Beyond the War:
Mental Health Consequences in Civilian War Survivors

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Për shumë të dashurit gjyshin Ibish dhe gjyshën Ryvë

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For my beloved grandfather Ibish and grandmother Ryve

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Contents

Contents

Index of Tables and Graphics

List of Abbreviations

APA	American Psychiatric Association
CH	Switzerland
CI	Confidence Interval
DIKJ	Depressionsinventar für Kinder und Jugendliche
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
HIIK	Heidelberg Institute for International Conflict Research
HSCL-25	Hopkins Symptom Checklist-25
ICD-10	International Classification of Diseases, Tenth Edition
NATO	North Atlantic Treaty Organization
OCD	Obsessive-Compulsive Disorder
OCI-R	Obsessive-Compulsive Inventory, Revised
OSCE	Organisation for Security and Co-operation in Europe
PDS	Posttraumatic Stress Diagnostic Scale
PTE	Potentially Traumatic Event
PTSD	Posttraumatic Stress Disorder
SCAS	Spence Children's Anxiety Scale
SCL-90-R	Symptom Checklist-90-Revised
SE	Standard Error
SPSS	Statistical Package for the Social Sciences
TLE	Traumatic Life Event
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
WHO	World Health Organization

Abstract

According to current news reports, the world is experiencing more than 45 wars and open armed conflicts and/or crises (HIIK, 2014). It is known that the number of civilian people affected by war has constantly increased in the last years, causing more suffering (Murthy & Lakshminarayana, 2006). Empirical research has only in the past years begun to investigate the effects of war-related stressors among civilians. The current thesis presents the results of three empirical papers of a project on mental health of civilian survivors of the 1998/1999 Kosovo war.

The aim of the first study was to assess intergenerational aspects of trauma-related mental health problems among families 11 years after the Kosovo war. A paired sample of 51 randomly selected triplets (child, mother, and father) of Kosovar families was investigated with regard to trauma exposure, posttraumatic stress, anxiety, and depressive symptoms. In both parents and children considerable trauma exposure and high prevalence rates of clinically relevant symptoms were found. Only children's depressive symptoms and paternal posttraumatic stress, anxiety and depression were strongly correlated. Maternal symptoms did not correlate with their children's psychopathological symptoms. In addition, multiple regressions revealed that only posttraumatic stress symptoms of fathers were significantly related with children's depressive symptoms.

The second study examined firstly the level of somatization and pain symptoms in the aftermath of war, and secondly the mediating role of posttraumatic stress symptoms and depression in the relationship between trauma exposure and somatic symptoms. Civilian adult war survivors (N=142) were assessed regarding their lifetime trauma history, posttraumatic stress symptoms, depression symptoms, somatization symptoms and persistent pain. On average, 5 types of traumatic exposure were reported, and 26.1% and 47.9% met the cut-off indicative for Posttraumatic Stress Disorder (PTSD) or depression, respectively, which were

associated with higher somatization symptoms and persistent pain. The relationship between trauma exposure and somatization symptoms and the level of persistent pain, respectively, was fully mediated by depression and the avoidance subscale of PTSD.

In the third study the occurrence of obsessive compulsive symptoms and their relationship to trauma in civilian war survivors was investigated. Fifty-one adult civilian survivors of the Kosovo War who had immigrated to Switzerland were interviewed with regard to their obsessive-compulsive symptoms, posttraumatic stress symptoms and depressive symptoms. Overall, 35 and 39% of the sample had obsessive-compulsive and posttraumatic stress scores, respectively, above the cut-off of the specific instrument. Subjects with obsessive-compulsive symptoms were highly likely to have posttraumatic-stress symptoms, and vice versa. In multiple regression analyses gender and the severity of posttraumatic stress were significantly related to obsessive-compulsive symptoms, whereas number of traumatic life events and depressive symptoms were not.

Taken together, all three studies indicate that the mental health of the majority of civilian war survivors is characterized by psychopathological impairment - even a decade after the war. An important finding of the presented papers is that there are as well other consequences than posttraumatic stress symptoms following war-related trauma, regardless of the place of residence. The results do support the importance of the families in this regard and their impact on children's mental health. Thus, the current findings indicate that future research in civilian war-survivors on mental health should also investigate broader aspects that go beyond war-related trauma. Finally, it should be concluded that a more globally oriented mental health approach is absolutely necessary to support the affected societies in order to further understand and thus to better cope with the aftermath of war conflicts.

Zusammenfassung

Gemäss aktuellen Nachrichten, erlebt die Welt zurzeit mehr als 45 Kriege und offene bewaffnete Konflikte und/oder Krisen (HIIK, 2014). Es ist bekannt, dass die Zahl der Zivilisten, die in den letzten Jahren von Krieg betroffen sind, sich ständig erhöht und mehr Leiden verursacht hat (Murthy & Lakshminarayana, 2006). Die empirische Forschung hat erst in den letzten Jahren begonnen die Auswirkungen der kriegsbedingten Stressoren bei Zivilisten zu untersuchen. Die vorliegende Arbeit präsentiert die Ergebnisse dreier empirischen Manuskripte eines Projekts auf die psychische Gesundheit der zivilen Überlebenden des Kosovo-Krieges 1998/1999.

Das Ziel der ersten Studie war es, Aufschluss über generationenübergreifende Aspekte von traumabezogenen psychischen Störungen in Familien 11 Jahre nach dem Kosovo-Krieg zu geben. In einer gepaarten Stichprobe von 51 randomisierten Dreiergruppen (Kind, Mutter und Vater) wurden kosovarische Familien im Hinblick auf Traumaexposition, Posttraumatische Belastung, Angst und depressive Symptome untersucht. Sowohl bei den Eltern als auch bei den Kindern wurden erhebliche Traumaexposition und hohe Prävalenzraten von klinisch relevanter posttraumatischer Belastung, Angst und depressiven Symptomen gefunden. Während starke Korrelationen zwischen den depressiven Symptomen der Kinder und posttraumatischer Belastung, Angst und depressiven Symptomen beim Vater gefunden wurden, korrelierten die Symptome der Mütter nicht mit denen ihrer Kinder. In multiplen Regressionsanalysen hingen nur die posttraumatischen Belastungssymptome der Väter signifikant mit den depressiven Symptomen der Kinder zusammen.

Die zweite Studie untersuchte den Grad der Somatisierung und Schmerzsymptome in der Folge des Krieges und die Mediatorrolle der posttraumatischen Belastungssymptomen und Depression in der Beziehung zwischen Traumaexposition und somatischen Symptomen. Zivile erwachsene Kriegsüberlebende (N=142) wurden bezüglich Traumaexposition, post-

traumatischen Belastungssymptomen, Depressions-, und Somatisierungssymptomen sowie persistierenden Schmerzen untersucht. Im Durschnitt wurden fünf verschiedene Arten von Traumaexposition angegeben, während 26.1% die Cut-off Kriterien für eine Posttraumatische Belastungsstörung bzw. 47.9% für eine Depression erfüllten. Beide waren mit höheren Somatisierungssymptomen und persistierenden Schmerzen verbunden. Die Beziehung zwischen Traumaexposition und Somatisierungssymptomen bzw. dem Grad der persistierenden Schmerzen wurde vollständig von Depression und der Vermeidungsskala der PTSD erklärt.

In der dritten Studie wurden das Auftreten von Zwangsstörungssymptomen und ihre Beziehung zum Trauma bei zivilen Kriegsüberlebenden untersucht. Einundfünfzig erwachsene Zivilüberlebende des Kosovo-Krieges, die in die Schweiz immigriert waren, wurden hinsichtlich ihrer Zwangssymptome, posttraumatischer Belastungssymptome und depressiver Symptomen befragt. Jeweils 35% und 39% der Befragten hatten Werte bei Zwangs- bzw. posttraumatische Belastungssymptomen über dem Cut-Off des jeweiligen Instruments. Teilnehmende mit Zwangssymptomen hatten signifikant mehr auch posttraumatische Belastungssymptome und umgekehrt. Geschlecht und Schweregrad der posttraumatischen Belastung waren signifikant zusammenhängend mit Zwangssymptomen, während Anzahl der traumatischen Ereignisse und Depressionssymptome nicht mit Zwangssymptomen korrelierten.

Zusammenfassend geben alle drei Studien an, dass die psychische Gesundheit bei der Mehrheit der zivilen Kriegsüberlebenden von psychopathologischen Beeinträchtigungen, sogar ein Jahrzehnt nach dem Krieg, charakterisiert wird. Ein wichtiges Ergebnis der vorgestellten Arbeit ist, dass es auch noch andere als nur posttraumatische Belastungssymptome gibt, die unabhängig vom Wohnort nach einem Kriegstrauma, folgen. Die Ergebnisse unterstützen diesbezüglich die Bedeutung der Familie und deren Auswirkung auf die psychische Gesundheit der Kinder. Folglich zeigen die aktuellen Ergebnisse, dass zukünftige Forschung der psychischen Gesundheit bei zivilen Kriegsüberlebenden sollte auch einen viel breiteren Aspekt untersuchen, welches jenseits vom Kriegstrauma geht. Zusammenfassend ist zu

schlussfolgern, dass ein Ansatz ausgerichtet auf globale psychische Gesundheit unbedingt

erforderlich ist, um die betroffenen Gesellschaften zu unterstützen, um die Folgen des Krie-

ges besser zu verstehen und somit besser mit dem umzugehen.

1   General introduction

While you are reading this introduction more than 50 million people worldwide are fleeing from war (UNHCR, 2014). In 2013 the global number of political conflicts was as much as 414 worldwide (Heidelberg Institute for International Conflict Research; HIIK, 2014). According to the Heidelberg Conflict Barometer, in 221 of these 441 violence was used, and the number of wars amounted to twenty throughout the five world regions. Together with the so-called limited wars (war whose objective is less than total defeat of the enemy) this leads to the record of total 45 highly violent conflicts in 2013 (HIIK, 2014). As such, millions of people and whole communities do suffer from prolonged war related traumatic stressors (Murthy & Lakshminarayana, 2006). In the last 100 years, the implementation of modern organized violence – i.e. wars, limited wars, conflicts as well as other forms of repression – has changed. This implies, firstly, in respect to technological progress of the means of violence and secondly, to the goals of modern organized violence. Nowadays, war and other violent conflicts rather aim at affecting whole societies for political, religious or ethnic reasons (Summerfield, 1996). The modern technology linked with the so-called worldwide terrorism makes things even more complex and less transparent.

Although the scientific and clinical interest in the field of psycho-traumatology has progressively increased in the last two decades, research has focused only recently on the psychological effects of organized conflicts on civilian war survivors. The aim of the current thesis is to investigate the consequences of one of the last wars in Europe in the last century - the 1998/1999 Kosovo war. Following this introduction the next chapter describes several areas of the current research on psychological theoretical framework. It aims to provide a theoretical background of the current war-related situation and of the relevant psychological factors. A review of the research upon which the present studies in the empirical parts are based is to be provided. After a brief introduction on modern warfare and a short historical background of the 1998/1999 Kosovo war, this chapter focuses on current knowledge on the

mental health consequences of these people. An elaboration on factors having been shown to impact the mental health status of civilian war survivors will follow. In addition information on the mental health of migrants and refugees will be provided. A section on families and transgenerational aspects of trauma will close this chapter.

The third chapter describes the empirical studies performed in the framework of this thesis and their aims in general. Following this, the next three chapters will describe the three manuscripts of present thesis. Further, a general discussion of the thesis will be provided in the seventh chapter, including methodological limitations and an outline on future research. The thesis will be summed up with a conclusion paragraph.

2   Modern warfare and its psychological sequelae

There have been nearly 50 wars and armed conflicts during the last 15 years. Every day the media brings us the horror of the on-going war situation - i.e. the current conflicts in Syria, Iraq, and Ukraine. As of end 2013 more than 51 million people in various parts of the world were being forced to flee from war, of them 33.3 million are internally displaced persons (people who were forced to "move" to other parts of their own country), 16.7 million refugees worldwide and 1.2 million asylum-seekers (UNHCR, 2014). This is six million more than what was reported the year before. The overwhelming majority of these people originated from and resided in low-income countries (UNHCR, 2014). According to UNHCR this is the highest level since World War II. Roughly half of these people are children, including many unaccompanied or separated children, which is the highest proportion in 10 years (UNHCR, 2008, 2014). Millions of lives have been lost in wars in modern times (Clodfeiter, 2008), with millions more added in the recent conflicts in Syria, Afghanistan, Iran, Iraq, Sudan, Congo and Kenya (Clodfeiter, 2008; White, 2014).

The nature of armed conflicts has significantly changed after the Second World War and particularly since the end of the Cold War, with a shift from inter-state wars to violent conflicts within states (Forced Migration Online, 2011). Many of these internal armed conflicts are prolonged, have multifaceted causes, and even with the use of low-tech weapons cause millions of deaths (Forced Migration Online, 2011; White, 2014).

Current warfare actions are no longer isolated between two country's armies, because the majority of recent war-related deaths were among civilians according to the United Nations (1996). They are not only victims of what militaries call "collateral damage", but often are intended targets of violence (Forced Migration Online, 2011). Hence, civilian people die not only directly due to battle-induced trauma, but suffer from secondary violence, starvation and disease (Tapp et al., 2008). Modern armed conflicts are often accompanied by hate and exclusion between ethnic groups, systematic killing and ethnic cleansing (Cardozo, Vergara,

Agani, & Gotway, 2000; Elbert & Schauer, 2002; Summerfield, 2003). Elbert and Schauer (2002, p. 883) cite a 90-year-old woman describing the effects of such war in Kosovo: "*I've lived through the First and Second World Wars but this was worse. This time it was so bad that even the cows ran away. In the night of 24 March, at 3:30 in the morning, as NATO bombs began falling over Yugoslavia, I saw black-masked paramilitia running through Djakovica, shooting, cutting throats and burning houses*". As a result, not only people are affected; additionally, war has an impact on regions as well because they are left uninhabitable for native people, mines remain a constant threat, cultural heritage and monuments are destroyed.

On the other hand, wars have had an important role in psychiatric history. For example, during the First World War, it was the psychological impact described in the form of "shell shock", which supported the effectiveness of psychological interventions (Murthy & Lakshminarayana, 2006). Further, the National Institute of Mental Health in the United States was only set up, after the recognition that a proportion of the population was not suitable for army recruitment during the Second World War (Murthy & Lakshminarayana, 2006). The long-term physical and psychological consequences of war on soldiers especially came to light during and after those wars, and particularly after the Vietnam War (Murthy & Lakshminarayana, 2006).

Wars impact mankind in different ways. Mental health is one of those. Thus, the development of trauma related disorders, i.e. the posttraumatic stress disorder, are strongly linked to wars. The different presentations of the psychopathological symptoms in soldiers made available new possibilities of understanding the psychological reactions to trauma related stress. Though there have not been any world wars since the Second World War, there has been nearly 200 wars and armed conflicts during the last 60 years (Summerfield, 2000). For example, 80% of the people in the Eastern Mediterranean countries are either in such a conflict or have experienced such a situation in the last few years (Ghosh, Mohit, & Murthy,

2004). Thus, several millions of injured soldiers and civilians have to cope with severe psychological and physical dysfunctions of war traumas for the rest of their lives.

However, our knowledge about the lifetime consequences of war on affected civilians is limited. The World Health Organisation (2001) estimated that in armed conflicts situations, approximately 10% of the individuals who experience potentially traumatic events will develop clinically significant mental health distress. Additionally, another 10% of people will develop behaviours in such a way, that they will have problems functioning effectively (Murthy & Lakshminarayana, 2006).

For this reason, political, medical, psychological, and social research today have more than ever the duty to face the consequences of such developments of war, and to provide post-war societies with the knowledge and means to address the psychosocial war aftermath. The present thesis aims to contribute to this task by providing a certain empirical understanding for the examination of the psychopathological problems in civilian war survivors.

The majority of Kosovarian people were exposed to cumulative traumatic events before, during and after the war in 1998/1999 (OSCE, 1999). It is therefore of great interest, to better understand the long-term consequences of war, torture and fugitive traumatic experiences and wherever possible to help mitigate. After this background the following will give a short background about the war in Kosovo.

2.1 Short historical background of the 1998/1999 war in Kosovo

In the region of the present Republic Kosovo in the years 1998/1999 a war prevailed. This can be seen as the last war on in a number of armed conflicts in the territory of former Federation of Yugoslavia. The Federation of Yugoslavia consisted of a conglomeration of eight federal units, of which six were republics (Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Slovenia, and Serbia) and two were autonomous provinces (Kosovo and Vojvodina), with each of these entities having equal rights on federal level and being autonomous in domestic policies. After the death of Yugoslav President Marshal Tito in 1980,

there was an upswing in nationalist movements within the various ethnic groups of Yugoslavia, which led to outbreaks of many armed conflicts, and finally to the disintegration of the Federal Republic of Yugoslavia. In the area of today's Kosovo different ethnicities live, Kosovo-Albanian, Turks, Serbs, Roma, Bosniaks, Gorani, Ashkali, Egyptians, Montenegrins and Croats. By the End of 1980s the former Serbia Leadership under Milosevic reduced Kosovo's autonomous status and started an oppression of the ethnic Albanian population. After increasing violent attacks by the Serbian police and military against the Albanian population in Kosovo, an actual war started in 1998 - as the previously non-violent resistance of the Kosovo Albanians was not successful (Malcolm, 1998; Schmierer, 2007). To prevent a humanitarian catastrophe, NATO decided to intervene in March 1999, ending the suffering of the Albanians and the war itself in June 1999. It would be presumptuous and go beyond the scope of the present thesis to describe at this point the entire background of the Kosovo war associated with the Yugoslavian crises and their impact on the various ethnic groups in detail. But the fact is that in this armed conflict, the civilian population - particularly the Albanian-Speaking - was strongly affected. The civil population was victim and target of attacks, such as ethnic cleansing, massacres, rapes and terror (Schmierer, 2007). Even today the correct number of victims and displaced people during the Kosovo war remains unclear and there are only estimations (OSCE, 1999): more than 12'000 dead, 800'000 up to a million forcibly displaced, over 4000 missing persons and over 20'000 thousands of rapes (OSCE, 1999; WGBH, 2000).

The Kosovar population is not alone with such a fate. In the last decades the number of victims among the civilian population in times of war dramatically increased and now accounts for more than 80% of all war victims (Elbert & Schauer, 2002). In contrast to combat trauma, war-related trauma in civilian survivors has been only of interest in recent years (Murthy & Lakshminarayana, 2006), and the armed conflicts in the Balkans are comparably well studied. These studies include research conducted in Bosnia and Herzegovina

(Avdibegovic, Hasanovic, Selimbasic, Pajevic, & Sinanovic, 2008; Hasanovic et al., 2009), in Croatia (Priebe et al., 2009; Prorokovic, Cavka, & Cubela Adoric, 2005), in Serbia (Nelson et al., 2004; Priebe et al., 2009), and in Kosovo (Eytan, Guthmiller, Durieux, Loutan, & Gex-Fabry, 2011; Nelson et al., 2004).

2.2 Migrants and Refugees following war

The above-described complex nature of modern warfare and armed conflicts has forced many people into migration. According to UNHCR (2014) there are currently more than 15 million refugees worldwide, with numbers increasing due to the recent developments of various crisis throughout the world. For example, during the Kosovo war about 60'000 people found protection in Switzerland (Olson, 1999).

Refugees are to be the most severely affected survivors of war conflicts (Schauer, 2014). In general, there is clinical and research evidence that serious mental health disorders are frequent in refugees (Fazel, Wheeler, & Danesh, 2005). Not only that they have experienced potentially traumatic events in their home country, but also they experience as well post-migration living difficulties (Heeren et al., 2012; Nickerson et al., 2015). Subsequently, they are a vulnerable population.

To conclude increasing evidence show that refugees and migrants suffer from multiple mental health problems. Studies assessing psychiatric disorders report high overall psychiatric morbidity, most often diagnosed disorders are depression, PTSD and other anxiety disorders, with growing results suggesting high rates of co-morbidity (Fazel et al., 2005).

2.3 Psychological sequelae of war related-experiences and their prevalence

Anyone who has experienced war, genocide or torture, is often severely traumatized (Schaal & Elbert, 2006; e.g. Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997), and such people are considered to be particularly at risk to develop psychiatric disorders such as social phobias, depression or PTSD (Kashdan, Morina, & Priebe, 2009). Children are espe-

cially severely affected. According to UNICEF (1995), specifically in the 1980's about two million children were killed in wars, one million were orphaned and more than ten million were psychologically traumatized. Particularly for children, consequences of trauma can be far-reaching. Foremost, the potentially traumatic experiences affect an organism in mid-development, which is integrated into a family system and is physically, cognitively, emotionally and socially maturing. According to Shaw (2003) this can affect the formation of identity and personality structures, of coping strategies, of internal values of good and evil, of impulse control mechanisms and social behaviour patterns. Also, neurobiological changes may persist in the long-term (Elbert & Schauer, 2002; Schauer, 2014).

War is an absolute state of emergency in which civilians are confronted with organized violence that destroys, hurts and kills. To survive a war situation can be the most disturbing experience (Schaal & Elbert, 2006; Summerfield, 2003).

In the following sections, some of the frequent consequences of war related-experiences and their prevalence in the general population will be presented. Additionally, rates of these mental health disorders in post-conflict countries and in migrants/refugees will be provided.

In May 2013, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) was published (APA, 2013). The DSM-5 made changes in defining many diagnoses, and major changes were made with regard to PTSD. One of the main changes categorized PTSD no longer under anxiety disorders, but in a new category of trauma and stressor related disorders. Further changes included the elimination of the trauma criteron A-2 (in DSM-IV the A trauma criterion was related to the traumatic event, meaning A-1=the stressor itself and A-2=the subjective emotional response to the event), and the diagnostic criteria now consist of four rather than three symptom clusters (Friedman et al., 2011). As the current thesis, which the upcoming papers are part of, was based on the DSM-IV criteria the follow-

ing diagnosis and descriptions will focus and describe the DSM-IV symptoms and criteria (APA, 1994, 2013).

Posttraumatic Stress Disorder

The experience of a wide variety of extreme situations (combat situations, torture, rape, accidents, injuries, and natural disasters etc.) seems to lead remarkably to similar psychological reactions. One of these clinical pictures, which according to various potentially traumatic events can present is defined by the two disease classifications DSM-IV and ICD-10 as "Posttraumatic Stress Disorder" (APA, 1994; Dilling, Mombour, & Schmidt, 1993). For the diagnosis of PTSD, according to DSM-IV (APA, 1994), the following core symptoms over a period of at least one month must be present: persistently re-experiencing of the traumatic event (flashbacks/intrusions), avoidance of trauma-related stimuli and emotional numbness, and increased emotional hyper-arousal. These symptoms should further cause significant social, occupational or other areas of functional impairment. People may have these symptoms immediately after a trauma or with a delayed onset. Additionally, in some individuals the symptoms decrease within a short time, whereas in a number of other they become chronic.

According to Neuner et al. (2004) there is a dose-response relationship between war trauma experiences and PTSD. Thus, the accumulation of different events increases the risk of development of post-traumatic stress disorder. PTSD is a severe mental health disorder, which affects close to 7% of the population (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995) and occurs among 10-20% of those who have been exposed to potentially traumatic events (Kessler et al., 1995). In post-war countries, PTSD is reported to be one of the most frequent individual disorders with a range of 10.6% to 35.4% (Priebe et al., 2010). In refugees and migrants (Fazel et al., 2005) PTSD is definitively the most studied stress-related sequele. However, PTSD is not the only mental health consequence that can arise from trauma (Kessler, Chiu, Demler, Merikangas, & Walters, 2005). Moreover, it commonly co-exists

with other disorders, like anxiety, depression and a variety of psychosomatic complaints, which are to be explained in the following.

Depression

Major depression is a psychiatric disorder, defined by persistent depression of mood, anhedonia, sleep and appetite disturbances, feelings of worthlessness, guilt and hopelessness. According to DSM-IV (APA, 1994) diagnostic criteria for a major depression disorder are a depressed mood and significant reduction of interest or pleasure in nearly all activities for a period for at least two weeks. Additionally, three or more of the following symptoms must be present: gain or loss of weight, increased or decreased sleep, increased or decreased level of psychomotor activity, fatigue, feelings of guilt or worthlessness, reduced ability to concentrate, and recurrent thoughts of death or suicide. An overall prevalence rate of 8.6% for depressive disorders was found in European countries (Ayuso-Mateos et al., 2001; Wittchen et al., 2011).

In post-war regions, the rates of depression following trauma are much higher, they have been found to be up to 47.6% (Priebe et al., 2010). On the other hand, in refugees there were rates of 28.2% scoring above the cut-off for depression symptoms found (Silove et al., 1997), and Gerritson et al. (2006) reported even a rate of 68.1% of depression in refugees.

Anxiety

While anxiety is a non-specified state of worry, fear and uncertainty about future events, anxiety disorders include various types of psychiatric syndromes. They are broadly divided into generalized anxiety disorder, phobic disorders and panic disorder. In the European countries the overall prevalence rate of any anxiety disorder is estimated to be 6% (Alonso et al., 2004) and a 12month prevalence of 8.6% is evidenced (Wittchen et al., 2011).

In post-conflict countries, rates of anxiety disorders ranging from 15.6% to 41.8% (Priebe et al., 2010) were reported. Whereas in migrants and refugees, anxiety rates of 23.1% (Silove et al., 1997) and 39.4% (Gerritsen et al., 2006) were reported.

Obsessive Compulsive Disorders

Obsessive–compulsive disorder (OCD) are characterized by repeated intrusive thoughts (obsessions) and repetitive actions (compulsions) and do affect between 0.7% and 2.3% of the general population in western countries (Kessler, Berglund, et al., 2005). Several studies have described OCD after trauma in rates up to 47% (Nacasch, Fostick, & Zohar, 2011).

In post-war countries, rates up to 6.3% were found (Priebe et al., 2010), whereas, to the best of our knowledge, there are no studies in literature reporting OCD in in civilian war survivors.

Somatization and persistent Pain

The consequences of trauma appear to have not only psychological, but also physical consequences. Somatization describes in general different distress arising from perception of bodily dysfunction, whereas these complain reflects cardiovascular, gastrointestinal, respiratory, neurological and other systems with strong autonomic mediation. Other possible components of somatization can be pain and discomfort of the gross musculature and other somatic equivalents of anxiety. Prevalence rates of 6.3% were found in a study in the European Union (Wittchen et al., 2011).

On the other hand, chronic pain is described as pain with a duration of 3 to 6 months or greater, persisting beyond the curing of the initial cause and is often associated with functional and psychosocial problems (Dersh, Polatin, & Gatchel, 2002; International Association for the Study of Pain (IAP), 1986; Morina & Egloff, 2015). Prevalence rates of chronic pain

between 10% and 42% were found in a large general population over 17 countries around the world (Demyttenaere et al., 2007).

High rates of somatization and chronic pain are reported in the aftermath of trauma, particularly in veterans (Sack, Lahmann, Jaeger, & Henningsen, 2007). In post-conflict regions, rates up to 12% for a somatization disorder were reported (Morina, Ford, Risch, Morina, & Stangier, 2010; Priebe et al., 2010), whereas in refugees, up to 83% of people do report chronic pain symptoms (Olsen, Montgomery, Bøjholm, & Foldspang, 2007).

Other psychological consequences in the aftermath of war

Beyond the above-mentioned mental health problems, there are many other consequences that can develop after experiencing war and other traumata. Literature shows, that people experiencing war, do develop complex psychological health problems, such as: complex PTSD (Pelcovitz et al., 1997; van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005), prolonged grief (Morina, Rudari, Bleichhardt, & Prigerson, 2010; Nickerson et al., 2014), dissociation (Gelkopf, Solomon, & Bleich, 2013), substance abuse (Kline et al., 2014), and eating disorders (Aoun et al., 2013).

As they have not been primary objectives of the present thesis, they will not be specified in more detail here.

Comorbidity of trauma related disorders

In addition to PTSD, traumatic experiences may influence the development of or the intensity of other mental disorders as well. In the National Comorbidity Survey (Kessler et al., 1995) it was found that in 53 % to 78 % of cases, mood disorder was secondary to the traumatic experiences and PTSD. In fact, the association of PTSD with other disorders is rather the norm (O'Donnell, Creamer, Pattison, & Atkin, 2004) than the exception. Findings from population based surveys, as well as studies with traumatized people report that more than half of people with PTSD also met criteria for at least one other psychological disorder,

such as other anxiety disorder, mood disorder, substance abuse, dissociation, and somatiza-tion (e.g. Breslau, Davis, Andreski, & Peterson, 1991; Kessler et al., 1995). Also in refugees and civilian war survivors in post-conflict countries have been found strong associations be-tween PTSD and other mental health disorders (Basoglu et al., 2005; Steel, Silove, Phan, & Bauman, 2002; van Ommeren et al., 2002). In community-based surveys in a study in 5 countries following war in the Balkans, war related comorbidity rates between 21.5% and 62.2% were reported (Priebe et al., 2010). A study of psychologically traumatized patients in post-war Bosnia, found that almost 75% of patients with PTSD had some other, co-morbid psychiatric disorder (Avdibegovic et al., 2008).

2.4   Factors associated with mental health of civilian war survivors

In addition to being through a war and conflict, civilian war survivors live in a state of insecurity: in their home countries they must rebuild everything. The insecurity in refugees, for example, involves the application process, which is often long-standing and the face with the constant fear of repatriation. Research has focused in the last years on the important ques-tion, whether and how past and ongoing stressors interact with, and possibly maintain or ex-acerbate different mental health symptoms. In a meta-analysis, Brewin et al. (2000) found in different trauma samples the following three categories of possible factors to be associated with the development of a PTSD: a) factors such as gender, age at trauma, and race; b) fac-tors such as education, previous trauma, and general childhood adversity; and c) factors such as psychiatric history, reported childhood abuse, and family psychiatric history.

Studies have shown that people affected by war and other human rights violations ex-perience a wide range and high number of traumatic events, with studies reporting a mean of 7 to 15 traumatic event types experienced (Marshall, Schell, Elliott, Berthold, & Chun, 2005; Mollica et al., 1998; Nickerson et al., 2015). Pre-migration trauma includes, for example, witnessing murders, having their lives threatened, being separated from family members,

brainwashing, and having endured torture (Nickerson et al., 2015; Sinnerbrink, Silove, Field, Steel, & Manicavasagar, 1997).

On the other hand, research in the last years has shown that adverse effects of trauma on refugees and migrants are compounded by post-migration stressors, and that they are important contributors to the persistence and increase in mental distress in migrants (Laban, Gernaat, Komproe, van der Tweel, & De Jong, 2005; Porter & Haslam, 2005; Silove, Steel, McGorry, & Mohan, 1998). Such post-migration stressors can include asylum procedure, insecure visa status, unemployment, discrimination, and distance from family (Nickerson et al., 2015; Porter & Haslam, 2005). Finally, a study across European countries on refugees from the former Yugoslavia found that sociodemographic characteristics, war experiences and post-migration stressors were associated with mental health disorders (Bogic et al., 2012).

2.5   Families and transgenerational effects of trauma

Post-traumatic stress affects not only the victims themselves but also has a high impact on their social environment. In particular the increased level of arousal, which is characterized by high irritability, outbursts of anger, nervousness, concentration problems and chronic sleep problems, has a negative effect on the social environment of those affected. It is therefore not surprising that in addition to the direct effects of PTSD, indirect consequences of the disease have been shown. It was found that the presence of PTSD in a family member has a negative impact on other family members and may adversely affect the family dynamics (Figley, 1998; Franciskovic et al., 2007; Lambert, Holzer, & Hasbun, 2014). Many studies have shown the negative effect of PTSD in war veterans on their partnership (Galovski & Lyons, 2004). Also, there are some studies evidencing the negative impact of trauma among veterans on their children's education environment (Galovski & Lyons, 2004). Most studies consistently show, that a paternal PTSD correlated with the dysfunctionality of the family (A. C. Davidson & Mellor, 2001; Galovski & Lyons, 2004; Lambert et al., 2014). Particularly the

PTSD clusters emotional numbing and arousal play an important role in the parent-child relationship and are predictive of family distress (Ruscio, Weathers, King, & King, 2002). A cross-sectional study also showed that male Bosnian war veterans with PTSD in comparison with a healthy control group disclosed significantly more often that their children suffered from developmental and emotional problems than veterans without PTSD (Klarić et al., 2008). In a study of Vietnam veterans and their children, 34% of the variance of child behavior problems were explained by the paternal PTSD (Caselli, 1995). Furthermore, children of parents with PTSD seem to show poorer school performance (J. R. Davidson, Smith, & Kudler, 1989; Harkness, 1991). Generally, it seems that individuals who live together with PTSD patients are at risk to develop PTSD themselves, if they are also traumatized (Galovski & Lyons, 2004).

It is reported that children and adolescents are exposed on average six to seven traumatic events during war (Gavranidou, 2007). Stress related reactions in children and adolescents express themselves according to their stages of development of perception, emotions or social contact behavior. The presence of traumatic reactions depends as well on how the children perceive the stress and on the attributed meaning given to the stressor. Therefore, in children, parents and other relevant care givers seem to be crucial in the stress-response system, i.e. whether a stressor is perceived as such or not and how to react to such stress, lies in the social interaction (Gunnar, Brodersen, Nachmias, Buss, & Rigatuso, 1996). According to Macksoud et al. (1993), young children eventually show regressive behaviors in terms of bed-wetting or defecating. They further can have concentration and learning difficulties caused by recurring memories of the traumatic event or depressive affects. They are also susceptible for psychosomatic complaints, sleep and eating disorders. Adolescents who experienced war, are described to be distressed and are depressed, irritable, tend to be rather shy and social withdrawn, demonstrate aggressive and antisocial behavior and have difficulties developing future perspectives (Kocijan-Hercigonja, 1997). Finally, as further clinical conse-

quences of traumatic war experiences, depressive and anxiety symptoms are often diagnosed in children and adolescents (Smith, Perrin, Yule, Hacam, & Stuvland, 2002). In conclusion research evidences the importance of considering the family context of civilian war trauma survivors (Lambert et al., 2014).

3 Empirical studies of the current thesis

3.1 General overview and aims

All three presented papers are subject of the project „*Mental health of children and their traumatised parents - a comparison of Albanian families in Kosovo and in Switzerland 10 years post war*". The aims of this project were to investigate families who have lived through the armed conflict during the Kosovo war in 1998/1999. In particular this concerns the children of their respective families, their mental health, their emotional and behavioural problems. The study was headed at the Outpatient Clinic for Victims of Torture and War at the University Hospital Zurich and was conducted in 2010 and 2011 in Kosovo and Switzerland. The author of the current thesis was one of the project leaders and the presented papers are part of his research interests.

3.1.1 First Paper: Trauma, mental health and intergenerational associations in Kosovar Families 11 years after the war

The first paper investigates how parental behaviour affects the mental health of their children in daily life. This is one of the only studies interviewing both parents living in the same household and one child also living in the same household, all of them having experienced the 1998/1999 Kosovo war.

As discussed in the previous sections, there is a considerable amount of literature addressing consequences of trauma in veterans and holocaust survivors. However, the evidence regarding intergenerational effects of trauma in families is inconsistent. Though, war and post-war civilian populations, particularly children, are still understudied. Thus, the first paper investigates intergenerational aspects of trauma-related mental health problems among families 11 years after the Kosovo war. This paper reveals that there is considerable trauma exposure, and that symptoms of parents and children are associated.

3.1.2 Second Paper: Trauma Exposure and the Mediating Role of Posttraumatic Stress and Depression on Somatization Symptoms and Persistent Pain in Civilian War Victims

The second paper focuses more particularly on the association between the traumatic event and the perception of somatization symptoms and persistent pain in adults. It is evidenced, that somatic symptoms are a common aftermath of trauma. These might be as a direct consequence of war-related traumatic events, such as torture or injuries, or as a physiologic hyperactivity, or this may result thorough mediation by other traumatic stress related disorders. This association is very well studied in veterans and survivors of motor-vehicle accidents, but data on civilian survivors in a post-war region is lacking. To better examine the above mentioned relationships mediation analyses were conducted. These analyses revealed that somatic symptoms are in different ways associated with psychopathology.

3.1.3 Third Paper: Obsessive-Compulsive and Posttraumatic Stress Symptoms Among Civilian Survivors of War

Literature shows that not only PTSD and depression are developed after experiencing war-related trauma. There are many other war-related sequelae, such as obsessive-compulsive symptoms. This has been well documented in the literature of veterans; civilians have received less attention thus far. The third paper examines this relationship in Kosovar war-survivors living in Switzerland. It investigates assesses the presence of obsessive compulsive symptoms in the aftermath of war-related trauma in civilians, and secondly, it shows data from people who have experienced the war and moved to another country of their origin.

A more detailed description of the aims of the current papers can be found in the sections related to the respective studies. In the following three chapters, the manuscripts of each study will be presented. The first paper has already been published, whereas the last two will be submitted for publication in scientific journals.

4   Paper 1 – Trauma, mental health and intergenerational associations in Kosovar Families 11 years after the war

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[1] These authors contributed equally to this work.

4.1 Abstract

Background: While there is a considerable amount of literature addressing consequences of trauma in veterans and holocaust survivors, war and postwar civilian populations, particularly children, are still understudied. Evidence regarding intergenerational effects of trauma in families is inconsistent.

Objective: To shed light on intergenerational aspects of trauma related mental health problems among families eleven years after the Kosovo war.

Method: In a cross-sectional study, a paired sample of 51 randomly selected triplets (school-age child, mother, father, N=153) of Kosovar families was investigated with regard to trauma exposure, posttraumatic stress (UCLA, PDS), anxiety (SCAS, HSCL-25) and depressive symptoms (DIKJ, HSCL-25).

Results: Considerable trauma exposure and high prevalence rates of clinically relevant posttraumatic stress, anxiety and depressive symptoms were found in both parents and children. While strong correlations were found between children's depressive symptoms and paternal posttraumatic stress, anxiety and depressive symptoms, maternal symptoms did not correlate with their children's. In multiple regression analyses only posttraumatic stress symptoms of fathers were significantly related with children's depressive symptoms.

Conclusion: Eleven years after the Kosovo war, the presence of posttraumatic stress, anxiety and depressive symptoms in civilian adults and their children is still substantial. As symptoms of parents and children are associated, mental health problems of close ones should actively be screened and accounted for in comprehensive treatment plans, using a systemic approach. Future research should include longitudinal studies conducting multivariate analyses with larger sample sizes in order to investigate indicators, causal and resilience factors.

Keywords: PTSD, trauma, Kosovo, war, intergenerational, children, parents

32

4.2 Introduction

Civilian populations all over the world have become principal targets of military and paramilitary persecution and thereby victims of severely traumatizing experiences, particularly during the many ethnically motivated armed conflicts of recent years (International Committee of the Red Cross, 2010). People concerned have been reported to show an increased prevalence of mental disorders, namely posttraumatic stress disorder (PTSD), anxiety and depression (Cardozo et al., 2004; Cardozo et al., 2000; Johnson & Thompson, 2008; Neuner, Schauer, Karunakara, et al., 2004; Schaal, Dusingizemungu, Jacob, & Elbert, 2011; Scholte et al., 2004). Notably children were shown to frequently suffer from mood and anxiety disorders, especially PTSD, in the aftermath of war (Ahmad, von Knorring, & Sundelin-Wahlsten, 2008; Hadi, Llabre, & Spitzer, 2006) and must be considered as particularly vulnerable. Besides traumatic experiences, the affected populations often suffer from difficult war and postwar living conditions which increase the risk of developing psychological symptoms (Heptinstall, Sethna, & Taylor, 2004; L. A. King, King, Fairbank, Keane, & Adams, 1998; Klaric, Klaric, Stevanovic, Grkovic, & Jonovska, 2007; K. E. Miller et al., 2002; Wenzel et al., 2009). Without appropriate treatment, which is often unavailable in post war countries, the majority of individuals with chronic PTSD do not recover (Goenjian et al., 2000; Kessler et al., 1995).

The 1998/1999 war in Kosovo represents one of the few conflict zones that were rather closely observed by western media and politics and therefore followed by comparably fast and extensive support in terms of restoration of civil order and infrastructure. Nevertheless, high short- and medium-term postwar prevalence rates of mental disorders have been observed (Kashdan et al., 2009; Morina & Ford, 2008). A large epidemiological survey conducted in the Balkans found a prevalence for mood and anxiety disorders of 47.6% and 41.8%, respectively, in 648 Kosovar adults (Priebe et al., 2010).

Moreover, not only those directly exposed to trauma, but also their close ones can be affected in a broad range of ways. Children of fathers involved in the first gulf war have been shown to present with elevated scores of anxiety and depression (Al-Turkait & Ohaeri, 2008). PTSD in Vietnam veterans predicted their offspring's behavioral problems (Caselli, 1995). Veterans with war-related PTSD significantly more often reported developmental, behavioral and emotional problems in their children than veterans without PTSD (Klarić et al., 2008). More than a third of war veterans' wives were found to meet the criteria for secondary traumatic stress (Francisković et al., 2007) and veterans' PTSD was related to lower levels of marital adjustment (Klaric et al., 2011). A variety of intergenerational effects of parental trauma exposure and posttraumatic stress symptoms on parenting, child development and family functioning in veterans and holocaust survivors has been reviewed (Barel, Van Ijzendoorn, Sagi-Schwartz, & Bakermans-Kranenburg, 2010; Dekel & Goldblatt, 2008; Galovski & Lyons, 2004; Kellerman, 2001), with often inconsistent findings.

Several studies examined intergenerational aspects in families in which both parents and children were exposed to traumatic experiences. Both war trauma and parents' emotional responses in terms of PTSD and anxiety were found to be significantly associated with children's PTSD and anxiety symptoms in 100 traumatized families from the Gaza Strip (Thabet, Tawahina, El Sarraj, & Vostanis, 2008). In 296 Tamil school children, a significant relationship between previous war events and the amount of family violence experienced by the children was reported. Both violence associated with the war and with parental behavior were in turn related to the diagnosis of PTSD in children (Catani, Jacob, Schauer, Kohila, & Neuner, 2008). Self-report data of 339 mothers and children from Bosnia-Herzegovina revealed high levels of posttraumatic stress symptoms in mothers and children. Child distress was related to both their level of exposure and to maternal posttraumatic stress reactions (Smith, Perrin, Yule, & Rabe-Hesketh, 2001).

While there is a considerable amount of literature addressing veterans and holocaust survivors, war and postwar civilian populations, particularly children, are still understudied. Furthermore, while earlier studies were usually conducted on the impact on children of a single traumatized parent (mostly fathers) or both parents together, few studies have examined traumatized families in terms of the differential relationship of each parent's and children's individual mental health problems. This cross-sectional study, therefore, aimed at shedding light on the intergenerational interplay of PTSD, anxiety and depressive symptoms among Kosovar families eleven years after the war. We hypothesized that, despite the relatively long time lapse since the end of war, both children and adults would still suffer to a great extent from clinically relevant symptoms of posttraumatic stress, anxiety and depression, with children being less affected than their parents due to lower lifetime trauma exposure. Given the inconsistence of evidence regarding the influence of maternal vs. paternal symptoms on their children's wellbeing, we expected equally strong correlations between the psychopathological symptoms of the children and their mothers' and fathers', respectively.

4.3   Methods

The study was approved by the ethics committee of the County of Zurich, Switzerland. As no ethics committee was available in Kosovo, the study was submitted to and approved by the Ministry of Education of Kosovo. Data collection occurred from May to November 2010.

4.3.1   *Participants and Procedure*

Participants, i.e. children and their parents, were recruited from the general population of three different regions of Kosovo (north, central, south) in order to avoid bias resulting from town-country discrepancy or different degrees of involvement in war. We included Albanian families with children born during or before the war (i.e., age 10 to 17 at the time of

data collection) and both parents living in the same household. Families were excluded if they had not been permanently resident in Kosovo or if higher military functions were executed during the war. School authorities of 14 communities were asked for permission to contact the principals of 17 elementary schools and 9 high schools randomly selected from a list provided by the Ministry of Education. In case of agreement, school principals and teachers were approached by the study team (NM) in order to obtain permission to ask students for cooperation. Students from 5th to 11th grade were randomly selected from class lists and asked for participation. In case of consent, parents were subsequently addressed on their part. Written informed consent was obtained from all participating children and parents. Children were mostly interviewed at school whereas parents were interviewed at their homes. Interviews were conducted by six master-level students of psychology from the University of Prishtina. They were thoroughly trained in a two-day-workshop to correctly provide study information, obtain informed consent and conduct interviews according to the study protocol. A member of the research team (NM) provided on-site support and supervision during the first week of data collection. Another half-day supervision session in a group setting took place six weeks later. Telephone and email support was granted during the complete study period. Parents obtained €10 for completing the interviews, children €5 respectively. Interviewers obtained €12 for each completed interview.

All contacted school authorities, principals and teachers granted full support without exception. From 129 students approached by the study team, 114 (88%) agreed to participate. Among these, parents of 18 children (16%) entirely refused cooperation whereas either mother or father of 45 children (39%) and both parents of 51 children (45%) gave their consent and were assessed, resulting in 261 data sets or an overall response rate of 73%. Only complete triplets of child, mother and father (N=153) were included in this study. Two thirds of the children were female. Children were m=14.3 (SD=2.0, R=10-17) years of age, mothers

m=42.1 (SD=5.6, R=31-59,) and fathers m=46.6 (SD=6.0; R=35-60) on average. Children had a mean of m=8.1 years of education (SD=1.9, R=5-11), mothers m=9.0 years (SD=3.3; R=1-20) and fathers m=11.7 years (SD=3.4, R=4-19). 59% of fathers compared to 18% of mothers were working at least part time or undergoing vocational training at the time of the interview. Complete triplets showed no significant difference as compared to incomplete triplets in terms of sex distribution (children), age and symptom scores of PTSD and depression of children, mothers and fathers.

4.3.2 Measures

Socio-demographic sample characteristics were assessed using a brief structured interview. Symptom severity was assessed by means of self-report questionnaires applied by the interviewers by one-to-one verbal administration, in which the instructions and questions were read to the participants. As no validated Albanian versions of the questionnaires were available, all instruments were translated from the original language, and back-translated by natively Albanian speaking interpreters. A native Albanian speaking psychiatrist compared source and back-translation and adapted the translations where necessary.

Children

Traumatic exposure and symptoms of posttraumatic stress disorder were established using the UCLA PTSD Reaction Index for DSM-IV, UPID, (Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998; Steinberg, Brymer, Decker, & Pynoos, 2004), a widely used screening instrument for children and adolescents. The exposure items are scored as present or absent. The 19 symptom items are scored on a 0-4 Likert scale. A cut-off of 38 showed the greatest sensitivity and specificity for detecting PTSD. Cronbach's alpha has been found to fall in the range of .90 (Steinberg et al., 2004) and was .86 in our sample.

The Spence Children's Anxiety Scale, SCAS, (Spence, 1998; Spence, Barrett, & Turner, 2003) was developed to assess the severity of anxiety symptoms according to the DSM-IV. The scale assesses six domains of anxiety including generalized anxiety, panic/agoraphobia, social phobia, separation anxiety, obsessive compulsive disorder and physical injury fears. The 44 items of the measure are rated on a 4-point Likert scale. Total score and subscale scores are computed by adding the individual item scores. In the present study, the subscales of panic/agoraphobia, separation anxiety and social phobia were used with the recommended cut-offs of 6 (panic, agoraphobia), 6 (separation anxiety) and 7 (social phobia), respectively (Muris, Schmidt, & Merckelbach, 2000). An anxiety disorder was presumed to be likely if at least one of the three cut-offs was surpassed. Internal consistency was .93 for the total scale and .74 - .82 for the subscales (Spence, 1998). Cronbach's alpha in our sample was .88.

The Depressionsinventar für Kinder- und Jugendliche (depression inventory for children and adolescents), DIKJ, (Stiensmeier-Pelster, Schürmann, & Duda, 1989, 2000) is a 26 item questionnaire derived from the Children's Depression Inventory CDI (Kovacs, 1985, 1992) and assesses depressive symptoms of children and adolescents from age 7 to 17 on a 3-point Likert scale. With a total score ranging from 0 to 52, a cut-off score of ≥ 12 is recommended to indicate clinically relevant depression (Fruhe, Allgaier, Pietsch, & Schulte-Korne, 2012). Concerning internal consistency, a Cronbach's alpha of .81 was found in our sample.

Parents

The Posttraumatic Diagnostic Scale, PDS, (Foa, 1995; Foa, Cashman, Jaycox, & Perry, 1997) is a 49-item self-report questionnaire to measure the severity of PTSD symptoms related to a single identified traumatic event. Part I is a trauma checklist that inquires about a variety of potentially traumatic events and which in this study was extended by addi-

tional traumatic event items from the first part of the Harvard Trauma Questionnaire (Mollica et al., 1992), resulting in a total of 23 items rated as whether experienced, witnessed or not experienced/witnessed. Part II evaluates the stressor criteria A1 and A2 according to the DSM-IV. Part III assesses the 17 PTSD symptoms experienced in the month prior to assessment. The PDS yields a total severity score ranging from 0 to 51. A probable categorical diagnosis of PTSD can be made with an algorithm following DSM-IV diagnostic criteria for PTSD. Cronbach's alpha in our sample was .94 in both mothers and fathers.

The Hopkins Symptom Checklist, HSCL-25, (Mollica et al., 1991) is a well-known and widely used screening instrument which measures symptoms of anxiety and depression. The shortened 25-item version derived from the 90-item questionnaire (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974) has been translated in many languages and used in different cultural contexts (Mollica, Wyshak, de Marneffe, Khuon, & Lavelle, 1987; Ventevogel et al., 2007). Part I has 10 items addressing anxiety symptoms; Part II has 15 items for depression symptoms. Items are rated on a 4-point Likert scale, the period of reference is the last week. The respondent's total score is the average of all 25 items, while the subscores are the average of the anxiety and depression items respectively, ranging each from 1.00 to 4.00 (Mollica et al., 1991). The validity of the often used 1.75 cut-off criterion has been evaluated in relation to different diagnostic psychiatric interviews around the world and found to be accurate (Mollica et al., 1987; Veijola et al., 2003). Cronbach's alpha in the present sample was .83 (mothers) and .93 (fathers) for the anxiety subscale, and .90 (mothers) and .93 (fathers) for the depression subscale.

4.3.3   *Data Analysis*

All analyses were conducted using SPSS for Windows, Release 20 (SPSS inc., Chicago, IL, USA). Descriptive statistics are given in terms of means and standard deviations in

continuous variables, and counts and percentages in categorical variables. Prevalence rates were assessed by counts and percentages of participants exceeding the respective recommended cut-offs. Differences between children and parents were assessed with paired t-tests. The relationship between psychopathological and other parameters of children and parents were examined by means of Pearson's correlations. The regression models (method: enter) included depressive and PTSD symptom scores of children as dependent and parents' PTSD and depressive symptom scores as independent variables. Because anxiety symptoms overlapped with PTSD and showed a lower correlation between children and parents compared to the symptoms of PTSD and depression they were excluded from the model in order to reduce the number of factors in view of the small sample size. Beta weights, 95% confidence intervals and adjusted *R*-square are reported. Effect sizes were calculated using Cohen's guidelines (Cohen, 1988). P-values of less than .05 were considered significant. Preconditions for regression analyses were checked in terms of normal distribution of residuals, autocorrelation of residuals (Durbin-Watson-test), multicollinearity and homoscedasticity and were found to be satisfying for PTSD and depressive symptom scores respectively.

4.4 Results

4.4.1 Trauma Exposure

The vast majority of children and adults reported having witnessed or experienced one or more potentially traumatic events (PTE, Table 1). The most frequently reported PTEs in children were "*being in a place where war was going on around you*" (52.9%), "*being beaten up, shot at or threatened to be hurt badly in your town*" (35.3%), "*hearing about the violent death or serious injury of a loved one*" (21.6%) and "*seeing someone in your town being beaten up, shot at or killed*" (19.6%). The least frequently reported potentially traumatic events in children were domestic violence and sexual abuse (2%). Potentially traumatic expe-

riences most frequently reported by fathers and mothers included "*lack of shelter*" (48%), "*lack of food and water*" (41.1%), "*combat situations*" (41.1%) and "*being close to death*" (33.3%). The least frequently reported PTEs included sexual violence in both fathers and mothers (5%).

Table 1 Lifetime trauma exposure (N=51 triplets)

				Number of potentially traumatic event types experienced or witnessed								
	M	SD	Range	0		1		2-4		≥5	
				N	%	N	%	N	%	N	%
Children	2.39	2.03	0-11	6	11.8	11	21.6	30	58.8	4	7.8
Mothers	4.49	3.29	0-15	4	7.8	7	13.7	17	33.3	23	45.1
Fathers	5.24	4.88	0-21	5	9.8	6	11.8	18	35.3	22	43.1

4.4.2 *Prevalence Rates and Symptom Severity*

An overview of prevalence rates is given in Table 2. High rates of posttraumatic stress, anxiety and depressive symptom scores exceeding the respective cut-offs were found in children and parents. Prevalence rates of children were lower with respect to PTSD and depression but not anxiety as compared to their parents. Mothers suffered more frequently than fathers from clinically relevant anxiety and depressive but not from PTSD symptoms. Symptom scores in children were m=9.7 (SD=8.9) for PTSD, m=13.1 (SD=8.3) for anxiety and m=8.0 (SD=6.0) for depression. Symptoms scores in mothers were m=11.6 (SD=13.0) for PTSD and m=2.0 (SD=0.7) for each anxiety and depression. Symptom scores in fathers were m=8.7 (SD=10.2) for PTSD, m=1.7 (SD=0.7) for anxiety and M=1.6 (SD=0.6) for depression. Accordingly, mothers had significantly higher symptom levels of anxiety (p=.004) and depression (p<.001), but not PTSD (p=.136) compared to their husbands. Symptom scores of children and parents were not compared due to the different instruments applied.

Table 2 Prevalence of posttraumatic stress, anxiety and depression (N=51 triplets)

	Children		Mothers		Fathers		p		
Prevalence	N	%	N	%	N	%	C-M	C-F	M-F
PTSD	5	9.8	17	33.3	14	27.5	.006**	.028*	.497
Anxiety	26	51.0	31	60.8	21	41.2	.322	.280	.017*
Depression	10	19.6	29	56.9	19	37.3	.000***	.028*	.024*

Notes:
*p<0.05; **p<0.01; ***p<0.001.
C-M: children-mothers; C-F: children-fathers; M-F: mothers-fathers
PTSD: UCLA PTSD Reaction Index for DSM-IV (Children), Posttraumatic Diagnostic Scale (Parents)
Anxiety: Spence Children's Anxiety Scale (Children)
Depression: Hopkins-Symptom Checklist HSCL-25 (Parents), Depressionsinventar für Kinder und Jugendliche (Children)

4.4.3   Correlation Analyses

An overview of correlations between parents' and children's parameters is given in Table 3. The strongest relationship was found between children's depressive symptoms and fathers' symptom scores of PTSD, anxiety and depression. Another significant correlation was found between PTSD symptoms of fathers and children. Maternal symptoms did not correlate with their children's in any respect. Symptom scores of depression, anxiety and PTSD of fathers correlated significantly with those of mothers. A significant negative correlation was found between paternal education and depressive symptoms of children as well as of mothers. Neither parents' nor children's trauma exposure correlated with children's symptoms. Boys differed significantly from girls only with respect to anxiety symptoms (slightly higher scores in girls) and trauma exposure (slightly higher in boys).

Table 3 Pearson correlations between parents' and children's parameters (N=51 triplets).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 C Sex																			
2 C Age	.027																		
3 C Anx	.351*	-.151																	
4 C Depr	-.171	-.009	.445***																
5 C PTSD	-.004	.297*	.438***	.348*															
6 C Trauma	-.338*	.240	-.167	-.050	.169														
7 M Age	.129	.337*	-.064	-.185	-.040	-.189													
8 M Empl	.219	.075	.007	.016	.001	-.130	.151												
9 M Edu	.205	-.130	.019	-.045	-.119	.005	.013	.540***											
10 M Anx	.125	-.099	-.055	-.001	.124	.042	-.174	-.161	-.051										
11 M Depr	.018	-.032	.035	.226	.147	.067	-.148	-.147	-.171	.757***									
12 M PTSD	.193	.047	.140	.090	.053	-.117	-.138	-.091	-.259	.408**	.627***								
13 M Trauma	.004	.177	.037	.104	.259	.282*	.124	.178	-.035	.316*	.324*	.174							
14 F Age	.059	.256	-.061	-.140	.006	-.208	.797***	.251	.059	-.057	-.106	-.061	.157						
15 F Empl	.054	-.025	.093	.129	-.208	.047	-.119	.213	.223	-.232	.010	-.037	.107	-.023					
16 F Edu	.067	.101	-.183	-.466***	-.204	.196	.263	.063	.360**	-.216	-.307*	-.164	-.138	.214	.250				
17 F Anx	-.142	-.183	.102	.434***	.234	-.095	-.112	-.161	-.146	.484***	.518***	.254	.161	.062	-.089	-.390**			
18 F Depr	-.149	-.260	.209	.441***	.244	-.096	-.094	-.240	-.250	.417**	.627***	.371**	.184	-.028	-.047	-.470***	.836***		
19 F PTSD	-.242	-.026	.217	.509***	.299*	.053	-.130	.052	-.127	.274	.349*	.335*	.278*	.083	-.133	-.429**	.567***	.535***	
20 F Trauma	-.120	-.164	-.106	.133	.178	-.036	-.104	-.140	-.089	.378**	.308*	.194	.450***	.130	.071	-.079	.509***	.459***	.308*

$*p<0.05$; $**p<0.01$; $***p<0.001$

C: Children; M: Mothers; F: Fathers; Empl: Employment; Edu: Education (Years); Anx: Anxiety Total Score (Children: SCAS; Parents: HSCL-25); Depr: Depression Total Score (Children: DIKJ;

Parents: HSCL-25) PTSD: PTSD Total Scores (Children: UPID; Parents: PDS) Trauma: Number of Trauma Categories Experienced or Witnessed (lifetime)

4.4.4 *Regression Analysis*

Results of the regression analysis for PTSD and depressive symptoms in children, mothers and fathers, controlled for trauma exposure and education, are shown in Table 4. Children's PTSD values were neither related to parental PTSD values nor to their depressive symptoms. Children's depressive symptoms were significantly related to their fathers' PTSD symptoms but not to their mothers'. Parental depressive symptoms had no significant beta weight for children's depressive symptoms.

Table 4 Regression analysis for posttraumatic stress and depressive symptoms in children (N=51 triplets)

Independent		Dependent			
		Children PTSD		Children Depression	
		Beta (95%CI)	B (SE)	Beta (95%CI)	B (SE)
Children	Trauma Exp.	.18 (-0.12; 0.49)	.80 (.68)	.00 (-0.26; 0.26)	.01 (.39)
Mothers	PTSD	-.06 (-0.45; 0.34)	-.04 (.13)	-.09 (-0.43; 0.24)	-.04 (.08)
	Depression	-.02 (-0.47; 0.43)	-.24 (2.88)	-.04 (-0.42; 0.35)	-.30 (1.66)
	Education	-.05 (-0.36; 0.27)	-.12 (.43)	.13 (-0.14; 0.39)	.23 (.24)
Fathers	PTSD	.20 (-0.16; 0.56)	.17 (.16)	**.33*** (0.02; 0.63)	.19 (.09)
	Depression	.14 (-0.29; 0.56)	2.02 (3.21)	.22 (-0.14; 0.58)	2.18 (1.85)
	Education	-.09 (-0.45; 0.27)	-.24 (.48)	-.30 (-0.60; 0.01)	-.53 (.28)
		Adjusted R^2 = .002		Adjusted R^2 =.277	
		F (7, 43) = 1.01		F (7 , 43) = 3.73	
		p = .435		p = .003	
		Effect Size = .03		Effect Size = .38	

Notes:
*p<0.05; **p<0.01; ***p<0.001

4.5 Discussion

This cross-sectional study examined lifetime trauma exposure, trauma related mental health problems and their intergenerational relationship in a randomly selected sample of Kosovar school-age children and their parents (N=51 triplets) eleven years after the end of war.

High trauma exposure and high prevalence rates of clinically relevant symptoms of PTSD, anxiety and depression were found in both generations. Children's depressive symptoms correlated with their fathers' symptoms of PTSD, anxiety and depression, whereas maternal symptoms did not correlate with their children's. Regression analysis showed a significant relationship between children's depressive and fathers' posttraumatic stress symptoms.

This study has several limitations. Because no structured clinical interviews were performed, the extent to which self-reported symptoms of PTSD, anxiety and depression would match clinical diagnoses is unclear. Neither validation interviews nor double-ratings of the interviews were conducted, basically because of the self-rating character of the questionnaires. The implementation of unvalidated Albanian versions of measurement instruments is another limitation. Translations and back-translations however were thoroughly performed by experienced, natively speaking interpreters and adapted in a meticulous reconciliation process, if necessary, in order to achieve maximum quality. Cronbach's alphas in our sample were similar to those of the original versions, suggesting comparable reliability of the translated versions. Although girls were overrepresented, we only found a few minor gender differences and we therefore do not expect a relevant bias. As all efforts for optimal randomization were made on regional, communal, school and participant level and as our findings correspond well with large epidemiological surveys in similar samples, we assume our results can be regarded as fairly representative for Kosovar families with school aged children in general. The sample size is sufficient for calculating approximate prevalence rates and correlations; however, as the sample was divided into three subgroups, it was too small for extensive multivariate regression analyses. A specific strength of our study is the examination of triplets (children, mother and father) to investigate intergenerational aspects. Another strength comprises the administration of self-rating instruments by master level students of psychology, who were not involved in data processing.

As expected, lifetime trauma exposure in adults and children was high compared to non-conflict countries (Kessler et al., 1995; National Institute of Mental Health, 2012; Perkonigg, Kessler, Storz, & Wittchen, 2000): Only 10% of children and parents reported no traumatic experiences whereas barely 10% of children and almost half of parents reported having experienced or witnessed five or more potentially traumatic event types. More than half of the children reported war-related experiences. The high prevalence rates of clinically relevant symptoms of PTSD (10%, 33% and 27% respectively), anxiety (51%, 61% and 41% respectively) and depression (20%, 57% and 37% respectively) in children, mothers and fathers of our sample are in line with earlier studies conducted in the post-war Balkans (Kashdan et al., 2009; Morina & Ford, 2008; Priebe et al., 2010). Notably, the long time lapse of more than a decade since the end of war seems not to result in a considerable convergence to non-conflict civilian populations with respect to mental health problems. One of the reasons might be the limited availability of mental health care resources (Jones, Rrustemi, Shahini, & Uka, 2003). Providing specific and culturally appropriate screening and treatment programs, in turn, would be crucial in order to prevent further long-term impairment and secondary harm. A school-based mental health approach, as performed in this study, turned out to be feasible, both logistically and economically, for assessments on community and population level.

With regard to the intergenerational interplay of trauma exposure and PTSD, parental trauma exposure was not related with their children's PTSD symptoms, whereas paternal (but not maternal) PTSD symptoms correlated significantly with children's PTSD symptoms. Literature in this regard is inconsistent. The comparison of 50 children of male Vietnam veterans with and without PTSD with an age-matched group of 33 civilian peers found no significant difference in terms of PTSD symptomatology for any offspring group whereas the effect of veteran's PTSD appeared to manifest itself particularly in the area of unhealthy family

functioning (A. C. Davidson & Mellor, 2001). A review of 35 comparative studies on the mental state of offspring of Holocaust survivors indicated that the non-clinical population of children of Holocaust survivors did not show more psychopathological symptoms than people in general while the clinical population of offspring tended to present a specific profile including a predisposition to PTSD (Kellerman, 2001). Yehuda et al., in turn, found that adult offspring of Holocaust survivors had a greater prevalence of current and lifetime PTSD and other psychiatric diagnoses than demographically similar comparison subjects and demonstrated a specific association between parental PTSD and the occurrence of PTSD in offspring (Yehuda, Halligan, & Bierer, 2001; Yehuda, Schmeidler, Wainberg, Binder-Brynes, & Duvdevani, 1998). The association of paternal PTSD symptoms and depressive symptoms of children seen in our sample is in line with previous studies suggesting parental trauma exposure and PTSD being unspecific mediating rather than causal factors, that potentially but not necessarily contribute to a range of psychiatric problems in offspring including other axis I disorders, behavioral and developmental abnormalities (Dekel & Goldblatt, 2008; Galovski & Lyons, 2004; Yehuda, Bell, Bierer, & Schmeidler, 2008; Yehuda et al., 2001).

Our hypothesis of equal correlations of maternal and paternal mental health with that of their children could not be supported. In spite of the higher symptom load compared to fathers, maternal mental health did not correlate at all with their children's, whereas a significant relationship was found between paternal symptoms of PTSD, anxiety and depression and their children's depressive symptoms, as well as between PTSD symptoms of fathers and children. Furthermore, in regression analysis, paternal but not maternal PTSD symptoms were significantly related to children's depression (adjusted $R^2 = .277$). These findings have, to our knowledge, not been reported in the literature to date. Yehuda and colleagues (2008) in contrast found that maternal, not paternal, PTSD was related to an increased risk for PTSD in 211 adult offspring of Holocaust survivors while PTSD in any parent contributed to the risk

for depression, and parental traumatization was associated with increased anxiety disorders. These partially contradictory findings are not surprising given the heterogeneity of the investigated samples, the variety of potential resilience and risk factors and the many conceivable pathways of intergenerational interplay, ranging from genetic and epigenetic to psychological, social and cultural mechanisms. The findings in our Kosovar sample may possibly be explained by a specifically momentous position of fathers within the family structure: A large review recently found that perceived paternal rejection, as could be assumed in case of fathers with mental disorders, is associated with negative personality development, i.e. in terms of self-esteem and emotional stability (Khaleque & Rohner, 2011). The hypothesis is supported by the correlations of fathers' symptoms of depression, anxiety and PTSD with those of their wives and the negative correlation of paternal education with depression of mothers and children, indicating higher paternal education being a protective factor. A complementary hypothesis, though speculative and not directly supported by the data of this study, could imply different ways of expression of mental health problems, particularly PTSD, among parents: As compared to mothers, fathers might present with rather externalizing behavior (M. W. Miller, Greif, & Smith, 2003; Rielage, Hoyt, & Renshaw, 2010), resulting in a higher impact on family members. The higher scores of maternal symptoms of anxiety and depression as indicators of an internalizing personality style would support this assumption. Future research should test the hypothesis given its potential for relevant clinical implications.

4.5.1   *Clinical implications and conclusions*

More than a decade after the end of the Kosovo war, the presence of posttraumatic stress, anxiety and depressive symptoms in civilian adults and their children is still substantial, corresponding to a high lifetime trauma exposure. Symptoms of parents (here: fathers) and children are associated. Therefore, mental health problems of close ones should actively

be screened and accounted for in comprehensive healthcare plans, using a systemic approach. This seems particularly important when mental health programs are addressing selective risk groups. The intergenerational interplay of trauma related mental health problems is a complex, non-linear process and is not sufficiently defined by the severity and distribution of mental disorders within families. Future research should include longitudinal studies conducting multivariate analyses with larger sample sizes in order to investigate indicators, causal and resilience factors.

5   Paper 2 – Trauma Exposure and the Mediating Role of Posttraumatic Stress and Depression on Somatization Symptoms and Persistent Pain in Civilian War Victims

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5.1   Abstract

Background: Although considerable attention has focused on the effects of war exposure on civilians' psychological health, less research has addressed the issue of the impact of war on civilians' physical functioning. This study examined levels of somatization and pain symptoms in the aftermath of war, and the mediating role of posttraumatic stress symptoms and depression in the relationship between trauma exposure and somatic symptoms.

Methods: Civilian war survivors (n = 142) from Kosovo were assessed for potentially traumatic events, posttraumatic stress symptoms, depression, somatization and persistent pain. Data were analyzed with mediation analyses.

Results: Participants reported on average more than 5 types of traumatic exposure. The cut-off indicative for posttraumatic stress disorder (PTSD) or depression was exceeded by 26.1% and 47.9% of participants. Symptom levels of PTSD and depression were associated with somatization symptoms and persistent pain. The relationship between trauma exposure and somatization symptoms and the level of persistent pain, respectively, was fully mediated by depression and the avoidance subscale of PTSD. Hyperarousal symptoms were positively related to somatization and persistent pain, however, when controlling for depression this association was no longer significant.

Conclusion: Depression and avoidance symptoms seem to play a key role in traumatized people suffering from somatization symptoms and persistent pain, even years after the war.

Key words: trauma, PTSD, depression, somatization symptoms, pain, Kosovo, civilian, war, victims

5.2   **Introduction**

Civilian populations exposed to trauma, such as military persecution and war, often suffer from a variety of psychological complaints including anxiety, depression, and posttraumatic stress symptoms. For instance, prevalence rates of 48% and 42% for mood and anxiety disorders, respectively, were found in Kosovar adults (Priebe et al., 2010). Somatization symptoms, i.e., bodily symptoms for which no organic causes are found, and persistent pain are also common among trauma survivors with PTSD, regardless of the traumatic event (i.e. combat, physical assault or motor vehicle accident) (Sack et al., 2007). In war veterans, combat stress reactions and PTSD were related to somatic symptoms (Shalev, Bleich, & Ursano, 1990; Solomon & Mikulincer, 1987). Disaster survivors suffering from PTSD reported more physical symptoms than those without PTSD (McFarlane, Atchison, Rafalowicz, & Papay, 1994), a finding that was also found 14 years after the genocide in Ruanda (Rieder & Elbert, 2013). Research suggests that somatization in the aftermath of trauma is paved by neurobiological changes, increased physiological arousal, and poorer health behavior (van Ommeren et al., 2002).

The relationship between trauma and somatic symptoms may be mediated by PTSD. Specific PTSD symptoms, e.g., hyperarousal may cause repeated muscle tension that could result in somatic complaints (Liedl et al., 2010). In other studies intrusive re-experiencing symptoms (McFarlane et al., 1994) and numbing (Escalona, Achilles, Waitzkin, & Yager, 2004) also predicted somatization in PTSD patients.

There are various theoretical models to explain the association between posttraumatic stress and somatic health symptoms. For example, the shared vulnerability (Asmundson, Coons, Taylor, & Katz, 2002; Asmundson & Katz, 2009) and mutual maintenance model (Sharp & Harvey, 2001), and a recent extension, the perpetual avoidance model (Liedl & Knaevelsrud,

2008), propose that individuals with PTSD and somatization disorder have shared vulnerability to both conditions, or alternatively, that pain symptoms and posttraumatic stress symptoms interact with each other.

One possible explanation for the association between PTSD and somatic reactions may be the role of depression. Depression is highly comorbid with PTSD (Breslau, Davis, Peterson, & Schultz, 2000). High rates of depressive disorder have also been found in patients with unexplained somatic symptoms (Katon, Sullivan, & Walker, 2001). Further, across numerous studies mood disorders have been shown to predict somatization (Haug, Mykletun, & Dahl, 2004; McCall-Hosenfeld, Winter, Heeren, & Liebschutz, 2014; McFarlane et al., 1994; Simon, Gater, Kisely, & Piccinelli, 1996; Zatzick, Russo, & Katon, 2003). However, most of these studies have not assessed both PTSD and depression. In the Escalona et al. (2004) study, when controlling for PTSD, demographic variables as well as depression failed to predict somatization. Similar results were found in a study of combat veterans (Beckham et al., 1998). There is evidence, though, that gender may play a mediating role in the relationship of trauma and somatization, with females developing more somatic complaints as compared to men (Andreski, Chilcoat, & Breslau, 1998; McCall-Hosenfeld et al., 2014). This pattern overlaps with the robust finding of more females developing PTSD than males (Olff, Langeland, Draijer, & Gersons, 2007).

While there is a considerable amount of literature addressing survivors of combat, motor vehicle accidents and interpersonal trauma, war and postwar civilian populations have been less studied to date. To the best of our knowledge, no studies have examined war-traumatized civilians in terms of the differential relationship of each posttraumatic stress symptom cluster, depression and somatic problems. This cross-sectional study aimed at investigating the relationship between trauma, posttraumatic stress symptoms, depression, somatization symptoms and persistent pain in postwar civilians, i.e, Kosovar civilians more than a decade after the war. We hy-

53

pothesized that despite the relatively long time lapse since the end of war, civilians would suffer from clinically relevant symptoms of posttraumatic stress, depression, pain and somatic symptoms, and that specific PTSD symptom clusters are associated with pain and somatic symptoms. Finally, we expected that depression would mediate this association.

5.3 Material and Methods

5.3.1 Procedure

The study was approved by the ethics committee of the Canton Zurich, Switzerland. Because no ethics committee was available in Kosovo, the study was approved by the Ministry of Education of Kosovo. Data collection occurred between May and November 2010. A random sample of civilians in Kosovo who had been exposed to traumatic events during the war in 1998/1999 was surveyed. Interview procedure and data collection are described elsewhere (Schick, Morina, Klaghofer, Schnyder, & Mueller, 2013).

Interviews were conducted in the participants' native, Albanian language. Socio-demographic sample characteristics were assessed in a brief structured interview. Symptom severity was assessed by means of self-report questionnaires applied by the interviewers by one-to-one verbal administration, in which the instructions and questions were read out to the participants.

The measures were translated and back-translated by natively Albanian-speaking mental health interpreters following gold-standard procedures (Bontempo, 1993). A piloting with five randomly selected people was done and then the first author, whose native language is Albanian and a native Albanian-speaking psychiatrist compared source and back-translation and adapted

the translations where necessary. Finally interviewers confirmed that all interview items were understood by all participants and that respondents understood all response options and scales.

5.3.2   Measures

Traumatic events and PTSD symptoms

Exposure to various types of traumatic events was assessed using a measure derived from combining the trauma event lists of the Harvard Trauma Questionnaire (Mollica et al., 1992), and the first part of the Posttraumatic Diagnostic Scale (PDS; Foa, 1995; Foa, Cashman, Jaycox, & Perry, 1997), resulting in a total of 23 items. Overall trauma exposure is rated by each participant whether or not a given potentially traumatic event was experienced and/or witnessed. The severity of 17 PTSD symptoms according to the DSM-IV PTSD criteria was assessed using the PDS (Foa, 1995; Foa et al., 1997). The frequency of each symptom in the last month was rated on a 4-point scale ranging from 0 = "*never*" up to 3 = "*5 times per week or more/nearly always*"), yielding a total severity score ranging from 0 to 51. Besides the assessment of symptom levels, the PDS allows making a categorical probable diagnosis of PTSD according to DSM-IV criteria, which requires at least one symptom of re-experiencing, three of avoidance, and two of hyperarousal. The PDS has demonstrated good psychometric properties (Foa et al., 1997). The internal consistency for the current sample was $\alpha = .96$.

Depression

Depressive symptoms were assessed using the depression subscale of the Hopkins Symptom Checklist-25 (HSCL-25; Mollica et al., 1991). The subscale consists of 15 items rated on a 4-point Likert-scale, resulting in a mean score between 1 and 4. A cut-off of 1.75 has been found

to reliably indicate clinically relevant depression and has been evaluated in different studies around the world (Mollica et al., 1987; Veijola et al., 2003). The scale has been shown to have good psychometric properties. The internal consistency in the present study was α =.93.

Somatic symptoms and persistent pain

Somatic symptoms were assessed using the 12-item somatization subscale of the Symptom Checklist-90-revised (SCL-90-R; Derogatis, 1977). The SCL-90-R has been translated in many languages and used in different cultural contexts (Mollica et al., 1987; Ventevogel et al., 2007). Each of the 12 symptoms was assessed for the last week on a 5-point Likert scale ranging from 0="*not at all*" to 5="*extremely*". Items scored as 2=*moderately* or above are considered as positive responses, yielding a total count of somatic symptoms. The somatization subscale in our study demonstrated good internal consistency (Cronbach's alpha = .90).

Persistent pain was measured using the self-reported Verbal Rating Scale (VRS; item 7 of the SF-36; Ware & Sherbourne, 1992), which assesses physical pain levels in the last for weeks on a six-point rating scale from 1="*no pain*" to 6="*extreme pain*".

5.3.3 *Data Analysis*

All analyses were conducted using SPSS 22 (SPSS inc., Chicago, IL, USA). There were less than 5% missing data on any of the variables included in the analyses. Descriptive characteristics were calculated for all outcome variables and are given in terms of means (M) and standard deviations (SD) in continuous variables, and counts and percentages in categorical variables. Differences between variables were tested by t-tests. The mediating role of posttraumatic stress and depression in the relationship between trauma and somatic symptoms and persistent pain was

investigated by a statistical mediation analysis approach developed by Preacher and Hayes (Hayes, 2009; Preacher & Hayes, 2008). The indirect method of this approach uses bootstrapping, which includes random resampling from the original data, with 5'000 pseudo bootstrap samples being generated. Following this, point estimates for specific and total indirect effects for each sample are provided, which then can be used to calculate indirect effects and their confidence intervals (95% CIs). The CIs are then used to define if the effects are statistically significant at $p<.05$. The use of bootstrap models is especially suggested for small sample sizes (Shrout & Bolger, 2002). We performed a separate model for somatization and persistent pain as outcome variables. For each model, the independent variables were trauma exposure, and the mediator variables were the three sub clusters of posttraumatic stress symptoms (re-experiencing, avoidance and hyperarousal). In a second step, depression was added as another mediator into the analyses. All analyses were controlled for gender, age, education and employment status.

5.4   Results

5.4.1   Sample Characteristics

Approximately half of the 142 assessed participants were female (56.4%). Mean age of the participants was 43.8 years (SD=6.12), education was 10.4 years of education (SD=3.6), and 35% were working at least part time or undergoing vocational training, whereas the remaining 65% were not employed.

5.4.2   Trauma Exposure and Symptom Severity

Participants had witnessed or experienced a mean of 5.3 (SD = 4.2) types of potentially traumatic events (PTE, see Table 5). The most frequently reported PTE's were: *"lack of shelter"*

(51.4%), "lack of food or water" (44.4%), *"being close to death"* (39.9%) and *"combat situation"* (35.9%). The least frequently reported lifetime traumatic events included sexual violence (between 1.4% and 2.1%).

The severity score for somatization on the SCL-90-R was 10.3 (SD=8.5) and for persistent pain on the VRS 3.25 (SD=1.25). Participants reported on average 3.3 (SD=3.3) different somatization symptoms with a range of 0 to 12. The PDS cut-off score for probable PTSD was exceeded by 26.1% of participants, while 47.9% scored above the HSCL-25 cut-off for probable depression. Females had higher levels of depression (p=.020), somatization symptoms (p=.004) and persistent pain (p=.003). Levels of PTSD symptoms were similar between males and females (p=.290). Participants with probable diagnosis of PTSD and clinically significant depression showed higher scores on somatization and persistent pain (Table 6).

Table 5 Trauma Exposure Reported by 142 civilian war survivors in a post-war region

Trauma type	*n*	%
Lack of shelter	73	51.4%
Lack of food or water	63	44.4%
Being close to death	56	39.4%
Combat situation	51	35.9%
Ill health without access to medical care	51	35.9%
Natural disaster	46	32.4%
Serious accident, fire or explosion	45	31.7%
Life-threatening illness	45	31.7%
Serious physical injury	41	28.9%
Forced separation from family member	40	28.2%
Murder of one or more strangers	36	25.4%
Unnatural death of a family member or friend	35	24.6%
Murder of a family member or friend	34	23.9%
Enforced isolation from others	23	16.2%
Torture	21	14.8%
Non-sexual assault by a stranger	21	14.8%
Imprisonment	19	13.4%
Disappearance or kidnapping	14	9.9%
Non-sexual assault by a family member or someone you know	11	7.7%
Brainwashing	6	4.2%
Sexual assault by a family member or someone you know	3	2.1%
Sexual assault by a stranger	2	1.4%
Sexual contact when you were younger than 18 with someone who was 5 or more years older than you	2	1.4%

Table 6 Somatization Severity, Somatization Symptom Count, and Pain by PTSD and Depression Diagnoses (N=142)

	PTSD		No PTSD		t-test	Depression		No Depression		t-test
	M	SD	M	SD		M	SD	M	SD	
Somatization Severity	15.9	8.8	8.3	7.5	5.104***	15.70	8.17	5.22	5.09	-9.211***
Somatization Symptom Count	5.65	3.38	2.57	2.29	-4.130***	5.46	3.19	1.40	1.94	9.210***
Persistent Pain Level	3.95	1.13	3.01	1.20	-5.327***	4.04	.92	2.52	1.07	-9.037***

Note: *p<.05, **p<.01, ***p<.001. Somatization: SCL-90-R, persistent pain level=VRS

5.4.3   Relationship: Mediation Analyses

The results from the mediation analyses are presented in Tables 7 and 8 (see Figure 1 for diagrammatic representation of the tested model). Trauma exposure was significantly associated with somatization and persistent pain. Trauma exposure was significantly associated with posttraumatic re-experiencing, avoidance, and hyperarousal in both models. With respect to the effect of posttraumatic stress symptoms (mediator) on somatization symptoms (outcome), only hyperarousal was associated with somatization symptoms. Posttraumatic stress partly mediated the relationship between trauma exposure and somatization. There was a significant indirect effect of both trauma and posttraumatic stress on somatization symptoms via hyperarousal. The same was observed for persistent pain as outcome measure.

After inclusion of depression into the model, hyperarousal symptoms no longer mediated the association between exposure to traumatic events and somatization and persistent pain symptoms. Depression fully mediated the relationship between trauma exposure and somatic symptoms and persistent pain, whereas avoidance partly mediated this relationship. There were significant indirect effects of trauma and posttraumatic stress on somatization and persistent pain via avoidance and depression.

Table 7 Results of Analyses Examining Mediating Role PTSD symptoms in Relationship between Trauma Exposure and Somatization Symptoms and Persistent Pain

		DV - Somatization Symptoms					DV – Persistent Pain				
Independent variable (*IV*)	Mediating variable (*M*)	Direct effects (c')	Total effects (c)				Direct effects (c')	Total effects (c)			
Trauma		.41*	.62***	Adj. R² = .36, F(8,133) = 10.75, *p*<.001			.06*	.08**	Adj. R² = .22, F(8,133) = 5.82, *p*<.001		
		Effect of *IV* on *M* (*a*)	Effect of *M* on *DV* (*b*)	Indirect effects (*a x b*)	95% CI Low	95% CI High	Effect of *IV* on *M* (*a*)	Effect of *M* on *DV* (*b*)	Indirect effects (*a x b*)	95% CI Low	95% CI High
Trauma	Re-experiencing	.28**	.29	.083	-.096	.337	.28**	.05	.014	-.007	.050
Trauma	Avoidance	.39***	-.16	-.063	-.314	.157	.39***	-.03	-.013	-.050	.014
Trauma	Hyperarousal	.24***	.76**	.019*	.044	.378	.24**	.09*	.21*	.005	.051

Note:

Re-experiencing = Re-experiencing subcluster in PDS (PTSD); Avoidance = Avoidance subcluster in PDS (PTSD); Hyperarousal = Hyperarousal subcluster in PDS (PTSD); *p<.05, **p<.01, ***p<.001.

Table 8 Results of Analyses Examining Mediating Role of Depression and PTSD Symptoms in Relationship between Trauma Exposure and Somatization Symptoms and Persistent Pain

		DV - Somatization Symptoms					DV – Persistent Pain				
Independent variable (*IV*)	Mediating variable (*M*)	Direct effects (c')	Total effects (c)				Direct effects (c')	Total effects (c)			
Trauma		.14	**.63*****	Adj. R² = .62, F(9,131) = 26.07, *p*<.001			.02	**.08******	Adj. R² = .44, F(9,131) = 13.30, *p*<.001		
		Effect of *IV* on *M* (*a*)	Effect of *M* on *DV* (*b*)	Indirect effects (*a x b*)	95% CI Low	95% CI High	Effect of *IV* on *M* (*a*)	Effect of *M* on *DV* (*b*)	Indirect effects (*a x b*)	95% CI Low	95% CI High
Trauma	Re-experiencing	**.28*****	.06	.018	-.119	.205	**.28*****	.02	.005	-.012	.033
Trauma	Avoidance	**.39******	**-.41***	**-.163***	-.390	-.021	**.39******	**-.07***	**-.027***	-.064	-.003
Trauma	Hyperarousal	**.24*****	.34	.085	-.018	.230	**.25*****	.04	.009	-.005	.032
Trauma	Depression	**.06******	**9.17******	**.545***	.344	.832	**.06******	**1.25******	**.075***	.047	.109

Note:

Re-experiencing = Re-experiencing subscale in PDS (PTSD); Avoidance = Avoidance subscale in PDS (PTSD); Hyperarousal = Hyperarousal subcluster in PDS (PTSD);
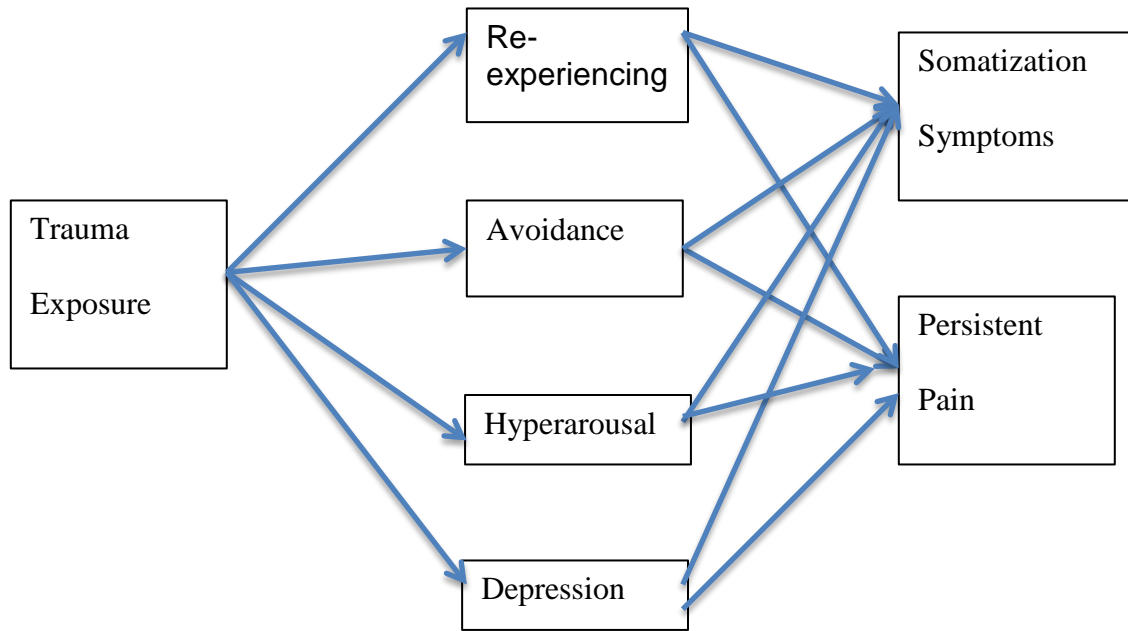
*p<.05, **p<.01, ***p<.001.

Figure 1Model of Mediation Analyses investigating relationship between Trauma, Posttraumatic Stress Symptoms, Depression, Somatic Outcomes

5.5   Discussion

In this study, we examined the relationship between trauma exposure, posttraumatic stress symptoms, depression, and the level of somatization symptoms and persistent pain in a randomly selected sample of Kosovar civilian war survivors (N=142), using cross-sectional data. Substantial trauma exposure and high levels of clinically relevant symptoms of PTSD, depression, somatization symptoms and persistent pain were found. Somatization symptoms correlated significantly with depression and PTSD symptoms. In mediation analyses, the relationship between traumatic exposure and somatic symptoms and pain, respectively, was fully mediated by depression and partly mediated by posttraumatic avoidance, accounting for 62% of the variance in somatization and 44% in persistent pain, respectively.

This study has several limitations. First, our results are based on self-reports assessed by questionnaires which usually have lower reliability than structured clinical interviews. However, because questionnaires were administered within a personal interview, we expect sufficient reliability. Another limitation is the use of instruments that have not yet been validated in Albanian. However, translations and back-translations were thoroughly performed by experienced and natively speaking interpreters in mental health and adapted by mental health care providers, if necessary, in order to achieve maximum quality. The long period between the war and our assessment might have induced inaccurate recall; moreover, it is not clear whether the problems reported by participants were a consequence of the war, the current social situation and living conditions, or both. Finally, the cross-sectional approach of the present study does not allow to draw any conclusions regarding causal relationships between trauma exposure and the presence of somatic symptoms. However, our findings allow us to generate specific hypotheses regarding possible mechanisms and causal factors contributing to the prominent somatization symptoms in traumatized civilian war survivors. These precise

assumptions about etiological mechanisms linking trauma exposure to somatic symptoms must be investigated in further research with appropriate longitudinal designs.

As expected, compared to non-conflict countries, lifetime trauma exposure was substantial (Kessler et al., 1995; National Institute of Mental Health, 2012; Perkonigg et al., 2000). This is unsurprising since the cohort was sampled from a war-affected region. Further, the high rates of probable PTSD (27%) and probable depression (39%) and the high levels of somatic symptoms and pain in the present sample are in line with earlier studies conducted in the post-war Balkans (Kashdan et al., 2009; Morina & Ford, 2008; Priebe et al., 2010).

Also, consistent with findings in the previous literature, female gender was associated with higher scores on somatization symptoms and persistent pain (Haug et al., 2004; McCall-Hosenfeld et al., 2014; Morina, Ford, et al., 2010). They also showed higher rates of clinically relevant depression symptoms, which is in line with epidemiological studies (de Jong, Komproe, & van Ommeren, 2003; Kessler, Chiu, et al., 2005). However, PTSD in the present study was equally found in women and men, which is in contrast to the epidemiological literature, but has been shown in samples of military personnel (Norris & Slone, 2007). It is possible that the comparable rates of PTSD in males and females in the current study may be related to differential trauma exposure during the war.

One of the interesting findings in this study was the differential role of PTSD symptom clusters on somatic symptoms. Specifically, we found that arousal initially mediated the association between trauma exposure and somatic symptoms. A comparable result was found by McFarlane et al. (1994). The present study adds to the previous literature, however, by adding depression to the model. When depression was included as a mediator, no association of hyperarousal with somatization and pain was observed. Instead, avoidance symptoms partly mediated the association between trauma exposure and somatic symptoms. Together, avoidance and depression, accounted for 62% of the variance in somatization symptoms and

44% in persistent pain, respectively. We note that avoidance was not subdivided into active and passive avoidance (also termed emotional numbing) symptoms, which has been indicated by factor analytic studies (D. W. King, Leskin, King, & Weathers, 1998). It is possible that passive avoidance may contribute to somatic presentations, as shown in a previous study (Escalona et al., 2004), because these responses can include social and emotional withdrawal, which in turn might increase awareness of and focus on internal sensory perception.

Avoidance behaviors in people suffering from chronic pain can be attributed, in part, to catastrophizing about the severity of the pain and the patient's inability to function, which may contribute to fear of pain and lead to avoidance of activities (Vlaeyen & Linton, 2000). Such avoidance may then contribute to depressive symptoms, which in turn lead to more inactivity and avoidance. In addition, depression may lead a person to avoid or limit physical activities, causing disability and poorer health, which in the long run increases the probability of somatic problems. It is also conceivable that the passive avoidance symptoms overlap with the alexithymia symptoms, which have been shown to mediate the association of trauma exposure on somatization in major depression (Gulec et al., 2013).

There has also been considerable attention given to the bidirectional relationship between PTSD and posttraumatic pain. As Sharp and Harvey (Sharp & Harvey, 2001) have argued, PTSD patients can have their trauma memories triggered by episodes of pain because their pain is associated with the experience of the traumatic event. Conversely, posttraumatic stress can exacerbate pain by (a) increasing arousal, (b) elevating muscle tension, (c) promoting vigilance to pain sensations, and (d) exaggerating negative appraisals about the severity of the pain experience.

Additional war-related consequences, such as social problems, may complicate the understanding of etiology, assessment, and course of treatment. In a poor country such as Kosovo, socio-economic hardship and mental health problems might additionally be associated. Be-

yond this, it has been suggested that among some non-western, collectivistic cultures, somatization is among the most frequent presentations of trauma survivors (Ford, 1997; Kirmayer & Young, 1998). In Kosovo, it is conceivable that being psychologically ill might be socially unacceptable, and therefore presenting somatic symptoms is more acceptable in Kosovarian people. As pain seems to be a particularly common symptom in depression, it raises the possibility that some people who present with somatic symptoms may actually have major depression. Thus, it is important to screen all somatizing patients for depression.

Our data suggest that in civilian trauma survivors with high levels of somatization and pain symptoms, a target should be the treatment of confounding mental health problems following traumatic events. Successful treatment of depression symptoms may mitigate somatization and perhaps other consequences of trauma. The literature shows that in depressed patients, physical complaints diminish with treatment of depression (Teh, Zaslavsky, Reynolds, & Cleary, 2010). As our work also showed the association between trauma exposure and PTSD, these treatments should also incorporate state-of-the-art treatment of PTSD. There is evidence that somatic symptoms improve when treating comorbid PTSD (Shipherd et al., 2007). One study of cognitive behavioral therapy for PTSD and somatization in major depression found a moderate effect size for PTSD symptom reduction, moderate to large effect size for depression, and moderate to large effect sizes for psychosocial/physical functioning variables (Perez Benitez, Zlotnick, Gomez, Rendon, & Swanson, 2013).

5.5.1 *Clinical implications and conclusions*

More than a decade after the end of the Kosovo war, the presence of posttraumatic stress, depression, somatic symptoms and pain in the civilian population is still substantial. Symptoms of posttraumatic mental health and somatic symptoms are highly associated, indicating a complex underlying mechanism. This study suggests that depression, and avoidance

patterns, mediate this association. Several studies have found depression to be implicated in somatic symptoms but it is surprising that it appears to be such a strong mediator that it can even almost eliminate the impact of PTSD in a sample after having experienced war trauma. Therefore, mental health problems should be screened and accounted for in a general view, particularly in the primary care of civilian survivors of war. The main approach should be the development of combined or stepped care treatments in terms of a bio-psycho-social model (Otis, Keane, Kerns, Monson, & Scioli, 2009). Finally, in the future, longitudinal studies including multivariate analyses with larger sample sizes should be conducted in order to investigate underlying mechanisms, predictors, causal and particularly resilience factors.

6   Paper 3 – Obsessive-Compulsive and Posttraumatic Stress Symptoms Among Civilian Survivors of War

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6.1 Abstract

Background: Several psychological sequelae have been identified in civilian war survivors. However, little is known on the occurrence of obsessive compulsive symptoms and their relationship to trauma in this population.

Method: Fifty-one adult civilian survivors of the Kosovo War (28 males) who had immigrated to Switzerland were interviewed and completed the Revised Obsessive-Compulsive Inventory (OCI-R) Scale, the Posttraumatic Stress Diagnostic Scale (PDS) and the Hopkins Symptom Check List for depression. Data were analyzed using multiple regression analyses.

Results: Overall, 35 and 39% of the sample had OCI-R and PDS scores above the cut-off for obsessive-compulsive disorder and posttraumatic stress disorder. Subjects with obsessive-compulsive symptoms were highly likely to have posttraumatic stress symptoms, and vice versa. In multiple regression analyses gender and the severity of posttraumatic stress were significantly related to obsessive-compulsive symptoms, whereas number of traumatic life events and depressive symptoms were not.

Conclusion: Both obsessive-compulsive and posttraumatic stress symptoms are very common among civilian survivors of the Kosovo War, even 10 years following the conflict. They commonly coexist, with obsessive-compulsive symptoms tending to be more pronounced in women. It remains critical to assess for both disorders in civilian war survivors, even years after the conflict has ended in order to provide the appropriate mental health care.

6.2   Introduction

In recent years, increasing attention has been given to the long-term psychological consequences of war-related trauma in civilian populations (Eytan et al., 2002; Marshall et al., 2005; Morina, Reschke, & Hofmann, 2011; Priebe et al., 2010). Studies performed in Bosnia (Avdibegovic et al., 2008; Hasanovic et al., 2009), Croatia (Priebe et al., 2009; Prorokovic et al., 2005), Serbia (Nelson et al., 2004; Priebe et al., 2009) and Kosovo (Eytan et al., 2011; Morina, Rushiti, Salihu, & Ford, 2010; Nelson et al., 2004; Schick et al., 2013) indicate rates of 57% for depression and 13-36% for posttraumatic stress disorder (PTSD). Moreover, up to 75% of people with PTSD were reported to have a co-morbid psychiatric disorder (Avdibegovic et al., 2008).

Beyond that, the relationship between war-related experiences and the occurrence of other mental health disorders such as obsessive-compulsive disorder in civilians has started to receive attention. Studies and case reports in civilians and veterans indicate that elevated posttraumatic stress and obsessive-compulsive symptom levels frequently co-occur in individuals with a history of traumatic exposure (Kessler, Chiu, et al., 2005), and that trauma may play a major role in the development of obsessive-compulsive disorder (OCD) (de Silva & Marks, 1999). The prevalence of OCD was reported to be up to 47% in people with PTSD compared to only about 1% in the general population (Helzer, Robins, & McEvoy, 1987; Kessler, Chiu, et al., 2005; Nacasch et al., 2011). On the other hand, up to 54% of individuals with OCD reported having experienced a traumatic life event (Cromer, Schmidt, & Murphy, 2007; Fricke, Köhler, Moritz, & Schäfer, 2007) and indicated higher posttraumatic stress symptoms (Fontenelle et al., 2012; Huppert et al., 2005; Speckens, Hackmann, Ehlers, & Cuthbert, 2007). In contrast, Grabe et al. (2008) compared 210 OCD patients with 133 gender- and age-matched controls in a German multicenter study, and identified a higher rate of past severe traumatization in controls than in OCD patients. The investigators also reported

low rates of trauma-related disorders either before or within the same year as OCD onset, just 2.9% and 1.5%, respectively.

OCD and PTSD share several common elements regarding clinical symptomatology, with the occurrence of intrusive images or thoughts being common to both conditions. Whereas OCD patients tend to have intrusive images of distressing events that may occur to them or others, PTSD patients typically experience recurrent memories of their traumatic experience. Both tend to respond to the resulting distress with avoidance behaviors or rituals (Badour, Bown, Adams, Bunaciu, & Feldner, 2012; Sasson et al., 2005). Various authors have described a "posttraumatic obsessive-compulsive disorder" (Fontenelle et al., 2012; Fostick, Nacasch, & Zohar, 2012; Pitman, 1993; Sasson et al., 2005) that refers to the onset of OCD which is clearly associated with the trauma. Furthermore, patients with comorbid OCD and PTSD may be less responsive to psychotherapy (Gershuny, Baer, Jenike, Minichiello, & Wilhelm, 2002; Gershuny, Baer, Radomsky, Wilson, & Jenike, 2003).

Based on these studies, it can be assumed that war-related posttraumatic obsessive-compulsive disorders can lead to high levels of mental health problems among civilian war survivors. Therefore, there is a need to understand the relationship of both disorders, particularly, as targeted therapy could lead to a lessening and eventually a decrease of the obsessive-compulsive symptoms (Nijdam, van der Pol, Dekens, Olff, & Denys, 2013). A large representative study performed in five Balkan countries five to 15 years after the war in the Balkans estimated the prevalence of OCD among civilian post war survivors between 0.2% and 6.1% (Priebe et al., 2010). In a study conducted in bereaved and non-bereaved war survivors in Kosovo, Morina et al. (2011) identified OCD rates of 3.4% and 0.6%, respectively. However, to our knowledge, there have been no studies published that specifically assessed obsessive-compulsive symptoms among survivors of war after they had migrated to a new host country. Therefore, the main objectives of this study were to assess the severity and charac-

teristics of obsessive-compulsive symptoms among survivors of the 1998/1999 Kosovo War living in Switzerland and to identify possible associations between obsessive-compulsive symptoms and posttraumatic stress symptoms.

6.3 Methods

6.3.1 Subject Recruitment

Data were collected between October 2010 and October 2011. To be eligible for interview, individuals had to have immigrated from Kosovo to Switzerland during or after the Kosovo War, which ended in 1999. All subjects were adults who spoke fluent Albanian and were either (1) respondents to an advertisement published in an Albanian newspaper; (2) parents of students at an all Albanian-speaking school for Kosovo immigrants; (3) respondents to a website for Kosovarian immigrants; or (4) patients of a single Albanian-speaking physician. Exclusion criteria were: being younger than 18 years old; no war-time experience, immigration before the Kosovo war; and significant military rank (i.e., non-civilian). All subjects provided signed informed consent prior to study participation according to the Declaration of Helsinki. The study protocol was approved by the ethics committee of the County of Zurich, Switzerland.

6.3.2 Data Collection

Data were collected within the context of a cross-sectional survey. All interviews were conducted at the subjects' home by a clinical psychologist fluent in both Albanian and German, and interviews were conducted in either language, per subject preference. The instruments were translated into Albanian by a bilingual mental health professional and then back-translated into the source language following gold-standard translation practices (Bontempo, 1993). Both copies were sent to a native Albanian speaking psychiatrist who compared the translations and recommended revisions where necessary. The feasibility and

comprehensibility of the measures was checked in a pilot phase and found to be acceptable. Interview time generally ranged from 60 to 90 minutes and participants were reimbursed CHF 30 (approximately US$ 30) for participation. Demographic data, as well as information on each subject's war-time experiences, and time of immigration to Switzerland were collected to verify eligibility.

Revised Obsessive-Compulsive Inventory (OCI-R) Scale

Obsessive-Compulsive Symptoms were assessed using the revised version of the Obsessive-Compulsive Inventory (OCI-R) scale, an 18-item questionnaire that has been adapted from an earlier 84-item version (Foa et al., 2002). The questionnaire asks three questions in each of six OCD domains: washing, checking, obsessions, mental neutralizing, ordering, and hoarding. For each item, individuals are asked to rate the degree of distress of a particular behavior, using the following five response options: 1 = *not at all*; 2 = *a little*; 3 = *moderately*; 4 = *a lot*; 5 = *extremely*. For each of the six domains, scores range from a minimum of 3 points to 15 points. A summation score of the six domains is also calculated (range: 18-90). The presence of an OCD diagnosis can be suggested if a total score of 42 or more is surpassed, or a mean score of 2.5 or more in any of the subscales. This scale has been used in culturally diverse contexts (Ghassemzadeh et al., 2011; Woo, Kwon, Lim, & Shin, 2010). Cronbach's alpha for the present study was .92.

Posttraumatic Diagnostic Scale (PDS)

The PDS (Foa et al., 1997) is a 49-item self-report questionnaire, designed for adults, that measures the presence and severity of PTSD on the basis of the DSM-IV criteria. Part I is a trauma checklist that inquires about several types of traumatic events. For the purposes of this study, the PDS was modified by adding traumatic event items from the Harvard Trauma

Questionnaire that frequently occur in refugees (Mollica et al., 1992), resulting in a total of 23 items, each rated as either *experienced*, *witnessed, both*, or *neither*. In Part II, respondents were asked about their most upsetting traumatic event with respect to the evaluation of DSM-IV criteria A1 and A2. Part III assessed 17 potential PTSD symptoms experienced within the month prior to assessment. Respondents were asked to rate the severity of each symptom from 0 (*not at all or only once*) to 3 (*5 or more times a week/almost always*). The PDS yields a total severity score (ranging from 0 to 51) that largely reflects the frequency of the 17 symptoms of PTSD. From this summation score, a categorical diagnosis of PTSD can be made using a pre-set, published algorithm that follows the DSM-IV diagnostic criteria for PTSD. This scale evidenced good internal validity $\alpha = 0.98$.

Depression

The second section of the Hopkins Symptom Checklist, HSCL-25, (Mollica et al., 1991) consisting of 15 items was used to measure depression symptoms. The HSCL-25 has been translated in many languages and used in different cultural contexts (Mollica et al., 1987; Ventevogel et al., 2007). The 15 items related to depression are rated on a 4-point Likert scale summing up to a score for the average, ranging from 1 to 4 (Mollica et al., 1991). The cut-off score is set at 1.75 points and has been evaluated in relation to different diagnostic psychiatric interviews and found to be reliable for the presence of a depressive disorder (Mollica et al., 1987). Internal consistency for the scale in the present study was .97.

6.3.3 Data Analysis

Rates of OCD, PTSD and depression were calculated according to the cutoffs defined in the description of each instrument (OCI-R, PDS and HSCL). Pearson's correlation coefficients were calculated to identify associations between individual symptoms. Hierarchical linear regression (using the enter method) was utilized to examine the relationship between

obsessive-compulsive symptoms as the dependent variable and gender, traumatic life events (TLE), PTSD severity and depression as predictors. Assumptions for regression analyses were checked in terms of linearity of the relationship between OCD and independent variables, autocorrelation of residuals (Durbin-Watson-test = 2.430), homoscedasticity and normal distribution of residuals and were found to be satisfactory. Furthermore we found no multicollinearity between independent variables (all VIF < 9.7). Results are reported in terms of *b* (SE(*b*)), Beta (95%CI) and adjusted *R*-square. In order to examine whether gender was a moderator in explaining the relationship between OCD and posttraumatic stress symptoms, the interaction between gender and PTSD severity was checked. The moderator analysis showed no significant interaction (*p = .568*), i.e. gender was not a significant moderator. All analyses were conducted using the computer software IBM SPSS Statistics Version 21 (SPSS inc., Chicago, IL, USA).

6.4   Results

6.4.1   *Demographic Information*

Fifty-one participants were included in the study. Out of these, 28 (54.9%) were male, and the mean age was 43.0 (SD=5.4) years. The average time since immigration from Kosovo to Switzerland was 11.3 (SD=1.4) years. Nineteen of 51 (37.3%) were working full-time at the time of interview and an equal number were unemployed; the remaining thirteen (25.5%) were working part time. Demographic information is presented in Table 9.

Table 9 Description of the sample of Kosovo immigrants (N=51)

Variable	N (%)	M (SD)	Range
Gender - male	28 (54.9%)		
Age (years)		43.0 (5.4)	32 - 54
Working (full-time or part-time)	32 (62.7%)		
Education (years)		9.29 (4.46)	0 - 20
Time since immigration (years)		11.3 (1.4)	(6 – 13)
OCD overall severity		32.63 (13.14)	18 - 90
Washing		6.24 (2.78)	3 - 15
Obsessions		6.12 (3.96)	3 - 15
Hoarding		5.37 (3.09)	3 - 15
Ordering		4.88 (2.62)	3 - 15
Checking		5.25 (2.60)	3 - 15
Mental neutralizing		4.76 (2.39)	3 - 15
Number of TLE		10.3 (4.9)	2 - 28
PTSD severity		12.4 (13.1)	0 - 51
Depression		3.7 (1.9)	1 - 4
Diagnoses			
Probable diagnosis of OCD	18 (35.3)		
Probable diagnosis of PTSD	20 (39.2)		
Clinically relevant depression	23 (45.1)		

Notes:

TLE: traumatic life events (experienced and witnessed; HTQ and PDS); OCD: Obsessive-Compulsive Disorder (OCI-R); PTSD: Posttraumatic Stress Disorder (PDS)

Rates of Psychological Symptoms

Participants had experienced and/or witnessed a mean of over 10.3 lifetime types of traumatic events (SD=4.9). Both obsessive-compulsive and posttraumatic stress symptoms were common, with 18 of 51 (35%) scoring above the cutoff score for OCD and 20 of 51

(39%) exceeding the threshold score for PTSD. Among the six core OCD symptoms in the overall sample, compulsive washing was the most common and most severe (M=6.24, SD=2.80), followed by obsessions (M=6.12, SD=3.96). Males and females differed in the rank order of symptoms, overall OCD score (p=.024), and OCD sub-scores, with females rating their obsessive-compulsive distress higher. Overall, almost half of 23 females (47%) met the criteria for OCD versus one in four males (7 out of 21, 25%; p=.08). Males and females did not significantly differ in terms of experiencing traumatic life events (p=0.58) or on the overall scores or the percentage meeting PTSD criteria (p=.603) or depression symptoms (p=.138).

6.4.2   *Associations between Symptoms*

A strong association (r=.751; p<.001) was evidenced between obsessive-compulsive and posttraumatic stress symptoms, with 16 of 20 participants with probable PTSD (80%) also meeting cutoff criteria for OCD, and 16 of 18 with probable OCD (89%) also having probable diagnosis of PTSD. This significant association persisted when correlation analysis was performed on the different OCD sub-scores and PTSD core symptoms, with moderate to strong positive correlations as shown in Table 10. With regard to the relationship between depressive and obsessive-compulsive symptoms, similar associations (OCD in depression 94% and depression in OCD 74%) and correlations (r=.732; p<.001) were found. However, no correlations were identified between the number of traumatic life events and any OCD symptoms. The multiple regression analysis (Table 11) revealed that obsessive-compulsive symptoms were mainly explained by gender and PTSD severity, but not traumatic life events and depression; the final model accounted for 75% of the variance of obsessive-compulsive symptoms.

Table 10 Correlations between observed variables (N=51)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Age	-																	
2 Sex	-.190	-																
3 Education	-.034	-.542**	-															
4 Occupation	.053	-.343*	.630**	-														
5 Stay in CH	.131	-.078	.225	.210	-													
6 Washing	-.049	.266	-.453**	-.670**	-.116	-												
7 Checking	.001	.216	-.424**	-.604**	-.025	.669**	-											
8 Obsessions	.100	.083	-.520**	-.666**	.026	.767**	.726**	-										
9 Mental neutralizing	-.035	.174	-.294*	-.388**	-.047	.382**	.455**	.449**	-									
10 Ordering	-.046	.345*	-.394**	-.635**	-.067	.476**	.539**	.435**	.577**	-								
11 Hoarding	.023	.393**	-.464**	-.435**	-.266	.488**	.185	.245	.246	.513**	-							
12 OCD total score	.010	.317*	-.577**	-.761**	-.106	.854**	.792**	.833**	.660**	.763**	.595**	-						
13 TLE	.036	-.267	-.027	-.038	.187	.202	.086	.219	.126	-.023	-.116	.117	-					
14 Re-experiencing	.097	.062	-.513**	-.683**	-.126	.713**	.631**	.871**	.513**	.470**	.292*	.793**	.380**	-				
15 Avoidance	.102	.070	-.555**	-.649**	-.152	.747**	.656**	.870**	.495**	.443**	.289*	.796**	.352*	.935**	-			
16 Hyperarousal	.072	.070	-.514**	-.684**	-.190	.747**	.745**	.885**	.523**	.513**	.306*	.845**	.202	.923**	.918**	-		
17 PTSD severity	.098	.075	-.543**	-.691**	-.151	.758**	.698**	.898**	.525**	.490**	.307*	.834**	.322*	.975**	.977**	.973**	-	
18 Depression	.104	.211	-.599**	-.690**	-.143	.742**	.732**	.876**	.587**	.518**	.283*	.842**	.195	.880**	.920**	.899**	.924**	-

Note: *p<0.05; **p<0.01, p-values are unadjusted. CH: Switzerland (mean years since arrival); TLE: traumatic life events (experienced and witnessed); OCD: Obsessive-Compulsive Disorder (OCI-R); PTSD: Posttraumatic Stress Disorder (PDS)

Table 11 Summary of Multiple Regression Analysis for Participants' OCD scores (N=51)

Variable	B	(SE B)	β	(95% CI)	t
Sex	5.027	(2.439)	.192*	(-0.07;0.45)	2.061
Education	-.013	(.314)	-.004	(-.27; 0.26)	.041
Occupation	-1.862	(1.356)	-.112	(-0.37; 0.15)	-1.373
TLE	-.112	(.222)	-.042	(-0.30; 0.22)	-.507
PTSD severity	.534	(.218)	.533*	(0.27; .80)	2.446
Depression	4.204	(3.112)	.275	(-0.01; 0.54)	1.351
Adjusted R^2		.755			
F (6,44)		26.721			
p		<.001			

Note: *p<0.05; TLE: traumatic life events (experienced and/or witnessed)

6.5 Discussion

We reported here the severity of obsessive-compulsive symptoms as well as their associations with posttraumatic stress and depression symptoms in civilian survivors of war living outside their country of origin. Obsessive-compulsive symptoms were common, affecting roughly one in three in our sample of 51 Kosovo war civilian survivors, with females showing higher symptoms. Our main finding is that there was a strong association between OCD and PTSD symptoms, with more than 80% of the individuals reporting symptoms of one disorder also endorsing symptoms of the other. The specific OCD symptoms were also strongly and significantly correlated with PTSD core symptoms. In multiple regressions, obsessive-compulsive symptoms were mainly related to gender and PTSD severity but not to traumatic life events and depression.

Our results are in line with several previously-published studies that have identified significant associations between OCD and both traumatic exposure and PTSD (Huppert et al.,

2005; Kessler, Chiu, et al., 2005), as well as between obsessive-compulsive symptoms and childhood trauma (Lafleur et al., 2011; Mathews, Kaur, & Stein, 2008). Our results are in contrast to Grabe et al.'s (2008) findings, who did not find any significant associations. However, it needs to be noted that the sample in Grabe et al.'s study was recruited from a non-post war population, possibly explaining the contrasting results. Our sample was characterized by a high presence of past severe psychological and/or physical trauma, given the subjects' inevitable immigration from a war-torn country. Furthermore, our population was drawn from a community sample, as opposed to a psychiatric or any other clinical sample.

Several explanations could account for the frequent co-occurrence of OCD and PTSD. Cognitive models of PSTD posit that negative appraisals lead to exaggerated interpretation of stimuli as threatening, which results in elevated distress (Ehlers & Clark, 2000). Following war, affected civilians may develop cognitive patterns involving concerns of safety, contamination, or the need to hoard, which may in turn lead to compulsive rituals to reduce arousal (Riggs, 2000). In the wake of war in particular, it is possible that threats to one's safety may trigger specific OCD-related concerns. For example, people may develop excessive checking rituals in order to maintain their sense of safety. Alternatively, those exposed to sexual violence or body dismemberment may develop concerns regarding contamination. There is also evidence of the link between trauma and OCD being moderated by genetic factors that are similarly implicated in PTSD development, raising the possibility of shared genetic risk factors for developing both conditions following trauma (Hemmings et al., 2013).

There was a striking excess of females with obsessive-compulsive symptoms in our sample. Males and females share the disorder equally in epidemiological studies of (Wittchen et al., 2011). Despite this, there is evidence that gender plays a relevant role in OCD phenotypic expression (Mathis et al., 2011). Considering that we studied OCD in a sample who fled

significant trauma during years of war, it is possible that exposure to or response to traumatic events occurred differentially across genders in this sample. Further, we note that endorsement of OCD symptoms is sometimes hindered by embarrassment about the nature of the images or impulses experienced, and this may have particularly impacted responses from female participants.

A further finding, which should be noted, is the severity of individuals scoring above the cutoff scores of PTSD (39%) and depression (45%). This is significant because this sample was not treatment-seeking and participants were interviewed more than ten years after the war and were now living in a safe context. We note, however, that there is good evidence that rates of psychiatric disorders in refugee groups tend to be elevated in small sample sizes (Steel et al., 2009). It is possible that a larger study that is more representative of those living in Switzerland who survived the war in Kosovo would yield lower rates.

Several limitations suggest that these preliminary results should be interpreted with caution. First, the sample was not randomized but rather a convenience sample and we cannot rule out that respondents to the various recruitment efforts had a vested interest in the study. In other words, the prevalence of OCD, PTSD and depression might have been influenced by the sampling process. Second, our sample was restricted to those who had left Kosovo to immigrate to Switzerland, a group that may be psychologically and demographically different from those who chose to remain in Kosovo; it would have been interesting to compare this data with comparable data of those still living in Kosovo. Third, we do not know the onset of symptoms, nor the sequence of OCD, PTSD, or depression onset in relation to each other. Relatedly, this study did not assess the extent to which the symptoms existed before the war already. Fourth, while we used measures that had been validated across cultural groups, they have not been validated in Albanian. Finally, we did not conduct clinical interviews, and con-

sequently the extent to which self-reported symptoms of OCD, PTSD and depression would correspond to clinical diagnosis is unclear.

Taken together, among survivors of war, PTSD may often be accompanied by obsessive-compulsive symptoms, which often are not assessed. To our knowledge, this is the first study that assessed the relationship of obsessive-compulsive symptoms and traumatic experiences in civilian war survivors a decade after the war. Our most remarkable finding is that obsessive-compulsive symptoms in our sample were clinically different in women than men, in terms of presence, overall severity, and the severity and frequency of specific core symptoms. Moreover, certain obsessive-compulsive symptoms, like compulsive organizing and compulsive washing, appear to be particularly correlated with PTSD symptomatology. Thus, in PTSD patients with these symptoms, further questioning to identify or rule out obsessive-compulsive symptoms seems warranted. Finally, our results suggest that screening of war-related traumatized populations should not be restricted to and focused on PTSD symptoms, but also take into account other mental disorders or psychopathological symptoms, such as OCD as we have shown that they are frequent in this population. As psychopathology of PTSD related intrusions is in some ways similar to obsessive images and thoughts, differential diagnosis of PTSD and OCD should be considered. Further investigations with respect to the role of traumatic experiences, such as war, in OCD etiology are needed, since trauma-related OCD may develop a specific subtype, which has clinical implications. In consequence it would be important to provide specific support and treatment that aims to reduce long-term posttraumatic psychosocial disability, including obsessive-compulsive symptoms.

Conflict of interest and funding

Acknowledgments

7   General Discussion

The goal of the present thesis was to examine mental health problems among civilian war survivors who had been exposed to different war-related traumatic experiences in Kosovo. The results revealed that the participants suffered under multiple war-related traumatic events. As an aftermath, the majority reported serious mental health complaints even a decade after the war. In sum, the three original studies of the present dissertation contribute to the thriving field of war sequelae in civilians by showing new pathways through which war-trauma affects people's daily lives, including intergenerational aspects.

In the following, the main results of the three empirical studies presented will be briefly summarized. Next, the findings are to be set into the context of the theoretical background and discussed with respect to the literature. Further, general methodological issues and limitations will be explored, and the clinical relevance of reported findings and future research needs will be discussed. Finally, a conclusion will sum up the thesis.

7.1   Summary of the main results

Summary of study results: *„Trauma, mental health and intergenerational associations in Kosovar Families 11 years after the war"*

The aim of this study was to assess intergenerational aspects of trauma-related mental health problems among families 11 years after the Kosovo war. A paired sample of 51 randomly selected triplets (child, mother, and father) of Kosovar families was investigated with regard to trauma exposure, posttraumatic stress, anxiety, and depressive symptoms. In both parents and children considerable trauma exposure and high prevalence rates of clinically relevant symptoms were found. Only children's depressive symptoms and paternal posttraumatic stress were strongly correlated. Maternal symptoms did not correlate with their

children's. Multiple regressions revealed that only paternal posttraumatic stress symptoms were significantly related with children's depressive symptoms.

Summary of study results: „*Trauma Exposure and the Mediating Role of Posttraumatic Stress and Depression on Somatization Symptoms and Persistent Pain in Civilian War Survivors*"

The aim of this study was to examine the mediating role of posttraumatic stress and depression in the relationship between trauma exposure and somatic symptoms (i.e. somatization symptoms and persistent pain). Civilian war survivors (N=142) were assessed regarding their lifetime trauma history, posttraumatic stress symptoms, depression symptoms, somatization symptoms and persistent pain. On average 5 types of traumatic exposure were reported in our sample, whereas 26.1 % and 47.9% met criteria for a cut-off indicative for posttraumatic stress disorder or depression, respectively, which were associated with higher somatization symptoms and persistent pain. The relationship between trauma exposure and somatization symptoms and the level of persistent pain, respectively, was fully mediated by depression and the avoidance subscale of PTSD. Hyperarousal symptoms were positively related to somatization and persistent pain, however, when controlling for depression this association was no longer significant.

Summary of study results: „*Obsessive-Compulsive and Posttraumatic Stress Symptoms Among Civilian Survivors of War*"

The aim of the following study was to shed light at the occurrence of obsessive compulsive symptoms and their relationship to trauma in civilian war survivors. Fifty-one adult civilian survivors of the 1998/1999 Kosovo War who had immigrated to Switzerland were interviewed with regard to their obsessive-compulsive symptoms, posttraumatic stress symp-

toms and depressive symptoms. Overall, 35 and 39% of the sample had obsessive-compulsive and posttraumatic stress scores above the cut-off of the respective instrument. Subjects with obsessive-compulsive symptoms were highly likely to have posttraumatic-stress symptoms, and vice versa. In multiple regression analyses gender and the severity of posttraumatic stress were significantly related to obsessive-compulsive symptoms, whereas number of traumatic life events and depressive symptoms were not

7.2   Discussion of the results

The main or central objective of all three empirical studies in this present work was the investigation of the level of psychopathology in civilian survivors of the Kosovo war. The three studies focus on different aspects of this issue: the first on mental health of children and their traumatized parents, the second on somatization symptoms and persistent pain, and the third on obsessive-compulsive symptoms. The first two were conducted in Kosovo, while the last one reports findings in civilian war survivors after migration (during or after the war) to Switzerland. These key aspects were chosen on the basis of the current state of research in the field.

Building on an increasing body of international research on the psychological consequences of war and conflicts, the three studies presented here tried to consider the existing shortcomings mentioned above. They assess different aspects of mental health in civilian survivors after war. They are, to our knowledge, the first to screen children's mental health - including both parents - in a randomly chosen sample on a community level in civilian war survivors. Further, they focus on obsessive compulsive-symptoms in civilian war survivors a decade after experiencing war and migration to a different country.

The participants of all papers reported very high rates of anxiety, depression, and somatic symptoms. The current prevalence rate of PTSD was very high, even 11 years after the war. Furthermore, a high proportion of participants with current posttraumatic stress symptoms suffered under additional psychopathological symptoms. Therefore, these findings suggest that even though PTSD seems to be relevant as a psychopathological outcome of war-related stressors, war-related trauma experiences seem to have a strong impact on other mental disorders as well, i.e. high rates of somatic symptoms (Study 2), but also obsessive-compulsive symptoms (Study 3) were elevated.

One crucial question that strikes from the current findings is the way and extent to which war-related experiences can affect mental disorders other than PTSD. Firstly, how does war-related violence impact on the initial development of psychological disorders and secondly, to what extent does such violence affect the severity of psychological disorders? With regard to depression, the results of this thesis implicate that there is a significant relationship between the number of war-related traumatic events and depression, indicating that those individuals who suffered more during the war were more likely to suffer deeper depression. This finding is in line with literature showing that a significant percentage of mood disorders can develop as a consequence of traumatic experiences and PTSD (Brown, Campbell, Lehman, Grisham, & Mancill, 2001; Kessler et al., 1995). Kessler et al. (1995) concluded in their US national survey that more than 50% of mood disorders could be seen as a consequence of traumatic events and PTSD.

Another important issue is the finding regarding the mental health of children and their traumatized parents in the first paper. The intergenerational relationship of trauma related to mental health problems seems to be very complex and a non-linear process. The above mentioned finding is insofar important as the children's psychological health was in addition ex-

plained by the fathers' mental health, i.e. depression. As shown in the introduction, research so far has found inconsistent findings with regard to the parental role on children's mental health (Galovski & Lyons, 2004). Therefore, mental health problems of close relations should actively be included in comprehensive healthcare plans using a systemic approach (Agani, Landau, & Agani, 2010; Lambert et al., 2014).

The findings of the second paper on somatic symptoms in civilian war survivors are highly interesting, as these have not been reported so far. Posttraumatic mental health (i.e. PTSD and depression) and somatic symptoms (i.e. somatization and persistent pain) are highly associated, suggesting a complex underlying mechanism between physical and mental symptoms. The study results indicate that depression, and avoidance patterns, mediate this mechanism, explaining between 44% and 62% of the variance. Similar findings were found in a study with veterans, where overall PTSD and current pain were moderately related and this relationship was fully mediated by depression (Poundja, Fikretoglu, & Brunet, 2006). There have been several theoretical models trying to explain association between posttraumatic somatic symptoms (particularly chronic pain) and PTSD: a) the shared vulnerability model by Asmundson and colleagues (Asmundson et al., 2002), which focuses on the presence of increased anxiety sensitivity in people affected by PTSD and chronic pain and as such suggesting a possible common basis for vulnerability; b) Sharp and Harvey developed the mutual maintenance model, where they included common features (i.e. depression symptoms) and postulated that PTSD and pain can perpetuate each other in a sufferer's experience (Sharp & Harvey, 2001); c) the "perpetual avoidance model" shows that avoidance behavior and in particular catastrophizing tend to perpetuate symptoms in individuals with PTSD and chronic pain (Liedl & Knaevelsrud, 2008); d) McLean and colleagues (McLean, Clauw, Abelson, & Liberzon, 2005) postulate that common biological and endocrine features originate in the

overlapping phenomenology of trauma-related stress disorder and persistent pain symptoms. All of these four approaches emphasize psychological or behavioural aspects. Though it has to be noted that, PTSD and depression consist in clusters of symptoms (i.e. syndromes) and as such they overlap. Somatization can be understood as a vegetative functional stress symptom including stress-induced pain. As such, the relationship between all these clusters could be explained by neurophysiological mechanisms. Egloff et al. (2013) proposed the hypermnesia-hyperarousal model, which postulates that somatic symptoms, i.e. pain persistence and pain sensitization following a traumatizing event are neurophysiological reactions connected to the mechanisms of learning physiology. All the above mentioned models are focused mainly on chronic pain, as such our findings add some potential thoughts to these complex mechanisms including somatization symptoms, which should be further studied.

The third empirical study of the thesis with the Kosovarian civil war survivors, who immigrated to Switzerland during or after the war, revealed that even being in a safe country and years after the end of the war, high symptoms of posttraumatic mental problems, such as PTSD, depression and obsessive-compulsive symptoms are present. High prevalence rates of PTSD and depression in Kosovarian refugees living in different countries have been reported (Cardozo et al., 2000; Priebe et al., 2010). Also, high prevalence rates of obsessive-compulsive disorders have been reported in other populations (i.e. veterans) (Nacasch et al., 2011), but our study strengthens this finding by reporting obsessive-compulsive symptoms in civilian war survivors.

7.3   Limitations

Despite of the significant mentioned contributions, some limitation ought to be taken into account. The particular limitations inherent to the specific studies have been discussed in the articles. In this section, the aim is to discuss the limitations of the thesis as a whole.

The strength of the present work lies in the random sampling method, the assessment of affected people in community-based approach, and the examination from different sides (child & parents). Moreover, all experienced the same traumatic event (i.e. the 1998/1999 Kosovo war) that might lead to a more homogenous group.

It goes without saying, that the main limitation lies in the cross-sectional design, which only allows for limited conclusions to be drawn. This is connected to a further limitation concerning the timeline with regard of the onset of the mental health problems. The cross-sectional design does not allow us to tell which mental health problems perhaps existed before the war or developed as consequences of the war. The same is true for the Kosovars living in Switzerland regarding their displacement and subsequent migration with respect to the onset of the mental health problems. A longitudinal assessment would have been necessary to enable reliable findings on the influence of war-related stressors on civilians. All presented studies were limited in sample size. Though, it has to be noted that, we were able to ensure random sampling in all studies. Another limitation concerns the lack of the assessment of other important factors, such as the current living situation, both in Kosovo and Switzerland. Current social situations in Kosovo, as well as post-migration living difficulties in Switzerland could be a significant factor in explaining development and relationship of the mental health problems in civilian war survivors.

7.4   Future research

The findings of the first study indicate the importance to further examine the mental health among certain subpopulations (i.e. children) of civilian survivors of war who might have survived specific violence that distinguishes them from other survivors. So far, previous research on war-related traumatization has mainly focused on the number of war-related stressors in adults, but has failed to take a differentiated approach. As discussed in the theoret-

ical background, children might be at a higher risk of having poorer mental health than other survivors of war, not only because of their own experience, but also due to social-interaction in their families and environment. Besides children, there are many other subpopulations, such as raped women, bereaved mothers, orphans etc., who need further investigations.

Another important issue which should be addressed in future studies is to what extent post-war political and economic instability affects psychological disorders. In a post-war region, like Kosovo, current hardships, due to present and future political instability, economical, and social insecurity may have a bigger impact on people's mental health than war-related hardships. Morina et al. (2003) found in a study in Kosovo, that people with PTSD were more likely to be unemployed and to have less monthly income than those without PTSD. Thus, it remains a task for future studies to better capture the economical status, political, and social determinants and their relationship with mental disorders. The same issue accounts for post-migration living difficulties in refugees, which should be included in further research.

Taken together, all three studies indicate significant mental health problems in civilian survivors of the 1998/1999 Kosovo war. Due to the design of the study we cannot evidence, whether some were undergoing treatment or not. It has to be noted that, in Kosovo there is a profound lack of mental care (Agani, 2001). Thus, future research should focus as well on treatment and treatment outcomes. Studies from Switzerland (Maier, Schmidt, & Mueller, 2010) show that refugee and migrant groups are undertreated and misdiagnosed. With respect to civilian survivors of war, the testing of treatment outcome has been largely neglected (Neuner & Elbert, 2007). Till now, few studies have empirically tested intervention outcomes in survivors of war and or refugees (Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004).

7.5   Conclusions

The best way to not develop posttraumatic stress war-related symptoms is to not be exposed to a traumatic event. Though, it is unrealistic to expect that there will not be wars and/or organized conflicts in the future and that people/states will not fight each other. Not only history, but as well as recent developments, i.e. the cases of Ukraine and Syria-Iraq teach us otherwise. Thus, it is very crucial to understand the mechanisms that play a role in the development of mental health problems and provide psychotherapy and other interventions, in order to avoid long-term consequences on people's daily life.

In conclusion, the present findings are in line and further strengthen other results from surveys on mental health among survivors of war. They reveal that mental health complaints are extremely high among civilian survivors of war or organized violence and thus are a major global health concern (Cardozo et al., 2004; De Jong et al., 2001; Mollica et al., 1999; Morina & Fort, 2008). Bearing in mind the high number of civilians affected by former or current conflicts, the numbers of organized violence survivors that suffer under psychological problems are indeed striking. And what makes things even worse, is the fact that the majority of the communities that suffer under clinically relevant mental health consequences of organized conflicts usually lack the human and material recourses to adequately identify and cope with these consequences. According to UNHCR about 86% of the refugees of war resided in third world countries with low income (2014).

A further important issue is considering the family context of trauma survivors. Our findings highlight areas for future development of treatments addressing a family approach. A study conducted in Kosovo with severe mental health problems in traumatized individuals showed promising preliminary results with this regard (Weine et al., 2005).

Taken together, it should be concluded that a more globally oriented mental health approach is absolutely necessary to support the affected societies leading to a better understanding and coping with the aftermath of war. The importance of such an approach seems even more understandable if one considers recent research suggesting that exposure to organized conflicts and its health consequences are significantly related with attitudes toward reconciliation and justice (Pham, Weinstein, & Longman, 2004). In fact in a study conducted by Vinck et al (2007) it was shown that having a mental health disorder was significantly related with identifying violence as a purpose to achieve peace. These results highlight that psychological impairment following man made violence might be a significant factor that adversely impacts future conflicts and thus further suffering. Consequently, a deeper understanding of the mechanisms of the aftermath of exposure to organized conflicts might drive the development of effective treatment approaches that not only can help those currently in need, but also contribute to the prevention of future violence.

The last years have shown an increased interest in research activities related to the mental health consequences of organized violence, such as war or civil conflicts. Though, the high number of people affected by organized violence and the relatively small amount of knowledge available in its aftermath warrant an intensification of both the quantity and quality of these research activities.

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