Association Between Exposure to Violence and Trauma-Related Mental Changes in a Sample of Trauma Survivors in Armenia

Master Thesis

by Tamara Stepanyan

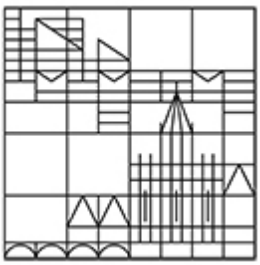
Matriculation number: 01/962482

E-mail: tamara.stepanyan@uni-konstanz.de

Jacob-Burckhardt-Straße 35, 78464 Konstanz

at the

Universität Konstanz



Department of Clinical Psychology and Neuropsychology

1. Supervisor: Prof. Dr. Thomas Elbert

2. Supervisor: Dr. Astrid Rossegger

Konstanz, July 2017

Dedications

Firstly, I would like to thank Prof. Dr. Thomas Elbert and Dr. Anke Köbach for accepting this Master Thesis and giving me the opportunity to conduct this study in my own country and reveal some concerning questions on trauma. I am especially grateful to Anke Köbach for her support and supervision in planning, organizing, conducting, and processing this work. I appreciate her various helpful ideas, recommendations, and feedbacks on theoretical background and data analysis, which guided me throughout the process. A further thanks goes to Dr. Anke Köbach, Prof. Dr. Thomas Elbert, and Dr. Maggie Schauer, who developed the new trauma checklist, making it possible to target specific questions on trauma and related mental changes. I owe a special thanks to my first and second supervisors Prof. Dr. Thomas Elbert and Dr. Astrid Rossegger respectively for evaluating this thesis.

Also I would like to special thank my Armenian colleagues Dr. Tigran Nalbandyan, Dr. Rafael Khachatryan, and Dr. Varazdat Stepanyan for helping with research organization in two cities of Armenia.

I am grateful to the respondents for their willingness to participate in the research and for their openness.

And I would like also to thank my parents for their support, dedication, and encouragement.

Table of Contents

Tables

Figures

Abstract

Armenian folk have experienced a large number of traumatic life events in the past and are still in a pending tension of war. Though there is not much research on trauma in this area, the studies that were conducted showed increased levels of PTSD and depression among the population. Previous research on trauma and related mental changes showed a cumulative effect of traumatic life experiences on obtaining more psychopathological symptoms. The pending question is - which type of trauma better predicts the development of psychopathology? To answer this question, a study in an Armenian setting was conducted and predictors for the total number of threats to human life and their subtypes of physical integrity threat, social integrity threat, and social and physical dominance behavior were determined. The outcomes for psychopathological symptoms (the sum score of the symptoms of PTSD, dissociation, depression, and appetitive aggression) in general and for appetitive aggression in particular were investigated. 60 participants completed measures of trauma exposure, PTSD symptoms, dissociation, depression, and 47 of them of appetitive aggression as well. Linear regression analysis revealed that more threats to human life predict more psychopathological symptoms. Moreover, with a multiple regression we found that physical integrity threat and social and physical dominance behavior proved to be better predictors for developing more psychopathological symptoms, and social and physical dominance behavior is a strong predictor for developing appetitive aggression in particular. With this study and findings, we wanted to focus the attention on the drastic need for better-organized psychotherapeutic intervention in Armenia.

Keywords: threats to human life, psychopathology, PTSD, appetitive aggression, Armenia

Abbreviations

PTSD – Post traumatic stress disorder

ICD – International Classification of Diseases

DSM – Diagnostic and Statistical Manual of Mental Disorders

NK – Nagorno Karabakh

WHO – World Health Organization

THL – Threats to Human Life

THL_PI - Physical Integrity Threat

THL_SI - Social Integrity Threat

THL_DB - Physical and Social Dominance Behavior

PP – Psychopathology

AAS - Appetitive Aggression Scale

PSS-I-5 - PTSD Symptom Scale – Interview for DSM-5

Shut-D - Shutdown Dissociation Scale

PHQ - Patient Health Questionnaire

PHQ-9 - Patient Health Questionnaire (depression scale)

1. Introduction

The human organism incorporates basic reaction schemes that are activated when encountering a potential life threat (fight, flight, fright, flag, and faint; Schauer & Elbert, 2010). In the long term, most importantly posttraumatic stress disorder (PTSD), but also other mental changes up to psychopathological symptoms, have been postulated as consequences (e.g., Kendler, Hettema, Butera, Gardner & Prescott, 2003; Read & Ross, 2003). Besides PTSD, these include for instance heightened levels of aggression (e.g., Elbert, Weierstall & Schauer, 2010; Hellmuth, Stappenbeck, Hoerster & Jakupcak, 2012; MacManus, Rona, Dickson, Somaini, Fear & Wessely, 2015), dissociative symptoms (e.g., Bödvarsdottir & Elklit, 2004; Dillon, Johnstone & Longden, 2012; Schauer & Elbert, 2010), and depression (e.g., Hill, 2009; Kilpatrick et al.; 2003 Trivedi et al., 2015). Altogether these consequences have a negative impact on mental health and quality of life (Balayan et al., 2014), which is the case for Armenians, described by Van Baelen, Theocharopoulos & Hargreaves (2005) as a population with low demand and high needs. Additionally, there is a big body of literature demonstrating the relationship between exposure to violence and subsequent aggressive and criminal acts (e.g., Ardino, 2012; Garbarino, 2002; Smith, Ireland & Thornberry, 2005; Widom & Maxfield, 2001), and recently the increasing criminality is a topic of concern in Armenia (Gabuzyan, 2007; Statistical Yearbook of Armenia, 2016).

One of the pending questions tries to answer - which factors are responsible for developing certain mental changes? In particular, the development of PTSD and other trauma related-mental changes is researched from perspectives of neurobiological processing within an individual (Liberzon & Abelson, 2016; Milani, Hoffmann, Fossualuza, Jackowski & Mello,

2016), namely changes in the hippocampus (Bremner et al., 2003; Carrion, Haas, Garrett, Song & Reiss, 2010; Gilbertson et al., 2002), amygdala (Pavlisa, Papa, Pavic & Pavlisa, 2006), cingulate cortex (Rogers et al., 2009; Woodward et al., 2005), corpus callosum (Villarreal et al., 2004), and prefrontal cortex (Geuze et al., 2008). Other aspects of interest are the type and features of a traumatic event (American Psychiatric Association, 2013; Copeland, Keeler, Angold & Costello, 2007; Giaconia et al., 1995). Gender differences (Tang & Freyd, 2012; Tolin & Foa, 2006) and sociocultural factors (Wagner, Monson & Hart, 2016; Yeomans & Forman, 2009) are also proven to have an influence on developing mental changes after trauma and violence exposure. One of the most robust findings is the cumulative effect of trauma and violence on the development of PTSD (Building Block Effect; Schauer et al., 2003).

In this study the association between different kinds of threats to human life and trauma-related mental changes will be examined and analyzed in a sample of Armenian trauma survivors. Firstly, four mental changes involved in the current work will be discussed, namely PTSD, dissociation, depression, and appetitive aggression, and also some information on violence exposure in Armenia will be given. Then the setting, procedure, and instruments used to conduct this research will be presented. Thereafter the general impact of the cumulative effect of traumatic life experiences on psychopathology (in the current study psychopathology is the sum score of PTSD, dissociation, depression, and appetitive aggression symptoms) will be examined. The impact of different kinds of threats to human life (physical integrity threat, social integrity threat, social and physical dominance behavior) on psychopathology in general and on appetitive aggression in particular will also be examined and discussed.

1.1. Trauma-related mental changes

1.1.1. Definition of psychological trauma

The word "trauma" is used in everyday life as a description of stressful events. The word by itself can be explained by the Greek meaning of "wound", "damage" (Figley, 1985). In terms of medicine, trauma is always linked to bodily injuries or, in general, damage of a tissue. Before almost the end of 20th century, trauma was not seen as a crucial factor in developing psychopathology and its meaning was simplified and reduced to trivial consequence after childhood abuse (van der Kolk, 2001). Since 1980 psychological trauma in terms of PTSD was seen as a part of medicine, which contributed to the entrance into the classification system of mental disorders, namely in ICD and DSM (Schellong, 2015). According to DSM-5 (2013), in order to refer to trauma as psychological, one should experience an extreme stress situation that a person is unable to cope with (see detailed description of psychological trauma (DSM-5: Criterion A) in para. 1.1.3., p. 6).

Encountering life-threatening situations, peritraumatic responses of animals and humans are being examined and described by evolutionary biology and psychophysiology (Lang, David & Öhman, 2000). Survival strategies, which occur in specific situations, are called "defense cascade". Schauer & Elbert (2010) describe six defense responses to a potentially traumatic life event: *Freeze, Flight, Fight, Fright, Flag, and Faint.*

Freeze (stage 1), known in psychophysiology as Or, is described as an attentive immobility component of the defense cascade, where the main process is gathering information on the source of the threat (Pavlov, 1927). At first, the alerting response is manifested by motor inhibition, focused attention on the threat, and decelerating heart rates (Campbell, Wood &

McBride, 1997). Then the response is reversed toward startle reflex with cardiac acceleration (Graham, 1979).

Flight (stage 2) and Fight (stage 3) are known to be acute stress responses characterized with sympathetic activation and adrenal release which causes heart rate acceleration, blood pressure elevation, and vasoconstriction. Typical for this phase are dizziness, lightheaded palpitation, dry mouth, numbing muscle tension, and feelings of unreality. The first attempt of the organism is to flee. If fleeing is not an option, the next attempt is the fight (Bracha, 2004).

Fright (stage 4) is described as a point of change from the rising phase to the falling phase of the curve of the defense cascade, when coactivation of the sympathetic and parasympathetic systems happens (Löw, Lang, Smith & Brandley, 2008). The following reactions characterize this stage: tachycardia, vasoconstriction, hypertension, hyperalertness, high emotional arousal, and assaultive breakout followed by immobility. The latter is known as tonic immobility, which is characterized by an emotionally aroused organism unable to act (frozen like ice) (Gallup & Rager, 1996).

Flag (stage 5) is the "shut-down" phase (Bracha, 2004) of the defense cascade with parasympathetic activation characterized by bradycardia, vasodilatation, hypotension, drop in arousal, surrender, cognitive failure, numbing of all emotions, and slower onset and termination of immobility leading to *Faint*ing *(stage 6).* Curtis & Biran (2001) report disgust as mediating the fainting.

Experiencing a threat to life, not every stage of the above described defense cascade occurs. The response depends on different factors, such as the classical conditioned response based on previous experience (Adenauer, Catani, Keil, Aichinger & Neuner, 2009).

Various psychological problems, mostly PTSD, also dissociation, depression, aggressive behavior against self or others, anhedonia, etc., can develop after experiencing traumatic events (e.g., Elbert, Weierstall & Schauer, 2010; Kendler, Hettema, Butera, Gardner & Prescott, 2003; Read & Ross, 2003; van der Kolk, 2001).

The following sections provide an introduction into the relations between trauma exposure and PTSD (Section 1.1.3.), dissociation (Section 1.1.4.), depression (Section 1.1.5.), and appetitive aggression (Section 1.1.6.).

1.1.2. Epidemiology of trauma related mental changes in veterans and survivors of natural disasters

The exposure to war affects several physiological, mental, and moral sides of a human being.

The findings of the RAND Center for Military Health Policy Research (2008), regarding the veterans who served in Iraq or Afghanistan, report that about 18.5% of veterans meet the criteria either for depression or PTSD. Moreover, 19.5% of veterans also reported experiencing traumatic brain injury during deployment.

In their study, Trivedi et al. (2015) found that the most prevalent condition in US veterans (N = 4 461 208) is depression (13.5%), followed by PTSD (9.3%). The results of the study also showed a significant co-occurrence among the diagnoses. Namely, 33.2% of depressed patients also had PTSD.

In reports of Hellmuth, Stappenbeck, Hoerster, & Jakupcak (2012), by examining the aggression among US Iraq and Afghanistan combat veterans (N = 359), they found that during

past 4 months 31.8% reported at least one aggressive act, 27.7% reported less severe physical aggression, and 18.9% conducted more severe physical aggression (MacManus, Rona, Dickson, Somaini, Fear & Wessely, 2015).

In the epidemiological studies of disasters, the most researched disorder that develops afterwards is PTSD. Some recent researches showed that anywhere from 20% (North, 2014) to 40% (Neria, Nandi & Galea, 2008) of disaster survivors develop PTSD. The prevalence of PTSD in natural disaster survivors ranges between 5% and 60% (Galea, Nandi & Vlahov, 2005). In the study of Hussain, Weisaeth & Heir (2011), among survivors of an undersea earthquake in Indonesia 11.1% met the criteria of PTSD and major depressive disorder.

The study of Bödvarsdottir & Elklit (2004) reports several psychological reactions in Icelandic earthquake survivors (N = 150), according to which depression had the highest M score of 15.42 (SD = 5.67; *range* = 10-30), the M score of dissociation was 9.38 (SD = 2.88; *range* = 7-19), and the M score of hostility was 5.15 (SD = 1.79; *range* = 4-11).

1.1.3. Psychological trauma and PTSD

According to ICD-10 (1992), in developing PTSD, the psychological trauma is due to an exposure to a stressful event or situation (either short or long lasting) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone (p. 120). The diagnosis of PTSD in DSM-5 (2013) is included in a new category named Trauma- and Stressor-Related Disorders (see the classification and diagnostic criteria of PTSD according to DSM-5 in Appendix A).

The lifetime risk for PTSD in the U.S. among adults is about 3.5% (American Psychiatric Association, 2013), in Germany – 2.3% (Burri & Maercker, 2014). In an epidemiological review of Atwoli, Stein, Koenen, and McLaughlin (2015), the cross-national differences in the prevalence of PTSD were reported as the following: there was a similar prevalence of PTSD in South Africa (2.3%), Spain (2.2%), and Italy (2.4%) (Atwoli et al., 2013; Carmassi et al., 2014; Olaya et al., 2015). The highest PTSD prevalence was reported in Northern Ireland (8.8%) and the lowest in Japan (1.3%) (Ferry et al., 2013; Kawakami, Tsuchiya, Umeda, Koenen, & Kessler, 2014). In a war-torn region like Afghanistan, PTSD-rates rise up to 42% (Cardozo et al., 2004) presenting a major obstacle to the mostly slowly-developing or recovering local health systems.

PTSD often co-occurs with different mental health problems, such as suicide, substance use disorder, traumatic brain injury, other neurocognitive disorders, anger/aggression, and grief. It also affects the condition of a person's physical health, such as chronic pain, sleep problems, etc. ("U.S. Department of Veteran Affairs", 2016).

In the reports of Brewin, Andrews & Valentine (2000), 3 clusters of risk factors for developing PTSD were described, which are: (1) Factors of gender, age at trauma, and race; (2) factors of education, previous trauma, and general childhood adversity; (3) factors of psychiatric history, reported childhood abuse, and family psychiatric history.

Most important and repeatedly demonstrated it the history of trauma exposure: the higher the number of traumatic events, the higher the risk for PTSD or the higher the number of PTSD symptoms respectively (see *Figure 1,* Schauer et al., 2003).

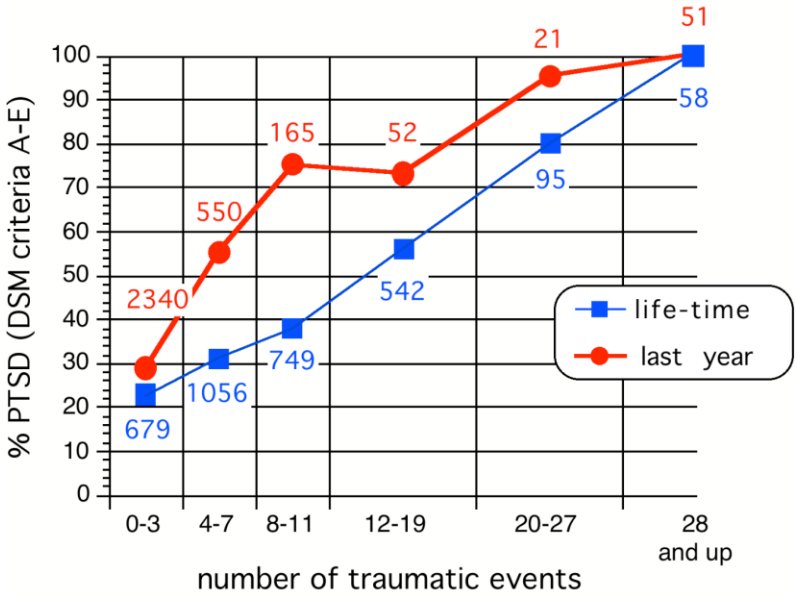


Figure 1 (taken from Schauer et al., 2003). Prevalence rates for PTSD (DSM criteria A-E) for the various numbers of traumatic events during the life-time (squares) and during the past year (circles). Differences for the lower three categories are significant (chi2) including the difference between the 23 vs. 29% for the 0-3 events category ($p < .01$).

A substantial body of studies researched cognitive processing of traumatized people in order to figure out how exactly a traumatic life event causes the symptoms' development of PTSD (Brewin, 2001; Conway & Pleydell-Pearce, 2000; Elbert, Rockstroh, Kolassa, Schauer, & Neuner, 2006). Elbert et al. (2006) describe how a threat to life might change the brain's processing and cause behavioral, physiological, and psychological maladaptation to the environment. The symptoms of PTSD appear, followed by a traumatic experience that causes changes in memory. Autobiographic memory is a store for everyday life experiences, and the contextual part of it (e.g., life-time periods, specific events) is called "cold memory" (Metcalve & Javobs, 1996). Emotional and sensory memory of a traumatic event has been called "hot" or non-declarative (implicit). According to Elbert et al. (2006), these two types of memories are normally connected with each other, and hot memories are activated through a link to

autobiographic memories. In the case of a trauma, hot memories become autonomous, namely they are activated by environmental stimuli, which are not related to autobiographic memory, thus forming a fear network. The latter involves sensory, cognitive, emotional, and physiological components. Activation of a single component is enough to activate the whole fear network. Every time the network is activated, some new, synchronously activated elements are included to the network, thus resulting the widening and strengthening of it. In other words, the hot elements are increasing, while contextual cold memory is becoming less connected to the hot memory, causing separation of these two memories. Only a little connection of hot memory to declarative memory leads to a fragmentation of the latter. This process explains how traumatic life events can cause plastic changes in the human brain.

1.1.4. Psychological trauma and dissociation

Although the concept of dissociation relating to traumatic stress was considered as an important factor in psychological studies in early times, for example, in works of French psychiatrist Pierre Janet (1880s), the clinical importance of it, in the framework of traumatic events, became a topic in research only recently (Schauer & Elbert, 2010). Dissociation is a protective strategy of the psyche that allows a person to detach mentally from an extreme negative experience (Dillon, Johnstone & Longden, 2012), such as childhood abuse, torture, war situations, etc. With this, the consciousness is altered to the state where a person can continue functioning under brutal conditions and adapt to the environment. In this context it is seen as a built-in defense mechanism (American Psychiatric Association, 2013; Seligman & Kirmayer, 2008).

As stated in DSM-5 (2013), concerning the relationship between PTSD and dissociation, the latter is a subtype of PTSD which is determined by symptoms of derealization (experiencing unreal world, 'as in dream' feeling) and depersonalization (experiencing oneself as unreal, 'out-of-body' feeling) (p. 272). In an evolutionary context, peritraumatic dissociation is understood as "fright-flag-faint" phases in the defense cascade model of "freeze-flight-fight-fright-flag-faint", which is an adaptive survival model (Schauer & Elbert, 2010). It is described as a "shut-down" reaction of the organism in a traumatic situation in terms of para-sympathetic activation, changes in the consciousness, loss of speech (language processing and production), motor immobility, and sensory deafferentation (Lang, Bradley & Cuthbert, 1998; Schauer & Elbert, 2010).Various studies report the importance of peritraumatic dissociation in the development of PTSD. Ehlers, Mayou and Bryant (1998) report a correlation between peritraumatic dissociation and PTSD diagnosis (p. 513). Similar findings are stated in the study of Weiss, Marmar, Metzler, and Ronfeldt (1995), who report that more peritraumatic dissociation experiences predict more posttraumatic symptomatic distress (p. 366).

1.1.5. Psychological trauma and depression

Depression is the leading cause of disability worldwide and is a major contributor to the overall global burden of disease (World Health Organization, 2016). Various studies are analyzing the development of depression after experiencing traumatic life events. According to the reports of Kilpatrick et al. (2003), the prevalence of depression after interpersonal violence among adolescents is higher (7.4% for boys and 13.9% for girls) than prevalence of PTSD (3.7% for boys and 6.3 % for girls and other trauma-related disorders).

Kendler, Hettema, Butera, Gardner & Prescott (2003) researched the risk for depressive episodes linked to stressful life events, which they defined through 4 categories: loss, humiliation, entrapment, and danger. They found a strong link between loss and humiliating life events and depressive episodes (p. 791).

Development of depression as a result of psychological trauma has been explained by the theory of learned-helplessness (Tran, 1993). The label of learned helplessness was offered by Overmier & Seligman (1967), who conducted an experiment on dogs and showed that in a condition of inescapable shock exposure, dogs were giving up and passively falling for the shock. Since then the topic of learned helplessness has become an area of interest to psychological researchers. Some similar effects were found in humans (Mikulincer, 1993). Particularly, in the study of Tran (1993), it was found out that among the Vietnamese people living in the U.S. stressful experiences, namely, premigration stresses, nightmares, and acculturation stresses, decreased a sense of personal efficacy and increased symptoms of depression.

Early traumatic experience in children is also a topic for numerous investigations which showed increased probability of developing depression. Childhood adversities, such as sexual abuse at early ages and poor parental care, are also associated with the risk of developing major depression in adult women (Hill, 2009; Hill et al., 2001). In the study of Poole, Dobson & Pusch (2017), adverse childhood experiences, such as childhood abuse, neglect, and household dysfunction, were identified as risk factors for developing depression. Through the hierarchical regression, the authors found that a large number of adverse childhood experiences increased depression symptoms.

1.1.6. Psychological trauma and appetitive aggression

Understanding of violence and aggression. Dreer, Maurelli, Ronan & Gerhart (2014) define human cruel behavior as an intention to cause pain and trouble to other people. According to their perspective, it appears in three states: anger, aggression, and violence. Anger is described as an emotional reaction to personally perceived injustice. In presenting characteristics of aggression, the authors defined it as a hostile, injurious, or destructive behavior (p. 3). The outcome of aggression, however, authors see as an intention of a person to cause mostly psychological harm. In contrary, violence is associated with applying physical force, thus to injure or abuse (p. 4). The behavioral pattern of violence and other types of cruel attitude towards others has an intention to take control over a single individual or group of people (Violence Prevention Initiative, 2016). The definition of violence, according to the Report on Violence and Health (2002) of World Health Organization (WHO), is as follows: "The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation" (p. 4). Violence can appear in different forms in controlled context (e.g., war, criminal sentencing) and in illegal actions. Behavioral categorization of illegal violence includes assault and battery, bullying, child maltreatment, destruction of property, elder abuse, gang-related violence, sexual homicide, intimate partner violence, sexual assault, suicide, terrorism, and vigilantism (World Health Organization, 2002).

In the recent literature of violence, the topic of the "circle of violence" or the "intergenerational transmission of violence" is very popular (Lindert & Levav, 2015, pp. 27-28),

which analyzes the childhood violence experience's influence on the development of perpetrating violence behavior in adolescence and adulthood.

Psychological trauma and appetitive aggression. The connection between psychological trauma and aggression is mostly examined in a context of armed conflicts and war. In numerous studies, traumatic experiences, such as self-perpetrated torture and violence, proved to lead to development of PTSD (Bayer, Klasen & Adam, 2007; Berntsen et al., 2012). However, even though the prevalence of PTSD symptoms is high in former combatants, one should also pay attention to the fact that there are a lot of combatants who are also participants in violence and torture but do not develop trauma symptoms (Elbert, Weierstall & Schauer, 2010). There are some mechanisms which are preventing the development of PTSD symptoms and helping the combatants to adapt to the conflict situation. Elbert, Weierstall and Schauer (2010) describe a different form of aggression, namely appetitive aggression, which, compared to the reactive-impulsive form, is controlled-instrumental. It is defined as an attractive hunting behavior, which in evolutionary context is explained as a need or desire to hunt. The described desire is reinforced through the release of testosterone, serotonin, and endorphins, which are mediating the feeling of euphoria and are also ceasing pain (p. 100). The authors suggest that there is a mechanism underlying the hunting behavior: that is the hunting network, which is formed in analogy to the fear network (Elbert, Rockstroh, Kolassa, Schauer & Neuner, 2006) and is constantly competing with the latter one. Both networks share some common sensory, cognitive, and physiological responses to violence; however, the difference appears when one looks from perspectives of being a victim or perpetrator. That is, experiencing violence extends the fear network and in case of re-exposure to one of the violence cues, the alarm response of the network is activated. From the perspectives of perpetrators, the hunting network is activated,

which elicits appetitive arousal (Elbert, Rockstroh, Kolassa, Schauer & Neuner, 2006). Some cases are described in reports of Elbert et al. (2010) and Maclure & Denov (2006), where violence and cruel behavior are seen as attractive and fascinating, which gives a sense of power over others. The perception of violent cues as appetitive, however, is not directly excluding the development of PTSD symptomatic. Several studies reported a linear relationship between PTSD symptoms and appetitive aggression, but the interesting fact is that this relationship is true only up to some threshold of PTSD symptom severity. This means that though appetitive aggression can be seen as an adaptive mechanism in violent experiences, it is not good resilience against PTSD (Elbert, Weierstall &Schauer, 2010; Hecker, Hermenau, Maedl, Schauer & Elbert, 2013; Nandi, Bambonye, Crombach & Elbert, 2015; Weierstall, Castellanos, Neuer & Elbert, 2013).

1.2. Violence exposure in Armenia

1.2.1. Earthquake in Spitak and Gyumri

The earthquake that happened in the northern part of Armenian Republic of the Soviet Union on 7th of December 1988 is known to be one of the most devastating natural catastrophes of the 20th century (Armenian, Melkonian, Noji, & Hovanesian, 1997). It is named after the city Spitak, which was the closest city to the epicenter. With a magnitude of 6.9 on the Richter scale, it affected four cities and 350 villages, killing 25 000 people according to Soviet reports and 100 000 people according to European sources; an additional 530 000 people were left homeless. After the earthquake, the city Spitak was almost completely destroyed, and the second most affected city Gyumri (former Leninakan) was 50% destroyed and 90% damaged. It was planned to rebuild the damaged cities in two years; however, by June 1990, barely 15% of the projected

constructions of houses and not more than 7% of constructions of nursery schools were finished (Armenian, Melkonian, Noji, & Hovanesian, 1997, Goenjian, 1993, Goenjian et al., 1995). According to the reports of Goenjian (1993), the consequences of the earthquake included lack of housing and protection from cold weather, loss of jobs, displacement of survivors, and corruption, which caused an unfair spreading of relief materials to the victims. In line with these problems, mental health services in Soviet Armenia were offered only by psychiatrists. The author mentioned also that the stigmatization of being in psychiatric treatment was very high at that period, mainly because there were no out-patient mental health clinics and the treatment was mostly provided to individuals with severe mental disorders. After earthquake time, there were only four certified psychologists in Armenia. The number of local medical and mental health services was decreased because of their own loss and traumatic experiences. Armenian Relief Society of the Western United States and the government of Soviet Armenia organized a psychiatric outreach program to provide mental health services for victims of the earthquake. The program involved the training of mental health professionals in evaluation and individual and group therapeutic forms of psychological first-aid techniques. In Spitak and Gyumri mental health clinics were opened (Goenjian, 1993).

The earthquake in Armenia caused a very high prevalence of PTSD which, according to the epidemiological reports of Goenjian (1993) and Goenjian et al. (1995), ranged from 50% to 95% among the affected population in different cities three to six months after the disaster. The prevalence of major depressive disorder ranged between 6% and 35%. The study of Armenian et al. (2000), which was conducted two years after the earthquake, showed that almost the half of the population, who suffered from the earthquake, met the criteria for PTSD.

1.2.2. War in Nagorno Karabakh

For about the last hundred years, the conflict between Armenia and Azerbaijan has been going on concerning the territory of Nagorno Karabakh (NK), which is situated in the Southern Caucasus (Balalian, Simonyan, Hekimian & Crape, 2014; Kohlhagen, 2013). This region was initially a the part of pre-Soviet Armenia, which in the Soviet Union in 1923 was annexed to the Soviet Republic of Azerbaijan by the order of Stalin (Thompson, Dorian & Harutyunyan, 2010). As the Soviet Union collapsed, NK declared itself independent from Azerbaijan in 1988, which caused a military conflict (Minasyan, 2010). The independence movement for self-determination started in 1988, escalated to war in 1991, and ended in 1994 with a ceasefire (Balalian, Simonyan, Hekimian & Crape, 2014; Minasyan, 2010; Thompson, Dorian & Harutyunyan, 2010). It was managed on the international level by the special committee of the Organization for Security and Cooperation called the Minsk Group, which was co-chaired by Russia, the U.S., and France (Zartman. 2013). However, the ceasefire did not bring peace to both sides; the conflict is known to be "frozen" and the ceasefire is being violated regularly along the borders of NK and Azerbaijan (Balalian, Simonyan, Hekimian & Crape, 2014; Public International Law, 2000). According to the reports of Minasyan (2010), the number of killed people during the war on both sides reached tens of thousands. In line with this, hundreds of thousands lost their homes, were deported, or became refugees.

Since the ceasefire, the biggest violation happened on April 2016, which is known as the four-days war. It brought more than 100 deaths on both sides and more than 150 were wounded. This armed conflict began on the 2nd of April and lasted till the 6th of April with a resumption of the ceasefire (Lorusso, 2016).

1.3. Study questions

Though Armenian folk have a traumatic past in which the effects have lasted to the present, the studies on trauma and violence exposure and related mental changes are few in Armenia. With this study, we wanted to reduce the gap in this field. In a sample of Armenian trauma survivors we aimed to assess lifetime traumatic event types, as well as perpetrated acts and their consequences. Therefore, the Threats to Human Life Scale was used (see the detailed description in para. 2.4.2.), which gives an opportunity to screen all possible traumatic life events of a person including natural and human made disasters and experiences connected to victimization or perpetration.

As outlined before, the increase of different traumatic experiences leads to an increase of psychological distress and psychiatric disorders (e.g., Elbert, Weierstall & Schauer, 2010; Neuner et al., 2004; Turner & Lloyd, 1995). In the Armenian sample, we first wanted to see whether there is an association between violence exposure (witnessed, experienced, or perpetrated) and psychopathological symptoms.

Within this study, the next aim is to find out if the different threats to human life, namely physical integrity threat, social integrity threat, and social and physical dominance behavior predict psychopathological symptoms. As described in the introduction, many studies were conducted to find out the associations between different types of trauma and various mental changes. Social threats, such as public humiliation, workplace bullying, peer victimization, are being found to be associated with psychological distress (Nielsen & Einarsen, 2012), posttraumatic stress (Carleton, Peluso, Collimore, & Asmundson, 2011), psychosocial maladjustment (Hawker & Boulton, 2000), and other mental problems. Within physical integrity

threats, associations between PTSD (Neria, Nandi & Galea, 2008), social anxiety disorder, depressive disorder (Hussain, Weisaeth & Heir 2011), dissociation (Schauer & Elbert, 2010), appetitive aggression (Hecker, Hermenau, Maedl, Schauer & Elbert, 2013), substance use disorder (Vetter, Rossegger, Rossler, Bisson & Endrass, 2008), and other psychiatric problems are reported. Concerning perspectives of social and physical dominance behavior, associations were found between appetitive aggression (Weierstall, Schaal, Schalinski, Dusingizemungu & Elbert, 2011), PTSD (Vinck, Pham, Stover & Weinstein, 2007), depression, substance use disorder, anxiety disorder (Trivedi, Post, Sun, Pomerantz & Saxon, 2015), and other mental changes.

As mentioned before, trauma studies in Armenia are generally few and mostly include research on PTSD and depression, and because our sample includes partly war participants, we also wanted to see how appetitive aggression in particular is associated with social and physical dominance behavior.

Due to the small sample size, we will not separately analyze violence exposure and related mental changes regarding perspectives of witnessing, experiencing, or perpetrating acts.

Although the Threats to Human Life Scale gives an opportunity to split the subscale of physical integrity threat according to the reactions of the defense cascade (freeze, flight, fight, fright, flag, and faint) and to analyze how these reactions are associated with different mental changes, we could not apply this in this study for the aforementioned reason.

1.4. Hypotheses

According to the findings described above, the following outcomes are expected in this study:

(1) The total number of traumatic experiences and perpetrated violence is associated with the number of psychopathological symptoms.

(2) Different subscales of the Threats to Human Life predict psychopathological symptoms.

(3) The number of social and physical acts of violence predicts the total score of appetitive aggression, while controlling for the number of physically or socially threatening events.

2. Method

2.1. Setting

The study was conducted in two cities of Armenia: in Yerevan, the capital of Armenia, in the "Medical Center Izmirlian" (within the period of 29.02.16-12.03.16 and 29.03.16-02.04.16) and in Gyumri, in the "Rehabilitation Center Samariter" (within the period of 14.03.16-28.03.16).

The setting of Armenia is within the interest of this study, because traumatic life experiences (e.g., earthquake, war) and exposure to violence (e.g., sexual abuse, domestic violence) are a part of everyday life for the people.

The working staff of both centers, including the deputy director of "Medical Center Izmirlian" and the head of "Rehabilitation Center Samariter", were informed about the study. The aims of the study and research target groups were explained in detail during private appointments with the aforementioned staff. The recruitment of participants was done in two ways: through the spread of information among people of two centers and through an agreement with one ex-combatant, a colonel of the war in Nagorno Karabakh, who re-directed ex-combatants of the war to participate in the study.

2.2. Procedure

The study was organized by Prof. Dr. Thomas Elbert, Dr. Anke Köbach, Dr. Maggie Schauer and M. Sc. Tamara Stepanyan. The interviews were conducted by me, Tamara Stepanyan, Master student in psychology at the University of Konstanz. Beforehand I

participated in several examinations in the competence center of psychotraumatology at the Reichenau Psychiatric Center (Zentrum für Psychiatrie (zfp) Reichenau), Germany, and also conducted some diagnostics under supervision.

The study was approved by the ethical committee of Konstanz University within the framework of the Declaration of Helsinki (World Health Organization, 2001).

Each participant was provided an informed consent form before the interview, which they had to sign after getting familiar with the brief explanation of the process, the risks and discomforts of the study, and the rights of participants. All respondents were reimbursed for their participation in the study.

The inclusion condition for participants was the ability to give consent to participate for themselves (≥ 18 years old). Exclusion criteria were acute drug-addiction, alcohol intoxication, an acute psychosis, or diagnosed organic brain disease.

The interview consists of questions about psychological problems and potential traumatic experiences of the respondent, and in order to regulate the possible emotional disbalance induced by the questions during the interview, the respondents were given an opportunity to contact a local psychologist (David Gevorgyan, head of YSU Center of Applied Psychology, Yerevan, Armenia) and if needed, obtain a referral to a psychotherapist.

During the whole study, the process of research, concerning ongoing questions, and complications were controlled and supervised by Dr. Köbach through weekly Skype calls and e-mail.

Each interview lasted 1.5 to 2 hours on average, depending on the amount of traumatic life experiences of the participant and his or her concentration ability.

2.3. Participants

The sample overall consists of 60 participants: 27 (45%) male and 33 female (55%). 48.3% of respondents are from Gyumri, 36.7% from Yerevan, and the rest are from several small cities in Armenia. Almost all participants (95.5%) are citizens of the Republic of Armenia. The average age of all respondents is 50.7 (*SD* = 10.7; *range* = 20-71). All participants have writing and reading skills and at least basic school education (8 years). 35% are unemployed. 86.7% of them have at least 1 child, and the average number of children per person is 2 (*SD* = 1.3; *range* = max: 8). 16 male participants reported being involved in the military, from which 2 of them participated in torture activities, 4 own firearm, and 1 owns a combat dog. The average number of family members per person is 4.3 (*SD* = 2.1; *range* = 1-14). 16.7% participants currently have an ill family member at home, 91.7% have dead family members (see social-demographical results in Table 2.1).

According to the results on general health condition, 55% of respondents have undergone an operation. During the past 4 weeks, 28.3% of respondents reported coughing, 35% had flu, 62.7% - headache, 31.7% - fever, 6.7% - skin rash, 6.7% - diarrhea, 25% - stomach pain, and 23.7% mentioned other types of somatic complains. Overall, 13.3% of all subjects have a prehistory of psychotherapy.

Table 2.1

Socio-Demographical Results

(*N*=60)	*Frequency*	*Percent*	*M ± SD*	*Range*
Sex *(male)*	27	45.0	-	-
Country of birth *(Armenia)*	57	95.5	-	-
Town of birth *(Yerevan, Gyumri, other)*	22,29,9	36.7, 48.3, 15	-	-
Age	-	-	50.7 ± 10.7	[20-71]
Writing and reading	60	100	-	-
Years of education	-	-	13.9 ± 3.1	[8-24]
Unemployed	21	35.0	-	-
Military	16	26.7	-	-
Torture activities	2	3.3	-	-
Owning firearm	4	6.7	-	-
Owning a combat dog	1	1.7	-	-
Hunting in free time	5	8.3	-	-
Marital status *(single, married, divorced, widowed)*	5, 45, 4, 6	8.3, 75.0, 6.7, 10.0	-	-
Having children	52	86.7	-	-
Number of children	-	-	2 ± 1.3	[max: 8]
Inhabitants number	-	-	4.3 ± 2.1	[1-14]
Current ill family member	10	16.7	-	-
Dead family member	55	91.7	-	-

2.4. Instruments

In this study, the following instruments were applied: socio-demographic questionnaire; Threats to Human Life (THL; Köbach, Elbert & Schauer, unpublished) event-checklist, which includes all relevant social and physical threats to human life as well as perpetrated violent acts; PTSD Symptom Scale – Interview for DSM-5 (PSS-I-5; Foa & Capaldi, 2013, Foa et al., 2016), to make a diagnosis of PTSD and to obtain an estimate of the severity of the symptoms; Appetitive Aggression Scale (AAS; Weierstall & Elbert, 2011) for the assessment of the attraction to violence; Shutdown Dissociation Scale (Shut-D; Schalinski, Schauer & Elbert, 2015) to assess the risk for dissociation; Patient Health Questionnaire (PHQ; Spitzer, Kroenke & Williams, 1999), particularly PHQ-9 (Kroenke & Spitzer, 2002), the depression scale from PHQ to determine the severity of depression.

According to the regulations of World Health Organization on translation and adaptation of instruments (2017), the testing methods were translated forward from English to Armenian language, which were afterward translated back and pre-tested before the final version.

As *dependent* (outcome) variables, appetitive aggression (AAS) and psychopathology (PP) were defined. The latter in this study is the sum score of symptoms of PTSD, dissociation, depression, and appetitive aggression (each of these variables is created from the sum scores of PSS-I-5, Shut-D, PHQ-9, and AAS).

As *independent* (predictor) variables, traumatic life experiences on 3 subscales of the THL checklist were defined, namely: Physical Integrity Threat (THL_PI), Social Integrity Threat (THL_SI), Social and Physical Dominance Behavior (THL_DB), and the total sum score of mentioned scales (THL_ss) as well.

2.4.1. Socio-demographic questionnaire

The socio-demographic questionnaire collects information on several personal characteristics of participants. It includes a group of social questions about age, sex, date of birth, town/village, country of birth, occupation, literacy, marital status, number of children, and inhabitants in the house. The other part screens the military experience and some aggressive activities of participants: namely, if the participant was in the military, was involved in torture activities, has a cold weapon or firearm at home, owns a fight dog, participates in fighting sports, or hunts in his/her free time. Other questions refer to reproductive function (e.g., infertility among close relatives) and diseases/deaths in the participant's family. And the last part of the questionnaire includes questions on the general health condition of subjects: namely, experience of undergoing a surgery, having the following somatic complaints in the last four weeks: cough, flu, headache, fever, skin rush, diarrhea, stomach pain, other complaints, and prehistory of psychotherapy.

2.4.2. Threats to Human Life – THL

The THL (Köbach, Elbert & Schauer, unpublished) is a newly-developed event checklist that includes the whole range of social and physical threats to human life (conventional traumatic event types are included). It was designed to screen all the interpersonal victimization-perpetrating experiences as well as natural and environmental disasters. The checklist is available in interview (THL) and self-report (THR-SR) forms.

The initial version of the checklist was called Threatful Events to Life and Fitness – Interview (TELFI) and was first applied in this study as an interview.

The checklist used in the current study consists of the following three subscales (as in the final version):

- Threats to physical integrity - THL_PI (Questions 1-25)
- Threats to social integrity – THL_SI (Questions 26-30)
- Social and physical dominance behavior – THL_DB (Questions 31-50)

The items of THL_PI are referring to one of the physical modalities essential for survival (e.g., sufficient oxygen supply, integrity of organs). Different item groups of this subscale are associated with a specific peritraumatic response, namely fight/flight (tonic mobility), fright (tonic mobility), and flag/faint (flaccid immobility). For instance, fright is triggered by a predatory threat by an aggressor, suffocation, tissue or organ damage, etc. Shutdown is triggered by tissue damage, contamination, invasion, and penetration.

The subscale THL_SI is asking for extraordinary strong negative social incidents with posed threats to social integrity, for instance, social interactions, community status, reliable bonds, and the production of offspring.

The subscale THL_DB includes different forms of aggression against oneself, objects, animals, and other people. In this case, the same modalities are targeted: threatening the social or physical integrity of a potential aggressor.

The THL assesses not only the presence or absence of an event, but also the frequency and how regularly the event occurred. In addition, it also assesses the attributed causality (trusted person, family member, stranger, organized violence, accident, or natural disaster) as well as the age of the person when the event happened.

Within the interest of this study, only people who had at least one event on the subscale "Social and physical dominance behavior" were assessed on Appetitive Aggression Scale (*N* = 47). The other respondents did not complete the aforementioned questionnaire.

2.4.3. PTSD symptom scale – Interview for DSM-5 - PSS-I-5

The PSS-I-5 (Foa & Capaldi, 2013) is a flexible, semi-structured interview used to make a diagnosis of PTSD as well as to obtain an estimate of the severity of the symptoms. During the interview, the symptoms should be linked to a single identified "target" trauma, which must be identified by the participant as currently the most distressing one.

PSS-I-5 consists of trauma screen items, questions on re-experiencing trauma, avoidance symptoms, changes in cognition and mood, and increased arousal and reactivity.

The time frame for the reported symptoms is established for the past month only. Accordingly, each item of the questionnaire should be asked in reference to the past month, or if < 1 month, the question to ask is "since the event".

The task of the interviewer is to determine whether a symptom is present, then evaluate the severity of it. The severity of the symptom is determined on a five-point scale as follows: 0 - not at all; 1 - once per week or less/a little; 2 - 2 to 3 times per week/somewhat; 3 - 4 to 5 times per week/a lot; 4 - 6 or more times a week/severe.

The final severity is calculated by a combination of symptoms' frequency and intensity.

The PTSD diagnosis is determined by the amount of symptoms per symptom clusters. That is, one intrusion symptom, one avoidance symptom, two cognition and mood symptoms, and two arousal and reactivity symptoms. The diagnosis also requires a symptom duration of more than one month (Criterion F) and clinically significant distress or impairment (Criterion G).

The severity is calculated by totaling the 20 symptom ratings within a range of 0 to 80. A score of 23 might be set as cutoff point for diagnosis, with scores between 0-22 indicating no diagnosis, and 23-80 indicating a probable diagnosis.

The PSS-I-5 has a good internal consistency (α = .89) and test-retest reliability (r = .87). It has an excellent interrater reliability for the total severity score (intraclass correlation = .98) and interrater agreement (κ = .84) (Foa et al., 2016).

2.4.4. Appetitive Aggression Scale – AAS

The AAS (Weierstall & Elbert, 2011) is a semi-structured interview that assesses the participant's attraction to violence. The initial aim of the questionnaire is to assess serious types of violence (like murder and assaults), mostly in people who are involved in the armed forces or other violent groups. This method is not appropriate to use in cases of minor violent acts and accidentally harming other people.

The AAS consists of fifteen items on the experiences of other people of committing violence. The participant has to answer how strongly he or she agrees or disagrees with the given question on the scale from 0 (disagree) to 4 (agree).

The establishment of a time frame is optional for the interviewer, which must be related to the time in combat or armed forces. In our study, the time frame was determined individually for combat or other periods of perpetrating an act of violence.

In administering the results, it is important to distinguish appetitive aggression from facilitative aggression, where the important part is not to include the aggressive act in a state of the highest rage or anger of the person.

During the scoring, the severity score of appetitive aggression is calculated.

2.4.5. Shutdown Dissociation Scale – Shut-D

The Shutdown-Dissociation Scale (Schalinski, Schauer & Elbert, 2015; Schauer & Elbert, 2010) is a structured interview for assessing dissociation risk.

The Shut-D consists of thirteen items on typical bodily reactions of a person as a response to reminders of a stressful experience. The questions refer to the progressive symptoms of the final stage of the defense cascade (fright, flag and faint), which are following (Schalinski, Schauer & Elbert, 2015, p. 2):

- functional sensory de-afferentation (including kinaesthetic, somesthetic)
- reduced nociception
- emotional numbing
- motor paralysis (tonic and flaccid immobility)
- loss of language functions/suppresses vocalization
- pseudoneurological symptoms
- (pre)-syncope

The respondent has to answer whether he or she has experienced the symptoms in their everyday life and define the frequency as the following: 0 - not experiencing at all; 1 – little/once a month or less; 2 – sometimes/several times a month; 3 – often/several times a week.

The time frame should be established over the past six months from the traumatic event or, if the trauma happened less than six months ago, the interviewer should ask “since the traumatic event”.

In administering the questionnaire, it is important to exclude the symptoms which can arise as side effects of medications, alcohol, and drugs or as effects that may appear at the beginning of menopause.

The total score is defined by summing the thirteen items. Scores range from 0 to 39, which determine the severity of shutdown dissociation.

The questionnaire showed excellent internal consistency (Cronbach's alpha = .89). The test-retest reliability index was high (r = .93, p < .001, 95% CI [0.88, 0.96]. Also the convergent validity of the Dissociative Experience Scale (Bernstein & Putman, 1986) was assessed, which showed that the correlation of the sum scores with Shut-D was significant (r = .86, p < .001).

2.4.6. Patient Health Questionnaire – PHQ

The Patient Health Questionnaire (Spitzer, Kroenke & Williams, 1999) is the self-administrated version of PRIME-MD, which diagnoses the five most common types of mental disorders: depressive, anxiety, somatoform, alcohol, and eating disorders (Spitzer et al., 1994), which are all scored as DSM-4 diagnosis for all types of disorders, except somatoform (PHQ Instruction Manual). Each of the previously mentioned modules can be used separately due to the condition of interest, together with several modules, or as a part of the full PHQ (PHQ Instruction Manual).

Within the interest of this study, we used the PHQ-9 (Kroenke & Spitzer, 2002), the depression scale from PHQ. It consists of nine items. To calculate the depression severity, each item is scored from 0 to 3 in the response categories of "not at all", "several days", "more than half the days", and "nearly every day" respectively. The range of total score is from 0 to 27. The cut points for mild, moderate, moderately severe, and severe depression are 5, 10, 15, and 20 respectively.

2.5. Data analysis

The statistical analyses were done with IBM SPSS Statistics 22. For all conducted analyses, a significance level of .05 was determined. The results with $p > .05$ were interpreted as not significant. In testing the statistical significance, we used two-tailed tests.

The data was first explored for the violation of assumptions on additivity and linearity, normality, homogeneity of variance, independence, and multicollinearity (see in Appendix B).

Spearman's rho (r_s) correlation, which is useful in current study to minimize the effects of extreme scores and effect of violation of the assumptions, was calculated between independent and dependent variables. For the same reason, after every analysis BCa bootstrap 95% CIs is reported in brackets.

For our first hypothesis - (1) The total number of traumatic experiences and perpetrated violence is associated with the number of psychopathological symptoms - simple linear regression was applied ($N = 60$).

To test the second hypothesis - (2) Different subscales of the Threats to Human Life predict psychopathological symptoms – we checked first the correlations between the THL subscales and every outcome variable: PTSD, dissociation, depression, and appetitive aggression. Afterwards, in order to see how the THL subscales predict the sum score of psychopathology, a multiple regression analysis with the blockwise entry method ($N = 60$) was conducted.

And for the third hypothesis - (3) The number of social and physical acts of violence predicts the total score of appetitive aggression, while controlling for the number of physically or socially threatening events – again a multiple regression analysis with the blockwise entry method between the THL subscales and appetitive aggression ($N = 47$) was applied.

3. Results

3.1. Descriptive results

The descriptive results of the THL sum score, THL subscales, and psychopathology are presented in the Table 3.1. In total, the average number of all traumatic life events is 14.9 (*SD* = 6.8; *range* = 3-35), from which an average of 8.6 (*SD* = 3.5; *range* = 1-18), 2.8 (*SD* = 1.2; *range* = 1-5), and 3.5 (*SD* = 3.5; *range* = max: 15) are accounted for by the THL subscales of Physical Integrity Threat (THL_PI), Social Integrity Threat (THL_SI), and Social and Physical Dominance Behavior (THL_DB) respectively. 36.7% of participants met the diagnostic criteria of PTSD. The average scores of psychopathology are as follows: 13.5 for PTSD (*SD* = 8.4; *range* = max: 44); 7.3 for depression (*SD* = 4.2; *range* = max: 18); 3.8 for appetitive aggression (*SD* = 6.7; *range* = max: 27); 8.2 for shutdown dissociation (*SD* = 7.0; *range* = max: 26). The symptoms' severity for PTSD and depression are presented in Table 3.1.

Table 3.1

Descriptive Results of Threats to Human Life and Psychopathology

(*N*=60)	*Frequency*	*Percent*	*M* ± *SD*	*Range*
THL (sum score)	-	-	14.9 ± 6.8	[3-35]
THL_PI	-	-	8.6 ± 3.5	[1-18]
THL_SI	-	-	2.8 ± 1.2	[1-5]
THL_DB	-	-	3.5 ± 3.5	[max: 15]
PSS-I-5 (sum score)	-	-	13.5 ± 8.4	[max: 44]

(*N*=60)	*Frequency*	*Percent*	*M* ± *SD*	*Range*
PSS-I-5 (diagnosis met)	22	36.7	-	-
Symptoms severity of PSS-I-5				
minimal	20	33.3	-	-
mild	25	41.7	-	-
moderate	12	20.0	-	-
severe	3	5.0	-	-
very severe	0	0	-	-
PHQ-9 (sum score)	-	-	7.3 ± 4.2	[max: 18]
Symptoms severity of PHQ-9				
mild	21	35.0	-	-
moderate	28	46.7	-	-
moderately severe	9	15.0	-	-
severe	2	3.3	-	-
AAS (sum score)	-	-	3.8 ± 6.7	[max: 27]
Shut-D (sum score)	-	-	8.2 ± 7.0	[max: 26]
PP (sum score)	-	-	32.8±17.6	[8-92]

Note. THL = Threats to Human Life; THL_PI = Physical Integrity Threat; THL_SI = Social Integrity Threat; THL_DB = Social and Physical Dominance Behavior; PSS-I-5 = PTSD Symptom Scale – Interview for DSM-5; PHQ-9 = Patient Health Questionnaire (depression scale); AAS = Appetitive Aggression Scale; Shut-D = Shutdown Dissociation Scale, PP = Psychopathology.
PSS-I-5 symptoms severity: minimal symptoms = 0-8, mild = 9-18, moderate = 19-30, severe = 31-45, very severe = 46-80. Shut-D symptoms severity: mild = 5, moderate = 10, moderately severe = 15, severe = 20.

The results of Spearman's rho (r_s) correlations between dependent and independent variables are presented in Table 3.2. Bias corrected and accelerated bootstrap 95% CIs are reported in square brackets. The results show positive correlation between sum scores of traumatic events and psychopathological symptomatology ($r_{s\,=}$ .26 [.02, .52], p = .05).

The subscales THL_PI and THL_SI (r_s = .27 [.03, .49], p = .03), and THL_PI and THL_DB (r_s = .61[.37, .78], p < .001) are also positively correlated.

Within the dependent variables, a strong positive correlation was found between symptoms severity of PTSD and depression (r_s = .40 [.17, .61], p = .001), and depression and dissociation (r_s = .51 [.25, .68], p < .001).

Table 3.2

Correlations Between Threats to Human Life and Psychopathology

N = 60	1	2	3	4	5	6	7	8	9
1. THL (sum score)		.92**	.40**	.82**	-.07	-.02	.60**	.25	.26*
		[.85, .96]	[.17, .60]	[.68, .91]	[-.33, .21]	[-.27, .23]	[.40, .75]	[-.03, .52]	[.02, .52]
2. THL_PI			.27*	.61**	-.01	.02	.51**	.30*	.30*
			[.03, .49]	[.37, .78]	[-.28, .26]	[-.23, .29]	[.22, .74]	[.02, .56]	[.05, .55]
3. THL_SI				.12	-.10	.10	.10	.29*	.17
				[-.14, .38]	[-34, .16]	[-.13, .37]	[-.17, .35]	[.03, .53]	[-.10, .41]
4. THL_DB					-.09	-.14	.71**	.07	.13
					[-.00, .14]	[-.38, .10]	[.58, .81]	[-.22, .36]	[-.15, .40]
5. PSS-I-5						.40**	.07	.17	.69**
						[.17, .61]	[-.20, .32]	[-.10, .46]	[.51, .81]
6. PHQ-9							-.03	.51**	.75**
							[-.31, .23]	[.25, .68]	[.58, .86]
7. AAS								.03	.33**
								[-.27, .32]	[.06, .55]
8. Shut-D									.62**
									[.40, .79]
9. PP									

Note. THL = Threats to Human Life; THL_PI = Physical Integrity Threat; THL_SI = Social Integrity Threat; THL_DB = Social and Physical Dominance Behavior; PSS-I-5 = PTSD Symptom Scale – Interview for DSM-5; PHQ-9 = Patient Health Questionnaire (depression scale); AAS = Appetitive Aggression Scale; Shut-D = Shutdown Dissociation Scale; PP = Psychopathology.
* $p < .05$, ** $p < .01$ (2-tailed). BCa bootstrap 95% CIs reported in square brackets.

3.2. Hypothesis-based analyses

In order to test the first hypothesis, a simple linear regression was applied. It was tested whether the sum score of traumatic life events was associated with the number of psychopathological symptoms (see Table 3.3). A significant regression equation was found (F (1-58) = 9.330, p = .003), with an R^2 of .139 (see also *Figure 2*).

Table 3.3

Results of Simple Linear Regression Analysis Predicting Psychopathology.

(*N*=60)	*B*	*SE B*	*ß*	*t*	*p*
Constant	18.38 [5.80, 31.95]	5.18		3.55	.001
THL	0.97 [.13, 1.72]	0.31	.372	3.05	.003

Note. *B* = unstandardized regression weight, *SE* = standard error, *ß* = standardized regression weight. THL = Threats to Human Life (sum score)
R^2 = .139.
* $p < .05$, ** $p < .01$ (2-tailed). BCa bootstrap 95% CIs reported in square brackets.

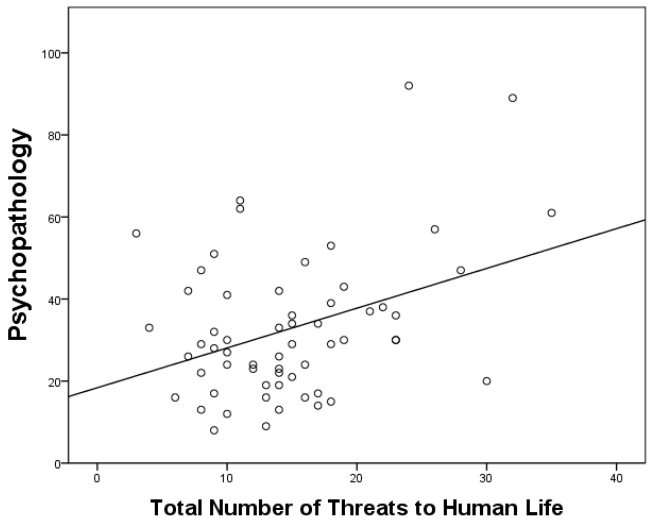


Figure 2. Results of simple linear regression analysis predicting psychopathology from total number of threats to human life.

For the second hypothesis we checked the correlations between THL subscales and single disorders and found positive correlations between THL_PI and appetitive aggression (r_s = .51 [.22, .74], p < .001) and dissociation (r_s = .30 [.23, .56], p = .019). THL_SI has a positive correlation with dissociation (r_s = .29 [.03, .53], p = .024), and THL_DB has a positive correlation with appetitive aggression (r_s = .71 [.59, .81], p < .001) (see *Table 3.2*, p. 35). The scatterplots between the THL subscales and PTSD *(Figures C1, C2, C3*), dissociation *(Figures D1, D2, D3*), depression *(Figures E1, E2, E3*), and appetitive aggression *(Figures F1, F2, F3*) are presented in Appendix C, D, E, and F respectively.

A blockwise multiple regression between the THL subscales and psychopathology was also conducted to see whether they predict the latter. The results are presented in Table 3.4. For the first model, where only THL_PI is used as a predictor and THL_SI and THL_DB are controlled, we found that it accounts for 10.2% of the variability in psychopathology: (F (1-58) = 6.558, p = .013), with an R^2 of .102. For the second model, when THL_SI is the predictor, and THL_PI and THL_DB are controlled, 2.9% of variation in psychopathology is explained: (F (1-58) = 1.75, p = .191), with an R^2 of .029. And in the third model, when THL_DB is the predictor and THL_PI and THL_SI are controlled, it explains 11.6% of the variance in psychopathology: (F (1-58) = 7.65, p = .008), with an R^2 of .116 (see also *Figures 3, 4, 5*).

Table 3.4

Results of Blockwise Multiple Regression Analysis Predicting Psychopathology from Threats to Physical Integrity, Threats to Social Integrity, and Social and Physical Dominance Behavior

(*N*=60)	*B*	*SE B*	*ß*	*t*	*p*
Model 1					
Constant	19.24 [3.56, 33.79]	5.72		3.36	.001
THL_PI	1.58 [.14, 3.36]	0.62	.319	2.56	.013
Model 2					
Constant	25.58 [14.60, 35.77]	5.92		4.32	.000
THL_SI	2.57 [-1.03, 6.53]	1.94	.171	1.32	.191
Model 3					
Constant	26.79 [21.08, 33.01]	3.06		8.74	.000
THL_DB	1.73 [.01, 3.25]	.626	.341	2.76	.008

Note. THL_PI = Physical Integrity Threat; THL_SI = Social Integrity Threat; THL_DB = Social and Physical Dominance Behavior.
B = unstandardized regression weight, *SE* = standard error, *ß* = standardized regression weight.
R^2 = .102 for Model 1, R^2 = .029 for Model 2, R^2 = .116 for Model 3.
* $p < .05$, ** $p < .01$ (2-tailed). BCa bootstrap 95% CIs reported in square brackets.

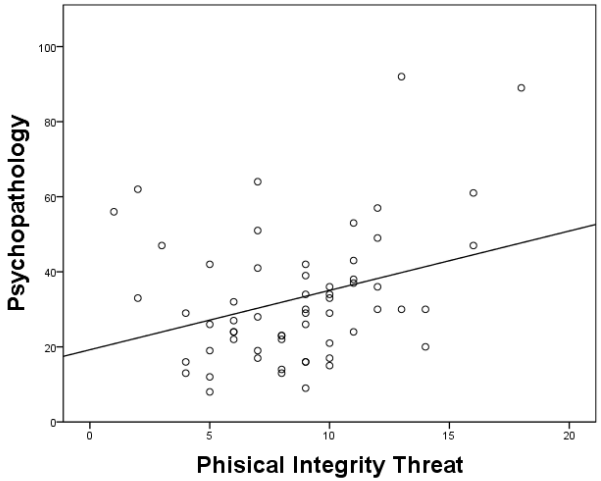


Figure 3. Scatterplot for psychopathology and physical integrity threat

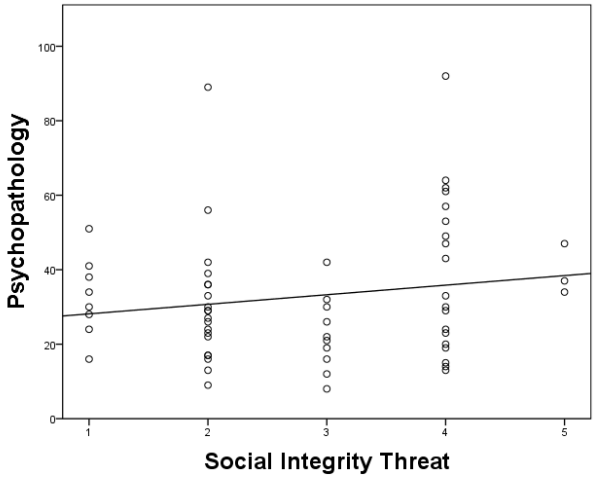


Figure 4. Scatterplot for psychopathology and social integrity threat

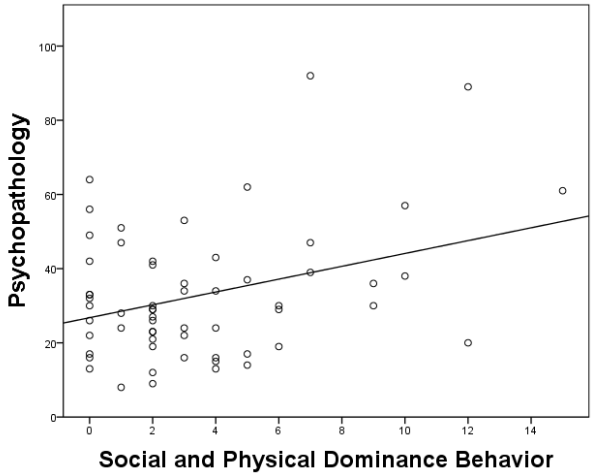


Figure 5. Scatterplot for psychopathology and social and physical dominance behavior

In the third hypothesis, using a blockwise multiple regression, we tested how much variability in appetitive aggression is accounted for by the subscale THL_DB, while controlling for the subscales THL_PI and THL_SI. The results are presented in Table 3.5. The subscale THL_DB as an only predictor accounts for 58.3% of the variability in appetitive aggression: (F (1-45) = 62.93, $p < .001$), with an R^2 of .583 and an *F change* of 62.93 ($p < .001$) (see *Figures F1, F2, F3* in Appendix F). When the other two subscales are also included as predictors, the explained variance of appetitive aggression remains nearly the same – 58.5%: (F (1-43) = 20.17, $p < .001$), with an R^2 of .585 and an *F change* of .076 ($p = .927$).

Table 3.5

Results of Blockwise Multiple Regression Analysis Predicting Appetitive Aggression from Social and Physical Dominance Behavior, While Controlling for Threats to Physical Integrity and Threats to Social Integrity

(*N*=47)	*B*	*SE B*	*ß*	*t*	*p*
Step 1					
Constant	-2.55 [-4.21, -.59]	1.16		-2.20	.033
THL_DB	1.66 [1.11, 2.13]	.21	.764	7.93	.000
Step 2					
Constant	-3.36 [-8.10, 1.27]	2.49		-1.35	.184
THL_DB	1.59 [.72, 2.18]	.28	.732	5.58	.000
THL_PI	.099 [-.48, 1.05]	.288	.046	.344	.733
THL_SI	.067 [-1.17, 1.24]	.602	.011	.111	.912

Note. THL_PI = Physical Integrity Threat; THL_SI = Social Integrity Threat; THL_DB = Social and Physical Dominance Behavior.
B = unstandardized regression weight, *SE* = standard error, *ß* = standardized regression weight.
R^2 = .583.
* $p < .05$, ** $p < .01$ (2-tailed). BCa bootstrap 95% CIs reported in square brackets.

4. Discussion

The aim of the present work was first to study the different kinds of threats to human life, including natural and human made disasters as well as experiences connected to victimization or perpetration and to see if the cumulation of them is associated with psychopathological symptoms. Second, with the help of the newly developed THL questionnaire, we tested the prediction of psychopathology from perspectives of different threats to human life, namely, physical integrity threat, social integrity threat, and social and physical dominance behavior. In the end, we examined social and physical dominance behavior as being a predictor of appetitive aggression in details.

Firstly, regarding the results of descriptive statistics on psychopathology, it can be said that the level of psychopathological symptoms is relatively high (see Table 3.1, p. 32), especially the number of PTSD diagnoses – 22 respondents met the diagnosis criteria. Surprisingly, we did not find any correlation between the number of traumatic life events and symptoms of PTSD and depression, which in turn were strongly positively intercorrelated. These results contradict with numerous findings that the higher number of traumatic events is associated with higher symptoms of mentioned mental changes (e.g., Hill, 2009; Hill et al., 2001; Neuner et al., 2004; Schauer et al., 2003; Turner & Lloyd, 1995). This unexpected finding in our sample might be explained by the armed conflict that suddenly erupted on the border of Nagorno Karabakh, which could have awakened old memories and feelings, causing an increase of symptoms of PTSD and depression.

For the question on whether the sum score of traumatic life events is associated with the total level of psychopathology, we found a cumulative effect but with a weak predictive power

(R^2 = .139). This indicates an increase of psychopathological symptoms with an increase of the total number of threats to human life. This finding is consistent with studies showing that more traumatic experiences predict more psychopathological symptoms (e.g., Neuner et al., 2004; Turner & Lloyd, 1995). In the study of Turner & Lloyd (1995) on the significance of cumulative adversity (N = 1.393), the cumulative effect was found for psychological distress and psychiatric disorders. A similar effect was found by Suliman et al. (2009) on PTSD and depression in a sample of adolescents in South Africa (N = 1.140). In our sample, the regression analysis showed that the total number of traumatic life events explains approximately 14% of the variation in psychopathology. Still, a big part of its variation remains unexplained.

Within this context, the result of PTSD frequency is also of interest: as mentioned above, diagnosis of it was met by 36.7% of the sample. The high PTSD rate in the sample and the weak predictive power of the THL sum score discussed above might have different explanations for our sample.

First, the variance in psychopathology which is not explained by cumulative effect of traumatic life events could indicate that there might be some other variables that were not controlled in this study that can potentially cause the development of PTSD and other trauma–related mental changes.

Armenian people are traumatized not only by earthquake, war, and everyday life traumatic events described in the introduction, but also by the experience of the genocide carried out by the Ottoman Turkish Government from 1895-1915. It took one-and-a half million Armenian lives and caused an immense migration of the survivors around the world (Kalayjian & Weisberg, 2002). Since this study's sample represents the second- and third-generation of

genocide survivors, there might be a possibility of transgenerational transmission of trauma, which has been becoming a topic of interest as of late.

Recent studies are concentrating on transgenerational transmission of trauma after war (Dekel, Goldblatt, 2008), genocide, or other severe traumatic experiences (Kellermann, 2013) as an important factor for developing PTSD in the second, third, and possibly other generations. Studies in epigenetics are exploring the molecular basis of heritable information (Eccleston et al., 2007). The transmission is described by heritable changes, which are not explained through changes in the DNA sequence. They occur in response to environmental stress or trauma experience, which causes certain marks on the chemical coating of chromosomes (Kellermann, 2013; Meaney & Szyf, 2005). This coating is a type of "memory" of the cell, which comprises a physical reminder of our own past, the past of our parents, grandparents, and beyond (Van der Kolk, 1994). From recent neuroendocrine studies, Yehuda & Bierer (2008) found out that neuroendocrine measures in the offspring of Holocaust survivors were negatively correlated with the severity of parental PTSD symptoms.

Second, it is also important to consider the fact that on the days when interviews were conducted for this study (on March-April, 2016), escalation of the "frozen" conflict between Azerbaijan and Nagorno Karabakh took place that ended in the 4-day war between these two countries (Lorusso, 2016). Accordingly, the participants might have had an increased level of trauma-related mental changes, in particular in PTSD, due to revival of past war memories and the threat of new ones.

Regarding predicting psychopathology from the perspectives of different types of traumatic events, we found that physical integrity threat and social and physical dominance behavior were significant predictors of psychopathological symptoms in our sample.

The results of the blockwise multiple regression analysis showed that the subscale THL_PI as an only predictor explained approximately 10.2% of the variation in psychopathology. This means that the more threatening events to physical integrity happened, the higher psychopathological symptoms are. The results are in line with results of several studies also reporting a connection between different kinds of threats to physical integrity and trauma-related mental changes (e.g., Hecker, Hermenau, Maedl, Schauer & Elbert, 2013; Hussain, Weisaeth & Heir 2011; Neria, Nandi & Galea, 2008; North, 2014). For instance, in the systematic literature review of Neria, Nandi & Galea (2008), the authors cumulated 284 reports published between 1980 and 2007 reporting post traumatic symptoms following disasters (classification of disasters involved in review: human-made, technological, and natural).

In the present study, the subscale THL_SI alone was not a significant predictor of psychopathology, which explained its variance to 2.9% only. Still, a big number of studies report evidence of the negative influence of social threats, such as workplace or school bullying (Nielsen & Einarsen, 2012; Idsoe, Dyregrov, & Idsoe, 2012), public humiliation, and being ridiculed (Carleton, Peluso, Collimore, & Asmundson, 2011) on psychological distress, posttraumatic stress, and other mental changes. However, as reported in a literature review and meta-analysis by Nielsen et al. (2015), who included 29 relevant studies on work and school bullying and PTSD published until October 2014, the number of clinical assessment of PTSD diagnosis after being exposed to bullying is very limited. Thus, it is not yet possible to judge whether threats to social integrity directly lead to PTSD diagnosis or if PTSD is an appealing target of bullying.

Regarding the result of the THL_DB subscale as the only predictor of psychopathology, 11.6% of the variance was explained by the subscale, which makes it another significant

predictor in our sample. This result is in line with results of several studies reporting that the more social and physical dominance behavior is, the more psychopathological symptoms are. Research conducted with war veterans indicates high symptoms of appetitive aggression (Weierstall, Schaal, Schalinski, Dusingizemungu & Elbert, 2011), PTSD (Vinck, Pham, Stover & Weinstein, 2007), depression (Stevelink , 2015), and other disorders. The study of Trivedi, Post, Sun, Pomerantz & Saxon (2015) on mental illnesses among US veterans (N = 4 461 208) reported that approximately 1.15 million of these veterans had a diagnosis of the following five mental illnesses assessed in their study: depression (13.5%), PTSD (9.3%), substance use disorder (8.3%), anxiety disorder (4.8%), and other serious mental illness (3.7%).

For our last hypothesis on the prediction of appetitive aggression from the perspective of social and physical dominance behavior, we found that this subscale is a strong predictor of symptoms in appetitive aggression, while controlling for threats to physical and social integrity. The blockwise multiple regression analysis showed that THL_DB as an only predictor explains 58.3% of the variation in appetitive aggression. This indicates that the higher social and physical dominance behavior is, the higher symptoms in appetitive aggression are.

This result can support other studies, which found that being violent increases the symptoms of appetitive aggression. In a survey of Weierstall et al. (2011), authors questioned Rwandese prisoners (N = 269) accused for the 1994 genocide. The results showed a higher score of appetitive aggression by those respondents who committed more crime types. Furthermore, higher scores on AAS predicted lower PTSD severity scores. In another study by Weierstall et al. (2012), the authors found a similar relationship in Ugandan child soldiers (N = 42) who had a tendency for appetitive aggression and were at the same time more resilient towards development of PTSD. The mentioned results were replicated in a larger sample of demobilized

soldiers from Burundi (N = 392), where a random forest regression showed that perpetrated violence is an essential predictor of appetitive aggression and the sum of experienced traumatic events is an important predictor of posttraumatic stress (Köbach et al., 2015).

In this study, including the subscales THL_PI and THL_SI as additional predictors did not improve the explained variance in appetitive aggression significantly, meaning that the mentioned subscales in our sample do not significantly predict symptoms of it.

4.1. Study limitations

The present study has some statistical and methodological limitations. One of the *statistical* limitations is the small sample size (N = 60), which according to Bortz (1993), might increase the bias in interpreting statistical results, because some effects could be easily ignored. In addition, because of the small sample size, we could not apply a path-analysis method, which would have provided data on differences in predicting psychopathology from the perspectives of witnessing, experiencing, or perpetrating a violent act.

Another statistical limitation of the study is the assumptions check of the linear regression: one must consider the fact that not all the regression assumptions were met. Although we used robust methods in analyzing, the results might still have some bias.

Considering the *methodological* limitations, the validity of the instruments should be taken into account because there might be some distortion while translating them into Armenian.

4.2. Implications for future studies

Future studies on threats to human life and associated trauma-related mental changes should be conducted in larger samples.

Moreover, in order to get more specific information on cumulative effects of trauma, categorizing the trauma experiences into witnessed, experienced, and perpetrated threats, which is possible to do with the THL checklist, should be considered. The studies on this topic are controversial: some of them report results of higher PTSD rates after experiencing a trauma rather than witnessing it, and concerning the perpetration, it is rather related to later forms of violence than PTSD (e.g., Hiley-Young et al., 1993; Kulkarni, Graham-Bermann, Rauch, & Seng, 2011). In other studies, e.g., in the study by Hinsberger et al. (2016), it was found out that witnessing and self-experiencing of traumatic events were both predictors of appetitive aggression, and higher scores of the latter resulted in higher levels of PTSD. However, the authors also found that self-experienced violent acts are stronger predictors for appetitive aggression. Unfortunately, in our study we could not present results on witnessing, experiencing, and perpetrating violent acts separately because of the small sample size.

A further opportunity given by the THL checklist is that with the help of it, it is possible to split the subscale of THL_PI according to the reactions of the defense cascade (freeze, flight, fight, fright, flag, and faint). Thus, it is reasonable to figure out how the reactions of the defense cascade predict different mental changes.

Another relevant factor that would be interesting to research is the age of trauma onset, which could reveal sensitive periods for developing psychopathological symptoms. As described in paragraph 2.4.2. (p. 25), the THL checklist gives an opportunity to screen for the age of the

person when the trauma happened. Several studies found the period of adolescence as being sensitive (Cerdá et al, 2016; Köbach & Elbert, 2015). Keshavan et al. (2014) explained it as a consequence of dynamic changes in brain structures, which can increase the risk of developing psychiatric problems.

In addition, a considerable body of research is devoted to associations between cumulative trauma and PTSD, depression, and more recently, appetitive aggression. Other trauma-related mental changes like dissociation, anxiety, substance abuse are still not sufficiently researched in this context. For future studies, it would be interesting to involve other trauma-related mental changes as well.

4.3. Conclusion

In order to understand how different threats to human life influence the mental health of the victims, the association between violence exposure and trauma-related mental changes should be understood. The results of this study showed that the increasing number of traumatic experiences predicts an increase in psychopathology. Moreover, considering different traumatic events, we found that physical integrity threat and social and physical dominance behavior are significant predictors of psychopathological symptoms. In addition to these findings, it was also examined how social and physical dominance behavior predicts appetitive aggression and it was found to be a strong, significant predictor of symptoms in it.

With this study we also wanted to focus the most attention on the general traumatization level of the Armenian population and highlight the need for psychotherapeutic interventions, which, according to Van Baelen, Theocharopoulos & Hargreaves (2005), are in poor condition in

Armenia because of the lack of infrastructure in psychiatric hospitals and institutions as well as a strong stigma against people with mental health problems.

Lastly, our findings of relatively high score in psychopathology in general might also shed some light on the criminality in Armenia. According to the Statistical Yearbook of Armenia (2016), there has been an upsurge in it in the last few years. These data are official statistics, which, according to Gabuzyan (2007), do not reflect the real picture of criminality level. In his research, he reported that 70% of criminality in Armenia remains latent. With the present results, we also would like to point out the possibility that unsolved mental problems might have a negative influence on the level of criminality. However, to figure out if there is a connection between traumatization and criminality, additional studies should be conducted.

5. References

Adenauer, H., Catani, C., Keil, J., Aichinger, H., & Neuner, F. (2010). Is freezing an adaptive reaction to threat? Evidence from heart rate reactivity to emotional pictures in victims of war and torture. *Psychophysiology, 47,* 315–322. doi:10.1111/j.1469-8986.2009.00940.x

American Psychiatric Association. (2013*). Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Ardino, V. (2012). Offending behaviour: The role of trauma and PTSD. *European Journal of Psychotraumatology, 3.* doi:10.3402/ejpt.v3i0.18968

Armenian, H. K., Melkonian, A. K., Noji, E., & Hovanesian, A. P. (1997). Deaths and injuries due to the earthquake in Armenia: A cohort approach. *International Journal of Epidemiology, 4,* 806-813.

Armenian, H. K., Morikawa, M., Melkonian, A. K., Hovanesian, A. P., Haroutunian, N., Saigh, P. A., . . . Akiskal, H. S. (2000). Loss as a determinant of PTSD in a cohort of adult survivors of the 1988 earthquake in Armenia: Implications for policy. *Acta Psychiatrica Scandinavica, 102,* 58-64. doi:10.1034/j.1600-0447.2000.102001058.x

Atwoli, L., Stein, D. J., Koenen, K. C., & McLaughlin, K. A. (2015). Epidemiology of posttraumatic stress disorder: prevalence, correlates and consequences. *Curr Opin Psychiatry, 28,* 307-311. doi:10.1097/YCO.0000000000000167

Atwoli, L., Stein, D.J., Williams, D.R., McLaughlin, K. A., Petukhova, M., Kessler, R. C., & Koenen, K. C. (2013). Trauma and posttraumatic stress disorder in South Africa: Analysis from the South African Stress and Health Study. *BMC Psychiatry, 13,* 1-12. doi:10.1186/1471-244X-13-182

Balalian, A. A., Simonyan, H., Hekimian, K., & Crape, B. (2014). Adapting continuing medical education for post-conflict areas: assessment in Nagorno Karabagh - a qualitative study. *Human Resources for Health, 12,* 39. doi:10.1186/1478-4491-12-39

Balayan, K., Kahloon, M.,Tobia, G., Postolova, A., Peek, H., Akopyan, A., . . . IsHak, W. W. (2014). The impact of posttraumatic stress disorder on the quality of life: A systematic review. *International Neuropsychiatric Disease Journal 2,* 214-233.

Bayer, C. P., Klasen, F., & Adam, H. (2007). Association of trauma and PTSD symptoms with openness to reconciliation and feelings of revenge among former Ugandan and Congolese child soldiers. *JAMA: Journal of the American Medical Association, 298,* 555–559. doi:10.1001/jama.298.5.555

Berntsen, D., Johannessen, K. B., Thomsen, Y. D., Bertelsen, M., Hoyle, R. H., & Rubin, D. C. (2012). Peace and war: Trajectories of posttraumatic stress disorder symptoms before, during, and after military deployment in Afghanistan. *Psychological Science, 23,* 1557–1565. doi:10.1177/0956797612457389

Bödvarsdottir, I. & Elklit, A. (2004). Psychological reactions in Icelandic earthquake survivors. *Scandinavian Journal of Psychology, 45,* 3–13.

Bortz., J. (1993). *Statistik für Sozialwissenschaftler.* Berlin, DE: Springer.

Bracha, H. S. (2004). Freeze, flight, fight, fright, faint: Adaptionist perspectives on the acute stress response spectrum. *CNS Spectrums, 9,* 679–685. doi:10.1017/S1092852900001954

Bremner, J. D., Vythilingam, M., Vermetten, E., Southwick, S. M., McGlashan, T., Nazeer, A., . . . Charney, D. S. (2003). MRI and PET study of deficits in hippocampal structure

and function in women with childhood sexual abuse and posttraumatic stress disorder. *Am J Psychiatry, 160,* 924-932. doi:10.1176/appi.ajp.160.5.924

Brewin, C. R. (2001). A cognitive neuroscience account of posttraumatic stress disorder and its treatment. *Behaviour Research and Therapy, 39,* 373–393.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68,* 748-766. doi:10.1037//0022-006X.68.5.748

Burri, A. & Maercker, A. (2014). Differences in prevalence rates of PTSD in various European countries explained by war exposure, other trauma and cultural value orientation. *BMC Research Notes, 7,* 11. doi:10.1186/1756-0500-7-407

Campbell, B. A., Wood, G., & McBride, T. (1997). Origins of orienting and defense responses: An evolutionary perspective. In P. J. Lang, R. F. Simmons & M. T. Balaban (Eds.), *Attention and orienting: Sensory and motivational processes* (pp. 41–67). Hillsdale, NJ: Erlbaum.

Cardozo, B. L., Bilukha, O. O., Crawford, C. A., Shaikh, I., Wolfe, M. I., Gerber, M. L., & Anderson, M. (2004). Mental health, social functioning, and disability in postwar Afghanistan. *JAMA, 292,* 575-584. doi:10.1001/jama.292.5.575

Carleton, R. N., Peluso, D. L., Collimore, K. C., & Asmundson, G. J. (2011). Social anxiety and posttraumatic stress symptoms: The impact of distressing social events. *Journal of anxiety disorders, 25,* 49-57. doi:10.1016/j.janxdis.2010.08.002

Carmassi, C., Dell'Osso, L., Manni, C., Candini, V., Dagani, J., Lozzino, L. … de Girolamo, G. (2014). Frequency of trauma exposure and post-traumatic stress disorder in Italy:

Analysis from the World Mental Health Survey Initiative. *J Psychiatr Res., 59*, 77–84. doi:10.1016/j.jpsychires.2014.09.006

Carrion, V. G., Haas, B. W., Garrett, A., Song, S., & Reiss, A. L. (2010). Reduced hippocampal activity in youth with posttraumatic stress symproms: An fMRI study. *Pediatric Psychology, 35,* 559-569. doi:10.1093/jpepsy/jsp112

Cerdá, M., Prins, S. J., Galea, S., Howe, C. J., & Pardini, D. (2016). When psychopathology matters most: Identifying sensitive periods when within-person changes in conduct, affective, and anxiety problems are associated with male adolescent substance use. *Addiction (Abingdon, England), 111,* 924–935. doi:10.1111/add.13304

Conway, M. A. & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review, 107,* 261–288. doi:10.1037//0033-295X. 107.2.261

Copeland, W. E., Keeler, G., Angold, A., E., & Costello, E. J. (2007). Traumatic Events and Posttraumatic Stress in Childhood. *Arch Gen Psychiatry, 64,* 577-584.

Curtis, V. & Biran, A. (2001). Dirt, disgust, and disease: Is hygiene in our genes? *Perspectives in Biology and Medicine, 44,* 17–31. doi:10.1353/pbm.2001.0001

Dekel, R. & Goldblatt, H. (2008). Is there intergenerational transmission of trauma? The case of combat veterans' children. *Am J Orthopsychiatry, 78,* 281-289.

Dillon, J., Johnstone, L., & Longden, E. (2012). Attachment and neuroscience: A new paradigm for understanding severe mental distress. *The Journal of Critical Psychology, Counselling and Psychotherapy, 12,* 145-155.

Eccleston, A., DeWitt, N., Gunter, C., Marte, B., & Nath, D. (2007). Introduction to epigenetics. *Nature, 447,* 395.

Ehlers, A., Mayou, R. A., & Bryant, B. (1998). Psychological predictors of chronic PTSD after motor vehicle accidents. *Journal of Abnormal Psychology, 107,* 508-519. doi:10.1037/0021-843X.107.3.508

Elbert, T., Rockstroh, B., Kolassa, I., Schauer, M., & Neuner, F. (2006). The influence of organized violence and terror on brain and mind –a co-constructive perspective. *Lifespan development and the brain,* 326–363.

Elbert, T., Weierstall, R., & Schauer, M. (2010). Fascination violence: On mind and brain of man hunters. *European Archives of Psychiatry and Clinical Neuroscience, 260,* 100–105. doi:10.1007/s00406-010-0144-8

Ferry, F., Bunting, B., Murphy, S., O'Neill, S., Stein, D., & Koenen, K. (2014). Traumatic events and their relative PTSD burden in Northern Ireland: A consideration of the impact of the 'Troubles'. *Soc Psychiatry Psychiatr Epidemiol., 49,* 435–446. doi:10.1007/s00127-013-0757-0

Figley, C. R. (1985).*Trauma and its wake: The study and treatment of posttraumatic stress disorder.* New York, NY: Brunner/Mazel Publishers, Inc.

Foa, E. B. & Capaldi, S. (revised on 2013). Manual for the administration and scoring of the PTSD Symptome Scale – Interview for DSM-5 (PSS-I-5).

Foa, E. B., McLean, C. P., Zang, Y., Zhong, J., Rauch, S., Porter, K., . . . Kauffman, B. Y. (2016). Psychometric properties of the Posttraumatic Stress Disorder Symptom Scale Interview for *DSM–5* (PSSI–5). *Psychological Assessment, 28,* 1159-1165. doi:10.1037/pas0000259

Gabuzyan, A. A. (2007). Problems of crime in the Republic of Armenia in the transition period. *Yerevan State University Press,* 14.

Galea, S., Nandi, A., & Vlahov, D. (2005). The epidemiology of post-traumatic stress disorder after disasters. *Epidemiologic Reviews 27,* 78–91. doi:10.1093/epirev/mxi003

Gallup, G. G. Jr. & Rager, D. R. (1996). Tonic immobility as a model of extreme stress of behavioral inhibition: Issues of methodology and measurement. In M. Kavaliers (Ed.), *Motor activity and movement disorders* (pp. 57–80). Totowa, NJ: Humana Press.

Garbarino, J. (2002). Forward: Pathways from childhood trauma to adolescent violence and delinquency. *Journal of Aggression, Maltreatment, and Trauma, 6,* xxv–xxxi.

Geuze, E., Westenberg, H. G. M., Heinecke, A., de Kloet, C. S., Goebel, R., & Vermetten, E. (2008). Thinner prefrontal cortex in veterans with posttraumatic stress disorder. *Psychiatry Research: Neuroimaging*, 41, 675-681.

Giaconia, R. M., Reinherz, H. Z., Silverman, A. B., Bilgepakiz, M., Frost, A. K., & Cohen, A. (1995). Traumas and Posttraumatic Stress Disorder in a Community Population of Older Adolescents. *Child Asolesc. Psychiatry, 34,* 1369-1380.

Gilbertson, M. W., Shenton, M. E., Ciszewski, A., Kasai, K., Lasko, N. B., Orr, S. P., & Pitman, R. K. (2002). Smaller hippocampal volume predicts pathologic vulnerability to psychological trauma. *Nature Neuroscience, 5,* 1242-1247. doi:10.1038/nn958

Goenjian, A. (1993). A mental health relief programme in Armenia after the 1988 earthquake. Implementation and clinical observations. *The British Journal of Psychiatry, 163,* 230-239. doi:10.1192/bjp.163.2.230

Goenjian, A.K., Pynoos, R.S., Steinberg, A.M., Najarian, L.M., Asarnow, J.R., Karayan, I., … Fairbanks, L. A. (1995). Psychiatric comorbidity in children after the 1988 earthquake in Armenia. *Journal of the American Academy of Child and Adolescent Psychiatry, 34,* 1174- 1184. doi:10.1097/00004583-199509000-00015

Graham, F. K. (1979). Distinguishing among orienting, defense, and startle reflexes. In H. D. Kimmel, E. H. van Olst, & J. F. Orlebeke (Eds.), *The orienting reflex in humans* (pp. 137–167). Hillsdale, NJ: Erlbaum.

Hawker, D. S. J. & Boulton, M. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychol. Psychiat. 41*, 441-455. doi:10.1111/1469-7610.00629

Hecker, T., Hermenau, K., Maedl, A., Schauer, M., & Elbert, T. (2013). Aggression inoculates against PTSD symptom severity - Insights from armed groups in the eastern DR Congo. *European Journal of Psychotraumatology*, *4*, 1–9. http://dx.doi.org/10.3402/ejpt.v4i0.20070

Hellmuth, J. C., Stappenbeck, C. A., Hoerster, K. D., & Jakupcak, M. (2012). Modeling PTSD symptom clusters, alcohol misuse, anger, and depression as they relate to aggression and suicidality in returning U.S. veterans. *J Trauma Stress*, *25*, 527–34. doi:10.1002/jts.21732

Hiley-Young, B., Blake, D. D., Abueg, F. R., Rozynko, V. & Gusman, F. D. (1995). Warzone violence in Vietnam: An examination of premilitary, military, and postmilitary factors in PTSD in-patients. *Journal of Traumatic Stress*, *8*, 125-141. doi:10.1007/BF02105411

Hill, J. (2009). Developmental perspectives on adult depression. *Psychoanalytic Psychotherapy, 23*, 200-212. doi:10.1080/02668730903227263

Hill, J., Pickles, A., Burnside, E., Byatt, M., Rollinson, Davis, R., & Harvey, K. (2001). Sexual abuse, poor parental care and adult depression: Evidence for different mechanisms. *British Journal of Psychiatry*, *179*, 104-109.

Hinsberger, M., Sommer, J., Kaminer, D., Holtzhausen, L., Weierstall, R., Seedat, S., Madikane, S., & Elbert, T. (2016). Perpetuating the cycle of violence in South African low-income communities: attraction to violence in young men exposed to continuous threat. *European journal of psychotraumatology, 7*. doi:10.3402/ejpt.v7.29099

Hussain. A., Weisaeth. L., & Heir. T. (2011). Psychiatric disorders and functional impairment among disaster victims after exposure to a natural disaster: A population based study. *J Affect Disord, 128,* 135-41. doi:10.1016/j.jad.2010.06.018

Idsoe, T., Dyregrov, A., & Idsoe, E. C. (2012). Bullying and PTSD symptoms. *Journal of Abnormal Child Psychology, 40,* 901-911. doi:10.1007/s10802-012-9620-0

Kalayjian, A. & Weisberg, M. (2002). *Generational impact of mass trauma: The post-Ottoman Turkish genocide of the Armenians.* In J. S. Piven, C. Boyd, & H. W. Lawton (Eds.), (pp. 254-279). New York: Writers Club Press.

Kawakami, N., Tsuchiya, M., Umeda, M., Koenen, K. C., & Kessler, R. C. (2014).Trauma and posttraumatic stress disorder in Japan: Results from the World Mental Health Japan Survey. *J Psychiatr Res., 53,* 157–165. doi:10.1016/j.jpsychires

Kellermann, N. P. (2013). Epigenetic transmission of Holocaust trauma: Can nightmares be inherited? *Isr J Psychiatry Relat Sci, 50,* 33-39.

Kendler, K. S., Hettema, J. M., Butera, F., Gardner, C. O., & Prescott, C. A. (2003). Life event dimensions of loss, humiliation, entrapment, and danger in the prediction of onsets of major depression and generalized anxiety. *Arch Gen Psychiatry, 60,* 789-796.

Keshavan, M. S., Giedd, J. N., Lau, J. Y., Lewis, D. A., & Paul, T. L. (2014). Changes in the adolescent brain and the pathophysiology of psychotic disorders. *Lancet Psychiatry, 1,* 549–558. doi:10.1016/S2215-0366(14)00081-9

Kilpatrick, D. G., Ruggiero, K. J., Acierno, R., Saunders, B. E., Resnick, H. S., & Best, C. L. (2003). Violence and risk of PTSD, major, depression, substance abuse/dependence, and comorbidity: Result from the national survey of adolescents. *Journal of Consulting and Clinical Psychology, 71,* 692-700. doi:10.1037/0022-006X.71.4.692

Köbach, A. & Elbert, T. (2015). Sensitive periods for developing a robust trait of appetitive aggression. *Frontiers in Psychiatry, 6,* 144.

Köbach, A ., Elbert, T., & Schauer, M. Threats to Human Life (THL). Applicaion manual. University of Konstanz. Unpublished.

Köbach, A., Nandi, C., Crombach, A., Bambonyé, M., Westner, B., & Elbert, T. (2015). Violent offending promotes appetitive aggression rather than posttraumatic stress - A replication study with Burundian ex-combatants. *Frontiers in Psychology, 6,* 1755. doi:10.3389/fpsyg.2015.01755

Kohlhagen, K. (2013). The flexible barrier of history: Moving peace forward through the past. In P. T. Hopmann & I. W. Zartman (Eds.), *Nagorno Karabakh: Understanding conflict* (pp. 5-17). Washington, DC: SAIS.

Kroenke, K. & Spitzer, R. L. (2002). The PHQ-9: a new depression diagnostic and severity measure. *Psychiatr. Ann. 32,* 1–7.

Kulkarni, M., Graham-Bermann, S., Rauch, S., & Seng, J. (2011). Witnessing Versus Experiencing Direct Violence in Childhood as Correlates of Adulthood PTSD. *Journal of Interpersonal Violence, 26,* 1264-1281. doi:10.1177/0886260510368159

Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1998). Emotion, motivation and anxiety: Brain mechanisms and psychophysiology. *Biological Psychiarty, 44,* 1248-1263.

Lang, P. J., Davis, M., & Öhman, A. (2000). Fear and anxiety: Animal models and human cognitive psychophysiology. *Journal of Affective Disorders, 61,* 137–159. doi:10.1016/S0165-0327(00)00343-8

Liberzon, I. & Abelson, J. L. (2016). Context processing and the neurobiology of post-traumatic stress disorder. *Neuron Perspctive, 92,* 14-30. doi: 10.1016/j.neuron.2016.09.039

Lindert, J., & Levav, I. (2015). *Violence and mental health. Its manifold faces*. Dordrecht, Netherlands: Springer.

Lorusso, M. (2016). A deepening and widening conflict: The Nagorno-Karabakh dispute and the regional context. *Analysis, 299,* 11.

Löw, A., Lang, P. J., Smith, J. C., & Bradley, M. M. (2008). Both predator and prey: Emotional arousal in threat and reward. *Psychological Science, 19,* 865–873. doi:10.1111/j.1467-9280.2008.02170.x

Maclure, R. & Denov, M. (2006). "I didn't want to die so I joined them": Structuration and the process of becoming boy soldiers in Sierra Leone. *Terrorism and Political Violence, 18,* 119–135. doi:10.1080/09546550500384801

MacManus, D., Rona, R., Dickson, H., Somaini, G., Fear, N., & Wessely, S. (2015). Aggressive and violent behavior among military personnel deployed to Iraq and Afghanistan: Prevalence and link with deployment and combat exposure. *Epidemiol Rev, 37,* 196–212. doi:10.1093/epirev/mxu006

Meaney, M. J. & Szyf, M. (2005). Environmental programming of stress responses through DNA methylation: Life at the interface between a dynamic environment and a fixed genome. *Dialogues Clin Neuroscience, 7,* 103-123.

Menard, S. (1995). *Applied logistic regression analysis.* Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-106. Thousand Oaks, CA: Sage.

Metcalve, J. & Jacobs, W. (1996). A "hot-system/cool-system" view of memory under stress. *PTSD Research Quarterly, 7,* 1-3.

Mikulincer, M. (1994). *Human learned helplessness. A coping perspective.* New York, NK: Plenum Press.

Milani, A. C., Hoffmann, E. V., Fossualuza, V., Jackowski, A. P., & Mello, M. F. (2016). Does pediatric PTSD alter the brain? Systematic review and meta-analysis of structural and functional MRI studies. *Psychiatry and Clinical Neurosciences.* doi:10.1111/pcn.12473

Minasyan, S. (2010). Nagorno-Karabakh after two decades of conflict: Is prolongation of the status quo inevitable? *Caucasus Institute Research Papers, 2,* 67.

Nandi, C., Bambonye, M., Crombach, A., & Elbert, T. (2015). Appetitive aggression and its relation to posttraumatic stress in Burundian ex-combatants. *Peace and Conflict: Journal of Peace Psychology, 22,* 102-108. doi:10.1037/pac0000138

Neria, Y., Nandi, A., & Galea, S. (2008). Post-traumatic stress disorder following disasters: A systematic review. *Psychological Medicine 38,* 467–480. doi:10.1017/S0033291707001353

Neuner, F., Schauer, M., Karunakara, U., Klaschik, C., Robert, C., & Elbert, T. (2004). Psychological trauma and evidence for enhanced vulnerability for PTSD through previous trauma in West Nile refugees. *BMC Psychiatry 4,* 34. doi: 10.1186/1471-244X-4-34

Nielsen, M. B. & Einarsen, S. (2012). Outcomes of exposure to workplace bullying: A meta-analytic review. *Work & Stress, 26,* 309-332. doi:10.1080/02678373.2012.734709

Nielsen, M. B., Tangenc, T., Idsoe, T., Matthiesen, S. B., & Magerøy, N. (2015). Post-traumatic stress disorder as a consequence of bullying at work and at school. A literature review and meta-analysis. *Aggression and Violent Behavior, 21,* 17-24. doi:10.1016/j.avb.2015.01.001

North, C.S. (2014). Current research and recent breakthroughs on the mental health effects of disasters. *Current Psychiatry Reports 16,* 481. doi:10.1007/s11920-014-0481-9

Olaya, B., Alonso, J., Atwoli, L., Kessler, R. C., Vilagut, G., & Haro, J. M. (2015). Association between traumatic events and posttraumatic stress disorder: Results from the ESEMeD-Spain study. *Epidemiol Psychiatr Sci., 24,* 172–183.

Overmier, J. B. & Seligman, M. E. (1967). Effects of inescapable shock upon subsequent escape and avoidance responding. *Journal of Comparative and Physiological Psychology, 63,* 28-33.

Patient Health Questionnaire (PHQ) Instruction Manual. *Instructions for PHQ and GAD-7 measures.* Retrieved from http://www.phqscreeners.com/select-screener/31

Pavlisa, G., Papa, J., Pavic, L., & Pavlisa, G. (2006). Bilateral MR volumetry of the amygdala in chronic PTSD patients. *Coll Antropol, 30,* 565-568.

Pavlov, I. P. (1927). Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex. *Annals of Neurosciences, 17,* 136–141.doi:10.5214/ans.0972-7531.1017309

Poole, J. C., Dobson, K. S., & Pusch, D. (2017). Childhood adversity and adult depression: The protective role of psychological resilience. *Child Abuse & Neglect, 64,* 89-100. doi: 10.1016/j.chiabu.2016.12.012

Public International Law & Policy Group and the New England Center for International Law & Policy (2000, June). *The Nagorno Karabagh crisis: A blueprint for resolution (Part I)* Retrieved from http://www.nkrusa.org/hot_topic/hot_topics.php?id=10

RAND Center for Military Health Policy Research. (2008). *Invisible Wounds of War: Mental Health and Cognitive Care Needs of America's Returning Veterans.* Retrieved from http://www.rand.org/pubs/research_briefs/RB9336.html

Read, J. & Ross, C. A. (2003). Psychological trauma and psychosis: Another reason why people diagnosed schizophrenic must be offered psychological therapies. *The Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry, 31,* 247-268. doi:10.1521/jaap.31.1.247.21938

Rogers, M. A., Yamasue, H., Abe, O., Yamada, H., Ohtani, T., Iwanami, A., . . . Kasai, K (2009). Smaller amygdala volume and reduced anterior cingulate gray matter density associated with history of post-traumatic stress disorder. *Neuroimaging, 174,* 210-216.

Ronan, G. F., Dreer, L., Maurelli, K., Ronan, D. W., & Gerhart, J. (2014). *Practitioner's guide to empirically supported measures of anger, aggression, and violence*. Switzerland: Springer.

Schalinski, I., Schauer, M., & Elbert, T. (2015). The Shutdown Dissociation Scale (Shut-D). *European Journal of Psychotraumatology, 6.*

Schauer, M. & Elbert, T. (2010). Dissociation following traumatic stress: Etiology and treatment. *Journal of Psychology, 218,* 109-127. doi:10.1027/0044-3409/a000018

Schauer, M., Neuner, F., Karunakara, U., Klaschik, C., Robert, C., & Elbert, T. (2003). PTSD and the "building block" effect of psychological trauma among West Nile Africans. *European Society for Traumatic Stress Studies Bulletin 10, 2,* 5-6.

Schellong, J. (2015). Traumafolgestörungen. Diagnostik und Behandlung. *Internist. prax, 55,* 333-345.

Seligman, R. & Kirmayer, L. J. (2008). Dissociative experience and cultural neuroscience: Narrative, metaphor and mechanism. *Cult Med Psychiatry, 32,* 31–64. doi:10.1007/s11013-007-9077-8

Smith, C. A., Ireland, T.O., & Thornberry, T. P. (2005). Adolescent maltreatment and its impact on young adult antisocial behavior. *Child Abuse Negl, 29,*1099-119. doi:10.1016/j.chiabu.2005.02.011

Spitzer, R. L., Kroenke, K., & Williams, J. B. for the Patient Health Questionnaire Primary Care Study Group. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA, 282,* 1737-1744. doi:10.1001/jama.282.18.1737

Spitzer, R.L., Williams, J.B., Kroenke, K., Linzer, M., deGruy, F.V., Hahn, S.R., Brody, D., & Johnson, J.G. (1994). Utility of a new procedure for diagnosing mental disorders in primary care. The PRIME-MD 1000 Study. *JAMA, 272,* 1749-1756.

Statistical Yearbook of Armenia. (2016). Law Statistics, pp. 193-199.

Stevelink, S. A., Malcolm, E. M., Mason, C., Jenkins, S., Sundin, J., & Fear, N. T. (2015). The prevalence of mental health disorders in (ex-)military personnel with a physical impairment: a systematic review. *Occupational and Environmental Medicine, 72,* 243–251. doi:10.1136/oemed-2014-102207 doi:10.1001/jama.1994.03520220043029

Suliman, S., Mkabile, S. G., Fincham, D. S., Ahmed, R., Stein, D. J., & Seedat, S. (2009). Cumulative effect of multiple trauma on symptoms of posttraumatic stress disorder, anxiety, and depression in adolescents. *Compr Psychiatry, 50,* 121-127. doi:10.1016/j.comppsych.2008.06.006

Tang, S. S. & Freyd, J. J. (2012). Betrayal trauma and gender differences in posttraumatic stress. *Psychological Trauma: Theory, Research, Practice, and Policy, 4,* 469-478. doi: 10.1037/a0025765

Thompson, M. E., Dorian, A. H., & Harutyunyan, T. L. (2010). Identifying priority healthcare trainings in frozen conflict situations: The case of Nagorno Karabagh. *Conflict and Health, 4,* 21. doi:10.1186/1752-1505-4-21

Tolin, F. D. & Foa, B. E. (2006). Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research. *Psychological Bulletin, 132,* 959-992

Tran, T. V. (1993). Psychological traumas and depression in a sample of Vietnamese People in the United States. *Health & Social Work. 18,* 184-194.

Trivedi, R. B., Post, E. P., Sun, H., Pomerantz, A., Saxon, A. J., Piette, J. D., . . . Nelson, K. (2015). Prevalence, comorbidity, and prognosis of mental health among US veterans. *American Journal of Public Health, 105,* 2564-2569. doi:10.2105/AJPH.2015.302836

Turner, R. & Lloyd, D. (1995). Lifetime traumas and mental health: The significance of cumulative adversity. *Journal of Health and Social Behavior, 36,* 360-376.

U.S. Department of Veteran Affairs. (2016, June 29). National Center for PTSD: *Co-occuring conditions.* Retrieved from http://www.ptsd.va.gov/PTSD/professional/co-occurring/index.asp

Van Baelen, L., Theocharopoulos, Y., & Hargreaves, S. (2005). Mental health problems in Armenia: Low demand, high needs. *The British Journal of General Practice, 55,* 64–65.

Van der Kolk, B. (1994). The body keeps the score: Memory and the evolving psychobiology of post traumatic stress. *Harv Rev Psychiatry, 1,* 253-265.

Van der Kolk, B. (2001). The assessment and treatment of complex PTSD. In R. Yehuda (Ed.). *Traumatic stress* (pp. 1-29). Washington, DC: American Psychiatric Press.

Vetter, S., Rossegger, A., Rossler, W., Bisson, J. I., & Endrass, J. (2008). Exposure to the tsunami disaster, PTSD symptoms and increased substance use – an Internet based survey of male and female residents of Switzerland. *BMC Public Health, 8,* 92. doi:10.1186/1471-2458-8-92

Villarreal, G., Hamilton, D. A., Graham, D. P., Driscoll, I., Qualls, C., Petropoulos, H., & Brooks, W. M. (2004). Reduced area of the corpus callosum in posttraumatic stress disorder. *Psychiatry Research: Neuroimaging, 131*, 227-235. doi:10.1016/j.pscychresns.2004.05.002

Vinck, P., Pham, P.N., Stover, E., & Weinstein, H.M. (2007). Exposure to war crimes and implications for peace building in northern Uganda. *JAMA 298*, 543–54. doi:10.1001/jama.298.5.543

Violence Prevention Initiative. (2016, December). *Defining violence and abuse.* Retrieved from http://www.gov.nl.ca/VPI/types/

Wagner, A. C., Monson, C. M., & Hart, T. L. (2016). Understanding social factors in the context of trauma: Implications for measurement and intervention. *Journal of Aggression, Maltreatment & Trauma, 25,* 831-853. doi: 10.1080/10926771.2016.1152341

Weierstall, R., Castellanos, C. P., Neuner, F., & Elbert, T. (2013). Relations among appetitive aggression, post-traumatic stress and motives for demobilization: A study in former Colombian combatants. *Conflict and Health, 7,* 9. http://dx.doi.org/10.1186/1752-1505-7-9

Weierstall, R. & Elbert, T. (2011). The Appetitive Aggression Scale – development of an instrument for the assessment of human's attraction to violence. *European Journal of Psychotraumatology, 2.* doi:10.3402/ejpt.v2i0.8430

Weierstall, R., Schaal, S., Schalinski, I., Dusingizemungu, J. P., & Elbert, T. (2011). The thrill of being violent as an antidote to posttraumatic stress disorder in Rwandese genocide perpetrators. *European Journal of Psychotraumatology, 2,* 6345.

Weierstall, R., Schalinski, I., Crombach, A., Hecker, T., & Elbert, T. (2012). When combat prevents PTSD symptoms – results from a survey with former child soldiers in Northern Uganda. *BMC Psychiatry, 12,* 41. doi:10.3402/ejpt.v2i0.6345

Weiss, D. S., Marmar, C. R., Metzler, T. J., & Ronfeldt, H. M. (1995). Predicting symptomatic distress in emergency services personnel. *Journal of Consulting and Clinical Psychology, 63,* 361–368. doi:10.1037/0022-006X.63.3.361

Widom C. S. & Maxfield M. G. (2001). *An update on the "cycle of violence".* Washington, DC: National Institute of Justice, p. 200.

Woodward, S. H., Kaloupek, D. G., Streeter, C. C., Martinez, C., Schaer, M., & Eliez, S. (2006). Decreased anterior cingulate volume in combat-related PTSD. *Biol Psychiatry, 59,* 582-587. doi:10.1016/j.biopsych.2005.07.033

World Health Organization. (1992). *The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines*. Geneva: Author.

World Health Organization. (2001). World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. *Bulletin of the World Health Organization, 79,* 373-374.

World Health Organization. (2002). *World report on violence and health: Summary.* Geneva: Author

World Health Organization. (2016, June). *Depression: Fact sheet.* Retrieved from http://www.who.int/mediacentre/factsheets/fs369/en/

World Health Organization. (2017). *Process of translation and adaptation of instruments.* Retrieved from http://www.who.int/substance_abuse/research_tools/translation/en/

Yehuda, R. & Bierer, L. M. (2008). Transgenerational transmission of cortisol and PTSD risk. *Progr Brain Res, 167,* 121-35. doi:10.1016/S0079-6123(07)67009-5

Yeomans, P. D. & Forman, E. M. (2009). Cultural factors in traumatic stress. In S. Eshun, & R. A. Gurung (Eds.), *Culture and mental health: Sociocultural influences, theory, and practice* (pp. 221-244). Wiley-Blackwell.

Zartman, W. (2013). Introduction: Nagorno Karaback Report. In P. T. Hopmann & I. W. Zartman (Eds.), *Nagorno Karabakh: Understanding conflict* (pp. 1-4). Washington, DC: SAIS.

Appendix A

Classification and diagnostic criteria of PTSD according to DSM-5

The diagnosis of PTSD in DSM-5 (2013) is included in a new category named Trauma- and Stressor-Related Disorders (the classification of PTSD and diagnostic criteria see in Appendix A). In this classification the triggering stress is defined more precisely: threatening death, actual or threatening serious injury, sexual violence, which is directly experienced or witnessed by a person. Also the indirect announcement about unexpected death or danger of death, violence against close family member or friend is also considered as a trigger. Repeated or indirect exposure to aversive details of the traumatic event (usually related to occupational necessities, for example, first responders collecting human remains: police officers repeatedly exposed to details of child abuse) are also included as triggers. However, indirect triggers, not linked to profession (e.g., through social network, TV, films, photos), are not included (American Psychiatric Association, 2013; Schellong, 2015).

In order to diagnose a PTSD, all the below mentioned criteria are required (DSM 5, 2013; U.S. Department of Veteran Affairs, 2016b, para. 3):

Criterion A (one or more required): The person was exposed to: death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence, in the following way(s): direct exposure; witnessing the trauma; learning that a relative or close friend was exposed to a trauma; indirect exposure to aversive details of the trauma, usually in the course of professional duties (e.g., first responders, medics).

Criterion B (one or more required): The traumatic event is persistently re-experienced, in the following way(s): intrusive thoughts; nightmares; flashbacks; emotional distress after exposure to traumatic reminders; physical reactivity after exposure to traumatic reminders.

Criterion C (one or both required): Avoidance of trauma-related stimuli after the trauma, in the following way(s): trauma-related thoughts or feelings; trauma-related reminders.

Criterion D (two or more required): Negative thoughts or feelings that began or worsened after the trauma, in the following way(s): inability to recall key features of the trauma; overly negative thoughts and assumptions about oneself or the world; exaggerated blame of self or others for causing the trauma; negative affect; decreased interest in activities; feeling isolated; difficulty experiencing positive affect.

Criterion E (two or more required): Trauma-related arousal and reactivity that began or worsened after the trauma, in the following way(s): irritability or aggression; risky or destructive behavior; hypervigilance; heightened startle reaction; difficulty concentrating; difficulty sleeping.

Criterion F: Symptoms last for more than 1 month.

Criterion G: Symptoms create distress or functional impairment (e.g., social, occupational).

Criterion H: Symptoms are not due to medication, substance use, or other illness.

Appendix B

Assumptions' check on violation

The results of Kolmogorov-Smirnov test on normality of the distribution of predictor and outcome variables are following: the THL sum score, D (60) = 0.110, p = .069 and THL_PI, D (60) = 0.080, p = .200, did not deviate significantly from normal. However, the scores from the subscales THL_SI, D (60) = 0.224, p < .001 and THL_DB, D (60) = 0.182, p < .001, were both significantly non-normal. From the scores of psychopathology only score of PSSI-5, D (60) = 0.101, p = 2.00, did not deviate significantly from normal. Other scores on PHQ-9, D (60) = 0.137, p = .007, AAS, D (60) = 0.398, p < .001, Shut-D, D (60) = 0.169, p < .001, and PP, D (60) = 0.135, p = .008, were significantly non-normal.

The Leven's test on homogeneity of variance (based on Median) for males and females showed equal variances for predictor variables on the THL_PL scores, F (1-58) = 0.16, p = .69 and THL_SI scores, F (1-58) = 0.00, p = 1,000. The scores of THL_DB, F (1-58) = 8.83, p = .004, and THL_ss, F (1-58) = 4.51, p = .038 showed, however, unequal variances for males and females. The same test on outcome variables (based on Median) showed equal variances for males and females on PSS-I-5 scores, F (1-58) = 0.24, p = .63, PHQ-9 scores, F (1-58) = 0.02, p = .89, Shut-D scores, F (1-58) = 3.5, p = .072, and PP scores, F (1-59) = 2.12, p = .15. And for AAS, the variance between males and females was unequal, F (1-58) = 33.01, p < .001.

Durbin-Watson test for independent errors with values of 1.76 and 1.84 showed that the assumption has been met.

Collinearity diagnostics showed that the tolerance values were not below 0.2, indicating that one predictor does not have a strong linear relationship with the other predictors (Menard, 1995).

Appendix C

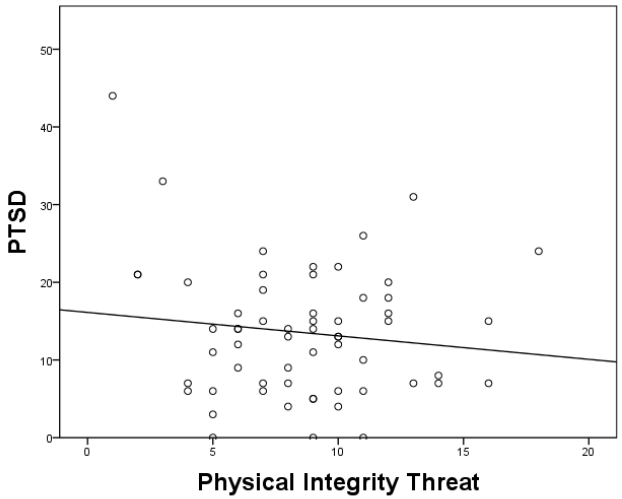


Figure C1. Scatterplot for PTSD and physical integrity threat

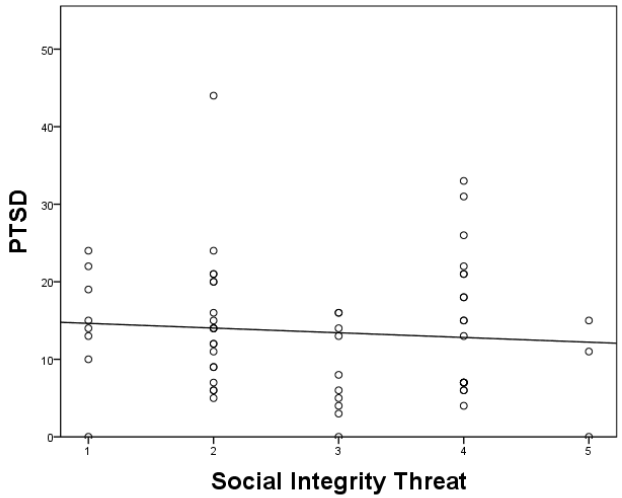


Figure C2. Scatterplot for PTSD and social integrity threat

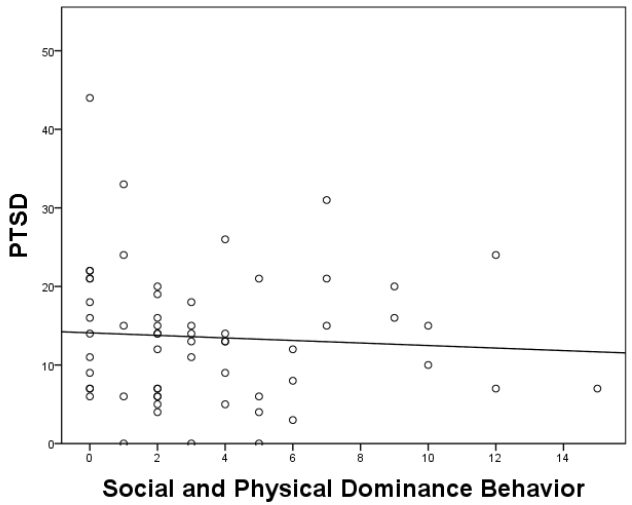


Figure C3. Scatterplot for PTSD and social and physical dominance behavior

Appendix D

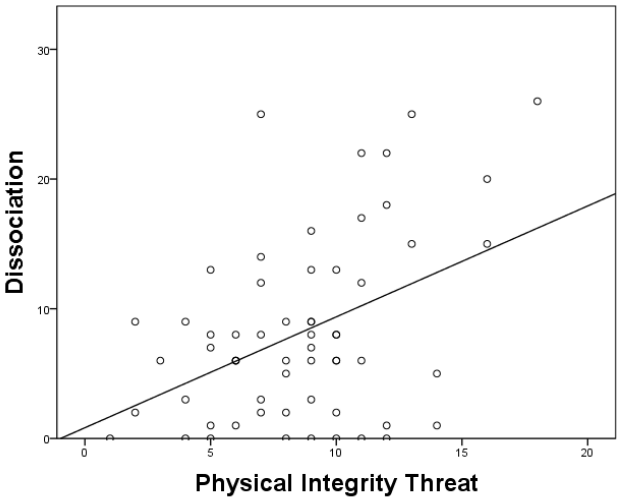


Figure D1. Scatterplot for dissociation and physical integrity threat

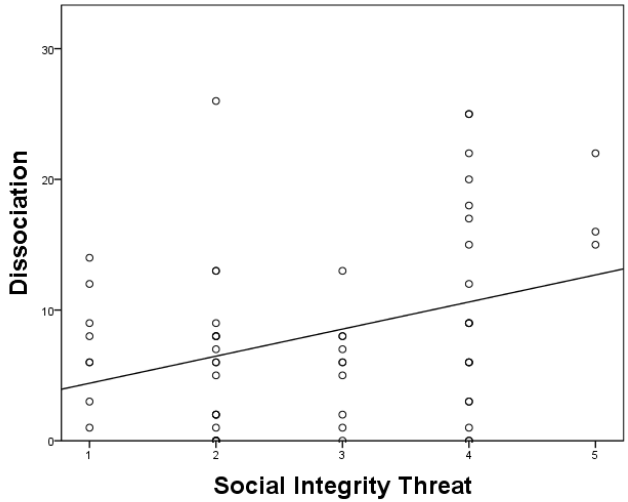


Figure D2. Scatterplot for dissociation and social integrity threat

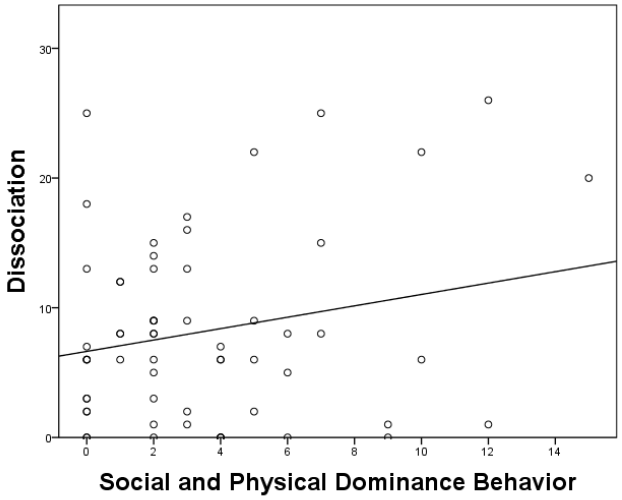


Figure D3. Scatterplot for dissociation and social and physical dominance behavior

Appendix E

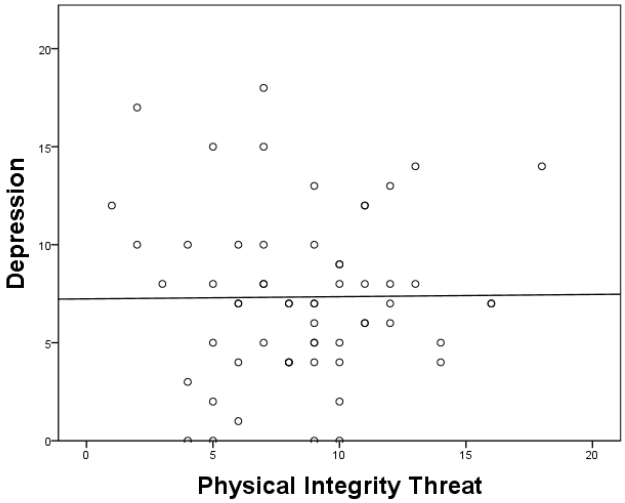


Figure E1. Scatterplot for depression and physical integrity threat

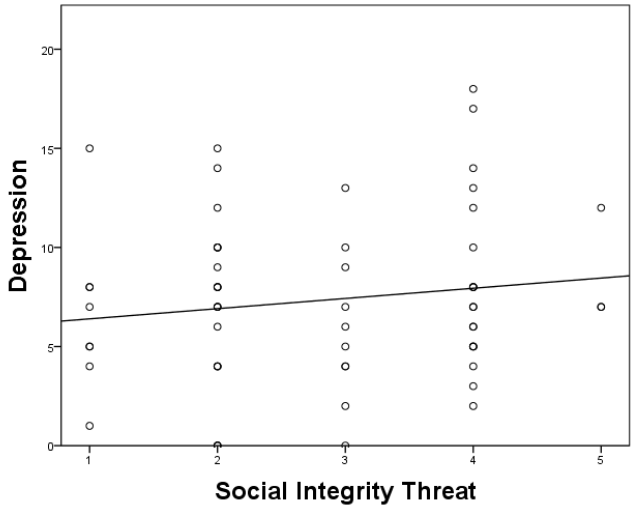


Figure E2. Scatterplot for depression and social integrity threat

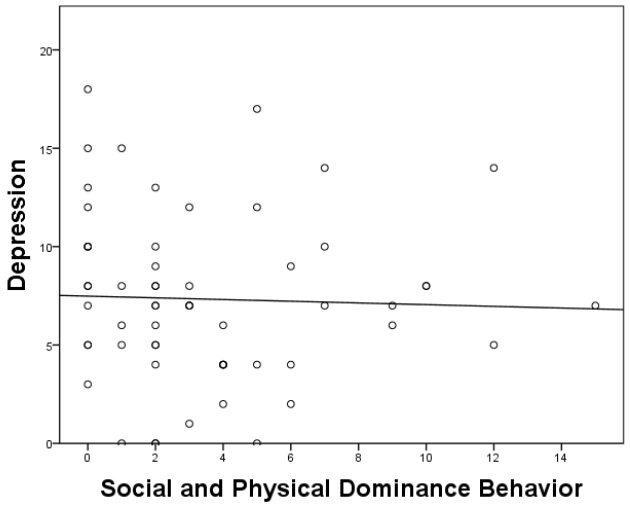


Figure E3. Scatterplot for depression and social and physical dominance behavior

Appendix F

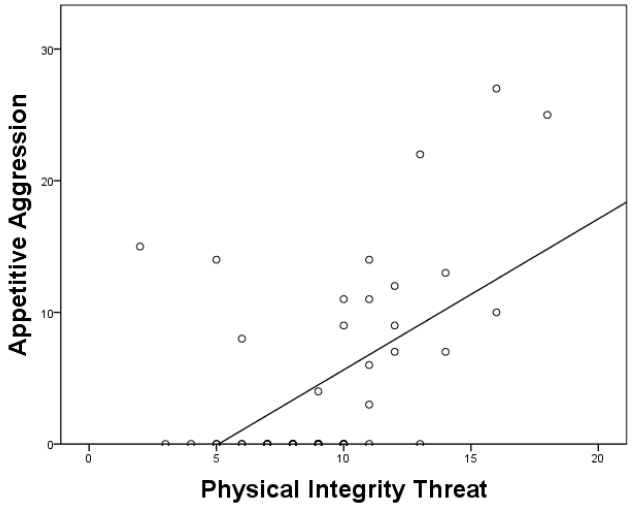


Figure F1. Scatterplot for appetitive aggression and physical integrity threat

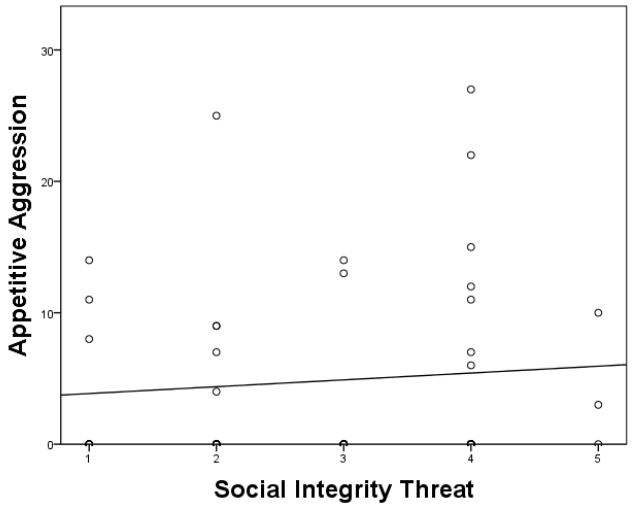


Figure F2. Scatterplot for appetitive aggression and social integrity threat

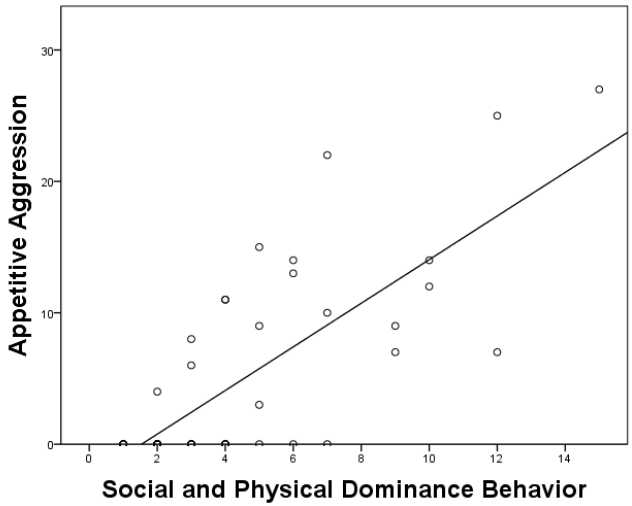


Figure F3. Scatterplot for appetitive aggression and social and physical dominance behavior