find themselves alienated from the rest of society, lacking a context for meaningful interpretation of their experiences (*ibid.*). Sweden, as well as most European countries, has undertaken the same transformation to an AVF as the USA and a similar decentralization of decisions regarding military operations to the EU Security Council. Even if Sweden has been spared from suicide among Swedish peacekeepers (Michel, Lundin, & Larsson, 2007) the prerequisites for international deployment have changed, and the alienation between society and the SAF is a well-known risk.

1.6.2.3. Positive psychological aspects of international deployment

During the past decade, it has also been recognized that most peacekeepers get to live a fulfilling life after service, despite some horrific experiences, and that peacekeeping even can have positive effects on well-being (e.g., Britt et al., 2001; Egge et al., 1996; Karlsen, Dybdahl, & Vittersø, 2006; Litz, 2007; Maguen et al., 2006; Sareen et al., 2007, 2010).

Before moving on to specific benefits of deployment, it should be noted that several studies have found evidence for what has been called "the healthy warrior effect", that is, peacekeepers with multiple deployments seem to be more resilient than soldiers with no previous deployment (e.g., Fear et al., 2010; Larson, Highfill-McRoy, & Booth-Kewley, 2008; Wilson et al., 2009). The healthy warrior effect is considered a consequence of positive selection where good health pre-deployment increases both the likelihood of being recruited to subsequent deployments and good health post-deployment (Wilson et al., 2009). Positive selection may also occur at a more general level where the healthy soldiers are more likely to be selected for and stay in service (*ibid.*). Another explanation for the experienced soldiers' higher resiliency may be the

Inoculation theory (Seery et al., 2010), where moderate experiences have increased their resilience. That is, as the peacekeeper gains confidence that he/she has the ability to handle the stress and strains of deployment, and draw experience from successful coping strategies, he/she becomes more resilient to stress and adversity. This U-shaped relationship between stress and well-being described in the Inoculation theory partly helps explain both the healthy warrior effect and resilience in general.

Some of the positive outcomes that peacekeepers have reported are personal development and valuable military experiences (e.g., Egge et al., 1996). In the study of Britt and colleagues (2001) investigating Hardiness and its relation to deployment experiences, hardy individuals tended to report more meaning and more benefits than less hardy individuals. It was also revealed that finding meaning in work per se was correlated to perceiving the service as more meaningful and beneficial, and benefits were defined in terms of personal development and increased ability to deal with stress. The authors (*ibid.*) also stated that women reported more benefits than men, and that peacekeepers who had witnessed the destruction caused by the belligerent parties and met local civilians as well as peacekeepers from other nations found more meaning and benefits from deployment. These experiences are speculated to have justified the peacekeepers' presence, thereby enhancing their perceptions of meaning. This result may also be interpreted in terms of the Inoculation theory (Seery et al., 2010) where again a moderate amount of exposure may prove beneficial for stress reactions and well-being.

1.6.3. Critique against screening for psychological vulnerability

Psychological vulnerability is still considered an unreliable selection criterion, an attitude that appears to originate from the experiences of WWII (Bliese, Wright, & Hoge, 2011; Jones & Wessely, 2005). The historical screening for psychological vulnerability is described as both subjective and unreliable (Jones & Wessely, 2005). Bliese and colleagues (2011) pose that today's screening would be as unfruitful as it was during WWII, among other things due to the vague definition of psychological vulnerability. Another recurrently raised obstacle for screening for vulnerability is the low prevalence of PTSD (e.g., Bliese et al., 2011; Jones & Wessely, 2005). Indeed, screening for low prevalence disorders such as PTSD seems futile. Yet, the knowledge of several pretraumatic risk factors (Friedman et al., 2007; Hourani et al., 2006; Keane et al.,

2011; Litz, 2007; Richardson et al., 2007; Vogt et al., 2007) has shown that there are several individual aspects than can be considered in a selection system, not the least prior trauma and family history of psychological health (e.g., Ozer et al., 2003). If vulnerability today can be considered a vague concept (Bliese et al., 2011), is disputable. Still, one new way of approaching this can be to shift focus from vulnerable to resilient. As already mentioned, most armed forces recognize the advantages resilient individuals have when it comes to resisting stress and adversity (e.g., Adler, Bliese, McGurk, Hoge, & Castro, 2009; Maddi, 2007; Meredith et al., 2011; Van Breda, 2001). For example, the US Armed Forces have developed and implemented a training program called *Battlemind* (e.g., Adler et al., 2009). The aim of Battlemind is to help soldiers deal with operational stress at both pre- and postdeployment within the framework of hardiness:

> "Battlemind is defined as the soldier's inner strength to face fear and adversity in combat with courage [and] comprises self-confidence, or taking calculated risks and handling future challenges, and mental toughness, or overcoming setbacks and maintaining positive thoughts during times of adversity" (Adler et al., 2009; p. 68).

Furthermore, a study of Skomorovsky and Sudom (2011) has also pointed to the usefulness of screening for both Big Five dimensions and Hardiness as the two concepts seem to contribute to the perception of stress as well as overall well-being. In addition, given the development of both test theory and test methods—not to mention the technological advancements since WWII—may justify reevaluation of this area.

Two perhaps more valid obstacles for screening are the dose-response theory (Jones & Wessely, 2005) and the low predictive validity in these types of circumstances (Bliese et al., 2011; Jones & Wessely, 2005). The first refers to the possibility that the intensity of combat and other types of combat-related trauma may have a higher impact on the individuals' psychological reactions than their individual capacities; the second refers to the possibility that it may be no more than guesswork trying to predict future behavior in such novel situations and circumstances (Jones & Wessely, 2005). Studies (e.g., Brailey et al., 2007; Jones & Wessely, 2005) also point to the fact that there are other circumstances beyond the individual that affect an individual's stress reactions, such as leadership, cohesion, and training. These are, however, not

intended for selection as they refer to more secondary preventive measures, that is, methods aimed at reducing the harm of already incurred stressful events (e.g., peri-traumatic or posttraumatic aspects). The already mentioned perspective on resilience has proven to be a valid method for identifying individuals who are able to handle and recover from stress and adversity (Adler et al., 2009; Britt et al., 2001; Eriksson & Lindström, 2006; Kobasa, 1997; Maddi, 2007; Meredith et al., 2011; Skomorovsky, 2013; Van Breda, 2001). Subsequently, resilience seems to be a personal recourse that may help individuals sustain and recover from stress and adversity, regardless of trauma severity, as denoted by Antonovsky's work (1979) on the WWII Holocaust survivors.

Interestingly, Adler, Bliese, and Castro (2011) retort the critique regarding the low effect sizes of Battlemind on hardiness, with the possible long-term usefulness. In other words, when it comes to resiliency training, the cumulative effects over time on the group and possible improvements of behavioral alternatives at the individual level are emphasized (Adler et al., 2011). This line of argument could be transferred to the debate on screening where, despite low predictive validity, it is likely that the effects of screening can have long-term positive consequences for the units, but also for the individual. In addition, several studies have shown that predeployment health seems to be a good predictor of postdeployment health (e.g., Berntsen et al., 2012; Casey Jr, 2011; Michel, Lundin, & Larsson, 2003). A study of Maguen and colleagues (2004) showed analogously that several of the postdeployment health problems were mostly predicted by predeployment health problems (i.e., hostility and aggression, and alcohol misuse). Psychological health—or resilience—does, in other words, seem to be a relatively stable feature, and could thus possibly be used as selection criteria. Indeed, it may also turn out that predeployment screening for stress can be a useful indicator of postdeployment ill-health. Put differently, knowledge of heightened predeployment stress levels could be useful when screening for some health problems other than stress-reactions such as PTSD.

Another important issue, raised in a commentary by Rona, Hyams, and Wessely (2005), regards the fact that predeployment screening can cause harm to the cohesion of the unit if members are falsely identified as psychologically unfit. The authors (*ibid.*) also raise the issue of the negative aspect of self-enhancement, that is, the individual's tendency to hide and/or minimize his/her negative characteristics due to

fear of stigmatization or impediments for a military career, to mention a few. These issues are, of course, important to consider, but also rather easy to resolve, at least the first one: The predeployment screening takes place as a selection strategy to the deployment in question. Thus, the unit members need not to wonder if their comrades are qualified or not, which in turn may even strengthen cohesion. The second issue would require more extensive actions to create an organizational culture where temporary psychological problems are "normalized" (Castro & McGurk, 2007) and where help seeking is considered a sign of strength and insightfulness, and not a hindrance in the military career.

1.7. The Swedish Armed Forces' selection system

The Swedish tradition of compulsory military service dates back to 1901, when the Law of Conscription came into force (from Sveriges militärhistoriska arv, 2013), epitomizing the Swedish value of democracy (Johansson, 2001). Yet, it was not until 1944 that the first Swedish enlistment battery (SEB) was introduced; before this, an enlistment board used an ocular inspection of the conscripts to determine their potential for military training (Carlstedt, 2000). Inspired by the experiences of both USA and Germany, Torsten Husén created the SEB (from Lindqvist & Vestman, 2009). In this early version of the SEB, both cognitive and non-cognitive abilities were included, and emotional stability was considered a main aspect of the latter (here psychological suitability; *ibid.*) The cognitive test of the SEB used the US Army General Classification Test as a model to assess the conscripts' general cognitive ability (GMA), and likewise the purpose was to classify and place the young men in the organization according to their level of cognitive ability—or exclude them for insufficient levels thereof. Carlstedt (2000) gives an overview of the development of this part of the SEB and points to the development from benchmarking of cognitive ability tests and models of intelligence to a more modern test theoretical framework in the 1980's, guided by Scandinavian scholars, resulting in the computer-aided testing (CAT-SEB) of 1994.

Since 2000, the current CAT-SEB is an adaptive computerized test, also known as the *I-prov 2000* (see Mårdberg & Carlstedt, 1998; and Carlstedt et al., 2000). An adaptive computerized test means that different questions are presented for the test-takers, depending on the correct answers and the speed with which they have an-

swered the former questions. The test-taker will be given questions adapted for his/her ability, where consequently less time is needed for each test-taker (Carlstedt et al., 2000). Moreover, it gives an indication of the test-taker's learning ability (*ibid.*). The CAT-SEB builds on the work of Gustafsson and his nested model of intelligence (from Carlstedt, 2000). A nested model implies that the general score of intelligence (here G) is inseparable from its subscales (e.g., Gv and Gc), and that tests as well as test items are multidimensional (*ibid.*). Taken together, both technical and theoretical advances have influenced the development of how G should be assessed and understood.

Apart from cognitive ability, Carlstedt (2000) also describes that the test for non-cognitive ability and psychological suitability was developed during the first half of the 1960s. At large, the SAF's selection system follows, with some time lag, the general development of military testing described earlier in this thesis, with focus on cognitive assessments.

1.7.1. From peace to war: The SAF's international experiences

As described earlier (see section 1.5.) the global development of the military task has gone from war to peace. From a Swedish point of view, however, the development has been the opposite. Although the Swedish two-century peace tradition has not been broken, participation in international operations and military partnerships has redirected and intensified the SAF's need for preparedness and interoperability. The SAF is no longer an organization of conscripts who are trained for an unsuspected invasion, but an organization of contracted soldiers training and preparing for combat on international soil. The Swedish soldiers have become soldiers for peace.

Historically, Sweden has contributed with more than 100,000 participants to over 120 international operations, mainly UN sanctioned, in 60 countries since the first operations in Suez in 1956 (Försvarsmakten, 2015a). Ever since Sweden became a member of the EU and of the security organ Organization for security and co-operation in Europe (OSCE), the involvement in international affairs has increased in terms of both diplomacy and military force (Försvarsmakten, 2015b). The latter has, among others, led to regular contribution to the so-called Nordic Battle Group (NBG), which is a rapid reaction force at the service of the EU (Försvarsmakten, 2015c). Being part of a rapid reaction force with standby readiness demands that the force is

ready for deployment within ten days of a decision from the EU council (Försvarsmakten, 2014). The NBG should initially be sustainable for 30 days, extendable to 120 days, and ready for both humanitarian aid operations and high conflict operations (*ibid*.). In addition, Sweden has expanded its collaborations with NATO within the framework of Partnership for peace (PfP) in order to increase the SAF's interoperability with other nations within both the EU and NATO (Försvarsmakten, 2015b). This means that the Swedish experiences based on traditional PKO have changed dramatically in the past two decades: Not only as a response to the changes that the UN peace operations have faced in accordance with the Capstone doctrine (United Nations, 2008), but also as a response to the increased cooperation and collaboration with the EU and PfP.

Hence, in light of the theoretical presentation of the importance of a thorough and inclusive work analysis (e.g., Brannick et al., 2012; Hough & Oswald, 2000; Pearlman & Sanchez, 2010, Penney et al., 2011) and the movement from PKO to PSO (e.g., United nations, 2008), the SAF's military tasks have undergone considerable change (Johansson, 1997). The question is whether the selection system has gone through corresponding changes taking into account not only the task of PSO, but also the need for repeated deployments.

1.7.2. The current selection system

The SAF's current selection system consists of four different selection steps and comprises tests assessing different cognitive and non-cognitive abilities as well as physical and medical status. All tests are administered and owned by the Swedish Defence Recruitment Agency (SDRA), formerly the National Service Administration, which handles the selection testing for all national defense organizations (e.g., military, police, and rescue personnel). All elements included in the current selection system are briefly outlined below. The brevity is due to restrictions against leaving out test information as some assessments are classified. All information given below is therefore accessible at the SDRA's webpage (Rekryteringsmyndigheten, 2013a), or at the SAF's webpage (e.g., Försvarsmakten, 2012).

1.7.2.1. The Recruitment test

The Recruitment test is a web-based screening for all interested young men and women. The basic requirements for all interested are: legal adult (i.e., 18 years), Swe-

dish citizen (double citizenships are generally accepted), and high school graduate with complete grades in Swedish, English, mathematics, and social sciences (Försvarsmakten, 2012).

Here, the interested are screened for medical conditions deemed unsuitable for military service (e.g., disabilities, previous injuries, allergies, severe eczema, and dietary restrictions). Background information regarding basic demographics, schooling, and personal interests, as well as their preferred placement for military service are gathered. Additionally, some questions symbolize the SAF's values and attitudes deemed fundamental to military service.

The test-takers approved on the medical criteria, and after a preliminary security control, are given a test date for the second selection step, often only within a week or two of the completed Recruitment test.

1.7.2.2. The Applicant testing

The second step, the Applicant testing, is made at one of the SDRA's test centers in Stockholm, Gothenburg, or Kristianstad (occasionally in Lund). The testing takes about one day and is described in the sequence below. All tests during the Applicant testing produces scores on a nine-point standardized scale (Stanine), with a few exceptions that will be specified below.

*Cognitive ability***.** The current CAT-SEB (i.e., the I-prov 2000) has been adapted since the earlier versions by Carlstedt and colleagues (Mårdberg & Carlstedt, 1998; Carlstedt et al., 2000) and is now a fully adaptive computerized test. The CAT-SEB consists of 12 different subtests with multiple-choice items, in total about 200 items. The test-taker has 80 minutes (excluding time for instructions) to complete the test, which the vast majority (95 %) of the test-takers manage to do (Mårdberg & Carlstedt, 1998).

The CAT-SEB produces an overall assessment of the test takers general cognitive ability (*G*). All applicants with G 5 or more are assessed for their suitability as commanders during the psychology interview, and applicants with G 7 or more are qualified for an application to Officer Cadet School. The overall score of G 5 is the lowest level for non-commissioned officers (NCO), and G 7 is the lowest level to become a commissioned officer (CO).

Physical tests. Before the physical tests commence, a nurse goes through the applicants' health declaration forms that the applicants have answered prior to the test day. After this, the applicants are weighed and measured for Body Mass Index (BMI), and tested for basic physical conditions, such as visual acuity, color vision, auditory acuity, electrocardiogram (ECG), pulse, and blood pressure. The applicants are also tested for muscular strength by means of the IsoKai, a test that uses an isokinetic method. The last test is an aerobic test, where the applicants ride a stationary bicycle for five minutes at submaximal pace, followed by a test at maximal pace, where they are asked to ride as long and as fast as they can. In addition to the Stanine scores, the IsoKai produce a value in Newton (N), and the bicycle test a value in Watt (W).

Psychological suitability. The psychological tests consists of a theoretical test and an interview, and if necessary the answers from the Recruitment testing. The purpose both of the test and the interview is to assess the applicants' psychological capacities and resources, suitability for more advanced positions, as well as a risk assessment for loyalty and dependability (Rekryteringsmyndigheten, 2013a). The applicants' motivation to, and for, military service are also of concern, that is, why they want to serve and how likely they are to fulfill their service. In addition, the interviewing psychologists assess the applicants' security profile, that is, the occurrence of past criminal offences, liabilities in loyalty, and reliability. The latter are aspects included by the SAF's Militära underrättelse- och säkerhetstjänsten (MUST; i.e., SAF's Intelligence and Security Agency), and are later cross-referenced with the criminal records of both the police department and the national security police.

Medical examination. The Medical examination is a general health check made by a physician. Apart from the medical health assessment, the physician also makes an overall appraisal of the applicant's suitability for military service, where the results from the physical, psychological, and medical tests are taken into account. This overall suitability will also be indicative of what type of service the applicant is suitable for and his/her prospects for dealing with upcoming tasks during severe strain.

Profession-focused interview. At the very end of the day, the applicants meet with a career officer. The career officer gives the applicants a preliminary decision whether they will be considered for military service or not, based on the overall suitability made by the physician. If the applicant is suitable, the career officer also gives the

necessary information about the placement in question. If the choice of placement is ill-suited, or the result is insufficient for the placement, the career officer has an opportunity to advice the applicant to change his/her placement choice. Thus, the purpose of the profession-focused interviews is to help the applicant make a well-grounded decision. If a positive preliminary decision can be given, the applicants are measured for equipment.

A selection panel however, ultimately decides whether or not an applicant is offered a place in the Basic Military Training (BMT) with members from both the SDRA and the SAF. The Head of the SAF's Human Resources Centre makes the formal and final decision. Each candidate is reviewed and a final decision is made in regard to the individual's capacities, but also in relation to the number of new recruits that the SAF is in need of (Försvarsmakten, 2012). The selection ratio can vary from one year to another, that is, how many that is accepted each year fluctuates.

1.7.2.3. Basic Military Training (BMT)

The BMT makes out the third selection step where those recruits who pass will be considered for placement within the organization and the following training as contracted Squad leaders (Swe. Gruppbefäl)/Soldiers/Sailors (GSS). During the BMT, the GSS are cultured and trained for 12 intense weeks in the basics of military life. The BMT aims at providing the GSS with the basics of skills needed for self-defense, ability to hold and secure terrain, location, and so on; as well as the knowledge to act according to legislations and regulations (Försvarsmakten, 2012). Thus, both theoretical and practical training sections make up the BMT. At the end of the BMT, the GSS will be evaluated on their performance during these 12 weeks and on their results from the Applicant testing for specific placement within the SAF. Again, the GSS will meet with a career officer who can advise and present the different career options.

There are some exceptions to this general selection process. In addition to the BMT, the recruits who have been accepted as officer recruits, either COs or NCOs, will do a supplementary three months preparatory officer training. After completing these six months of training, the officer recruits can either apply to the Officer Cadet School, or get a placement as NCOs. Recall that the officer recruits needed a CAT-SEB score of at least G 5 (G 7 in the case of COs) and an additional assessment by the psychologist of their suitability as commanders. The officer recruits (e.g., CO, and NCO) and the

GSS who have applied for special services, such as rangers, pilots, and combat divers, also do supplementary selection tests at the beginning of the BMT and later at the unit. Regardless of the line of service applied for, all recruits must complete the BMT before moving on to their individual placement/training.

1.7.2.4. Probationary service contract

This last selection step is a six-month probationary service contract, during which the GSS recruits are trained and assessed for their placement. This means that the NCOs will not be considered for service until their preparatory officers training is completed. For the COs, this will take an additional three years as service contracts are not drawn until the recruits have graduated from the Officer Cadet School.

1.7.3. The previous selection system for compulsory military service

The SAF became an AVF at the second half of 2010. In practice, however, military service has been based on voluntariness since the end of the 1990's, primarily due to downsizing. The magnitude of the downsizing is epitomized in the statistics from the SDRA, where the proportion of enrolled conscripts dropped from 63.2 % to 26.3 % during a ten-year period from 1996 to 2006 (Rekryteringsmyndigheten, 2013b). As of 2007, the young men called up for enlistment testing first did a web-based suitability testing, much like the current Recruitment testing, which led to a reduction of the numbers tested for enlistment from approximately 50,000 to about 15,000 (*ibid.*). Thus, the past decade's number of conscripts is incomparable from previous years' statistics, but it is apparent that the basis for service has changed gradually in the last decade.

At large, the previous selection system was similar to the Applicant testing of today. The main elements of the physical, medical, and psychological tests have remained the same. The biggest changes have been of the process itself, the multiple selection steps, and the emphasis on the applicants' own wishes in regard to placement and type of service. Thus, the element of career officers is new, as is the Recruitment testing—even if considering that a similar web-based suitability screening was introduced in 2007.

Apart from the changes for conscription per se, there have also been some contextual changes. One of these changes concerns the background questions asked, as the ap-

plicant population of today may be more heterogeneous in comparison to the conscripts. The candidates, who in most cases were men, were more similar regarding education, experiences, as well as cultural background. Today, circa 20 % of the applicants are women, and the applicants' ages may vary from 18 to 35; thus, their living conditions, life and work experiences, and education can vary considerably in comparison. In addition, immigrants with a Swedish citizenship constitute another group sought more actively for today, and by necessity, the assessors need to evaluate these applicants' experiences too in order to make qualified selection decisions.

Taken together, the previous selection system had a more homogeneous population to select from. Consequently, the possible variation between applicants can have changed significantly. In addition, although the psychological testing has added a standardized psychological test and the motivation to serve, the question regarding the validity of the psychological assessment for military service remains. Has the operationalization of "suitable for military service" been adequately changed to mirror the focus on international operations and deployments regarding both task and psychological resilience, or is focus still on fulfilling the military training? Figure 1 illustrates the different conditions for the selection system (and the personnel) in the old and new personnel system, respectively. In regard to the theoretical background of the purpose and validity of selection systems—that is, the selection systems ability to identify suitable individuals for a specific job and everything the job entails—the need for an adjusted selection system seems unquestionable.

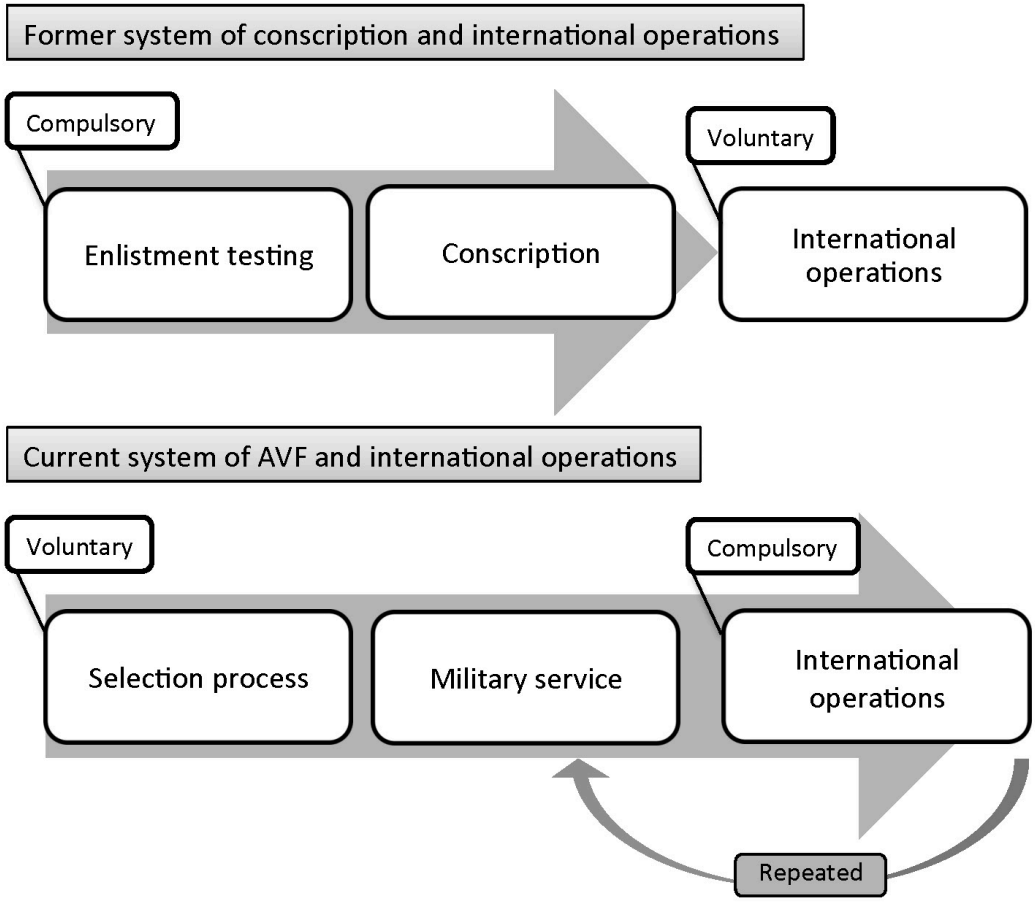

Figure 1. The practical framework of the selection system in the previous and current organization of the SAF.

This simplified model (Figure 1) shows some significant differences between the two systems, and although the first ”flowchart” (i.e., ”Former system of conscription and international operations”) only applied for the conscripts, the conditions regarding voluntary participation in international operations applied for officers too. In the new system of AVF, the process looks similar regardless of rank; however, officers' training and selection will, as previously, be more demanding and time-consuming. One important difference is the reversed positions for compulsory and voluntary in the two flowcharts, where the former was compulsory for selection but voluntary for deployment. The latter is the opposite: voluntary selection, but compulsory deployments. Another important difference is the extension of the ”flow”, where the former stops after conscription, signifying the end of military service, whereas the latter goes on and includes international deployments. Here, an additional difference appears:

the current system of AVF makes a circular movement after international deployment, signifying the need for repeated deployments. Thus, there have been some considerable changes in what military service looks like today compared to yesterday. The consequences of these changes are yet unknown and need to be investigated and evaluated in terms of selection issues, where a holistic job analysis should be included.

1.8. Aim and scope

The aim of this thesis was twofold: firstly, to find indicators of the validity of the current selection system, that is, to see if the selection system mirrors the refocus on international operations and voluntariness; secondly, to test if non-cognitive assessments of personality, health, and resilience can increment the validity of the current selection system and identify individuals suitable for repeated international deployments. This work was guided by a series of tentative questions regarding both the selection system in particular, but also international deployments in general:

a) Does the current selection system, originally designed for compulsory military service, correspond to the main task of international operations where the officers and soldiers may be faced with stressors similar to those from war?

b) Can new non-cognitive assessments, such as personality, resilience, and subjective health constructs, identify officers and soldiers/sailors who have the ability to readjust postdeployment?

c) How does international deployment affect the deployed personnel in terms of psychological stress reactions?

d) How does voluntariness, implying high motivation to serve, affect the selection process?

2. The present investigation

The following sections paraphrase and provide an overview of the four studies comprising this thesis: **Study I** (Bäccman & Carlstedt, 2010), **Study II** (Bäccman, Berggren, & Norlander, 2012), **Study III** (Bäccman, Hjärthag, & Almqvist, manuscript under preparation), and **Study IV** (Bäccman, Sjöberg, & Almqvist, 2015). Each of the four studies will be presented in short regarding background, aim, method, main result(s), and conclusion(s), followed by a general discussion regarding their contribution to the overall aim and questions of this thesis.

All studies have been part of research projects approved by the Ethical council in Stockholm: **Study I–III** (Protocol 2009/5:1; Diary number 2008/1905-31/5), and **Study IV** (Protocol 2010/5:10; Diary number 2010/1423-31/10). This means that all studies complied with the ethical principles for studies on human subjects set by the so-called Declaration of Helsinki (World Medical Association, 2008).

2.1. Summary Study I

A construct validation of a profession-focused personality questionnaire (PQ) versus the FFPI and the SIMP.

2.1.1. Main aim and short background

In the former system of compulsory military service, international operations were orchestrated from a more or less independent organization within the SAF, formerly known as SWEDINT. Both officers and former conscripts had to voluntary apply to SWEDINT for participation in a specific operation. In practice, the recruitment and manning for all international deployments were thus based on a top-down selection system where most officers and soldiers were recruited based on recommendations. To make this recruitment process a little more systematic, the Swedish National Defence College (SNDC) created a training program for the selection interview to give the platoon commanders some tools and support during the recruitment process. One of the tools was a short-version personality questionnaire based on the Big Five and developed especially for the SAF. In addition to the recruitment training at SWEDINT, the PQ was used in a team-composition design adapted from Tziner and colleagues (e.g., Tziner & Eden, 1985; Tziner & Vardi, 1983) as part of a systematic manning of tank-crews at a Swedish armored regiment. Due to its practical purpose,

it was important that the PQ was easy to use and quick to administer.

This first study was a construct validation (i.e., convergent or content validity, structure, stability, and internal consistency) of the PQ. The PQ was validated against two established Big Five questionnaires: the Five Factor Personality Inventory (FFPI; Hendricks, Hofstee, & de Raad, 1999); and the Single Item Measure of Personality (SIMP; Woods & Hampson, 2005).

2.1.2. Participants

The participants in this study were officers (i.e., regular and reservists) and former conscripts who had been selected for international operations (N = 637); the mean age was approximately 28, ranging from 19–62. The participants were divided across three different samples. The first sample (*Sample 1*; n = 240) was presented the PQ and the FFPI, and the second sample (*Sample 2*; n = 123) was presented the PQ and the SIMP. The third sample (*Sample 3*; n = 274) was only presented the PQ, and their answers were used to cross-validate the emergent structure of the PQ by means of a confirmatory factor analysis (CFA).

2.1.3. Instruments

The PQ consisted of 51 items from the International Personality Item Pool (IPIP; 2001) selected to assess seven different aspects of the Big Five dimensions: sociability and social ability (i.e., Extraversion); consideration and concern for others (i.e., Agreeableness); work and task related orderliness (i.e., Conscientiousness); stress-resistance (i.e., Emotional stability); self-confidence (i.e., Emotional stability); temper instability (i.e., reversed Emotional stability); and intellectual independence (i.e., Openness to experience). All answers were given on a 6-grade Likert scale where only the endpoints were defined, presenting a scale ranging from *Total disagreement* to *Total agreement*.

The FFPI consisted of 100 items (i.e., 20 items for each dimension), and all answers were given on a 5-grade Likert scale. The convergent validity of the FFPI has been tested against the NEO PI-R (Costa & McCrea, 1992), and has shown reliability (Hendricks et al., 1999).

The SIMP consisted of five ipsative items, that is, the items were presented as two dichotomous statements for each of the dimensions, and each item was answered on a 9-point scale. The SIMP has shown to have both convergent and divergent validity (Woods & Hampson, 2005).

2.1.4. Main results and conclusions

After an item clearing by means of structural equation modeling (SEM), 41 items remained over seven latent variables (i.e., personality aspects): *Social ability* (i.e., Extraversion, PQE; 5 items); *Concern for others* (i.e., Agreeableness, PQA; 5 items); *Orderliness* (i.e., Conscientiousness, PQC; 7 items); *Stress-resistance* (i.e., Emotional stability, PQN1; 5 items); *Self-confidence* (i.e., Emotional stability, PQN2; 7 items); *Temper instability* (i.e., reversed Emotional stability, PQN3; 7 items); and *Intellectual independence* (i.e., Openness to experience, PQO, 5 items).

The 41-item PQ showed stability across Sample 1–2, and Sample 3 (i.e., the cross-validation sample) showed stability both regarding factor loadings and the relationship between the factors. A confirmatory factor analysis (CFA) yielded a good model structure and model fit, χ^2 = 1725.02, *df* = 758, RMSEA = 0.059, $p < .001$, GFI = 0.813, AGFI = 0.788, CFI = 0.935.

The number of items in the seven factors ranged from five to seven, with factor loadings ranging from 0.49-0.79 and internal consistencies (Cronbach's alpha, α) ranging from 0.75-0.87. The seven factors of the PQ showed good to acceptable convergent validity with both the FFPI (r = .49- .71) and the SIMP (r = .21- .52). However, one of the PQ factors, Temper instability (PQN3), needs to be further investigated as its distribution was skewed.

Despite some variation between the PQ and the FFPI as well as between the PQ and the SIMP, the differences were rational from both a theoretical and operational point of view as the tested instruments defined the five dimensions differently. In conclusion, the PQ structure was deemed satisfactory with seven stable factors, with good internal consistency, and with convergent validity to other instruments within the Big Five framework. The PQ may thus be used for incremental validity regarding performance (e.g., Barrick et al., 2001; Hurtz & Donovan, 2000), as well as in the investiga-

tion of how personality can help explain the peacekeepers' readjustment postdeployment, for example in terms of resilience (Skomorovsky & Sudom, 2011).

2.2. Summary Study II

Military Capacity and Civil Adjustment: Assessments of the "re-usable" peacekeeping soldier for development of a selection system.

2.2.1. Main aim and short background

When the resolution came that the SAF would leave conscription in favor of an AVF, the need for a new organizational structure and a new recruitment system became evident. Although the need for recruiting and training "reusable soldiers" was merely implied, the emphasis on international deployment and contracted soldiers made a sustainable personnel system a prerequisite. In an organization where the main personnel force (i.e., officers and soldiers/sailors) can be contracted for 6–12 years (or longer), full-time or part-time, the personnel will be expected to do repeated deployments. To maintain operational readiness throughout their service period, the personnel need the ability to readjust between deployments.

In the new AVF, only the recruited and contracted personnel will constitute the available applicant pool. Thus, selecting suitable soldiers is not only about finding the young men and women who are likely to make it through the military training, but also to find those likely to be suitable for the new task of international deployments.

The aim of this study was twofold. First, to investigate whether the soldiers' test results from enlistment would have any connections to their performance during international deployments. Second, to see how different non-cognitive assessments (e.g., personality, resilience, and subjective health) could be used to complement the enlistment testing in identifying soldiers who could both perform during deployment and readjust after deployment.

Three hypotheses regarding the selection system for conscription were posed:

H1 The previous selection system, designed for conscription, would not be able to identify soldiers with lower military capacity as the task of peacekeeping is different from the traditional task of war and combat.

H2 The previous selection system would not be able to identify soldiers who had difficulties readjusting postdeployment as this selection system did not need to consider aspects of "reusability".

H3 These two aspects of "reusability" would be entwined as soldiers with poorer individual capacities (e.g., lower stress-resistance) may not only have difficulties readjusting at homecoming, but also difficulties performing during deployment as poor stress-resistance may impair task performance.

The question whether non-cognitive assessments could contribute to the selection process was held more open, and no hypotheses were posed.

2.2.2. Participants

The participants in this study were former conscripts who had been selected for two consecutive UN operations in Kosovo (312 men and 52 women, N = 363). The mean age of the sample was 27.91 years (SD = 8.73, range = 19-61), and the majority (56.6%) were 25 years or younger. Almost half (45.2 %) of the participants were in stable relationships, but only a small share had children (11.8 %). Of the soldiers with previous experience of international operations (n = 115), almost half (44.3 %) had participated in two or more operations, and more than half (63.4%) had participated in another operation within the past two years.

All participants included in this study were present at both data collections, that is, both predeployment (i.e., circa two weeks before deployment) and postdeployment (i.e., circa eight months after deployment). After the deployment and the second data collection, data regarding the participants' service record from the present deployment and enlistment results were collected.

2.2.3. Instruments

2.2.3.1. Before deployment

Background data consisted of self-reported age, sex, marital status, military rank, previous experiences from international operations, use of alcohol (frequency and amount), et cetera.

Enlistment data consisted of the participants' result from their enlistment testing, that is, their *Cognitive ability*, *Physical capacity* (in terms of aerobic fitness), the

Psychological evaluation, and if available, *Suitability as commanders*. All test results had been transformed into a standardized nine-grade scale, Stanine.

General health questionnaire (GHQ) was used to assess the participants' health status, and was designed to identify breaches in the normal functioning (Goldberg & Hillier, 1979). The GHQ consisted of 28 items equally divided across four different areas: *Somatic* (e.g., "Have you recently been feeling perfectly well?"); *Anxiety and insomnia* (e.g., "Have you recently lost sleep over worry?"); *Social dysfunction* (e.g., "Have you recently felt busy and occupied?"); and *Depression* (e.g., "Have you recently felt that life is entirely hopeless?"). All answers were given on a 4-graded scale from *Better than usual* to *Worse than usual* and were coded according to frequency (i.e., 0, 1, 2, and 3).

The PQ consisted of 41 items distributed over seven different aspects of the Big Five dimensions (**Study I**). The first three, *Stress-resistance, Self-confidence,* and *Temper stability,* where aspects of Emotional stability. The fourth, *Intellectual independence*, was an aspect of Openness to experience; the following, *Concern for others*, was an aspect of Agreeableness; and the last two, *Social ability* and *Orderliness*, were aspects of Extraversion and Conscientiousness, respectively. All answers were given on a 6-grade Likert scale ranging from *Total disagreement* to *Total agreement*.

Sense of coherence (SOC) consisted of 13 items assessing the participants overall orientation to life (Antonovsky, 1993), distributed across three subscales: *Comprehensible* (5 items, e.g., "Have you ever been surprised by the behavior of someone you thought you knew well?"); *Manageable* (4 items, e.g., "Have you ever been let down by people you thought you could trust?"); and *Meaningful* (4 items, e.g., "Do you feel like you don't really care about what goes on around you?"). Answers were given on a 7-grade scale with defined anchors, depending on the item. A mean for each subscale as well as a total score for the scale (*SOC-13*) was computed.

2.2.3.2. After deployment

Civil adjustment (CA) was an instrument designed for the present study, with 11 items related to psychological aspects of either psychosocial (5 items, e.g., "My life at home feels trivial and pointless") or psychosomatic (6 items, e.g., "I find myself crying/wanting to cry without apparent reason") character. These two aspects had ac-

ceptable correlation (r = .43) and were therefore analyzed as one factor (α = .84). After this, the participants were categorized in three groups according to their answers in relation to the whole group: Good (n = 141), Average (n = 108), and Poor (n = 115) CA.

Impact of event scale (IES-R) consisted of 22 items assessing how the participant reacts when he/she thinks about a stressful event (Weiss & Marmar, 1997). The IES-R items were distributed over three subscales: *Intrusion* (7 items, e.g., "I thought about it when I did not mean to"); *Avoidance* (8 items, e.g., "I stayed away from reminders about it"); and *Arousal* (7 items, e.g., "I felt irritable and angry"). All answers were given on a 4-grade frequency scale with weighted scoring. In addition to the subscale means, a total mean for the full scale was also computed.

Note that the IES-R was preluded by a question regarding the occurrence of a stressful event, and only participants who stated having experienced a stressful event during deployment continued to answer the IES-R (n = 118).

Military capacity (MC) was the two 10-grade service records that the participants were given after deployment. The first, service capacity, was the grade of psychological capacity at the participant's position (e.g., dependability, initiative, cooperation); the second, knowledge and skills, was a more general soldier proficiency grade evaluated through field tests (e.g., physical capacity, weaponry and shooting skills). As with CA, these two grades had acceptable correlation (r = .43), and were thus treated as one variable in the analyses. Additionally, MC was divided into three groups according to the grade distribution for the participants: High (n = 92), Average (n = 129), and Low (n = 143).

Sleep disturbances consisted of nine items designed for this study (e.g., "Have problems falling asleep"). The answers were dichotomous (*Yes*/*No*) and were computed into a joint index ranging from none to nine.

2.2.4. Main results and conclusions

An analysis (3x3 Pillais' MANOVA) with the three groups of CA (i.e., Good, Average, and Poor), and MC (i.e., High, Average, and Good), respectively, as outcome variables, and the enlistment variables as predictors, revealed: firstly, the selection system designed for conscription (i.e., Enlistment data) did not seem able to identify soldiers

with lower MC (i.e., H1). The only exception was Physical capacity where the highly skilled soldiers had better physical capacity than both soldiers with average and low MC. Secondly, the result revealed that the second hypothesis (H2) was confirmed in full, that is, the previous selection system could not identify soldiers who had difficulties readjusting post-deployment (i.e., poor CA). Thirdly, these two aspects of "reusability" did not show any connections (i.e., H3), that is, soldiers with poorer results from enlistment did not seem to do worse, neither regarding MC nor CA.

The analysis (3x3 Pillais' MANOVA) with the three groups of CA (i.e., Good, Average, and Poor) and MC (i.e., High, Average, and Good), respectively, as outcome variables, and the non-cognitive abilities (i.e., GHQ, PQ, SOC; IES-R, and Sleep problems) as predictors, revealed: a) SOC and GHQ were able to distinguish soldiers with poor CA from those with average and good CA; b) the PQ factors Temper stability and Social ability were able to identify the poor adjusters from the good adjusters, whereas Stress-resistance was able to distinguish the poor from the average adjusters; c) soldiers with poor CA also reported more Sleep disturbances than soldiers with both good and average CA.

There were also differences regarding non-cognitive abilities and MC. These differences were, however, more diffuse than for CA. For example, soldiers with low MC reported more Social dysfunction (i.e., GHQ subscale) than soldiers with high MC. Regarding Somatic symptoms (i.e., GHQ subscale), soldiers with low MC reported more problems than soldiers with average MC, and here soldiers with high MC were intermediate. Of the soldiers who answered the postdeployment assessment IES-R, it seems as if those with higher MC reported less Intrusion, Avoidance, and Arousal (i.e., IES-R subscales) than the other soldiers. That is, soldiers with high MC seemed less disturbed by the stressful events that may occur during deployment.

The results from this study suggest that the previous selection system needs to be adapted for the new task of repeated international operations; and that non-cognitive abilities, such as personality, resilience, and health aspects, can be used to identify those recruits who may have more difficulty readjusting postdeployment.

Also, the study indicated that the data from enlistment testing (e.g., G, psychological evaluation, and commanding ability), previously considered good predictors of performance during conscription (Carlstedt, 2000) and success later in terms of career

and salary (Lindqvist & Westman, 2009), did not show any relationship with performance during international operations. In part, this may have been due to ceiling effects, as most of the soldiers selected for international service were good performers during conscription.

A comprehensive selection system adapted for both the new task and the work conditions of repeated deployments is imperative from both an organizational and an individual perspective. From an organizational perspective, if the selection system has not been adapted to the new task, its usefulness for selecting suitable candidates seems questionable. From the perspective of the individual, being selected on the wrong terms may have lifelong consequences regarding both physical and psychological aspects.

2.3. Summary Study III

Improved resilience and well-being in a Swedish Naval Force after a counter piracy operation off the coast of Somalia

2.3.1. Main aim and short background

There are several studies looking at different types of stress reactions among personnel deployed on international operations, mainly in retrospect. Of the longitudinal studies the majority have been made on US and UK forces serving in Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF) in Afghanistan. These two operations are, firstly, not far from traditional combat and war, unlike the traditional Swedish peacekeeping operation (PKO); and secondly, the results from these studies revealed great differences in PTSD rates due to different organizational and personnel structures, for example, deployment length, man-to-leader ratio, age, and so on (see e.g., Castro & McGurk, 2007; Fear et al., 2010). Thus, although much has been learned about the risks and consequences of peace support operations (PSO), there seem to be differences due to both type of operation and nationality.

From a Swedish perspective the personnel have, at large, been spared from casualties, PTSD, and other life-altering consequences. The SAF's international involvement has, until recently, been more traditional UN PKOs, with some fluctuations, for example, in Balkan during the 1990's, and in Afghanistan. In general, however, the involvement has mainly concerned PKO with little or no persistent consequences for the ma-

jority of personnel involved. Still, as the variety of operations increase, with conditions ranging from traditional PKO to PSO, there is a need to understand more about how international deployments affect the SAF personnel.

ME01, which stands for the first Marine EU NAVFOR (European Union Naval Force), was the first big maritime operation for the SAF. The operation was called Operation ATALANTA, and was a UN-sanctioned operation, with a "robust" mandate that means that the members were authorized to "use all necessary means" (United Nations, 2008). The main purpose of Operation ATALANTA was to protect the ships of the World Food Programme, but did also come to include counter-piracy, and the prevention of people smuggling. Operation ATALANTA has been a success, and its presence off the coast of the Horn of Africa has prevented several piracy attacks and people smuggling attempts. Yet, the need for protection is still urgent, and the operation ATALANTA has been continuously prolonged. Sweden has so far contributed with an additional three maritime forces (i.e., ME01 to ME04).

The aim of this study was to explore how the members of ME01 were affected by their experiences during their deployment, and they were therefore assessed both before and after deployment (i.e., T1 and T2). The study was exploratory and guided by two tentative questions: How will the members' psychological health in terms of resilience and well-being (defined by negative psychological symptoms, e.g., anxiety and depression) be affected by deployment? Will factors like type of duty personnel (i.e., officers vs. sailors), previous experiences, and previous stressors affect their psychological health?

2.3.2. Participants

The participants in this study were 129 members of the ME01 (120 men, 9 women), with an equal distribution between officers (n = 68; 64 men, 4 women), and sailors (n = 61; 56 men, 5 women). For the majority (78%; 90 men, 7 women; 46 officers, 51 sailors), ME01 was their first international deployment. Of the 28 participants who had previous experience, 13 reported one previous deployment (9 officers, 4 sailors) and 15 reported at least two previous deployments (12 officers, 3 sailors). Thus, officers were generally more experienced than sailors.

The members' average age was 31 years, ranging from 20 to 61. The officers were on average almost 11 years older than the sailors (36 years vs. 25 years, $p < .001$), an age difference that was expressed in other background variables such as marital status, children, and living conditions. Almost half of all officers were married, or had common-law spouses, and had children, whereas this only applied for less than 10 % of the sailors where one-third still lived with their parents. There were no significant gender differences (*ns.*).

The response rate for this study was 85 %, with the largest attrition rate at the second data collection (37.5%). The first data collection was made during the preparatory training, circa a month before deployment (T1), and the second data collection was made during the so-called "reunion" (T2), which is a compulsory check-up before the force is formally dissolved. Data from T1 was imputed for missing data at T2 when available.

2.3.3. Instruments

Background data consisted of self-reported age, sex, marital status, et cetera, as well as of questions regarding their *Professional background*, such as rank (i.e., *Officers, Sailors*), previous *Experiences of international operations* (i.e., "No experience", "One experience", "Several experiences"), and previous stressful experiences (i.e., *Previous stress*). The latter variable was computed as the frequency of the participants' positive reports on a list of 11 stressful incidents. The listed items of stressful events ranged from combat experiences (e.g., "Engaged in armed conflict", "Threatened at gunpoint") to other types of stressful events (e.g., "Witnessed wounded, maimed, or dead people", "Involved in serious accident"). At T1, the responses could be made in three ways: "No"; "Yes, once"; "Yes, several times". At T2, the same types of items were listed for stressful experiences *during* ME01 (i.e., *ME01 stress*), and three items were deleted due to contextual relevance. A fourth response category was added ("Yes in my group") at T2 in order to take into consideration those who had had proxy experiences. Previous stress could range from 0 to 11, and ME01 stress could range from 0 to 8. A total frequency of positive answers was later computed for the participants who had given a positive answer to any of the incidents stated at T1 and/or T2: *Total stress*, ranging from 0 to 19.

Sense of coherence (SOC) (see instruments of **Study II**)

Hospital Anxiety and Depression Scale (HADS) consisted of 14 items assessing *Anxiety* and *Depression* (i.e., 7 items each), where a higher score indicated more severe problems on either or both subscales (Zigmond & Snaith, 1983; Snaith & Zigmond, 1994). Snaith and Zigmond (1994) suggested cut-offs for both Anxiety and Depression at 8–10 for mild cases, 11–15 for moderate cases, and 16 or more for severe cases. The response scale consisted of 4 categories.

Positive and Negative Affect Schedule (PANAS) consisted of 20 adjectives assessing the personality constructs *Positive Affectivity* (PA) and *Negative Affectivity* (NA; Watson, Clark, & Tellegen, 1988). Answers were made on a 5-graded scale with reference to the past week.

Stress Energy (SE) assessed the participants' subjective degree of *Stress* and *Energy* during the last 10 minutes (Kjellberg & Iwanowski, 1989). SE consisted of 6 adjectives for each subscale, and had six response categories. Kjellman and Wadman (2002) recommended that a mean of 2.4 points (or 14 total scores) be used as a neutral point for Stress, and 2.7 (16 total scores) as neutral point for Energy.

2.3.4. Main results and conclusions

The aim of this study was to see how the members of ME01 were affected by deployment, but also if and how professional background, previous experiences, and prior and current stressful incidents would affect them. The overall results showed that the ME01 members' resilience, and psychological well-being regarding, for example, anxiety, negative affect, and stress, seemed to improve from before to after deployment.

The results were relatively consistent, but did show some differences for: a) professional background, where sailors reported more negative affect, more anxiety, and more depression at T2 than officers; b) previous experiences, where those members who had been on at least two previous deployments (i.e., Several experiences) had lower levels of anxiety at both T1 and T2 than those members with no experience; and c) stressful events, where members who had experienced stressful events during the present deployment (i.e., ME01 stress) reported a decrease in resiliency at T2 compared to T1. Furthermore, members who reported more total stressful events (i.e., Total stress) increased their levels of negative affect and decreased their levels of energy at T2.

All in all, this study implied three things. Firstly, ME01 was, in general, a positive experience for its members regarding both resiliency and well-being. Secondly, screening during the predeployment preparatory training may be futile as the preparatory training may induce more stress and anxiety than the actual deployment. Thirdly, there are subgroups in the ME01 that may have fared less well than the rest of the force, and there seems to be a relationship between type of professional background and stress experiences that deserves further attention. Special attention may also be given to that of age, experience, and social support, as these may be the underlying factors for both patterns (i.e., professional background and experience of stressful events).

2.4. Summary Study IV

Comparison between applicants' and incumbents' mean scores on health constructs and personality constructs. A follow-up study of military recruits in a selection setting.

2.4.1. Main aim and short background

The transition from conscription to AVF may also have more direct effects on the selection system that may also threat validity, for example, if motivation to serve obscures an individual's factual capacity. The effects on motivation may be manifested as self-enhancement, that is, in order to increase their chances for selection, the applicants make themselves look better. Self-enhancement may be both conscious and unconscious, and may entail both augmenting the positive sides and hide or soften the negative sides. Several studies (e.g., Birkeland et al., 2006; Viswesvaran & Ones, 1999) have looked at how respondents may alter their answers under different quasi-experimental conditions, but few studies have been made in a real selection setting where the same individuals are assessed twice, first as applicants and later as incumbents. Most studies (e.g., Ones et al., 1996; Viswesvaran & Ones, 1999) have investigated the effect of self-enhancement on different personality assessments (e.g., Big Five instruments), but little is known about how self-enhancement works on self-rated health scales.

The aim of this study was to gain a greater understanding of the risk of possible self-enhancement in a military recruitment setting regarding both health constructs and

personality questionnaires. Thus, the same participants were assessed twice with the same instruments, first as applicants and later as incumbents.

2.4.2. Participants

The participants in this study consisted of a sample of the first round of recruits to the AVF in 2010 (N = 202, 177 men and 25 women), tested at the Swedish Recruitment Agency. The mean age of the sample was 20.86 years (SD = 3.12, range = 18–43). All participants included in this analysis applied for a position in the Basic Military Training (BMT), and were later accepted to the BMT in the beginning of 2011. These two sets of data from application to BMT will be referred to as two samples: applicants and incumbents. It should be noted that all participants had already passed the initial web-based screening, that is, the first of the four selection steps described earlier (see section 1.6.2. The current selection system).

2.4.3. Instruments

2.4.3.1. The personality instruments

The PQ (see **Study I**, and instruments of **Study II**)

Sense of coherence (SOC) (see instruments of **Study II**)

2.4.3.2. The health constructs

General health questionnaire (GHQ) (see instruments of **Study II**)

Impact of event scale (IES-R) (see instruments of **Study II**). Note that a confirmative answer of the occurrence of a stressful event is a prerequisite for answering the IES-R and was, thus, not answered by all of the participants (n = 48).

2.4.4. Main results and conclusions

The hypothesis that applicants would answer in a way to increase their chances for getting hired was confirmed in full: In comparison to their answers as incumbents, the applicants enhanced their answers on the positive scales and subscales and downplayed their answers on the negative scales.

Regarding the different types of instruments, the applicants consistently gave more positive answers on both personality instruments, PQ and SOC, than on the health

instruments GHQ and IES-R. Although the answers were not as consistent on the health instruments (i.e., 6 out of 9), the strongest effect sizes were found for the differences on the health instruments. In practice, this meant that the applicants tended to disown the negative aspects more intensely than they enhanced the positive aspects, as all health instruments were negatively keyed. In addition to this pattern, the analysis also showed that almost twice as many avoided disclosure of a previous trauma as applicants in comparison as incumbents (24 % and 40 %, respectively). This can be interpreted as a strategy to improve chances for application. In sum, applicants seem to treat personality instruments (e.g., PQ and SOC) differently than health instruments (e.g., GHQ and IES-R). While the tendency of possible self-enhancement seems more consistent on the personality instruments, the tendency on the health instruments was more severe—which may lead to more serious selection errors. Denying or withholding previous stressful events may have grave consequences at the individual level, as previous stress is a well-known risk factor for future vulnerability to stress (e.g., Litz, 2007; Ozer et al., 2003). Consequently, motivation to serve may impede the validity and reliability of the selection system, and careful methods for how this type of disinformation can be addressed should be implemented.

3. General discussion

At the most general level, the results in this thesis shows: Firstly, that the current selection system may need some adaption to better mirror the task of repeated international deployments, and a voluntary applicant pool. Secondly, that non-cognitive assessments of personality, health, and resilience may increment the validity of the current selection system and be used for identifying individuals suitable for repeated international operations.

Regarding the first part of the aim, **Study II** shows that the current selection system, which in content is very similar to that of compulsory military service, does not seem to suffice for selection to the AVF's repeated international deployments—neither for performance during deployment, nor for readjustment after deployment. However, it is hard to make any definite conclusions as the analysis was made on data collected in the "old organization" of compulsory military service and voluntary international deployments (see Figure 1). Interestingly, the results from enlistment, normally considered having high predictive validity for both conscription (Carlstedt, 2000) and future success in civilian life (e.g., Lindqvist & Westman, 2009), do not differentiate between the soldiers' level of military performance. Thus, the soldiers' scores for intelligence (G; Carlstedt et al., 2000), and the assessments from the psychological interview (i.e., psychological suitability and commanding ability) cannot be used as predictors for performance during international operations. Apart from obvious ceiling effects due to the selection strategy in the former organization, that is, voluntary deployments after completed conscription, the results suggest that the elements in the current selection system lacks validity for international deployments.

In addition, the results from **Study IV** shows that the participants moderated their answers in a more favorable manner during Applicant testing (i.e., as applicants), in comparison to their answers as incumbents during the basic military training (BMT). Applicants seem to use self-enhancement strategies to increase their chances of being recruited to the AVF; a pattern mostly consistent on the short-version personality instruments PQ (see **Study I**) and SOC (Antonovsky, 1993). Although not as consistent as on the personality assessments, the applicants moderated their answers more intensely on the health assessments GHQ (Goldberg & Hillier, 1979) and IES-R (Weiss & Marmar, 1997). In addition, the applicants were twice as likely to hide the

occurrence of previous trauma, as were incumbents. This tendency to downplay their answers on health instruments and avoid disclosure of previous trauma may thus lead to serious selection errors if not controlled for. Previous trauma is a well-known risk factor for future vulnerability for negative stress reactions (e.g., Litz, 2007; Ozer et al., 2003). Indeed, the risk for self-enhancement during application has historically limited the use of non-cognitive assessments in military selection systems (Rumsey & Arabian, 2014b). Consequently, the applicants' motivation to serve may pose a threat to the validity and reliability of the selection system, and needs to be taken into consideration for the selection of voluntary recruits.

In regard to the second aim, non-cognitive assessments of personality (subjective health constructs and resilience) could identify recruits who are able to both perform during deployment and readjust after deployment. As assessed by the PQ, GHQ, and SOC, the aspects of personality, health, and resilience, respectively, are able to discriminate between soldiers' military performance during deployment and readjustment at postdeployment (**Study II**). However, significant results regarding performance during deployment are few and somewhat diffuse. Overall, the results show that poor performers reported more health problems at predeployment, and that good performers seemed less disturbed by stressful events during deployment. In contrast to other studies, the Big Five personality assessment in terms of PQ provided no incremental validity for performance (e.g., Barrick et al., 2001; Hurtz & Donovan, 2000). The reasons for these rather disparate results can be many and besides being a "true" reflection of actual differences and similarities, or rather lack thereof, there is a risk for restriction of range. The already selected sample may have reduced variance in enlistment data, causing ceiling effects, thereby preventing the detection of differences. While not part of the enlistment, the selection process to international deployments in the previous system (i.e., completed conscription and recommendations from superiors or peers) may have led to indirect selection effects of the non-cognitive assessments too (i.e., personality, health, and resiliency), causing ceiling effects.

The reason for this vague results may also have been constrained dependent variables as soldiers' service records, used for military capacity, tend to be positively skewed. The two numerical service records tend to land on 5–9 for most soldiers/sailors, signifying an acceptable level of performance. For officers, the restriction is even more

pronounced. The majority of officers are rated as either C or B on a scale from A–E (suitability for the current position during deployment, where C and B signify "good suitability" and "very suitable", respectively) and as 7–8 on a 9-grade scale (recommendations for higher positions, where 7 and 8 signify "recommended" and "highly recommended", respectively). Thus, both the independent and the dependent variables may have lacked the variance necessary for detecting true differences. In order to better understand how these variables may affect military performance during international operations, both the selection criteria and the non-cognitive assessments (i.e., personality, health, and resilience) need to be investigated further.

The results regarding the usefulness of non-cognitive assessments for personality, health, and resilience (i.e., PQ, GHQ, and SOC), to discriminate between soldiers' readjustment ability postdeployment, are more straightforward. As hypothesized, soldiers with poor readjustment ability distinguished themselves from the rest, reporting both poorer health and lower resilience at predeployment. This result of a steadfast psychological health is in line with previous studies of among others Michel and colleagues (2003), and supports the healthy warrior effect (e.g., Fear et al., 2010; Wilson et al., 2009) where soldiers with good health at predeployment are more likely to be selected for international operations.

The even more persistent connection between resilience, as assessed by SOC, and readjustment ability lends further proof to the usefulness of SOC, and concurs with the review of Eriksson and Lindström (2006) where SOC is positively connected to Hardiness, optimism, and self-efficacy—aspects that all seem indicative of an individual's ability to withstand stress and adversity (Almedom, 2005). Indeed, although in terms of Hardiness (e.g. Kobasa, 1979; Maddi, 2007), resilience has become a recognized aspect in military contexts, both regarding training in terms of Battlemind (Adler et al., 2009) and selection (Rumsey & Arabian, 2014b; Stark et al., 2014). Albeit not as consistent as the result for health and resilience, the result for personality is in line with the study of Skomorovsky and Sudom (2011), who found that the Big Five dimension Neuroticism was connected to PTSD severity, and Extraversion was connected to social support. In **Study II,** the poor readjusters reported lower stress-resistance, temper stability, and social ability than soldiers with average and good readjustment ability at postdeployment. Stress-resistance and temper stability are both aspects of Neuroticism, and social ability of Extraversion (**Study I**). Thus, this

first dimension of the Big Five, Neuroticism, still seems as firmly connected to how soldiers reacts to war and armed combat as Woodworth (1919) reported almost a century ago. Extraversion is an aspect that describes individuals who find it easier both to relate and to seek contact with others, but who are probably also more likely to already have an established social network. Thus, the results of all three non-cognitive assessments seem to be in line with previous studies and contribute to the understanding of peacekeepers' readjustment ability postdeployment.

It should be noted that reported stressful events during deployment do not seem to affect soldiers' ability to readjust postdeployment (**Study II**). Overall, the soldiers actually seemed to be doing very well at postdeployment despite, or perhaps even due to, their experiences during deployment. As one-third of the participants in **Study II** (n = 118 of 364) answered the IES-R, the deployment seems to have been eventful—at least for a large part of the force. This may seem contradictory as many studies have shown that participation in combat and conflict intensity seem to be the dominating risk factors (Castro & McGurk, 2007; Pietrzak et al., 2009) according to the dose-response theory (Vogt et al., 2007). Still, the result in **Study II** may be merely an indication that the incidents during deployment were less stressful than the stressors referred to in the aforementioned studies. The results can also be interpreted in the light of the Inoculation theory, that is, that moderate stressful experiences can protect against stress reactions and ill-health, both present and future (Seery et al., 2010). Accordingly, deployment may be salutogenic for its participants if it is paved with moderate stressors. Regardless of what seems to have happened, the participants' self-reported health and resilience at predeployment is predictive of their health and resilience at postdeployment.

The fact that the participants in **Study II** overall reported very few problems postdeployment, raises the question of how international operations, especially the traditional UN peacekeeping operations (PKO), affect the participants. The results from **Study III** seem to confirm that deployment does not need to be harmful for the participants' psychological well-being. On the contrary, this particular operation, ME01, seems to have had a positive effect on most of its participants regarding both resilience (SOC), and well-being (e.g., anxiety, depression, negative affect, stress). Nonetheless, there were some noteworthy differences regarding professional background, and the experience of previous stressful events. Firstly, the sailors reported poorer

health and resilience than the officers, both before and after deployment. Secondly, the participants who reported stressful events *during* ME01 (i.e., ME01 stress) and several stressful events both before and during ME01 (i.e., Total stress) seemed to do worse at postdeployment than the rest. This result may be due to firstly, a large number of the participants were for the first time exposed to more severe stressful events. Inexperience and young age are well-known risk factors for stress reactions (Fear et al., 2010; Friedman et al., 2007; Pietrzak et al., 2013; Riviere et al., 2011; Vogt et al., 2007;). Secondly, the increased risk for poorer health among the more experienced participants can indicate a risk of accumulated stress, where both too much stress or too many stressful events may have detrimental effects on health and well-being (Seery et al., 2010; Vogt et al., 2007).

It should be noted that the predeployment assessments were made during the preparatory training; hence, the scores are unlikely to represent a true baseline. The results from before deployment probably represent the participants' reactions to stress, as several studies suggest that the preparatory training may induce more stress and anxiety than the actual deployment (MacDonald et al., 1999; Maguen et al., 2006). The improvements regarding both resilience and well-being were thus to be expected as the stressors generally weakened after the preparatory training. As the assessments were made at the same points in the deployment cycle as in **Study II**, the results can still be considered to contribute to the understanding of how international deployments may affect the serving personnel of the Swedish Armed Forces (SAF). The results from both **Study II** and **Study III** are not far off from other studies that have pointed to positive effects from peacekeeping (Britt et al., 2001; Karlsen et al., 2006; Sareen et al., 2007, 2010); and the stability in health is in line with previous studies on the SAF (Michel et al., 2003).

The results from **Study II** and **Study III** cannot be generalized to other types of deployments, such as Afghanistan or Congo, with sterner and perhaps even warlike conditions, not least manifested in higher PTSD rates (1% vs. 3%) (Larsson et al., 2000; Lundin & Otto, 1989; SOU, 2013). However, despite that peacekeepers in more traditional PKO's may be less exposed to threats and possible traumatic events, all international operations will undeniably entail a risk of being killed, injured, or having to kill someone else: Realities that the officers and soldiers/sailors who await deployment seem well aware of, not the least expressed in heightened stress and anxiety

levels during the predeployment training. Although the task of the SAF is changing and becoming more diverse and perilous, the most common operations, historically speaking, have mainly concerned traditional PKO. Therefore, the effects of traditional PKO on a Swedish military population are not rendered superfluous, as these types of deployments still are likely to make out a large portion of the SAF's deployments.

It is also important to remember that there are other aspects than deployment theater and conflict intensity that may affect peacekeepers' stress reactions (Fear et al., 2010). These aspects regard both organizational qualities (e.g., deployment length and tempo) and staffing procedures (e.g., leader-man-ratio and professional background), including cohesion and leadership qualities as well as personal characteristics (e.g., age and marital status; Ahronson & Cameron, 2007; Brailey et al., 2007; Castro & Adler, 1999; Fear et al., 2010, Hotopf et al., 2006; Iversen & Greenberg, 2009; Lane et al., 2012; Wong et al., 2003). The noted differences between active and reserve personnel (Fear et al., 2010; Hotopf et al., 2006; Iversen & Greenberg, 2009; Riviere et al., 2011) indicate that the dose-response theory (Vogt et al., 2007) is more complex than a factual state of combat intensity. Stress is not an objective fact, but needs to be understood as a subjective interpretation of the situation—an individual's appraisal of the situation, both primary and secondary (Lazarus & Folkman, 1984). Thus, as discussed by Iversen and Greenberg (2009), the reservists' more severe stress reactions were consequences of their tendency to interpret more situations as threatening and harmful, regardless of actual threat, than the active duty personnel. The results in **Study III** lend support to this result as the less experienced soldiers/sailor, comparable to a reserve force, reported lower overall SOC (i.e., SOC-13) and manageability (SOC subscale), than the officers, comparable to active duty personnel.

In addition, the sailors/soldiers stronger (**Study II** & **Study III**) connection to life outside the military alike the reservists (Doyle & Peterson, 2005; Green et al., 2010; Iversen & Greenberg, 2009) may cause more friction—not the least with the family, but may also create more role conflict between the two lives. The studies of Britt and colleagues (Britt et al., 2001; Britt et al., 2005) showed that role conflict was more negative for stress reactions than workload, and that self-engagement mitigated the effects of stress. How an individual reacts to stress is thus influenced by several factors that may go beyond the actual stressor, and where the subjective experience may

be more dominant than the incident. The proverb ”mind over matter” might hence be applicable not only for physical pain (Wiech, Ploner, & Tracey, 2008), but also for psychological pain where experience and overall life circumstances seem to play an important role.

The results for stability of health across the deployment cycle demonstrate that selecting on resilience may prove fruitful. It is not merely about identifying vulnerable individuals, but also about identifying individuals who are able to withstand stress and adversity. In addition, despite some valid objections, such as screening for extreme stress reactions like PTSD (Bliese et al., 2011; Jones & Wessely, 2005), military selection has come a long way since WWII regarding both technical and methodological advances (e.g., Rumsey & Arabian, 2014b; Stark et al., 2014). Also, there are more stress reactions to consider besides PTSD (e.g., Fear et al., 2010; Fertout et al., 2011; Katz et al., 2010, Larson et al., 2009; Litz, 2007), maybe not as importunate as PTSD, but still harmful and incapacitating both at the organizational and individual level. Indeed, there are probably more stress reactions that cannot be labeled as clinical (see e.g., Fertout et al., 2011; Katz et al., 2010; Weibull, 2012), but which still may impede or perturb the life of the peacekeeper and his/her family. Additionally, there are probably traumatic experiences that most individuals will not be able to shield themselves from. It is, however, likely that some will find the strength to move on and recover from the trauma whereas others will not. Some individuals' ability to recover is demonstrated repeatedly in the literature—not least in the work of Antonovsky (1979) on Holocaust survivors. Given this compelling evidence for resilience, both as an individual characteristic and as a process (Cornum et al., 2011; Skomorovsky, 2013), resilience should be considered both for selection and training.

The fact that the SAF has a person-oriented selection system, where individuals are first selected and later placed (Murphy, 2010), and provides full on-the-job-training (Sellman et al., 2010), present unique opportunities. One opportunity regards the selection system where screening for vulnerabilities, such as prior trauma, and family history of psychopathology (Ozer et al., 2003), can be used to identify individuals at risk for ill-health following stress reactions. Another regards the training where a comprehensive training program includes different aspects of task performance ranging from actual skills for performance to coping strategies (*cf.* Adler et al., 2009). Yet another aspect is the social climate where the organization's culture should encourage

self-disclosure (Castro & McGurk, 2007) and provide a social support system in which both the peacekeeper and his/her family are included, as family friction is connected to postdeployment ill-health (e.g., Doyle & Peterson, 2005; Green et al., 2010; Lane et al., 2012). The SAF has, in contrast to most other organizations, the prerequisites to design a comprehensive recruitment system from selection to retirement that enhance the individuals' resilience, both through selection, socialization, and insistent training.

3.1. Suggestions for future research

To come to terms with some of the methodological and theoretical issues in the current studies (**Study II** & **Study III**), a future study should be made on the personnel, recruited for and selected for the AVF. The volunteer recruits should be assessed at an early stage before deployment to eliminate the negative effects of predeployment stress, and ideally at several different times to elucidate how time itself may affect stress levels at predeployment. This sample from the AVF, as well as their result from the Applicant testing, and the baseline would thus be more representative for investigating the validity of the current selection system. Furthermore, additional postdeployment assessments should be made for a more comprehensive understanding of how the veterans' mental health may be affected long-term. Apart from the assessment at the "reunion" (i.e., 6-12 months after homecoming), one should be made at homecoming and another one 24-36 months after homecoming.

Another important aspect to study would be possible differences regarding military experience (e.g., professional background, previous experience, and current proficiency level), but also civilian differences regarding marital status, economic status, and overall life satisfaction. Understanding these differences could be vital for both primary and secondary selection decisions, as well as training routines. For example, a soldier/sailor/officer who is undergoing significant life changes, such as divorce or has recently become a parent may be more susceptible to stress than he/she has been before. A holistic view, where several possible factors that may affect performance and well-being are monitored seems to be vital for a valid selection system, as the interest is to find early predictors of work life success.

Apart from design, timely assessments, and different selection criteria (existing and future), it is imperative that the outcome variables are just as valid and tested for the

new AVF and repeated international deployments. Not having a valid outcome variable renders validity attempts useless (e.g., Austin & Villanova, 1992; Borman et al., 2010; Cronbach, 1990). Apart from identifying important areas for evaluation, for example, performance during deployment, readjustment postdeployment, and continued motivation to serve, the different areas need to be thoroughly operationalized. As already mentioned, the current system of service records is difficult to use for evaluations as it is restricted in range (see **Study II**). In addition, the reported values in the service records are aggregates of several different areas for assessment, making them perhaps too general to be valid. As with the Big Five, the dimensions are sometimes too broad to be valuable; hence, narrower facets could prove more valid depending on the aim (Alessandri & Vecchione, 2012; Ashton et al., 1995; Dudley et al., 2006; Kehoe & Murphy, 2010). The validity of the selection system is consequently not only depending on the different selection criteria, but equally on the outcome criteria to which they are supposedly connected. Thus, future studies need to also include appropriate outcome variables.

3.2. Concluding remarks

Taken together, the four studies in this thesis have pointed to a number of areas that the current selection system for an AVF needs to take into consideration, ranging from selection criteria to outcome criteria. The goal is no longer to find young men who are likely to make it through conscription (Carlstedt, 2000), but to find soldiers who can help create and maintain peace—a task that seems to go beyond that of traditional military training (Johansson, 1997). Apart from international deployments, the new voluntary soldiers are expected to do repeated deployments, which may entail other abilities, and pose different challenges to uphold and resume operative readiness (Castro & Adler, 1999). Indeed, given the sometimes fragile peace agreements, peacekeeping is as important on the operative level as it is on the tactical and strategic level where even the seemingly most insignificant situation may assume unproportionate consequences if handled in the wrong way (*cf.* Wong et al., 2003). The task of international operations is thus not only more complex but also more delicate.

As presented in the introduction, the main aim of any selection system is to predict which individuals who are most likely to be successful at the job. Thus, when the task, conditions for performance, and/or population change, the selection system needs to

be adjusted accordingly. The holistic approach to job performance entails numerous aspects besides the actual task, including reducing attrition, promoting health, and overall life-satisfaction, to mention a few. Accordingly, the selection system for the new AVF needs to identify individuals apt for military performance going beyond the traditional task of combat and war, a task that seems increasingly complex, as well as identify individuals able to withstand stress and readjust between deployments—as repeated deployments are expected within the contracted service periods.

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Mind over matter

Since the end of the Cold War the Swedish Armed Forces has undergone several changes regarding both task and personnel system. The task of national security does not only entail territorial defense but also international operations worldwide. In addition, the soldiers are no longer conscripts but young men and women who have volunteered to secure and uphold peace and democratic values.

The purpose of this thesis was twofold: firstly, to investigate if the current selection system mirrors the recent refocus on international operations and voluntariness; secondly, to see if and how non-cognitive assessments of personality, health, and resilience increment validity to the current selection system in identifying individuals suitable for repeated international deployments. This work was guided by a series of tentative questions regarding both the selection system in particular, but also international deployments in general.

The four papers in this thesis suggest that the current selection system need to be adapted to better correspond to repeated international deployments as well as to a voluntary applicant pool; and that non-cognitive assessments of personality, health, and resilience increment validity to the selection system.

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