Stability of risk and time preferences after a military mission in Afghanistan

Olivier Chanel[1], Stéphanie Vincent Lyk-Jensen[2], Jean-Christophe Vergnaud[3]

PRELIMINARY VERSION PLEASE DO NOT QUOTE OR CIRCULATE WITHOUT PERMISSION

June 2014

Abstract:
This paper investigates the stability of time and risk preferences by exploiting a natural experiment. We use pre- and post-deployment surveys conducted for the Danish soldiers deployed to Afghanistan in the spring 2011 and exploit the fact that in modern wars, and especially in Afghanistan, combat exposure in the form of ambush, improvised explosive devices, or an exchange of shots is as good as randomly distributed within and between combat units. We test both the effect of deployment and combat on these preferences and personality traits. In general time and risk preferences show a high correlation before and after, and soldiers appear to be relieved after the mission, becoming less neurotic. We also find that combat has an impact on risk preferences making soldiers more risk lover. Furthermore, first-timers appear to be more risk averse in general and become more patient after the mission.

JEL Classification: D01; D03, C99.
Keywords: Risk and time preferences; Stability of Preferences

[1] CNRS-GREQAM-AMSE, Marseille, SFI Research Fellow
[2] SFI, Copenhagen.
[3] CNRS-CES, Université Paris 1

I Introduction

Preferences, cognitive ability, personality traits, and emotions are usually fundamental determinants of decision-making in economic models (e.g., Barsky et al. 1997; Anderson & Mellor 2008; Dohmen et al. 2010; Heckman et al. 2006; Borghans et al. 2008; Loewenstein and Lerner, 2003). Preferences in economic analysis usually refer to the set of assumptions related to ordering alternatives based on, e.g., the expected level of utility they provide. Standard economic theory typically assumes that both time and risk preference parameters are constant and exogenous traits. Therefore, in the domain of choice under uncertainty, finding whether individual preferences are stable over time or affected by external factors is a puzzling challenge from a theoretical perspective and a crucial issue for practitioners, e.g. when public policies aim to change behavior through changes in individual risk perception.

An important literature has studied whether preferences (in a broad sense covering time, risk and social preferences) vary within individual, when the elicitation format or the game changes (Reynaud and Couture, 2012; Anderson and Mellor, 2009), when incentives change (Camerer and Hogarth 1999), or when time evolves (Kimball et al., 2008; Krupka and Stephens, 2013, Andersen et al., 2008). The concept of temporal stability differs from that of temporal consistency (Horowitz 1992): the former means that an individual exhibits the same risk attitudes over time or that his/her risk attitudes are a stable function of time-varying states of nature and opportunities.

Moreover, some recent papers have investigated how preferences may be impacted by extreme events. This area of study covers large economic shocks (Brunnermeier and Nagel, 2008; Krupka and Stephens, 2013), natural disasters (Eckel, et al., 2009) and combat exposure (Voors et al., 2012; Callen et al., 2013; Moya, 2011; and Cassar et al., 2011). In a recent and very detailed review on extreme events, Chuang and Schechter (2014) found mixed results with either increase (Cameron and Shah, 2013, Cassar et al., 2011; and van den Berg et al., 2009) or decrease risk aversion (Bchir and Willinger, 2013; Eckel et al., 2009; Page et al., 2012; and Willinger et al., 2013) and either increase impatience (Bchir and Willinger, 2013, and Cassar et al., 2011) or increase patience (Callen, 2011).

Regarding wars and combat exposure, the results are also mixed showing a decrease in risk aversion

(Voors et al., 2012) or an increase risk aversion (Callen et al., 2013; Moya, 2011); lower trust (Cassar et al., 2011) or an increase initial trustworthiness but lower subsequent trustworthiness (Becchetti et al., 2013); increase altruism (Voors et al., 2012); and increase egalitarianism (Bauer et al., 2011).

This paper investigates the stability of time and risk preferences by exploiting a natural experiment. To test the temporal stability of time and risk preferences, we use a survey conducted for the Danish soldiers deployed to Afghanistan in the spring 2011. We can test the temporal stability by comparing the soldiers' answers before and after the mission and investigate whether exposure to combat (or to other possibly traumatic events during the mission) affects these preferences.

Although soldiers, like students, are not necessarily representative of the general population — so that the results may not be generalizable — soldiers nonetheless constitute a valuable group for studying changes in preferences: The stakes for soldiers (particularly in combat) are much higher than for participants in laboratory experiments. Moreover, an increasing number of soldiers decide to participate in external operations before returning to civil life — not only in Denmark but also in many other countries — so that the impact of the military may change the characteristics and preferences of its recruits, and also explain differences in veterans' and non-veterans' later achievements. These changes may further explain changes in future behaviors that substantially impact both individuals and the society at large.

In modern wars, and especially in Afghanistan, combat exposure in the form of ambush, improvised explosive devices, or an exchange of shots is as good as randomly distributed within and between units. Moreover, soldiers are not on duty every day, and both daily missions and leave schedules are rotated among the troops. We will assess this randomness of combat exposure thanks to information about the companies, platoons, and units - so that we can control for fixed effects at the group level - and measures of the degree of exposure to combat both with validated questions and Danish Defense records. Therefore, this paper relies on unique data measuring time and risk preferences for the same individual at two points (before and after a randomly distributed traumatic event), as well as detailed background information.

In general, we find high correlations between time and risk variables, before, after, as well as their differences before and after the mission. On average, after the mission, we find a decrease in risk aversion and neuroticism. These decreases certainly translate the feeling of relief among soldiers after their mission. Likely, the mission did not seem to generate a high degree of trauma among them. Furthermore, first-timers appear to be more risk averse in general and become more patient after the mission.

Our two contributions to the literature are as follows: First, we extend previous studies by investigating the stability of preferences having two measurements before and after an event, making use of very high quality data. Second, this data allows clearer identification of the effect of event on time and risk preferences, as we exploit a random assignment.
The paper is structured as follows. Section 2 discusses previous results from the literature and outlines our framework for testing the impact of combat exposure on time and risk preferences. Section 3 presents the data. Section 4 presents the results. Section 5 concludes.

II Review of the literature

As previously mentioned, some recent papers have investigated how extreme events (e.g., natural disasters or wars) impact preferences. As noted by Chuang and Schechter (2014) in their survey, these papers find divergent results with either increase or decrease risk aversion and either increase impatience or increase patience. Table 1 reports some references that illustrate this conflict in findings.

Table 1 Illustration of conflicting findings on preferences impacted by extreme events

	Risk preference	**Intertemporal preference**
Natural disasters	*Increase risk aversion:* Cameron and Shah, 2013, Cassar et al., 2011; van den Berg et al., 2009 *Decrease risk aversion:* Bchir and Willinger, 2013; Eckel et al., 2009; Page et al 2012, Willinger et al., 2013	*Increase patience:* Callen, 2011 *Increase impatience:* Bchir and Willinger, 2013, Cassar et al., 2011 *No marked change:* Willinger et al., 2013
Wars	*Increase risk aversion:* Callen et al., 2014; Kim and Li, 2013, Moya, 2011 *Decrease risk aversion:* Voors et al., 2012	*Increase impatience:* Voors et al., 2012

In these contexts of extreme events, experienced emotions play probably an important role in the change as well as the direction of the change in preferences. It is now well documented that moods and emotions felt when making choice under risk modify risk aversion (Caplin & Leahy, 2001). Furthermore, the impact depends on the nature of emotions: positive or negative (valence) and calm or excited (arousal). Negative emotions or moods (e.g., anxiety, fear, sadness, etc.) improve prevention-focused attitudes with an increase of risk aversion (Kliger and Levy, 2003; and see Hartley and Phelps, 2012 for a survey on the role of anxiety). On the contrary anger induces more optimistic risk perception with some effects similar to those of happiness (Lerner and Keltner, 2001).

This contrast between the effects of emotions may provide an explanation to the diverging results observed in the literature examining the effect of extreme events. Indeed, different dominating effects can be present when preferences are measured. Callen et al. (2014) observed that individuals that were exposed to violence, when asked to recall fear, exhibit an increased risk aversion. In Eckel et al. (2009), a decreased risk aversion was observed among evacuees two weeks after the Hurricane Katrina and the authors attribute this effect to some positive-emotion variables that were high at this moment. However, 10 months after the Hurricane Katrina a moderate increase risk aversion was also observed and attributed to negative-emotion that ends by dominating in the long-term.

Preferences changes may be driven by emotions that are induced by some extreme events, but conversely, emotional reaction to extreme events also depends on individual psychological characteristics. These characteristics may include preferences themselves. For instance, people vulnerable to stress may have a higher risk of post-traumatic stress disorder (PTSD) (Paris, 2000). The personality traits of neuroticism and conscientiousness are known to be strongly correlated with anxiety and depression but in an opposite direction, respectively positive and negative (Kotov et al., 2010).

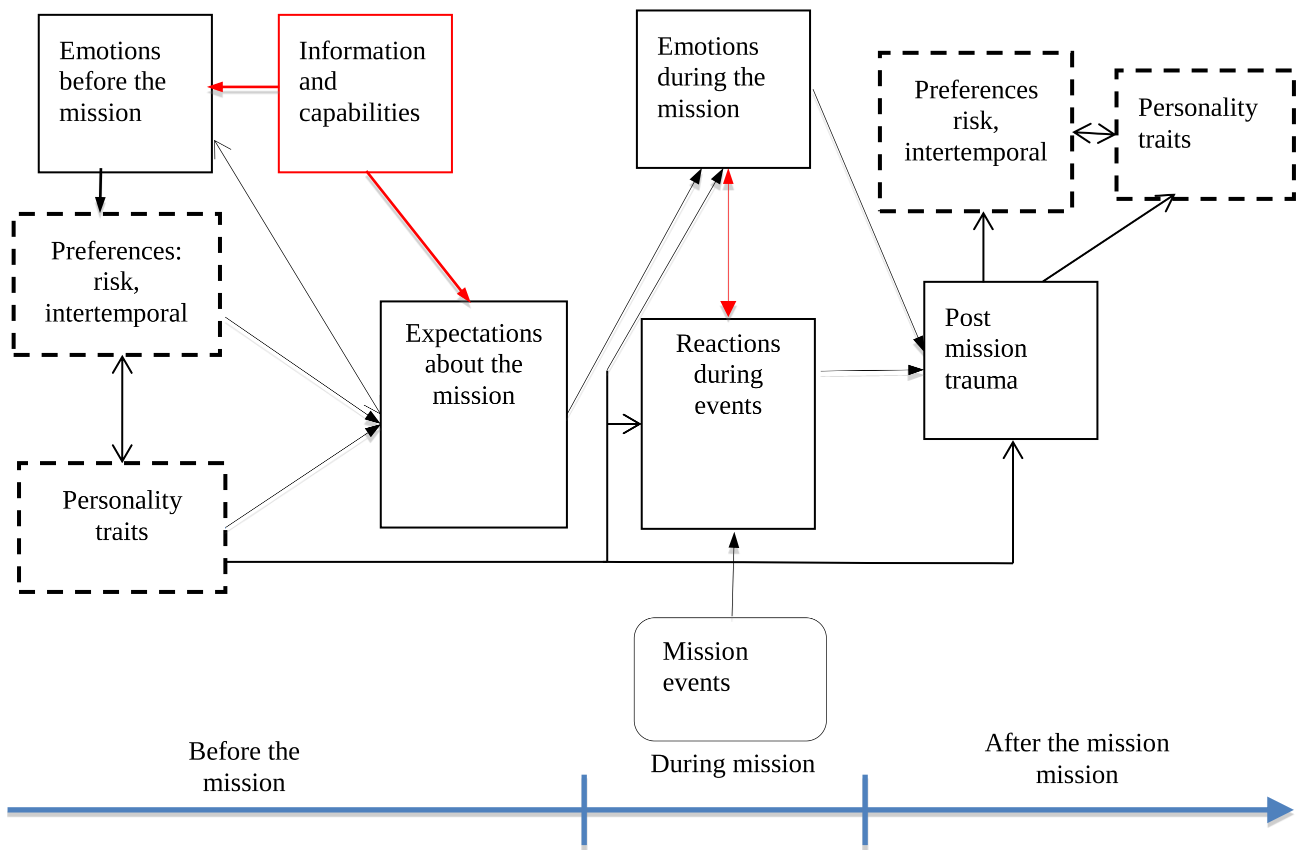
Thus, to better understand whether and how preferences change, we should not just take emotions as an exogenous variable induced by an external traumatic event but we should also take into account that emotions are related to individual psychological characteristics. Note that the well-documented correlations between preferences and personality traits (Almlund et al., 2011; Becker et al., 2012; Borghans et al., 2008; Heckman, 2011) suggest that overall preferences, personality traits and emotions are complexly interrelated. These interrelations are not well understood but some works in neuroscience suggest some directions on how to model them.

Emotions can be interpreted as a signal that guides future behavior: In situation where people have to learn an optimal strategy under risk (for instance in experimental paradigm such as the Iowa Gambling Task), emotions play a central role (Bechara et al., 2000). The dynamic in repeated choice under risk seems to follow a reinforcement process (Coricelli et al., 2005): A subject chooses according to an optimizing process (for instance, maximizing expected utility), then according to the consequence s/he obtains, s/he gets an "experienced" utility (that incorporates emotions: regret, relief, satisfaction, etc.), that makes him/her revising his/her *ex ante* utility function according to the distance between the expected and the "experienced" utilities (Schultz et al. 1997). On the contrary, the behaviors of patients who suffer from brain damages demonstrate dramatically the central role of emotion in decision-making under risk. For instance, while the amygdala plays a prominent role in affective processing (e.g., fear), amygdala damage eliminates monetary loss aversion (De Martino et al., 2010). Bechara et al. (2000) also observed that some injured patients are unable to learn the optimal strategy in the Iowa Gambling Task.

In our study, the soldiers had to prepare themselves for a military mission and thus, contrary to natural disaster situations where the event comes almost as a surprise, this psychological preparation phase may make a difference in the long term consequences of experienced acts of war. Similarly, we cannot interpret the preferences and personality traits elicited before the mission as reflecting an ex ante steady state, as would be the case with unpredictable natural disasters. Rather, they should be considered as already incorporating some features / effects due to the expectations about the mission.

Figure 1 presents the potential links between preferences, personality traits, emotions (before the mission, during the mission and after the mission), anticipations and experience.

Figure 1 Comprehensive representation of the decision process with emotions for soldiers participating in a mission



First, we expect that the pre-mission phase is a stressful period with negative emotions (anxiety, fear, etc.) that may impact the preferences measured at this stage. To estimate this emotional state, we may take anticipations of the future emotions as a proxy. However, since we expect that these anticipations also depend on risk and time preferences and personality traits, we face an identification problem that leads us to only scrutinize correlations between these three types of variables.

Then, the reactions the soldiers have during the mission and the emotions they feel could depend on the severity of the events they face but also on their individual characteristics and expectations (for instance over-optimistic expectations with respect to the experienced reaction may lead to negative emotions and long-term stress disorder). It is also likely that the emotions felt during the mission affect their reactions during the mission.

Finally, we conjecture that changes in preferences and personality traits can be the result of the long-lasting effect of combat and trauma exposure through the emotional channel.

III Data

The data consists of two surveys combined with records from the Danish Defense. The respondents are Danish soldiers deployed to Afghanistan[4] in spring 2011. The soldiers filled out a questionnaire (pencil survey) both at the pre-deployment mission preparation (January 2011) and at the post-deployment debriefing mission (August 2011), with 484 completing the questionnaire before deployment and 371 completing both questionnaires. The average pre-and post-answer rate is almost 95 percent.[5] The choice of method for data collection explains the high response rate.[6]

A Data collection

SFI-survey was responsible for the data collection through interviews/visits (drop off) at the different forts. Data were collected in January 2011 at fort Oksbøl. SFI Surveys interviewers delivered the questionnaires to the different group-leaders present at the mission preparation in Oksbøl (the 4 January 2011) and collected the answers ten days later (14 January 2011). The questionnaire after mission was scheduled between 17 and 25 August 2011 in different military forts: Fredericia, Holstebro, Vordingborg, Slagelse, Varde / Oksbøl, Skive and Aalborg. The questionnaires were delivered directly to the soldiers and collected immediately after completion. It took on average 25 minutes to answer the questionnaire.

[4] Danish hold 11 of the NATO International Security Assistance Force (ISAF).

[5] Actually it is 99% for after and approximately 82-86% before—but for the before rate we do not know how many soldiers were present in Oksbøl and we probably underestimate the answer-rate (see table A.1 in the Appendix). Soldiers were not allowed to communicate with each other.

[6] For Danish soldiers, the average length of a mission is six months. However, soldiers are not necessarily deployed for the same period and some could be absent at either mission preparation or debriefing, or both—e.g., while most soldiers are deployed for 6 months, mechanics return after only 4 months. Furthermore, some soldiers returned earlier for medical or personal reasons, and one was killed in action. Most soldiers had returned to Denmark less than one month before responding.

Our sample

Analyses are based on responses from the 371 soldiers deployed to Afghanistan who answered both before and after deployment and provided a valid employees number.[7] By restricting the sample to soldiers who answered questions both before and after deployment, we ensure that potential differences do not result from differences in populations.

Variables in the analysis

Socio-demographics

Respondents reported socio-demographic characteristics (gender, age, marital status, having children, education, and house ownership), and we obtain their average monthly earnings (before tax) during the mission from military records.

Table 2 Socio-demographic characteristics of the sample (all pre-deployment)

Variables	Obs	Mean	St. Dev.
Male (share)	371	0.957	0.203
Age (years)	371	28.663	7.472
In a Relationship (share)	371	0.598	0.491
Has a child (share)	371	0.205	0.404
Has a child younger than 18 years (share)	362	0.191	0.393
Has a child older than 18 (share)	362	0.036	0.186
Basic education (share)	371	0.283	0.451
Youth education (share)	371	0.350	0.478
Vocational education (share)	371	0.229	0.421
Further education (share)	371	0.127	0.333
Parents divorced (share)	371	0.380	0.486
House-owner (share)	371	0.342	0.475
Earnings (EUROS)	371	6,840	1,975

Military

Information about groups, platoons, companies, and battle damage assessments—in form of number of killed, wounded and returnees—are available, and is linked to the surveys via the personnel number of the respondents. We also have some military background characteristics, such as how

[7] However, it does not necessarily mean that these soldiers answered all the questions.

long respondents have been employed in the Army and whether other members of the family have been deployed previously.

Furthermore, the data to which we have access, allows us to distinguish not only between the soldiers' level of experience (first-timers or previously deployed) but also to distinguish the different type of exposure expected (before the mission) and realized (after the mission). In the survey, combat exposure is measured with the Deployment Risk and Resilience Inventory (King et al. 2006). We used combat and post-battle experiences and construct sub-variables that identify the gravity of the exposure, the implication in bloody events and the degree of personal implication in combat. Survey responses to these combat experience items are also scored and summed so that higher score reflects a higher exposure. We assessed these items for the current mission (*SEVERETOT_event*) and all previous missions if any (*SEVERETOT*).

Table 3 Military variables

Variables	Obs	Mean	St. Dev.
Less than 6 years in the armed forces (share)	359	0.646	0.478
Between 6 and 10 years in the armed forces (share)	359	0.181	0.385
More than 10 years in the armed forces (share)	359	0.173	0.378
Having previously deployed family members (share)	371	0.272	0.446
Exposed to combat during this mission (share)	305	0.374	0.486
Previously deployed (share)	369	0.675	0.469
Sub-units with returnees or wounded during the mission (share)	371	0.291	0.455
Returnees ever (share)	371	0.035	0.184
Returnees before this mission (share)	371	0.013	0.115
Returnees for this mission (share)	371	0.022	0.145
Returnees or wounded in this mission (share)	371	0.038	0.191

Survey data pre- and post-deployment also encompass risk behavioral variables: hypothetical behaviors (willingness to pay for risky assets and trade-offs between payments available immediately or in 1 year), self-reported attitudes towards risk, actual behaviors (e.g., alcohol and drug consumption, and the practice of a risky sport).

Risk preferences

Risk attitude questions and gains and losses questions are inspired from previous studies. We have asked soldiers whether they perceived themselves as someone who prefers to avoid risks, or is willing to take risks to achieve something in life (Arrondel et al., 2004). The answer range from 1: "I'd rather avoid risks" to 10 "I do not mind taking risks" (*RISKPER)*. We have also asked the soldiers whether they think to be more exposed or less exposed to different type of risks in their daily life in Denmark and compared to the Danish population (Chanel et al., 2001). These risks are: traffic accidents, physical aggressions, diseases, unemployment and natural disasters. The answers could range from 1 "Much less likely exposed" to 10 " much more likely exposed" *(RISKPOP)*. The variable *RISKPOPEV* is a sub-variable only considering the risk for physical aggression. These three variables are referred as risk attitudinal variables, whereas the three next variables constitute the risk and time preference variables.

As in Grable & Lytton (1999), we use a gains–and-losses question to measure soldiers' taste for gains and losses in lotteries (*LOSSLOVER*), where they should decide between four different investments with different size for gains and losses (see question 25 in the Appendix). The answers to the question were coded on scale from 1 to 4, with 1 meaning high loss aversion and 4 low loss aversion.

We also categorize the soldiers in four groups showing their willingness to pay for a ticket in a lottery where the prize is 20,000 DKK (2,667 EUR) and the chance of winning is 1/10 (*RISKLOVER*). Depending on their ticket price, we classify the respondents into four categories, where 1 means high risk aversion and 4 low risk aversion (see question 21 in the Appendix).

Time preferences

To measure time preferences we use an intertemporal choice question very similar to the questions used in Fuchs (1982), Barsky et al. (1997), and Dohmen et al. (2010): TIMEPREF, where 1 means low preference for the present (patience) and 7 is high preference for the present (high impatience). We use different implicit discount rate to see when the respondents prefer to get the fixed amount now or a larger amount one year later (see question 26 in the Appendix; the question is translated from Danish to English).

Table 4 Time and risk preferences

Variables	Obs	Mean	St. Dev.
Subjective probability for combat involvement	307	74.586	34.413
LOSSLOVER (1-4: high-low loss aversion)	348	1.994	1.001
LOSSLOVER_after (1-4: high-low loss aversion)	343	2.020	.987
TIMEPREF (1-7: patient-impatient)	355	3.175	2.227
TIMEPREF_after (1-7: patient-impatient)	350	3.14	2.144
RISKLOVER (1-4: high-low risk aversion)	360	2.975	1.016
RISKLOVER_after (1-4: high-low risk aversion)	353	2.878	.996
RISKPOP (1-25: less-more exposed)	334	11.955	3.356
RISKPOP_after (1-25: less-more exposed)	333	13.534	2.113
RISKPOPEV (1-5 : less-more exposed)	365	2.353	1.013
RISKPOPEV_after (1-5: less-more exposed)	337	2.754	.765
RISKPER (1-10: feel less-more risk lover)	366	7.077	1.957
RISKPER_after (1-10: feel less-more risk lover)	366	6.934	1.925

Everyday risk-taking behaviour

Questions about alcohol, smoking and drug consumption are selected questions from Babor et al. (2001) and the World Health Organization (2000). To identify the group with an at-risk consumption of alcohol, we use the WHO’s thresholds (i.e., more than 7 drinks per week for women and 14 drinks per week for men). We also ask soldiers whether they practice risky sports (like bungee jumping, paragliding, skydiving, rafting, gliding, diving, etc.) more than once a year year.

Table 5 Alcohol, smoking and drug

Variables	Obs	Mean	St. Dev.
At-risk for alcohol consumption (share)	365	.139726	.3471785
At-risk for alcohol consumption_during[8] (share)	366	.0136612	.1162389
Smoker (share)	367	.4141689	.4932504
Smoker_after (share)	368	.4103261	.4925626
Hashish consumption (share)	363	.046832	.2115704
Hashish consumption_after (share)	344	.0639535	.2450265
Consumption of other drugs (share)	359	.0250696	.1565549
Consumption of other drugs_after (share)	348	.0517241	.2217884
Any drugs consumption (share)	361	.0498615	.2179608
Any drugs consumption_after (share)	343	.0874636	.2829259
Practice of a risky sport more than once a year (share)	357	.3277311	.470045

Personality traits & PTSD

We also have pre-and post-measurements for personality traits from the Big Five Inventory (see John et al., 1991; and John et al., 2008): Whether they are overly worried (*Neuroticism*) or conscientious (*Conscientiousness*). The literature generally considers that Neuroticism is strongly positively correlated with anxiety and depression, and negatively correlated with risk taking behaviour and the ability to cope with stressful. Conscientiousness is the tendency to plan and think carefully before acting, to be self-disciplined, punctual, reliable and competent. Low score for CONSC are usually associated with risk taking. We also have question indicating the degree of control on life events (Rotter, 1966). We measure Post-Traumatic Stress Disorder (PTSD) after the mission with the PTSD Checklist PCL-M military population (Weathers et al. 1993 and Weather & Ford 1996). The cut-off score in the military context is 50.

Table 6 Personality traits and PTSD

Variables	Obs.	Mean	St. Dev.
Feel lucky (1-10)	363	5.785124	1.533457
Feel lucky_after (1-10)	364	5.653846	1.3178
Feel happy (1-10)	365	7.578082	1.590688
Feel happy_after (1-10)	365	7.520548	1.762784
Neuroticism (1-5)	360	2.28125	.5336639

[8] This 1 to 10 difference with the figure before the mission is certainly explained by the fact questions are related to alcohol consumption during the 30 days preceding the survey. Before mission, we can assume that the soldiers were more likely to "enjoy their civil life." During the mission, access to alcoholic beverages is restricted and the Danish Defense has a no-alcohol policy.

Neuroticism_after (1-5)	361	2.235457	.5708148
Conscientiousness (1-5)	360	3.837963	.3757394
Conscientiousness)_after (1-5)	363	3.63667	.2910308
Control (0-4)	362	3.121547	.9911687
Control_after (0-4)	353	3.062323	.969168
PTSD score (0-85)	352	26.44602	9.106676
PTSD score >50 (% with PTSD syndrome)	352	.0340909	.181721
PTSD score >17 (% with score larger than minimum)	352	.8693182	.3375318
PTSD score is attributed to other events than missions (%)	361	.2382271	.42659

B Methodology and the natural experiment

The deployment of soldiers in Afghanistan from February-August 2011 allows us to investigate the impact of combat and deployment on time and risk preferences. About one-third of these soldiers had never been previously deployed. Moreover, one can safely assume that after six months of deployment most of the soldiers will not remember their previous answers to the same questions (questions about time and risk preferences are identical in the two surveys). Although one might argue that some soldiers might not participate in the second survey due to changing their preferences or having experienced combat, the rate of response between “pre” and “post” is high: 371 of 484 answered both surveys including 75% of the wounded. Moreover, information on individual characteristics from the “pre” survey and records on combat exposure can control for possible sample selection in the “post” survey.

Previous approaches reveal only preferences (e.g., Wolf & Pohlman 1983), elicit them through laboratory experiments (e.g., Holt & Laury 2002), introduce hypothetical questions into a representative survey (e.g., Barsky et al. 1997), or use between-subject design (in field experiments) that cannot correct for selection issues (Voors et al. 2012 and Callen et al. 2012). The present method can both elicit preferences and investigate the causal chain by observing preferences pre- and post-combat exposure. This method investigates the stability of preferences using a within-subject design, where preferences are elicited for the same person before and after deployment. Combat constitutes a substantial change that may affect the individual’s preferences, and combat exposure is random, allowing us to investigate the effect of combat exposure on preferences.

The soldiers who participated in both surveys all belong to combat units; they thus have very similar skills and are all at risk for combat exposure. Moreover, according to high-ranking Danish officers, forecasting the probability of the soldiers' being involved in an exchange of shots or a rocket attack is very difficult for those assigning soldiers to daily missions. The random aspect of combat exposure is mainly explained by the unpredictability of the war against the Taliban: Combat exposure in the form of ambush, improvised explosive devices, or an exchange of shots is as good as randomly distributed within and between units. Moreover, soldiers are not on duty every day, and both daily missions and leave schedules are rotated among the troops. All these factors make combat exposure essentially random. This random distribution of traumatic events makes the research design particularly valuable. Moreover, information about the companies, platoons, and units is available so that we can control for fixed effects at the group level.

Thus the project both analyzes how a priori randomly distributed events may affect individual preferences and focuses on within-subject changes controlling for combat exposure both within and between units.

IV Results

A. Raw results on correlations between behavioral risk variables and direction of changes

Correlation tests among the risk and time behavioral variables and personality traits variables

We start by computing a set of pairwise correlations to look for significant correlations among variables. Note that a significant correlation does not necessarily represent a causal relationship between two variables *X* and *Y* since the link may be due to another variable *Z* itself correlated to these two variables. Regressions will help to explore this point in the next section.

We compute the correlation coefficient r between two variables *X* and *Y* as follows:

$$\mathrm{r(X,Y)} = n^{-1}[(\mathrm{X}_i - \mathrm{E(X)})'(\mathrm{Y}_i - \mathrm{E(Y)})]/[\ \mathrm{ET(X)ET(Y)}] = \mathrm{Cov(X,Y)/SD(X)SD(Y)}$$

where n stands for the number of observations, *i* indexes soldiers, *E(.)* stands for expectancy, *SD(.)* for standard deviation, and *cov(.)* for covariance.

The nullity test of a correlation coefficient *r* is test as follows.

H0: no correlation (*r=0*).

Ha: the correlation differs from zero ($r \neq 0$).

We compute the following statistic, which follows a Student distribution with (*n-2*) degrees of freedom under H0: $t = r(1-r^2)^{-0.5}(n-2)^{-0.5}$. Rejection of H0 will be based on the p-values.

We compute pre- and post deployment correlations between the six variables related to risk behavior and time and risk preferences and the three psychological traits variables (neuroticism, conscientiousness and control). Table 7 shows the results for pre-deployment correlations[9]. We find one positive significant correlation among the risk attitudinal questions, (0.7434, p-value<0.0001, between *RISKPOP* and *RISKPOPEV*), and one among the risk preference variables (0.2104, p-value<0.0001 between *RISKLOVER* and *LOSSLOVER*). Such positive and significant correlations were expected and indicate the relevance of the risk measures. Across all risk and time behavioral variables, we find significant positive correlations between RISKPER and the three preference variables: *LOSSLOVER* (0.2545, p-value<0.0001), *TIMEPREF* (0.1008, p-value=0.0591) and *RISKLOVER* (0.0911, p-value=0.0861), as well as between *RISKPOPEV* and *RISKLOVER* (0.0902, p-value=0.0887).

The positive correlations between *RISKPER*, *LOSSLOVER* and *RISKLOVER* were expected since the value of the three variables increase with risk-loving behavior. The positive correlations between *TIMEPREF* and *RISKPER* (e.g. positive correlation between risk aversion and impatience) were also expected (e.g. Dohmen et al. 2010). The significant correlations between *Neuroticism* and some risk preference variables (*RISKPOP* and *RISKPER*) were also expected with signs in the correct direction. Surprisingly, we find no correlations between *Conscientiousness* and *Control* with any preference variables while we expected at least a correlation with *TIMEPREF*.

[9] We do not report the correlations between the psychological traits variables. We observe the classical significant negative correlations between Neuroticism in the one hand and Conscientiousness and Control in the other hand as well as the significant positive correlation between Conscientiousness and Control.

Table 7 Pre-deployment pairwise correlations among the risk and time behavioral variables

	LOSSLOVER	TIMEPREF	RISKLOVER	RISKPOP	RISKPOPEV	RISKPER
TIMEPREF	0.0827 (0.1273) *341*					
RISKLOVER	**0.2104***** (<0.0001) *343*	0.0774 (0.1495) *348*				
RISKPOP	-0.0509 (0.3661) *318*	-0.0718 (0.1964) *325*	0.0316 (0.5699) *326*			
RISKPOPEV	0.0380 (0.4807) *346*	0.0088 (0.8695) *354*	**0.0902*** (0.0887) *357*	**0.7434***** (<0.0001) *334*		
RISKPER	**0.2545***** (<0.0001) *344*	**0.1008*** (0.0591) *351*	**0.0911*** (0.0861) *356*	0.0884 (0.1090) *330*	0.0354 (0.5031) *361*	
Conscientiousness	0.0224 (0.6808) *340*	-0.0470 (0.3836) *346*	-0.0238 (0.6565) *351*	-0.0600 (0.2800) *326*	-0.0809 (0.1281) *355*	0.0660 (0.2123) *359*
Neuroticism	-0.0408 (0.4551) *338*	0.0829 (0.1245) *345*	0.0873 (0.1028) *350*	**0.1430***** (0.0098) *341*	0.0851 (0.1094) *355*	**-0.1156**** (0.0285) *359*
Control	-0.0265 (0.6267) *339*	-0.0215 (0.6902) *346*	-0.0570 (0.2858) *353*	-0.0812 (0.1433) *326*	-0.0582 (0.2738) *356*	0.0105 (0.8436) *357*

Note: p-values in parentheses, number of observations in italics. *** p<0.01, ** p<0.05, * p<0.10.

We obtain consistent results for the post-deployment correlations. Table 8 shows that the positive significant correlation between *RISKPOP* and *RISKPOPEV* is confirmed (0.7050, p-value<0.0001), as well as between *RISKLOVER* and *LOSSLOVER* (0.2227, p-value<0.0001). In contrast to pre-deployment correlations, we now find a significant correlation between *LOSSLOVER* and *TIMEPREF* (0.1162, p-value<0.033). Across all risk and time behavioral variables, we find the most noticeable changes for *RISKLOVER* —no longer significantly correlated with *RISKPOPEV* and *RISKPERSO*—and *TIMEPREF*—now significantly correlated with *RISKPOPEV* (0.1592, p-value=0.0043). They are more significant correlations between preference variables and personality traits with for instance significant correlations between Conscientiousness and Control with *TIMEPREF*.

Table 8 Post-deployment pairwise correlations among the risk and time behavioral variables

	LOSSLOVER	TIMEPREF	RISKLOVER	RISKPOP	RISKPOPEV	RISKPER
TIMEPREF	**0.1162**** (0.0330) *337*					
RISKLOVER	**0.2227***** (<0.0001) *336*	0.0539 (0.3205 *342*				
RISKPOP	0.0686 (0.2282) *310*	0.0732 (0.1939) *317*	-0.0073 (0.8960) *322*			
RISKPOPEV	0.0809 (0.1533) *313*	**0.1592***** (0.0043) *320*	0.0043 (0.9380) *325*	**0.7050***** (<0.0001) *333*		
RISKPER	**0.2200***** (<0.0001) *339*	**0.1235**** (0.0215) *346*	0.0404 (0.4508) *350*	0.0140 (0.7998) *330*	0.0745 (0.1742) *334*	
Conscientiousness	-0.0174 (0.7504) *338*	**-0.1157**** (0.0319) *344*	0.0596 (0.2680) *347*	-0.0749 (0.1765) *327*	**-0.1024*** (0.0628) *3331*	0.0568 (0.2815) *362*
Neuroticism	-0.0432 (0.4300) *336*	0.0513 (0.3434) *343*	-0.0537 (0.3183) *347*	0.2330*** (<0.0001) *325*	0.2013*** (0.0002) *329*	-0.1425*** (0.0068) *360*
Control	0.0552 (0.3149) *333*	**-0.1070**** (0.0493) *338*	**0.1021*** (0.0599) *340*	**-0.1131**** (0.0439) *318*	**-0.1133**** (0.0425) *321*	-0.0627 (0.2428) *349*

Note: P-values in parentheses, number of observations in italics. *** p<0.01, ** p<0.05, * p<0.10.

Before and after changes in the risk preferences variables

We now investigate changes at the individual level for the six risk and time behavioral variables and the three personality traits variables. We start by computing the correlation coefficient and the associated statistical significance, then we run a linear regression explaining post-deployment variable by some covariates (income, gender, age, 4 classes for education level, and 8 classes for the units the soldier belongs to (see table A.2 in the Appendix), and pre-deployment variables, and report the coefficient associated with the latter.

To explore the impact of risk exposure during the deployment on the before-after variation, we use two types of tests.

First, we compute standard mean equality paired tests by computing, for each soldier, the difference $diff_i$ between the risk behavior variables after and before deployment, and calculating the following statistic:

$$T = n^{0.5}E(diff_i)/SD(diff_i),$$

where $E(diff_i)$ stands for the expectation of $diff_i$, $SD(diff_i)$ their standard deviation and n the number of observations. This T statistic follows a Student distribution with $(n\text{-}1)$ degrees of freedom under the null assumption of no difference (H0: $E(diff)=0$).

Second, because such tests are sensitive to distributional assumptions (normality, independence and continuity), we also computed non-parametric and distribution-free tests for the continuous variables: equality of median (Snedecor and Cochran, 1989), Wilcoxon rank test (Wilcoxon, 1945) and the Kolmogorov Smirnov (KS) test of equality of distribution (Chakravarti, Laha, and Roy, 1967).

In table 9, the corresponding p-value for each test gives the level of significance and indicates whether the correlation is different from zero or not (for the equality tests). The sign of the difference determines the direction of the inequality (higher or lower than before deployment). The correlation and regression parameters of the risk and time behavioral variables and the personality traits variables before and after the deployment are all positive and significantly different from zero, which indicates some consistency between pre- and post-questionnaire answers over the 7 months period. They are in the range of those found in the literature: 0.35 for time preferences (vs. 0.4 in Meier and Sprenger, 2010) and around 0.46 for risk preferences (vs. 0.13-0.55 for 7 studies with sample size larger than 100, cited in Chuang et Schechter, 2014).

We now investigate changes at the aggregate level (whole sample), while we will use a regression analysis to investigate changes at the individual level. In general, the equality tests yield similar conclusions, except in two cases where KS tests lead to different (but not opposite) conclusions. First, the four equality tests all conclude to non-significant changes for the *LOSSLOVER* and the *TIMEPREF* variables on average, which exhibit a remarkable stability. However, for *RISKLOVER* we observe a significant increase in mean, median, and matched-pairs signed-ranks tests (but not significant difference in distribution according to KS test).

Regarding the risk attitudinal variables, the four equality tests all conclude to a very significant increase for *RISKPOP* and *RISKPOPEV*, but to a less significant decrease for *RISKPER* (but not significant difference in distribution). For *Conscientiousness* and *Neuroticism*, we also observe a significant decrease in mean, median, and matched-pairs signed-ranks tests (and also difference in distribution according to KS test for *Conscientiousness*).

Overall, soldiers significantly seem to feel more risk lover, more exposed to different type of risks in their daily life (in particular to physical aggressions) compared to the Danish population, and less worried and conscientious after deployment than before.

Table 9 Changes in the 6 risk and time behavioral variables before and after mission

	Correlation		Equality tests of …			
	Pairwise Correlation	Regression coefficient[a]	Mean (paired data)	Median	Matched pairs (Wilcoxon)	Distribution KS test
LOSSLOVER	0.4596***	0.4678***	Non Reject.	Non Reject.	Non Reject.	Non Reject.
n=331	(<0.0001)	(<0.0001)	(0.8734)	(0.7527)	(0.7245)	(0.996)
TIMEPREF	0.3628***	0.3418***	Non Reject.	Non Reject.	Non Reject.	Non Reject.
n=339	(<0.0001)	(<0.0001)	(0.8249)	(0.999)	(0.9921)	(0.619)
RISKLOVER	0.4748***	0.4597***	Higher*	Higher**	Higher**	Non Reject.
n=346	(<0.0001)	(<0.0001)	(0.0524)	(0.0274)	(0.0473)	(0.389)
RISKPOP	0.3566***	0.2216***	Higher***	Higher***	Higher***	Higher***
n=302	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
RISKPOPEV	0.3191***	0.2451***	Higher***	Higher***	Higher***	Higher***
n=331	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
RISKPER	0.5007***	0.4751***	Lower*	Lower**	Lower*	Non Reject.
n=262	(<0.0001)	(<0.0001)	(0.0833)	(0.0212)	(0.0589)	(0.243)
Conscien.	0.5039***	0.3833***	Lower***	Lower***	Lower***	Lower***
n=355	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
Neuro.	0.6737***	0.7366***	Lower**	Lower***	Lower**	Non Reject.
n= 351	(<0.0001)	(<0.0001)	(0.0169)	(0.0085)	(0.0130)	(0.454)
Control	0.4012***	0.3412***	Non Reject.	Non Reject.	Non Reject.	Non Reject.
n= 347	(<0.0001)	(<0.0001)	(0.5473)	(0.8247)	(0.3759)	(0.955)

Note. In each cell, the result of the test is given along with p-values in parentheses (bi-lateral for correlation and equality tests when equality is not rejected, unilateral otherwise). KS for Kolmogorov-Smirnov. Non Reject. For non-rejection of equality test. *** p<0.01, ** p<0.05, * p<0.10.[a] Controls in regressions include earnings, gender (dummy), age, age^2, education (4 classes), and the unit the soldier belongs to (8 classes).

B. Exploring the emotional process

In Figure 1, we proposed a comprehensive model to explain how soldiers' experiences during the mission may impact preferences, but we also hypothesize that their emotional experience may depend on their initial predisposition. In this section we explore step by step the emotional process: expectations, experiences, and post-mission trauma.

Before the mission: impact of the psychological variables on expectations

In the pre-deployment questionnaire, soldiers were asked to report their subjective probability about the likelihood of experiencing a combat during the mission (*PROBSUB*, n = 307, mean = 74.5%, s.d = 34.4), to anticipate their reactions during the combat (*REACTITOT* is a variable that aggregates four types of anticipated reaction on a 10 point scale (how well they expect to follow order and the usual procedure), n = 303, mean = 8.21, s.d = 1.67), to anticipate their emotions during the combat (*EMOTIONTOT* is a variable that aggregates anticipated fear, excitement, anxiety and control on a 10 point scale, n = 305, mean = 3.72, s.d = 1.48). To investigate the links between the preference measures and the personality traits and the three expectations variables, we run a stepwise linear regression explaining expectation variables by some covariates (income, gender, age, 4 classes for education level, 8 classes for the unit the soldier belongs to, and a dummy indicating whether they are first-timers) the six risk and time preference measures and the personality traits.

We find no significant effect between *PROBSUB* and all the preference and personality traits variables. As we do not expect to find links between preference measures and subjective beliefs, this latter finding is not surprising. First-timers report significant higher subjective probabilities.

For *REACTITOT* and *EMOTIONTOT*, we expect to observe some links with preference measures and the personality traits, for instance a negative effect of *Neuroticism* on *REACTITOT* and a positive effect on *EMOTIONTOT*. We find significant effects of *TIMEPREF* (positive, p-value = 0.020), *RISKPER* (positive, p-value < 0.0001), *Neuroticism* (negative, p-value < 0.0001), and Control (positive, p-value = 0.025) on *REACTITOT:*; soldiers expecting to react well are hence more impatient, feel more risk lover, have lower score for neuroticism, and higher score for control . First-timers report significant lower value for *REACTITOT*. We find significant effects of *RISKPER* (negative, p-value = 0.037), *Neuroticism* (positive, p-value < 0.0001), and *Control* (negative, p-value = 0.008) on *EMOTIONTOT*: soldiers expecting a lot of negative emotions feel less risk lover, have higher score for neuroticism and lower score for control. Consequently, both for *REACTITOT* and *EMOTIONTOT*, the signs of coefficients are consistent with expectations.

During the mission: impact of the mission events on real life reactions and emotions

In the post-deployment questionnaire, the soldiers answered the same questions about recalled reactions and emotions (now realized) if they experienced a combat during the mission. Compared to *REACTITOT*, *REACTITOT_after* presents significant higher values (n = 213, mean = 9.18, s.d = 1.63, p-value for the paired equality test < 0.0001). This positive difference is significantly higher for first-timers than for previously deployed. Conversely, compared to *EMOTIONTOT*,

EMOTIONTOT_after presents significant lower values (n = 207, mean = 2.39, s.d = 1.78, p-value for the paired equality test < 0.0001). The mission (ISAF 11) went apparently better than anticipated by the soldiers, with better reactions and less emotions than expected. Indeed, Figure A.1 in the Appendix shows that the number of deaths, wounded and returnees from missions in Afghanistan since 2002 was much larger than those of the ISAF 11 mission we examined. Moreover, Table 9 also shows a significant decrease in *Neurotiscism*.

We expect reactions and emotions to be related to the severity of the mission events (measured by *SEVERETOT_after* and specific sub-variables capturing more focused aspects about the severity of the mission events), with a negative impact on *REACTITOT_after* and a positive impact on EMOTIONTOT_after. Results of a stepwise linear regression with some covariates (earnings, gender, age, 4 classes for education level, 8 classes for the unit the soldier belongs to, first-timers dummy and the preference and personality traits variables) only find a positive significant effect on *REACTITOT_after* of some specific severity sub-variables, like *DAMAGETOT_SSU*, the number of returnees or wounded in the sub-unit (negative, p-value = 0.001). As expected, the experienced reactions and emotions are related to the severity of the mission: soldiers had more difficulty to react if their sub-unit was affected (wounded or returnees).

Some psychological evidence in the literature show that the **prediction errors,** i.e., the difference between expected and experienced reactions and emotions, may explain the changes in preferences and personality traits. To study these differences, we also run similar stepwise linear regressions with the earlier mentioned covariates. We find a significant and negative effect of *SEVERETOT_after* on *REACTITOT_dif (i.e.,REACTITOT_after – REACTITOT)* (p-value = 0.038) but still no effect on *EMOTIONTOT _dif (=EMOTIONTOT _after – EMOTIONTOT):* soldiers with low level of exposure seem to react better than expected.

Post-mission trauma

In the model developed in Figure 1, we hypothesized that post-mission trauma may be determined by the deviation between expectations and actual experience. To study the determinants for this post-mission trauma, we run a stepwise linear regression explaining *PTSD* by some covariates (earnings, gender, age, 4 classes for education level, and 8 classes for the unit the soldier belongs to, the first-timers dummy, the six risk and time preference measures, the personality traits, two dummies for a *PTSD* syndrome that are not related to the mission, the severity of the mission events and the variables *REACTITOT_dif* and *EMOTIONTOT_dif)*. We find significant effects for *REACTITOT_dif* (negative, p-value = 0.004), SEVERETOT_after (positive, p-value < 0.0001), *Neuroticism* (positive, p-value < 0.0001): a better reaction than expected during the mission lowers the PTSD score whereas a higher exposure to combat increases it, as expected.

Changes in preferences and personality traits after the mission

Finally, we examine whether the changes in preferences and personality traits are related to psychological events that occur during the mission. Following Figure 1, we conjecture that changes in preferences and personality traits may be provoked by post-mission trauma, prediction errors and the severity of the mission events. We run a stepwise linear regression explaining the difference between after and before variables with some covariates (earnings, gender, age, 4 classes for education level, and 8 classes for the unite the soldier belongs to, the first-timers dummy, PTSD, two dummies for a *PTSD* syndrome that are not related to the mission, the severity of the mission events and the variables *REACTITOT_dif* and *EMOTIONTOT_dif).*

Generally the sign of the correlations are very intuitive: a high *PTSD* score decreases the *Control (Control_dif*, negative, p-value = 0.004), better reaction to combat than expected (*REACTITOT_dif>0)* lowers their measurement for *Neuroticism* (*Neuroticism_after* negative, p-value = 0.001). Likely if they have underestimated their negative emotions (*EMOTIONTOT_dif>0)* they become more risk-averse (*LOSSLOVER_dif* , negative p-value = 0.014). Hence, soldiers People with high PTSD score lost a sense of control but are more willing to defer gratification. However, PTSD score decreases the impatience (*TIMEPREF_dif*, negative p-value = 0.005) which is not as intuitive.

C. Impact of the degree of mission exposure on the changes in the risk and time behavioral variables

We examine the changes in the six risk and time preference measures for sub-samples with different previous exposure (first-timers & previously deployed) or different exposures during the mission ("having some returnees or wounded within sub-unit before the end of the mission", or "being exposed to combat exposure during the mission"). To lighten presentation, we only present below the results of the equality test of mean (not the median and Wilcoxon equality tests that were never discordant with the mean equality test in Table 9) and the equality of distribution KS test.

Regarding previous exposure, we find that *RISKPOP*, *RISKPER* and *Neuroticism* are significantly higher for first-timers both before mission (respective p-values 0.0565, 0.0195 and 0.024) and after mission (respective p-values 0.0464 and 0.0486), and that the change in *TIMEPREF* and *Neuroticism* is significantly different for the first-timers (negative for *TIMEPREF* and positive for *Neuroticism*) than for the previously deployed (positive) (respective p-values 0.0211 and 0.050). We examine how the 6 behavioral variables for time and risk preferences evolve before and after mission according to previous deployment. As earlier, we find higher after mission values for *RISKPOP* and *RISKPOPEV* and no differences for *LOSSLOVER*. However, we find differences for *TIMEPREF* (lower after mission for non-previously deployed (p-value 0.0911) but no difference for previously deployed (p-value = 0.5496)), *RISKLOVER* higher after mission for the first-timers (p-value 0.056) but no difference for the previously deployed (p-value = 0.3592)) and *RISKPER* (lower after mission for not previously deployed but no difference for the previously deployed (p-value = 0.3575)).

The non-parametric KS tests find no difference in distribution for the 6 risk and time behavioral variables before and after mission, nor in the difference between after and before mission except for *TIMEPREF* after mission, which is lower first-timers than for previously deployed (p-value = 0.075).

When measuring the intensity of exposure with the variable **being exposed to combat during the mission**, we find no differences for the 6 risk and time behavioral variables before mission, significantly higher *RISKLOVER* and *TIMEPREF* after mission for those exposed to combat (respective p-values 0.0551 and 0.0248) and a (positive) change in *RISKPOPEV* significantly larger for soldiers non-exposed than for soldiers exposed to combat (p-values 0.0837). Regarding the changes in the 6 measures of risk preferences before and after mission by combat exposure, we find no differences for *LOSSLOVER* and *TIMEPREF* (still no difference), *RISKPOP* and *RISKPOPEV* (still higher after mission) and RISKPER (no difference although lower after mission on the whole sample). We only find differences for RISKLOVER (higher after mission for those exposed to combat (p-value 0.0888) but no difference for those non-exposed (p-value = 0.4673)). The non-parametric KS tests find no difference in distribution for the 6 risk behavior variables before mission, after mission nor in the difference between after and before mission.

Finally, when we measure intensity of exposure during the mission with the presence of **returnees or wounded within sub-unit,** the results are as follows. We find no differences on the 6 risk and time behavioral variables after mission, a (positive) change in *RISKPOP* before mission significantly lower for those having returnees or wounded in sub-unite (p-value 0.0404). Regarding the changes in the 6 risk and time behavioral variables before and after mission by having (or not) returnees or wounded within sub-unite, we find no differences for *LOSSLOVER* and *TIMEPREF* (still no difference), *RISKPOP* and *RISKPOPEV* (still higher after mission) and *RISKPER* (no difference although lower after mission on the whole sample). We only find differences for *RISKLOVER* (higher after mission for those having returnees or wounded in sub-unite (p-value 0.0159) but no difference for those having no returnees or wounded (p-value = 0.4791)). The non-parametric KS tests find no difference in distribution for the 6 risk behavior variables before mission, after mission nor in the difference between after and before mission: the presence of returnees or wounded within sub-unit does not appear to change the shape of the distribution of these variables among the soldiers.

Overall, we consistently find no change in *LOSSLOVER* before and after mission but higher value for *RISKPOP* and *RISKPOPEV* after mission for the whole sample and all sub-samples. These findings mean that soldiers consider themselves as more exposed to risks in their daily life (and especially to risk of physical aggressions) after the mission than before, which suggests a tendency towards over-evaluation. We find almost no change in *TIMEPREF* (except a lower value after mission for first-timers). Finally, we find evidence of lower values for *RISKPER* after mission than before mission in the whole sample and for first-timers, and higher values for *RISKLOVER* after mission than before for the whole sample, for first-timers, those exposed to combat during the mission and those having returnees or wounded within sub-unit.

D. Towards a modelling of before after changes in the risk and time behavioral variables

We propose a set of simultaneous equation models that explain the level of each risk and time behavioral variables before and after the mission. In order to respect temporal consistency, candidates for the explanatory variables for the dependent variables before the mission are looked for among the corresponding before variables and the socio-demographic variables. Candidates for the explanatory variables for the dependent variables after the mission are looked for among the corresponding after variables or the difference between after and before variables (*dif*), including all variables related to the mission.[10] Each after-equation includes the corresponding dependent variable before the mission (the soldier's idiosyncrasy) as explanatory variable. To solve the endogeneity issue, we use three stage least squares (3SLS) estimations.

The most parsimonious models (i.e. to those with significant variables with p-values around 10% or below) are presented and discussed below. Obviously, each of the after the mission dependent variable is always significantly explained by the corresponding before variable, but other variables are also significant. The joint nullity tests of the explanatory variables of each of the two equations are always strongly rejected (p-value at least lower than 0.0075) in the six models.

LOSSLOVER

Among risk and time preference variables, the *LOSSLOVER* variables (see Table 10) are the most poorly explained. Before the mission, we observe a negative effect of age and vocational education, and a positive effect of the severity of the exposure to combat during previous missions and of having family members previously deployed. When explaining *LOSSLOVER_after*, only the difference between the after and the before lucky feeling has a positive effect (in addition to *LOSSLOVER* before the mission).

[10] Note that for a given time and risk preference variable, we did not consider the other time and risk preference variables as potential explanatory variables. To account for heterogeneity in combat exposure, each model is tested for the significance of the unit to which the soldier belongs to (8 dummy variables).

Table 10 Model explaining LOSSLOVER variables

3SLS estimations for LOSSLOVER (pre and post-deployment)	
LOSSLOVER	
Family members deployed	0,263**
	(0,129)
Vocational education	-0,289**
	(0,145)
Severity of the exposure to combat during previous missions	0,0449*
	(0,0255)
Age	-0,0150*
	(0,00828)
Constant	2,316***
	(0,236)
LOSSLOVER_after	
LOSSLOVER	0,278*
	(0,144)
Feel happy_dif	0,0584**
	(0,0277)
Constant	1,476***
	(0,289)
N	282

Standard errors in parentheses.* p<0.10, ** p<0.05, *** p<0.010.
Chi^2 for LOSSLOVER's equation: 15.26 (p-value=0.0042) and Chi^2 for LOSSLOVER_after's equation: 35.05 (p-value=0).
Feel happy_dif stands for the difference between Feel happy_after and Feel happy before.

TIMEPREF

The TIMEPREF variable is better explained (see Table 11). Soldiers are more impatient if they have at least one child and being worried increase impatience, whereas higher earnings decreases impatience. The effect of age is quadratic with a maximum at 38 years.

TIMEPREF_after is mainly explained by the value of *TIMEPREF* before the mission, but smoking after the return from mission, the severity of the exposition to blood during the mission and the difference between the after and the before chance feeling have also a tendency to increase the impatience after the mission.

Table 11 Model explaining TIMEPREF variables

3SLS estimations for *TIMEPREF* (pre and post-deployment)	
TIMEPREF	
Age	0,254**
	(0,116)
Age^2	-0,00332**
	(0,00165)
Having a child	0,890**
	(0,391)
log (earnings)	-1,263**
	(0,627)
Neuroticism	0,485**
	(0,219)
Constant	8,616
	(5,420)
TIMEPREF_after	
TIMEPREF	0,671***
	(0,151)
Smoker_after	0,506**
	(0,224)
Exposed to bloody events during the mission	0,0790*
	(0,0457)
Feel Lucky_dif	0,113*
	(0,0684)
Constant	0,704
	(0,479)
N	317

Standard errors in parentheses.* p<0.10, ** p<0.05, *** p<0.010.
Chi^2 for TIMEPREF's equation: 15.26 (p-value=0.0042) and Chi^2 for TIMEPREF_after's equation: 35.05 (p-value=0). Exposed to bloody events during the mission is a sub-variable of SEVERETOT. Feel lucky_dif stands for the difference between Feel lucky_after and Feel lucky before.

RISKLOVER

Before the mission, the RISKLOVER variable (see Table 12) is explained by four variables: Having basic education and the level of happiness (Feel happy) lead to increase the risk aversion. While being between 18 and 24-year-old and being Male lead to a decrease in risk aversion, which is a standard result in risky behavior studies. RISKLOVER_after is strongly explained by the value before the mission, the score obtained at PTSD questionnaire and the level of control after the mission.

Table 12 Model explaining RISKLOVER variables

3SLS estimations for *RISKLOVER* (pre and post-deployment)	
RISKLOVER	
Male	0,556**
	(0,267)
Feel happy	-0,0802**
	(0,0365)
Basic education	-0,264**
	(0,126)
Aged 18-24	0,207*
	(0,116)
Constant	2,079***
	(0,396)
RISKLOVER_after	
RISKLOV	0,589***
	(0,157)
PTSD score	0,0159***
	(0,00580)
Control_after	0,181***
	(0,0525)
Constant	-0,0307
	(0,376)
N	312

Standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.010$
Chi^2 for *RISKLOVER*'s equation: 15.26 (p-value=0.0042) and Chi^2 for *RISKLOVER_after*'s equation:35.05 (p-value=0)

RISKPOP

Among risk and time attitudinal variables, the *RISKPOP* variable (see Table 13) is explained by four variables. The score at the personality trait neuroticism, smoking and having divorced parents lead to an increase of the subjective exposure to different type of risks whereas having a youth education level leads to a decrease.

Regarding the *RISKPOP_after* variable, apart the significant and positive effect of *RISKPOP*, we found that the level of Neuroticism after the mission increases its value whereas the after minus before difference in the subjective assessment of score of feeling lucky has a negative effect.

Table 13 Model explaining RISKPOP variables

3SLS estimations for *RISKPOP* (pre- and post-deployment)	
RISKPOP	
Parents divorced	0,930**
	(0,408)
At-risk for alcohol consumption	1,038*
	(0,555)
Neurtoticism	0,913**
	(0,379)
Constant	9,462***
	(0,901)
RISKPOP_after	
RISKPOP	0,238***
	(0,0910)
Neuroticism_after	0,670***
	(0,213)
Feel lucky_dif	-0,136*
	(0,0696)
Constant	9,148***
	(1,067)
N	278

Standard errors in parentheses.* p<0.10, ** p<0.05, *** p<0.010
Chi^2 for RISPOP's equation: 15.10 (p-value=0,0017) and Chi^2 for RISKPOP_after's equation:28.17 (p-value=0). Feel lucky_dif stands for the difference between Feel lucky_after and Feel lucky before.

RISKPOPEV

Regarding the risk for physical aggression (*RISKPOPEV*), it increases with the severity of the exposure to combat during previous missions, the regular practice of a risky sport and being considered at risk for alcohol consumption; and decreases with youth education. *RISKPOPEV_after* is partly explained by its value before the mission, and increases with the score at the personality trait *Neuroticism*, declaring consuming Hashish after the mission and decreases with the after minus before difference in the conscientiousness.

Table 14 Model explaining RISKPOPEV variables

3SLS estimations for *RISKPOPEV* (pre and post-deployment)	
RISKPOPEV	
Practice of a risky sport more than once a year	0,256**
	(0,127)
At-risk for alcohol consumption	0,511***
	(0,173)
Youth education	-0,337***
	(0,126)
Exposed to severe events in previous missions	0,0428*
	(0,0244)
Constant	2,306***
	(0,0937)
RISKPOPEV_after	
RISKPOPEV	0,254**
	(0,106)
Exposed to bloody events during the mission	0,0394**
	(0,0200)
Hashish consumption_after	0,450***
	(0,170)
Neuroticism_after	0,234***
	(0,0771)
Conscienstiousness_dif	-0,218*
	(0,122)
_cons	1,475***
	(0,271)
N	255
adj. R^2	

Standard errors in parentheses.* p<0.10, ** p<0.05, *** p<0.010.
Chi^2 for RISKPOPEV's equation: 22.49 (p-value=0,0002) and Chi^2 for RISKPOPEV_after's equation:39.61 (p-value=0).

RISKPERSO

Finally, *RISKPERSO* (i.e. the self-perception of "being willing to take risks to achieve something in life") leads to the following results. Feeling happy, the regular practice of a risky sport and having basic education increases *RISKPERSO*, whereas the level of anticipated emotion during the mission decreases it. *RISKPERSO_after* is strongly explained by its value before the mission and the severity of the exposition during the mission.

Table 15 Model explaining RISKPERSO variables

3SLS estimations for *RISKPERSO* (pre and post-deployment)	
RISKPERSO	
Feel happy	0,291***
	(0,0698)
Practice of a risky sport more than once a year	0,822***
	(0,235)
Basic education	0,664***
	(0,244)
EMOTIONTOT	-0,214***
	(0,0755)
Constant	5,259***
	(0,646)
RISKPERSO_after	
RISKPERSO	0,704***
	(0,116)
SEVERETOT_event	0,197***
	(0,0681)
Constant	1,547**
	(0,778)
N	262

Standard errors in parentheses.* p<0.10, ** p<0.05, *** p<0.010.
Chi^2 for RISKPERSO's equation: 50.85 (p-value=0) and Chi^2 for RISKPERSO_after's equation: 73.66 (p-value=0)

Overall, we find that some socio-demographic variables (age, gender, educational level, income) contribute to explain the level of the risk and time behavior variables before the mission. To explain the level of the risk and time behavior variables *after* the mission, we find evidence that variables related to personality traits (neuroticism, conscientiousness and control), risky health behaviours (smoking, alcohol and Hashish consumption) and severity of combat exposure (*SEVERETOTAL SEVEREBLOOD* and *PTSD*) help explaining them, in addition to the corresponding before variables that are obviously their strongest drivers.

V Conclusion

In general, we find high correlations between time and risk variables, before, after, as well as their differences before and after the mission. Moreover, on average, we find a decrease in risk aversion, patience and neuroticism. These decreases certainly translate the feeling of relief among soldiers after their mission. Likely, the mission did not generate a high degree of trauma among them. Furthermore, we find that combat has an impact on time and risk preferences, where soldiers become more risk lover and less patient, while first-timers appear to be more risk averse in general and become more patient after the mission.

Although some socio-demographic variables contribute to explain the level of the risk and time behaviour variables after mission, we find evidence that variables related to personality traits (neuroticism, conscientiousness and control), risky health behaviours (risky sport, smoking, alcohol and Hashish consumption) and severity of combat exposure contribute to explain this level. Not surprisingly, we find that the strongest drivers are the variables measured before the mission.

VI References

Almlund, M., Duckworth, A. L., Heckman, J. J., & Kautz, T. D. (2011). *Personality psychology and economics* (No. w16822). National Bureau of Economic Research.

Andersen, S., G.W. Harrison, M.I. Lau & E.E. Rutström (2008): "Lost in State Space: Are Preferences Stable?" *International Economic Review,* 49(3), pp. 1091-1112.

Anderson, L.R. & J.M. Mellor (2008): "Predicting Health Behaviors with an Experimental Measure of Risk Preference". *Journal of Health Economics*, 27, pp. 1260-74.

Arrondel L., Masson A. & D. Verger (2004), "Le questionnaire de l'enquête Insee-Delta Comportements face au risque et à l'avenir", *Economie et Statistique,* n° 374-375, 159-170.

Babor, T.F., J.C. Higgins-Biddle, J.B. Saunders & M.G. Monteiro (2001): *AUDIT: The Alcohol Use Disorders Identification Test*, Guidelines for Use in Primary Care, Second Edition, Department of Mental Health and Substance Dependence, the World Health Organization: Geneva.

Barsky, R.B., F.T. Juster, M.S. Kimball & M. Shapiro (1997): "Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study". *The Quarterly Journal of Economics*, 112(2), pp. 537-579.

Bchir, M. A., & Willinger, M. (2013). Does the exposure to natural hazards affect risk and time preferences? Some insights from a field experiment in Perú. *Unpublished Manuscript*.

Bechara, A., Damasio, H., & Damasio, A. R. (2000). Emotion, decision making and the orbitofrontal cortex. *Cerebral cortex, 10*(3), 295-307.

Becker, A., Deckers, T., Dohmen, T., Falk, A., & Kosse, F. (2012). The relationship between economic preferences and psychological personality measures, *CESifo Working Paper: Behavioural Economics, N° 3785.*

Borghans L., A.L. Duckworht, J.J. Heckman & B.T. Weel (2008): "The Economics and Psychology of Personality Traits". *Journal of Human Resources*, 43, pp. 972-1059.

Callen, M. (2011). Catastrophes and time preference: Evidence from the Indian Ocean earthquake. Unpublished Manuscript.

Callen, M., M. Isaqzadeh, J. D. Long, and C. Sprenger (2014). Violence and risk preference: Experimental evidence from Afghanistan. *American Economic Review 104* (1), 123–148.

Camerer, C. F., & Hogarth, R. M. (1999). The effects of financial incentives in experiments: a review and capital-labor-production framework. *Journal of Risk and Uncertainty*, 19(1–3), 7–42.

Cameron, L., & Shah, M. (2013). *Risk-taking behavior in the wake of natural disasters* (No. w19534). National Bureau of Economic Research.

Caplin & Leahy, (2001)

Cassar, Alessandra, Andrew Healy, and Carl von Kessler (2011). *Trust, Risk and Time Preferences after a Natural Disaster: Experimental Evidence from Thailand*. Working Paper, June 20, 40 p.

Chakravarti, I.M., R.G. Laha and J. Roy (eds) (1967), *Handbook of Methods of Applied Statistics*, Vol.1: *Techniques of computation*, descriptive methods and statistical inference. John Wiley and Sons.

Chanel O., E. Faugère, G. Geniaux, R. Kast, S. Luchini, C. Protopopescu and P. Scapecchi (2001), Approche économique et socio-anthropologique de la pollution atmosphérique : application au département des Bouches-du-Rhône, *Final Report* n°36/98 *for French Ministry in charge of Environment*, December .

Chuang, Y. & Schechter, L. (2014). Stability of Experimental and Survey Measures of Social, Risk, and Time Preferences Over Multiple Years. *Risk, and Time Preferences Over Multiple Year (March 21, 2014)*.

Coricelli, G., Critchley, H. D., Joffily, M., O'Doherty, J. P., Sirigu, A., & Dolan, R. J. (2005). Regret and its avoidance: a neuroimaging study of choice behavior. *Nature neuroscience*, *8*(9), 1255-1262.

De Martino, B., Camerer, C. F., & Adolphs, R. (2010). Amygdala damage eliminates monetary loss aversion. *Proceedings of the National Academy of Sciences*, *107*(8), 3788-3792.

Dohmen, T., A. Falk, D. Huffman & U. Sunde (2010): "Are Risk Aversion and Impatience Related to Cognitive Ability". *The American Economic Review*, 100, pp. 1238-60.

Eckel, C. C., El-Gamal, M. A., & Wilson, R. K. (2009). Risk loving after the storm: A Bayesian-Network study of Hurricane Katrina evacuees. *Journal of Economic Behavior & Organization*, *69*(2), 110-124

Fuchs, V.R. (1982): “Time Preferences and Health: An Exploratory Study”. In: V. Fuchs (edt.): *Economic Aspects of Health*. Chicago: University of Chicago Press, pp. 93-120.

Grable, J. & R.H. Lytton (1999): “Financial Risk Tolerance Revisited: The Development of a Risk Assessment Instrument”. *Financial Services Review*, 8, pp. 163-181.

Hartley, C. A., & Phelps, E. A. (2012). Anxiety and decision-making. *Biological psychiatry*, *72*(2), 113-118.

Heckman, J. J. (2011). *Integrating personality psychology into economics* (No. w17378). National Bureau of Economic Research.

Heckman, J.J., J. Stixrud, & S. Urzua, (2006): “The Effect of Cognitive and Noncognitive abilities on Labor Market”. *Journal of Labor Economics*, 24(3), pp. 411-82.

Horowitz, J.K. (1992): “A Test of Intertemporal Consistency”. *Journal of Economic Behavior and Organization*, 17, pp. 171-182.

John, O.P., E.M. Donahue & R.L. Kentle (1991): *The Big Five Inventory--Versions 4a and 54. Berkeley*. CA: University of California, Berkeley, Institute of Personality and Social Research.

John, O.P., L.P. Naumann & C.J. Soto (2008): “Paradigm Shift to the Integrative Big Five Trait Taxonomy: History, Measurement, and Conceptual Issues”. In: O.P. John, R.W. Robins & L.A. Pervin (eds.): Handbook of Personality: *Theory and Research*. New York, NY: Guilford Press, pp. 114-158.

Kahneman, D & A. Tversky, A (1979). “Prospect Theory: An Analysis of Decision under Risk”. *Econometrica*, 47(2) pp. 263-292.

Kim, Y. I., & Lee, J. (2013). *The Long-Run Impact of Traumatic Experience on Risk Aversion*. Working Paper Sogang University, South Korea, July, 35 p.

Kimball et al., 2008;

King, L.A., D.W. King, D.S. Vogt, J. Knight & R.E. Samper (2006). Deployment Risk and Resilience Inventory: A Collection of Measures for Studying Deployment-Related Experiences of Military Personnel and Veterans. *Military Psychology*, 18 (2), pp. 89-120.

Kliger, D., & Levy, O. (2003). Mood-induced variation in risk preferences. *Journal of Economic Behavior & Organization*, *52*(4), 573-584.

Kofod, J., A. Fenger Benwell & A. Aslaug Kjær (2010): *Hjemvendte Soldater. En Interviewundersøgelse*. Netpublication: www.sfi.dk. København: SFI – Det Nationale Forskningscenter for Velfærd, 10:21.

Kotov, R., Gamez, W., Schmidt, F., & Watson, D. (2010). Linking “big” personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychological bulletin*, *136*(5), 768.

Krupka and Stephens, 2013

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of personality and social psychology*, *81*(1), 146-159.

Loewenstein, G. & J.S. Lerner, (2003): “The Role of Affect in Decision Making”. In: R.J. Davidson, M. Goldsmith & K. Scherer (eds.): *Handbook of Affective Sciences*, pp. 619-42.

Lyk-Jensen, S.V., A. Glad, J. Heidemann & M. Damgaard (2012): *Soldater efter udsendelse. En spørgeskemaundersøgelse*. Netpublication: www.sfi.dk. København: SFI – Det Nationale Forskningscenter for Velfærd, 12:01.

Lyk-Jensen, S.V., C.D. Weatherall, J. Heidemann, M. Damgaard & A. Glad (2011): *Soldater før og under udsendelse. En kortlægning.* Netpublication: www.sfi.dk. København: SFI – Det Nationale Forskningscenter for Velfærd, 11:25.

Lyk-Jensen, S.V., J. Heidemann & A. Glad, (2012): *Soldater før og efter udsendelse. En analyse af motivation, økonomiske forhold og kriminalitet*. Netpublication: www.sfi.dk. København: SFI – Det Nationale Forskningscenter for Velfærd, 12:09.

Lyk-Jensen, S.V., J. Heidemann, A. Glad & C.D. Weatherall (2012): *Danske hjemvendte soldater. Soldaternes psykiske sundhedsprofil før og efter udsendelse*. Netpublication.: www.sfi.dk. København: SFI – Det Nationale Forskningscenter for Velfærd, 12:24.

Lyk-Jensen, S.V., J. Jacobsen & J. Heidemann (2010): *Soldater – Før, under og efter udsendelse: Et litteraturstudie*. Netpublication: www.sfi.dk. København: SFI – Det Nationale Forskningscenter for Velfærd, 10:27.

Meier, S. & C.D. Sprenger. (2010): “Stability of Time Preferences”. IZA DP no. 4756, February 2010.

Moya, A. (2011). Violence, mental trauma, and induced changes in risk attitudes among the internally displaced population in Colombia. Unpublished Manuscript.

Page, L., Savage, D., & Torgler, B. (2012). Variation in Risk Seeking Behavior in a Natural Experiment on Large Losses Induced by a Natural disaster. *CESifo Working Paper: Behavioural Economics, N° 3878.*

Paris, J. (2000). Predispositions, personality traits, and posttraumatic stress disorder. *Harvard Review of Psychiatry*, *8*(4), 175-183.

Rotter, J. (1966), 'Generalized expectancies for internal versus external control of reinforcements', *Psychological Monographs*, *80*, Whole No. 609.

Schultz, W., Dayan, P., & Montague, P. R. (1997). A neural substrate of prediction and reward. *Science*, *275*(5306), 1593-1599.

Snedecor, G. W., and W. G. Cochran. 1989. Statistical Methods. 8th ed. Ames, IA: Iowa State University Press.

Stigler, G.J. & G.S. Becker (1977): "De Gustibus Non Est". *American Economic Review*, 67 (2), pp. 76-90.

Stiglitz, J.E., & L.J., Bilmes (2008): *The Three Trillion Dollar War: The true Cost of Iraq Conflict*. *W.W. Norton & Company*.

van den Berg, M., R. Fort, and K. Burger (2009). Natural hazards and risk aversion: Experimental evidence from Latin America. Unpublished Manuscript.

Voors, M., E. Nillesen, P. Verwimp, E. Bulte, R. Lensink, & D. van Soest, (2012) "Violent Conflict and Behavior: A Field Experiment in Burundi", *The American Economic Review*, 102(2), pp. 941–964.

Weathers, F. & J. Ford (1996): "Psychometric Review of PTSD Checklist (PCL-C, PCL-S, PCL-M, PCLPR)". In: B.H. Stamm (edt.): *Measurement of Stress*, *Trauma and Adaptation*. Luthewille, MD: Sidran Press.

Weathers, F., B. Litz, D. Herman, J. Huska & T. Keane (1993): "The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility". Paper presented at the Annual Convention of the International Society for Traumatic Stress Studies, San Antonio. (DSM-III-R PCLM).

White, H. (1980), "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity", Econometrica 48 (4): 817–838.

Wilcoxon, F. 1945. Individual comparisons by ranking methods. Biometrics 1: 80-83.

Willinger, M., M. A. Bchir, and C. Heitz (2013). Risk and time preferences under the threat of background risk: A case-study of lahars risk in central Java. Unpublished Manuscript.

Wolf, C. & L. Pohlman (1983): "The Recovery of Risk Preferences from Actual Choices". *Econometrica*, 51(3), pp. 843-50.

World Health Organization (2000): *International Guide for Monitoring Alcohol Consumption and Harm*. Genève: WHO.

APPENDIX

Time and Risk preferences

We would like to ask you about your perception of risk. both in general and in some hypothetical situations.
These hypothetical questions are dealing with financial investment. The aim is to help us to understand what the key elements are for you when you have to make a decision. For these hypothetical questions please respond as if this was a real situation. It is important for our study that you take a position on each issue. but write your first impulse response. There is no right or wrong answers.

18. Do you perceive yourself as someone who prefer to avoid risks. or are you willing to take risks to achieve something in life?

Answer from a scale of 1 to 10. where 1 means "I want to avoid risks" and 10 indicates "I do not mind taking risks."

	Check one box only									
	I'd rather Avoid risks									I do not mind taking risks
	1	2	3	4	5	6	7	8	9	10
How do you perceive yourself?	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

19. Below we present five types of risks to which the Danish population can be exposed. Compared with the entire Danish population, how do you think you are exposed to the following risks in your daily life in Denmark?

Do you think that you are much less likely, equally exposed or much more exposed to the below events compared to the Danish population in general?
Please answer based on a scale of 1 to 10:

		(Please) check one box only in each row									
		Much less likely exposed				Equally exposed					Much more exposed
		1	2	3	4	5	6	7	8	9	10
1.	Traffic accidents (Car, pedestrian, bicycle, train, plane)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10
2.	Physical aggressions	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10
3.	Diseases (e.g., cancer, genetic disorders, depression)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10
4.	Unemployment, educational failure	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10

5.	**Natural disasters (e.g., fire, flood**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10

20. All things considered - how unlucky or lucky do you think you are in your life compared with the general Danish population?

Please answer based on a scale from 0 to 10, where 0 is "more unlucky" than the general Danish population and 10, which is "more lucky" than the Danish population.

	Check one box only										
	More unlucky										**More lucky**
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
How unlucky/lucky are you?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10

Now some hypothetical questions.

☒

21. You get the opportunity to buy a ticket to a lottery. There are 10 people with the lottery. The prize is worth DKK 20,000 and the winner of the lottery is found by drawing lots, i.e., everyone has an equal chance of winning.
What price are you willing to pay for a ticket to this lottery?

Write the amount: kr.

25. Given the best and worst case returns of the four investment choices below, which would you prefer?

Check one box only

A 50% chance to gain 1.500 kr. and a 50% chance to gain nothing..................................	☐ 1
A 50% chance to gain 6.000 kr. and a 50% chance to lose 1.500 kr.………………………	☐ 2
A 50% chance to gain 19.500 kr. and a 50% chance to lose 6.000 kr.……………………..	☐ 3
A 50% chance to gain 36.000 kr. and a 50% chance to lose 18.000kr.…………………….	☐ 4

26. Imagine that when you come back from your mission, you win a tax-free bonus 100,000 Dk in your bank. You have two options.
A) You can withdraw the money immediately, or
B) you can leave the money in the bank for one year more.
Which option would you choose in each of the seven lines, A or B?

Check A or B -
Only one check by line

	A. Amount paid immediately	**B. Amount paid on 12 months**	**A**	**B**
1.	*100.000 kr.*	*102.000 kr.*	☐ 1	☐ 2
2.	*100.000 kr.*	*105.000 kr.*	☐ 1	☐ 2
3.	*100.000 kr.*	*108.000 kr.*	☐ 1	☐ 2
4.	*100.000 kr.*	*110.000 kr.*	☐ 1	☐ 2
5.	*100.000 kr.*	*120.000 kr.*	☐ 1	☐ 2
6.	*100.000 kr.*	*130.000 kr.*	☐ 1	☐ 2
7.	*100.000 kr.*	*150.000 kr.*	☐ 1	☐ 2

TABLES

Answer rates

Pre-deployment. About 560 soldiers were expected to participate in the mission preparation in Varde/oksbøl and 490 questionnaires were collected of which 484 included a personal identification number given a response rate of more than 85 percent.

Table A.1: Estimated sample size and response rate – Questionnaire before the mission

Military forts	Stated no. of soldiers	No. of soldiers present	Returned questionnaires	% of stated	% of present
Ålborg	120	107	101	84	94
Holstebro	143	113	113	79	100
Slagelse	253	163	163	64	100
Vordingborg	48	43	43	90	100
Varde/ Oksbøl	70	59	59	84	100
Skive	47	42	42	89	100
Fredericia	27	20	20	74	100
Total	858	685	679	79	99

Table A. 2 ISAF 11 – Unit distribution and characteristics

Name	Description	Combat unit	Involved in combat	Wounded, killed, returnees	Freq.	%
1 ST	Staff	X	X		14	3,77
2 ST & LOG COY	Staff & Logistic	X	X	X	147	39,62
3 PNINF (IKK)	Armored Infantry Company	X	X	X	60	16,17
4 MEKINF (PMV G3)	Mechanized Infantry Company	X	X	X	65	17,52
5 MPDET	Military Policy		X		12	3,23
7 KVGDEL	Division of combat vehicles	X	X		14	3,77
8 NSE	National Support Element			X	31	8,36
9 KODET	Communication	X	X	X	24	6,47
Total					367	98,92
Missing					4	1,08
Total					371	100

FIGURES

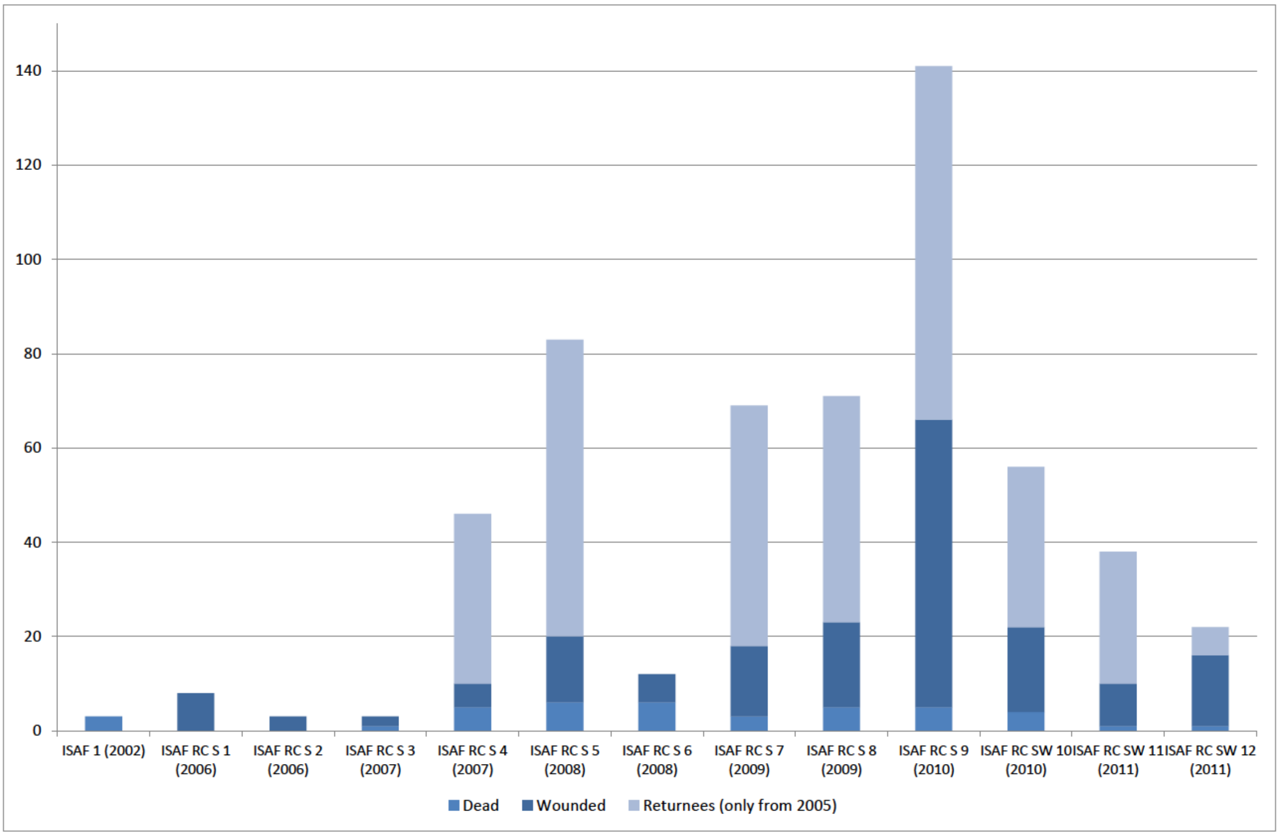


Figure A.1: Number of dead, wounded, returnees for Danish participation in ISAF missions since 2011.