

Stress, mental disorders, and its treatment approach for North Korean refugee youth:

*A special focus on treatment of PTSD,
depression, and insomnia*

Dissertation

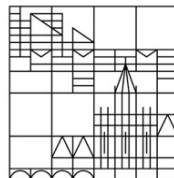
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Jinme Park

at the

Universität
Konstanz



Faculty of Science

Department of Psychology

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First supervisor: Prof. Dr. Thomas Elbert

Second supervisor: Prof. Dr. Brigitte Rockstroh

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Summary

In displaced populations who have fled their homeland because of persecution, violence, and political oppression, both children and adults have been affected by a variety of traumatic experiences. In addition, refugee children and adolescents are often exposed to violence in the home. The experiences of family violence may contribute to the psychopathology of refugee children, apart from traumatic experiences related to war or flight. However, little is known, so far, about the exposure to family violence and its relation to mental health in North Korean refugee youth affected by political violence. Experiencing the various forms and types of trauma increases the probability of developing mental disorders such as posttraumatic stress disorder (PTSD) in refugees. Further, PTSD often occurs with other mental health symptoms and also seems to have a relation to the comorbid symptoms in multiple trauma-affected populations. However, to our knowledge, the relation of PTSD to comorbid mental disorders among North Korean refugee youth has not been fully understood. The present thesis investigated family violence and its relation to mental health in North Korean refugee youth. Furthermore, the relationships between PTSD and comorbid mental health symptoms were examined in North Korean refugee youth who have experienced multiple trauma. Subsequently trauma-focused intervention – Narrative Exposure Therapy (NET) – was tested in order to reduce trauma-related mental health problems in North Korean refugee youth.

The first article investigated exposure to violence and trauma, and mental disorders of North Korean refugee youth compared to South Korean youth who share similar ethnicity, language, and cultural norms but differ in the political context. Results revealed that North Korean refugee youth reported higher rates of family violence as well as organized violence and general traumatic events, and higher levels of mental health symptoms than South

Korean youth. Furthermore, experiencing family violence and the number of experienced traumatic events were found to be a risk factor that increases the likelihood of PTSD and depression in North Korean refugee youth.

The second article revealed that high comorbidity rates of PTSD, depression, and insomnia were found in North Korean refugee youth who have been exposed to multiple trauma. The overall symptoms and four cluster symptoms of PTSD correlated strongly with insomnia in addition to depression. Path analyses demonstrated that PTSD affected insomnia only through depression.

The third article investigated the effectiveness of NET on posttraumatic symptoms by comparing it to treatment as usual (TAU) in North Korean refugee youth with PTSD. This study focused on changes in sleep problems in addition to PTSD and depression. Results revealed that NET significantly reduced all clinical symptoms (effect size $g = 3.6$) and sleep problems, i.e. insomnia and sleep quality (effect size $g = 2.1$), but TAU did not. The substantial symptom reduction of the NET group was observed two weeks after treatment completion, and this effect was stable for at least 6 months posttreatment. The substantial improvement of sleep in the NET group was associated with reduced PTSD and depression.

Results revealed that North Korean refugee youth are a more vulnerable population for experiencing family violence in addition to organized violence and general traumatic events, which place them at higher risk of developing PTSD and depression. Further, PTSD and depression among North Korean refugee youth were linked to insomnia. The greater levels of PTSD suffer, the greater the likelihood for developing sleep problems via depression. NET appeared to be more effective than the non-trauma-focused treatment for addressing both clinical symptoms and sleep problems of North Korean refugee youth with PTSD. NET can be a promising approach for treating traumatized North Korean refugee youth and may be effective also for the treatment of sleep problems relating to traumatic experiences.

Zusammenfassung

In vertriebenen Bevölkerungsgruppen, die aufgrund Verfolgung, Gewalt, und politischer Unterdrückung aus ihrer Heimat geflohen sind, waren sowohl Kinder als auch Erwachsene von einer Vielzahl von Traumata betroffen. Darüber hinaus sind Flüchtlingskinder und - jugendliche häufig häusliche Gewalt ausgesetzt. Diese familiäre Gewalt kann, unabhängig von traumatischen Erfahrungen im Zusammenhang mit Krieg oder Flucht, zur Psychopathologie von Kindern beitragen. Bisher sind jedoch wenig über familiärer Gewalt und ihre Beziehung zur psychischen Gesundheit bei geflüchteten Jugendlichen aus Nordkorea bekannt. Das Erleben verschiedener Formen und Arten von Traumata erhöht die Wahrscheinlichkeit psychische Störungen, wie die posttraumatische Belastungsstörung (PTBS), zu entwickeln. Die PTBS tritt häufig zusammen mit anderen traumabedingten psychischen Symptomen und komorbiden Störungen auf. Besonders betroffen sind Bevölkerungsgruppen wie Flüchtlingen, die multiple Traumatisierung erlebt haben. Der Zusammenhang zwischen PTBS und komorbiden Störungen ist bei geflüchteten nordkoreanischen Jugendlichen jedoch nicht vollständig geklärt. Die vorliegende Arbeit untersuchte familiäre Gewalt und ihre Beziehung zu psychischen Erkrankungen bei nordkoreanischen, geflüchteten Jugendlichen. Darüber hinaus wurde der Zusammenhang zwischen PTBS und komorbiden Störungen bei nordkoreanischen, geflüchteten Jugendlichen untersucht, die multiplen Traumata erlebt haben. Im Anschluss wurde die traumafokussierte Intervention – die Narrative Expositionstherapie (NET) - getestet, um die negativen Folgen von traumatischen Erlebnissen bei nordkoreanischen, geflüchteten Jugendlichen zu verringern.

Die erste Studie untersuchte das Erleben von Gewalt und Trauma, und psychische Erkrankungen bei geflüchteten Jugendlichen aus Nordkorea im Vergleich zu südkoreanischen

Jugendlichen, die ähnliche ethnische, sprachliche und kulturelle Normen teilen, sich jedoch im politischen Kontext unterscheiden. Die Ergebnisse zeigten, dass nordkoreanische Jugendliche höheren Raten an familiärer sowie organisierter Gewalt und allgemein traumatischen Erlebnissen, und ein höheres Maß an psychischen Symptomen aufwiesen als südkoreanische Jugendliche. Weiterhin zeigte sich, dass familiäre Gewalt und die Anzahl an traumatischen Erlebnissen Risikofaktoren, die die Wahrscheinlichkeit von PTBS und Depression bei nordkoreanischen, geflüchteten Jugendlichen erhöhen.

Die zweite Studie zeigte hohe Komorbiditätsraten von PTBS, Depression, und Insomnie bei nordkoreanischen, geflüchteten Jugendlichen, die von mehreren traumatischen Ereignissen betroffen waren. Die Gesamtsymptome und die vier Cluster-Symptome der PTBS korrelierten mit Insomnie sowie Depression. Pfadanalysen zeigten, dass PTBS Insomnie durch Depression beeinflusste.

Die dritte Studie untersuchte die Wirksamkeit der NET auf posttraumatische Symptome im Vergleich zu einer regulären Behandlung bei nordkoreanischen Jugendlichen, die PTBS Symptome haben. In dieser Therapiestudie wurde der Fokus auf Veränderungen in der Symptomschwere von Schlafstörungen sowie auf PTBS und Depression gelegt. Die Ergebnisse zeigten, dass die NET zu einer signifikanten Reduktion aller klinischen Symptome (effect size $g = 3.6$) und Schlafstörungen wie Insomnie und Schlafqualität (effect size $g = 2.1$) führte. Teilnehmende in der TAU Gruppe zeigten diese Ergebnisse nicht. Die wesentliche Symptomreduktion der NET-Gruppe wurde zwei Wochen nach Abschluss der Behandlung beobachtet. Dieser Effekt war auch mindestens 6 Monate nach der Behandlung stabil. Die wesentliche Verbesserung der Schlafprobleme in der NET-Gruppe war mit einer Verringerung der PTBS- und Depressionssymptome verbunden.

Die Ergebnisse zeigten, dass geflüchtete nordkoreanische Jugendliche neben organisierter Gewalt und allgemeinen traumatischen Ereignissen eine Risikogruppe für

familiäre Gewalt sind, wodurch sie ein höheres Risiko für die Entwicklung von PTBS und Depression haben. Darüber hinaus waren PTBS und Depression bei geflüchteten nordkoreanischen Jugendlichen mit Insomnie verbunden. Je mehr PTBS-Symptome vorliegen, desto größer ist die Wahrscheinlichkeit, dass sich aus einer Depression eine Insomnie entwickelt. Die NET scheint wirksamer zu sein als die nicht traumafokussierte Behandlung, um sowohl klinische Symptome als auch Schlafprobleme bei geflüchteten nordkoreanischen Jugendlichen zu behandeln. Die NET stellt einen vielversprechenden Ansatz für traumatisierte geflüchtete Jugendliche aus Nordkorea dar, auch bei der Behandlung von Schlafproblemen aufgrund traumatischer Erfahrungen.

Record of achievements

The articles in this thesis were realized in collaboration with a number of colleagues. The following is a list for the submitted articles and my independent research contributions.

Article 1: Exposure to Family and Organized Violence and Associated Mental Health in North Korean Refugee Youth compared to South Korean Youth (published in *Conflict and Health*, 2019, 13, 46. doi: 10.1186/s13031-019-0230-0)

Jinme Park, Claudia Catani, Katharin Hermenau, and Thomas Elbert

My contributions:

- contributed to the design of the study
- carried out the questionnaires
- conducted the statistical analysis
- drafted and revised the manuscript.

Article 2: The Contribution of Posttraumatic Stress Disorder and Depression to Insomnia in North Korean Refugee Youth (published in *Frontiers in Psychiatry*, 2019, 10, 211. doi: 10.3389/fpsy.2019.00211)

Jinme Park, Thomas Elbert, Seog Ju Kim, and Jinah Park

My contributions:

- contributed to the design of the study
- carried out the questionnaires
- conducted the statistical analysis
- drafted and revised the manuscript.

Article 3: Effects of Narrative Exposure Therapy on PTSD, Depression, and Insomnia in Traumatized North Korean Refugee Youth (published in *Journal of Traumatic Stress*, 2020, 33, 353-359, doi: 10.1002/jts.22492)

Jinme K Park, Jinah Park, Thomas Elbert, and Seog Ju Kim

My contributions:

- contributed to the design of the study
- carried out a large number of clinical interviews
- carried out the NET therapies
- conducted the statistical analysis
- drafted and revised the manuscript.

1. Introduction

At the end of World War II in 1945, Korea was divided into the north occupied by the Soviet Union and the south by the United States. In 1948, due to the failure to negotiate reunification of the north and the south, Korea was split into two independent governments with the Democratic People's Republic of Korea (also known as North Korea) and the Republic of Korea (South Korea). North Korea has been considered a typical example of a totalitarian system where a military dictatorial regime oppresses citizens. After the Korean War (1950-1953), many North Koreans have fled their home country for political, ideological, religious or economic reasons to enter South Korea, because they are regarded as South Korean citizens under the South Korean constitution. In 2014, there were 26,483 North Korean refugees resettled in South Korea, 40% of whom were children and young adults aged 10 to 29 (South Korea's Ministry of Unification, 2014). According to a recent review of mental health status of North Korean refugees living in South Korea (Lee, Lee, & Park, 2017), high rates of trauma exposure and high levels of trauma-related mental health symptoms have been reported for both young and adult populations. In addition, trauma-related symptoms among North Korean refugees have been found to be associated with difficulties in adapting to South Korean society (Lee et al., 2017). However, mental health risk factors among North Korean refugee youth have not been fully addressed, and little is known about how to address their trauma-related mental health symptoms effectively (Human Rights Commission of Korea, 2017; Lee et al., 2017). There is also a lack of research comparing mental health status and related risk factors of North Korean refugee youth living in South Korea with those of the community-based South Korean youth population. It is necessary to deeply understand the mental health and related risk factors of North Korean refugee youth and develop useful treatments for this population.

1.1 Mental health status in refugee youth

Research on displaced populations has shown that both children and adults have been affected by a variety of adversities (Canetti et al., 2016; Kim, Jeon, & Cho, 2010; Kim, 2016). They are often exposed to multiple types of traumatic and violent incidents (Ibrahim & Hassan, 2017; Kim, 2014; Knipscheer, Sleijpen, Mooren, Ter Heide, & van der Aa, 2015; Schock, Boettche, Rosner, Wenk-Ansohn, & Knaevelsrud, 2016). In addition, refugee children and adolescents seem to be at high risk of experiencing violence within the home. Studies have shown that family violence is more prevalent in the contexts of war, political violence, poverty and/or refugee status (Catani, 2018; Catani, Jacob, Schauer, Kohila, & Neuner, 2008; Charak, de Jong, Berckmoes, Ndayisaba, & Reis, 2017; Saile, Ertl, Neuner, & Catani, 2014; Timshel, Montgomery, & Dalgaard, 2017). Research evidence suggests that traumatic experiences of refugees have far-reaching implications not only for an individual but also for a whole family, fostering conditions that lead to violence within the family (Timshel et al., 2017). Indeed, parental experiences of war and political violence have found to be a risk factor for child maltreatment (Palosaari, Punamäki, Qouta, & Diab, 2013; Rentz et al., 2007).

A substantial amount of international research has documented that the number of experienced traumatic stressors increase the chance of developing psychological sequelae such as PTSD in trauma-affected populations including refugees (Hodges et al., 2013; Neuner, Schauer, Karunakara, et al., 2004; Suliman et al., 2009; Wilker et al., 2015), which supports a dose-response effect (Neuner, Schauer, Catani, Ruf, & Elbert, 2006). A systematic review on the prevalence of psychiatric disorders among refugees suggests that the heterogeneity of samples and findings was considerable (Fazel, Wheeler, & Danesh, 2005). Although there is no meaningful standard prevalence rate of PTSD among refugees due to the heterogeneity of factors associated with mental health (Miller, Elbert, & Rockstroh, 2005),

generally high rates of PTSD ranging from 4.4% to 86% have been reported for refugee populations (Bogic, Njoku, & Priebe, 2015; Chung et al., 2018; Kazour et al., 2017). In trauma-affected populations, the prevalence of the inability to obtain a normal sleep, such as insomnia, has also been found to be elevated (Wang, Raffeld, Slopen, Hale, & Dunn, 2016). In particular, studies with refugee children have shown enhanced rates of sleep disturbance (Lee et al., 2016; Montgomery & Foldspang, 2001), and its relation to traumatic stressors such as persecution, violence, and stressful family situations (Hjern, Angel, & Hoejer, 1991; Montgomery & Foldspang, 2001). There have been studies showing the relation of violence exposure to mental health symptoms in children and adolescents affected by insecure living conditions. In refugee minors, exposure to organized violence was found to be strongly connected to the symptom severity of PTSD (Mueller-Bamouh, Ruf, Dohrmann, Schauer, & Elbert, 2016). A number of studies have found that family violence was related to psychological disorders including PTSD in children and adolescents living in stressful and violent environments (Catani et al., 2010, 2009; Derivois, Cénat, Joseph, Karray, & Chahraoui, 2017; Saile et al., 2014).

Experiencing multiple traumatic events has been found to be associated with greater odds of comorbid psychiatric symptoms (Hodges et al., 2013; Suliman et al., 2009). Further, in multiple trauma-affected individuals, PTSD frequently co-occurs with other trauma-related mental health disorders (Ikin, Creamer, Sim, & McKenzie, 2010; Momartin, Silove, Manicavasagar, & Steel, 2004; Reavell & Fazil, 2017). Indeed, high comorbidity rates of PTSD and depression ranging from 26% to 40% have been found in refugees and war-affected populations (Bogic et al., 2015; Chung et al., 2018; Kazour et al., 2017; Madianos, Sarhan, & Koukia, 2011; Momartin et al., 2004; Stander, Thomsen, & Highfill-McRoy, 2014). In a longitudinal study with war veterans, the comorbidity rates of PTSD, depression and/or anxiety were higher than the rates of PTSD alone (Ginzburg, Ein-Dor, & Solomon,

2010). A study concerning insomnia among adult refugee populations found that refugees with insomnia reported higher levels of PTSD and depression symptoms (Lee et al., 2016). Therefore, PTSD among refugees often occurs with other mental health symptoms, and also may have a relation to comorbid mental health symptoms including depression and insomnia (Kim, 2014; Lee et al., 2016; Powers, Thomas, Ressler, & Bradley, 2011; Subica, Claypoole, & Wylie, 2012). However, the relation of PTSD to comorbid symptoms such as depression and insomnia has not been fully understood in refugee children and adolescents.

1.2 Stress and mental disorders in North Korean refugee youth

North Korean refugee youth have experienced multiple types of traumatic events during the course of their life (Kim, 2016; Lee et al., 2017). According to a recent research on North Korean refugees living in South Korea (Cha et al., 2018; Human Rights Commission of Korea, 2017), a great number of respondents reported having experiences of severe systematic violations of basic human rights. The most commonly reported form of human rights violations includes witnessing public execution (82%), surveillance and prosecution (57%), physical violence (46%), forced labour and torture (64%), kidnap and imprisonment (28%), and human trafficking (22%) (Human Rights Commission of Korea, 2017). There is also some initial evidence indicating elevated rates of child abuse in North Korean refugee populations (Kim, Choi, & Chae, 2012; Um, Kim, & Palinkas, 2018). For instance, a study with young North Korean refugees found that 38.2% of the respondents reported experiences of physical or sexual violence inflicted by an immediate family member, a relative, or an acquaintance (Kim, 2016). North Korean refugee youth may have been affected by family violence as well as organized violence. However, most studies on trauma exposure of North Korean refugee youth assessed traumatic experiences, including family and organized

violence, without distinguishing types of violence and trauma. Research on their complex history of exposure to violence and its relation to mental health is very scarce.

There is an increasing number of North Korean refugee youth who were born in China and resettled in South Korea. They were born as children of a North Korean woman who was forced to marry a Han Chinese or Korean-Chinese man. In the mid-1990's, due to a massive famine in North Korea, high proportion of North Korean women and female adolescents have left their home and crossed the border into China for economic reasons. In China, North Koreans have to hide the identity to avoid a danger of being arrested by Chinese authorities. If they are caught by Chinese authorities, they are forcibly repatriated back to North Korea to face torture, punishment or even death in political prison camps. In this context, North Korean women and female adolescents are often kidnapped by Chinese human traffickers for forced marriage, sexual assault or prostitution (Chung, Choi, & Choi, 2012). A woman who is forced to marry a Han Chinese or Korean-Chinese man usually escapes China after the birth of a child. Consequently, the child remains in China without his/her mother or accompanies his/her mother in the process of flying through the third countries. North Korean refugee youth born in China have not been exposed to violence by a dictatorial regime in North Korea, but may have witnessed their mother being caught by Chinese authorities or forcibly repatriated to North Korea. In addition, they may have experienced traumatic events in the process of escaping from China and passing through the third countries. However, little is known, so far, about mental health and associated risk factors of this population.

PTSD is the most prominent form of trauma-related mental health outcomes in North Korean refugee populations (Lee et al., 2017). Research on young and adult North Korean refugees has shown that more than half of respondents reported having clinical levels of PTSD symptoms (Human Rights Commission of Korea, 2017; Han et al., 2015). Previous

studies have consistently found that the symptom severity of PTSD is closely related to the amount of traumatic events in young and adult North Korean refugees (Cho, Kim, & Kim, 2011; Kim, 2013a; Kim, 2016). However, the mechanisms behind this relationship are not fully understood. The diagnosis and severity of PTSD may be associated with the diversity of experienced trauma types in addition to the amount of trauma.

Organized violence may be an important marker of the risk for PTSD. Limited evidence suggests that the diagnosis and severity of PTSD may be linked to the diversity of trauma types related to violence in trauma-affected youth (Kim, 2014; Kim, 2016; Wong, Clark, & Marlotte, 2016). For example, studies with North Korean refugee youth have shown that interpersonal violence was predictive of PTSD (Kim, 2014; Kim, 2016), whereas non-interpersonal violence had no relation to PTSD (Kim, 2016). Recent studies with young and adult North Korean refugees have found that experiencing forced repatriation, imprisonment or human rights violations increases the risk for psychopathological symptoms including PTSD (Cha et al., 2018; Choi & Kim, 2011; Jung & Choi, 2017; Kim, Yun, Jun, & Park, 2019; Kim & Shin, 2015). Family violence may also be a particular type of trauma that is related to PTSD in North Korean refugee youth. According to a recent review of mental health status of North Korean refugees (Lee et al., 2017), family related factors such as family conflicts have been found to be risk factors affecting mental health. In particular, a study by Emery and colleagues (2015) on childhood abuse among North Korean refugee youth found that physical abuse was significantly linked to depression symptoms (Emery, Lee, & Kang, 2015). In this study, however, PTSD has not been examined, nor other types of family violence such as psychological abuse and neglect. Therefore, family violence and its association with PTSD have not been thoroughly investigated. More research is needed to address the question whether different levels of risk for PTSD are associated with the

different types of violence among North Korean refugee youth who have a complex history of exposure to violence.

Studies with young and adult North Korean refugees have shown high incidences of PTSD and comorbid symptoms (Kim, 2014; Kim & Shin, 2015; Lee et al., 2016), and suggested that PTSD has a relation to comorbid symptoms (Kim, 2016; Lee et al., 2016). For example, Kim (2016) investigated interrelationships among trauma, PTSD, and other mental health problems in North Korean refugee youth, and found that PTSD mediated the relationship between interpersonal trauma and other mental health problems including depression. Lee et al. (2016) found that North Korean refugees with insomnia reported having higher levels of PTSD and depression symptoms compared to those without insomnia. Limited evidence shows that PTSD may be linked to depression and insomnia in young and adult North Korean refugee youth, however, the question of how PTSD is associated with both depression and insomnia has not been addressed in North Korean refugee youth.

1.3 Mental health and associated risk factor in South Korean youth compared to North Korean refugee youth

When comparing with North Korean refugee adolescents, South Korean adolescents have reported lower levels of psychological symptoms including posttraumatic stress symptoms, somatic symptoms, and problems related to attention and thought (Kim & Shin, 2015; Lee, Shin, & Lim, 2012). However, there have only been a limited number of studies comparing mental health problems between North Korean refugee youth and South Korean youth over the past decade (Lee et al., 2017). In particular, little is known about the differences between mental health risk factors of two groups that share similar ethnicity and cultural norms but differ in political context.

In contrast to North Korean refugee youth, South Korean youth have not been exposed to political violence, but seem to be exposed to general traumatic event or family violence. Family violence among South Korean youth can occur as the result of a combination of cultural values and child-rearing practices. Indeed, elevated levels of physical child maltreatment have been reported for South Korean families as well as immigrant Korean families (Chang, Rhee, & Weaver, 2006; Ju & Lee, 2010; Zhai & Gao, 2009). Further, previous studies with South Korean children and adolescents have shown that family violence is related to psychological problems such as depression, low-self efficacy or suicidal impulses (Kim & Kim, 2014; Na & Chung, 2007; Nam & Lincoln, 2017). Kim, Choi, & Chae (2012) suggest that the incidences of child maltreatment seem to be higher among North Korean refugee families when compared to South Korean families. However, the authors did not directly compare the two populations within one study. Cultural values and child-rearing practices may affect both North Korean and South Korean families, as the two groups share similar cultural norms and ethnicity. Further research is needed to fully understand the differences and similarities between family violence and associated mental health symptoms in North Korean refugee youth and South Korean youth.

1.4 Treatment approaches for traumatized North Korean refugee youth

In recent reviews of psychological interventions for refugees and asylum seekers, trauma-focused treatments have been found to be the most efficacious and promising interventions for treating PTSD of refugees (Morina & Nickerson, 2018; Nickerson, Bryant, Silove, & Steel, 2011; Nickerson et al., 2017). Nickerson et al. (2017) recommended further treatment studies with refugees to investigate its effects on psychological symptoms beyond PTSD and broader outcomes of treatments. Limited evidence suggests that improvement in sleep disturbance has been observed for treatment respondents of Cognitive Behavioural

Treatments for PTSD (Brownlow et al., 2016; Gutner, Casement, Gilbert, & Resick, 2013; Woodward et al., 2017). However, to date, the question whether sleep disturbance among traumatized refugees can be effectively treated through trauma-focused intervention has not been addressed.

According to a recent review of mental health status of North Korean refugees by Lee et al. (2017), there is a need to develop useful treatment interventions for traumatized North Korean refugees. In North Korean refugees, non-trauma-focused treatments have so far been the common treatment approaches for addressing their posttraumatic symptoms. Although there have been studies examining the effect of art therapy for treating North Korean refugee children and adolescents (Kim, 2013b; Kim, Song, & Choi, 2009), little is known about effective treatment approaches for treating PTSD of North Korean refugees. In particular, no studies of which we are aware have examined the effect of evidence-based trauma-focused interventions on symptom changes in PTSD of North Korean refugee populations.

Narrative exposure therapy (Schauer, Neuner, & Elbert, 2005, 2011) can be effectively applied in the treatment of North Korean refugee youth with PTSD and insomnia. NET is a short-term and trauma-focused intervention, developed to address PTSD and mental distress resulting from multiple traumatic stressors related to organized violence and war. A great number of studies indicate that NET reduces the severity of PTSD symptoms in refugees and asylum seekers from different countries and cultures (Halvorsen & Stenmark, 2010; Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004; Ruf et al., 2010; Stenmark, Catani, Neuner, Elbert, & Holen, 2013). Randomized controlled trials of traumatized populations show that NET improves not only PTSD, but also other mental health problems such as depression, dissociation, typical symptoms associated with borderline personality disorder (BPD), and general stress (Alghamdi, Hunt, & Thomas, 2015; Orang et al., 2018; Robjant, Roberts, & Katona, 2017). There has been the only study examining the effects of

NET on some sleep parameters conducted by Weinhold et al. (2017). Their results suggest that NET may reduce sleep onset latency and arousal. However, their sample was small and a group of individuals with BPD and comorbid PTSD. Therefore, so far, no studies have examined the effect of NET on changes in sleep patterns in survivors of traumatic threats such as refugees.

1.5 The aim of this thesis

The present thesis aims to examine stress, psychological sequelae, and its treatment approach for North Korean refugee youth. In the following studies mental health symptoms and associated risk factors of North Korean refugee youth are explored with a focus on their complex history of exposure to violence. The relationships between PTSD and comorbid symptoms are also addressed in North Korean refugee youth who have been exposed to multiple trauma. Finally, NET is examined as a treatment option for North Korean refugee youth with PTSD.

In Chapter 2, this study examines experiences of family and organized violence and general traumatic events, and its relation to PTSD and depression of North Korean refugee youth compared to their South Korean peers.

In Chapter 3, PTSD and its relation to co-occurring symptoms of depression and insomnia are investigated in North Korean refugee youth. In order to predict insomnia in a single model, path analysis is used to evaluate whether trauma exposure affects insomnia through PTSD and depression.

In Chapter 4, NET is evaluated for treating North Korean refugee youth with PTSD. This study focuses on sleep patterns in addition to changes in symptom severity of PTSD, depression, and internalizing and externalizing problems.

2. Exposure to family and organized violence and associated mental health in North Korean refugee youth compared to South Korean youth

2.1 Abstract

Studies on populations affected by organized violence have shown elevated levels of family violence against children. This form of violence has been found to contribute to children's psychopathology independently of traumatic experiences related to war, persecution or flight. Little is known, so far, about the exposure to family violence and its relation to mental health in North Korean refugee youth affected by political violence. The aim of this study was to examine the amount of organized and family violence and associated psychopathology in a sample of North Korean refugee youth living in South Korea compared to their South Korean peers. Sixty-five North Korean refugee youth and sixty-five South Korean youth were recruited. Trained researchers conducted the survey in group meetings of five to ten participants. Questionnaires were employed to assess family and organized violence, PTSD symptoms, depressive symptoms and other mental health problems. Higher rates of violence and trauma, and higher levels of mental health problems were found in the North Korean sample compared to the South Korean sample. Linear regression analyses including the various types of trauma as potential predictors showed that the severity of PTSD and depressive symptoms in the North Korean sample were associated with the amount of traumatic events and family violence but not with higher levels of organized violence. The findings suggest that in a context of organized violence, abusive experiences by family members constitute an important problem that is strongly linked to the psychopathology of adolescents. Our data suggest that psychological treatment and prevention approaches for

North Korean refugees reaching South Korea should be carefully tailored to fit the specific requirements of this population and address the mental health of the individual as well as potential problems at the family level.

Keywords: family violence; organized violence; trauma; PTSD; depression; refugee youth

2.2 Introduction

Research on populations who have fled their homeland because of political oppression and economic hardship has consistently shown that both children and adults have been affected by a variety of adverse life experiences, including traumatic events. They have been exposed to political violence and life adversities related to poverty. The most commonly reported adversities include physical violence, torture, imprisonment, hunger, and witnessing public execution (Kim et al., 2010; Kim, 2016; Nickerson et al., 2017).

Adverse life experiences are not only common in a traumatic and risky life context but also seem to increase the risk of experiencing family related violence among children and adolescents. Following this line of thinking, several studies have shown a heightened prevalence of family violence in contexts of war, political violence, poverty and/or refugee status (Catani, 2018; Catani et al., 2008; Charak et al., 2017; Saile et al., 2014; Timshel et al., 2017). Based on such findings, it has been suggested that traumatic experiences have far-reaching implications not only for the individual but also for the whole family, fostering the conditions which lead to violence within the family (Timshel et al., 2017). Moreover, there is evidence suggesting that parental experiences of war and political violence are risk factors for child maltreatment (Palosaari et al., 2013; Rentz et al., 2007). Therefore, children and adolescents in families affected by violent and harsh living conditions are at higher risk of

experiencing violence in their home due to the deleterious effects of cumulative traumatic stress on the families.

A substantial amount of research has documented that multiple traumatic experiences increase the chances of developing Posttraumatic Stress Disorder (PTSD), thus pointing to a dose-response effect of traumatic stress (Neuner et al., 2006). In particular family violence has been identified as an important risk factors which contributes to a higher vulnerability for mental disorders (Charak et al., 2017; Greger, Myhre, Lydersen, & Jozefiak, 2015; Saile et al., 2014). Studies with children and adolescents living in insecure and violent environments have found that family violence is closely associated with a range of psychological disorders such as PTSD (Catani et al., 2010; Derivois et al., 2017; Erolin, Wieling, & Parra, 2014; Mueller-Bamouh et al., 2016; Saile et al., 2014). There is also evidence of a link between organized violence and PTSD among children and adolescents living in traumatic and stressful environments. In a previous study on refugee minors from various countries, Mueller-Bamouh et al. (2016) found that exposure to torture and war in addition to family violence was related to PTSD symptom severity.

North Korea can be regarded as a typical example of a totalitarian system where the civil population is oppressed by a military dictatorial regime. North Korean children and adolescents are therefore likely to be seriously affected by violence and poverty during the course of their life. Consistent with this assumption, North Korean refugee youth have reported multiple traumatic and violent experiences including physical violence, forced labor, imprisonment, torture, witnessing public execution, starvation, and human trafficking (Davis, 2007; Kim et al., 2010; Kim, 2016). Even though research on family violence among North Korean refugees is still rather limited, there is some initial evidence pointing to elevated levels of child abuse in this population (Kim et al., 2012; Um et al., 2018). For instance, a study with 144 young North Korean refugees found that 59.1% of respondents reported

experiences of physical or sexual violence, and 38.2% of that violence was inflicted by an immediate family member, a relative, or an acquaintance (Kim, 2016). Apart from the particular political context, a combination of cultural values and parenting norms together with specific standards of child-rearing practices might also be linked to the higher levels of family violence in North Korea (Ji & Finkelhor, 2014; Zhai & Gao, 2009). The use of strict physical discipline methods has been persistently documented to be high in Asian families (Chang et al., 2006; Ji & Finkelhor, 2014; Kim, 2000; Zhai & Gao, 2009). In fact, elevated levels of physical child maltreatment have also been reported for families in South Korea as well as in immigrant Korean families (Chang et al., 2006; Ju & Lee, 2010; Zhai & Gao, 2009). To date, it is not clear, whether family violence is a more common phenomenon among North Korean refugee youth compared to their South Korean peers. Even though Kim et al. (2012) suggest that the incidences of child maltreatment might be higher among North Korean refugee families, there has been no direct comparison between North and South Korean samples. By including such a comparison in the present study, we sought to examine two groups who are shaped by similar cultural norms but differ with respect to their political context. So far, there is very little evidence on mental health problems and related risk factors in South Korean youth compared to North Korean samples (Kim & Shin, 2015; Lee et al., 2017).

As far as the latter group is concerned, previous research has confirmed the typical dose effect relationship between traumatic experiences and PTSD (Lee et al., 2017). However, the mechanisms behind this relationship are not fully understood. It has been suggested that the diagnosis and severity of PTSD may be linked to the diversity of experienced trauma types in addition to the amount of trauma (Kim, 2014; Kim, 2016; Wong et al., 2016). Consistent with this view, studies with North Korean refugees have found that PTSD is

closely related to interpersonal trauma (Kim, 2014; Kim, 2016), but not to non-interpersonal trauma (Kim, 2016).

Organized violence is a particular type of trauma that has been strongly associated with PTSD in North Korean samples. A number of studies suggest that the massive violations of human rights experienced by many North Koreans seem to increase the risk for psychiatric disturbances and trauma-related disorders (Cha et al., 2018; Choi & Kim, 2011; Jung & Choi, 2017; Kim et al., 2019). The question whether exposure to family violence increases the risk for PTSD even when taking into account the level of organized violence has not been answered yet in North Korean refugee samples.

Previous studies have investigated either the relationship between PTSD and organized violence, or the association between PTSD and physical abuse. There have been no studies differentiating between family abuse, organized violence, and general traumatic events as potential risk factors for PTSD in North Korean refugee youth. The current study tries to fill this gap by including different types of traumatic adversities and determining for each of them whether it constitutes an independent risk factor for PTSD.

Taken together, the aim of the present study was, therefore, to address the links between family and organized violence, potentially traumatic events, and mental health (PTSD and depression) for both North Korean refugee youth and South Korean youth. We hypothesized that North Korean refugee youth would report more traumatic and violence experiences and higher levels of overall mental health symptoms than South Korean youth. We also hypothesized that in the North Korean sample, both family and organized violence would be identified as independent predictors for PTSD and depression symptom scores.

2.3 Method

2.3.1. Participants

65 North Korean participants were recruited from a specialized school for North Korean refugee youth, located in Seoul. This school offers accredited high school education and commissioned junior high school education for young North Korean refugees. Every student in the 14 to 25 age group was asked to participate in the study. As a control group, we contacted three educational organizations for young South Koreans, located in Seoul. We received the permission to conduct the study from only one of the organizations, a private educational institute for youth and young adults who prepare for the college entrance examination. To be included in the study, participants had to be born in North Korea (or South Korea for the control group) and be between the ages 14 and 25. The exclusion criteria were intellectual disability, acute psychosis, current severe suicidal ideations, and drug or alcohol intoxication. With the exception of three individuals who did not meet the inclusion criteria, our overall sample consisted of 62 North Korean refugee students and 65 South Korean students. The socio-demographic characteristics of two groups are summarized in Table 2.1. The groups statistically differed with respect to age ($t = 2.353, p = .022$), gender ratio ($\chi^2 = 6.371, p = .012$) and education level (Fischer's exact test $p < .001$). The higher proportion of females among the North Korean sample is consistent with the common gender imbalance of North Korean refugees entering into South Korea (The Ministry of Unification, 2017).

Table 2.1

Sociodemographic characteristics

	North (n=62)		South (n=65)		<i>t/ X²/ Fisher's exact test</i>
Age (years), M (<i>SD</i>)	19.82 (^a 15-25)	2.81	18.97 (^a 18-21)	.53	2.35*
Sex, n (%)					
Male	17	27.4	32	49.2	6.37*
Female	45	72.6	33	50.8	
Education, n (%)					
Middle school	8	12.9	0	0	164.39***
High school	54	87.1	0	0	
High school graduates	0	0	65	100	
Parents alive, n (%)					
Both	31	51.7	64	98.5	41.38***
One parent only	27	45	1	1.5	
Both are not alive	2	3.3	0	0	
Household members, n (%)					
Both parents	11	18.6	54	83.1	
One parent	28	47.5	8	12.3	
Relative/friend/NGO	12	20.3	3	4.6	
No one	10	16.9	1	1.5	
Economic support, n (%)					
Both parents	6	10	56	87.5	
One parent	25	41.7	7	10.9	
Relative/government/NGO	19	31.7	2	3.1	
Earn my own money	18	27.7	1	1.6	
Years since arrival in ^b SK, M (<i>SD</i>)	2.9 (^a 0-9)	2.1	-	-	
Duration of flight, n (%)					
1-12 months	42	68.8	-	-	
1-3 years	9	14.8	-	-	
more than 3 years	10	16.4	-	-	
Experienced forced repatriation, n (%)					
Yes	6	10.2	-	-	
No	53	89.8	-	-	

Note. For Household members and Economic support, participants were able to answer multiple responses; *M* = mean; *SD* = standard deviation, ^a Range, ^b South Korea, **p*<.05; ***p*<.01; ****p*<.001.

2.3.2. Procedure

All of the North Korean refugee students ($n = 80$) and South Korean students ($n = 65$) present in the respective institutions were invited to participate in this study, receiving a written invitation and informed consent form. Sixty-five North Korean students and sixty-five South Korean students gave informed consent to be included in the study. For participants under the age of 18 (i.e. minors by law in South Korea) an informed consent form signed by their legal guardian was required as well. Participants who consented to take part in the study arranged group appointments with the research team through their teachers. In group meetings of five to ten people, the survey was conducted under the supervision of two researchers who were trained to provide immediate psychological support if necessary. At the appointed time, each group of North Korean students gathered in a quiet room at their school. Similarly, South Korean students filled out the questionnaire in group meetings conducted in two quiet rooms, outside their school.

Before the survey began, the aim and content of the study, procedure, risks, their right to withdraw and confidentiality were explained again. Only those who voluntarily signed the consent form were included in the study. Participants were then asked to answer questionnaires in Korean about family and organized violence, traumatic experiences, post-traumatic stress disorder symptoms, depressive symptoms and other mental health problems. Participants asked questions, if they did not understand the item, and the researcher provided sufficient explanation. Filling out the questionnaires required about 35 minutes. At the end of the survey, participants were fully debriefed and were given the opportunity to ask questions. They received financial compensation for their transportation expenses (about 8 Euro). The study was approved by the ethical review board of the University of Konstanz.

2.3.3. Instruments

For some clinical outcomes (e.g., PTSD and behavioural problems), we used instruments developed specifically for children and adolescents, even though the sample included many young adults. We deemed this approach acceptable given that the level of education and language ability of the North Korean students did not match their actual age. The majority of them did not receive any formal education during the long process of hiding and escaping the country. The final selection of instruments was informed by discussion with local experts working with and caring for the North Korean refugee youth in South Korea. All items in the questionnaire were reviewed beforehand by teachers of North Korean youth and local mental health professionals.

2.3.3.1. Traumatic experiences

The trauma event checklist of the University of California Los Angeles (UCLA) PTSD Index for Children/Adolescents DSM-5 (PTSD-RI-V) (Elhai et al., 2013a, 2013b; Steinberg et al., 2013) was applied for the assessment of potentially traumatic events. The checklist consists of 14 items covering different types of traumatic events. Item four, assessing experiences of family violence, was omitted as this was already evaluated by another study instrument. The amount of exposure to potentially traumatic events was established by counting the number of different event types that were reported by the participant.

2.3.3.2. *Family violence*

Lifetime exposure to family violence was measured using the Child Version of the Parent-Child Conflict Tactics Scales (CTSPC) (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). The Korean version of the CTSPC had been used previously in a study on child abuse and neglect conducted by the Ministry of Health and Welfare in South Korea (MOHW, 2011). The CTSPC is comprised of 27 items covering nonviolent discipline and three types of child maltreatment, psychological abuse (verbal abuse), physical assault, and neglect. The physical assaults subscale covers a wide range of severity and legality of physical assault, and is categorized by three subscales: corporal punishment, physical maltreatment, and extreme physical maltreatment, differing in severity to the physical assaults. Following the recommendation of the authors (Straus et al., 1998), we created a measure of physical abuse by combining the physical maltreatment and the extreme physical maltreatment subscales. This physical abuse measure also included one item from the corporal punishment subscale (slap on face or head), as this item was classified as severe physical abuse based on the judgment of experts and researchers in previous research on South Korean youth (MOHW, 2011).

Neglect assesses the lack or absence of adequate supervision, health care, physical care and emotional care. The CTSPC measures a prevalence score (i.e., exposure to an incident during the last year or in a lifetime) and an annual incidence score (i.e., frequency with which the incident occurred in the last year) for each item of the subscales. In the current study, the prevalence scores for physical abuse, psychological abuse and neglect were obtained based on whether the participant experienced more than one of the acts on the physical abuse, psychological abuse, and neglect subscales during their lifetime. In addition, the level of exposure to each type of family violence was calculated by summing the number of items of physical abuse, psychological abuse and neglect subscales reported by the

participant, representing the total number of multiple forms of family violence the participants experienced. Cronbach's α of the overall mean score of the CTSPC was .78.

2.3.3.3. Organized violence

To obtain a measure of exposure to organized violence, we generated five questions addressing political violence related to the North Korean regime. The items read as follows: "Have you seriously suffered from starvation?"; "Have you witnessed torture or public executions?"; "Have you been kidnapped or trafficked for forced labor or sexual exploitation?"; "Were you beaten up, shot at, or threatened with a knife or gun by the police or soldier?"; and "Have you been imprisoned in a prison camp or labor camp?". The level of exposure to organized violence was calculated by the aggregate number of different event types reported by the participant. Cronbach's α for the organized violence scale was .73 in the current sample.

2.3.3.4. PTSD symptoms

The prevalence and severity of probable PTSD were assessed with the UCLA PTSD Index for C/A DSM-5 (Elhai et al., 2013a, 2013b; Steinberg et al., 2013) which is a revised version of the UCLA PTSD Index for DSM-4 (UPID) (Steinberg, Brymer, Decker, & Pynoos, 2004). The UPID is a widely-used PTSD assessment for children and young adults with good psychometric properties, which has been proven to be useful in different cultures and countries (Steinberg et al., 2013). The Korean version of the UCLA Index for DSM-5 has been used previously in a study with North Korean refugee youth and reported a high internal consistency of $\alpha = .95$ (Park, Elbert, Kim, & Park, 2019). The new DSM-5 version consists of 27 items asking about PTSD symptoms and 4 additional items assessing the dissociative

subtype. Symptom scales include criteria B (re-experiencing), criteria C (avoidance), criteria D (negative cognitions/mood), and criteria E (arousal). Participants rated the frequency of the symptoms that occurred in the past month on a 5-point Likert scale, ranging from 0 (none) to 4 (most of the time). The sum of scores on the all items of symptom scales represents the total symptom score of the UPID. In the present study, the total symptom score of the UPID was defined as the severity of PTSD symptoms. Cronbach's α for the overall symptom score in the current sample was .96.

2.3.3.5. Depressive symptoms

The presence and severity of depression was measured using the Patient Health Questionnaire-9 (PHQ-9) (Kroenke, Spitzer, & Williams, 2001). The Korean version of the PHQ-9 has been shown to be an appropriate self-report diagnostic tool for the screening and assessment of depression both in South Koreans (Park, Choi, Choi, Kim, & Hong, 2010) and in young and adult North Korean refugees (Song, Shin, Lee, Kim, & Jun, 2016). The PHQ-9 contains 9 items, which are rated from 0 (not at all) to 3 (nearly every day) based on the frequency of symptoms over the last two weeks. In the present study, the severity of depressive symptoms was defined as the sum of all 9 items (range: 0-27). Following the instructions for the PHQ-9 (Kroenke & Spitzer, 2002), a total score of ≥ 5 is regarded as indicative of probable depression. The cutoff score for considering treatment is 10. In the present study, the total PHQ-9 scores were classified into three levels of severity: abnormal (scores: 10-27), borderline (5-9) and normal (0-4) (Kroenke et al., 2010). Cronbach's α for the PHQ-9 sum score was .86 in the sample.

2.3.3.6. *Emotional and behavioural symptoms*

The self-report version of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) was used to assess emotional and behavioural symptoms. The SDQ includes five subscales covering emotional symptoms, peer problems, conduct problems, hyperactivity and prosocial behaviour. Each subscale is composed of five items that can be rated on a 3-point scale ('not true'=0, 'somewhat true'=1 or 'certainly true'=2). Usually, items on the emotional symptom scale and the peer relationship problem scale are combined into an "internalizing behaviour" subscale, whereas the conduct problems and hyperactivity items are united in an "externalizing behaviour" subscale. In the current study, we used the sum of all items of the internalizing and externalizing subscales to generate a total difficulty score, i.e. the sum of all items of the SDQ except for prosocial behaviour. The self-report Korean version of the SDQ (the SDQ-Kr) has been reported to be highly reliable and valid for assessing emotional and behavioural symptoms in Korean children and adolescents, and the use of the total difficulties score of the SDQ-Kr was recommended for more confidence for screening (Kim, Ahn, & Min, 2015). Based on the cutoffs suggested by Goodman, Meltzer & Bailey (2003), respondents with a total difficulty score between 20 and 40 were classified as "abnormal", those with a score between 16 and 19 as "borderline" and those with a score below 16 as "normal". Cronbach's α in the current sample was .75 for the total difficulty subscale.

2.3.4. **Statistical analysis**

Data analyses were carried out using IBM SPSS version 24.0. For dichotomous variables (i.e. the UPID total dichotomous score for trauma exposure, the CTSPC total dichotomous score, and the organized violence total dichotomous score) Chi-square tests

were conducted to differences between groups. Fisher's exact test was used to analyse group differences with respect to PTSD prevalence. For continuous variables, we used t-tests for dependent variables that were normally distributed, and Mann-Whitney U-tests for data that were not normally distributed. The data of the number of traumatic events, the PHQ score, the SDQ score was considered to be normally distributed, because the values of skewness and kurtosis were within the acceptable range of -2 to +2 (Garson, 2012; George & Mallery, 2010). Only for the UPID score of the South Korean sample, the skewness and kurtosis values indicated a distortion of the data. Therefore, t-tests were performed to examine group differences with respect to the amount of experienced trauma types, the PHQ score, and the SDQ score. Mann-Whitney U Tests were applied to compare group differences regarding the UPID sum score as well as each of the subscale scores of the UPID. Multiple linear regression analyses with PTSD and depressive symptom score as respective outcomes were conducted separately for the North and South Korean samples to examine the associations between exposure to violence and trauma and mental health symptoms. For the North Korean sample, we entered the PTSD RI sum score and the PHQ sum score as a dependent variable, and age, the level of exposure to family violence, the level of exposure to organized violence, and the number of traumatic events as predictor variables. For the South Korean sample, more than half of the sample (58.5%) had no traumatic experience thereby the sample size was so small ($n = 38$) that we were unable to conduct a multiple regression analysis on the PTSD sum score. The regression analysis for the PHQ-9 sum score for the South Korean sample was conducted with the predictor variables age, family violence, and the number of traumatic events, excluding organized violence. In order to control for the influence of outliers, data points with high Cook's distance (>1) and/or with large Std. residual (>3) were excluded. Accordingly, one data point for the North Korean sample and two data points for the South Korean sample were excluded from the analyses.

2.4 Results

2.4.1. Exposure to trauma and violence

The statistical comparison between the two groups (see Table 2.2) showed that exposure to traumatic events was significantly higher in the North Korean sample compared to the South Korean sample ($t = 9.006, p < .001$). 88.7% of the North Korean sample had been exposed to at least one type of traumatic event that met the DSM-5 A criteria, 45.2% reported having had between two and four events and 30.6% experienced more than five traumatic events. Of the South Korean sample, 41.5% reported having experienced at least one traumatic event and 9.2% of the respondents experienced two or more traumatic events. The maximum number of lifetime exposure to potentially traumatic events was 8 for the North Korean sample ($M = 3.13, SD = 2.11$) and 4 for the South Korean sample ($M = .55, SD = .81$). The percentages of exposure to various types of traumatic events are presented in Figure 2.1.

Experiences of family violence were significantly more frequent among North Korean youth than in the South Korean sample (56.5% vs. 33.8%), $X^2 = 6.555, p = .01$. 35.5% of the North Korean sample reported having experienced two or more types of family violence, whereas 23% of the South Korean sample reported two or more types. Figure 2.2 illustrates the lifetime prevalence of various forms of family violence in the two samples. Compared to the South Korean sample, the North Korean sample had significantly higher rates of physical abuse (32.3% vs. 10.8%), $X^2 = 8.753, p = .003$, and neglect (25.8% vs. 6.2%), $X^2 = 9.237, p = .002$, whereas psychological abuse did not differ between the two groups.

Table 2.2

Trauma exposure in the North and South Korean samples

	North		South		<i>Statistical test</i>	
	(n=62)	(n=65)	(n=62)	(n=65)	<i>t</i>	<i>X</i> ²
The number of traumatic events ^a , M (<i>SD</i>)	3.13	2.11	.55	.81	9***	-
Frequency of traumatic experiences ^b , n (%)						
Potentially traumatic events	55	88.7	27	41.5	-	30.86***
Family violence	35	56.5	22	33.8	-	6.56**
Organized violence	37	59.7	0	0	-	54.74***

Note. ^a The total number of potentially traumatic events based on the UPID trauma checklist;

^b Frequency of traumatic experiences with at least one event in each type of trauma and violence, **p*<.05; ***p*≤.01; ****p*<.001.

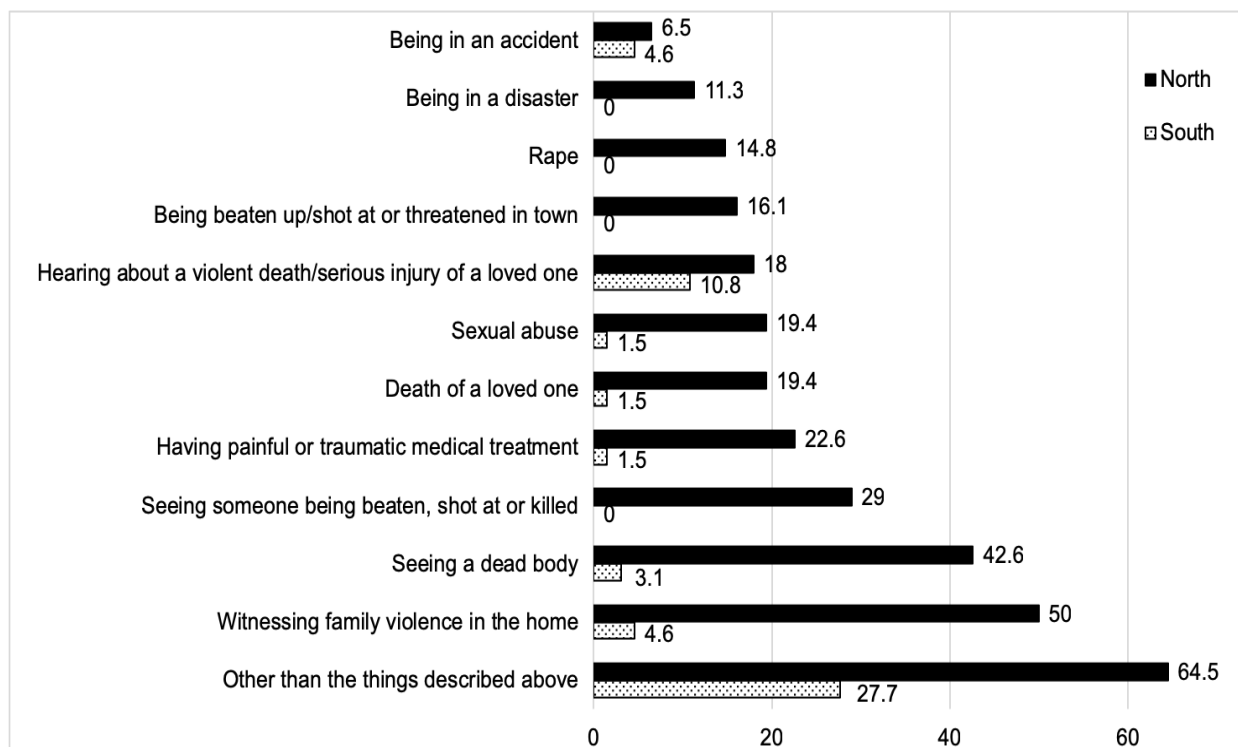


Figure 2.1. Percentages of lifetime exposure to trauma event types in the two samples

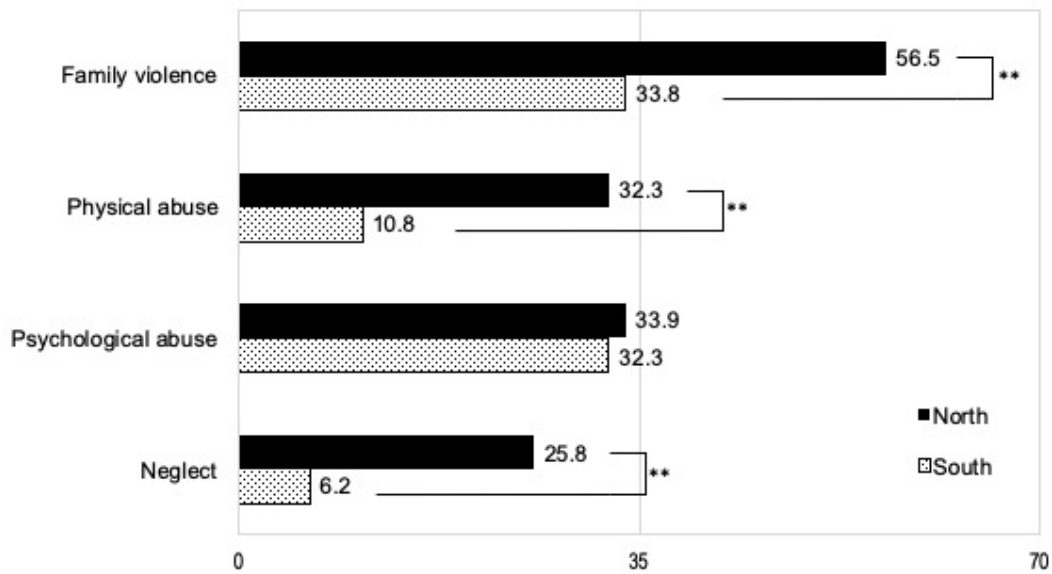


Figure 2.2. The prevalence of various forms of family violence in the two samples

Note. ** $p \leq .01$

Exposure to organized violence was reported by more than half of the North Korean refugee youth in our sample (59.7%), whereas no one has been exposed to this type of violence in the South Korean youth sample. The mean number of exposures to organized violence for the North Korean sample was 1.19 ($SD = 1.33$), with a maximum number of five different incidences linked to organized violence. The three most frequent types were suffering from starvation (43.5%), witnessing torture or public execution (27.4%), and imprisonment (21%).

2.4.2. Mental health outcomes

Table 2.3 provides an overview on group means and statistical differences between the two samples. Compared to their South Korean peers, North Korean refugee youth reported higher levels of PTSD symptoms (Mann-Whitney $U = 800$, $p < .001$), and emotional and behavioural symptoms ($t = 4.702$, $p < .001$). With respect to depressive symptoms, the mean score of the PHQ-9 for the North Korean sample ($M = 6.87$, $SD = 5.58$) was higher than that of the South Korean sample ($M = 5.18$, $SD = 5.45$), however the difference reached only a trend-level of significance ($t = 1.722$, $p = .087$).

Table 2.3

Comparison of mental health problems between the two samples

	North		South		<i>Statistical test</i>		
	(n=62)		(n=65)		<i>Fischer's exact test</i>	<i>Mann-Whitney U</i>	<i>t</i>
PTSD prevalence, n (%)	8	12.9	1	1.5	6.23*	-	-
UPID, M (<i>SD</i>)	17.06	17.96	3.62	8.9	-	800***	-
re-experiencing	3.63	5.01	.59	2.2	-	1,034***	-
Avoidance	1.76	2.47	.64	1.47	-	1,357**	-
negative cognitions/mood	6.71	6.68	1.40	3.38	-	826***	-
Arousal	4.97	5.28	1.02	2.57	-	924***	-
PHQ-9, M (<i>SD</i>)	6.87	5.58	5.18	5.45	-	-	1.72
SDQ, M (<i>SD</i>)	13.66	5.28	9.52	4.63	-	-	4.70***

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

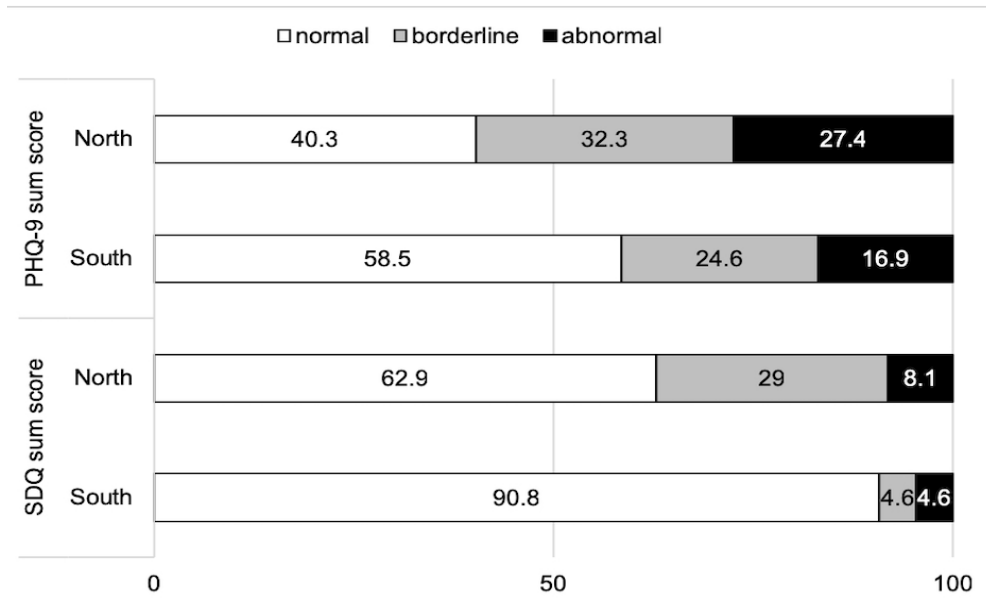


Figure 2.3. Frequencies (%) of critical scores on the PHQ-9 and the SDQ in the two samples

Figure 2.3 shows the frequencies of critical scores on the PHQ-9 and the SDQ, separately for each group. The North Korean sample showed more emotional and behavioural problems compared to the South Korean sample (Fischer's exact test $p < .001$), whereas the amount of borderline to abnormal depression scores on the PHQ-9 did not differ between the two groups ($\chi^2 = 4.344$, $p = .113$).

2.4.3. Relationships between trauma exposure and mental health

Table 2.4 provides an overview on the findings of the linear regression models on the amount of PTSD and depressive symptoms in the North Korean sample. For both outcomes, the level of exposure to family violence and the number of traumatic events resulted as significant predictors. Regarding the South Korean sample, the regression model on depressive symptoms did not reach statistical significance ($\text{adj}R^2 = .000$, $F = 1.001$, $p = .399$), therefore, the results are not presented here.

Table 2.4

Predictors of PTSD and depressive symptoms in the North Korean sample

Predictor	UPID sum score		PHQ-9 sum score	
	North		North	
	(n = 62)		(n = 62)	
	β	r	β	r
Age	-.06	-.06	-.08	-.20
Number of traumatic events	.33*	.44	.32*	.32
Level of exposure to family violence	.27*	.33	.48***	.54
Level of exposure to organized violence	.12	.31	-.11	.08

Note. $adjR^2$ (UPID sum score) = .220, $F = 5.226$, $p < .01$, $adjR^2$ (PHQ-9 sum score) = .318, $F = 7.999$, $p < .001$, UPID sum score = PTSD symptom severity; PHQ-9 sum score = depressive symptom severity; Number of traumatic events = the total number of potentially traumatic events (UPID checklist); Level of family violence = the number of lifetime exposure to family violence (CTSPC); Level of organized violence = the number of lifetime exposure to organized violence, * $p < .05$; *** $p < .001$.

2.5 Discussion

The present study found higher rates of violence and trauma, and higher levels of mental health problems in the North Korean sample compared to the South Korean sample. A crucial finding was that both the experience of family violence and trauma exposure were significant predictors of PTSD and depressive symptom severity in the North Korean sample.

The great majority (88.7%) of the North Korean sample reported having experienced a traumatic event whereas this was the case only for 41.5% of the South Korean youth. Around 60% of the North Korean sample reported having experienced organized violence. The prevalence of incidences of family violence in the North Korean sample (56.5%) was significantly higher compared to the South Korean sample (33.8%), but similar when compared to the rates in refugee families from other contexts (Chang, Rhee, & Berthold, 2008; Tappis, Biermann, Glass, Tileva, & Doocy, 2012). Therefore, the present finding is in line with previous research supporting a link between organized violence and elevated rates of family violence among conflict-affected populations (Catani et al., 2008; Palosaari et al., 2013; Saile et al., 2014). In this regard, Timshel et al. (2017) suggest that the likelihood of exposure to violence in the home increases as multiple risk factors accumulate at the individual, familial, societal, and cultural levels. We might therefore assume that the cumulative experiences of political oppression and trauma in the North Korean sample could be one reason for the more frequent experiences of family abuse. Moreover, next to culture norms, national and regional policies including child abuse prevention advocacy may have an impact on the use of physical discipline methods towards children (Ji & Finkelhor, 2014). Even though parental discipline was legally allowed, and there was no explicit prohibition of physical punishment in South Korea at the time of the study (Global Initiative, 2016; Human rights watch, 2018), the promotion of non-violent child rearing strategies in Western countries may have had a larger impact on parents in South Korea than those in North Korea,

who are kept mostly isolated from western influences. In fact, in 2012, the Korean government has accepted recommendations of the UN Committee on the Rights of the Child with regard to corporal punishment, and has advocated the prohibition of corporal punishment (Global Initiative, 2014, 2016). In this regard, just recently in 2019, the Korean government has decided to actively push a revision of the provisions of the country's civil law to enact explicit prohibition of physical punishment (MOHW, 2019). Currently, the Civil Act states that "a person who has the parental authority for a child may take necessary disciplinary action against the child in order to protect or educate the child" (art. 915). The government has a plan to reform the law by explicitly prohibiting physical punishment (MOHW, 2019). In contrast, according to the Human Rights Watch's World Report 2018 and progress reports by the Global Initiative to End All Corporal Punishment of Children, the little information available on North Korea suggests that children's rights are not protected and that violence against children, whether within or outside the family, is not punished (Global Initiative, 2014, 2016; Human rights, 2018). Considering this line of reasoning, our findings that specifically physical abuse as opposed to psychological abuse was higher in the North compare to the South Korean sample seems plausible.

Consistent with findings from a previous study (Kim & Shin, 2015), the North Korean sample presented higher levels of PTSD and depressive symptoms as well as a higher amount of emotional and behavioural symptoms compared to the South Korean sample.

Regarding the role of family abuse in the prediction of posttraumatic stress, we identified the amount of family violence, next to general traumatic events, as a significant predictor for PTSD and depressive symptoms in the North Korean sample. This is in line with previous studies suggesting that the experience of family violence increases the risk for PTSD and other mental health problems in populations affected by political conflict and violence (Catani et al., 2008; Charak et al., 2017; Erolin et al., 2014; Mueller-Bamouh et al.,

2016). Our finding supports not only earlier evidence of a dose-response relationship between trauma exposure and mental health problems in people who fled North Korea (Lee et al., 2017), but also points towards family violence as an independent risk factor associated with PTSD and depression.

The amount of organized violence was not included as a specific predictor of either PTSD or depressive symptoms. This finding is incongruent with previous studies showing a close link between organized violence and PTSD (Gorst-Unsworth & Goldenberg, 1998; Kohrt et al., 2008; Mueller-Bamouh et al., 2016). Two possible explanations could account for this discrepancy. First, the assessment of organized violence with only five items in the present investigation was not comprehensive enough. In fact, other studies employing standardized checklists to assess the amount of events related to conflict and persecution typically reported higher incidences of organized violence (Gorst-Unsworth & Goldenberg, 1998; Mueller-Bamouh et al., 2016). Second, we did not assess torture as a specific type of organized violence. Previous studies assessing more specifically different types of organized violence have consistently reported a strong connection between PTSD and torture experiences (Gorst-Unsworth & Goldenberg, 1998; Kohrt et al., 2008; Mueller-Bamouh et al., 2016; Van Ommeren et al., 2001).

It is worth noting that we found an increased occurrence of clinically relevant depressive symptoms (16.9%) also in the South Korean sample that did not statistically differ from the rate in the refugee group. However, we were unable to determine risk factors associated specifically with depressive symptoms in the South Korean sample. One reason for this might be that, due to the small sample size, we were not able to include the different types of adverse childhood experiences in the regression analyses. In fact, our results show that psychological abuse was the only type of family violence that was reported similarly frequently in both groups. There is evidence from previous research on the long-term

consequences of childhood maltreatment showing that, compared to physical or sexual abuse, psychological or emotional abuse is more strongly linked to depression (Gibb & Abela, 2008; Hovens et al., 2010; Jewkes, Dunkle, Nduna, Jama, & Puren, 2010). Thus, the relatively high amount of clinically relevant depression symptoms in the South Korean sample might be related to the frequent reports of childhood psychological violence by family members.

In addition, it might be speculated that there are important factors associated with depression other than family violence and traumatic life events that have not been assessed here. In fact, there are studies showing that depressive symptoms are linked to poor school performance and/or peer problems in South Korean adolescents (Lee & Lee, 2012; Park, Heo, Subramanian, Kawachi, & Oh, 2012; Park, Jang, & Lee, 2018). Related to this, Kim and Shin (2015) found that South Korean adolescents reported higher scores on academic stress compared to North Korean adolescent defectors. Unfortunately, the present study did not include the assessment of academic achievement, so further research would be needed to clarify any potential association with depression.

There are more limitations that should be taken into account when discussing the present findings. First, our sample size was small and the North Korean refugee sample examined in the study was comprised mostly of females, resulting in a gender imbalance between the samples. In addition, the South Korean sample differs from the North Korean sample with respect to education level, age and gender so that group differences cannot be attributed solely to the different political context. However, there are studies with South and North Korean students indicating that mental health is not necessarily affected by education level or gender (Kim & Shin, 2015; Kim, 2002). For instance, previous research with South Korean youth (Kim, 2002) did not find any differences between high school and middle school students with respect to depression, anxiety, aggressive behaviour and conduct problems. In addition, aggressive behaviour and conduct problems did not differ between

male and female participants. We might therefore assume, that the differences found between the North and South Korean samples in the present paper cannot be entirely attributed to age and gender. As a second drawback of our study, it should be mentioned that measures for PTSD symptoms and organized violence have not been validated specifically for the Korean context. However, the rate of probable PTSD of the North Korean sample in the present study is similar to that obtained in comparable previous studies (Kim, 2013a; Kim, 2016) using the Posttraumatic Stress Diagnostic Scale (PDS) (Foa, Cashman, Jaycox, & Perry, 1997). Third, although it was included in the list of potentially traumatic events, we did not specifically focus on sexual abuse which is well known to be associated with the development of mental disorders (Steine et al., 2017). Thus, larger studies using more comprehensive and detailed measurements of family and organized violence are required.

Although our finding should be interpreted with caution, this study is the first attempt to compare exposure to trauma and violence as well as mental health problems between North Korean refugee youth and South Korean youth. The present study also contributes to a better understanding of exposure to trauma and violence and its relation to mental health problems in young people who fled North Korea. It could be shown that a considerable percentage of North Korean refugee youth have experienced multiple types of family violence in addition to organized violence and general traumatic events, which place them at higher risk for PTSD and depression.

The findings of the present study have implications for the development of diagnostic and psychosocial treatment services that should be offered to North Korean adolescents who reach South Korea. Next to individual trauma treatment for adolescents diagnosed with PTSD, there seems to be an additional need for intervention and prevention programs at the family level developed to end or prevent violence in the family and foster positive parenting strategies. On an even broader level, psychoeducational programs could be useful to raise

awareness and educate the refugee youth, caregivers and teachers about family violence and its consequences in the context of persecution and flight. Given that the psychological problems faced by North Korean refugees are linked to a lower quality of life and difficulties in adapting to South Korea (Han et al., 2015), specifically tailored mental health care services for North Korean refugee youth will not only improve the mental health but might also promote social inclusion.

3. The contribution of PTSD and depression to insomnia in North Korean refugee youth

3.1 Abstract

Refugees are exposed to multiple traumatic and stressful events and thereby are at higher risk for developing a variety of psychological sequelae including PTSD. However, the relation of PTSD to other mental health conditions has not been fully revealed in refugee populations. The present study investigated relationships among trauma exposure, PTSD, depression and insomnia in North Korean refugee youth. 74 refugee youth were assessed for exposure to traumatic events, PTSD, depression and insomnia symptoms. The results showed high rates of multiple trauma exposures among the refugee youth and high incidences of co-occurring symptoms of PTSD and insomnia in those who have multiple trauma. Furthermore, the overall symptoms and four cluster symptoms of PTSD were strongly correlated with insomnia in addition to depression. In the path model to predict insomnia, PTSD affected insomnia only through depression, indicating that the greater levels of PTSD suffer, the greater the likelihood for developing sleep problems via depression. The present study indicates how sleep problems relate to trauma-related symptoms, i.e. PTSD and depression in refugee populations, and highlights the need for further investigation of the specific relation between sleep problems and trauma-related symptoms for effective evaluation and intervention.

Keywords: PTSD; depression; insomnia; North Korea; refugee youth

3.2 Introduction

Refugees are frequently exposed to traumatic and stressful events of different types ranging in numbers between 2 and 17 (Augsburger, Dohrmann, Schauer, & Elbert, 2017; Ibrahim & Hassan, 2017; Kim, 2014; Knipscheer, Sleijpen, Mooren, Heiden, & van der Aa, 2015). The greater the number of traumatic events experienced, the greater the likelihood for developing a variety of psychological sequelae such as posttraumatic stress disorder (PTSD) and depression (Neuner, Schauer, Karunakara, et al., 2004; Schauer et al., 2003; Wilker et al., 2015) and the smaller the likelihood for remission without treatment (Kolassa et al., 2010). A systematic review of the literature on psychiatric prevalence in refugees shows that the heterogeneity of the samples and findings was considerable (Fazel et al., 2005). Importantly, there is no meaningful general, standard prevalence rate for refugees due to the heterogeneity of factors associated with mental health, such as characteristics of trauma unreported on or samples that are difficult to access (Miller et al., 2005).

Hyperarousal is a defining feature of PTSD and usually includes the inability to obtain a normal sleep. Nightmares contribute to the disturbed sleep-patterns. Consequently, the prevalence of insomnia has been found to be elevated in survivors of traumatic stressors. For instance, in a representative population-based sample study, adolescents with a history of childhood adversity were more likely to have insomnia later in life than those who did not report exposure to adversity (Wang et al., 2016). In addition, experiencing more adversities increased the risk of insomnia, which indicates a dose-response relationship (Wang et al., 2016). On the other hand, clients with longer pre-treatment total sleep time and pre-treatment REM sleep duration showed a better treatment outcome (Weinhold et al., 2017), whereby Narrative Exposure Therapy (NET) resulted in an increased reduction in sleep latency and a reduction in arousals over time.

Only few studies have examined sleep in refugee children. Hjern et al. (1991) found a close link between sleep disturbance and experiences of persecution among Chilean refugee children. Montgomery and Foldspang (2001) suggested that the presence of sleep disturbance was predicted by violent exposures and stressful family situations in the refugee children from the Middle East. One study concerning insomnia among adult refugee populations showed high rates of insomnia in North Korean refugees (aged 38 ± 12 years) when compared to the general population (38% vs. 9%; Lee et al., 2016). The authors also compared trauma exposure and mental health problems reported by North Korean refugees with insomnia to those reported by North Korean refugees without insomnia, and found that North Korean refugees with insomnia reported having experienced a larger number of traumatic events and higher levels of PTSD and depression symptoms. Although these findings suggest that it may be fruitful to investigate insomnia in refugee populations, research on insomnia among these populations is scarce.

PTSD commonly occurs with other mental health outcomes in refugees (Mollica, McInnes, Poole, & Tor, 1998; Momartin et al., 2004; Reavell & Fazil, 2017). Studies of trauma-affected populations have found that PTSD may provide a link between trauma exposure and the presence of comorbid mental health symptoms such as depression, substance abuse, physical health and personality disorder (Kim, 2014; Powers et al., 2011; Subica et al., 2012). However, the relationship between PTSD and other mental health conditions has not been fully revealed in refugee populations.

In North Korean refugee adolescents and youth, studies have found high rates of trauma exposure and high levels of consequent psychopathology including PTSD and depression (Kim, 2014; Kim & Shin, 2015; Kim, 2013a). North Korean children and adolescents are exposed to multiple traumatic experiences not only in North Korea, but also during defection and stay in the 3rd country (Chung et al., 2012; Kim, 2014). The most

commonly reported trauma includes witnessing execution or torture, witnessing traumatic incidents involving family members (death, arrest, etc.), experiencing or witnessing violence, chronic malnutrition, hunger-related illnesses, witnessing the death from starvation and incarceration (Chung et al., 2012; Kim, 2014; Kim, 2013a). In particular, North Korean female adolescents are likely to face forced marriage, sexual assault or prostitution by Chinese human traffickers or brokers (Chung et al., 2012). The association between the level of trauma exposure and the severity of mental health outcomes including PTSD has been found to be robust (Kim, 2014; Kim, 2013a; Kim, 2016). Kim (2016) investigated interrelationships among trauma exposure, PTSD and comorbid mental health problems in North Korean refugee youth and found that PTSD mediated the relationships between interpersonal trauma and comorbid mental health problems. However, there is a lack of research on insomnia and its relation to trauma exposure and PTSD among North Korean refugee youth.

The aim of the present study was to examine relationships among trauma exposure, PTSD, depression and insomnia in a sample of North Korean refugee youth. Our first hypothesis was that higher rates of co-occurring symptoms of PTSD and insomnia would be found in those who have experienced a greater number of traumatic events. The second hypothesis was that PTSD would be associated with insomnia as well as depression. Finally, in order to predict insomnia in a single model, we used path analysis to evaluate the third hypothesis that trauma exposure would affect insomnia through PTSD and depression. We assumed that in this sample, depression symptom severity mainly would arise as a consequence of PTSD symptom severity. The paths in the model were predetermined by theoretical assumptions, previous empirical research and temporal precedence.

3.3 Method

3.3.1. Sample

The sample consisted of 74 refugees (47 females and 27 males) with a mean age of 18.7 years ($SD = 2.5$, range: 15-29). Of the overall sample, 35 participants (47%) were born in North Korea and 39 participants (53%) were born in China. The youth who were born in China were the children who were born from forced marriages between North Korean women and Chinese men. As these marriages are illegal under Chinese law, the youth were not given citizenship and escaped to South Korea with their mother. Thus, we defined North Korean refugee youth as the youth who were born in North Korea or in China in the present study. The two groups differed with respect to age ($t = 3.5, p = .001$) and gender ratio ($X^2 = 10.7, df = 1, p = .002$). There was no significant difference in the number of trauma types between groups ($t = 1.4, p = .174$). With regards to content of the trauma types, we found only one difference between groups. More than half of North Korean youth who were born in North Korea reported having experience of seeing someone being beaten, shot at or killed (68.2%), whereas 31.8% of North Korean youth who were born in China had experienced this type of trauma, $X^2 = 5.908, df = 1, p = .021$.

3.3.2. Procedure

Participants were recruited from a specialized school for North Korean refugee youth, which offers middle and high school education in South Korea. Anyone who is a North Korean refugee youth can apply to this school and will be assigned to this school selectively according to the decision of the school board. All of the North Korean refugee students ($n = 90$) were invited to participate in this study following the agreement and cooperation of the organization's leaders. Two researchers administered the questionnaires to participants in

their classrooms. Prior to administration, the researcher explained the aim and content of the study, procedure, risks and confidentiality. Participants who volunteered to take part in the study and signed an informed consent form were then included in this study. For minors an informed consent form signed by their legal guardian was required as well. Participants were asked to complete questionnaires about traumatic experience, post-traumatic stress disorder, depression and insomnia symptoms which were written in Korean. If participants had questions about the questionnaire items, the researcher gave a detailed explanation and clarified the items. During the administration of the study participants were asked to sit away from each other to ensure privacy. Completing the questionnaires required about 40 minutes. The ethical review board of the University of Konstanz approved the present study.

3.3.3. Instruments

3.3.3.1. Trauma exposure

The trauma event checklist of the UCLA-PTSD Index for Children/Adolescents DSM-5 (PTSD-RI-V; Steinberg et al., 2013) was used for the assessment of exposure to trauma. The checklist contains 14 items covering different traumatic event types. In this study, the number of different types of traumatic events reported by the participant was defined as the level of exposure to trauma, because PTSD prevalence was most accurately predicted by the number of different traumatic event types experienced (Wilker et al., 2015).

3.3.3.2. PTSD symptoms

The symptom severity of PTSD was assessed with the UCLA PTSD Reaction Index for C/A DSM-5 (the revised version of the UCLA PTSD RI for DSM-4; Steinberg et al.,

2013). The new DSM-5 version consists of 27 items measuring PTSD symptoms corresponding B, C, D and E criteria and 4 additional items assessing dissociative subtype. Each item can be rated from 0 (none) to 4 (most of the time) based on the frequency of symptoms in the past month. In the current study, the severity of PTSD was calculated by summing up the scores of all items of PTSD symptoms (range: 0-80). According to the instructions, the cutoff score for considering PTSD is 38. For the current study, two independent Korean-speaking translators translated the UPID into Korean and then another translator, who is bilingual in Korean and English, translated it back into English. A Korean clinical psychologist corrected and confirmed discrepancies. Cronbach's α in the current sample was .95.

3.3.3.3. *Depression symptoms*

The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) is a 9-item self-report questionnaire assessing the severity of depression. Each item can be rated from 0 (not at all) to 3 (nearly every day) based on the frequency of symptoms over the last two weeks. The sum of all 9 items was defined as the severity of depression symptoms (range: 0-27) in the present study. Following the instructions for the PHQ-9 (Kroenke & Spitzer, 2002; Kroenke et al., 2010), a total score of ≥ 10 is regarded as indicative of severe depression and the cutoff score for considering treatment. The Korean version of the PHQ-9 has been shown to be an appropriate self-report diagnostic tool for assessing depression (Park et al., 2010). Cronbach's α was .86 in the sample.

3.3.3.4. *Insomnia symptoms*

The Insomnia Severity Inventory (ISI; Bastien, Vallières, & Morin, 2001; Morin, 1993) is a 7-item self-report questionnaire measuring sleep difficulties. Each item can be rated from 0 (no problem) to 4 (very severe problem) based on the nature, severity and impact of sleep difficulties in the past months. The items assess severity of sleep onset, sleep maintenance, early morning awakening problems, sleep dissatisfaction, inference of sleep difficulties with daytime functioning, noticeability of sleep problems by others, and distress caused by the sleep difficulties. The total sum score is defined as the symptom severity of insomnia (range: 0-28) and interpreted as follows: absence of insomnia (0-7); sub-threshold insomnia (8-14); moderate insomnia (15-21); severe insomnia (22-28). The Korean version of the ISI has been shown to be a clinically useful instrument for assessing the severity of insomnia with good psychometric properties (Cho, Song, & Morin, 2014). Cronbach's α in the sample was .83.

3.3.4. **Statistical analysis**

Data analyses were performed using IBM SPSS version 25.0 and AMOS version 24.0. Associations between variables and group differences with regard to sociodemographic variables were examined using either the chi-square test or t-test. Pearson correlations were used to examine the relations between PTSD, depression and insomnia symptoms. A path analysis was used to predict insomnia in a single model. Potential impact on results due to symptom overlap between PTSD and depression could be excluded in preliminary analyses. The following indices with recommending values assessed adequacy of model fit: chi-square; root mean square error of approximation (RMSEA), with values below .08 (MacCallum, Browne, & Sugawara, 1996); standardized root mean square residual (SRMR), with values

less than .05 (Byrne, 1998); and goodness of fit statistic (GFI) and adjusted goodness of fit statistic (AGFI), with values close to .90 or higher. For GFI a higher cut-off of .95 is recommended, when sample sizes are low (Miles & Shevil, 1998).

3.4 Results

3.4.1. Description of the participants

High rates of multiple trauma exposures were found in our sample. The mean number of traumatic event types was 4.5 ($SD = 2.4$) with a maximum number of 10. Note that the actual occurrence of traumatic stressors can be much higher, as one type may have been experienced multiple times. The majority (91%) reported having experienced more than 2 traumatic events and about half (49%) reported having been exposed to more than 5 different types of traumatic stressors. The five most frequent types were having anyone close to me died (56.8%), seeing a family member being hit, punched or kicked at home (48.6%), being hit, punched, or kicked at home (40.5%), seeing a dead body (36.5%) and being in an accident (35.1%). Additionally, 68.9% of the total sample reported having other traumatic experience which are not described in the trauma list of the UPID.

3.4.2. Prevalence of mental health symptoms

The mean score was 28.43 ($SD = 16.69$) for PTSD symptoms and 9.81 ($SD = 5.90$) for depression symptoms. For insomnia symptoms, the mean score was 13.19 ($SD = 5.58$). 30% of the sample ($n = 22$) met the cutoff score for PTSD-symptoms. 14 of them also presented with scores for depression and insomnia above the cut-off. Figure 3.1 illustrates the high rates of co-occurring symptoms of PTSD and insomnia in those who have multiple trauma.

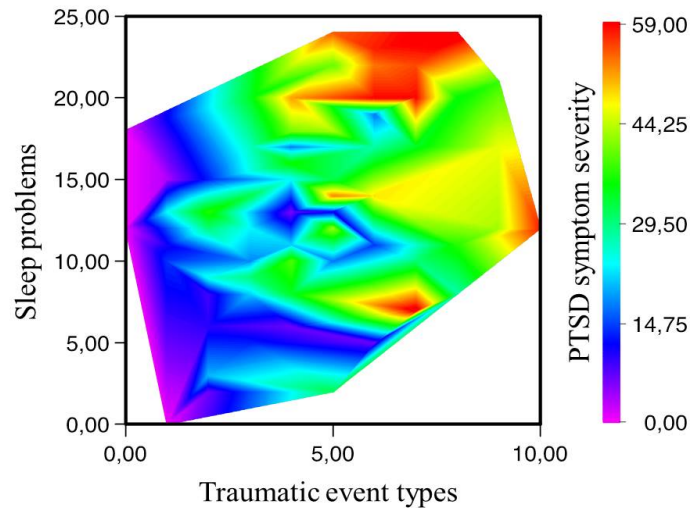


Figure 3.1. The relationship between the number of traumatic event types and insomnia according to the PTSD symptom severity. *Note.* There are no data in the lower right corner (i.e. all respondents who report high numbers of traumatic events present with sleep problems) and in the upper left corner (sleep problems do not reach extreme values in those with few traumata). Sleep problems: the ISI sum score; PTSD symptoms: the UPID sum score

3.4.3. The associations between trauma exposure, PTSD, depression and insomnia

The correlations among the mental health outcome variables are presented in Table 3.1. The scores of the overall symptoms and the four diagnostic cluster symptoms of PTSD were positively correlated with the score of depression and insomnia symptoms ($p < .001$). Results of path analysis indicated satisfactory fit to the proposed model, $\chi^2(1, n = 74) = .13$, $p = .72$; RMSEA = .00; SRMR = .01; GFI = 1.0; AGFI = .99. In the path model, PTSD and depression symptom severity fully mediated the relation between trauma exposure and insomnia symptoms (Figure 3.2). PTSD was significantly associated with depression symptom severity, but not insomnia symptom severity. Trauma exposure was related to PTSD, but not insomnia symptom severity.

Table 3.1.
Correlations between mental health outcomes

	1	2	3	4	5	6	7
1. Overall PTSD symptoms	-						
2. PTSD intrusion	.88	-					
3. PTSD avoidance	.78	.70	-				
4. PTSD alterations in cognition/emotion	.92	.70	.65	-			
5. PTSD alterations in arousal and reactivity	.87	.68	.55	.72	-		
6. PTSD dissociation symptoms	.69	.62	.41	.70	.55	-	
7. Insomnia symptoms	.56	.42	.39	.53	.55	.43	-
8. Depression symptoms	.77	.62	.54	.78	.65	.59	.59

Note. All correlations significant at $p < .001$

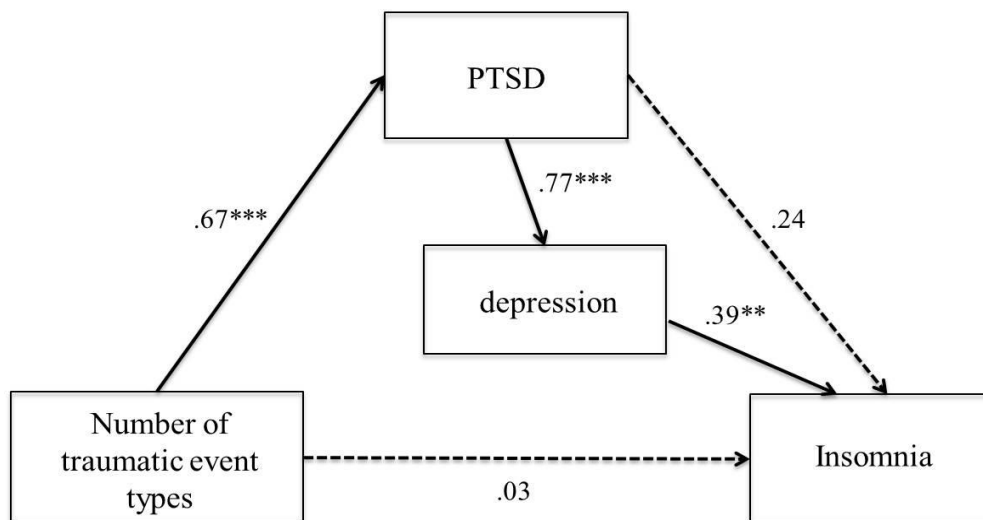


Figure 3.2. Model representing the associations between trauma exposure, PTSD, depression and insomnia ($n = 74$). Note. Standardized regression weights for all hypothesized paths are presented. Nonsignificant paths are indicated with dotted lines. Error variables are omitted for clarity. ** $p < .01$, *** $p < .001$

3.5 Discussion

The aim of the present study was to examine the associations between trauma exposure, PTSD, depression and insomnia in a sample of North Korean refugee youth. As expected, the present study revealed high rates of PTSD and currently co-occurring insomnia symptoms among the refugee youth who have experienced a greater number of traumatic events. This is in line with previous findings of high co-morbidity rates of PTSD and other mental health symptoms in refugees and war-affected populations (Ikin et al., 2010; Mollica et al., 1998; Momartin et al., 2004; Reavell & Fazil, 2017). This is also consistent with studies showing a close relationship between multiple traumatic events and enhanced likelihood of comorbid psychiatric symptoms (Hodges et al., 2013; Suliman et al., 2009). Moreover, we found positive correlations between PTSD, depression and insomnia. Specifically, insomnia was strongly related not only to hyperarousal but also to other symptom clusters of PTSD. Results of the path analysis supported the hypothesized associations among trauma exposure, PTSD, depression and insomnia.

The path model indicated that trauma exposure affected insomnia symptom severity through trauma-related symptoms, i.e. PTSD and depression. This confirms the previous finding of a dose response relationship between exposure to multiple traumatic events and insomnia (Lee et al., 2016; Wang et al., 2016). Our findings are also consistent with studies showing that PTSD provides a link between trauma exposure and depression (Ikin et al., 2010; Kim, 2016; Momartin et al., 2004; Reavell & Fazil, 2017; Subica et al., 2012). Furthermore, PTSD affected insomnia symptom severity only through depression in the path model. This suggests that elevated levels of sleep problems in refugee populations may be explained by trauma-related symptoms, especially depression. Therefore, we argue that the presence of depression associated with PTSD increases the risk for developing sleep

problems in refugees. In other words, the greater levels of PTSD suffer, the greater the likelihood for developing sleep problems via depression.

Our findings have important clinical implications. Firstly, the present study indicates that the identification of depression associated with PTSD is needed to identify potential candidates that may develop sleep problems later on. In terms of early stage assessment, clinicians and professionals could pay attention to assess depression associated with PTSD to screen individuals with higher risk of sleep problems. Secondly, in the context of intervention strategy, our findings may be useful to indicate which symptoms should be targeted first to reduce sleep problems of refugees. For example, if sleep problems are related to the presence of depression associated with PTSD, a failure to treat sleep problems may thus be due to persistence of PTSD symptoms. Finally, from the viewpoint of post-treatment evaluation, the improvement of sleep problems may be indicative of good treatment outcomes in the treatment of trauma-related psychological disorders. Weinhold et al. (2017) argue that improvement in sleep quality can be considered as an important condition for treatment outcome regarding PTSD symptoms. Considering our finding of the relation between PTSD, depression and insomnia, treating PTSD may result in the improvement in depression symptoms, leading to improved sleep.

There are limitations to the present study. First, the limited sample size may have reduced the accuracy of the statistics. However, values for all indices in the path model represented good model fit with a higher cut-off that is recommended when sample size is small. In addition, our measure was based on retrospective self-report and self-reported symptoms that may include some reporting bias.

The present study extends the existing knowledge and study of sleep problems of refugees and indicates how sleep problems relate to trauma-related symptoms, i.e. PTSD and depression. Our findings call for further investigation of the specific relationship between

sleep problems and trauma-related symptoms, leading to more effective evaluation and intervention for refugee populations.

4. Effects of Narrative Exposure Therapy on posttraumatic stress disorder, depression, and insomnia in traumatized North Korean refugee youth

4.1 Abstract

Refugees affected by multiple traumatic stressors are at high risk for developing trauma-related mental disorders, including posttraumatic stress disorder (PTSD), depression, and insomnia, which is sometimes overlooked. This study examined the effectiveness of narrative exposure therapy (NET) on trauma-related symptoms in a sample of North Korean refugee youth. The study focused on sleep patterns in addition to changes in symptom severity for PTSD, depression, and internalizing and externalizing symptoms. North Korean refugee youth ($n = 20$) with PTSD were assigned to either an NET-based treatment group or a control group, which consisted of treatment as usual (TAU). There was a clinically significant reduction in PTSD, depression, and internalizing and externalizing symptoms for the NET group, Hedges' $g = 3.6$, but not the TAU group. The change in diagnostic status for PTSD was more notable for participants in the NET group compared to the TAU group. Of note, NET also produced a significant improvement in insomnia symptoms and sleep quality, Hedges' $g = 2.1$. The substantial recovery regarding overall posttraumatic symptoms in the NET group was observed 2 weeks after the end of treatment and remained stable at 6-month follow-up. The results of the present study suggest that NET may be a treatment option for traumatized North Korean refugee youth and may also be effective for the treatment of sleep problems that arise from traumatic experiences.

Keywords: Narrative Exposure Therapy; PTSD; depression; insomnia; refugee youth

4.2 Introduction

Displaced populations, such as refugees and asylum seekers, have often experienced multiple traumatic stressors (Augsburger et al., 2017; Ibrahim & Hassan, 2017; Reavell & Fazil, 2017). The more traumatic stressors an individual experiences, the higher the probability they will have trauma-related mental disorders, including posttraumatic stress disorder (PTSD), depression, and insomnia (Hodges et al., 2013; Wang et al., 2016; Wilker et al., 2015). Consequently, variable but generally high rates of PTSD and comorbid symptoms of depression and insomnia have been reported among refugees and war-affected populations (Bogic et al., 2015; Chung et al., 2018; Kazour et al., 2017; Madianos et al., 2011; Miller et al., 2005; Stander et al., 2014).

In recent reviews of psychological interventions for refugees and asylum seekers, trauma-focused treatments have been found to be the most efficacious and promising interventions for treating PTSD in traumatized refugees (Nickerson et al., 2011, 2017). In a briefing paper of the *International Society for Traumatic Stress Studies* (Nickerson et al., 2017), the authors recommended further studies with refugees to investigate the efficacy of treatments in improving psychological symptoms beyond PTSD as well as broader outcomes of treatments. Limited evidence exists regarding whether cognitive behavioral treatment, such as Prolonged Exposure Therapy, Cognitive Processing Therapy, and Cognitive Therapy for PTSD, improves sleep disturbances among traumatized individuals (Brownlow et al., 2016; Gutner et al., 2013; Woodward et al., 2017). However, the question whether the high rates of insomnia among refugees with PTSD can be treated through trauma-focused interventions has not yet been addressed.

Narrative exposure therapy (NET; Schauer et al., 2005, 2011) can be effectively applied in the treatment of refugees, even in individuals with high levels of PTSD and insomnia. NET is a trauma-focused intervention that was developed to address PTSD and

mental distress resulting from multiple traumatic stressors. A large number of randomized controlled trials have suggested that NET decreases PTSD symptoms (Hensel-Dittmann et al., 2011; Hijazi et al., 2014; Neuner, Schauer, & Elbert, 2018; Ruf et al., 2010; Stenmark et al., 2013) and other trauma-related mental health symptoms, including those associated with depression, dissociation, borderline personality disorder (BPD) and general stress (Alghamdi et al., 2015; Orang et al., 2018; Pabst et al., 2014; Robjant et al., 2017). However, to our knowledge, the only previous study to examine the effects of NET on various sleep parameters was conducted by Weinhold et al. (2017), who used a small sample of individuals with BPD and comorbid PTSD. Their results suggest that NET may reduce sleep onset latency and arousal. However, to date, no studies have examined the effect of NET on a change in sleep patterns in traumatized refugees.

North Korean refugee youth affected by organized violence and poverty in their home country or during flight have reported high rates of multiple trauma exposures and high levels of subsequent trauma-related symptoms, including PTSD, depression, insomnia, and behavioral problems (Kim & Shin, 2015; Kim, 2016; Lee, Lee & Park, 2017; Park et al., 2019). However, little is known about effective and useful evidence-based interventions for treating traumatized North Korean refugee populations (Lee et al., 2017). There is a lack of published research that has examined the effects of trauma-focused interventions on PTSD in North Korean refugee youth, specifically research that compares such therapies with other intervention approaches.

The present study aimed to test the extent to which trauma-related symptoms can be addressed by trauma-focused treatment in a sample of North Korean refugee youth. We compared NET to treatment as usual (TAU), focusing on insomnia and sleep quality in addition to changes in symptoms of PTSD and depression symptoms. We also examined

changes in internalizing and externalizing symptoms. We hypothesized that NET would result in a significantly larger reduction in clinical symptoms and sleep problems compared to TAU.

4.3 Method

4.3.1. Participants

Participants were 20 North Korean refugee youth with a mean age of 19 years (range: 16-24 years). Individuals were assigned to either the NET ($n = 9$) or TAU group ($n = 11$) in sequential order. Assignment to groups followed convenience in the organizational process due to its environmental constraints and independent of individual characteristics. The two groups did not differ with respect to sociodemographic characteristics or number of experienced traumatic events. Regarding mental health symptom indices, somewhat higher values for depression symptom severity were found among participants in the TAU group (see Table 4.1, for demographics and test scores). One participant had received outpatient pharmacological treatment for probable attention deficit and hyperactivity disorder the start of the study, and this individual's medication was kept constant during the study. Participant flow is represented in Figure 4.1.

Table 4.1

Sociodemographic characteristics and mental health symptom indices

Variable	NET		TAU		<i>p</i>
	(n = 9)		(n = 11)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Age, years	18.89	1.05	18.73	2.72	.869
Number of traumatic event types	5.44	1.59	5.73	1.62	.700
Mental health symptoms					
PTSD	48.0	6.44	49.45	10.13	.714
Insomnia	16.67	4.72	18.09	4.74	.512
Sleep quality	12.11	2.89	13.36	3.11	.367
Depression	13.0	6.0	17.64	3.5	.045
Internalizing and externalizing symptoms	16.78	5.24	19.18	3.46	.234

Note. NET group: *n* = 6 girls and women, *n* = 3 boys and men; TAU group: *n* = 9 girls and women, *n* = 3 boys and men. NET: Narrative Exposure Therapy, TAU: treatment as usual; PTSD = posttraumatic stress disorder.

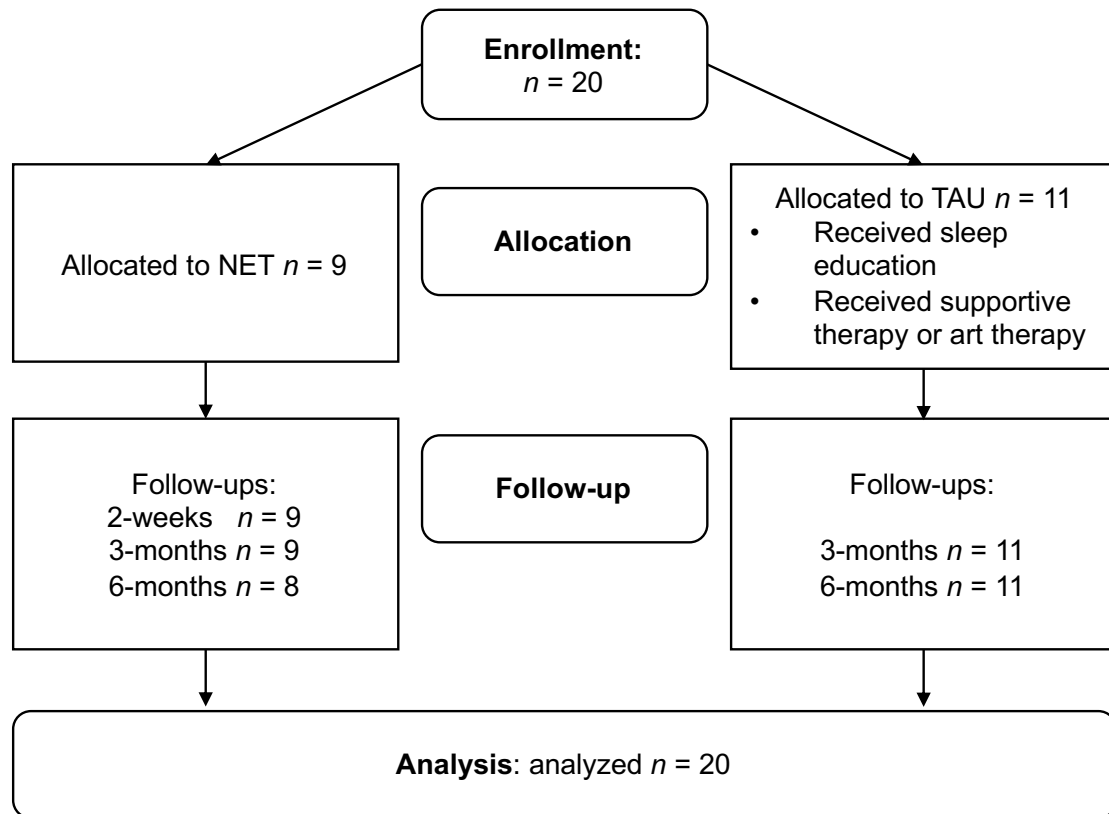


Figure 4.1. Flow of participants through the study. Note. NET: Narrative Exposure Therapy; TAU: treatment as usual group

4.3.2. Procedure

The Ethical Review Board of the University of Konstanz and the Samsung Medical Center Institutional Review Board approved this study. This clinical trial was registered in ClinicalTrials.gov ID: NCT02852616, the study protocol is also available from the authors. This study was conducted in Seoul, the capital of South Korea between July 2018 and April 2019. All participants were recruited through an alternative school for youth from North Korea and children of North Korean refugees who were born in China. A group of 81 students were screened before admission into the study. Inclusion criteria was a diagnosis of

PTSD according to criteria in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Exclusion criteria were severe psychotic disorder, neurological disorder, acute suicidal behavior, or intellectual disabilities. All participants, and parents for all minors, provided written informed consent. Pretest assessments (t0) were conducted in Korean by a clinical psychologist as well as a counseling professor who worked with traumatized individuals. To test the immediate effects of NET, a posttest assessment was conducted after 2 weeks after treatment completion (t1) for the NET group. For both groups, follow-up time points were 3 (t2) and 6 months (t3) after the end of treatment. To reduce potential sources of assessment bias, follow-up assessments were conducted by a trained researcher who had not participated in the therapy portion of the study. If participants in the TAU group still fulfilled the criteria for PTSD at the last follow-up examination, they were immediately offered NET.

4.3.3. Treatment

4.3.3.1. NET

The NET condition comprised five to 10 individual sessions ($M = 8$ sessions), which were 90–120 min each. NET was performed in accordance with the manual, as outlined by Schauer et al. (2011) and its Korean translation (Choi & Park, 2014). The first author, a clinical psychologist who had been trained in NET and had previously delivered treatment to traumatized individuals, carried out the treatment in Korean. Supervision included documentation of cases and communications by e-mail or telephone. In NET, the participant constructed a chronological narrative of his or her entire life span with a focus on exposure to traumatic experiences with assistance of the therapist. After psychoeducation, the first session started with a lifeline within which the participant gave a short overview concerning his/her

entire life. The therapist recorded the narrative in written form and read this record to participants in the next session. This allowed participants to properly locate their experiences in the past and the corresponding context and be able to report the traumatic experiences without mental distress.

4.3.3.2. TAU

In the TAU condition, participants continued to receive their usual care, which included supportive therapy or art therapy, depending on the needs determined by the institution. The TAU condition contained 10 to 15 individual sessions of 40–60 min each as well as one session that covered sleep education, during which participants were educated in a 1-hr group session, conducted by a psychiatrist, about the nature, prevalence, prevention, and intervention of sleep disorders.

4.3.4. Measures

4.3.4.1. PTSD diagnosis and symptoms

Diagnosis and severity of PTSD were assessed using the UCLA PTSD Index for DSM-5 (UPID; Elhai et al., 2013a, 2013b; Steinberg et al., 2013), which is the revision of the UCLA Child/Adolescent PTSD Reaction Index for DSM-IV. The UPID includes 27 items designed to measure PTSD symptoms as well as four items that assess the PTSD dissociative subtype. Respondents rate each item on a scale of 0 (none) to 4 (most of the time), based on past-month symptom frequency. Severity of PTSD was calculated by summing the scores for all items related to PTSD symptoms, with a cutoff score of 38 (range: 0–80). In the present sample, Cronbach's alpha was .81.

4.3.4.2. *Insomnia symptoms*

Insomnia symptoms were evaluated using the seven-item Insomnia Severity Index (ISI; Bastien et al., 2001), which assesses sleep difficulties over the last 2 weeks, using a scale of 0 (*none*) to 4 (*very severe*). The total sum score is defined as the severity of insomnia and interpreted as follows: none (0–7), subthreshold (8–14), moderately severe (15–21), and severe insomnia (22–28). In the present sample, Cronbach's alpha was .79.

4.3.4.3. *Sleep quality*

Sleep quality was assessed using the 19-item Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989), which contains items related to past - month sleep quality and disturbances. Respondents are asked to rate items on a scale of 0 (*not during the past month*) to 3 (*three or more times a week*). The Cronbach's alpha value was .76.

4.3.4.4. *Depression symptoms*

Depression symptoms were assessed using the nine-items Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001), which is designed to measure the severity of depression over the last 2 weeks. Respondents are asked to rate items on a scale of 0 (*not at all*) to 3 (*nearly every day*). Scores are summed to indicate depression severity, with higher scores representing a higher level of severity. In the present sample, Cronbach's alpha was .80.

4.3.4.5. *Internalizing and externalizing symptoms*

Internalizing and externalizing symptoms were measured with the 25-item Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), which consists of five subscales:

Emotional Symptoms, Peer Problems, Conduct Problems, Hyperactivity, and Prosocial Behavior. Each subscale includes five items, which respondents are asked to rate on a scale of 0 (*not true*) to 2 (*certainly true*). In the present study, symptom severity was generated by summing the scores from all the scales except the Prosocial subscale (range: 0–40). The Cronbach’s alpha value in the present sample was .77.

4.3.5. Data Analysis

Data analyses were performed using SPSS (Version 25.0). Group differences for sociodemographic and clinical variables at baseline were examined using Fischer’s exact test and t tests. For outcome measures, linear mixed effects models were used to analyze changes from t0 to t3. To evaluate the development of clinical symptoms between pretreatment and follow-ups, we calculated a series of repeated-measurement analyses of variance (ANOVAs) for the PTSD severity score and the scores for the different symptoms, with treatment condition (NET, TAU) as the between-group factor and time point (t0, t2, t3) as the repeated-measures factor. Changes from t0 to t2 and t3 within the NET group were calculated by linear mixed models as well as paired t tests for post hoc comparisons. A Bonferroni correction was applied to control the family-wise error rate and compute the adjusted p values. Mauchly’s tests were performed for testing the sphericity assumption. For cases in which the assumption was violated, the Greenhouse-Geisser correction was used. In the NET group, one participant completed the 2-week and 3-month follow-up interviews but did not participate in the 6-month follow-up. We included this participant in the analysis by using the “last observation carried forward” method. Hedge’s g was used to calculate effect sizes for both conditions with regard to the overall symptoms, and eta squared was calculated as an effect size for the omnibus ANOVAs.

4.4 Results

4.4.1. Comparison of NET and TAU Over Time

There was a significant group difference in scores of all clinical characteristics (see Table 4.2, Figure 4.2 and 4.3). For PTSD symptom severity, we found a significant main effect of time, $F(1.48, 36) = 38.28, p < .001, \eta_p^2 = .68$; treatment, $F(1, 18) = 20.89, p < .001, \eta_p^2 = .54$; and the Group x Time interaction, $F(1.48, 36) = 14.97, p < .001, \eta_p^2 = .45$. Symptoms of PTSD were significantly reduced in the NET group from t0 to t3, Hedges' $g = 3.57, p < .001$; but not in the TAU group, Hedges' $g = 0.70, p = .382$. Six months after treatment, five of the 11 participants in the TAU group still met the criteria for a PTSD diagnosis, whereas all participants of the NET group had lost their diagnostic status, Fischer's exact test $p = .038$. Regarding the UPID cutoff score for PTSD, six participants in the TAU group (54.5%) scored at or above the cutoff of 38 as compared to only one participant in the NET group (11.1%).

For insomnia, we found significant main effects for Group x Time, $F(1.36, 36) = 7.13, p = .008, \eta_p^2 = .28$; time, $F(1.36, 36) = 25.04, p < .001, \eta_p^2 = .58$; and treatment, $F(1, 18) = 7.35, p = .014, \eta_p^2 = .29$. Participants in the NET group showed a substantial decline in insomnia symptoms from t0 to t3, Hedges' $g = 2.14, p = .001$; but those in the TAU group did not, Hedges' $g = 0.66, p = .211$. Regarding sleep quality, a substantial improvement was found in among participants in the NET group from t0 to t3, Hedges' $g = 2.16, p < .001$, but not among those in the TAU group, Group x Time: $F(2, 36) = 4.02, p = .027, \eta_p^2 = .18$; time: $F(2, 36) = 17.22, p < .001, \eta_p^2 = .49$; and treatment: $F(1, 18) = 10.71, p = .004, \eta_p^2 = .37$. Furthermore, participants of the NET group reported more reduced symptom scores on both UPID and ISI from t0 to t3 than those of the TAU group (see Figure 4.4). In particular, the

greater the reduction in PTSD symptoms, the greater the improvement in insomnia symptoms, indicating a relationship between PTSD and insomnia symptom change scores.

A repeated measure ANOVA for depression revealed no significant interaction of group and time, $F(1.38, 36) = 1.12, p = .322, \eta_p^2 = .06$, but there was a significant main effect of both time, $F(1.38, 36) = 17.07, p < .001, \eta_p^2 = .49$; and treatment, $F(1, 18) = 12.25, p = .003, \eta_p^2 = .41$, whereby a significant reduction from t0 to t3 was found for both, Hedges' $g = 1.50, p = .011$, for the NET group; Hedges' $g = 1.31, p = .020$ for the TAU group. At the symptom level, however, there were significant results at various follow-up time points, depending on type of treatment. Compared to participants in the TAU group, those who received NET reported significantly lower depression scores at t2 ($M = 13, SD = 5.6$ vs. $M = 5.8, SD = 7.1$, respectively), $p = .020$, and t3 ($M = 12.5, SD = 4.3$ vs. $M = 4, SD = 6$, respectively), $p = .002$. For internalizing and externalizing symptoms, we found a significant Group x Time interaction, $F(2, 36) = 4.89, p = .013, \eta_p^2 = .21$. There was a significant reduction in symptoms from t0 to t3 among participants in the NET group, Hedges' $g = 0.99, p = .042$, but not in the TAU group, Hedges' $g = 0.15, p = 1.00$. The results remained statistically significant after correcting for multiple testing. Between-condition effects were medium in magnitude for depression and large for all other symptoms.

4.4.2. Changes in the NET Group Over Time (changes from t0 to t3)

There was a significant time effect for all clinical symptoms among participants in the NET group (Table 4.2) for PTSD, $F(3, 24) = 76.41; p < .001, \eta_p^2 = .91$, for depression, $F(1.69, 24) = 10.21; p = .003, \eta_p^2 = .56$, for insomnia, $F(3, 24) = 20.66; p < .001, \eta_p^2 = .72$, for sleep quality, $F(2.04, 24) = 10.94; p = .001, \eta_p^2 = .58$, and for internalizing and externalizing symptoms, $F(3, 24) = 8.76; p < .001, \eta_p^2 = .52$. Significant reductions, with

large effects, were found between t0 and t1 for PTSD, $p < .001$; insomnia, $p = .042$; sleep quality, $p = .025$; and depression, $p = .012$. Similar results were observed between t0 and t3 for the same variables, with p values of $< .001$, $.001$, $.010$, and $.023$, respectively. For internalizing and externalizing symptoms, changes between t0 and t1 and between t0 and t2 were significant, $p < .001$ and $p = .018$, respectively. Overall, NET elicited a substantial reduction that was observed shortly after treatment completion, and its effect was stable for at least 6 months posttreatment (see Figure 4.2).

Table 4.2

Changes in Clinical Characteristics in the Narrative Exposure Therapy (NET) and Treatment as Usual (TAU) Groups

	Pre-test		2-week		3-month		6-month		Statistics	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Group x Time	main effect time for NET
PTSD symptoms										
NET	48.0	6.44	11.33	10.49	9.0	12.53	9.44	13.87	14.97***	76.41***
TAU	49.45	10.13	-		41.09	15.82	39.91	16.45		
Insomnia symptoms										
NET	16.67	4.72	10.56	4.72	6.78	7.34	4.11	6.83	7.13**	20.66***
TAU	18.09	4.74	-		14.45	7.17	14.55	5.94		
Sleep quality										
NET	12.11	2.89	6.56	3.13	6.56	4.61	4.33	4.21	4.02*	10.94**
TAU	13.36	3.11	-		10.81	3.43	10.82	3.34		
Depression symptoms										
NET	13.0	6.0	4.11	4.08	5.78	7.1	4.0	6.02	1.12	10.21**
TAU	17.64	3.5	-		13.0	5.59	12.45	4.34		
Internalizing and externalizing symptoms										
NET	16.78	5.24	9.56	4.88	11.44	7.81	10.56	7.14	4.89*	8.76***
TAU	19.18	3.46	-		19.64	3.78	18.55	4.84		

Note. PTSD = posttraumatic stress disorder, * $p < .05$. ** $p < .01$. *** $p < .001$.

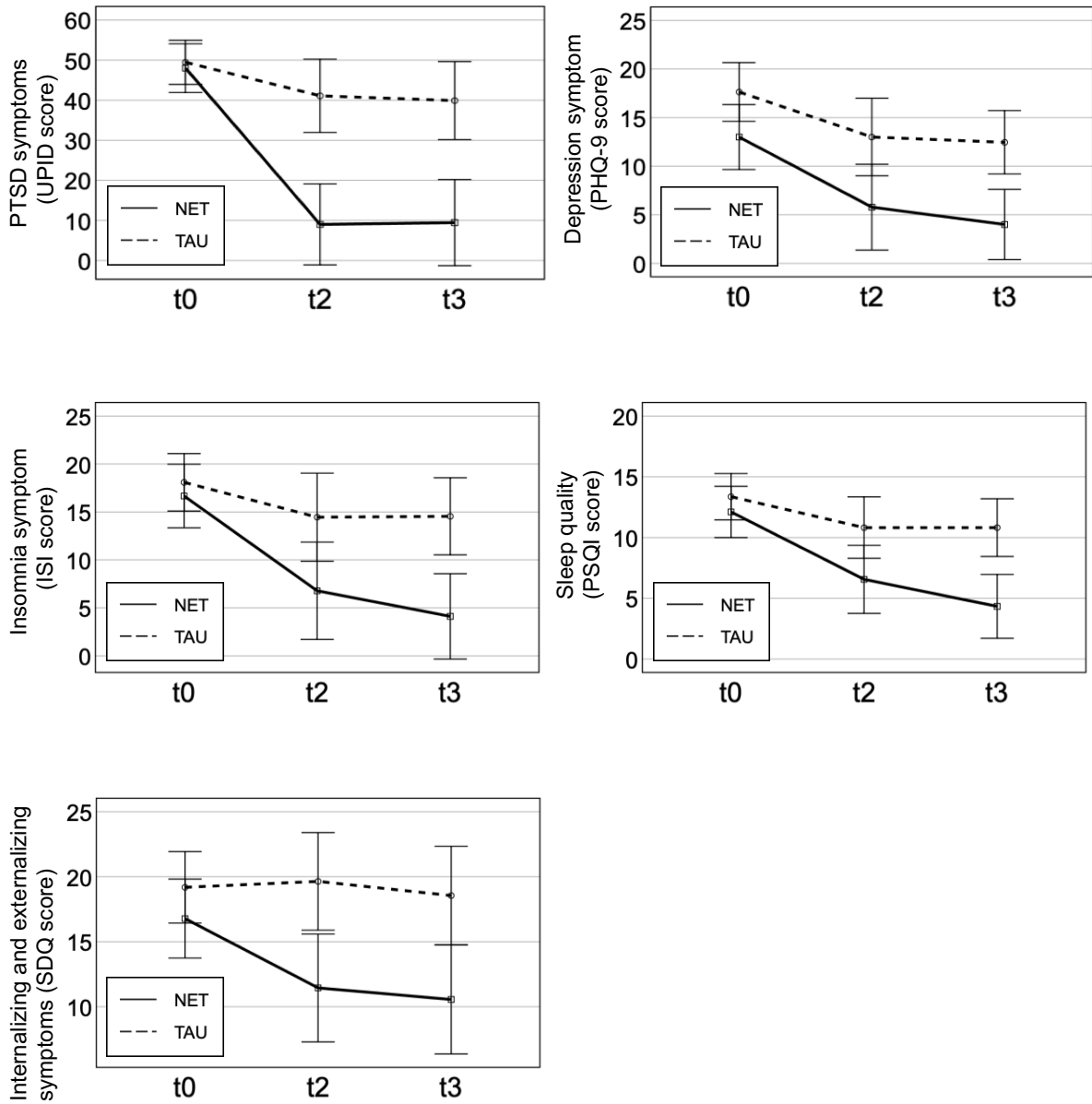


Figure 4.2. Changes in symptom severity before treatment and at follow-ups in the narrative exposure therapy (NET; $n = 9$) and treatment-as-usual (TAU; $n = 11$) groups

Note. Bars represent 95% confidence intervals. PTSD = posttraumatic stress disorder; t0 = pretreatment; t2 = 3-month follow-up; t3: 6-month follow-up; UPIID = UCLA PTSD Index; PHQ = Patient Health Questionnaire; ISI = Insomnia Severity Inventory; PSQI = Pittsburgh Sleep Quality Index = SDQ: Strengths and Difficulties Questionnaire.

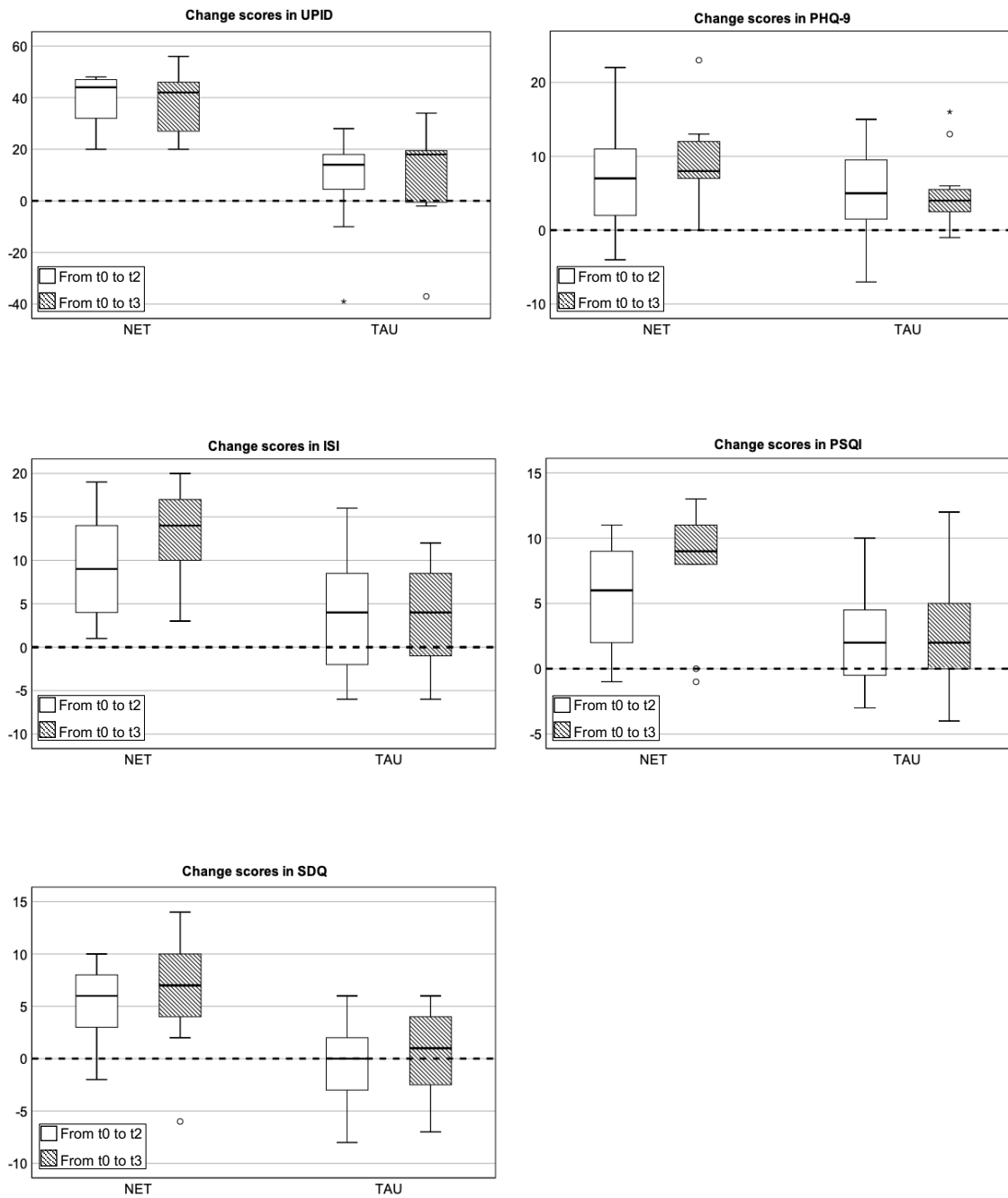


Figure 4.3. Box plots of change scores before treatment and at follow-ups in the NET ($n = 9$) and the TAU ($n = 11$) group

Note. NET: Narrative Exposure Therapy; TAU: treatment as usual group; UPID: UCLA PTSD Index C/A DSM-5, PHQ-9: Patient Health Questionnaire, ISI: Insomnia Severity Inventory, PSQI: Pittsburgh Sleep Quality Index, SDQ: Strengths and Difficulties Questionnaire. A score of zero represents no change in symptom severity. Positive score indicates symptom improvement, whereas negative score means symptom aggravation.

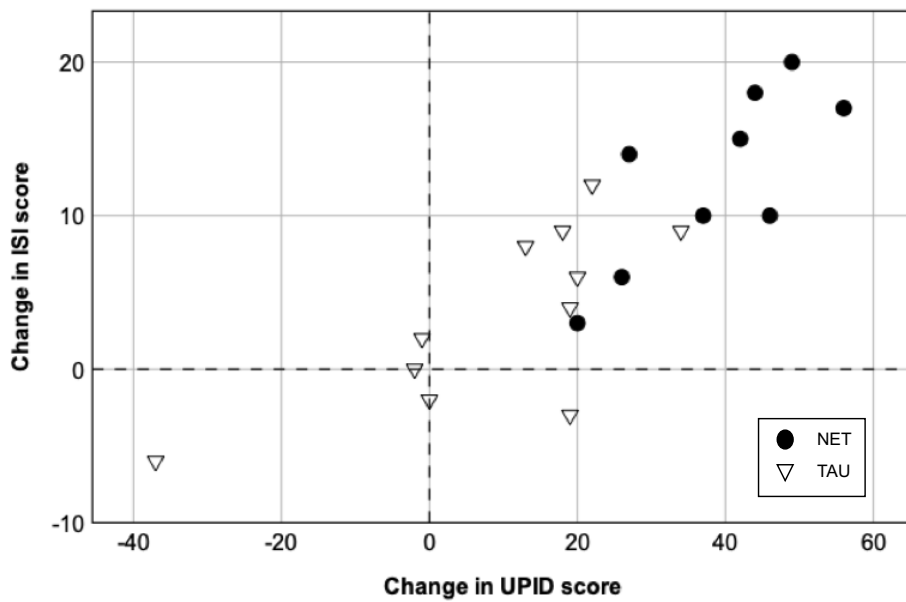


Figure 4.4. Grouped scatter of change scores of PTSD and insomnia symptoms between pretreatment and the 6-month follow-up (from t0 to t3)

Note. NET: Narrative Exposure Therapy; TAU: treatment as usual; UPID: UCLA PTSD Index, ISI: Insomnia Severity Inventory. A score of zero represents no change in symptom severity. Positive score indicates symptom improvement, whereas negative score means symptom aggravation.

4.5 Discussion

The present study investigated the effectiveness of NET in the treatment of traumatized North Korean refugee youth. Consistent with the reported effects of NET on traumatized populations (Alghamdi et al., 2015; Halvorsen & Stenmark, 2010; Neuner et al., 2018; Orang et al., 2018; Pabst et al., 2017; Robjant et al., 2017), we found a clinically significant reduction in PTSD, depression, and internalizing and externalizing symptoms among participants in the NET group. The change in the diagnostic status for PTSD was more notable in participants who were given NET than those who engaged in TAU. Regarding depression, it is important to note that although a symptom reduction was observed in both the NET and TAU conditions, the reduction found in the NET group was significantly larger and clinically important, and participants in the TAU group reported clinical levels of remaining PTSD and depression symptoms after treatment completion. NET is an evidence-based, trauma-focused treatment that contextualizes traumatic memories in time and space, reducing the perceived threat and stress by the reconstruction of a coherent life narrative (Schauer et al., 2011). Given the strong treatment effect found for NET on both PTSD and depression symptoms in the present study, we propose that proper processing of traumatic memories resulted in the reduction of not only PTSD but also depression for participants in the NET group. The present findings suggest that NET, with its trauma-focused component, appears to be more effective than TAU in the treatment of depression in North Korean refugee youth with PTSD.

Additionally, NET produced a significant improvement in insomnia symptoms and sleep quality, whereas TAU did not. Our findings concur with reported findings that have shown CBT to be more effective than non-trauma-focused therapy for treating sleep problems in individuals with PTSD (Brownlow et al., 2016; Woodward et al., 2017) as well as findings that have demonstrated changes in some sleep parameters after NET (Weinhold et al., 2017). The study by Weinhold et al. (2017), however, found no effect of NET on the subjective data

of the PSQI, which we used to assess sleep quality in the present study. One possible explanation for this inconsistent result may be the different sample populations (i.e., medicated clients with severe BPD vs. unmedicated refugee youth with PTSD). Considering previous evidence showing that PTSD may provide a link, via depression, between trauma exposure and insomnia in North Korean refugee youth (Park et al., 2019), the therapeutic improvement in sleep problems we found in the NET group seems to be associated with the reduced PTSD and depression symptoms achieved through trauma-focused intervention. This assumption is supported by our findings of residual sleep problems in the TAU group despite improvement in depression symptoms and a session on sleep education as well as by congruent results observed in previous studies, which have indicated an association between sleep disturbance and PTSD symptom severity (Belleville, Guay, & Marchand, 2011; Brownlow et al., 2016). Indeed, studies with individuals with PTSD have shown improving self-reported sleep quality following CBT (Gutner et al., 2013; Nishith et al., 2003). Our findings suggest that an improvement in sleep may indicate successful treatment outcome with respect to PTSD. The fact that the NET group showed no remaining clinically relevant sleep problems after treatment is incongruent with some previous evidence that has shown residual sleep difficulties to be observed in treatment responders after successful treatment of PTSD (Belleville et al., 2011; Brownlow et al., 2016; Gutner et al., 2013). In their review of treatment of sleep disturbances in PTSD, Schoenfeld, DeViva, & Manber (2012) pointed out that additional interventions may be required to address posttraumatic sleep problems even after successful treatment. We suggest further studies to replicate and extend the present findings to understand the ways in which the treatment component and mechanisms of NET affect sleep.

The present study had some limitations worth mention. Most notably, the sample size was small, and there was a lack of random group assignment. Due to the limited sample size,

we were not able to control the preexisting group difference in depression nor could we assess whether depression was a mediator or moderator of the treatment effects.

In conclusion, the results of our study suggest that North Korean refugee youth with PTSD can be treated effectively through trauma-focused intervention in the short term. Among the present sample, NET was more effective than TAU for the treatment of posttraumatic symptoms in North Korean refugee youth, and the NET intervention demonstrated lasting benefits. In addition, this was, to date, the first study of which we are aware to demonstrate the effect of NET on changes in sleep patterns in traumatized refugees. The results of the present study suggest that NET appears to be a treatment option for traumatized North Korean refugee youth and may also be effective for the treatment of sleep problems in relation to traumatic experiences.

5. General Discussion

The present thesis examined exposure to violence and trauma, and its relation to PTSD and depression in North Korean refugee youth compared to South Korean youth. Further, the relationships between PTSD, depression, and insomnia were investigated in North Korean refugee youth seriously affected by multiple trauma. The effectiveness of NET was examined to address the question whether North Korean refugee youth with PTSD can be effectively treated through trauma-focused treatment.

5.1 Discussion of the results

In chapter 2, higher rates of family and organized violence in addition to general traumatic events, and higher levels of mental health problems were found in the North Korean sample compared to the South Korean sample. The present findings support a link between organized violence and elevated rates of family violence among refugee populations (Catani et al., 2008; Palosaari et al., 2013; Saile et al., 2014). The cumulative experiences of political oppression and trauma could be one reason for the more frequent family violence among North Korean refugee youth. In this regard, Timshel et al. (2017) suggest that the more risk factors an individual experiences at individual, familial, societal, and cultural levels, the higher the likelihood they will experience violence in the home. Moreover, a combination of cultural values and parenting norms as well as political context might influence the prevalence of family violence among North Korean refugee youth. Moreover, family violence and the amount of traumatic events among North Korean refugee youth were found to be a risk factor that enhances the likelihood of developing PTSD and depression. North

Korean refugee youth are therefore at higher risk of developing PTSD and depression than their South Korean peers.

In chapter 3, high rates of comorbidity of PTSD, depression, and insomnia were found in the North Korean sample who have experienced a greater number of traumatic events. The finding is consistent with previous results of a close relationship between multiple traumatic events and enhanced likelihood of comorbid psychiatric symptoms in refugees and war-affected populations (Hodges et al., 2013; Ikin et al., 2010; Reavell & Fazil, 2017). The symptom severity of PTSD among North Korean refugee youth was related to insomnia, and this relation appeared to be mediated by depression. The frequent depression among North Korean refugee youth with PTSD may thus explain their elevated levels of sleep problems. In addition, there was no difference in trauma exposure between North Korean refugee youth born in China and those born in North Korea, indicating that a considerable percentage of both groups have experienced multiple types of traumatic events.

In chapter 4, the effectiveness of NET on trauma-related symptoms was examined in a sample of North Korean refugee youth born in North Korea or in China. The results suggest that NET with its trauma-focused component seems to be more effective than the non-trauma-focused treatment for addressing both clinical symptoms and sleep problems of North Korean refugee youth. The change in the diagnostic status for PTSD was more notable in participants who were given NET than those who were given TAU. Participants of the NET group showed a clinically significant reduction in sleep disturbances as well as in PTSD, depression, and internalizing and externalizing symptoms, whereas participants of the TAU group reported clinical levels of remaining symptoms. The findings are in line with previous evidence showing the effects of NET on PTSD, depression, and some sleep parameters (Neuner et al., 2018; Weinhold et al., 2017), and also concur with the findings of more effectiveness of CBT on sleep problems of individuals with PTSD than non-trauma-focused

therapy (Brownlow et al., 2016; Woodward et al., 2017). Considering that PTSD may affect insomnia symptoms through depression in North Korean refugee youth, the improvement in symptoms of PTSD and depression through trauma-focused intervention may result in improved sleep of the youth.

5.2 Implications for the future

The present thesis presents some clinical implications and future research challenges. Firstly, considering complex history of violence exposure and its impact on mental health of young people who fled North Korea, it is recommended to assess family violence in addition to general traumatic events and organized violence to identify high risk groups for PTSD and depression. In addition, family-level prevention and early intervention services for North Korean refugee youth should be developed and implemented to prevent family violence and foster positive parenting strategies. National and regional policies for North Korean refugee families who were resettled in South Korea may also reduce the use of physical discipline methods towards children that might be related to severe physical abuse.

Secondly, the present thesis indicates how sleep problems relate to both PTSD and depression, and also demonstrates the effects of NET on changes in clinical symptoms and sleep patterns of North Korean refugee youth with PTSD. Considering the contribution of PTSD and depression on insomnia, clinicians and professionals could pay attention to the symptoms of depression associated with PTSD to screen an individual with higher risk of sleep problems when assessing traumatized North Korean refugee youth. Trauma-focused treatment with reorganization of traumatic memories may be a prerequisite to normalize sleep in traumatized individuals as the first-line treatment for insomnia. As treating PTSD and depression may be important to reduce dysfunctional sleep patterns relating to traumatic

stress, it is recommended to identify which symptoms should be targeted first to reduce sleep problems of refugees with PTSD. However, it is unclear whether depression intensifies sleep problems in traumatized individuals or sleep problems aggravates depression, representing a vicious cycle. Further research is required for addressing this question and also for understanding the treatment component and mechanisms of NET affecting sleep. Further, an early intervention program should be developed and implemented to apply NET to North Korean refugee youth with PTSD. Along with this, it is recommended to examine whether NET can be effectively delivered by local trained staff such as mental health professionals working with North Korean refugee youth.

Finally, the narration that are produced and prepared by experts during the NET sessions can be used for documentary purposes. Feeding back the narrations as anonymous testimony within the Korean community will increase empathy for the suffering of North Korean refugee youth, and also provide a deep understanding of the history of Korean society. The testimonies may further be used as advocacy tools for North Korean refugees' rights, and also encourage traumatized North Korean refugee youth to take a treatment and share their own stories. This approach can be the healing process for North Korean refugee youth that not only improve the mental health but also integrate them into Korean society.

5.3 Overall conclusion

The present thesis extends the existing knowledge of stress, mental disorders, and its treatment approach for North Korean refugee youth. North Korean refugee youth have been exposed to the cumulative experiences of general traumatic events, organized violence, and the more frequent family violence than South Korean youth. Consequently, North Korean refugee youth are at higher risk of developing PTSD and depression compared to their South Korean peers. In addition to developing treatment approach for posttraumatic symptoms, it is also necessary to develop and implement family violence prevention and intervention programs for North Korean refugee youth living in South Korea that may help reduce the likelihood of developing PTSD and depression. Further, North Korean refugee youth who have experienced a greater number of traumatic events are more likely to have comorbid PTSD and depression that may lead to high levels of sleep problems. Considering the contribution of PTSD and depression on insomnia, addressing both PTSD and depression may be important to prevent and reduce dysfunctional sleep patterns in traumatized North Korean refugee youth. NET appeared to be more effective than the non-trauma-focused treatment for treating sleep problems as well as clinical symptoms in North Korean refugee youth with PTSD. This strong treatment effect of NET on PTSD, depression, and insomnia suggests that NET may be a useful psychotherapeutic intervention for North Korean refugee youth with PTSD, and may also be effective for the treatment of sleep problems in relation to traumatic experiences.

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