AN INTERACTIONISTIC APPROACH TO SOLDIERS' MENTAL PERSISTENCE IN THE CONTEXT OF OPERATIONAL DEPLOYMENTS

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ABSTRACT

The presence of two poles on the activity dimension, strict boring regulations and thrilling incidents, in every operational environment constitutes a major challenge for military leaders. Soldiers, who do well in a clear and secure environment, can be less effective in unpredictable and risky surroundings. Or taking the opposite, troops who do well in combat, can be undisciplined problem-makers in their regular service in the garrison. In this article an interactionistic approach is proposed to explore this phenomenon from the perspective of well-being of performing soldiers in their operational task environment.

1.0 INTRODUCTION

One of the characteristics of military operations is the contrast between at the one hand highly structured tasks, with a risk of passivity and boredom (for example standing guard at the gate of garrison barracks), and on the other hand tasks with high levels of unpredictability and threat (for example a night patrol in hostile environment). The presence of these two extremes in every operational environment constitutes a major challenge for soldiers as well as for military leaders who are supposed to get out the best from their men in all situations. The complexity of modern military operations, in which soldiers often have to perform under both structured and safe, versus unstructured and high risk circumstances, creates also a challenge for the recruitment, selection and training of military people.

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14. ABSTRACT
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Field stories and anecdotal evidences show that soldiers who do well in a clear and secure environment (like staff work in peacetime), do not necessarily maintain their mental persistence[1] in an unpredictable and risky surrounding (like combat operation in wartime), or vice versa. For illustration we use the description by an experienced NCO:

> *"According to my experiences, camp guard is the dullest task during deployments. Everybody tries to break free of that. If you are in a camp like /… / and depending only on your own unit, you have no choice—you have to do it. We all understand that it is necessary, but this is just depressing and makes you feeling that what you are doing is senseless; besides it is not interesting at all. Although there are people in every deployment who participate just for money and try to have a quiet and secure deployment, there are still lots of people who engage for some action. They are interested in what is outside of the camp, how the nature looks like, the way locals live, etc. Of course, as a task, camp-guarding is more secure — no risk to step on an IED, however, it is boring and leaves you with the feeling of meaninglessness."*

Russell (2000) divides soldiers into clusters: on the one side there are individuals drawn to the military by the potential for excitement or adventure; on the other side individuals are drawn to the security of the military system, the guaranteed employment, and the social benefits. He emphasises, however, that it is not plainly to claim that the one type is better than other; it is just to say that the willingness to perform in particular environment can be different according to personality types.

Read et al. (2010) have conceptualized person–situation interactions in terms of the interaction between the motive systems (person) and the influence of situational features (situation) on the motive systems. For each individual there are environments that match more with the characteristics of his personality and the level of overlap is expressed in his contentment and performance (De Rue & Morgeson, 2007; Greenberg, 2002; Holland 1997; Lyons & O'Brien, 2006; Pervin, 1968; Roberts & Foti, 1998; Schneider 1978). The person can be represented in terms of motivational system and situations that are represented in terms of their affordances for the person's motives (Read et al., 2010). Research has shown that personality dispositions alone are not enough to predict the outcome; potential co-effects with the type of situation or environment should be taken into consideration (Edwards et al., 2006; Fritzsche, McIntire & Yost, 2002; Fritzsche, Powell & Hoffman, 1999; Kieffer, Schinka & Curtiss, 2004; Liesing & Igl, 2007; Mischel, 1984, 2004a, 2004b; Mischel, Shoda & Mendoza-Denton, 2002; Walschburger, 1994; Witt & Spitzmuller, 2007). "*Stress is often in the mind of stressed*" and therefore it is important to include both situational and personality variables in understanding the soldiers' response to stress (Krueger, 2008).

We believe that bringing an interactionistic approach to the military context would help to understand why soldiers who are effective and perform well in one operational context may appear puzzled and useless in another context. Strong persistence usually pays off in performance accomplishments, however when faced with difficulties it is the individual who decides how much hardship he or she is willing to endure for pursuits related with particular obstacles (Bandura, 1991). Series of research was conducted based on the presumption that the military manpower can be enhanced not only by massive recruitment, but by using the benefits of the Person x Environment approach as a force multiplier in the common military practice. Throughout three related studies[2] we were looking if and how personality predispositions of deployed soldiers are related with their psychological well-being in the specific environment of military deployment.

[1] Defined in terms of one's willingness or motivational urge to intensity his/her effort and persistence of exertion in particular environment

[2] Submitted for publication, referred as unpublished manuscripts

2.0 METHODOLOGICAL DESCRIPTION OF THE RESEARCH

For the research, we have asked one unit of Estonian conscripts (validation of measures) and three detachments of Estonian professional soldiers deployed to the Helmand province in Afghanistan between the years 2005 and 2008, to serve as our sample (longitudinal design). Demographically, both of our samples appear to be quite homogenous; all available respondents have approximately the same age and educational background, and are all white Estonian males.

2.1 Description of Key Study Variables

Most military tasks are highly procedural, and Standard Operational Procedures have been developed for many situations, especially for a deployment environment where additional restrictions apply. Theoretically, this well-defined environment must fit with the expectations of soldiers who are high in *need for structure* (e.g., Thompson, Naccarato, Parker & Moskowitz 2001). On the other hand, *sensation seeking* is not only an element in recruiting campaigns ('*explore the world, join the army*!'), but becomes more than important when the soldier is confronted with risks and life-threatening situations in reality. The service member should be able to respond adequately in these contexts (Neria et al., 2000) without major psychological trauma (Netter, Henning & Roed, 1994). In the military, the high risk acceptance is seen as a desirable quality of sensation seeking because it is useful in terror management under conditions of threat while soldiers with high need for structure may become overwhelmed by the amount of risks present (Van den Berg & Soeters, 2009). When threat is effectively present, people high in need for structure are challenged also by the terror management. This drawback of being a structure seeker was confirmed in the study by Van den Berg and Soeters (2009) who found that soldiers scoring high on this trait are able to tolerate the risk of dying in non-threatening situations but lose this tolerance when situations become life-threatening. Based on literature, this side of military life must fit with the expectations of soldiers who are high in need for sensations (e.g., Zuckerman, 2005).

2.1.1 Need for Structure and Sensation Seeking

Need for structure and sensation seeking are not to be seen as two sides of one coin or the two poles of one dimension. In the literature, the two constructs are usually discussed separately. In our thesis we postulate that sensation seeking and need for structure have to be considered as two separate, however related, dimensions, that have differential effects on a variety of measures. Surprisingly, there is hardly any empirical or theoretical literature on the relation between the two traits. A search for relevant Subject Terms in the scientific database (EBSCO)[3] revealed many studies about Sensation Seeking (353 hits), less studies about Need for Structure (23 hits), and zero studies where both of these narrow traits are studied together (0 hits). One to refer to is a recent study focussing on risk taking by Meertens and Lion (2008) showing that risk-taking is negatively correlated with avoidance of uncertainty. One of the aims of the current thesis therefore is, to explore the relation between sensation seeking and need for structure and the combined effect on behavioural and emotional outcomes of deployed military.

Given the strong (even extreme) contrasts in situational demands for military personnel in different task environments; we selected two narrow personality traits, the Need for Structure and Sensation Seeking as key personality characteristics for our study. Next, a short description of these two constructs is given.

2.1.1.1 Need for Structure

The main underlying mechanisms for Need for Structure are information processing and cognitive structuring. The cluster of related cognitive preferences is described in the literature by peoples' need for simple vs. complex structures (Thompson et al., 2001), by their orientation towards certainty (Roney &

[3] Note: the search was conducted on 25.11.2010

Sorrentino, 1995; Shuper & Sorrentino, 2004), and by the degree of enjoying cognitive endeavours (Cacioppo & Pettey, 1982; Cacioppo et al., 1996). The need for a simplified and clear world view has important social-, cognitive- and behavioural implications. Need for Structure is found to predispose peoples' ability to tolerate the risks and complexities in their everyday live (Meertens & Lion, 2008; Neuberg & Newsome, 1993), and explains their role perceptions, situational preferences and the extent of desired environmental regularity (Heponiemi et al., 2008; Moskowitz, 1993). People scoring high on the Personal Need for Structure scale (PNS) prefer clear and predictable situations over complicated and indefinite ones (Neuberg & Newsome, 1993). They tend to enjoy simple environments with tightly organized life and they try, at least perceptually, to keep their surroundings clear and plain (Gordon, 1997; Schaller et al., 1995). Although a high Need for Structure may be perceived as overall profitable by the military "chain of command" and in "all supplies guaranteed" environments, it might have its dark side when situations turn into complex or unpredictable and life-threatening ones (Van den Berg & Soeters, 2009) as it is the case in most operational environments.

2.1.1.2 Sensation Seeking

Sensation Seeking is a trait which describes the tendency to seek novel, complex and intense sensations; e.g. thrilling experiences and the willingness to take risks just for the sake of such experiences (Zuckerman, 1994, 2005). Neurobiological findings show that individuals high in sensation seeking are not only strongly activated by exciting, thrilling and potentially dangerous activities but also may be less likely to inhibit or appropriately regulate that activation than other people (Joseph et al., 2009). In research, sensation seeking is mostly referred to as a negative characteristic for being related with substance abuse and sexual risk-taking (Brady & Donenberg, 2006), with enjoyment of fight and violence (Hoffner & Levine, 2005), with risk propensity (Killgore, Vo, Castro & Hoge, 2006) and with cortical under-arousal associated with psychopathy (Herperz & Sass, 2000), to name a few. This negative connotation holds also for research in military settings where sensation seeking is viewed as a predictor of antisocial predispositions/behaviours, unacceptable risk-taking and poor health outcomes (Fear et al., 2008; Glicksohn, Ben-Shalom & Lazar, 2004), leaving by doing so potential positive aspects of sensation seeking mostly out of discussion. However, Van Emmerik and Euwema (2009), studying Dutch peacekeepers, have found positive relations between adventurism (a construct closely related with sensation seeking), cultural empathy, and self-efficacy during peacekeeping, and the search for future assignments. Moreover, a study with Israeli veterans has shown that, for higher-sensation seekers, performance during the war and subsequent long-term adjustment are better than for lower-sensation seekers (Neria et al., 2000). Taking into account the nature of military operations, a person's ability and readiness to accept risks and complexity (Dretsch & Tipples, 2008; Hartmann et al., 2003) might be highly relevant for successful coping with unstructured situations.

2.1.2 Situational Structure

To describe the type of environment we use the concept of *Situational Structure*. In literature, this concept has been referred to in different ways. However, they have a common denominator for distinction; i.e., the organisation or structure of the environmental context. For example, Marks, Zaccaro and Mathieu (2000) have stressed the novelty component by classifying situations as routine vs. novel. Beaty, Cleveland and Murphy (2001), who have based their research on normative criteria and the behaviour regulation component, differentiated strong vs. weak situations, which are defined by cues (or lack thereof) from the environment concerning expected performance behaviour. Shaw and Gupta (2004) have put emphasis on the element of environmental complexity and use the terms complex vs. simple contexts.

In our work, we took *situational structure* as the leading principle for a contextual distinction between military task environments as structured vs. unstructured according to their degree of predictability and of the level of risks involved. *Structured situations* are simple and predictable; no risks are present nor

expected (e.g. routine guard duty in camp). In structured situations the environment provides clear cues for what is going to happen next and what behaviour is expected to be performed. Guidelines, routines and pre-packed solutions to problems are given. The focus is on details of activity which are to be managed in an orderly fashion and are based on skills and knowledge and no threat or physical harm are involved. *Unstructured situations* are complex and unpredictable; the situation evolves unexpectedly and/or can turn into harmful or risky (e.g., a patrol in mined enemy area). The environment provides considerably few benchmarks for right behaviour or references for the expected course of action or provides them on an inconsistent or infrequent basis. Solutions need flexibility and willingness to take risks when an outcome is unknown. The focus is on the process which is to be managed with confidence and efficiency. Threat or physical harm might be involved.

2.2 Main Measures

The Sensation Seeking Scale V (SSS-V, Zuckerman, 1978; 2005) was used for the assessment of Sensation Seeking (SS). The SSS-V is a 40-item forced choice questionnaire that measures the degree to which a person seeks out novel and adventurous experiences. The total score is obtained by adding up the scores of four sub-scales (each of 10 items) representing the different dimensions of SS: 1) a desire for adventures or unusual sensations, named Thrill or Adventure Seeking (TAS), 2) experiences through the mind and senses, called Experience Seeking (ES), 3) attitudes regarding social and sexual stimulation, labelled Disinhibition (DIS) and 4) intolerance to monotonous conditions, defined as Boredom Susceptibility (BS). Scoring higher on SSS-V (and on all of its subscales) indicates a higher sensation seeking tendency.

The Personal Need for Structure (PNS, Neuberg & Newsome, 1993; Thompson et al., 2001) construct is found to reflect quantitatively inter-individual differences (Meiser & Machunsky, 2008) and was used for the assessment of the Need for Structure (NS) in our research. This inventory consisted of 11 of the original 12 items (item 5 was dropped; see Neuberg & Newsom, 1993) which were evaluated on a 4-point scale ranging from *strongly disagree* to *strongly agree*. The scale is divided over two sub-scales: 1) the preference component: the extent to which people prefer to structure their lives, called Desire of Structure (DS) with 4 items; and 2) the reaction component: the manner in which people respond when confronted with unstructured unpredictable situations, named Response to Lack of Structure (RLS) with 7 items. The instrument assesses the degree to which a person prefers a simple structure, organization and clarity. Higher scores on the PNS (and its subscales) indicate a higher structure seeking tendency.

2.3 Research Question

The research question was formulated as follows: *Are personality predispositions related with soldiers' psychological well being in deployment environment, and if yes – up to what extent are they adaptable according to environmental demands?* Our general expectation, answering the research questions was that 1) the soldiers' personality profile is related with the perception and evaluation of field situations in different ways; 2) soldiers are generally able to adapt their needs with environmental demands (temporarily); and 3) for some personality profiles the deployment is more difficult to endure than for some others. Setting up the study we hypothesised that psychological well being of deployed service personnel is related with their personality predispositions in interaction with the demands of a particular task environment. Schematically, the research question was developed based on the model presented in Figure 1.

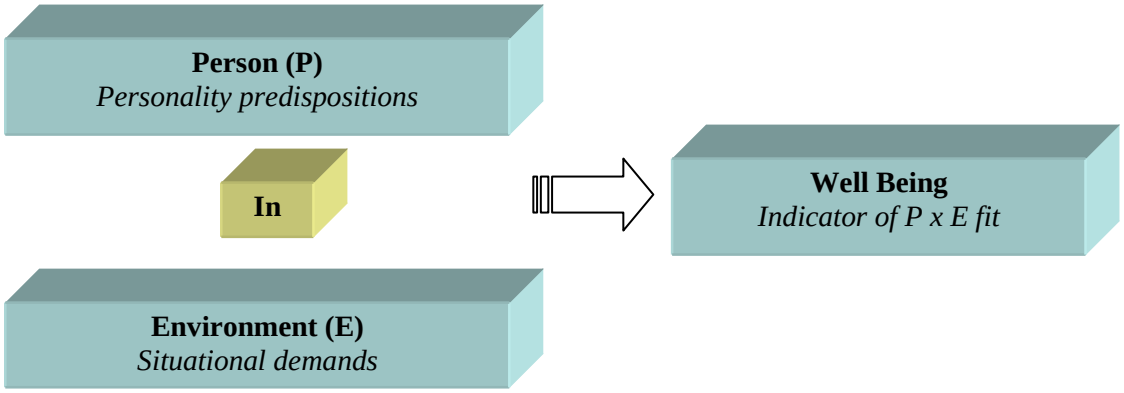

Figure 1: Setting up the study: the research model

To answer this question(s), we designed and conducted three studies described below.

2.3.1 Study 1[4]

After having validated the research instruments for the Estonian military population we proceeded with studying the perception of the situation among soldiers with different personality profiles. To explore that, we used simulated field exercises as a part of soldiers' pre-deployment training. The research model for the field exercise is represented in Figure 2.

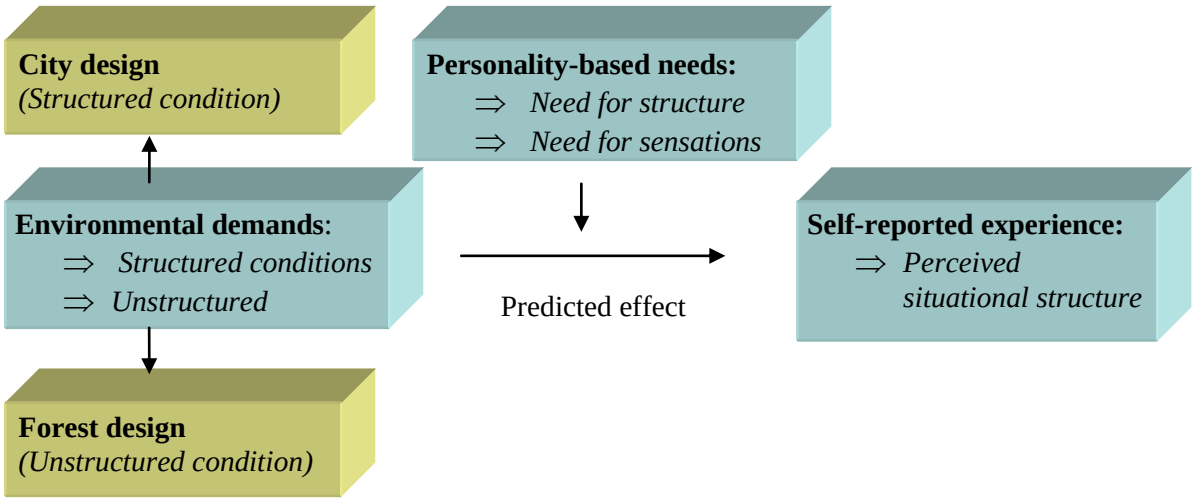

Figure 2: Components, variables and design for the field setting

The role of two personality traits, Sensation Seeking and Need for Structure, in soldiers' perception of situational structure was investigated. Scenarios for the simulations were composed with the help of adventure games' specialists and where designed to simulate structured and unstructured situations (respectively a City scenario and a Forest scenario) using situational elements from real deployment environments. In this study our data confirmed that soldiers' personality propensities are significantly related with how structured the current situation is perceived.

[4] Parmak, Mylle & Euwema, *unpublished manuscript* [a]

2.3.2 Study 2[5]

Next, we examined if soldiers are able to adapt their behavioural tendencies characteristic as expressions of their personality to the environmental demands in their immediate surroundings. The soldiers' situational adaptation with the environment-specific demands of a military deployment – i.c. the Helmand province in Afghanistan - was under closer look. Certain changes on the level of those characteristics took place across deployment: soldiers who are lower in Sensation Seeking are more inclined to seek for sensations after deployment, and soldiers at the extremes of the Need for Structure dimension, modify their behavioural tendencies after deployment towards a moderate level. According to our findings, these behavioural changes suggest temporal characteristic adaptations with certain environmental demands. In terms of the model design, our expectations in the second study are presented in Figure 3.

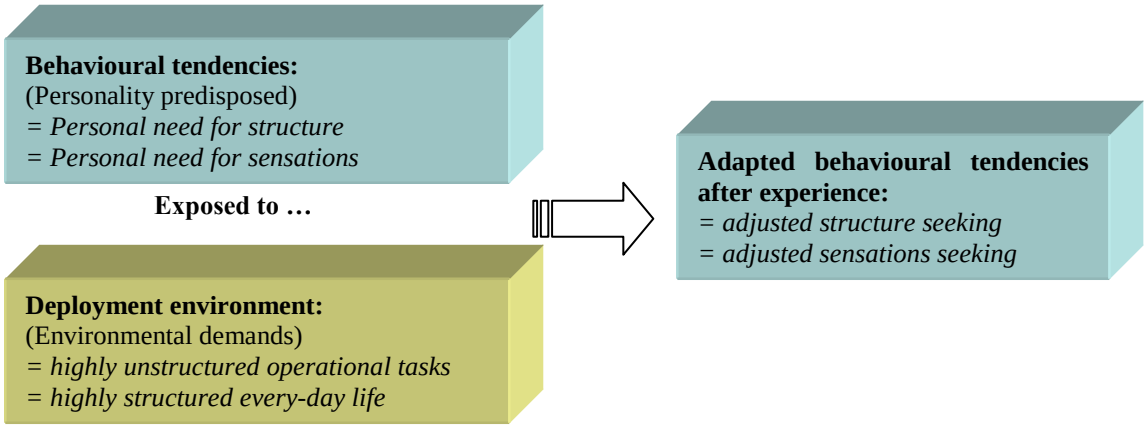

Figure 3: Adaptation of behavioural tendencies after being exposed to particular environmental demands

2.3.3 Study 3[6]

The relation between Sensation Seeking, respectively Need for Structure, and psychological well being of Estonian soldiers was examined before and after the deployment to Helmand province in Afghanistan. We expected to find an interaction effect between personality categories (SS and NS) and Time (before and after) on well being. In this research we were able to show that the soldiers' personality is related with the changes in their well being during deployment and our hypothesis that an interaction effect between individual and situational variables on psychological well being can be found after the deployment experience was verified. Moreover, our data confirmed that the P x E effect on a person's well being is rather stable over time – as measured before and after deployment. The strongest decrease in well being during deployment took place among soldiers who are low in need for structure, especially when this trait was combined with moderate or high need for sensation seeking.

Graphically, the combination of personal and situational characteristics in Study 3 was hypothesized to be related to psychological well being in context as shown (in simplified way) in Figure 4. The best comfort would be expected in situations where personal need and situational characteristics match.

[5] Parmak, Euwema & Mylle, *unpublished manuscript*

[6] Parmak, Mylle & Euwema, *unpublished manuscript* [b]

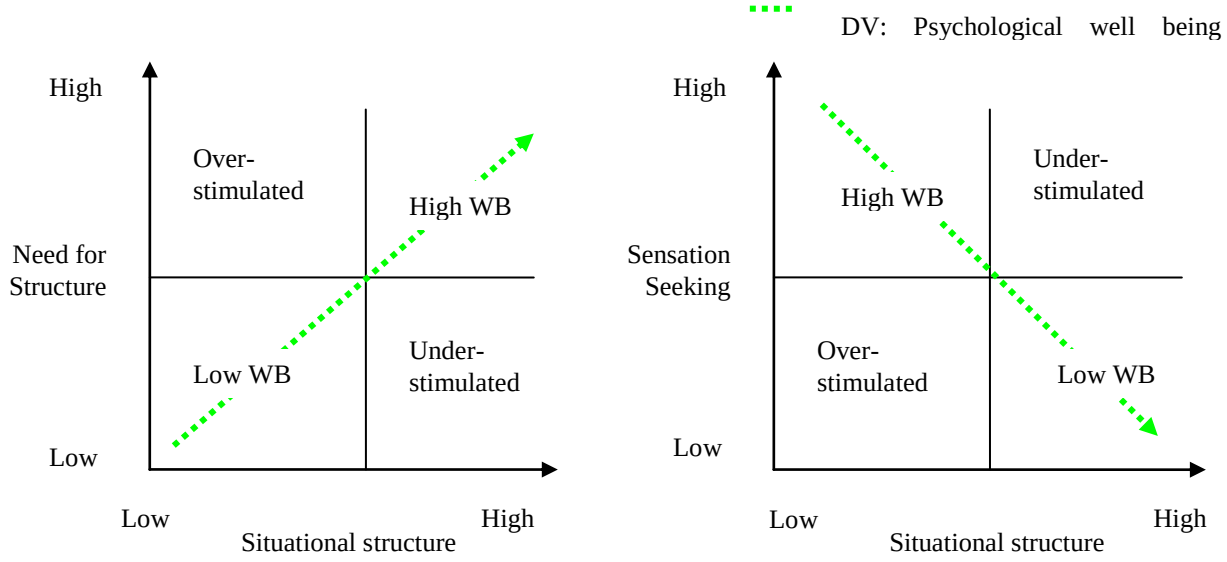

Figure 4: Hypothesized relations (P x E fit) between the situational structure and psychological well being

2.4 Main Findings

We started with studying the mechanism of situational perception among soldiers with different personality profiles that correspond to those described by Russell (2000) as garrison people vs. battlefield people. We found that two narrow personality traits, Sensation Seeking and Need for Structure, are significantly related with how structured soldiers perceived their current situation (Parmak, Mylle & Euwema, *unpublished manuscript* [a]). To remind, situational structure in our research is defined as low vs. high level of predictability and of riskiness involved in situation. Results suggest that 1) situational structuredness is apprehensible by the person involved in this situation; and 2) personality characteristics are involved in the process of perception of that situational structuredness. Our findings proof that the often negatively evaluated Sensation Seeking and the undervalued Need for Structure may provide an important explanation to the differences in stress level of "garrison people" and "battlefield people" respectively when facing situations with different structuredness.

After having explained the individual differences in perceived situational structure we verified if soldiers adapt the self-perception of their personality as a function of environmental characteristics. Several causes can contribute to this adaptation of the self image, including environmental stress, and coping with stressors (Biesecker & Erby, 2008). We asked ourselves if soldiers' adaptive responses to specific environmental stimuli reflect these two needs-based traits and thus can be viewed as trait-based states (as opposed to situation-based states). We discovered that certain changes of soldiers self-perception of their personality characteristics took place across deployment: soldiers who are low in Sensation Seeking are more inclined to seek for sensations after deployment than those high on that trait, and soldiers at the extremes of the Need for Structure dimension, modify their perception of themselves after deployment towards a moderate level (Parmak, Euwema & Mylle, *unpublished manuscript*). Soldiers who score low on sensation seeking (LSS) or on need for structure (LNS) before combat experience define themselves as different after such experiences. After having been deployed to high intensity military operations, they declare to be more willing to accept risks (applies for LSS) and to prefer structured environments (applies for LNS). A decrease in propensity among the high in Need for Structure (HNS) soldiers may serve them

as a way to cope with an unavoidable environment that is too complex for them, and might be explained by a high level of threats in the deployment area which they have to tolerate. For both extremes along the structure seeking dimension it seems feasible to adapt to the environmental conditions but as environmental irregularity seems to overrule the established regulations, adaptation is more vital for the high structure seekers. According to our findings, these behavioural changes could be viewed as a successful adaptation process leading to psychological growth as described by Matthews (2008) but also as effective trait expressions in states suggesting temporal peculiar adaptations with certain environmental demands and as such fits well with the approach provided by Read et al. (2010) as neural network model. This model makes an attempt to bridge the gap between personality dynamics and a dispositional approach to personality and refers to a possible integration of those approaches regarding personality.

After having successfully proven the soldiers' capabilities to adapt their dispositional preferences to the situational demands, we aimed further at confirming our main assumption about an interaction effect between individual and situational variables on soldiers' psychological state. Namely, we were interested in how the disposition to look for thrill and novelty (Sensation seeking) together with disposition to look for stability and regulations (Need for Structure) contribute to the soldiers' psychological well being before and after deployment. Although the presumed decrease in the level of soldiers' well being was observed (they all felt less well after deployment), we found that soldiers' personality is related with the magnitude of changes (Parmak, Mylle & Euwema, *unpublished manuscript* [b]). Soldiers, who do not like their environment too much structured or regulated, felt most well at regular service but their well being decreased remarkably after they were exposed to a severely restricted environment during deployment. Although those troops may do well in garrison duties, they may experience difficulties in adapting to deployment conditions. And they are not doing well at all in chaotic and risky environments.

Diener (1984) has stated that if people's goals and desires are in conflict, it is impossible to satisfy all of them fully. Indeed, we found that soldiers high on both needs, i.e. looking for intense sensations but as well for tight regulations did not feel well, neither in garrison nor on deployment. Also, soldiers who score moderately on both traits ("common people") felt themselves worse than people with any other profile before and after the deployment. Those two profiles seem to be the least fit for military duties in general. Being exposed to deployment demands, well being did not decrease for those soldiers who feel comfortable in well-ordered environment (high need for structure). For them, changes in well being during deployment were absent; they reported the same level of well being before and after deployment, however only under condition of at least a moderate need for sensations. Our findings confirm that emphasising only risks and threats as main stressors may be too simple even for intense combat deployment (Mæland & Burnstad, 2009). The most significant decrease in psychological well being was detected among soldiers low in need for structure, especially when the latter was combined with moderate or high need for sensation seeking suggesting that increased level of restrictions can pose psychological difficulties as well. These finding are well in line with literature about the stress and its consequences due to task insignificance or too low work load (e.g., Gaillard, 2008; Shingledecker et al., 2010).

3.0 SUMMARY

A peacetime army differs in many ways from an army engaged in conflict, and not all soldiers who do well in peacetime service are able to function well at operational tasks (Russell, 2000). This may pose a problem for armies that have not been engaged in field activity for a long time but, have to do it suddenly by contributing to international operations for instance in which combat activities constitute an inherent risk. It is not of being "right" or "wrong" as a soldier - i.e. it is not the question of selecting in or out someone (leaving aside individuals not fit for duty) - it is rather a question of effective preparation and treatment; i.e. about evidence-based programs for training before deployment and for rehabilitation after deployment.

People differ according to their vocational interests, which are found to have even some genetically determined potentialities (Schermer & Vernon, 2008). Similarly to other specific occupations, the military attracts individuals with particular vocational interests. However, field stories and historical writings hint that individuals holding military positions do not belong to an as homogeneous group of people as one could expect. Russell (2000) describes two personality profiles with different reasons for joining the military and for staying in the military as well: dutiful garrison people and adventuresome battlefield people. Related to the differences for joining the army, profiles are distinguishable by their strengths and weaknesses in combat functions vs. peacetime service. In a series of researches, Delahaij (2009) has proven that soldiers' personality characteristics are related with their coping under acute stress. She states that the perceived capability to cope with stress in a military task environment determines how a person appraises a stressful situation (Delahaij, 2009). Rademaker (2009) points out also that personality is involved in all stages of the coping process and claims that soldiers who perceive more situations as threatening are subject to an increased risk for developing stress-related symptoms (Rademaker, 2009). Our research contributes further to this comprehension. Any condition that significantly threatens one's health leads to stress and requires adaptation in order to cope with it (Biesecker & Erby, 2008) and in order to survive; organisms are able to adapt psychologically to fit with the changed circumstances (Schmitt & Pilchner, 2004). Describing research findings in the field of positive psychology, Matthew (2008) points out that, in extreme situations or in times of enhanced mortality, salience and positive reactions may appear instead of fear and anxiety. The issue of resilience (Bartone, 2006; Bartone, Roland, Picano & Williams, 2008) is closely related with looking for potentially positive outcomes of being exposed to extreme situations. Our results confirm that there are changes, observable in individuals self-perceived personality characteristics reflecting environmental demands. This finding has been supported also by neurobiological changes (Van Wingen, Geuze, Vermetten & Fernandez, 2010). However, we go further than these authors proposing that these behavioural changes could be viewed also as *effective trait expressions* or as *states* suggesting particular adaptations with certain environmental demands which are by definition temporal and should not be mixed up with psychological growth as suggested by Matthews (2008).

3.1 Theoretical Implications

From a theoretical perspective, the results of the studies reported in the dissertation contribute the most to the understanding and relevance of the P x E fit, revealing the interactive mechanism between personality predispositions and demands of a particular task environment. Our findings are in line with previous research that, for each individual, there are environments which more or less match with the characteristics of his personality and which are related with his job satisfaction and well being (DeRue & Morgeson, 2007; Greenberg, 2002; Holland 1997; Lyons & O'Brien, 2006; Pervin, 1968; Roberts & Foti, 1998; Schneider 1978). Based on Lewin's Field Theory (1935), we confirmed that different personality dispositions prove themselves as relevant indeed, as fitting in a specific task environment whereas others do not. With that conclusion we complement an array of P x E researchers who (not always with one voice about "what, how, and how much") agree that personality dispositions are not enough for predicting job performance (Edwards, Cable, Williamson, Lambert & Shipp, 2006; Fritzsche, McIntire & Yost, 2002; Fritzsche, Powell & Hoffman, 1999; Kieffer, Schinka & Curtiss, 2004; Liesing & Igl, 2007; Walschburger, 1994; Witt & Spitzmuller, 2007).

Without elaborating here different opinions about the number or the description of personality traits (Tupes & Christal, 1992; Eysenck, 1990; Cattell & Cattell, 1995) there is a massive body of personality research that has concluded that the five-factor structure of personality (Big Five, see Goldberg, 1990; McCrae & Costa, 1995) is a useful model for the assessment of individual differences. However, the results are mixed about the effectiveness of using these broad personality traits as performance predictors (for an example, see the scientific argumentation between Ones, Mount, Barrick & Hunter, 1994 and Tett, Jackson, Rothstein & Reddon, 1994), especially if relatively specific outcome criteria are considered

(Borman, 2004). This inconsistency may be due to the broadness of the used personality constructs, to unspecified outcome criteria, and to ignoring situational characteristics of the environment in which the behaviour occurs. Jenkins and Griffith (2004) have claimed that whereas both performance and personality are multifaceted constructs, predicting certain outcomes using a narrow personality traits approach, instead of a broad bandwidth framework, should be more useful. Our results reported in this article, support this line of thinking suggesting that if an (specific) outcome is expected in a specific task environment, narrow personality traits may prove to be more useful predictors of psychological coping than the broad framework, as far as they are corresponding to the demands of this particular environment.

Considering research related to military performance, our results add some new insights about the role of needs-based personality domains, especially the relevance of two narrow personality predispositions, Sensation Seeking and Need for Structure in diverse military task environments. People who score high in need for structure, like clear and predictable situations (Moskowitz, 1993; Neuberg & Newsome, 1993; Meertens & Lion, 2008) and try, at least in their own perception, to manage their life in an orderly fashion (Schaller, Boyd, Yohannes & O'Brien, 1995; Gordon, 1997). This was confirmed by our results where soldiers high in this need did well in severely restricted operational deployment, however were nevertheless able to adapt their self-perceived personality characteristics to tolerate environmental irregularities. High sensation seekers are said to prefer challenging and novel experiences over repetitive events and familiar surroundings, and accept risks for their arousal potential (Zuckerman, 1978, 1994, 2005). Our results also confirmed Zuckerman's findings in an operational deployment. Soldiers higher in sensation seeking were less forced to adapt their self-perceived personality being faced with risky operational environment but were not the best at coping with the other side of deployment reality – boredom and monotony. Focusing on the relations between the well explored concept of Sensation Seeking and the less studied Need for Structure, we confirmed that they should not be approached as two sides of the one coin but must be taken as two different personality traits describing a unique portion of a personality. Not much research can be found where the combination of these two traits is explored. As mentioned, a search for relevant Subject Terms in the scientific database revealed zero studies where both of these narrow traits are studied together. Some studies, however, can be found (e.g. Meertens & Lion 2008) in which both traits are dealt with but even then those traits are studied as separate and not as combined personality factors. Our studies show that Sensation Seeking and Need for Structure are indeed (negatively) related constructs; however they should be seen as differentiated personality traits. Zooming in on the combination of Sensation Seeking and Need for Structure, our results show that in a turbulent and uncontrollable environment it can be a key to understand changes in experienced well being which is an important predictor of work performance (e.g., Taris & Schreurs, 2009), job satisfaction (e.g. Robert, Young & Kelly, 2006), and early attrition (e.g. Parker & Martin, 2009) in a wide scope of occupations. The combination of Sensation Seeking and Need for Structure, and not two traits in separate fashion, must be necessarily considered when studying outcomes in an extremely structured (well-defined, predictable, well-guided and unambiguous) environment or in an extremely unstructured (ill-defined, novel, complex and changing) situation, or when studying performance in occupations where both of these extremes are simultaneously present . Our results emphasise that Sensation Seeking and Need for Structure must be taken (and measured) as different traits and that their combination in a profile has important implications not only for military but for many civilian occupations too.

3.2 Practical Implications

From a practical point of view, the dissertation contributes to the everlasting consideration in the military to maximize the effectiveness of the performing human element. The findings reported in this doctoral research have a range of practical implications. Our studies provide evidence-based knowledge for two things that can be – for not saying need to be - improved: preparation before and rehabilitation after a mission. First, to increase soldiers' psychological resilience in severely restricted deployment environments compared to their home garrison, training should not only point on risks and threats, but also

on coping with tight regulations, routine tasks and boredom. For now, the impact of the proclaimed personality profile leading to a particular self-selected population is even more amplified by action-oriented training which prepares them well for threats and risks but not for an increased level of restrictions. It might be useful to consider extra modules for those specific profile groups who have proven to be the least fit for a specific deployment context. Second, support structures responsible for helping soldiers to get fit again for civil society after deployment, may use our findings by developing target-oriented rehabilitation programs to provide effective services to those for whom it is most needed and profitable for the organisation; i.c. the Estonian Defence Force (EDF). In addition, to be more effective in terms of increasing mental persistence in their units, military leaders may benefit from an individual-based approach across the whole deployment cycle.

3.2.1 Improving Preparation Programs

An emergent behaviour of a military performer is a reaction to the current environmental event and is influenced by the soldier's person (*nature* factor) but also by his acquired competencies and previous experiences (*nurture* factor). Realistic training is said to be a main concern of today's militaries. Results presented in this dissertation suggest that, to increase soldiers' mental resilience, applying a more individual-based approach in their pre-deployment training (but also in basic training) is beneficial. This is well in line with Rademaker's (2009) recommendation to adopt tailored training and coaching programs instead of the classic one-size-fit-all approach. It is known that psychologically experienced stressors can result in remarkably impaired performance. Taking into account that stress is often in the mind of stressed (Krueger, 2008) it is useful to increase training effectiveness by creating individual-based and software-based training models which are intelligent enough to take the performers' psychological profile into account. Technology-based training, especially interactive simulation, is proposed as a powerful learning environment because it produces not only more but especially better learning (Graesser & King, 2008). Ideally, the created software should be capable to take into account as many as possible of the agent's personal characteristics (e.g. personality, experience, type of training needed) and this at a sufficient level of detail. Several micro-level formal models able to deal with the cognitive-affective state (see, Zacharias, MacMillan & Van Hemel, 2010), the situational assessment (Lewis, Buford &Jakobson, 2009), or to manipulate unpredictable environmental variables (Shvartsman, Taveter, Meriste & Parmak, *unpublished manuscript*) are already developed and can serve as platforms.

3.2.2 Improving Rehabilitation Programs

In line with findings that personality is related with the psychological vulnerability for a traumatogenic event (Rademaker, 2009), our findings recommend that the post-deployment screening for psychological victims and the treatment provided should take those aspects of personality into account that make the particular person more vulnerable for exposed demands in this specific deployment. Our results suggest that a personality-based approach in rehabilitative programs could be a beneficial and a cost-effective way also for not traumatized soldiers' in their re-adaptation process. Armed Forces from several countries already make use of specific psycho-education programs and activities for soldiers returning from intense missions to assist them to re-adapt back to the social norms of the home country and to the work routines in garrison. As an example, there is the Third Location Decompression program designed to allow the service personnel returning from deployment to adapt to the home environment in a graduated way, with the aim of reducing the potential for maladaptive psychological adjustment (Hacker Hughes et al., 2008; Castro, Greenberg & Vigneulle, 2009). Also the Army Warrior Adventure Quest program must be cited here (see http://www.hood.army.mil/resiliencycampus/Warrior.aspx), developed by the U.S. Armed Forces to help soldiers to re-adjust after the deployment. Our results provide an additional scientific justification for those practices but also recommend the potential use of a personality-based approach as intervention model. It could be one step ahead towards more sophisticated re-adaptation programs. Theoretically, targeted programs for rehabilitation and training that are able to take into account individual needs are more time- as well as cost-effective than those applying a universal approach. The effectiveness, of course, must be empirically demonstrated before application.

3.3 Directions for Further Research

The results of the studies reported in this dissertation contribute to the understanding of the interactive mechanism(s) between personality predispositions and demands of a particular task environment with respect to the psychological resilience of the performer. To extend the use of the adapted instruments of Sensation Seeking and Need for Structure (Parmak, Mylle & Euwema, *unpublished manuscript* [a]) beyond Estonian military population, investigating their role as a determinant of self perception, of perception of the situation and of behaviour and consequently of well being (at work) in different sub-populations would be a useful way ahead. Also, studies to explore further the issue of person-environment fit in the workplace related to the qualities determining the structuredness of the employees' environment (Parmak, Mylle & Euwema, *unpublished manuscript* [a]) may have benefits for the performance in the military as well as for civil organisations.

One limitation of our research about situational adaptation (Parmak, Euwema & Mylle, *unpublished manuscript*) was that it did not involve the lastingness of the adaptation effect. If the change in behaviour is a consequence of situational adaptation, sooner or later, an individual will adapt back to his normal environment. Although the change is expected to reverse back to baseline as a result of "habituation of dishabituation" (Thompson & Spencer, 1966), it has to be examined in further research, preferable in neurobiological terms for the sake of objectivity (Rademaker, 2009). Recent developments in this field are encouraging (see, Van Wingen, Geuze, Vermetten & Fernandez, 2010) providing a valuable addition to research where self-report measures are used. In order of being able to enhance soldiers' situational adaptation in deployment as well as their re-adaptation once back home; the mechanism of adaptation is worth to be studied more in detail, especially the role of training and of leadership in that process.

In following studies about the P x E fit, the focus should not only be on psychological well being (Parmak, Mylle & Euwema, *unpublished manuscript* [b]) but also on emergent behaviour or misbehaviour and performance in garrison and in deployment. Examining the influence of Sensation Seeking and Need for Structure on the behaviour and performance in a military task environment can provide useful information regarding how to optimize the outcome(s) in various professional roles based on the individuals' personality-based needs.

3.4 The Way Further: A Mental Persistence Model

Duckworth, Peterson, Mathews and Kelly (2007) have suggested that the achievement of difficult goals entails not only talent but also the sustained and focused application of talent over time. In the same vein it is noted that while mental and physical achievement and ability are proven to be important predictors of military performance, the probability of success increases when a high level of performance is sustained over time and under increasingly difficult conditions; that is, when soldiers persevere (Beal, 2010). Explaining the motivational sources of human behaviour involves clarifying the determinants and intervening mechanisms that govern the activation and sustained direction of behaviour (Bandura, 1989, 1991). Mental persistence, hence, can be observed in terms of one's willingness or a motivational urge to intensity his effort and persistence of exertion in this particular environment. Although it is found that persistence provides a unique contribution in success outcomes (Beal, 2010; Duckworth et al., 2007), little has been done to establish an empirical basis of the potential mechanism of this phenomenon. The underlying idea of which, however, is mentioned with increased frequency as an important aspect of personnel selection.

Exploring mental persistence from the focus of Person x Environment fit in a military framework can be defined as the willingness to endure the experience of operational deployment and the readiness to grow as a result of the perceived fit between their perceived personality and perceived operational environment. A

person, who perceives his environment as fitting is willing to endure, adapts to the situational demands and feels motivated. On the contrary, a person, who perceives the environment as not fitting with his needs, is not motivated to invest his energy to grow through situational demands. From that perspective the research question for further studies could be formulated as: *what is the mechanism of mental persistence in a particular task environment and is there something that could be done about it?* Particularly, based on the results presented in the current article one could ask: *what is the role of personality as a contributing factor to the mental persistence in a particular task environment*?

Integrating our results into one meaningful whole for further studies, a Mental Persistence Model is proposed in Figure 5.

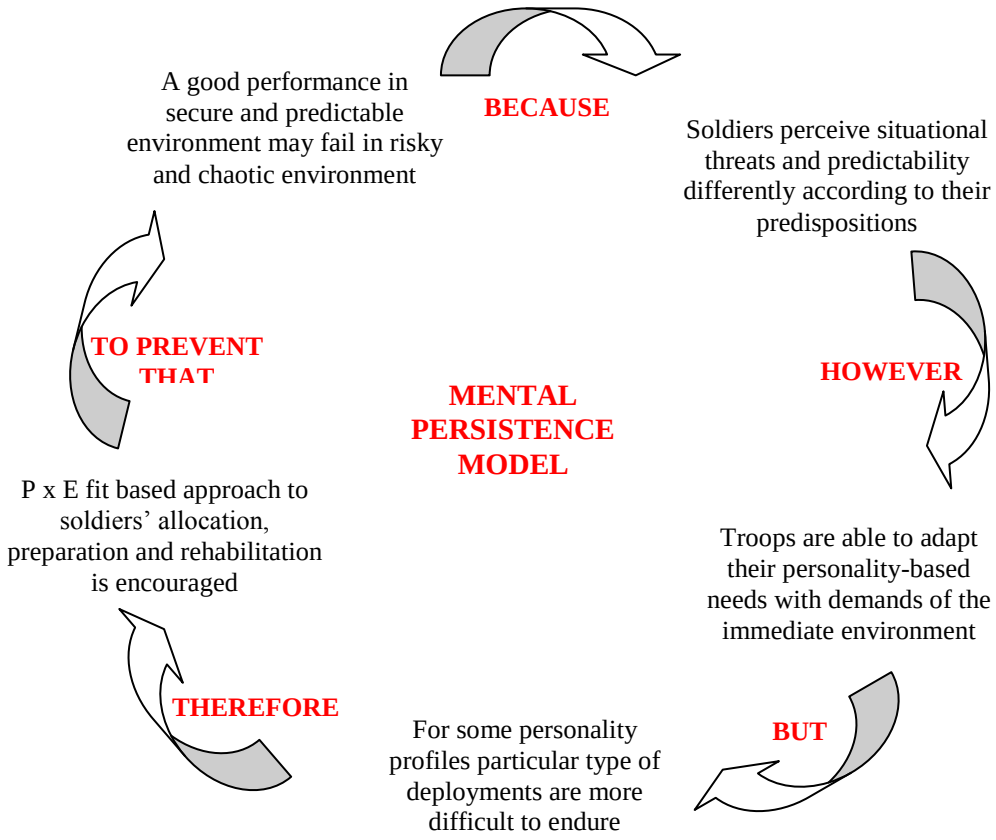

Figure 5: Mental Persistence Model (proposed)

The Mental Persistence Model, if further explored, could provide a solid theoretical framework to the incremental observations through military history that "*The military is composed of two fundamentally different types of individuals, each with unique advantages and weaknesses",* as formulated strikingly by Major Michael Russell (2000).

3.5 To Conclude

A performance can be superior only, if the performing individual is in a good working condition as well as able and willing to perform at best the requested action. The argument does not apply to military and

paramilitary institutions only, but also to civil enterprises and governmental bodies. In short, it applies to all establishments where the human element as a performer is involved. However, in this dissertation we have been focusing on the military environment in general and the operational one in particular; as a consequence, our results are discussed more in terms of military implications.

Unexpected reactions of the performing human element have a great potential to jeopardise any military operation. Ignoring risks caused by the service member behaving in an unpredictable way can undermine severely any operational success. In the military, it is common to presume that soldiers give always the best of themselves – following their training and field manuals. However, a human agent does not operate autonomously but within an interactional causal structure (Bandura, 1989) and all elements present in his environment have the potential to interfere with the process at any time but especially in the times of stress (Hancock & Szalma, 2008). Understanding the interaction between situational demands and personality-based aspects is necessary in order to prevent dangerously oversimplified predictions. Taking everything together, the main message of the dissertation in practical terms is that we need to give up to built our expectations about human performance only in technical terms using a "stimulus – (trained) reaction" line of thinking; i.e. relying merely on a behaviouristic approach. Our results presented in this dissertation encourage taking into account the interactional nature of relations between a person and his environment in predicting any human outcome.

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