Trauma, personality function, and posttraumatic reactions: A retrospective and prospective study of traumatized refugee patients

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It is never too late
To be met by gentleness
To feel understood
To feel human
Among humans

Marianne Opaas

Table of Contents

Acknowledgements i

Summary iii

List of Papers vi

Concepts in this thesis vii

1. Introduction 1

Traumatization 2

Cultural aspects of traumatization and treatment 4

The special nature of refugee trauma 5

2. Theoretical Perspectives 8

Childhood attachment, trauma, and development 8

Brain development 9

Theoretical perspectives on traumatization 11

3. Research findings 15

Personality-related functions and traumatization 15

Effects of potentially traumatic childhood experiences 17

Refugee mental health and quality of life 18

Clinical refugee samples 20

4. The Rorschach Method 22

Cultural differences and the Rorschach method 23

Rorschach findings in relation to traumatized individuals 23

Rorschach prediction of treatment outcome and change 24

5. Background to this study 25

Population, immigrant mental health, and treatment of refugees in Norway 25

The need for further studies 26

'Treatment and Rehabilitation of Traumatized Refugees' - Research program..... 27
Objectives of the PhD Study 27
6. Methods 29
Design 29
Ethical considerations 30
Participants 30
Treatment and therapists 32
General procedures 33
Instruments and assessment methods 34
Statistical Methods 37
7. Results 40
Main findings 42
8. Discussion 47
The salience of childhood trauma 47
Two trauma-related personality dimensions 48
Different qualities of reality testing 52
Opposite trajectories after treatment start 54
Childhood trauma and reality testing difficulties: a connection? 54
Other aspects of our findings 54
Methodological Reflections 56
If I could start again 58
9. Strengths, limitations, and conclusions 59
Strengths and limitations 59
Implications 60
Conclusions 61
References 63
APPENDIX and Papers I, II, and III 78

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In science, one often has to choose between breadth and depth. Both approaches offer valuable insights. In our research, we wanted to study refugee mental health with contextual breath and also to search in-depth for understanding in some areas. Our research has a quantitative design, but is also partly explorative, and in that sense closer to the qualitative tradition. Furthermore, I wanted to place my scientific endeavor in context, theoretically, scientifically, and geographically. Space restrictions did not allow me to do more than touch upon some themes and refer to a small part of existing research. Moreover, I was only able to pay a limited degree of special attention to my Norwegian and Nordic colleagues in the field, which I would have liked to have done to a greater extent. In the wealth of material produced by this research program, I have addressed only a few research questions and aims.

Oslo, Oct. 8, 2015 *Marianne Opaas*

Summary

Many refugees have experienced traumatic events over extensive periods of their lives, including their early, formative years. Experience of multiple or prolonged traumatic events, especially interpersonal trauma, has profound effects on the individual, but the immediate and long-term responses to such events vary. Traumatized refugees with mental health symptoms requiring treatment often do not receive the mental health care needed. Among refugee patients who receive treatment, there are significant individual differences in initial mental health and quality of life, treatment outcome, and other long-term outcome. Even with more or less improvement, only a few recover their health and function, and many refugee patients remain with a high symptom burden, low function, and low quality of life after treatment. Despite a growing research base concerning refugees' mental health, we still know little about the factors that contribute to such differences. The overall aim of this doctoral study was to investigate some understudied areas which might contribute to more understanding of refugees' differing trajectories both after traumatic experiences and after treatment. This thesis investigates the implications of adverse childhood experiences, potentially traumatic experiences of war and human rights violations, and personality factors for the mental health and wellbeing of adult refugee patients.

Fifty-four adult patients with histories as refugees and trauma survivors were recruited into the study over the years 2006 to 2009 as they entered outpatient treatment in mental health specialist services. The design was naturalistic and longitudinal, with no restraints on therapeutic approach or treatment duration. Each participant was assessed several times over the course of three years. We used interviews and assessment instruments common and less common to the field of refugee mental health. Our aim was to provide new insights as well as being able to compare our data with findings from research of similar patient groups. We interviewed the adult participants extensively about their life-history, childhood adverse events, the war-related and other traumatic events that had led to their flight, and the course of events after flight. We also used the Rorschach personality assessment method at treatment start. The Rorschach is a performance-based method which provides data about the individuals' mental and emotional functions, like the way they perceive, structure, evaluate, and react to objects and events in the outside world, especially in new and potentially stressful situations. In addition, we used self-report inventories to record symptoms of posttraumatic stress disorder (reexperiencing, arousal, and avoidance symptom clusters), anxiety, depression, and four aspects of quality of life (physical health, psychological health, social relationships,

and environmental conditions), which were repeated several times along with a qualitative interview. Finally, we recorded their employment history and status at various times and their Norwegian skills as observable aspects of their daily life function. We also recorded information about the therapists and about treatment length, the number of sessions, dates of treatment start, terminations, and any restarts, and the clinician-determined diagnoses.

In Paper I, we studied adverse events experienced in childhood, and potentially traumatic events related to war- and human rights violations (HRVs), mostly experienced in early adulthood. These potentially traumatic events were analyzed in relation to participants' mental health, quality of life, and aspects of their function in daily life. We found that adverse and potentially traumatic experiences during childhood were more strongly related to their mental health and quality of life at treatment start, than experiences exclusively related to war, persecution, and other HRVs, experienced more recently. This was so even though the war- and HRV-related precursors to flight happened on average 10 years before T1 assessment while childhood adversities happened on average 20 to 30 years before the assessment. Among the kinds of adverse childhood experiences we identified, we found that experiences of family violence and external violence had the clearest (statistical) effect on measures of mental health and quality of life at treatment start.

In Paper II, a principal component analysis ('factor analysis') of selected, trauma-related Rorschach variables resulted in a finding of two components or personality dimensions that characterized the way these individuals functioned when under relative stress. We named the two dimensions of personality function 1) '*Trauma Response'*, which quantified the way the participants responded to the assessment along a continuum from constriction (*i.e.,* restrained or limited associative and emotional activity) to flooding (*i.e.,* traumatic intrusions, emotional regulation problems, and logical breaches in thinking), and 2) '*Reality Testing'*, which quantified the participants' responses to the assessment along a continuum from impaired to adequate reality testing (*i.e.,* ability to notice ordinary aspects of the environment and perceive events and objects in ways that correspond with realities and the ways others are able to perceive them). The components' relationship to pretreatment measures showed that Reality Testing was more strongly related to the participants' overall mental health and well-being than the other, more trauma-specific variable. The *Trauma Response* dimension was significantly and positively related to *reexperiencing/intrusive symptoms of PTSD.* This means that more flooded responses were related to more reexperiencing symptoms. The *Reality Testing* dimension, on the other hand, was significantly related to *anxiety* and most aspects of *quality of life*, in that more impaired

Reality Testing was associated with more anxiety and poorer quality of life.

In Paper III we analyzed the degree to which the two personality dimensions of Paper II could predict mental health, quality of life, and daily life function, and their changes, over a course of three years. We also examined any relationships between these personality variables and treatment length and frequency. At the three-year follow-up, 43 % of all participants were (still) in treatment or were about to start again. The participants' mean results showed statistically significant improvements in depression, anxiety, PTSD, and quality of life, but the individual variation in outcome was pronounced. After three years and varying lengths and intensities of treatment, most participants still qualified for a mental health diagnosis. We found that higher scores on the Reality Testing dimension *continued to predict better functioning* during follow-up. None of the Rorschach dimensions significantly predicted the *amount* of overall improvement. However, *a pattern* emerged in which participants with adequate Reality Testing improved markedly the first year after treatment start and retained their improvement, whereas participants with impaired Reality Testing deteriorated the first year after treatment start and had not fully regained their relatively better T1-level by the end of the three years.

Findings in our study of participants' multiple adverse childhood experiences compounded by numerous war-related experiences later on, problems with (perceptual) reality testing, severe and complex traumatization characterized by intrusive and emotional flooding or constriction, reduced functioning, and the chronicity of these conditions in the participants were analyzed in relation to attachment theory, trauma theory, findings from neuroscience, and existing research in the refugee and trauma fields. Two different qualities of reality testing difficulties evidenced in this study are discussed.

The problems with reality testing identified in this study were of an apparently trauma-based nature, not to be confused with the reality testing difficulties of psychotic patients. Our results indicate that adverse childhood experiences and difficulties with reality testing, of a mainly perceptual nature, add to the suffering and reduced function experienced by refugee patients. Our findings point to the importance of addressing adverse childhood experiences in research and in psychotherapy with adult refugees. Furthermore, the results suggest the importance of working to enhance the patients' capacity to perceive the context of events fully, in order to support their reality testing of potentially stressful relational and other experiences in their daily life.

List of Papers

I. Opaas, M. & Varvin, S. (2015). Relationships of childhood adverse experiences with mental health and quality of life at treatment start for adult refugees traumatized by pre-flight experiences of war and human right violations. *Journal of Nervous and Mental Disease, 203*, 684-695.

II. Opaas, M. & Hartmann, E. (2013). Rorschach assessment of traumatized refugees: An exploratory factor analysis. *Journal of Personality Assessment, 95*, 457-470.

III. Opaas, M., Hartmann, E., Wentzel-Larsen, T., & Varvin, S. (2015). Relationship of pretreatment Rorschach factors to symptoms, quality of life, and real-life functioning in a three-year follow-up of traumatized refugee patients. *Journal of Personality Assessment*. 1-14. http://dx.doi.org/10.1080/00223891.2015.1089247. The published version in print: *Journal of Personality Assessment, 2016, 98,* 247-260.

Concepts in this thesis

Human rights violations (HRVs). The term HRVs refers to events that may be included under the heading "organized violence", which involves torture, cruel, inhuman, or degrading treatment and punishment, imprisonment without trial, mock executions, hostage taking, and any form of violent deprivation of liberties (Sveaass & Lavik, 2000). HRVs denote violations of rights ascertained by the Universal Declaration of Human Rights, especially Article 5: "No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment", and Article 9: "No one shall be subjected to arbitrary arrest, detention or exile" (The United Nations, 2011).

Refugee. The United Nations' definition of a refugee is: Any person who because of a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, has to flee his or her country and is unable to return there owing to serious threats to life, physical integrity or freedom resulting from generalized violence or events seriously upsetting civic order (United Nations High Commissioner of Refugees, 2011). In this thesis, I do not use the term refugee in its strict juridical sense, but generically to refer to individuals who have fled their countries due to war and HRVs. Though it can be discussed how long one continues to be a "refugee", I also use the term irrespective of residency and the number of years spent in the country of exile. I use the term '*traumatized refugees'* broadly to refer to individuals with a background as a refugee, and with potentially traumatizing experiences related to war and HRVs, and with mental health disorders.

Exile, living in exile. Exile from the land of one's birth may mean banishment, expulsion, expatriation, deportation ("Oxford Paperback Thesaurus," 2006). 'Living in exile' will refer to life in a country that is not one's country of origin, which was not chosen out of free will, but was arrived at as a result of having to flee.

Trauma. The concept of *trauma* has its origin in medicine, referring to bodily injury caused by external violent events. In the psychological and psychiatric literature, trauma has been used both to refer to a highly adverse or violent event itself, and to its psychological effects on the individual. Examples of events that are expected to be traumatizing to many or most people are natural catastrophes, violent or devastating loss in close relationships, dramatic and life-threatening accidents, torture, violent attacks, and witnessing other people being killed or molested. There are unclear boundaries between what constitutes traumatic events and what should be regarded as simply adverse or highly stressful events (*e.g.,* Briere, 2004; Weathers & Keane, 2007).

Interpersonal trauma refers to traumatic experiences related to other human beings, such as early and devastating losses in close relationships, abuse, and neglect. Human-caused trauma may be accidental, but events caused deliberately by the acts or decisions of other human beings, organizations, or authorities, such as abuse, rape, torture, persecution, and warfare have more serious repercussions (Briere, 2004).

Extreme or complex trauma. I use terms like *extreme or complex trauma/ traumatization* to signify severe, recurring, or manifold events/experiences of interpersonal violence, often combined with other adversity.

Potentially traumatic/ traumatizing events or experiences. The term '*potentially traumatic events'* acknowledges that it is the individual's response that determines whether an event is "traumatic" (*e.g.*, Weathers & Keane, 2007. The term *potentially traumatizing events/experiences (PTEs)* will be used in this thesis to refer

to harmful, dangerous, or hurtful events or experiences that, depending on the circumstances, may or may not have had a traumatizing effect. I use 'traumatic' or 'traumatizing' to describe adverse events or experiences that outweigh an individual's capacity to cope psychologically, giving rise to feelings of being emotionally overwhelmed, and leading to symptoms of psychological disorder and other bio-psycho-social problems.

'Adverse childhood experiences' refers here to the experience of negative events during upbringing that may or may not have been traumatizing, such as loss of caregivers in early childhood, being verbally, emotionally, physically or sexually abused by caregivers, or being exposed to other severe and shocking events within or outside the family.

Personality/personality function. The 'personality' of an individual refers to that individual's characteristic ways of responding to the environment, comprising values, beliefs, preferences, and the more stable components of psychopathology (McGrath, 2008). Differently stated, 'personality' comprises relatively stable patterns of ways of perceiving, thinking, feeling, and acting in specific situations and relationships across time (Huprich & Bornstein, 2007). The prevailing patterns, for example in times of crises or at treatment start, may be termed the individual's personality function at the time of evaluation. Thus, I think of 'personality function' as the personality "in action" in a given context of time and situation, thus potentially less stable and less comprehensive than 'the personality' of an individual.

Emotional regulation is the process of modulating the intensity of feelings so that they become manageable or optimal through soothing or enhancing strategies internalized from care-takers, further developed by later experiences and mental effort. Emotional regulation depends on more stable individual capacities which are also affected by contextual factors (Labouvie-Vief, Grühn, & Mouras, 2009). Gratz and Roemer (2004) suggested four central aspects of emotion regulation: (a) awareness and comprehension of one's emotions, (b) acceptance of one's emotions, (c) ability to control impulsive behaviors when experiencing negative emotions, and (d) ability to use emotion regulation strategies flexibly and appropriately to meet individual goals.

Posttraumatic stress symptoms. Posttraumatic stress is associated with multiple symptoms and difficulties in life (see the introductory chapters). The specific symptoms of *Posttraumatic Stress Disorder (PTSD)* referred to in this thesis are related to the definition given in DSM-IV (APA, 1994; see the Appendix) due to the assessment instrument used. Core symptom groups in the DSM-IV criteria for PTSD were intrusive/reexperiencing, arousal, and avoidance/numbing symptoms. More criteria are taken into account in DSM-5 (APA, 2013; see the Appendix). Reactions to extreme or complex trauma may involve more fundamental disturbances in aspects of personality function such as emotional regulation, cognition, and ability to form, and function in, interpersonal relationships (see *e.g.*, ICD-10 diagnostic criteria for 'Enduring Personality Change After Catastrophic Experience' in the Appendix).

Quality of life (QOL). The term QOL refers generically to the subjective evaluation by individuals of their health, living conditions, and well-being. In our study, it refers specifically to the (results of the) instrument used, where QOL is defined as "... a broad-ranging concept affected in complex ways by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment" (WHOQOL Group, 1998).

Daily-life function/real-life function. These terms refer to ordinary aspects of living outside the assessment situation, such as taking care of one's nourishment, health, hygiene, dressing, tending to one's living quarters, getting around, obtaining what one needs, communicating, working, studying or being engaged in some

activity.

The Rorschach/the Rorschach Inkblot Method (RIM). The Rorschach (Rorschach, 1942) is a personality assessment method originally developed by the Swiss psychiatrist and psychoanalyst Hermann Rorschach (1884 – 1922), consisting of 10 cards with "inkblots" or suggestive, ambiguous images; five in shades of black and white, two in black, white, and red, and three in pastel colors. During the *Response phase*, the ten cards are shown one by one and the simple question posed to the individual is: "What might this be?" The task is to propose what the inkblots might look like. During *Inquiry*, which is a second round going through the ten cards and the responses given to each, further details are asked for in order to clarify what made the participant perceive the picture this way (including *localization*, *content*, *color use*, *texture*, *perspective*, and perception of *movement)*.

To complete this task, the participant must use his or her perceptual, cognitive, and affective resources (Meyer, Viglione, Mihura, Erard, & Erdberg, 2011; Weiner, 2003). Responses to the Rorschach can be classified and scored quantitatively. The Comprehensive System (CS), developed by Exner (2003) is the most widely used scoring system. In 2012, the Rorschach Performance Assessment System (R-PAS) was launched by Meyer, Viglione, Mihura, Erard, and Erdberg, designed to be a "psychometrically sound and research-based improvement of the available Rorschach systems" (Viglione, Towns, & Lindshield, 2012). The Rorschach has been found equally reliable and as valid as other widely accepted personality assessment instruments, such as the MMPI (Meyer & Viglione, 2008), and has demonstrated good reliability and validity cross-culturally (Meyer, Erdberg, & Schaffer, 2007).

Principal components analysis (PCA), a 'factor analytic method'. PCA is a statistical method for analyzing a number of variables to find patterns of variables that vary together, thought to reflect an underlying process or dimension producing the correlation between the variables. Component/factor scores are standardized measures based on the contribution of each variable to the component.

Flooding/flooded. I use this term to represent indications of strong, unregulated emotional reactions, intrusive imagery, and thought disturbances, implying an experience of being overwhelmed.

Constriction/constricted. I use this term to represent indications of limited emotional, cognitive, associative, and verbal activity. Constriction implies restraint in freedom of movement, action, expression, or feeling. Constriction is a familiar term in psychoanalytic writings (*e.g.*, Kardiner, 1941) but in the general trauma field, 'avoidance' and 'emotional numbing' are used to indicate aspects of constriction.

Reality testing is the process by which we discriminate between external and internal stimuli, between perceptions of actual objects in the world and non-real objects imagined or hallucinated by the mind (Buchanan, 2010). Hartman (1956) described reality testing as "taking the "real" features of an object or a situation into account, in perception, thinking, and action" (p. 32).

Note.

The meaning of abbreviations is repeated in major parts of the thesis in order to increase the accessibility of the text and allow for reading of the thesis in parts. I also use abbreviations to a lesser degree in the summary, discussion, and conclusion.

Variable names are capitalized, *i.e.* 'Reality Testing' refers to the principal component extracted from our factor analysis, while 'reality testing' refers to the generic meaning of the term.

1. Introduction

Refugees from war-ridden and repressive regimes often seek to flee to other countries for protection. Although the majority of refugees take shelter in neighboring – often developing – countries, nations world-wide have a responsibility to reach out to persecuted individuals and peoples. Many refugees turn to Western countries in the hope of safety and a better life, and many risk their lives on the perilous journey. Refugees represent a challenge to solidarity, to economies, legal systems, reception routines, and systems for integration, rehabilitation, and treatment. Refugees and immigrants also offer opportunities for cultural enrichment, a strengthened labor force, and new insights. The presence of refugees is a reminder of the suffering of people in more distant parts of the world, and of the historical and political processes that have contributed to the instability and violence in these countries.

By the end of 2014, the total number of people forced to flee from their home regions was close to 60 million people worldwide and only a small percentage of these refugees live in developed countries (United Nations High Commissioner for Refugees, 2015). Due to current crises in Syria and other regions in Africa and the Middle East, great numbers of refugees are at present seeking to travel to Europe for protection.

Refugees come from countries at war or with oppressive regimes witch severely limit individual freedom and rights. Oppressive regimes foster secrecy, denial, disclosure, and severe mistrust between people. Pain and suffering are blamed on the individual, and submission, fear, and a blurred sense of reality may develop (Sveaass & Lavik, 2000). In many countries and regions, repeated wars or repressive conditions may have persisted throughout several generations, giving rise to multigenerational trauma.

Refugees' experiences include human rights violations (HRVs) suffered in interpersonal interactions like physical assaults and torture, or by order of authorities, as in warfare and oppression. The perpetrators aim to create fear, to harm and kill, to produce a state of helplessness, and to break down dignity and self-respect, thereby curtailing individuals as well as religious, ethnic, and political groups. Experiences like these are undergone in hostile and aggressive surroundings with few opportunities for psychological self-repair or help from others. HRVs, devastating experiences of war, and dangers experienced during flight often add up to repeated, overwhelming experiences, likely to lead to severe traumatization (*e.g.*, Lavik, Nygård, Sveaass, & Fannemel, 1994). Many refugees need mental health treatment, but even in developed countries, refugees often do not receive

the treatment and opportunity to recuperate they need (Sveaass, 2013). When treatment is offered, many refugee patients do not recover at rates and to degrees expected from psychotherapy outcome studies (see *e.g.*, Boehnlein et al., 2004; Carlsson, Olsen, Kastrup, & Mortensen, 2010; Lambert, 2013).

In the psychotherapy research literature, a positive treatment outcome has been linked to patients' personal characteristics, such as secure attachment, high ego strength, low self-criticism, motivation, openness to experiencing and to emotion, and moderate positive expectations, as well as patients' preferences regarding therapeutic approach, patients' beliefs, and motivations (Bohart & Wade, 2013). Severe initial symptoms and great impairment in functioning have predicted poorer outcomes (Clarkin & Levy, 2004). In addition, early or sudden treatment gains within the psychotherapy process have been associated with better outcomes and deterioration and sudden losses in treatment gains to poorer outcomes of psychotherapy (*e.g.*, Lutz, et al., 2013).

Traumatization

Research into traumatization has led to important insights: Human-caused and intentional acts of violence and abuse are associated with more severe or long-lasting suffering and are found to be a stronger predictor of posttraumatic stress disorder (PTSD) than accidents and natural catastrophes; people vary in their response to trauma according to their personal history, personality, the context of the event(s), the individual's perception of the event(s), and the response of close persons and society at large; previous exposure to potentially traumatizing events renders the individual more vulnerable to developing PTSD after additional adverse events; and, finally, traumatization in childhood may result in particularly increased vulnerability to further trauma (*e.g.*, Briere, 2004).

The repeated finding of *a dose-response relationship* between trauma exposure and mental health symptoms has underlined the need to examine the broad scope of adverse and potentially traumatic events in an individual's life, and not just focus on one major trauma and its assumed effects (*e.g.*, Weathers & Keane, 2007). The relationship between the extent, number or severity of trauma events and the severity of PTSD is not straight-forward (*e.g.*, McNally, 2003); the timing of experiences is also important. Eckart et al. (2012) lend support to Briere and Spinazzola's (2005) suggestion of a complexity continuum ranging from the responses of adults with a secure childhood and sound psychological health to a single traumatic event, such as a car accident, at one end, to the increasingly complex responses to early onset, multiple, prolonged, and interpersonal traumatic events happening to vulnerable

individuals, at the other end.

In the Norwegian young adult population, Amstadter, Aggen, Knudsen, Reichborn-Kjennerud, and Kendler (2013) found that 26.5% had experienced one or more potentially traumatic events (PTEs) in their life. In the adult population, Thoresen, Myhre, Wentzel-Larsen, Aakvaag, and Hjemdal (2015) found that 27.8% (my calculation of their figures) had been victims of one or more kinds of sexual and/or physical/psychological violence and neglect in childhood and 16.5% (*idem*) had experienced at least one category of interpersonal violence in adulthood. Large population surveys in other countries have shown that many people experience one or more PTEs during their lifetime, *e.g.*, 49.5% to 67.0% of adult populations in Australia, Europe, and the USA (Creamer, Burgess, & McFarlane, 2001; Darves-Bornoz et al., 2008; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Usually, only a small portion of those exposed individuals develop PTSD, but the likelihood increases with exposure to more PTEs. The kinds of PTEs most likely to be associated with PTSD included rape, childhood physical abuse, and combat exposure. Significant gender differences have been found in the degree of exposure to PTEs (men more exposed), the types of PTEs experienced (women more exposed to interpersonal trauma like rape and childhood abuse), and the rate of PTSD (more frequent among women), suggesting that trauma type may be an important factor in the greater vulnerability to PTSD found in women (Amstadter et al., 2013).

Arguments for an additional diagnosis, related to the complex consequences of extreme and prolonged trauma (*e.g.*, Herman, 1992), led to the inclusion of the diagnosis 'Enduring Personality Change after Catastrophic Experience' in the International Classification of Diseases (ICD-10; World Health Organization, 1994; see the Appendix), in addition to a PTSD diagnosis. However, the American Psychiatric Association (1994) chose not to include a special diagnosis for complex reactions in their diagnostic system (The Diagnostic and Statistical Manual of Mental Disorders, DSM-IV). The DSM-IV included a PTSD-diagnosis with reexperiencing, arousal, and avoidance symptoms as the main symptom groups (see the Appendix). However, research among traumatized individuals has frequently documented other reactions to trauma such as dissociation and feelings of intense anger, guilt, shame, and grief (*e.g.*, Aakvaag, Thoresen, Wentzel-Larsen, Røysamb, & Dyb, 2014; McNally, 2003; Weathers & Keane, 2007). In DSM-5 (American Psychiatric Association, 2013), the definition of PTSD was expanded also to include negative alterations in cognitions and mood, including blame of self and others, anger, guilt, and shame, and alterations in reactivity, including self-destructive recklessness and interpersonal irritability.

Importantly, it has been noted that psychiatric disorders seldom occur alone, and that

this is especially true for PTSD (Van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005). Van der Kolk and colleagues asserted that traumatic reactions depend on the context and on the individual's developmental stage. They advocated extending trauma research to the full range of psychological impact, *e.g.*, to disturbances in perception, information processing, affect regulation[1], impulse control, and personality development.

Cultural aspects of traumatization and treatment

In this thesis, cultural aspects of traumatization, research and treatment are not in the foreground. However, cultural factors color the patients' manifestation of symptoms, the professionals' understanding of their patients and of psychosocial and bodily phenomena, and they shape the way disorders are described and diagnosed. Furthermore, what evokes emotional distress and the way such distress is experienced and expressed varies in different cultures. A major question has been the extent to which Western diagnoses and Western therapies can be applied to individuals from other parts of the world (*e.g.*, Carlsson, Sonne, & Silove, 2014; Hinton & Lewis-Fernández, 2011; Kienzler, 2008; Summerfield, 2000). It has been questioned whether research from the general trauma field can be used to inform the refugee trauma field and whether ordinary assessment instruments may be used, or whether they should be culturally tailored (Carlsson et al., 2014). Another discussion has been the extent of cultural competence and cultural tailoring needed in the treatment of refugees and other patients from non-Western cultures (*e.g.*, Ekblad & Kastrup, 2013).

The existence of some common cross-cultural human reactions to extreme stress is indicated by the fact that some symptoms of PTSD have been found to occur after exposure to trauma in societies with very different cultures (Hinton & Lewis-Fernández, 2011). Depression also seems to occur among all ethnic groups, but is experienced and expressed differently across cultures (Kleinman, 2004). At any rate, flexibility and openness towards the many cultural blends and different expressions of these conditions is important, as has been stated by Carlsson et al. (2014). They noted that, with time, refugees gradually adapt to the culture of the host country, and their beliefs and values become a mixture of the original and new cultures. The present author speculates that, with time, refugees' expression of mental health suffering may also be shaped by a blend of the original and new cultures.

In treating traumatized refugees, challenges thus include the therapists' potential unfamiliarity with the cultural backgrounds of their patients, the patients' unfamiliarity with

[1] Affect regulation is a broad construct including emotional regulation, coping, and mood regulation (Gross, 2014).

Western culture and forms of therapy, and the effects of complex trauma and acculturative stress experienced by refugees. Murray, Davidson, & Schweitzer (2010) reported that mental health programs directed at culturally homogenous client groups were four times more effective than those directed at culturally heterogeneous client groups. They recognized, however, that the heterogeneity of refugee groups in Western countries often make culturally targeted interventions and research difficult.

Carlsson et al. (2014) asserted that there was a need to make research an integral component of services for refugees in Western countries. Cultural concerns, human rights concerns, and political considerations had so far restrained research in the field of refugee trauma and treatment, they argued. Furthermore, ethical considerations over the vulnerability of refugees had made clinicians and researchers hesitant to conduct research among this patient group. Carlsson et al. recommended that it was time to resolve such concerns.

The special nature of refugee trauma

Refugees have often experienced multiple, repeated, or long-lasting HRVs, interpersonal violence, and devastating losses (Lie, Lavik, & Laake, 2001). The adverse and potentially traumatizing experiences of refugees contain many of the factors most likely to lead to PTSD (Briere, 2004). Military attacks, violent losses, and forced displacement, as well as HRVs such as torture, rape, suppression, persecution, detention, and imprisonment without just trial are characterized by being human-caused, intentional, and more or less directly interpersonal. They interrupt multiple areas of life and relationships. HRVs and the sum of adverse pre-flight, flight and post-flight experiences induce insecurity, fear, and grief, may lead to strong resentment and anger (Steel et al., 2011), or for some, to guilt and shame (Furukawa & Hunt, 2011). HRVs affect adaptive systems connected with personal safety, attachment, and maintenance of close relationships. Such experiences also affect the afflicted individuals' sense of justice and arouse existential anxieties in areas such as a person's sense of meaning, identity, and role functioning, which are vital to the psychological balance of both individuals and communities (Allen, Vaage, & Hauff, 2006).

When refugees have suffered from massive or repeated exposure to highly adverse events, sometimes in addition to unsafe conditions and loss of caregivers and other close persons during upbringing, they can be considered extremely or complexly traumatized (Herman, 1992; Van der Kolk et al., 2005; Varvin & Rosenbaum, 2003). Extreme traumatization affects the individual broadly, reflected in the complex patterns of symptoms found among refugee patients in clinical settings (*e.g.*, Carlsson et al., 2014). Cognitive,

emotional, bodily, and relational functioning may be disturbed. The capacity to work, study, and take part in social life is disrupted. Physical health also suffers (e.g., Afari et al, 2014). Sometimes the disturbances turn into disorders and conditions that become chronic (Krystal, 1978; Shalev et al., 1998, Rosenbaum & Varvin, 2007).

In refugee populations, the mean number of exposures to diverse kinds of PTEs is found to be high, though the number and kind of trauma events assessed vary across studies. In a large, systematic review and meta-analysis of studies comprising more than 80,000 refugees and other conflict-affected persons from 40 countries, Steel et al. (2009) found that across these studies, subjects had experienced a mean of 29% of the number of PTEs that were asked about. The prevalence of reported torture was 21%. In clinical samples, particularly in specialized clinics for refugees, the reported number of trauma events and severity of trauma exposure has been high. Exposure to torture was reported among 81% of the patients in a study by Carswell, Blackburn, and Barker (2011) and among 80% of patients at the Rehabilitation and Research Centre for Torture Victims (RCT; name today: Dignity, Danish institute against torture) in Copenhagen (Carlsson et al., 2010). The reported prevalence of disorders in clinical refugee samples varies, but is generally much higher than in population-based refugee studies.

In addition to the potentially detrimental psychological effects of experiencing severe trauma, Sveaass and Lavik (2000) argued for a moral dimension to the individual's requirement for restitution. They underlined the injustice suffered and the individual's cognitive need to understand what had happened to them, their emotional need for the perpetrator(s) to be punished, and their social need for authorities to accept responsibility and to publicly acknowledge the survivors' losses and suffering. This moral dimension, they argued, interacts with psychological mechanisms in the efforts of the victims to regain health and restore their lives. Sveaass and Lavik concluded that, most likely, among the majority of refugees, such restoration of a sense of justice had not occurred. Therefore, it would be more difficult for healing processes to work effectively.

A high frequency of mental health problems, low quality of life, and multiple problems experienced with living in exile, have been documented among recently arrived refugees (*e.g.*, Buchwald, Manson, Dinges, Keane, & Kinzie, 1993; Jakobsen, Thoresen, & Johansen, 2011; Lindencrona, Ekblad, & Hauff, 2008; Sulaiman-Hill & Thompson, 2012) and also among individuals with refugee backgrounds many years after settlement (*e.g.*, Bogic et al., 2012; Hermansson, Timpka, & Thyberg, 2002; Marshall, Schell, Elliott, Berthold, & Chun, 2005; Steel, Silove, Phan, & Bauman, 2002; Vaage et al., 2010). The mental health of

exiled refugees was found to be poorer than that of compatriots who remained in the area of conflict (Bogic et al., 2012; Porter & Haslam, 2005).

Mental health treatment programs directed at severely traumatized refugees have existed for the last 40 years, but the research base is still small, and, so far, there is not sufficient documentation to demonstrate the superior effect of specific treatment methods in treating traumatized refugees (Carlsson et al., 2014; Claassen, Ascoli, Berhe, & Priebe, 2005; Crumlish & O'Rourke, 2010; Nickerson, Bryant, Silove, & Steel, 2011; Nicholl & Thompson, 2004). In a broad review of intervention studies for adult survivors of torture and trauma, McFarlane and Kaplan (2012) concluded that refugees are helped by a wide array of psychological treatments. Significant improvements in symptoms of PTSD, depression, anxiety, or somatic symptoms were found in 90% of the studies after the intervention. However, despite statistically significant mean improvements, many researchers have noted the chronicity of symptoms and the limited treatment gains among refugee patients: only a portion of the patients improve, and few improve to the point of not qualifying for a mental health diagnosis any more (Boehnlein et al., 2004; Carlsson, Mortensen, & Kastrup, 2005; Hermansson et al., 2002; Kivling-Boden & Sundbom, 2001). Furthermore, in clinical refugee samples, research has not been able to identify factors associated with patients who improve and those who do not improve (Boehnlein et al., 2004; Carlsson, Olsen, Mortensen, & Kastrup, 2006).

Although I focus on individual qualities in this thesis, the development of illness after traumatic experiences rests not only on individual qualities, but in decisive ways also on environmental factors present after the trauma (Simich & Andermann, 2014). At any rate, many individuals exposed to highly adverse events have shown *resilience*, the ability to retain positive adaptation/maintain a stable equilibrium in the face of significant threat, severe adversity, or trauma (Bonanno, 2004; Cicchetti, 2010; Luthar & Zelazo, 2003). Some individuals develop symptoms of traumatization initially, and then recover or even experience a health-enhancing effect of coping with traumatic events (Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003; Papadopoulos, 2007). Papadopoulos underlined that there are different levels of suffering after traumatic experiences, also, from ordinary human suffering and distressing psychological reactions, both of which can usually be handled with support from family and friends and by drawing on one’s capacity for resilience, to psychiatric disorder, requiring professional assistance.

2. Theoretical Perspectives

Traumatized refugee patients' long-term suffering with their mental health, their childhood traumatization, and their problems with emotional regulation and reality testing are central to this thesis. I focus here on theories relating to emotional, perceptual, and cognitive development and processes related to traumatization, aiming to shed light on potential ways in which traumatization may have contributed to participants' responses in our personality assessment, and more broadly, to their mental health difficulties and other problems with functioning. My theoretical understanding of childhood trauma, later trauma, and psychological processes involved in traumatization, is broadly anchored in a psychodynamic tradition, with insights from developmental psychology, neurocognitive science, and object-relations/attachment theory. Sigmund Freud (1896) was a pioneer in alerting therapists and the public to the importance of childhood experiences – and to the importance of childhood trauma for mental disorders emerging at a later stage of development.

Childhood attachment, trauma, and development

John Bowlby (*e.g.,* 1988) made a decisive contribution to psychology with *object relations theory,* showing the importance of the relationship between infants and their caregivers for the provision of a fundamental sense of security. According to his theories, the infant has inborn behavioral systems, one of which is directed at maintaining proximity to the caregiver, with the aim of securing protection, comfort, and social learning (Davila & Levy, 2006). Each behavioral system includes both outward behavior and the inner organization, evolving further through neurophysiological processes influenced by genetics and environmental conditions (Ainsworth, 1989). Early relationships are internalized and influence how the individual will experience similar relationships in the future.

According to *attachment theory,* the small child learns what responses can be expected from its caregivers through attachment behaviors such as crying, smiling, and approaching. These expectations are generalized and become internal working models (*e.g.*, Goldman & Anderson, 2007). Specific patterns of attachment behavior formed by these working models come into play when the child/individual feels insecure or in danger. Secure childhood attachment allows for an emerging sense of self and others, normal emotional development, and ability to be aware of and reflect upon different internal states. Secure attachment and protection give rise to benign inner representations of others, and are vital to the individual's ability to endure and handle stress from within or without. Good attachment experiences

enable the individual to symbolize and work through adverse events and thus contribute to resilience in the face of present or later potentially traumatic events.

Without secure attachment to a caregiver, a child may become disorganized psychologically and turn to disengagement and dissociation as survival strategies when experiencing painful affect and bodily sensations. Such dissociation may turn into a characterological defense against a wide array of stressors in life, which may have a detrimental effect on the continuity and sense of self and of personal identity. Such turning away from internal emotional and bodily states also disturbs the ability to recognize, understand, and integrate information from internal and external events, and the ability to distinguish one's self from others (Schore, 2002). Abuse inflicted by or related to an attachment figure in early life may disturb vital aspects of the child's personality development, such as object relationships and reality testing, especially when there is a lack of other trusted caregivers who can respond empathically, affirming the validity of the child's experience (Bowlby, 1988; Haviland, Sonne, & Woods, 1995). Freud (1914) proposed that reality monitoring, the capacity to distinguish between externally and internally generated perceptions of reality develops step by step through life and remains vulnerable to being lost at times of stress. In a similar vein, Fonagy and Target (2005) posited that benign inner objects and safe attachment patterns might be attacked and destroyed by later traumatic experiences.

Interpersonal neglect, abuse, and violence often lead to difficulties in relating to others (Briere & Spinazzola, 2005) and to a reduced capacity to make use of others for comfort, safety, and to alleviate negative emotional states (*e.g.*, Schore, 2009). Thus, traumatic early attachment experiences impede emotional development, and obstruct the emotional appraisal of events that is vital for adaptation to social life. Neglect and abuse in infancy interrupt integrative processes and may lead to aberrations in brain development (Fonagy & Target, 2005; Schore, 2009).

Brain development

Neuroscientific research has shown that optimal early attachment not only secures protection and nurturing and provides a basic sense of security, but may also be a key organizer of brain development (Bacciagaluppi, 2011). Traumatic relational experiences and adverse events that are severe, recurring, or long-lasting, particularly when occurring in childhood, can seriously affect brain structures vital to attachment, affect regulation, and stress modulation (*e.g.,* Schore, 2002). Regulation of thought and emotion is critical to health,

as psychological states in themselves may alter stress-related physiology and cause physical illness (Sapolsky, 2007).

Adverse experiences have different consequences for brain development depending on the individual's developmental phase (Zeanah, 2009). Zeanah commented that, from a clinical perspective, there is always hope that the effects of early adversities can be overcome; from a research perspective, however, there are sensitive periods in brain development that may limit restorative processes. Structures that are developing or undergoing age-related changes at the time of stress exposure are most adversely affected; moreover, some effects of adverse exposure depend on the interaction between the effects of genetic dispositions and previous exposure to stressful events (Lupien, McEwen, Gunnar, & Heim, 2009). Eckart et al. (2012) suggested that stressful experiences during sensitive developmental stages condition the brain to prepare for high levels of lifetime stress. Lupien et al. (2009) found that small increases in *glucocorticoid*[2] level were related to adaptive increases in vigilance and learning during acute challenges. Chronic exposure to stress hormones, however, influenced brain structures involved in cognition and mental health whether it occurred during pregnancy, infancy, childhood, adolescence, adulthood, or during old age. In addition, according to Lupien et al., animal research implied that such impairment was lasting in young individuals, but could be reversed when happening in adulthood.

Research related to trauma has been directed at examining the structures and functions of the brain involved in the formation of emotions, the recall/imagery of emotionally loaded situations, and contextual fear conditioning (Eckart et al., 2012; McNally, 2003). McNally suggested that neurodevelopmental deviations might constitute vulnerability factors for PTSD, impeding an individual's ability to handle stressful events. Eckart et al. (2012) found functional brain alterations in highly traumatized adult refugees to be strongly related to childhood adversity rather than to whether or not they had a PTSD diagnosis. They suggested that adverse childhood experiences, not necessarily extreme or traumatic, might be central to increased vulnerability to later traumatic stress and its biological and psychological consequences.

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2 Glucocorticoids are hormones produced by the adrenal glands in response to stress. Cortisol is the main *'stress hormone'*. Physical and psychological stress, as in the fight or flight response, activates cortisol secretion and helps regulate blood pressure, cardiovascular function, and the body's use of proteins, carbohydrates, and fats. (http://www.medicinenet.com)

Theoretical perspectives on traumatization

Freud (1920/1955) described traumatization as a breaking of the "stimulus barrier". Traumatization occurs in situations where the individual feels completely helpless and overwhelmed by an experience which is usually highly shocking, frightening, and potentially life threatening, and where the ability to structure and attach meaning to the experiences breaks down. Hurvich (2004) described the intense fright and helpless surrender that might arise from the overload of sensory stimuli and the physical and psychological pain under conditions of extreme traumatization as a fear of going to pieces or *fear of annihilation.* According to Hurvich, annihilation anxiety arises from the anticipation of potential threat to one's physical or psychological survival and in response to the inherent breakdown of normal structuring, symbolization, meaning-making, self-regulatory, and self-sustaining functions. Grubrich-Simitis (2010) expressed it the other way around; that it is the annihilation anxiety that tends to disrupt the cohesion of the ego. Rosenbaum and Varvin (2007) understood traumatic fear not as a fear of dying, but rather as a fear of abandonment, of losing the love of close relations (objects), losing the objects themselves, and losing the guidance and protection provided by keeping their internal representations alive and present.

A blow to the mind. Varvin and Rosenbaum (2003) described psychic trauma as a "blow to the mind", produced by an external, traumatic event that breaks through defenses and overflows the individual with anxiety, fear, and pain. The accompanying difficulties with processes of symbolization and mentalization lead to incomplete integration of the experiences into the personal narrative and identity of the individual, and break the protective shield – the internal boundaries – of the individual so that other material which is usually kept away from consciousness, may also come forward and overwhelm the individual. Such a breach threatens the integrity of the ego, generating feelings of going to pieces. When the ego is overwhelmed by a "psychobiological overload", ego functions are weakened, symbolization of the experience(s) fail, and biological changes may follow (Rosenbaum & Varvin, 2007).

According to Varvin and Rosenbaum, the resulting fragmented traumatic memories or memory traces can be experienced as alien, or can be kept and narrated without the related affects. Narratives and coherent thinking break down easily again when affects emerge. Furthermore, traumatization creates instability in the network of mental representations and causes long-term difficulties in thinking and reflection. The capacity to mentalize – to identify and understand one's own and others' thoughts, feelings, and their possible reasons – and the

meta-cognitive function – the ability to reflect upon one's own experiences, suffer (Varvin & Rosenbaum, 2003). These difficulties do not only arise in connection with memories of trauma, but also include thoughts, memories, and new experiences that link associatively to the original trauma. The associative linking to the original trauma may induce a fear of mental activity in the traumatized individual, inhibiting associative activity, reflection, mental flexibility, and creativity. Extreme traumatization may thus influence every aspect of life, and affect the individual on a deeply personal level.

Varvin and Rosenbaum proposed that the sense of time and the linking of experiences to chronological time dissolve in the traumatized individual, laying the way open for the easy activation of reexperiencing phenomena and retraumatizing experiences. The ensuing reactivation of strong feelings of anxiety, aggression, and depression further hinder meaning-making and symbol-formation. In the traumatized state, experiences cannot be given a temporally meaningful place in the autobiographical narrative, and it is difficult for the individual to describe his or her present state of mind to family, friends, or to a psychotherapist (Varvin & Rosenbaum, 2003).

Grubrich-Simitis (2010) discussed how sensations of being helplessly at the mercy of an uncontrollable situation, which cannot be metabolized and integrated, have to be kept encapsulated and dissociated from other psychic contents. Accordingly, memory traces from such traumatic experiences are constantly derealized by defensive dissociative processes. Thus, the memory-traces are not integrated into the autobiographical construction of meaning and are not accessible for mourning, whereby pain could be relieved by the gradual withdrawal of emotional investment. The memory traces may thus "remain catastrophically imperishable" (*ibid.*, p. 46).

Loss of self and the other. Varvin and Rosenbaum (2003) remarked how torturers are becoming increasingly adept in using psychological knowledge to crush identity, feelings of worth, and sense of belonging in victims. Furthermore, being subjected to humiliating and dehumanizing treatment or being forced to perform acts contradictory to one's own ideals and moral convictions, give rise to intense feelings of shame and worthlessness. Varvin and Rosenbaum emphasize the sense of utter abandonment, both experienced in external reality and felt internally, by individuals who are imprisoned in hostile and lawless surroundings. Traumatic experiences may harm internal objects, attachment, and relational capacities, a point also made by Fonagy and Target (2005). When the internal link to protective objects is broken, attachment to others may be perceived as threatening, resulting in withdrawal and further loss of potential support.

Lemma and Levy (2004) similarly describe the effect of trauma as an attack on the individual's attachment. According to them, benign internal representations can be transformed by the traumatic experience into being felt as malevolent or powerless. Through identification with the aggressor or with the helpless self, continuing into the posttraumatic phase, contemporary relationships may come to be characterized by projections, demands to be taken care of, or suspicion (Lemma & Levy, 2004). Parson (1998) proposed two basic types of self-and-other representations, malignant and benevolent, both determined by pre-trauma and trauma-related experiences. The "traumatic representational system", which consists of "all internalizations that occurred under the powerful impact of intense fear, terror, and/or reactive aggression" (Parson, 1998, p. 365), continues to exert a strong influence on life, cognition, and relationships in the post-trauma phase.

Mental survival strategies. Varvin and Rosenbaum (2003) suggested that posttraumatic symptoms and aspects of personality function characteristic of posttraumatic conditions are efforts to avoid "a mental catastrophe" (ibid, p. 7). They proposed that in response to extreme traumatization, individuals develop "mental survival strategies" aimed at solving the problems of the posttraumatic phase and at avoiding the pain of reexperiencing. Accordingly, intrusions could be seen as attempts to control the danger, reexperiencing as partly a "deficit-avoiding" strategy, partly a repetition aimed at confirming a negative world-view, or as a chance to regain control, thereby transforming the original helplessness to mastery. Furthermore, they considered the use of the body in somatization as an arena for built-up tensions caused by non-symbolized, non-integrated affects, hyperactivity or violent actions as a means of dealing with aggression, and strategies like social withdrawal and blocking of emotion, impulse, or images (*i.e.*, *constriction;* the present author's comment) as efforts to avoid overwhelming associations and feelings. However, intrusions and reexperiencing might lead to chaos instead of control, and blocking of emotions and engagement represent a danger of psychic death rather than internal composure. Thus, these 'efforts' at solutions, depending on developmental phase and context, have the potential to have a more or less detrimental impact on the personality and become major problems.

Garland (2004), along the same lines, proposed that the traumatized individual tends to turn him- or herself off mentally in order to ward off unbearable feelings, thoughts, and memories. She described how reflection and conceptualization was impossible both when mentally turned off and when overwhelmed. Several other authors also have discussed this "mental turning off", observed in traumatized individuals, which alternates with traumatic intrusions and painful thoughts and feelings that break through 'the mental barrier', creating a

feeling of being overwhelmed (*e.g.*, van der Kolk, McFarlane, & Weisæth, 1996; Lemma & Levy, 2004). The term "biphasic psychological response to trauma" (Horowitz, 1976; van der Kolk, 1994) was coined to describe these two types of trauma responses; one involving emotional flooding, intrusive recollection, reexperiencing, intense fear reactions, arousal, and mobilization for fight or flight and the other, avoidance and emotional and cognitive constriction, aimed at protecting the individual from painful feelings.

Viglione et al. (2012) observed that traumatized individuals actively organize their behavior and their subjective experience in order to suppress and repel distressing thoughts and feelings. Gratz and Roemer (2004) held that adaptive regulation of emotions implies modulating the *experience* of emotions rather than trying to eliminate or suppress specific emotions. Whereas efforts at control/suppression of emotions may intensify arousal and psychopathology, they argued, optimal (down-) modulation of emotions by means of soothing strategies, acceptance, and cognitive strategies, enables the individual to control impulsive behavior by reducing the feeling of urgency connected with the emotion. *Regulation* of emotion, according to Gratz and Roemer, implies modulation to an optimal level, permitting appropriate response to the situation.

Reality testing and trauma. Heinz Hartman (1956) described reality testing as the ability to differentiate between ideas and perceptions, which should function reliably in normal adults. Reality testing entails the ability to recognize what is subjective and what is objective in our way of seeing reality, which is an ongoing process throughout life. The *reality principle* implied, according to Hartman, "taking the "real" features of an object or a situation into account, in perception, thinking, and action" (p. 32). It also implied the ability to postpone the urge to act upon impulses (inherent in the pursuit of 'pleasure') and tolerate 'unpleasure' (frustration or discomfort) in order to facilitate organized thought and action and to enhance the possibility of later 'rewards'. However, as Hartman commented, the impulse to avoid *pain* is significant for biological self-preservation, and in such cases, it may be adaptive to 'obey' the urge towards immediate action. Hartman related failing reality testing to problems with accepting realities, distortion, and denying facts, and discussed how difficulties with reality testing might occur in relation to inner as well as outer reality. He linked problems with reality testing of inner reality to neurotic functioning, and the breakdown in outer reality testing to psychotic functioning.

Several trauma researchers have noted the special nature of reality testing difficulties in traumatized individuals, and warned that these should not be regarded as signs of more comprehensive psychopathology (*e.g.*, Kaser-Boyd & Evans, 2008; Viglione et al., 2012).

3. Research findings

Personality-related functions and traumatization

Traumatization has been related to problems with emotion-regulation, self-regulation problems more generally, attentional and perceptual bias, reality testing deficiencies, and problems with concentration and memory (see Chapter 2). Ehring and Quack (2010), using a large sample of trauma–survivors, found that the symptom severity of posttraumatic stress disorder (PTSD) was significantly associated with emotion regulation difficulties, and early-onset and chronic interpersonal traumatic experiences were associated with more severe emotional dysregulation than single–event or late–onset traumatic experiences. Haviland et al. (1995) found that insecure attachment and reality testing disturbances (*i.e.*, reality distortion, uncertainty of perception, hallucinations, and delusions) were positively related to PTSD symptom severity in their study of abused adolescents. However, the severity of the reality testing disturbances could not be significantly associated with the personal characteristics of the adolescents or specific features of the abuse. Haviland et al. proposed that factors such as the availability of another secure attachment figure might have moderated the relationships between personal characteristics, trauma factors, and the degree of reality testing disturbance.

Grubrich-Simitis (2010) noticed a defensive need in descendants of Holocaust survivors to dissociate from the traumatic experiences of their family members. She found that members of the affected families expressed a feeling of unreality (derealization) and had difficulties distinguishing reliably between external and internal reality in areas related to the trauma. She underlined the detrimental effect of derealization on the capacity to distinguish reliably between external and internal reality and between perception and imagination. In therapeutic work with these patients, Grubrich-Simitis found it necessary to facilitate reality testing before other therapeutic work could be accomplished.

Different kinds of attentional bias, understood as attention drawn to threat- or trauma-related information, overriding the volitional, goal-directed attentional system, have been associated with psychological trauma, PTSD, or acute stress disorder in several studies (*e.g.*, Amir, Taylor, Bomyea, & Badour, 2009; Esterman et al.,2013; Kleim, Ehring, & Ehlers, 2012). Based on their findings, Amir et al. (2009) suggested that individuals with PTSD process trauma-relevant information more rapidly and efficiently than benign information. Esterman et al. (2013) proposed a trauma-based manner of processing in which all salient stimuli (emotional and non-emotional) are treated as potentially threatening, leading to

generalized distractibility across hearing, vision, perception, memory, and other sensory and cognitive functions. Kleim et al. (2012) suggested that patients' perception of their surroundings as hostile and unsafe may be the result of their reduced awareness of cues indicating normality and security, which may also have contributed to their development of PTSD.

Attentional bias in traumatized individuals has been related to the involuntary activation of intrusive trauma memories in PTSD. Intrusive visual/sensory images and memories are one of the core features of PTSD (Brewin, Gregory, Lipton, & Burgess, 2010). According to Brewin et al., intrusions in patients with PTSD are linked to greater feelings of helplessness, dissociative experiences, lack of context, and a sense of reliving the memory in the present. Brewin et al. describe intrusive, involuntary memory as an associative process where a cue alone may elicit the memory, whereas voluntary effort does not, and furthermore, that visual imagery brings about stronger emotional responses than verbal representations.

A number of studies have demonstrated an association between the severity of posttraumatic and depressive symptoms and impaired cognitive functioning (*e.g.*, Steel et al., 2011; Johnsen & Asbjørnsen, 2009), with implications for affected individuals' ability to learn the language of their host country and manage a job (Steel et al., 2011). Higher levels of psychological distress and symptoms of PTSD have been significantly related to poor language skills (Gorst-Unsworth & Goldenberg, 1998; Sulaiman-Hill & Thompson, 2012; Söndergaard & Theorell, 2004) and unemployment (*e.g.*, Kivling-Bodén & Sundbom, 2002; Teodorescu, Siqveland, et al., 2012), both impeding life in exile. Learning difficulties and cognitive problems have been shown to be proportionate to the duration and severity of posttraumatic suffering (Emdad, Söndergaard, & Theorell, 2005).

Daud, Klinteberg, and Rydelius (2008) studied the relationship between traumatization and personality in male, Iraqi refugee survivors of torture, Swedish prisoners with a history of prolonged childhood trauma, an Arab control group without any self-reported experiences of torture or violence, and a Swedish control group. Daud et al. found highly significant associations between the severity of PTSD, cognitive dysfunction, maladaptive behavior, and personality factors related to 'internalized anxiety' and 'externalized behavior' in both traumatized groups. The authors proposed that the impaired personality formation was a result of prolonged traumatic experiences that enhanced already existing cognitive, affective, and behavioral vulnerabilities. Daud et al. found that both traumatized groups had personality profiles that differed from the control groups, while both tortured refugees and refugees that did not report any previous trauma showed more anxiety-related internalizing personality

traits than the other two groups. The authors offered the explanation that the 'non-traumatized' refugee group might have experienced severe adversities during flight.

Lecic-Tosevski, Gavrilov, Knezevic, and Priebe (2003) studied personality-related variables in medical students one year after exposure to air-attacks. They found a significant interaction effect of personality traits, traumatic exposure, and stressful experiences in the participants' past on intrusion and avoidance symptoms, but the level of exposure to the air attacks was the strongest predictor of both symptom clusters. Students with more 'balanced' personalities reacted to higher exposure to air attacks with higher intensities of symptoms. The authors found that avoidant personality traits predicted avoidant behavior and also (sub-significantly) symptoms of intrusion. Lecic-Tosevski et al. therefore suggested a potentially negative impact of avoidant behavior on recovery from posttraumatic stress. Bonanno (2004), in his review of literature on resilience among groups of people exposed to loss and potentially traumatic events, found that *repressive copers*, individuals who scored higher on tendencies to avoid unpleasant thoughts, emotions, and memories, showed better adaptation to extreme adversity. A coping strategy of this kind was related in some studies to evidence of elevated distress, as registered by indirect measures such as autonomic arousal, with the potential that this might produce long-term health costs, while other studies reviewed showed that the repressive copers initially reported increased somatic complaints, but showed better adaptation, and over time did not report greater health problems than other participants.

These studies indicate the variety of individual characteristics that have been studied, and the complexity of relationships between personal characteristics, traumatic experiences, mental health, and function, depending on many factors such as, for example, the samples studied and the type of potentially traumatic experiences undergone.

Effects of potentially traumatic childhood experiences

Adverse childhood experiences, when severe or repeated, have pervasive effects on personality development (Cassidy & Mohr, 2001) and have been found to increase the risk of interpersonal maladjustment, psychopathology, and physical diseases in adulthood as well as seriously affecting health, wellbeing, prosperity, and even length of life (*e.g.*, Anda et al., 2006; Yehuda, Halligan, & Grossman, 2001). Breslau, Chilcoat, Kessler, and Davis (1999) found that a history of two or more traumatic childhood experiences involving assaultive violence more than quadrupled the risk of PTSD from subsequent trauma in adulthood. Early onset adverse interpersonal or psychosocial experiences have been found to be risk factors for various psychiatric disorders, such as depression (*e.g.*, Danese et al., 2009; Wells, Vanderlind,

Selby, & Beevers, 2014), anxiety disorders and PTSD (Breslau et al., 2014; Briere 2004; Neuner et al., 2004; Yehuda et al., 2001), as well as for other health risks like high inflammation levels and metabolic risk biomarkers (*e.g.*, overweight, high blood pressure, high total cholesterol; Danese et al., 2009). The risk of negative long-term effects of childhood PTEs is higher in the absence of supportive parental or other figures, and when they occur during especially vulnerable periods (Heim, Shugart, Craighead, & Nemeroff, 2010). Previous exposure to traumatic events, not only in childhood, increases the risk of developing PTSD from subsequent trauma (*e.g.*, Breslau et al., 1999; Briere & Elliot, 2000). The impact of both early and of cumulative adversities and PTEs across the lifespan is increasingly recognized (Martins, Baes, Tofoli, & Juruena, 2014; Weathers and Keane, 2007).

There are few studies relating childhood PTEs and later experiences of war and HRVs to subsequent mental health and wellbeing among adult refugees. Among Kurdish refugees, adverse childhood experiences were associated with a negative effect on the hippocampus, possibly increasing vulnerability to the biological and psychological consequences of stress and PTEs later in life (Eckart et al., 2012). In a study of 100 Ugandan adolescents and their parents, Olema, Catani, Ertl, Saile, and Neuner (2014) found that both adolescents and adults were severely affected by both war-related trauma and childhood trauma, yet for the parents, only maltreatment during childhood significantly accounted for PTSD. As underlined by Itani, Haddad, Fayyad, Karam, and Karam (2014) after their national survey of trauma experiences among Lebanese adults, multiple childhood adversities and early traumatic events are part of these individuals' life experiences alongside later trauma, all of which should be measured simultaneously. If this is not done, the effects of a subcategory of PTEs could be mistakenly assumed to be the main contributor to the negative outcomes under examination. (Literature searches, PsychInfo/PubMed/Google Scholar, September 2015).

Refugee mental health and quality of life

Risk factors that have been found to increase the likelihood of experiencing distress or developing PTSD after PTEs are *e.g.* lack of education, psychiatric history, and prior trauma experiences (see Hooberman, Rosenfeld, Rasmussen, & Keller, 2010), trauma-load (*e.g.*, Darves-Bornoz et al., 2008; Johnson & Thompson, 2008; Keller et al., 2006; Nicholson, 1997; Steel et al., 2002), torture and rape/sexual assault (*e.g.,* Chu, Keller, & Rasmussen, 2013; Gorst-Unsworth & Goldenberg, 1998; Hooberman, Rosenfeld, Lhewa, Rasmussen, and Keller, 2007; Steel et al., 2009), female gender and older age (Johnson & Thompson , 2008), and a coping style characterized by social withdrawal, avoidance, and self-criticism (Hooberman et

al., 2010). In Steel et al.'s (2002) study, trauma severity showed a dose-response relationship with current degree of mental health symptoms as well as with psychosocial dysfunction.

Studies have shown that mental health problems are more frequent in the refugee population than in the general population, even many years after traumatic exposure (*e.g.*, Fazel, Wheeler, & Danesh, 2005; Porter & Haslam, 2005; Vaage et al., 2010). Post-migration factors such as residential status, economic security, challenges of acculturation, and worries about friends and family left behind in areas of conflict are of great significance for refugees' mental health and well-being (*e.g.*, Allen et al., 2006). Still, several studies have found that pre-migration traumas account for more of the variance in PTSD than post-migration hardships (*e.g.*, Bogic et al., 2012; Marshall et al., 2005; Steel et al., 2002). Complex reactions like PTSD, depression, anxiety, psychosomatic symptoms, and personality changes are frequent among torture survivors (*e.g.*, Campbell, 2007).

To clarify these relationships in more detail, it is worth noting that Bogic et al. (2012) found that war-related factors explained more of the variance in PTSD, while post-migration factors explained more of the variance in mood, anxiety, and substance abuse. Lie et al. (2001) found that pre-migration adversities including exposure to life-threatening events, physical violence, and forced separation from family were strong predictors of psychological distress among newly settled refugees. Life threatening past experiences, current unemployment, and problems around family reunion were associated with more symptoms at the three-year follow-up (Lie, 2002). Furthermore, the participants' measures of anxiety and depression at the three-year follow-up were unchanged, and symptoms of PTSD had increased, indicating the severity and chronicity of mental health problems.

In large reviews of refugee mental health, the percentage of refugees qualifying for a diagnosis of posttraumatic stress disorder (PTSD) have varied from 9% among adult refugees resettled in Western countries - about ten times more than in the general population (Fazel et al., 2005) to 30.6% in a world-wide study of refugees (Steel et al., 2009). In these studies, the prevalence of depression was 5% and 30.8%, respectively. Steel et al. noted that non-random sampling, small number of participants, and the use of self-report questionnaires were connected with higher rates of mental disorder. Overall, existing research suggests that some refugees manage well, a majority improve over time, but a substantial minority remain struggling with considerable symptoms (e.g., Steel et al., 2011; Vaage et al., 2010).

The long duration of distress following extreme trauma has been demonstrated in several studies (*i.e.*, Eitinger, 1961; Marshall et al., 2005; Steel et al., 2002; Sulaiman-Hill & Thompson, 2012; Vaage et al., 2010). In their long-term follow-up study of Vietnamese

refugees, Vaage et al. found that mental disorder upon arrival and the course of symptoms over the first three years of resettlement predicted mental health disorder more than 20 years later, at which time one fifth of the participants still reached threshold scores for a diagnosis of mental health disorder.

Clinical refugee samples

Grave and multiple experiences of PTEs among refugee patients have been related to the severity of their posttraumatic suffering (*e.g.*, Kivling-Bodén &Sundbom, 2001). The reported prevalence of disorders has varied also in clinical refugee studies, but has generally been high: the prevalence of PTSD was 85% in a Dutch clinic for patients with war- and HRV-related posttraumatic psychopathology (Huijts et al., 2012), 82 % among refugee out-patients in ordinary Norwegian mental health specialist services (Teodorescu, Heir, et al., 2012), and 80.4% at a torture treatment center in Copenhagen (Carlsson, Olsen, et al., 2006), although only 45.7% in a torture treatment program in New York (Keller et al., 2006). The prevalence of depression and anxiety has also been found to be high in clinical refugee studies. In Keller et al.'s sample the prevalence of depression was 84.5% and the prevalence of anxiety was 81.1%. Furthermore, Teodorescu et al. (2015) found that most patients in their sample with a current PTSD diagnosis also suffered from a clinical level of chronic pain.

This prominent, trauma-related suffering is particularly striking because of the long duration of refugees' residency in the host country reported in many clinical studies. The mean length of residency reported in clinical studies varies from 5 and 6 (Carlsson, Olsen, et al., 2006; Keller et al., 2006) to 13 and 15.8 years (Huijts, Klein, van Emmerik, Noordhof, & Smith, 2012; Teodorescu, Heir, et al., 2012). The length of stay may reflect the time it takes for treatment needs to be responded to, the longevity of posttraumatic suffering, the potential for becoming retraumatized, and the time required to learn the host country's language, if language competence is part of the inclusion criteria. The latter applies to Teodorescu, Heir, et al.'s study. Difficulties in learning the host country's language when struggling with mental health and other problems have been noted in several studies (*e.g.*, Beiser & Hou, 2001; Steel et al., 2011; Söndergaard & Theorell, 2004).

Lambert (2013), in his extensive review of existing research, noted that the majority of patients with complex PTSD, especially those with a chronic condition at treatment start, continued to have considerable symptoms after treatment. Treatment of traumatized refugees has not yielded as positive results as might have been expected from general psychotherapy research. In long-term follow-up studies of severely traumatized refugee patients in multi-

modal psychosocial treatments (*e.g.*, Boehnlein et al., 2004; Carlsson et al., 2010), findings showed that only a proportion of the patients improved and most patients still had a substantial burden of symptoms. Neither research group found any systematic associations between background variables or treatment characteristics and differences in mental health improvement.

In Carlsson, Olsen, et al.'s (2006) 10-year follow-up study, more than half of the patients still qualified for a diagnosis of PTSD, and even higher percentages still qualified for diagnoses of anxiety and depression. Despite this, the proportion of patients qualifying for a diagnosis had decreased by 30% over the 10 years, demonstrating the time it takes for highly traumatized refugee patients to improve, but also that improvement continues. Predictors of positive long-term mental health and health-related QOL outcome were longer residency in Denmark, employment, and good social relations. Predictors of poorer long-term outcome were physical complaints, especially headaches at treatment start, and higher education. Trauma was more closely related to mental health scores, and postmigratory factors were more closely related to QOL scores.

Several authors of systematic reviews (Benish, Imel, & Wampold, 2008; Claassen, Ascoli, Berhe, & Priebe, 2005; Crumlish & O'Rourke, 2010; Nicholl & Thompson, 2004; Nickerson et al., 2011; Palic & Elklit, 2011) have pointed out the need for greater knowledge about effective treatments for traumatized refugees and the scarcity of research into the durability of treatment effects. They also called for studies that could demonstrate effects of therapeutic interventions on a wider scope of mental health and other problems restricting refugees' quality of life. Palic and Elklit pointed to the often chronic trajectory of recurrent intensification of symptoms in these patients. Murray et al. (2010) emphasized the need for interventions to increase the quality of psychological and social well-being, not only to focus on symptom-reduction. Carlsson et al. (2014) underlined the need for greater flexibility of treatment efforts to meet ongoing stresses and retraumatizing events among refugee patients.

4. The Rorschach Method

The Rorschach method is a perceptual and performance-based personality assessment tool (Meyer & Viglione, 2008). It was previously termed a projective method, based on the psychoanalytic theory that responding to ambiguous stimuli was determined predominantly by the projection of internal conflicts and wishes (McGrath, 2008). The term performance-based was introduced by Kubiszyn, Meyer, Finn, Eyde, Kay, Moreland, Dies, and Eisman (2000) to emphasize that tests like the Rorschach require responders to perform a defined activity with an examiner, as in neuropsychological and intelligence testing. Although projective processes may be at play, "projection" often represents a minor contribution to the responses given (Kubiszyn et al., 2000).

The Rorschach method has been criticized for being unscientific (*e.g.*, Garb, Wood, Nezworski, Grove, & Stejskal, 2001). In response to the critics, extensive research has documented its reliability and validity (*e.g.*, Meyer & Viglione, 2008; Meyer et al., 2002; Schaffer, Erdberg, & Meyer, 2007; Mihura, Meyer, Dumitrascu, & Bombel, 2013), its utility (Viglione, 1999), and its incremental validity in conjunction with other assessment tools (Meyer, 1997; Meyer & Viglione, 2008). Huprich and Bornstein (2007) noted that the way individuals respond to questions about themselves in assessments depends on many factors, including their degree of self-understanding, their ability and willingness to respond openly and honestly, and the clarity of the meaning of the test items. In contrast to personality tests that base their personality assessment on the individual's self-description, the Rorschach involves sampling of the individual's *behavior* (McGrath, 2008). The correctness of Rorschach responses does not depend on a person's self-knowledge, and is less vulnerable to intentional distortion of replies (Hartmann & Hartmann, 2014). In addition, the individual's responses to the Rorschach are not dependent on predetermined suppositions generated by the test developers (Viglione, Towns, and Lindshield, 2012).

The mental processes that are activated in the production of Rorschach responses tap into and trigger the test person's underlying personality structures, which are not accessed by self-report measures and interviews. The Rorschach method requires the participants to use available cognitive, perceptual, affective, problem solving, and coping resources to complete the task (Meyer & Viglione, 2008; Weiner, 2003). The Rorschach method is considered to place the participants in a potentially stressful situation, unfamiliar to most people, with few clues as to how to respond. Therefore, individuals suffering from trauma (and other

individuals) cannot apply their usual coping strategies as easily (Viglione, Towns, & Lindshield, 2012).

Rorschach results correspond better with more objective, functional measures such as observer ratings and measures of perceptual and cognitive disturbances than with introspectively assessed criteria, like self-report on questionnaires (*e.g.*, Bornstein, 2012). Mihura et al. (2013) found greater correlation between Rorschach variables and externally assessed characteristics such as psychiatric diagnosis or observer ratings than between Rorschach variables and introspective, self-reported data. The behaviors coded during the Rorschach response process provide data about the person's way of functioning in the immediate present, and the assumption is that this way of responding has implications for the person's approach to events outside the assessment (McGrath, 2008).

Cultural differences and the Rorschach method

Allen and Dana (2004) emphasized the Rorschach's suitability as a cross-cultural instrument, through its composition of visual and suggestive stimuli, culturally neutral and ambiguous shapes, and because there is no need for translation of individual test items. The method is less dependent on language and cultural factors than are most assessment methods. International adult normative reference standards for the Rorschach Comprehensive System (CS; Exner, 2003) were established by a large international study, which demonstrated great similarity in the ways in which individuals responded to the Rorschach images across cultures (Shaffer, Erdberg, & Meyer, 2007). They concluded that the methodological problems inherent in trying to make normative comparisons or conclusions when using the Rorschach across nationalities and cultures are shared with other methods used in multicultural studies.

Rorschach findings in relation to traumatized individuals

Several authors have pointed out the Rorschach's capacity to assess a wide array of psychological functions affected by trauma (*e.g.*, Ephraim, 2002; Kaser-Boyd & Evans, 2008). Rorschach results may reveal how trauma memories interfere with the capacity to perceive objectively and think clearly and logically (Ephraim, 2002). Viglione et al. (2012) highlighted how Rorschach responses revealed the struggle between loss of control and over-control, which they considered crucial to posttraumatic reactions.

Van der Kolk and Ducey (1989) made the important distinction that, although individuals with PTSD may display serious symptoms such as thought disorder on the Rorschach, they usually show no evidence of psychotic thinking in intensive clinical interviews. Van der Kolk and Ducey found in their sample a reduced capacity to judge new

situations appropriately, resulting in more pronounced autonomic arousal, anxiety, and disorganization of thought processes. The authors observed that even minor stimuli could evoke emergency reactions and have a disorganizing impact on mental functioning in traumatized individuals. They suggested that this occurred without the individuals' conscious awareness of the link between the stimuli at hand and any memories of past traumatic experiences.

Studies of traumatized individuals have shown elevations in Rorschach variables that can be related to traumatization (Arnon, Maoz, Gazit, & Klein, 2011; Kaser-Boyd & Evans, 2008; Luxenberg & Levin, 2004). Smith, Chang, Kochinski, Patz, and Nowinski (2010) found that Rorschach indications of poorer perceptual accuracy, seeing themselves and their world as damaged or with a depressive quality, intrusive/traumatic imagery, and severe thought disturbances differentiated significantly between trauma-exposed and non-trauma-exposed individuals. Rorschach studies of traumatized individuals have shown indications of both emotional flooding/traumatic intrusions and emotional and cognitive avoidance/constriction, (*e.g.*, Ephraim, 2002; van der Kolk, 1994; Viglione et al., 2012).

The repeated finding of Rorschach indications of impaired reality testing and thought disorder in individuals with otherwise intact reality testing (*e.g.*, Brand, Armstrong, & Loewenstein, 2006; Kaser-Boyd & Evans, 2008), have demonstrated the disorganizing impact of reminders of trauma (*e.g.*, Levin & Reis, 1997; van der Kolk & Ducey, 1989). Van der Kolk & Ducey noted that even slight reminders of the trauma could precipitate acute reactions. Viglione et al. (2012) pointed out the content-specific nature of post-traumatic deficits, different from the more generalized deficits in other pathological conditions, and proposed that thinking, judgment, concentration, and reality testing remain intact when not disturbed by trauma-reminders from within or without.

Rorschach prediction of treatment outcome and change

The Rorschach has been associated with behavioral and relational outcomes that develop over time (Viglione, 1999). Grønnerød (2003) found an overall high temporal stability among 39 Rorschach CS variables tested over an average retest period of about 3 years. The Rorschach has demonstrated uniformly high predictive validity (Meyer & Handler, 1997), but there is relatively limited research on Rorschach prediction of change/treatment-related improvement. No single Rorschach measure or index seems to have been widely used to evaluate treatment outcome or general improvement. (For details, see Paper III.)

5. Background to this study

Population, immigrant mental health, and treatment of refugees in Norway

Until the mid-1900s, the Norwegian population was relatively homogenous, comprising "ethnic Norwegians", and the minority groups Sami, Kvens, forest Finns, Romani, Roma, and Jews (Ekblad & Kastrup, 2013). In January 2015, the Norwegian population totaled 5 165 802 inhabitants. There were 188 100 individuals with a refugee history[3], representing 3.6% of the Norwegian population and 28% of the immigrant population. Until the last few years, the largest groups of refugees came from Asia, including Turkey. In 2014, the largest groups of new refugees arriving in Norway were from Eritrea, Syria, and Somalia. At present, the largest groups of inhabitants with a refugee background, or whose both parents are refugees, originate from Somalia, Eritrea, and Iraq (Statistics Norway, 2015).

Research into mental health problems among immigrants in Norway revealed that immigrants from the Middle East had the highest proportion of psychological distress and South-Asian immigrants the lowest (Abebe, Lien, & Hjelde, 2014). Women and the elderly were at greater risk of developing mental health problems. Risk factors were poor social support, meager economic conditions, multiple negative life events, and past traumatic experiences. Immigrants from low- and middle-income countries had a higher degree of mental health problems compared with the general Norwegian population (Abebe et al., 2014).

Norway and the other Nordic countries are small, the era of cultural diversity short, and refugee backgrounds are highly diverse (Ekblad & Kastrup, 2013). Most refugee patients in Norway are treated by primary health care services (Varvin & Aasland, 2009). Refugees with more severe problems are treated in mental health out-patient clinics that offer specialist services to the general population. Therapists in these services therefore must be able to respond therapeutically to individuals from multiple different cultural contexts and with a wide range of psychiatric conditions. Ekblad and Kastrup (2013) noted that few mental health practitioners in the Nordic countries have formal transcultural training. They suggested that understanding and reflecting on cultural diversity in the field of mental health was more important than cultural competence as such.

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[3] *Refugee history* refers to persons resident in Norway who have come to Norway for refuge. Their families are also included. Children born in Norway to persons with a refugee background are not included. Asylum seekers are not included in the statistics (Statistics Norway, 2015).

The need for further studies

There are great variations in refugees' responses to trauma, how they manage living in exile, and how they respond to treatment. In earlier studies of traumatized refugee patients, no clear relationships have been established between individual treatment outcomes and aspects of treatment or patient variables (*e.g.,* Boehnlein et al., 2004; Carlsson et al., 2010). Furthermore, while adverse childhood experiences have been found to be of great significance for adult health and well-being in general (*e.g.*, Anda et al., 2006), there are few studies in which the adverse childhood experiences of adult refugees with pre-flight experiences of war, persecution, and human rights violations have been systematically investigated. Also, few researchers have investigated personality factors in this patient group as part of an attempt to explain individual differences in mental health, response to treatment, and long-term outcomes. The complex interaction between personal characteristics, personal experiences, and traumatic events in the lives of refugees may account for some of these differences.

Researchers have advocated the use of a varied battery of assessment methods, as different methods may have different strengths and shortcomings, may tap into different aspects of the area of interest, and may attain incremental validity through the combination of information from various sources (*e.g.,* Meyer & Archer, 2001). Carlsson et al. (2014) emphasized the complexity of refugee mental health, but did not recommend cultural fine-tuning of assessment tools and interventions at this stage of knowledge in the field. They advocated using general instruments and measures in order to permit the accumulation of sufficient comparable data to be able to reach conclusions about relationships relevant to the further development of this field.

In 2006, when our research project started, there were still relatively few studies focused on the mental health of refugees, even though publications about refugees started to appear in the mid-1950s and increased markedly from the 1980s. Since 2006, publications about refugees, their preflight traumatic experiences, challenges in exile, mental health problems, and treatment have multiplied. Research is still at an early stage of investigating the relationships involved in the more complex posttraumatic reactions in severely traumatized refugees. Furthermore, there are, to date, few longitudinal studies of refugee patients' natural course during and after treatment. More research into individual histories and characteristics and more prospective and longitudinal data could capture some of the factors associated with different courses of mental health and daily-life functioning. Such knowledge could throw light on individual treatment needs and guide treatment planning.

‘Treatment and Rehabilitation of Traumatized Refugees’ - Research program

This naturalistic and longitudinal research program, which is based at and financed by the Norwegian Centre for Violence and Traumatic Stress Studies in Oslo, Norway, was initiated in 2006. Professor Sverre Varvin was the leader of the program until 2014, and Varvin and the present author planned and conducted the research. The research program investigates the trajectories of traumatized refugee patients from treatment start, through treatment, and on in life. By this point in 2015, we have been meeting the refugees intermittently for up to 10 years.

Our intention was to recruit a sample typical of refugees referred to and treated by specialist-level public mental health services in Norway. We wanted to capture the vicissitudes of their lives over time, their trajectory towards increasing health, stagnation, or deterioration, and the factors that seemed to affect these changes. We decided to include some assessment tools commonly used in the refugee mental health field to enable comparison with other refugee studies. We aimed also to capture both the individuals’ explicit grasp of their traumatic experiences as well as the impacts of trauma at a less aware and less verbalized level. For these reasons we used a variety of assessment methods and measures in order to gain insight into the participants’ personal history, trauma-related aspects of their personality, mental health, and well-being, and their course through therapy and after therapy. Only a fraction of the data collected was used in this PhD study. Another PhD study presently investigates the therapeutic processes of some of the participants in the research program. Further studies are planned.

Objectives of the PhD Study

Some refugees show resilience in and after their encounters with potentially traumatic events, or manage to regain and preserve relatively good health and wellbeing in exile. However, as described in the Introduction, many former refugees have serious mental health symptoms many years after resettlement. This thesis is concerned with refugees who develop symptoms of mental disorders, and who are referred for treatment.

We studied background variables and followed the natural course of treatment and life outside treatment in a sample of refugee patients over three years, aiming to discover relationships and factors that characterized the health, wellbeing, and the trajectories of these participants. This PhD study focuses on the potentially traumatic events of the pre-migratory and migratory past, including childhood adversities, and on personality function, and these factors’ relationships to mental health, quality of life, and aspects of daily life functioning.

The aim was not to study the content of treatment or isolate its effects. The patients underwent psychological treatment of various length and theoretical orientation. Some were still in treatment at the three-year follow-up.

All participants are referred to as 'refugees' in our study, including former asylum seekers who were permitted to stay for humanitarian reasons, and whether the participants had come to Norway 6 months before the start of the study or were Norwegian citizens who had lived here for 26 years. All participants were also labeled 'traumatized', if they qualified for inclusion in our study, although not all qualified for a diagnosis of PTSD according to the PTSD assessment instrument used.

Main aims:

1) To examine how adult refugee patients' adverse childhood experiences and later experiences of the atrocities of war and human rights violations relate to mental health symptoms and to quality of life at treatment start.

2) To explore the participants' trauma-related dimensions of personality function and examine their associations with mental health symptoms, QOL, real-life functioning, and some demographic variables.

3) To analyze the extent to which participants' trauma-related personality function, measured at treatment start, predicts levels of mental health symptoms, QOL, real-life functioning, and changes in these measures during a three-year follow-up, and to study the relationship of personality function to frequency and length of treatment.

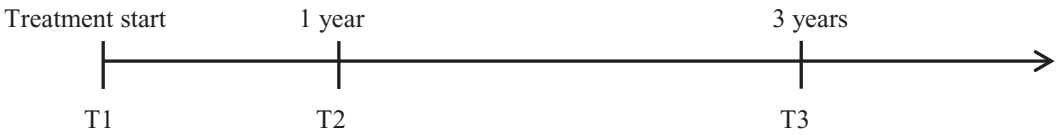
4) A more general aim was to gain more knowledge about traumatized refugees' problems by studying the characteristics of the patients in our sample and to relate our findings to other relevant research and theory.

For the detailed aims and hypotheses of each paper, see the individual papers in the Appendix.

6. Methods

Design

This study was part of the naturalistic, mixed method, prospective, longitudinal research program previously described, comprising research into a heterogeneous group of adult refugee mental health patients with pre-flight experiences of war and HRV, referred to specialist out-patient treatment services in the Oslo region of Norway during the years 2006 to 2009. The PhD study included assessments of and interviews with the participants at three points in time: at treatment start (T1), at one-year follow-up (T2), and at three-year follow-up (T3). Termination of treatment was determined in each case by the therapist and patient.



Time line in our study

We were interested in various mental health problems experienced by refugees that were severe enough for them to be admitted for treatment by specialist mental health services. A formal diagnosis of PTSD was therefore not required. An ability to communicate in Norwegian was also not required. The criteria for patients to enter the study were the following:

Inclusion criteria: referred to and accepted for mental health treatment, refugee background, potentially traumatizing experiences of war and persecution, and age 18 to 65.

Exclusion criteria: present psychosis or abuse of drugs or alcohol, if extensive enough to hinder assessment.

We collaborated with two general mental health outpatient clinics in District Psychiatric Services (DPS) and with six psychotherapists with publicly funded individual practices in the Oslo area in order to recruit refugee patients according to the inclusion criteria. The DPS gave their written consent to take part according to the research protocol. Their role included helping us recruit participants from eligible patients referred to them by the patients' general medical practitioners. Furthermore, it included allowing us to interview their patients and therapists, to access information with the consent of the participants, and letting us use their premises to conduct our assessment interviews during and after the treatment period. The consent of the individual therapists were inferred by their taking part in the research procedures, helping us meet their patients, and agreeing to meet with us for interviews. The

therapist interviews were not a main source of data in this study.

Ethical considerations

The study was approved by the Norwegian South-East Regional Committee for Medical and Health Research Ethics (REK, South-East; https://helseforskning.etikkom.no) and was conducted according to the Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects (World Medical Association, 2010).

We were committed to carrying out research in a way that would facilitate a good experience for the refugee patients and which would contribute positively to the work of the therapists and treatment services. We were careful to inform the patients about the nature of the study, our duty of confidentiality, and that participation was voluntary. We planned our methods and procedures to counteract possible negative experiences and consequences for the participants (see General procedures). We were also concerned to conduct research in a way that would not add extra burden to therapists and mental health services already under pressure.

We set out to study personality function as a potentially significant factor associated with the participants' suffering, their trajectory throughout treatment and after, and their improvement. Focusing on characteristics of the participants could be looked upon as 'blaming the victim', as noted by McNally (2003). McNally argued, however, that studying personality variables as potential 'risk factors', is as vital to the understanding of PTSD as it is to the understanding of physical conditions.

Concerns shared by many researchers and therapists in the field of refugee trauma are the assumed vulnerability of this patient group, the worry that they might be retraumatized by questioning about their traumatic experiences, concern that questions might feel like some kind of interrogation, and also the issue of whether refugee patients would feel forced to respond positively when asked to take part in research (*e.g.*, Carlsson et al., 2014). Carlsson et al. found that refugees understood the importance of developing further knowledge through research and that they usually agreed with this aim and found it meaningful to contribute to it.

Participants

Patients agreeing to take part submitted written informed consent. From 72 patients asked to participate, 54 patients accepted and were included in the study, resulting in an inclusion rate of 75%. These 54 participants constituted the sample for Paper I. Three of the participants did not complete the Rorschach, and were thus not included in the sample used for Paper II and III. (See the individual papers for further details about inclusion.)

Table 1

Demographics at T1 for the 54 participants

Variable	Percent/Mean	*n*/*SD*
Gender, males	64.8%	35
Age	39.3	8.2
Married/living with partner	64.8%	35
Participants with children	81.5%	44
Children per parent	2.7	44[a]
Years of education (in country of origin)	9.7	4.5
Years living in Norway	10.5	6.5
Speaks Norwegian	50.0%	27
Any work in Norway	59.3%	32
Recent employment	31.5%	17
Present employment	22.2%	12
Previous MHT	40.7%	22

Note. Speaks Norwegian = Able to communicate in Norwegian during interviews. Any work in Norway = Any period of paid work in Norway at all, even for a very short time. Recent employment = Any paid work within last 2 years. Present employment = Employed at the time of assessment, even if on sick leave. Previous MHT = Mental health treatment > 3 consultations before present referral (based on subjects' information, which often was vague). % = percentage of total *N*. [a]118 children among 44 parents.

Table 1 shows demographic data at T1 for the 54 participants, 35 men and 19 women, included in the Paper I sample. In the studies for Paper II and III, 33 of the men and 18 of the women were included. The 54 participants in the study came from 15 different countries in the Middle East, the Balkans, East and Central Africa, and Central and Eastern Asia. Only one participant had come to Norway during childhood. At treatment start/T1, only about one

fifth were employed; all of them on sick leave at the time of assessment. Despite frequent multiple language competence in their home region and long average residence times in Norway, only half of the participants could be interviewed in Norwegian. Less than half had previously received mental health treatment. Only one had been hospitalized. While in Norway, few had completed the mandatory Introduction Program, only two had managed to complete any levels of further education, and one had been imprisoned for a few days. All but two participants had either Norwegian citizenship or permanent residence on humanitarian grounds. (See the individual papers for further details).

There was minor attrition of participants during follow-up. At treatment start (T1) there were 54 participants (Paper I), 51 of whom were included in the Rorschach assessment study at T1 (Paper II). In the Rorschach follow-up study (Paper III) there were 50 participants at 1-year follow-up (T2), and 46 participants (90.2% of the original 51-sample) at 3-year follow-up (T3). Even if a few participants dropped out of their treatment, and some treatments were terminated early, most participants continued meeting with us for research interviews.

Treatment and therapists

At the respective treatment sites, the patients were offered psychological treatment/ psychotherapy, which addressed to some extent the patient's life history, traumatic experiences, current relationship issues, and problems in daily living. The therapies were of multiple theoretical orientations, were not manualized, and were not part of any special program for refugees. Treatment followed the Norwegian health laws and the ethical principles of the professions involved. The therapists determined length and content of treatment in accordance with the guidelines of their clinics and in cooperation with the patients. Time frames were flexible, with up to 1-2 years' treatment in the clinics, and no specific time limits in the private practices.

Psychotherapy was carried out by specialists in clinical psychology (58.8%, n = 30), specialists in psychiatry (25.5%, n = 13), and by psychologists, psychiatrists in training, and nurses or social workers with clinical specialties (15.7%, n = 8). Some therapists had extensive experience in treating refugee patients; most had some experience with this patient group. We were not able to record medication systematically. Although many of the patients reported that they had been prescribed psychopharmacological treatment at some time in the past or at present, many described negative side effects and few positive effects of medication. The present author's impression was that non-adherence to prescriptions was typical, with overuse of sleeping medication and discontinuation of other medication common.

General procedures

Participants were informed carefully about the voluntary nature of participation, confidentiality, and the purpose of the study. The two researchers conducting the study were both experienced clinicians. One of the researchers was the main contact for the individual participants at all times during the course of the study. We emphasized continuity in order to facilitate the development of a trusting relationship. However, both researchers met with every participant, as Varvin conducted all the Adult Attachment Interview (AAI; Crittenden, & Landini, 2011), and the present author conducted all the Rorschach assessments (Exner, 2003). This enabled joint evaluation and a broader understanding of the patient. Interview sessions were planned to allow sufficient time for talking about painful experiences. Efforts were made to give the participants emotional support in the interview situation and make sure that they knew that they could contact their therapist or us if difficult feelings arose after the interview.

The interviews usually took place within the mental health services' facilities, but also at our research institution and a few times in the participant's home. Interpreters trained for clinical settings were appointed on the advice of the intake teams, at the request of the participant, or as soon as we noticed insufficient communication skills in Norwegian. We used only in-room interpretation, and both researchers were skilled in the use of interpreters. All interviews, self-report questionnaires, and symptom checklists were personally administered by the two researchers. Illiteracy, concentration problems, headaches, and other difficulties often made the interview situation demanding and underlined the need to create a supportive atmosphere.

T1 assessment of the participants consisted of five to six sessions, 8 -10 full hours in total, which were tape-recorded and transcribed. All patients were re-interviewed/assessed at T2 and T3, whether still in treatment or not. Over the three years, we spent about 14 to 18 hours with each participant. Due to the participants' limited endurance, the numbers that completed the different self-report inventories varied. Another variation was whether participants could complete the questionnaires themselves, or needed us to do it for them by means of an interview. On the HSCL-25, the researchers completed the self-report inventories as interviews for 61.1% of the respondents at T1, for 50.0% at T2, and for 31.5% of the respondents at T3.The remaining percentages of the completed questionnaires had been filled out by the participants themselves. Similar ratios of direct responses/responses by means of interview applied to the other instruments.

We did not see symptoms alone as sufficient representations of all the repercussions of complex or severe traumatic experiences. Furthermore, symptom reduction may not be the

most important sign of progress with severely traumatized patients and may not be the best way to judge outcome (Lambert, 2013). Full recovery in terms of symptom removal may also not be an attainable goal of treatment for this patient group. The inclusion of measures of quality of life and daily life function was done in order to provide indications of patients' problems and their improvement, supplementary to their reporting of symptoms of mental health disorder.

Instruments and assessment methods

The Rorschach method is a performance-based personality assessment method (see p. ix in the preface and Chapter 4). Scoring of responses according to *e.g.* CS (Exner, 2003) or R-PAS (Meyer et al., 2011) can be used in statistical analyses. Rorschach results are usually analyzed by single variables, indexes, and the totality of results, and not by their factor structure, as we did in Paper II.

Rorschach procedures. During a discussion in 2006 of our plans for the use of Rorschach in our research, professor Jim Allen[4] alerted us to the possibility of using factor analysis of relevant Rorschach variables to investigate the 'bi-phasic response to trauma' (Horowitz,1976; van der Kolk, 1994). This had not been done before.

The present author conducted the Rorschach interviews with the patients at T1 and scored them jointly with Ellen Hartmann. Administration followed the CS guidelines, but due to the few responses given by many participants, more prompting was given. Despite prompting, a majority of participants gave few responses during the *Response phase* (see p. x, in the preface). As the protocols were generally shorter than recommended, we included therefore any new responses given during *Inquiry*. Thirty-three percent of the Rorschach protocols were still brief (7 to 13 responses), but there was no evidence that this was due to non-collaboration. Protocols with seven responses or more were included.

An external RIM-expert independently scored 20 randomly drawn protocols, and inter-scorer reliability was excellent (ICC = .79 to .98). Rorschach variables for the principal component analysis (PCA) were selected by their established or presumed relevance to traumatization (*e.g.*, Kaser-Boyd & Evans, 2008), by their interpretational validity (*e.g.* Mihura et al., 2013), and by their parametric qualities for statistical analyses (*e.g.* Meyer, Viglione, & Exner, 2001), and were all controlled for R (as implemented in the R-PAS system). The factor analytic method restricted the number and guided the kind of variables that could be included in the analysis. We expected that a Rorschach manifestation of a pattern corresponding to Horowitz's (1976) concept of the biphasic psychological response to

[4] James R. Allen, then professor at Alaska University, Fairbanks, now University of Minnesota, Duluth.

trauma might show up in some form in the PCA. For further details about the choice of Rorschach variables and their interpretation, see Paper II.

The study presented in Paper III examined whether the components extracted from the Rorschach data obtained at T1 (Paper II) could predict the participants' mental health and quality of life through the three assessment times extending over three years of follow-up.

The Harvard Trauma Questionnaire (Mollica, McDonald, Massagli, & Silove, 2004) was developed to record the multiple traumas of refugees and has been rated as one of the research tools that perform best within refugee populations (Hollifield, Warner, & Lian, 2002). *The HTQ Part I* (HTQ-Trauma Events) is a checklist of potentially traumatic events, and the *HTQ Part IV*, items 1 to 16, is a symptom checklist for PTSD derived from the three symptom clusters reexperiencing, arousal, and avoidance in DSM-IV. Symptoms over the last week are rated on a four-point scale from 1 (*not at all*) to 4 (*extremely*). In the HTQ a mean PTSD score of ≥ 2.5 is considered indicative of PTSD. (See Papers I and II for further details.)

The Hopkins Symptom Checklist-25 (HSCL-25; Mollica et al., 2004) records anxiety (the first 10 items) and depression (the next 15 items). Although not developed for use within refugee populations, this instrument has been found to have good reliability and validity within clinical refugee samples (*e.g.*, Hollifield et al., 2002). Symptoms over the last week are rated on a four-point scale from 1 (*not at all*) to 4 (*extremely*). An anxiety score or a depression score of > 1.75 is consistent with clinically significant anxiety and significant Major Depression (Mollica et al., 2004). (See Papers I and II for further details.)

The World Health Organization's Quality of Life-Bref (WHOQOL-BREF; The WHOQOL Group, 1998) was developed as a cross-cultural instrument to measure subjective QOL and has been widely used in refugee studies (*e.g.*, Carlsson et al., 2006; Huijts et al., 2012; Teodorescu, Siqveland, et al., 2012). The instrument has 26 questions across four domains: Physical Health (Domain 1, 7 items), Psychological Health (Domain 2, 6 items), Social Relationships (Domain 3, 3 items), and Environmental Conditions (Domain 4, 8 items). Scoring is marked on Likert scales ranging from 1 (*not at all*/*very dissatisfied/disagree strongly)* to 5 (*completely*/*very satisfied*/*agree strongly*, and related formulations). We converted the raw scores to a scale from 0 (*very poor*) – 100 (*excellent*), following the most commonly used option given in the WHOQOL-bref instructions. In a world-wide field trial comprising sick and healthy individuals from different sociodemographic groups (Skevington, Lotfy, & O'Connell, 2004), the means obtained were 64.8 (Physical Health), 60.0 (Psychological Health), 57.2 (Social Relationships), and 54.0 (Environmental Conditions). (See Paper I and II for further details).

Demographics. Age, gender, number of years of education in country of origin,

number of years living in Norway, marital status, number and age of children, were also recorded. Rorschach results were related to number of years of education in addition to the dependent variables below.

Real-life function. The variable 'Communicated in Norwegian' (conversion of 'Interpreter use', used in Paper II) was determined by whether the participant was able to take part in the research interviews without an interpreter. The variable 'Presently Employed' was determined by whether the participant held a job at the time of inquiry, part-time or fulltime, even if on temporary sick leave. These variables were simply scored yes (1) or no (0) and were recorded at T1 and T3. These indications of real-life functioning were crude. Obtaining employment and learning the Norwegian language, or not, could be related to many factors. However, as unemployment in Norway was low, and language training was obligatory, getting work or starting to communicate in Norwegian were regarded as signs of healthier functioning, possibly cognitively, emotionally, and socially.

Variables related to treatment. 'Frequency of Sessions' (number of sessions per month of treatment) and 'Treatment Length' (in months) were calculated from information from treatment charts and therapists at T2 and T3. In addition, we recorded terminations, new periods of treatment and any new treatment plans.

Variables derived from qualitative interviews. Qualitative interview material, which consisted of structured and semi-structured interviews, were systematically examined as a source of information on potentially traumatic experiences during childhood. These interviews covered family relationships, attachment, health, social situation, losses, traumatic events, and other aspects of personal history during childhood, adolescence, and adulthood, and included also the AAI-interviews (Crittenden, & Landini, 2011). The AAI-interviews were used only as a source of such biographical information in this thesis, and have therefore not been listed with the other instruments as a method of research in its own right. However, the questions of the AAI are constructed in order to elicit information about the important persons, relationships, and vital events in the individual's life as a child – such as traumatic events and losses.

Adverse and potentially traumatic childhood experiences (PTCEs) up to age 18 were identified, categorized, summarized, and analyzed quantitatively. All material collected was analyzed twice, a few months apart, for evidence of childhood experiences related to loss, violence, neglect, and similar hardships within the family, as well as violence and atrocities experienced externally to the family. Any inconsistencies in type and number of events found by the two searches were evaluated and resolved. The information provided by participants about the year of any significant events and their age at the time was compared with sources

of historical facts, to clarify uncertainties. The authors reached consensus about the type of events and the categorizing of these events according to their psychological meaning. A scoring system was agreed, and the sum score of PTCEs (PTCE-Sum) and of subtypes (Loss, Illness, Family Violence, External Violence) were calculated. The results of this investigation were used quantitatively in the analyses. (See Paper I for further details).

Independent variables/predictors in one or more of the three papers:

- Exposure to PTEs related to war and HRVs, measured by a trauma-event checklist (HTQ, Part I/ HTQ-Trauma Events)
- Exposure to PTEs during childhood, age 0-18, extracted from all interview material obtained at treatment start (PTCE-Sum and the subcategories Loss, Illness, Family Violence, and External Violence)
- Two Rorschach components, 'Trauma Response' and 'Reality Testing', derived in our study (Paper II) from principal components analysis (PCA) of trauma-related Rorschach variables. The Rorschach components were understood as trauma-related aspects/dimensions of personality functioning

Dependent variables/outcome variables in one or more of the three papers:

- Symptoms of anxiety, depression, and posttraumatic stress, measured by symptom checklists HSCL-25 and HTQ, Part IV, 1-16
- QOL, measured by WHOQOL-BREF, which refers to the subjective experience of the quality of Physical Health, Psychological Health, Social Relationships, and Environmental Conditions
- Real-life /daily-life functioning indicated by Any work in Norway, Recent Employment, and Present Employment
- Real-life /daily-life functioning indicated by Norwegian language skills/Interpreter use, evaluated by interviewer

Statistical Methods

In Paper I, we employed linear regressions in order to analyze relationships between two types of potentially traumatizing experiences (PTCE-sum and HTQ-Trauma Events) and outcome variables related to mental health and quality of life (QOL) and between the four subtypes of PTCE (Loss, Illness, Family Violence, and External Violence) and the outcome variables. In the first linear regressions, HTQ-Trauma Events and PTCE-Sum were related

separately to each one of the outcome variables. Then, multiple regressions were performed with the two trauma variables. The next multiple regression models included the four subtypes of PTCE as predictors of the outcome variables. These were entered simultaneously in the regressions with each of the outcome variables. Simultaneous entry of predictor variables allowed assessment of what each individual predictor contributed to the prediction of the outcome variable by controlling for the contribution of all of the other predictor variables (Tabachnick & Fidell, 2007). The unstandardized coefficients represent the amount of change in the outcome measure per unit change in the predictor (number of trauma-events). The unique contribution of each subtype of PTCE to the outcome variable was expressed by the unstandardized coefficient. The strength of the model in explaining the variance in outcome variables was expressed by R^2. (See Paper I for details).

In Paper II, we employed Principal Component Analysis (PCA) to explore potentially underlying dimensions of trauma-related personality function in a set of selected Rorschach variables. We used Varimax rotation, but also tried Oblimin rotation to check the degree of correlation between the components. PCA is related to the factor analytical method, which is a statistical method that searches for relationships between measured variables. It can reduce a large set of variables to a few factors/components and serves to identify latent constructs or underlying dimensions. Exploratory factor analysis or PCA is used when the researcher has no a priori hypothesis about factors or patterns of measured variables. The measures are a function of common variance, unique variance, and errors of measurement. Factors/components based on several items or variables are usually more stable and are more likely to obtain higher internal consistency than factors based on few items. Rotation of factors is used to ease interpretation of the results. The meaning of the combination of variables identified within each factor is the basis for interpretation of the factor (Tabachnick & Fidell, 2007). The names given reflect this meaning. We used correlations to examine the relationships between the Rorschach components and demographics, trauma exposure, symptom load, and QOL and the correlation coefficient *r* as an expression of the effect sizes. (See Paper II for further details).

In Paper III we used ANOVA to compute and compare subgroup means of Rorschach variables, logistic regression to analyze relationships between Rorschach components and the dichotome variables Communicated in Norwegian and Presently Employed, and linear regression to analyze relationships between Rorschach components and the continuous variables Frequency of Sessions and Treatment Length. The main statistical method, however, was linear mixed effects modelling, employed in order to analyze the relationships between the two pretreatment Rorschach components and the continuous outcome variables at the

three points of measurement over the three-year follow-up. Linear mixed effects is a statistical method suited to analysis of repeated measurements in longitudinal studies, and more generally, to data with a multilevel clustering structure. Mixed models include both fixed effects and random effects. Fixed effects are the assumed non-random effects of factors associated with an entire population. Mixed effects models also estimate random effects. In the present case there was random variation both between individuals and between the repeated measurements within persons. Linear mixed effects has the advantage of being able to utilize all data, even if there are varying numbers of observations among subjects. In addition, it allows for observation times to differ (Davis, 2002; Pinheiro & Bates, 2000). Time was modelled as categorical, as the patients' symptoms and QOL were studied at three discrete points in time.

We wanted to use continuous scores as much as possible. As described in the methods section of Paper III, the limited degrees of freedom, however, compelled us to use a special technical procedure in some analyses concerning the Trauma Response component, dividing this variable into two continuous variables. Time was categorical, as before. Most outcome variables were continuous, such as symptoms and QOL scores, Frequency of Sessions, and Treatment Length. Ability to Communicate in Norwegian and Employment were dichotomous, as they were recorded this way in the data collection procedures. We were able to find one paper outlining a procedure for calculating effect sizes for generalized linear mixed effects models (Nakagawa & Schielzeth, 2013). They proposed a method for calculating marginal R^2, which we followed. 'Marginal' refers to variance explained by fixed factors. To estimate effect sizes in the linear regressions, we used partial eta (computed as the square root of partial eta squared), regarded as commensurate with r (Richardson, 2011). The strength of the relationships in the logistic regressions was estimated by odds ratio (OR). (See Paper III for further details).

In preparing for the statistical analyses, questionnaire mean scores were computed if at least 80% of the items were completed. Missing data were left missing. We used Cohen's (1992) benchmarks to evaluate the effect sizes. Accordingly, a Pearson correlation coefficient $r = .10$ represented a small effect, $r = .30$ a medium effect, and $r = .50$ a large effect. Linear mixed effects analyses, bootstrapping, and Horn's parallel analyses were conducted using the R (The R-Foundation for Statistical Computing, Vienna, Austria, 2013). PCA, regressions, ANOVA, correlations, and descriptive statistics were analyzed using the Statistical Package for the Social Sciences (SPSS; IBM Corp., SPSS Statistics, Version 20, 2011).

7. Results

At treatment start, the HTQ indicated Posttraumatic Stress Disorder (PTSD) in 78.8% of the participants, and the mean posttraumatic symptom score was 2.8 (*SD* = 0.5). The HSCL-25 indicated Major Depression in 98.1%, with a mean depression symptom score of 2.9 (*SD* = 0.5). Furthermore, the HSCL-25 indicated clinically significant anxiety in 96.2% of participants, with a mean symptom score of 2.8 (*SD* = 0.6). WHOQOL-Bref indicated quality of life in the low third of the scale for Physical Health (*M* = 28.5, *SD* = 13.8), Psychological Health (*M* = 25.6, *SD* = 15.9), and Social Relationships (*M* = 36.6, *SD* = 23.4). These quality of life (QOL) mean scores were far below international means. Participants' mean score for Environmental Conditions was 45.2 (*SD* = 18.2), and closer to the international mean, probably owing to the relatively good welfare system in Norway. Many participants described a miserable life with psychological pain, anxieties, sleep disturbances, imposed or self-imposed social isolation, feelings of inadequacy, low self-esteem, and physical pain including severe headaches, problems with joints (shoulders and knees), and stomach/ digestive system problems. Almost all the participants experienced themselves as severely afflicted by the experiences of war and HRVs. (Paper I, Paper II).

The participants reported on average *16.3 (SD = 6.3)* different kinds of traumatic experiences related to war, persecution, and other HRVs on the HTQ-Trauma Events: *e.g.*, forced evacuation under dangerous conditions, military attacks, violent death/murder of family member or friend, imprisonment, torture, and rape. Moreover, several who had been voluntarily engaged in armed resistance or had been forced into military service, described devastating experiences. The HTQ-Trauma Events were recorded without restriction to any particular period of participants' lives, but these traumatic experiences had mostly been experienced close to the time of flight, which can be estimated to averagely 10.5 years before T1 assessment.

An investigation into adverse events experienced before the age of 18 revealed that on average, the participants had experienced *5.4 (SD = 3.5)* different types of potentially traumatic childhood experiences (PTCEs). Most participants described one or more highly adverse childhood events, such as the death of a parent or sibling, disappearance of family members, their own serious illness or accident, violence within the home, violence outside the home, and war. The PTCEs had happened on average 20 to 40 years prior to T1. (Paper I)

The Rorschach personality assessment of the participants, and the PCA (principal component analysis) applied to selected variables, indicated that two strong components or

dimensions characterized the trauma-related personality function of the participants at treatment start, accounting for 59.7% of the variance (see paper II). The first component, *Trauma Response*, was understood as a dimension of personality functioning comprising degrees of complexity in thinking, emotional modulation problems, fear of forces out of personal control, traumatic intrusions, vigilance toward other people and traumatic thought disorder, captured by Blends, CF+C, m, TCI, M, and SevCog[5], positively weighted, and F%, negatively weighted. Component loadings varied from .60 to .89. The Trauma Response scores quantified the way the participants responded to trauma along a continuum from -1.82 (highly *constricted*) to 2.60 (highly *flooded*). 'Flooded' responses implied Rorschach indications of traumatic intrusions, problems with emotion regulation, logical breaches in thinking, and signs of being overwhelmed. 'Constricted' responses implied Rorschach indications of little associative richness, little emotional expression, simple, form-dominated responses, and relatively less trauma-related content.

The second component, *Reality Testing*, was understood as a perception based dimension indicating accuracy of perception, ability to see features of the environment the way others see them, and ability to notice prominent details and multiple aspects of the environment, captured by FQo, D, and R, positively weighted, and FQ-%, negatively weighted. The Reality Testing component scores quantified the participants' ability at treatment start to perceive details of the Rorschach images, and by inference, the outer realities, more or less accurately, under relative stress, along a continuum from -2.50 (highly *impaired*) to 1.52 (*adequate*). The negative direction of the component scores indicated increasingly impaired reality testing, with few responses, global, vague, or faulty responses showing lack of fit with the images, and little ability to notice what others ordinarily see.

After three years, the participants showed statistically significant improvement in symptoms and QOL, that is, less Depression, Anxiety, PTSD (arousal symptoms) and better quality of Physical Health, Psychological Health, and Social Relationships. The percentage of participants qualifying for a mental disorder diagnosis decreased over the three years. However, 65.9% still qualified for PTSD, 86.7% still qualified for clinically significant anxiety, and 91.1% still qualified for Major Depression. The QOL means were still well below international means. Thus, despite statistically significant group level improvement, a majority of the participants still had a symptom burden qualifying for a diagnosis at the 3-year follow-up (see Paper III). The percentage being able to communicate in Norwegian and the percentage engaged in work increased over the period from treatment start to the three-year

[5] For the meaning of the Rorschach variables, see Paper II.

follow-up (Paper III), indicating improvement in observable/behavioral aspects of functioning.

For 37% of the participants (19 of 51) treatment was terminated within the first year. Some were readmitted later on. Only three patients dropped out without notice or against the therapists' advice. At T3, mean length of psychotherapy/mental health treatment among the participants was 24.5 months (*SD* = 13.7) and mean frequency of attendance was 1.7 monthly sessions (*SD* = 1.1). At T3, 29% (*n* = 15) of the participants were (still) in treatment that had either restarted or had been continuous since T1. (See Paper III).

Of significance to my discussion later, was the finding that, within the Trauma Response component, both the Flooded and the Middle subgroups of the participants (see Table 2, Paper III), representing about 80% of our sample, had elevated mean values for the Rorschach variables TCI and SevCog, indicating intrusive ideation and signs of deviating thought processes. In addition, the Flooded subgroup (about 20% of the sample) had very high mean values of Blends, CF+C, m, and M, and a very low mean value of F%. This implied highly complex thought processes, potentially leading to confusion, as well as unmodulated emotions, fear of uncontrollable forces, vigilance towards people, and a low degree of straightforward, form-dominated responses. The Constricted subgroup was characterized by low values on all the variables of the component, except very high F%, which meant that responses were to form qualities of the stimuli only, which was interpreted as a tendency to avoid, ignore, or not become aware of more complex external or internal information. Within the Reality Testing component, both the Impaired and the Middle subgroups, also representing about 80% of the participants, had elevated mean values on FQ-%, and lowered mean values on FQo%, D, and R, indicating a high proportion of obviously faulty percepts and few ordinary responses with reasonable fit. Additionally, the Impaired subgroup had very few D-responses, *i.e.,* they gave little attention to obvious parts of the Rorschach images, interpreted as a tendency to pay limited attention to obvious parts of the environment.

Main findings

1. Number of different kinds of trauma events related to war- and human rights violations (HTQ-Trauma Events) and the number of different kinds of childhood adverse events (PTCE-Sum) were significantly associated with mental health and/or QOL at treatment start. (See Table 4, Paper I).
2. The linear regression analysis showed that the effects of the *two types of trauma events* were not overlapping, but mapped onto different outcome variables. Number of HTQ-Trauma events experienced before flight was significantly associated with

PTSD-Reexperiencing symptoms, while PTCE-Sum was significantly associated with PTSD-Arousal and -Avoidance symptoms and with poorer QOL of Social Relationships and Environmental Conditions, and tentatively also of Psychological Health. (See Table 4, Paper I).

3. The *adverse childhood experiences (PTCE-Sum)* of these adult refugees were more strongly related to their mental health and quality of life at treatment start (on all outcome variables except PTSD-Reexperiencing) than their later experiences of war- and human rights violations. Despite the severe nature of their preflight war-related experiences, including threats to their life, numerous violent losses, persecution, torture, and other degrading and fear-evoking experiences, and despite the greater proximity in time, adverse childhood experiences showed a stronger association with the participants' reduced mental health and QOL at treatment start. (See Paper I).
4. According to the multiple linear regression of the different subtypes of PTCEs, *Family Violence* and *External Violence* during childhood both yielded significant associations with symptoms of psychological distress and QOL at treatment start. Family Violence was significantly associated with Anxiety and the QOL-variables Psychological Health and Environmental Conditions. External Violence was significantly associated with PTSD-Arousal, PTSD-Avoidance, Depression, and the QOL-variable Psychological Health. (See Table 5, Paper I).
5. The Total Model involving the four subtypes of PTCEs significantly explained variation in PTSD-Total, PTSD-Arousal, PTSD-Avoidance, Depression, and the QOL-variable Psychological Health (see Table 5, Paper I).
6. In our correlational study of the Rorschach components, we found that *Trauma Response* was significantly and positively associated with Years of Education, Any Work in Norway, and Recent Employment. Positive scores corresponded with more resources/better functioning. *Reality Testing* was significantly and positively associated with Years of Education and negatively associated with Interpreter Use. Thus, positive Trauma Response and Reality Testing scores, *i.e.* flooded responses and adequate Reality Testing corresponded with more *resources/better functioning*, and constriction and impaired Reality Testing with poorer functioning. (See Paper II).
7. Next, we found that Trauma Response was significantly and positively related with PTSD-Reexperiencing symptoms, that is, patients with a flooded Trauma Response also had more intrusive posttraumatic symptoms according to the HTQ. There were no significant relationships between Trauma Response and the remaining measures of symptoms or QOL. (See Paper II).

8. Reality Testing was significantly associated with Anxiety and with QOL in Social Relationships, Physical Health, and Psychological Health, that is, patients with impaired Reality Testing had more anxiety and poorer QOL. Conversely, adequate Reality Testing was significantly associated with less Anxiety and better QOL in these areas. (See Paper II).
9. According to an Oblimin rotation of the two Rorschach components, the correlation between the components was very low (Paper II). However, increasing intensity of flooded and of constricted Trauma Responses correlated significantly with increasing Reality Testing disturbance (when correlating Reality Testing scores with the absolute values of the Trauma Response scores; Paper III). Thus, although flooded Trauma Responses were generally associated with better resources and functioning than constricted responses (Paper II), the relationship with impaired Reality Testing of more extreme values of Trauma Response, both constricted and flooded, was thereby also likely to imply poorer functioning. (For the relationship between the components, see Figure 2, below).
10. According to the mixed effects analyses, over the three years of follow-up, when adjusted for time, better Reality Testing was associated with significantly less anxiety and fewer/less intense arousal symptoms of PTSD, and with significantly better quality of psychological health. Adjusted for time, the Trauma Response component was not significantly associated with any symptom or QOL measure (Paper III).
11. The overall interaction between Reality Testing and Time was significant for PTSD-Avoidance. In addition, two other models including Reality Testing and Time, showed significant interactions with the change in scores from T1 to T2 (PTSD-Reexperiencing, and PTSD-Total).There were no significant interaction effects between the two components, and no significant interaction effects involving the Trauma Response component. (See Tables 4 and 5, Paper III).
12. The change in symptoms took different directions after treatment start, depending on the participants' Reality Testing score. The effect of the interactions in three models with significant time contrasts or overall effects are illustrated in Figure 1, Paper III. The Figure shows the model-based differences in the outcome variables PTSD-Avoidance, PTSD-Reexperiencing, and PTSD-Total when Reality Testing values were set to -1, 0, and 1. As can be seen in Figure 1, the changes followed a similar pattern in all three models: Participants with adequate Reality Testing (score +1) improved markedly the first year with a steep decrease in symptoms from T1 to T2, and then they retained much of this decrease at the 3-year follow-up (T3). Participants with

only somewhat reduced Reality Testing (at sample mean, score 0) improved slightly from T1 to T2 and slightly more from T2 to T3. Participants with impaired Reality Testing (score -1) had a marked increase in symptoms from T1 to T2, and then symptoms decreased approximately to their original T1 at T3.

13. Reality Testing was positively associated with real life functioning. According to logistic regressions, higher scores on Reality Testing significantly increased the chance that the participants would be employed at T1, and that they could communicate with us in Norwegian at T1 (OR = 2.0) and also at T3 (OR = 2.8). (See Paper III).
14. Participants with higher scores on Reality Testing attended therapy sessions more frequently in the course of the first year after treatment start as well as over all three years of follow-up. Results also sub-significantly indicated that patients with a flooded Trauma Response met more frequently for sessions in the first year, and that there was a positive interaction effect upon Frequency of Sessions between Reality Testing and the flooded half of Trauma Response over the three years. There were no significant relationships between any Rorschach component and treatment length. (See Paper III).

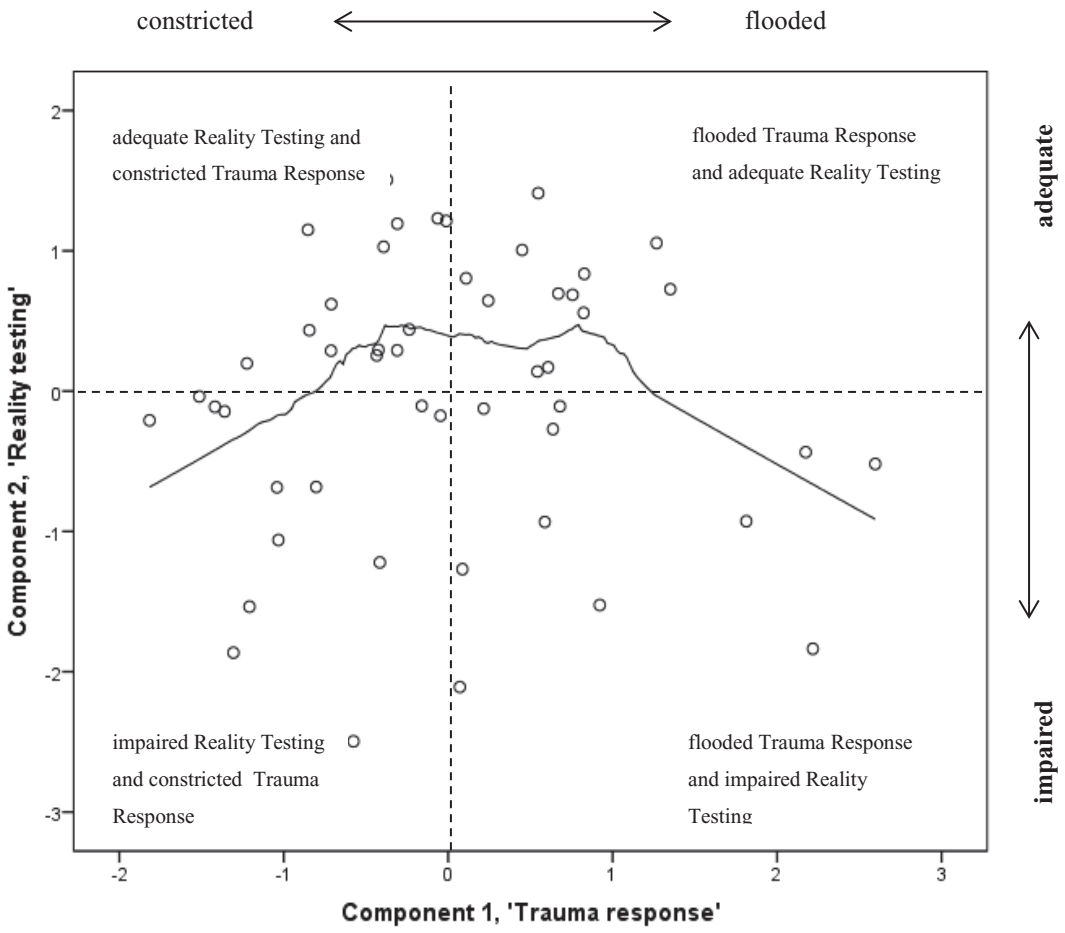


Figure 2. Scatterplot of the participants' scores on the Trauma Response component and on the Reality Testing component (Rorschach components resulting from Opaas & Hartmann's principal components analysis; 2013, Paper II). Component scores are standardized, and values around zero therefore represent the mean in our sample. Each circle represents one participant and his or her scores on the two components.

The mountain-shaped line is a locally weighted scatterplot smoothing ('lowess') curve, approximating the relationship between the components. The 'mountain top plateau' represents Reality Testing that is fairly adequate, and a Trauma Response that is neither too highly flooded nor too highly constricted. The 'mountain sides' illustrates that as Trauma Response values get increasingly flooded or constricted, Reality Testing becomes increasingly impaired (see mean values of the Rorschach variables, Table 2, Paper III).

8. Discussion

The first of our two main findings was the significance of adverse childhood experiences for traumatized adult refugee patients' mental health and quality of life. The other was the finding of the trauma-related personality dimensions that characterized this clinical refugee sample. While both the Trauma Response and the Reality Testing dimensions elucidate important aspects of the mindsets of the participants, the Reality Testing dimension was more closely associated with the participants' mental health and wellbeing over the three years. A related finding of potential importance was the way in which symptoms took two opposite trajectories over the first year after treatment start, showing improvement or deterioration depending on whether participants' scores on the Reality Testing dimension were positive or negative. Many aspects of our results are worth discussion, but what follows will be focused on the main findings.

The salience of childhood trauma

Our study of childhood trauma is rare among existing research with adult refugees. The number of different kinds of potentially traumatic childhood experiences undergone by the refugees was more strongly related, overall, to symptoms of mental disorder and to quality of life than the number of different kinds of potentially traumatic experiences of war and persecution that they had endured, even if those experiences included torture, rape, and near-death experiences. Thus, the association of childhood trauma with the outcome measures was not overshadowed or erased by later preflight exposure to war and human rights violations during adult years, by the dangers experienced during flight, or by the challenges of living in exile over a mean of more than 10 years in Norway. Our findings support developmental theory and research, outlined in the introductory chapters, concerning the negative implications of repeated or severe adversities in childhood. In Daud et al.'s (2008) study, male refugees with adult experiences of torture had more anxiety and personality difficulties than Swedish male prisoners with prolonged histories of childhood traumatization. However, many factors may have contributed to their findings, such as the possibility that the tortured refugees had also experienced childhood traumatization and many other additional adverse events. Our findings regarding the importance of childhood adversities among war-traumatized individuals uphold Olema et al.'s (2014) conclusion from their study, that "the impact of child maltreatment on psychological disorders surpasses the damage of war trauma" (p. 35).

The two kinds of trauma variables in our study did not interact noticeably to create a stronger impact on each of the outcome variables. Instead, they mapped onto different variables more or less discretely. Childhood adversities were associated with more *arousal* and *avoidance* symptoms of PTSD, and also with poorer quality of life, while war-related events were associated with more *reexperiencing* symptoms of PTSD. The cited theories and research within developmental and neurocognitive psychology provide possible explanations for some of these differences, in suggesting that childhood trauma is associated with difficulties with emotional regulation, which may lead to increased arousal (*e.g.,* Eckart et al., 2012; Sapolsky, 2007; Schore, 2009). Furthermore, the cited developmental theories (*e.g.*, Schore, 2002) give reason to believe that adverse events must be experienced, symbolized, and stored at some level, for them to reappear in the form of intrusive memories. According to this model, reexperiencing symptoms would be more likely to appear if the individual was more mature when the traumatic events happened. This could explain the association that we found between reexperiencing and war-related events, which were generally experienced as adults, and also, perhaps, why there was no significant relationship between adverse childhood experiences and reexperiencing symptoms of PTSD.

Childhood experiences of being a victim of or witness to violence, either within the family or outside of the family were found to be significant in relation to the participants' subsequent posttraumatic and depressive symptoms and poorer quality of life. Our findings comply with Breslau et al.'s (1999) finding of the striking effect of assaultive violence during childhood.

Two trauma-related personality dimensions

In the analysis of results from the Rorschach personality assessment, only variables with presumed relevant to traumatization were included. By our principal component analysis, we expected we might find separate components pertaining to constriction and flooding. Instead, two strong components emerged, where Trauma Response seemed to contain both constriction and flooding along a continuum from negative to positive component scores. As component scores approached either the negative (highly constricted) or the positive (highly flooded) pole, we interpreted this as indicating increasingly unhealthy adaptations of the personality. More normal personality functioning was represented by scores around the mean (0). The other component, Reality Testing, emerged unexpectedly, and the poles from minus to plus seemed to represent a continuum from impaired to increasingly intact Reality Testing.

Even if one of the reasons for conducting a principle component analysis or factor analysis is the reduction of many variables to a more manageable number of variables, and

even if variables that vary together in personality assessment are assumed to reflect the workings of an underlying personality dimension, we will turn 'backwards' in parts of this discussion, and have a closer look at some of the individual Rorschach variables that make up the components. The purpose of this is to acquire a better grasp of the qualities of the two components.

The Trauma Response dimension. The concomitant presence in our study of elevations in traumatic intrusions and thought disturbance in the Trauma Response component among individuals with no diagnoses of psychoses support the interpretation by *e.g*. Ephraim (2002) and Van der Kolk and Ducey (1989), that trauma reminders and intrusive ideation disturb logical thinking in individuals with otherwise normal cognitive functioning. The Trauma Response dimension illustrated the problems with emotional regulation and self-regulation more generally among the participants in our study. This was apparent in the insufficient structure of emotional expressions in flooded responses and the over-control in constricted responses. Part of the participants appeared predominantly flooded, by intrusive recollections and concomitant intense emotions and chaotic thinking, and others appeared predominantly constricted both emotionally and cognitively.

Even if this was the main trend, many of the participants also showed evidence of both flooding/intrusive imagery and constriction/avoidance/numbing in their Rorschach responses, as described in previous literature (*e.g.*, van der Kolk, McFarlane, & Weisæth, 1996; Lemma & Levy, 2004; Yorke). The "biphasic psychological response to trauma", as outlined by *e.g.* Horowitz (1976) and van der Kolk (1994) could imply individuals vacillating between flooded and constricted functioning from response to response in the Rorschach, as well as a tendency towards one or the other at different times of the posttraumatic process. My conjecture with regard to our Trauma Response component is that also more stable personality traits were involved, so that a given individual would tend more towards either a constricted response or a flooded response to trauma. Only one of the individual Rorschach variables of the Trauma Response component (the *m*) were among the few variables that were found to be more unstable by Grønnerød (2003), and depending on situational stress. The remaining ones were among those found to be relatively stable across time.

Flooding. The flooded responses to Rorschach with mental, emotional, and behavioral over-activation, can be understood as resulting from overwhelming associations and feelings "breaking through the mental barrier" (Freud, 1920). In our study, flooded responses were associated with reexperiencing symptoms of PTSD, but also with resourceful functioning (ability to speak Norwegian and employment). This finding can be seen in relation to Lecic-Tosevski's finding that more 'balanced' personalities reacted to higher trauma exposure with

higher intensities of symptoms. However, the more intensely flooded responses among our participants, characterized *e.g.* by more intrusive imagery, logical breaches, unstructured emotions, vigilance, hyper-arousal, and of overly complex thought processes, was associated with negative scores on the Reality Testing dimension and thus probably also with less resourceful functioning. Rorschach trauma researchers (*e.g.*, Arnon et a., 2011; Kaser-Boyd & Evans, 2008) have found an elevated WSum6, signifying thought disturbances, to be characteristic of traumatized individuals. This variable is and analog to the SevCog variable within our Trauma Response component. Thus, both variables are indications of impaired reality testing, but of a different quality than the reality testing difficulties assessed by our Reality Testing component, an issue that will be discussed later (see below).

Constriction. The more constricted part of the Trauma Response dimension was characterized by simple responses with little emotional expression, parallel to many of the Rorschach signs of "*traumatic avoidance*", designated by Kaser-Boyd and Evans (2008). Low R (number of responses) has been described as "the patient's attempt to limit and escape painful associations" (Brand et al, 2006, p. 154) and has been found to be a part of a constricted, avoidant reaction to trauma (*e.g.*, Viglione et al., 2012). In our study, number of responses was only insignificantly associated with constriction in the Trauma Response component. However, it was clearly associated with the other individual variables in the Reality Testing component. It is premature to try to evaluate the potential significance of the place of R within our components.

Viglione et al. (2012) held that an avoidant reaction "should be reflected in reduced externally directed cognitive activity, and in turn, simplistic, thematically impoverished, and shorter Rorschach records" (p. 138). The present author's view is that the constricted Trauma Response in our study not only reflected restricted *externally* directed mental activity, but also restricted *internally directed* activity, resulting in an impoverished mind with little access to associations and reflection. The indications of constriction in our study can be understood along the line of the "mental turning off", described by Garland (2004), and as one kind of effort to avoid the "mental catastrophe", described by Varvin and Rosenbaum (2003). Thus, the constricted Rorschach responses in our study can be seen as efforts to defend against overwhelming associations and feelings triggered by details of the Rorschach images, somehow reminiscent of the trauma. The defensive strategies appearing in the way to respond to the Rorschach assessment may go along with "strategies" in other parts of life, such as social withdrawal and blocking of thoughts, memories, and feelings, described by many of the participants.

In the Paper II study, we found that participants with a more constricted Trauma

Response had less often held employment in Norway, and more often could not communicate with us in the research interviews without an interpreter. In our study, therefore, constriction seemed connected with poorer adaptation after trauma. Furthermore, constriction was associated with *less* reexperiencing symptoms of PTSD, and was not associated with any other symptom or quality of life variable. One possible explanation for the lower score on reexperiencing symptoms among the constricted participants may be that their defensive strategies were successful in limiting the reexperiencing of traumatic events. Viglione et al. (2012) pointed out that constricted Rorschach records do not show much of the individuals' difficulties or idiosyncrasies and that such Rorschach responses are efforts at suppressing, rather than expressing, internal matters. Hooberman et al.'s (2010) study, which employed other methods than the Rorschach, showed that a coping style characterized by *e.g*. social withdrawal and avoidance, which may correspond with characteristics of the constricted individuals in our study, represented a risk factor for *more* symptoms of PTSD. Bonanno (2004) reported that individuals who scored higher on tendencies to avoid unpleasant thoughts, emotions, and memories (repressive copers) had been found to show more autonomic arousal , but that some studies also had shown their long-term better adaptation after extreme adversity. However, we found that individuals with constriction (taken as a possible indication of a repressive coping strategy) tended to have less arousal symptoms of PTSD than those individuals with more flooded responses. There is the possibility that it is a question of degrees: Flooded responses (both emotionally and cognitively) and constricted responses (inhibiting both emotional responsivity and the emergence of thoughts) may both, if extreme, be associated with negative outcomes such as autonomic arousal, even if such a relationship was not examined in our study.

The Reality Testing Dimension. The Reality Testing results of the participants in our study were important to their symptom level, quality of life, and real life functioning. The problems with reality testing identified by this component was of a perceptual, probably trauma-based nature, and not to be confused with the reality testing difficulties of psychotic patients, as underlined by *e.g*. Van der Kolk and Ducey (1989).

Difficulties regarding perceptual accuracy and reality testing in connection with trauma have been discussed in theory and documented in research (Bowlby 1988; Haviland et al., 1995). In accordance with Haviland et al. (1995), we found in our three-year follow-up that disturbances in reality testing were positively related with PTSD symptom severity – in our case with Arousal symptoms of PTSD. In Haviland et al.'s (1995) study, however, the assessed reality testing disturbances were divided into three subscales, reality distortion, uncertainty of perception, and hallucinations/delusions, and among these, 'uncertainty of

perception' was most strongly associated with outcome. This subscale implied "a keen sense of doubt about one's perception of internal and external reality" (p. 1055), and seemed thus to be of a different quality than our Reality Testing dimension.

For many of the participants in our study, their perceptual process seemed geared to restrict impressions or focus attention only on certain characteristics, and only to a limited degree allow them to see what there was to see. Defensive operations thus seemed to restrict perception in a way that impeded their reality testing, and which resulted in responses that poorly reflected the characteristics of the Rorschach images. The finding in our study, that participants who tended towards more adequate Reality Testing had fewer/less intense symptoms of mental disorder and better quality of life across time, was hardly surprising, because intact reality testing could be considered a personal strength that is related to other resources in the personality. Participants with scores indicating more impaired Reality Testing accordingly fared less well on the same measures.

There may be several routes which lead to Rorschach results indicating the participant has impaired Reality Testing. Constricted perception could be related to a more trait-like genetic or developmental disposition of the individual, or be acquired as part of the chronic course of participants' posttraumatic condition. It could come into play at the point of any rapid and pre-conscious perception (*e.g.*, Brewin et al., 2010) of isolated forms, color, or other qualities of the Rorschach images that were reminiscent of traumatic experiences, functioning as a danger signal. Several kinds of perceptual biases might have led to impaired Reality Testing: a bias towards any salient stimulus (Esterman et al., 2013) or signal of danger (Amir et al., 2009), lack of ability to see what is normal (Kleim et al., 2012), or a different kind of bias, which the present author will call a perceptual 'veil', through which details are blurred, and impressions are vague and global, all leading to the gathering of insufficient information and subsequent faulty conclusions. Although initiated from within, the perceptual bias that is expressed and quantified by the Rorschach Reality Testing component can be viewed as a perceptual strategy and defensive operation stopping the acquisition of more detailed or fuller contextual information at the *external level*, so to speak. Due to the imprecise or highly selective quality of the percepts that could then be let into the mind for further processing, a proper reality-testing process would be prevented.

Different qualities of reality testing

Several theoreticians and researchers have noted the compromised capacity to distinguish reliably between external and internal reality in times of severe stress (Freud, 1914; Grubrich-Simitis, 2010; Schore, 2002). Viglione et al. (2012) linked the confused thinking

and idiosyncratic perception of traumatized individuals to their attempts at cognitive constriction and suppression of imagery. In our study, confused thinking/disturbance of formal thinking (SevCog) was part of the Trauma Response component. SevCog weighted positively onto the component and was thus positively a part of flooded responses. Perceptual distortions (elevated FQ-) and idiosyncratic perception (low FQo and low D) was part of the Reality Testing component. This means that both our components comprised evidence of reality testing difficulties. The different qualities of the reality testing difficulties between the two components/dimensions deserve further discussion.

Except for a few who were severely cognitively and emotionally constricted, a majority of our participants showed Rorschach evidence of traumatic intrusions (TCI), disturbance of formal thinking (SevCog), and poor perceptual judgment/perceptual distortions (FQ-), consistent with Rorschach findings in other traumatized samples (e.g., Kaser-Boyd & Evans, 2008; Viglione et al., 2012). In our Trauma Response dimension, the thought disturbances and the traumatic intrusions (TCI and SevCog) varied together, and this was taken to mean, in line with other researchers' notions, that trauma reminders and intrusive ideation disturb logical thinking. However, the perceptual distortions and idiosyncrasies inherent in the Reality Testing dimension did not vary together with traumatic intrusions evidenced by the higher TCI of the flooded Trauma Response. Thus, the kind of reality testing difficulty evidenced by the Reality Testing component was not necessarily triggered by traumatic intrusions.

Within the perceptually based Reality Testing dimension, the present author will suggest that a defensive perceptual operation limited the inspection of the Rorschach images. The evaluation of the object/situation then also became deficient, leading to vague or inaccurate responses. In real life, such difficulties may perhaps be described as distorting what there is to be perceived, and then misinterpreting the event. The reality testing disturbance of the SevCog in the Trauma Response dimension, on the other hand, could be described as a 'short circuiting of the mind', resulting from high emotional stress and hyper-activation. Such difficulties would entail difficulties in keeping a coherent and logical chain of thought when under stress. According to Hartman's (1956) thinking, problems with reality testing of inner reality was related to neuroses, and problems with reality testing of outer reality was related to psychosis. According to this view, reality-testing difficulties connected with external events were more severe. This could explain the greater association with poorer mental health and reduced wellbeing of the negative range of scores on the Reality Testing dimension, than of the thought disturbance that was an integral part of the Trauma Response dimension. If we take into account the finding that increasingly "extreme" values in both

directions of the Trauma Response dimension, indicating intense flooding or severe constriction, were associated with increasingly negative values on the Reality Testing dimension, we see that both kinds of reality testing difficulties becomes associated at some level of intensity.

Opposite trajectories after treatment start

The interaction effect of Reality Testing with time on three outcome variables, PTSD-Avoidance, PTSD-Reexperiencing, and PTSD-Total, showed a marked difference in the patterns of symptom change, depending on the participants' Reality Testing scores. We have not found comparable studies or findings in the clinical refugee research literature. Our models indicated that participants with adequate Reality Testing improved markedly after therapy start, and retained their improvement at the three-year follow-up, while participants with impaired Reality Testing actually had deteriorated markedly at the one-year follow-up, and were more or less back on their pretreatment level at the three-year follow-up. The findings indicate that, across the variety of therapists and psychotherapy approaches represented in our study, participants with a positive score on Reality Testing improved, showing that they probably could profit from many different therapies. Possibly this finding can fit into results relating better outcome to *e.g*. higher ego strength (see p. 20), noted in the general psychotherapy literature. The negative trajectory of participants with impaired (perceptual) Reality Testing is worth noticing. It suggests a need to study if there are conditions, *e.g*. more time or more finely tuned treatment approaches, under which these patients could improve.

Childhood trauma and reality testing difficulties: a connection?

Could there be a connection between the (perceptual) Reality Testing difficulties that we found, and participants' childhood trauma? As shown in the introductory chapters, childhood trauma has been related to difficulties with reality testing (*e.g*., Schore, 2002). From a theoretical point of view, it is thus conceivable that participants with more severe childhood PTEs would be the ones with lower score on the Reality Testing dimension (more impaired). So far, we have not investigated any such associations.

Other aspects of our findings

Risk factors characteristic of our participants. Several of the risk factors outlined in the literature applied to our participants, such as little education and interpersonal trauma (e.g., Hooberman et al., 2010; Martins et al., 2014; Weathers & Keane, 2007). Furthermore, most of our participants were severely and repeatedly exposed to potentially traumatic events,

which represent a known risk factor for the development of PTSD (*e.g.*, Breslau et al., 1999; Briere & Elliot, 2000). Most of the participants had also been exposed to potentially traumatic events in childhood, which has been found related to deviations in regulatory functions and relational capacities (e.g., Schore, 2002, 2009), increased vulnerability to later stress (*e.g.*, Breslau et al., 1999; Briere & Elliot, 2000), and lifetime adverse outcomes on health, prosperity, and wellbeing (*e.g.*, Anda et al., 2006; Danese et al., 2009;). In addition to the general risk factors mentioned, many participants had experienced torture and rape, which are known to make a severe impact on psychological health (*e.g.*, Chu, Keller, & Rasmussen, 2013; Gorst-Unsworth & Goldenberg, 1998; Hooberman et al., 2007).

Physical pain and illness. The high rate of bodily pain and ailments among the participants, reported in the qualitative interviews, in specific items of the questionnaires, and reflected by the low score on the quality of physical health (QOL-Physical Health), fall in line with other research findings (*e.g.,* Lupien et al., 2009; Danese et al., 2009; Teodorescu et al., 2015), and with theories connecting mental and physical pain, and even bodily disorders and death (*e.g.*, Anda et al., 2006). I understand the physical suffering among our participants as a composite result of physical hardships (strenuous work, mal-nutrition, abuse, and torture) and intense and/or chronic dysregulated thoughts and emotions altering stress-related physiology, causing physical illness (*e.g.*, Sapolsky, 2007). In a psychoanalytic language the effect of trauma on the physical body can be expressed as overwhelming experiences overriding the binding and symbolizing capacities of the ego, generating biological changes (Rosenbaum & Varvin, 2007).

Social isolation and loneliness. Many of our participants described isolating themselves, rejecting social contact with family, friends, and others, or a strong internal feeling of loneliness. The social isolation and inner loneliness can be understood as a result of the damage to internal objects, attachment, and relational capacities caused by pre-trauma and traumatic experiences (Fonagy & Target, 2005), the utter abandoned feeling resulting from lawless and hostile surroundings in captivity (Varvin & Rosenbaum, 2003), and as a transformation of benign internal representations into being experienced as malevolent, making attachment to others be perceived as threatening (Lemma & Levy, 2004; Parson, 1998). Such damages would hinder the solace of being able to retrieve reassuring internal objects and good memories, or the seeking to others for companionship and support.

A crushed identity. We also noticed the reporting of strong feelings of shame and worthlessness among the participants, as also observed in other studies of traumatized samples (Furukawa & Hunt, 2011; McNally, 2003; Weathers & Keane, 2007). Feelings of worthlessness and shame were also given by several participants as a reason for the self-

inflicted and deliberate social isolation. Furthermore, based on the prevalence of severe experiences like torture and rape in our study, we can assume, in line with Varvin and Rosenbaum (2003), than many of our participants suffered from a crushed identity, a sense of not belonging, and intense feelings of shame and worthlessness, complicating the consequences of trauma.

Improvement – Outcome. We studied improvement at a mean level as a function of reduction in symptoms, increases in quality of life, and increases in language skills and employment. It is likely that improvement would be related to a number of aspects working together, like the factors touched upon in the introductory chapters. We understood the outcomes as any combined effect of personal qualities of the patient, what happened in the patient's life outside therapy during these years, the totality of the treatment experience, the comprehensive research assessments, and the passing of time. Any changes over the three years could not be specifically related to treatment, due to the design of the study. Improvement in the patients of our study might thus be related to other factors than the treatment received. However, the long time that had passed since the traumatic events, the long duration and the high degree of functional impairment, the high amount of potentially traumatic experiences, the severe symptom load, the high degree of comorbid anxiety and depression, speaks against significant improvement due to time alone.

The model-based finding of diverging trajectories, improvement or deterioration, the first year after treatment start, depending on the score of the Reality Testing component (negative or positive), were less clear after the first year of the study. Clarkin and Levy (2004) offered an argument that may serve as one explanation to why this was so: "pretreatment client variables have a plausible impact on therapy, but as soon as therapy begins, the client variables are in a dynamic and ever changing context of therapist variables and behavior" (p. 215). Furthermore, they stated that the patients' trajectories and the statistical relationship between pretreatment patient variables and outcome would depend on the therapists' responsiveness to characteristics of the patients. Another factor in our study was that after the first year, many of the patients' therapies were terminated, so the situations among participants were more diverging than during the first year.

Methodological Reflections

The meeting of cultures. When preparing to do cross-cultural research or work therapeutically with individuals from a different culture than one's own, it is useful to be aware of having a culture oneself, which shapes one's way of thinking, feeling, and acting. There are a vast number of issues where cultural differences and potential conflict of interests

and values are great. It is helpful to know as much as possible about other cultures, but in my experience, it is also possible to get off to a good start by taking a stance of sensitivity, politeness, openness, and asking questions in order to learn more. The use of interpreters in clinical and research practice has inherent problems of a linguistic and cultural nature, well known in transcultural settings (Crosby, 2013), but interpreters can also be a valuable source of cultural knowledge. My evaluation of the measures which were taken to reduce language barriers, was that, to a fair degree, we were able to detect misunderstandings and establish good rapport and communication.

Conducting research on "foreign ground". I work at a national research center, which does not offer treatment. Clinical research has to be implemented in cooperation with external treatment units. The choice to conduct the assessment interviews personally entailed a need for us to gain access to the clinical units, to their patients, and to their facilities. The treatment units were very helpful at lending us different offices that were vacant the day we arrived. However, some parts of our original plans proved difficult. For example, we were not able to make use of a method which would frequently have required use of a room in order for the patient (and the interpreter, if necessary) to sit in privacy and complete questionnaires after sessions, since there was no such room available. Getting therapists to tape sessions was successful in the individual practices, but not in the clinics.

Research is increasingly being emphasized as an important part of health services and other enterprises. Session-by-session monitoring of the treatment process has been found to be useful in preventing dropout and improving outcome in psychotherapy (Lambert, 2013). It is probably time for every treatment service to have a room with a computer, reserved for patients to respond to treatment process studies and other research.

The Adult Attachment Interview (AAI). It must be noted that although the AAI was not used in this PhD study in its own right as a method with a scoring system and defined interpretations, the manner of questioning used elicited information that we might not have obtained through 'regular' questioning. For instance, the request for five words that illustrated the participants' relationship with their mother, father, or care-taker, and then the request for an episode that illustrated each of the five words, obliged them to abandon conventional phrases, turn inward, and search their memory for personal experiences. Sometimes these deeply personal accounts contradicted the responses first given. In this way we, and also the participant, became aware of both good and hurtful family and childhood experiences. In the same manner as the Rorschach assessment, this kind of interviewing had to take place within an empathic and supportive atmosphere. Under these conditions, our impression was that the AAI interview was experienced as deeply meaningful by many of our participants.

If I could start again...

- I would have included an instrument to assess interpersonal relating, as many researchers and theoreticians of traumatization have stressed problems in this area.
- I would also have included an instrument tapping into resourceful functioning, as this would have been an important marker of the patient's pre-treatment condition and of change/improvement. In the follow-up interviews especially, as treatments reached termination, it would have felt more inspiring/uplifting and perhaps more ethical to have also recorded resourceful or healthy functioning.
- I would have used the computer program Multilingual Computer Assisted Interview (MultiCASI; Knaevelsrud & Müller, 2008), which is computer-based and self-explanatory. This method does not require reading and writing skills. Subjects can read and/or hear the questions in their own language and then enter their answers on the computer. When used with a quality-checked translation of the questionnaires into each relevant language, this method has been found to function well with refugees of various nationalities, and with literates as well as illiterates. Using this method, we would have missed out on the respondent's successive associations and reactions to the questions, which we found valuable, but the Multi-Casi Method could probably have contributed to more valid and reliable answers, have been less emotionally demanding on both sides, have enabled the inclusion of more instruments, and would have left time to concentrate on the qualitative interviews. Even if the researcher was present during the Multi-Casi session, the turning away from the computer and towards each other would have marked a shift between self-report inventories and qualitative interviews that I think would have been helpful for both.
- Would I have used the Rorschach? It was time-consuming, but gave an instant understanding of how the participants were affected by their traumatic experiences. Also, using this method can generate new and unexpected findings, for example, it was useful in bringing to light the special nature of reality testing difficulties in these refugees, a finding which may be of interest and potential value to the field.
- We were warned about the size of the project being very large. I have no regrets, but if I were to start another such comprehensive study, I would make sure that we had more research staff available to assist.

9. Strengths, limitations, and conclusions

Strengths and limitations

Comparable studies of clinical samples of traumatized refugees (*e.g.*, Teodorescu, Heir, et al, 2012), which demanded skills in the language of the country of exile, have generally reported lower mean symptoms of PTSD and/or higher quality of life than we obtained in our sample, where participants were not required to have Norwegian language skills. We suggest that the frequent lack of Norwegian skills despite a long mean residency in Norway, the severe mental health suffering, the low QOL, and the low participation in the labor force that we observed in our study give a representative picture of the severity of the psychosocial situation of refugee patients in Norwegian mental health clinics.

The multiple kinds of assessment methods used gave a range of different kinds of results and insights into the refugees' situations and ways of thinking, feeling, and experiencing themselves and their surroundings. The longitudinal design allowed us to investigate trends and relationships over three years. The significance of adverse childhood experiences among adult refugees has rarely been demonstrated before. Furthermore, the systematic use of Rorschach in research with a sample of traumatized refugee patients is, as far as we know, new, just as is the idea to use factor-analysis to study how the trauma-related Rorschach variables varied together. Although many of the Rorschach variables that we studied have been related to trauma before, the special combination of variables in the personality-related components that were extracted is unique to this study, and were found to be significantly related to important outcomes.

Our study comprised traumatized refugees from many parts of the world, representative of the heterogeneous clinical reality in Norwegian treatment services. The cultural differences, specific cultural understandings, and the unique traditions and practices of this diverse group would have been too extensive to address within the study, and in addition, the subgroups produced would have been too small. This resembles the clinical reality of most treatment sites, where it is not practicable to possess specific cultural knowledge or to arrange specific therapies to match cultural background.

The present study could not ascertain which aspects of the participants' personalities were formed by their traumatic experiences and which aspects would have been part of their personality in any case. Even so, based on our choice of Rorschach variables which had been found to relate to trauma in other studies (e.g., Kaser-Boyd & Evans, 2008; Viglione et al, 2012), we considered the two principal components to represent trauma-related aspects of the

participants' personality functioning. However, personality assessment was performed at treatment start, when participants might have been in a state of crisis. This fact could make it difficult to assess the degree to which the results reflected their present state, relative to more enduring personality difficulties (see Lecic-Tosevski et al., 2003). Many of the Rorschach variables included in the study, however, have been found to have high temporal stability (Grønnerød, 2003).

The relatively low number of participants and their overall high degree of mental health suffering and low function may have limited the results in several respects. Participants in the study had more or less abnormal personality function for most of the studied aspects, which resulted in low variability. This fact may be one of the reasons why the components' ability to predict the mental health and quality of life of the participants was limited. Furthermore, due to the number of participants in our study, interaction effects could only be investigated to a limited degree. For the same reason, some potentially important associations may also have gone unnoticed. It must also be noted that many factors besides treatment may have had influence on the state and any changes within the participants' mental health, wellbeing and function through the follow-up period. Finally, the presented findings have been produced by one single, relatively small study. The results must therefore be understood as tentative, requiring support from other research and larger samples. (See the individual papers for more comments on strengths and limitations).

Implications

The two personality dimensions, Trauma-Response and (perceptual) Reality Testing, may be useful as organizing constructs when evaluating traumatized refugee patients for treatment or in research. Adequate Reality Testing was associated with ability to satisfactorily perceive and assess external information, which may make joint work in therapy easier to achieve. The low overall improvement in the subgroup with impaired Reality Testing suggests the need to assess which interventions may be more helpful, under which conditions, and the amount of time needed to effect change.

Furthermore, the two qualities of reality testing difficulties, with different implications for health, well-being, and chance to improve, may – if supported by other research – give rise to further theoretical thinking, research, and development of treatment interventions.

Conclusions

The salience of childhood adversities in a group of war-traumatized adult refugees has, to our knowledge, rarely been demonstrated before. Our study highlighted the prominence of the effect of childhood adversities, compared to war-trauma, on adult mental health, although this is not saying that atrocities of war and persecution do not cause much suffering and leave deep scars. The study showed a stronger association between the participants' adverse experiences in early developmental phases and their current mental health and wellbeing, 20-30 years later, than more recent and severe experiences of war, the violent deaths of close persons, persecution, imprisonment, and torture. Our findings confirm developmental theories and research from other patient groups into the impact of early and accumulated adversities and trauma, and suggests that such experiences should be addressed in therapy and research.

Furthermore, the use of the Rorschach and principal components analysis resulted in the finding of two strong personality dimensions that characterized the participants' ways of responding to the assessment – and allegedly – to stressful situations in real life. We found that there was no significant association between the participants' response to trauma in terms of more flooding or constriction and their mental health and quality of life across the three years of follow-up. Only the more extreme values of flooding or constriction were associated with impaired reality testing, and therefore possibly also with more severe mental health problems and poorer quality of life. Somewhat unexpectedly, we found a perceptual-based reality testing dimension that seemed to be important to both the level of mental health suffering and the chance to improve within the time-span of this study. With the model-based finding of diverging trajectories over the first year after treatment start, depending on the score of the Reality Testing component (negative or positive), we may have come one small step closer to identifying a patient-related variable that makes a difference to the patients' trajectories towards improvement or deterioration.

The therapies were performed at different places, and therapists had had different training, they surely must have had different approaches to psychotherapy, and they were different people. Participants with adequate (perceptual) reality testing, according to our statistical models, were still shown to improve. This finding could indicate that refugee patients with adequate (perceptual) reality testing may gain from a variety of therapeutic approaches – as in this study. In contrast, participants with impaired (perceptual) reality testing may need a treatment approach that is specifically attuned to their personality function, or they may need long-term treatment to improve.

The Rorschach personality assessment method was especially suited to show the impact of trauma, the manner in which the participants perceived, organized, and interpreted their perceptual impressions, and the degree to which these impressions arose various associations that were conveyed to us in their responses. The reality-testing difficulties that we found could not have been discovered by self-report measures, and would have been hard to detect in clinical interviews. Likewise, the questions of the Adult Attachment Interview were especially apt to elicit childhood experiences beyond stock, conventional phrases.

In this way, the present author hopes that we have contributed small pieces of new knowledge to the field of refugee mental health and to the understanding of these patients' suffering and chronicity. We have pointed out areas deserving greater attention in both treatment and research. Nevertheless, there is a need for yet more research, with both similar and different groups of refugees in order to confirm, expand, or refute the present findings.

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APPENDIX

Posttraumatic Stress Disorder (PTSD) – DSM-IV

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association [APA], 1994) a PTSD diagnosis required:

A. *Exposure* to a traumatic event where the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of the self or others, and where the person's response involved intense fear, helplessness, or horror.

B. *Reexperiencing* the traumatic event in one or more of the following ways: recurrent and intrusive recollections of the event, recurrent distressing dreams of the event, acting or feeling as if the traumatic event were happening again, intense psychological distress at exposure to internal or external reminders of the traumatic event, and/or physiological reactivity on exposure to such reminders.

C. *Avoidance* of stimuli associated with the trauma and numbing of general responsiveness indicated by at least three of the following: efforts to avoid thoughts, feelings, or conversations associated with the trauma, efforts to avoid activities, places, or people that arouse recollections of the trauma, inability to recall important aspects of the trauma, markedly reduced interest or participation in significant activities, feelings of detachment or estrangement from others, restricted range of affect, or sense of a curtailed future.

D. *Arousal*, indicated by two or more of the following: difficulty falling or staying asleep, irritability or outbursts of anger, difficulty concentrating, hypervigilance, or exaggerated startle response.

E. Disturbance must have lasted more than 1 month.

F. The disturbance causes clinically significant distress or impairment in social, work-related, or other central areas of functioning. The disturbance can be specified as acute (symptoms less than 3 months), chronic (3 months or more), or with delayed onset (onset of symptoms at least 6 months after the stressor).

Enduring personality change after catastrophic experience (ICD-10)

The F62.0 diagnosis in the International Classification of Diseases (ICD-10; World Health Organization Geneva, 1994), was included to account for the sometimes chronic alterations in the personality of traumatized individuals. This diagnosis had no parallel in DSM-IV. Prerequisites were: A. Definite and enduring personality change;

B. The personality changes should be significant and maladaptive, and should include at least two of the following: 1) a permanent hostile or distrustful attitude toward the world, 2) social withdrawal, 3) a constant feeling of emptiness or hopelessness, 4) an enduring feeling of being 'on edge' or of being threatened without any external cause, evidenced by increased vigilance and irritability, or 5) a permanent feeling of estrangement, being changed or being different from others, sometimes associated with emotional numbing;
C. causing significant interference with personal functioning in daily living, personal distress, or adverse impact on the social environment;
D. follow exposure to catastrophic stress, not present before the catastrophic event, not due to other disorders;
E. should be present for at least 2 years;
F. often preceded by PTSD (ICD-10, F43.1) and a chronic outcome of PTSD. Precipitating events were defined as concentration camp experiences, disasters, prolonged captivity with imminent possibility of being killed, prolonged exposure to life-threatening situations such as being victim of terrorism, and torture.

Posttraumatic Stress Disorder – DSM-5

The PTSD-diagnosis in DSM-5 (APA, 2013) requires symptoms from *four* clusters:
1. *Intrusion*: repeated, involuntary memories, distressing dreams, or flashbacks of the traumatic event. Flashbacks may be so vivid that individuals feel they are re-living the traumatic experience or seeing it before their eyes.
2. *Avoidance*: including avoidance of people, places, activities, objects, and situations that bring on distressing memories.
3. *Negative alterations in cognitions and mood*: including numbing, persistent and distorted blame of self or others [new], and persistent negative emotional state [new]; *i.e.*, persistent fear, horror, anger, guilt, or shame; markedly diminished interest in activities; or feeling detached or estranged from others.
4. *Alterations in arousal and reactivity*: including reckless or (self-) destructive behavior [new], irritable behavior and angry outbursts, exaggerated startle response; problems with concentration; or sleep problems.

Further, the DSM-IV criterion requiring fear, helplessness, and horror at the time of the trauma was removed, and the unexpected death of family or a close friend no longer qualified as a traumatic event. A clinical subtype with dissociative symptoms was added in DSM-5. The PTSD diagnosis was thus changed to include characteristics that were missing in DSM-IV, but Complex trauma or equivalents were also this time not included as a DSM-diagnosis.

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Relationships of Childhood Adverse Experiences With Mental Health and Quality of Life at Treatment Start for Adult Refugees Traumatized by Pre-Flight Experiences of War and Human Rights Violations

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Abstract: Adverse and potentially traumatic experiences (PTEs) in childhood were examined among 54 adult refugee patients with pre-flight PTEs of war and human rights violations (HRVs) and related to mental health and quality of life at treatment start. Extent of childhood PTEs was more strongly related to mental health and quality of life than the extent of war and HRV experiences. Childhood PTEs were significantly related to arousal and avoidance symptoms of posttraumatic stress disorder (PTSD) and to quality of life, whereas pre-flight war and HRV experiences were significantly related to reexperiencing symptoms of PTSD only. Within childhood adversities, experiences of family violence and external violence, but not of loss and illness, were significantly related to increased mental health symptoms and reduced quality of life. These results point to the importance of taking childhood adverse experiences into account in research and treatment planning for adult refugees with war and HRVs trauma.

Key Words: Refugee patients, childhood adverse events, war and human rights violation trauma, quality of life, mental health symptoms

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Potentially traumatizing events (PTEs) experienced by refugees are connected with numerous adverse historical, social, and political conditions (George, 2010), embedded in a shifting and evolving cultural context (Kirmayer, 2006). Since the refugee trauma field began to evolve around the 1980s, much research has been devoted to the relationships between refugees' experiences of torture, hardships of war, and persecution in their homeland and their mental health and quality of life in exile (for early contributions, see *e.g.*, Allodi, 1991; Eitinger, 1959; Holtzman and Bornemann, 1990; Mollica et al., 1987; Westermeyer et al., 1983). Similarly, the relationships between traumatic experiences in childhood and adult mental health have been extensively investigated, especially in the last decade (see *e.g.*, Scott et al., 2010), though with roots back to Freud (1896/1962) and his contemporaries. The present study brings these two lines of study together. We investigate childhood adverse experiences relative to later experiences of war and human rights violations (HRVs) in relation to mental health and well-being in a clinical adult refugee sample. The few refugee studies conducted along these lines do not offer a conclusion to whether adult experiences of torture and other atrocities of war are so pervasive that they override the effects of childhood adversities on later mental health.

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The refugee trauma field encompasses early and later insights from research in various areas like developmental psychology, neuroscience, cultural psychiatry, anthropology, social and political conditions, complex trauma, and posttraumatic stress disorder (PTSD). We cannot do justice to the many contributions and debates that have been central to the refugee trauma field. For early publications in some of these fields, see Bracken et al. (1995), Chakraborty (1991), and van der Kolk et al. (1996). We refer also to Kienzler's (2008) literature review of war trauma and PTSD in an interdisciplinary perspective.

What makes adverse events traumatic to the individual depends on individual dispositions and life experiences, on the nature of the adversities, and on cultural and societal values and roles (Hollan, 2013). Warfare, persecution, and torture, as well as family violence and child maltreatment, represent special kinds of trauma that deeply affect the individual, family, and society at large (Allen et al., 2006; Haviland et al., 1995; Schore, 2002). Interpersonal and intentional acts of violence like these are associated with more severe symptoms of posttraumatic stress than natural disasters and accidental human-caused events (Briere, 2004).

There are unclear boundaries between what constitutes psychologically traumatizing events and events that should only be regarded as adverse or highly stressful. In the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV; American Psychiatric Association (1994), traumatic events are defined by the A1 criterion for PTSD as events involving the experiencing, witnessing, or confrontation with actual or threatened death, serious injury, or threats to the physical integrity of the individual or others. The DSM-V American Psychiatric Association (2013) has added events of actual or threatened sexual violence and included indirect exposure to aversive events in the course of professional duties. Severe experiences like torture, rape, imprisonment, witnessing violence against family members, and being close to death have individually been associated with PTSD in refugee studies (*e.g.*, Keller et al., 2006). Further, a dose–response relationship has been reported between number and intensity of trauma exposures and severity of posttraumatic symptoms (Bogic et al., 2012; Johnson and Thompson, 2008; Keller et al., 2006; Marshall et al., 2005; Steel et al., 2009), depression (*e.g.*, Steel et al., 2009), and indices of psychosocial dysfunction (Steel et al., 2002). According to Weathers and Keane (2007), the repeated finding of a dose–response relationship between PTEs and symptoms of PTSD has led to a shift from a categorical to a dimensional understanding of what may be psychologically traumatizing. This means turning from a focus on one highly adverse event to encompassing the possible traumatic effect of a series of adversities that are sometimes less severe.

Many victims of war and HRVs experience all-encompassing insecurity, fear, and grief (Horowitz et al., 1994), as well as intense resentment and anger in response to the injustice involved (Steel et al., 2011). Identity, meaning, values, worldview, coping styles, and social functioning are often affected (Allen et al., 2006; Rosenbaum and Varvin, 2007). When forced migration adds to the multiple pre-flight losses and traumatic experiences of many refugees, the challenges of

acculturation, ongoing worries, and hardships in the post-migration phase may increase the severity of symptoms and suffering (*e.g.*, Allen et al., 2006; Carlsson et al., 2006). The cumulative burden of pre-flight, flight, and post-flight experiences is reflected in the complex symptom patterns and comorbidities found among refugee patients in clinical settings (Carlsson et al., 2014).

Studies of traumatized refugees in Western countries generally find high levels of distress such as symptoms of PTSD, depression, anxiety, and somatization (*e.g.*, Alemi et al., 2014; Priebe et al., 2010; Steel et al., 2002; Taylor et al., 2013) and problems with social functioning, work achievement, and general life satisfaction (*e.g.*, Marshall et al., 2005; Vaage et al., 2010). There has been extensive discussion regarding the impact of culture on what evokes emotional distress, how emotional distress is experienced and expressed in different cultures, and the use of Western diagnoses for members of non-Western cultures (*e.g.*, Hinton and Lewis-Fernández, 2011; Kienzler, 2008; Summerfield, 2000). However, symptoms of PTSD have been found in culturally diverse samples after exposure to trauma, indicating that some common human reactions to extreme stress exist (Hinton and Lewis-Fernández, 2011). Depression, a common affect and disorder among refugees in response to loss and trauma, afflicts members of all ethnic groups but are experienced and expressed differently across cultures (Kleinman, 2004). With time, refugees gradually adapt to the culture of their host country, and their beliefs and values become a mix of their original and new cultures (Carlsson et al., 2014), changing their understanding and expression of mental health issues.

Overwhelming emotional experiences, in terms of acute and ongoing psychic stress, have been related to neurovegetative changes, enduring bodily changes, and sometimes death (*e.g.*, Terranova et al., 2011). Traumatic experiences and chronic stress interfere with the regulatory processes of physiology and affect, leading to increased emotional reactivity and vulnerability to new or persistent stress. Dysfunctions in regulatory mechanisms are associated with intense arousal, multiple somatic symptoms, panic attacks, and destructive cycles of distress, experienced and expressed in ways that depend on local meaning and context (Hinton and Kirmayer, 2013). The underlying processes of severe traumatization also involve impairment of cognitive processes like memory, attention, and processing speed (Brodman et al., 2011). A number of studies have demonstrated an association between the severity of posttraumatic and depressive symptoms and impaired cognitive functioning (Steel et al., 2011; Johnsen and Asbjørnsen, 2009), with implications for learning the language of the host country and managing a job (Steel et al., 2011). Higher levels of psychological distress and symptoms of PTSD have been significantly related to poor host country language skills (Gorst-Unsworth and Goldenberg, 1998; Söndergaard and Theorell, 2004) and unemployment (*e.g.*, Kivling-Bodén and Sundbom, 2002; Teodorescu et al., 2012a), both impeding life in exile.

Adverse experiences have different consequences depending on the individual's developmental phase (Zeanah, 2009). Especially during childhood, adverse events that are severe, recurring, or long-lasting can seriously affect major aspects of personality functioning and lead to increased risk of interpersonal maladjustment and psychopathology (Anda et al., 2006; Yehuda et al., 2001). Wells et al. (2014) found childhood abuse increases the risk of depression later in life. Moreover, interpersonal neglect, abuse, and violence often lead to difficulties in relating to others (Briere and Spinazzola, 2005) and to a reduced capacity to use others for comfort, safety, and to alleviate negative emotional states (*e.g.*, Schore, 2009). Various researchers have found early adverse experiences to be risk factors for the development of PTSD after later exposure to adversities (Breslau et al., 2014; Briere 2004; Neuner et al., 2004). Here, we propose that severe or repeated PTEs experienced in childhood have implications for the ability to cope with later PTEs of war and HRVs and therefore represent additional risk factors for refugees' mental health and functioning in exile.

There is rising recognition of the impacts of early and of cumulative adversities and PTEs across the lifespan (Martins et al., 2014; Weathers and Keane, 2007). However, literature searches (PsychInfo/PubMed/Google Scholar) revealed that published studies on the adverse childhood experiences of adult refugees were scarce. Eckart et al. (2012), in a PTSD-related neuroscientific study comprising mainly Kurdish adult refugees, found that adverse childhood experiences were associated with a negative effect on the hippocampus, possibly increasing vulnerability to the biological and psychological consequences of stress and PTEs later in life. More relevant to the present study, a two-generation study by Olema et al. (2014), involving 100 Ugandan adolescents and their parents, investigated the relative effects of war-related trauma versus experiences of child maltreatment in both generations. Both adolescents and adults were severely affected by both war-related trauma and childhood trauma, yet only maltreatment during childhood significantly accounted for PTSD in the parents.

The Norwegian population was relatively homogenous until the late 1950s when about 1500 Hungarian refugees came to the country. Then followed labor immigrants and, later, refugees from increasingly distant parts of the world (see Brochmann and Kjeldstadli, 2008). In January 2014, there were 179,500 individuals with refugee backgrounds living in Norway, representing 3.5% of the total population and 28.4% of the immigrant population (Statistics Norway, 2014). According to existing research (*e.g.*, Fazel et al., 2005; Vaage et al., 2010), mental health problems are more frequent in the refugee population than in the population overall. Most refugee patients in Norway are treated in the primary health care services (Varvin and Aasland, 2009). Refugees with more severe problems are treated in the mental health specialist services. In these services, therapists must be able to respond therapeutically to a wide range of psychiatric conditions embedded in multiple cultural contexts and expressions. The patients receive psychotherapy, often combined with pharmacological treatment. Theoretical orientation and length of therapy vary.

The present study is an early part of a naturalistic, mixed-method, prospective, longitudinal research program comprising a heterogeneous group of adult refugee mental health patients with pre-flight experiences of war and HRVs, typical of those referred to specialist treatment services in Norway. A slightly smaller set of these participants was previously described in a study of pretreatment personality functioning in relation to mental health and quality of life (QOL) (Opaas and Hartmann, 2013). Investigation of adversities experienced in childhood can give indications of individual vulnerability, which may contribute to exacerbated reactions to war, HRVs, and hardships during and after flight, thus explaining some of the individual differences in mental health and QOL in these patients. The extent of various mental health symptoms and the personal experience of one's QOL capture different aspects of the experience of health and well-being. Different timing or types of PTEs may be differently related to certain mental health symptoms or aspects of QOL and may show different courses of change in future follow-up.

In this study, "(psychological) trauma" refers to experiences that are emotionally overwhelming and that outweigh an individual's psychological coping capacities, thereby giving rise to symptoms of psychological distress. The term "potentially traumatizing events" acknowledges that it is the individual's response that determines whether an event is "traumatic" (*e.g.*, Weathers and Keane, 2007). The terms "potentially traumatic" and "adverse" refer to harmful, dangerous, or hurtful events or experiences that, separately or cumulatively depending on the individual and the circumstances, may or may not have had a traumatizing effect. Although there is no simple relationship between PTEs and traumatization, here individuals are considered traumatized when they have been exposed to highly aversive events and exhibit severe posttraumatic symptoms in the assessment. By "pre-flight" experiences of war and HRVs, we refer to the more or less immediate experiences leading to flight, experienced by all participants, without

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excluding experiences related to war and HRVs that have happened earlier in life.

Our aim was to investigate the early and cumulative exposure of participants to adversities or PTEs preceding flight, and to analyze these in relation to the participants' mental health and QOL. We aimed to study: (a) adverse childhood experiences within and outside the family before age 18; (b) participants' PTEs related to war, persecution, and other HRVs; (c) the relationships of extent of childhood adverse events/PTEs and extent of PTEs related to war and HRVs, individually and together, with the following outcome variables: symptoms of PTSD, anxiety, and depression, and four QOL domains (physical health, psychological health, social relationships, and environmental conditions) and compare the strength of these relationships; and (d) to investigate how certain kinds of childhood adversities were related to negative outcomes. We hypothesized, first, that a greater number of pre-flight PTEs related to war and HRVs were related to more symptoms of psychological distress and lower QOL, and second, that more childhood adversities or PTEs were related to more symptoms of psychological distress and lower QOL. The first hypothesis only considered PTEs related to war and HRVs. The second hypothesis took various kinds of adversities and PTEs into account, such as loss, serious illness, family abuse, and war-related experiences, but only if experienced in childhood (up to 18 years).

METHODS

Study Design

Our choice of method was guided by the following concerns: (a) to permit comparison with other clinical refugee samples; (b) to provide a starting point for future investigations of individual and group level change; and (c) to be partly exploratory and allow investigation of aspects we consider relevant, though they may have been rarely studied in this population. It was necessary to limit the number and types of assessment methods to avoid causing excessive strain in the participants. A formal diagnostic interview was therefore not prioritized as part of the research procedure. Diagnoses and symptoms of PTSD, depression, and anxiety refer to the self-report instruments used.

Participants

We collaborated with two general mental health outpatient clinics at District Psychiatric Services and with six psychotherapists in publicly funded individual practices in the Oslo area to recruit refugee patients according to the following inclusion criteria: adult patients with a refugee background referred to and accepted for treatment in specialist mental health outpatient services, with mental health problems evaluated as related to pre-flight experiences of war and HRVs such as persecution, captivity, or torture. We were interested in various mental health problems experienced by refugees that were severe enough for them to be admitted for treatment to these services. A formal diagnosis of PTSD was not required because other mental health disorders may also be related to the impact of refugee trauma (*cf.* the Introduction section). An ability to communicate in Norwegian was not required. Exclusion criteria were severe psychosis or severe drug problems at the time of inclusion. The clinicians who were responsible for intake to treatment evaluated the patients for recruitment to the study. The broad selection criteria allowed us to recruit refugees with various ethnic and cultural backgrounds and with different mental health problems and levels of functioning, thus reflecting the clinically and culturally heterogeneous refugee patient population in these services.

From 2006 to 2009, all patients who were eligible according to the selection criteria were asked to take part in the study. Among the 72 patients asked to participate, 18 patients declined; 15 did so when they were first asked and the remaining three after one introductory meeting with us. Reasons given for declining were not wanting to open up to more people than necessary, not wanting to go into details about their trauma history, or lack of trust in interpreters. The remaining 54 patients accepted and were included in the study, resulting in an inclusion rate of 75%.

Study participants came from 15 Middle Eastern countries (55.6%, $n = 30$) with Iraqis as the largest group (31.5%, $n = 17$), the Balkans (16.7%, $n = 9$), East and Central Africa (7.4%, $n = 4$), Chechnya (11.1%, $n = 6$), and China, Vietnam, and Afghanistan (7.4%, $n = 4$). Among the 54 participants, 64.8% ($n = 35$) were male, mean age was 39.3 years (SD = 8.2; range 21–58), and mean residence time in Norway was 10.5 years (*SD* = 6.5; range 0.5–27). We found that 64.8% ($n = 35$) were married and 81.5% ($n = 44$) had children. Mean education in the country of origin was 9.7 years (SD = 4.5; range 0–16). Mean age when entering Norway was 28.8 years (SD = 8.4; range 5.4–49.7). Only one participant had come to Norway in childhood. Among all participants, only 22.2% ($n = 12$) were employed; all on sick leave at the time of assessment. Despite frequent multiple language competence in their home region and long average residence times in Norway, only 50.0% ($n = 27$) could be interviewed in Norwegian. We consider lack of Norwegian skills and unemployment partly as indications of these patients' mental health suffering and problems with daily life functioning. This seems reasonable because a mandatory, extensive introductory program provides Norwegian language training. Further, although individuals with minority backgrounds often experience discrimination in the job market in Norway, rates of unemployment are low; it is generally possible to get a job. Forty-one percent of participants had histories of mental health treatment. All but two participants had either Norwegian citizenship or permanent residence. No major concerns were at stake (*e.g.*, residency permits) that would systematically bias participant responses to the interviews during research.

Procedures

The study was approved by the Norwegian South-East Regional Committee for Medical and Health Research Ethics (REK, South-East; https://helseforskning.etikkom.no) and was conducted according to the Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects (World Medical Association, 2013). Receiving treatment was not dependent on participation in the research project. Taking part in the study was voluntary and all participants submitted a written informed consent.

Assessment of the participants consisted of five to six sessions, about 10 full hours in total, which were tape-recorded and transcribed. The authors, who are experienced clinicians, conducted the interviews and personally administered all of the instruments. Both researchers met with each participant, thereby enabling joint evaluation and a broader understanding of the patient. Questionnaires were in Norwegian and mostly presented in interview format. Interpreters trained for clinical settings were appointed at the advice of the intake teams, at the request of the participant, or as soon as we noticed insufficient communication skills in Norwegian. We had only in-room interpretation, and both researchers were skilled in the use of interpreters. The use of interpreters in clinical and research practice has inherent problems of a linguistic and cultural nature, well known in transcultural settings (Crosby, 2013). The different cultural traditions and the multitudes of languages among our participants required vigilance to ensure that they understood the questions. In addition, illiteracy, concentration problems, headaches, and other difficulties often made the interview situation demanding and underlined the need to create a holding atmosphere. Linguistic and paralinguistic cues were used to contribute to mutual understanding during our interviews. The items on the questionnaires and checklists brought up associations in many participants. Listening to these helped us to understand how they had understood the question, allowing us to clarify when needed. Such linguistic and transcultural

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dialogue on the topics and questions was time-consuming, but we believe this procedure added to the validity of our results.

Instruments and Measures

Our choice of instruments are in line with Carlsson et al. (2014) who, while recognizing the complexity of refugee mental health, recommended using ordinary instruments and measures to permit comparison of findings. In accordance with many of the studies referenced below, we included measures of mental health symptoms and QOL. Questionnaire mean scores were computed if at least 80% of the items were completed.

The Harvard Trauma Questionnaire (HTQ) and The Hopkins Symptom Checklist-25 (HSCL-25) were adapted for use in refugee studies by Mollica et al. (2004) and have been widely used in the study of refugee trauma and mental health (*e.g.*, Carlsson et al., 2006; Gerritsen et al., 2006; Steel et al., 2011). Both instruments are considered to have satisfactory reliability and validity in refugee populations (*e.g.*, Hollifield et al., 2002; Keller et al., 2006; Renner et al., 2006). Symptoms in the last week are rated on a 4-point scale from 1 (not at all) to 4 (extremely). According to Mollica et al. (2004), these instruments should be administered to traumatized refugees by health care workers.

The HTQ Part I (*HTQ-Trauma Events*) (variable names are capitalized and introduced in italic) is a checklist of PTEs that describes eight general categories that are regarded as traumatic events in most cultures (Mollica et al., 2004): material deprivation, war-like conditions, bodily injury, forced confinement and coercion, being forced to harm others, disappearance, violent death or injury of loved ones, and witnessing violence to others. The list was modified from the Revised Cambodian Version to encompass the PTEs most relevant to a multinational sample and came to consist of 37 types of PTEs related to war, persecution, and other HRVs. This part of the HTQ does not specify any range of time or age at which the events were experienced.

The HTQ Part IV, items 1 to 16 of the revised Cambodian version of HTQ-R (Mollica et al., 2004) were derived from the three symptom clusters reexperiencing, arousal, and avoidance, constituting criteria for PTSD according to DSM-IV. In the HTQ, a mean PTSD score of ≥2.5 is considered "checklist positive" for PTSD. Validation studies in refugee populations have found HTQ cutoff levels for a diagnosis of PTSD ranging from 1.17 to 2.5, which are partly dependent upon the cultural background of the sample (Jakobsen et al., 2011). In the present study, we used the original 2.5 cutoff because it most closely fitted the composition of our sample, and we preferred using the standard and more restrictive cutoff. We computed the mean score of the 16 items (*PTSD-Total*) and of the three subscales *PTSD-Reexperiencing* (items 1, 2, 3, and 16), *PTSD-Arousal* (items 6, 7, 8, 9, and 10), and *PTSD-Avoidance* (items 4, 5, 11, 12, 13, 14, and 15).

The HSCL-25 measures symptoms of anxiety and depression. Although not specifically developed for use in refugee populations, this instrument has been found to have good reliability and validity in clinical refugee samples (*e.g.*, Hollifield et al., 2002). The first 10 questions or items, which constitute the anxiety score (*Anxiety*), do not qualify for a specific DSM-IV diagnosis of anxiety but is consistent with several anxiety-related disorders; the next 15 items, constituting the depression score (*Depression*), are consistent with the DSM-IV diagnosis of major depressive disorder (Mollica et al., 2004). A mean depression score of >1.75 is considered checklist positive for major depressive disorder, and an anxiety score of >1.75 is considered a clinical level of anxiety.

The World Health Organization Quality of Life-BREF (WHOQOL-BREF; WHOQOL Group, 1998) was developed as a cross-cultural instrument to measure subjective QOL and has been widely used in refugee studies (*e.g.*, Carlsson et al., 2006; Huijts et al., 2012; Teodorescu et al., 2012b). QOL is defined as "… a broad-ranging concept affected in complex ways by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment" (WHOQOL Group, 1998, p. 3). The WHOQOL-BREF has 26 questions/items covering four domains: *Physical Health* (7 items); *Psychological Health* (6 items), *Social Relationships* (3 items), and *Environmental Conditions* (8 items). The WHOQOL-BREF can be interviewer-assisted or interview-administered when respondents have difficulties with self-administration. Likert scales ranged from 1 to 5 (*e.g.*, not at all/very dissatisfied to completely/very satisfied). Scores are transferred to a scale from 1 (very poor) to 100 (excellent), according to the manual. In a field trial (Skevington et al., 2004) comprising sick and healthy individuals from different sociodemographic layers in 23 countries around the world, the WHOQOL-BREF was found to be cross-culturally sound and valid. The means obtained were 64.8 (Physical Health), 60.0 (Psychological Health), 57.2 (Social Relationships), and 54.0 (Environmental Conditions).

Adverse and potentially traumatic childhood experiences (*PTCEs*) up to age 18 were identified, categorized, and quantified from a systematic study of the qualitative interview data, which consisted of structured and semi-structured interviews. These included family relationships, attachment, health, social situation, losses, traumatic events, and other aspects of personal history during childhood, adolescence, and adulthood. All material collected was searched twice, a few months apart, for childhood experiences related to loss, violence, neglect, and similar hardships within the family, as well as violence and atrocities experienced external to the family. Any inconsistencies in type and number of events between the two searches were evaluated and resolved. The information provided by participants about the year of significant events and their age at the time was compared with sources of historical facts, to clarify uncertainties. The authors reached consensus about the type of events and categorizing of these events according to their psychological meaning. A scoring system was designated, and the sum scores of PTCEs (*PTCE-Sum*) and of subtypes were calculated. The results of this investigation were used quantitatively in the analyses.

Statistical Procedures

We used linear regression to study the relationships of HTQ-Trauma Events and PTCE-Sum with each of the outcome variables. Regressions were performed with the two trauma sum scores separately and then together, to control one for the other and to check the strength of the model in explaining the variance in outcome variables. For differences between regression coefficients for PTCEs and HTQ-Trauma Events, 95% bootstrap BCa confidence intervals (Efron and Tibshirani, 1994) were computed with 10,000 bootstrap replications, and differences were regarded as significant if 0 was outside each interval. Multiple regressions were then run with four subtypes of PTCEs included in the same model. The unstandardized coefficients (*coef*) presented in the tables represent the amount of change in the outcome measure per unit change in the independent variables (HTQ-Trauma Events and PTCE-Sum) and must be interpreted relative to the range of scores, from 1 to 4 for the symptom measures and from 1 to 100 for the QOL measures. Data were analyzed using the Statistical Package for the Social Sciences (IBM Corp., released 2011; IBM SPSS Statistics for Windows, version 20.0. Armonk, NY) and the R (The R-Foundation for Statistical Computing, Vienna, Austria) package boot for bootstrapping.

RESULTS

Our study of adverse and potentially traumatic childhood experiences (PTCEs) among our participants resulted in a list of 14 different kinds of experiences (Table 1). Eleven of these could be placed with relative certainty in either the age period 0 through 12 years, or 13 through 17 years, or as taking place in both periods. We made two items for each of these events according to the childhood period in which they

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TABLE 1. Adverse and Potentially Traumatic Childhood Experiences (PTCEs)

PTCEs Experienced Before Age 18 (Item Number)	Participants With the PTCE in the Given Age Period: 0–12 yr Percent (*n*)	Participants With the PTCE in the Given Age Period: 13–17 yr Percent (*n*)	Sum of Events per Participant (PTCE-Sum): 0–17 yr *M* (*SD*) Range
Subtype 1: Loss (the 13 items below)			2.0 (1.0) 0–9
One parent died or disappeared (1, 2)	24.1% (13)	7.4% (4)	
Other parent died or disappeared (3, 4)	5.6% (3)	1.9% (1)	
Extended separation from one or both parents (5, 6)	27.8% (15)	37.0% (20)	
One or more siblings died (7, 8)	20.4% (11)	9.3% (5)	
Serious injury or illness among parents or siblings (9, 10)	22.2% (12)	11.1% (6)	
Parent imprisoned, captured, or persecuted (11, 12)	11.1% (6)	9.3% (5)	
Sibling imprisoned or taken captive, age 0 through 17 (13)	11.1% (6)		
Subtype 2: Illness (the 2 items below)			0.6 (0.8) 0–2
Participant seriously ill, in accident, or hospitalized (14, 15)	42.6% (23)	20.4% (11)	
Subtype 3: Family Violence (the 3 items below)			0.6 (1.0) 0–3
Violence within family[a] (16, 17)	27.8% (15)	18.5% (10)	
Parents' alcohol/drug abuse, age 0 through 17 (18)	6% (3)		
Subtype 4: External Violence (7 items)			2.4 (1.9) 0–6
Experienced war (19, 20)	40.7% (22)	66.7% (36)	
Witnessed others being killed (21, 22)	33.3% (18)	44.4% (24)	
Participant persecuted, imprisoned, or taken captive (23, 24)	3.7% (2)	24.1% (13)	
In military service or armed resistance, age 0 through 17 (25)	24 .1% (13)		
Mean PTCE-Sum (25 items)			5.4 (3.5) 0–15

List of 14 types of PTCEs extracted by the authors from the qualitative interviews, categorized into one of four subtypes, Loss, Illness, Family Violence, and External Violence, based on the authors' evaluation of their psychological meaning. Most events are divided into two items, according to when the event was experienced. Each item is scored 1 (experienced in the specified age period) or 0 (not experienced/not narrated).

[a]Violence within family = physical violence between parental figures, or parental violence against participant and/or siblings. $N = 54$.

occurred, resulting in more "points" for repeated or long-lasting PTCEs. Three events (*i.e.*, sibling imprisoned or taken captive, parent's alcohol or drug abuse, and their own participation in military or armed resistance) were scored once for the entire 18-year period because the time frames of these events were difficult to determine with accuracy. The resulting 25 items were scored 1 or 0 for each participant, according to whether such event was experienced within any of the relevant age spans (0–12, 13–17, or 0–17). The sum scores of PTCEs (PTCE-Sum) thus ranged from 0 to 25 for each individual. Mean score of PTCE-Sum was 5.4 (SD = 3.5; range 0–15). Only five participants did not report any adverse childhood experiences. The 14 kinds of PTCEs were grouped into four subtypes: loss of parents or siblings by death, extended separation, and serious illness in parents or siblings *(Loss*: 7 events, 13 items); own severe illness, hospitalization, and accidents, listed together as one event because of the infrequent occurrence of each (*Illness*: 1 event, 2 items); experience of violence and other unsafe conditions within the family (*Family Violence*; 2 events, 3 items); and experience of violence outside the family, such as war, persecution, witnessing atrocities, and taking part in military or paramilitary activity (*External Violence;* 4 events, 7 items). The mean score within each subtype was 2.0 for Loss, 0.6 for Illness, 0.6 for Family Violence, and 2.4 for External Violence. Many participants had experienced hardships at an early age. For example, before age 13, 24.1% ($n = 13$) had lost one of the parents, 42.6% ($n = 23$) had been seriously ill or in accidents, 27.8% ($n = 15$) had experienced physical violence between the parents and/or parental violence directed at the participant or siblings, and 33.3% ($n = 18$) had witnessed others being killed or die a violent death. Some (24.1%; $n = 13$) had participated in armed resistance or been enrolled in military service. The transition from running errands for armed resistance groups to fully taking part in armed activities was often gradual and, for the most part, voluntary among our participants, though they described many tough experiences. However, when summoned to regular military service at an early age, participants were mostly forced. We refer to Table 1 for further details.

Table 2 displays frequently reported HTQ-Trauma Events and illustrates the severity of experiences in our sample. The participants had experienced on average 16.3 (SD = 6.3; range 5–30) different kinds of PTEs related to war and HRVs. As many as 84.9% ($n = 45$) had experienced military attacks, 77.4% ($n = 41$) had witnessed others being killed or die a violent death, and 75.5% ($n = 40$) had themselves been close to being killed or dying. As many as 62.3% ($n = 33$) had been imprisoned, 52.8% ($n = 28$) had been tortured, and 20.8% ($n = 11$) had been raped. Moreover, 34.0% ($n = 18$) had taken part in armed resistance and 28.3% ($n = 15$) had been in wartime military service, and described massive exposure to cruel and heartbreaking scenes. In our sample, 20.8% ($n = 11$) reported having been in detention camps under harsh and often prison-like conditions. We refer to Table 2 for further details. From the qualitative interviews, we knew that most participants had experienced war and/or HRVs after the age of 18, preceding flight; several participants had lived through PTEs of war and HRVs in childhood and in their adult years. Thus, HTQ-Trauma Events and PTCEs had some intersecting items related to experiences of war and HRVs. HTQ-Trauma Events and PTCE-Sum correlated significantly and positively ($r = 0.43$, $p = 0.001$), indicating that participants with many childhood PTEs of various kinds often also had a high number of lifetime and adult PTEs related to war and HRVs.

Participants' symptom levels of PTSD, anxiety, and depression were high. Table 3 reveals that 78.8% ($n = 41$) qualified for a PTSD diagnosis, 96.2% ($n = 51$) had a diagnostic level of anxiety, and 98.1% ($n = 52$) qualified for a diagnosis of major depression according to

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TABLE 2. Potentially Traumatic Experiences Related to War and Human Rights Violations (HRVs)

HTQ-Trauma Events	Percent (*n*)
Forced evacuation under dangerous conditions	90.6% (48)
Experienced military attacks (shelling/bombing)	84.9% (45)
Forced to hide	83.0% (44)
Murder/violent death of family or friends	81.1% (43)
Witnessed beatings to head or body	77.4% (41)
Witnessed others being killed	77.4% (41)
Been close to being killed or die	75.5% (40)
Experienced beating to the body	75.5% (40)
Forced separation from family members	67.9% (36)
Confiscation or destruction of personal property	62.3% (33)
Imprisonment	62.3% (33)
Lack of food or water	60.4% (32)
Torture, *i.e.*, deliberate infliction of physical or mental suffering while in captivity	52.8% (28)
Ill health without access to medical care	50.9% (27)
Brainwashing	39.6% (21)
Someone was forced to betray you and place you at risk of death or injury	35.8% (19)
Armed resistance	34.0% (18)
Extortion or robbery	32.1% (17)
Military service in war	28.3% (15)
Sexual abuse or sexual humiliation, other than rape	22.6% (12)
Rape	20.8% (11)
Been in detention camp or prisoners camps	20.8% (11)
Been in refugee camp	20.8% (11)

HTQ-Trauma Events = experiences related to war and HRVs, measured by the Harvard Trauma Questionnaire (HTQ), Part 1 (37 items), exemplified by 23 events frequently experienced in our sample. Mean number of different experiences in our sample was 16.3 (SD = 6.3; range 5–30). $N = 53$.

the measures used. Mean QOL scores (28.5 for Physical Health, 25.5 Psychological Health, 36.6 Social Relationships, and 45.2 for Environmental Conditions) were very low. Compared with the international means obtained by Skevington et al. (2004; see Instruments and Measures section), our results indicated poor QOL, especially in the first three domains. Many respondents reported physical pain and bodily health concerns in addition to emotional and cognitive problems.

Table 4 presents the relationships of HTQ-Trauma Events and PTCE-Sum with PTSD, Anxiety, Depression, and the four QOL domains. The coefficients of PTCE-Sum were significantly higher than the coefficients of HTQ-Trauma Events for PTSD-Avoidance, Psychological Health, and Social Relationships, and the other variables, except PTSD-Reexperiencing, followed the same overall pattern, indicating that the relationships between childhood trauma and the outcome variables were stronger. HTQ-Trauma Events, when entered in the regression alone, was significantly and positively related to PTSD-Total (*coef* = 0.022, $p = 0.032$) and to PTSD-Reexperiencing (*coef* = 0.039, $p = 0.009$), but was not significantly related to other outcome variables. When controlled for PTCE-Sum, HTQ-Trauma Events was significantly and positively related only to PTSD-Reexperiencing (*coef* = 0.037, $p = 0.024$). PTCE-Sum, when entered in the regression alone, was related significantly and positively to PTSD-Total (*coef* = 0.044, $p = 0.015$), PTSD-Arousal (*coef* = 0.040, $p = 0.036$), and PTSD-Avoidance (*coef* = 0.051, $p = 0.021$), significantly and negatively to Social Relationships (*coef* = −2.24, $p = 0.013$) and Environmental Conditions (*coef* = −1.42, $p = 0.047$), and sub-significantly and negatively to Psychological Health (*coef* = −1.21, $p = 0.054$). When controlled for HTQ-Trauma Events, PTCE-Sum was related significantly and negatively to Social Relationships (*coef* = −2.38, $p = 0.019$) and Psychological Health (*coef* = −1.45, $p = 0.037$) and sub-significantly to PTSD-Avoidance (*coef* = 0.047, $p = 0.056$). HTQ-Trauma Events alone accounted for 0.0% to 12.9% of the variance in the different outcome variables, above 10% only in PTSD Reexperiencing. PTCE-Sum alone accounted for 1.1% to 11.6% of the variance, above 10%, in descending order, in Social Relationships, PTSD-Total, and PTSD-Avoidance. Together, HTQ-Trauma Events and PTCE-Sum accounted for 2.9% to 14.1% of the variance, above 10% in PTSD-Total, PTSD-Reexperiencing, Social Relationships, and PTSD-Avoidance (see Table 4 for details).

Table 5 displays how the PTCEs subtypes Loss, Illness, Family Violence, and External Violence and the Total Model relate to the outcome variables. With simultaneous entry in the regression, we found that External Violence and Family Violence were significantly related to increased symptoms of mental health disorder and to reduced QOL. External Violence was related significantly and positively to PTSD-Total (*coef* = 0.121, $p = 0.001$), PTSD-Avoidance (*coef* = 0.131, $p = 0.002$), PTSD-Arousal (*coef* = 0.118, $p = 0.001$), and Depression (*coef* = 0.117, $p = 0.005$), significantly and negatively to quality of Psychological Health (*coef* = −3.77, $p = 0.001$), and sub-significantly and positively to PTSD-Reexperiencing (*coef* = 0.105, $p = 0.051$). Family Violence was related significantly and positively to Anxiety (*coef* = 0.176, $p = 0.027$), significantly and negatively to Environmental Conditions (*coef* = 4.90, $p = 0.044$) and Psychological Health (*coef* = −4.55, $p = 0.019$), and sub-significantly and negatively to Physical Health (*coef* = −3.39, $p = 0.069$). Childhood Loss was significantly and

TABLE 3. Symptoms and Quality of Life

Symptoms	*M* (*SD*)	95% CI: Low, High
PTSD-Total	2.82 (.47)	2.69, 2.95
PTSD-Reexperiencing	2.89 (.69)	2.70, 3.08
PTSD-Arousal	3.12 (.49)	2.98, 3.25
PTSD-Avoidance	2.56 (.57)	2.40, 2.72
Anxiety	2.89 (.59)	2.72, 3.05
Depression	2.94 (.54)	2.79, 3.09

Diagnostic level of symptoms	Percent (*n*)
PTSD (≥2.5)	78.8% (41)
Anxiety (>1.75)	96.2% (51)
Major Depression (>1.75)	98.1% (52)

Quality of Life	*M* (*SD*)	95% CI: Low, High
Physical Health	28.5 (13.8)	24.7, 32.4
Psychological Health	25.6 (15.9)	21.1, 30.0
Social Relationships	36.6 (23.4)	30.1, 43.1
Environmental Conditions	45.2 (18.2)	40.1, 50.3

PTSD and its three DSM-IV-based symptom clusters are measured by the Harvard Trauma Questionnaire (HTQ), Part IV, items 1–16; PTSD-Total = Items 1–16; PTSD-Reexperiencing = Items 1, 2, 3, and 16; PTSD-Arousal = Items 6, 7, 8, 9, and 10; and PTSD-Avoidance = Items 4, 5, 11, 12, 13, 14, and 15. Anxiety (Items 1–10) and Depression (Items 11–25) are measured by the Hopkins Symptom Checklist-25 (HSCL-25); $N = 53$). Quality of life (QOL) is measured by the World Health Organization Quality of Life-BREF (WHOQOL-BREF) and consists of four domains: Physical Health, Psychological Health, Social Relationships, and Environmental Conditions. PTSD, Anxiety, and Depression scores range from 1 (not bothered) to 4 (all the time/extremely). QOL scores range from 1 (extremely low, very poor) to 100 (extremely high, very good). HTQ, Part IV: $N = 52$, HSCL-25: $N = 53$, and WHOQOL-BREF: $N = 52$.

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TABLE 4. Relationships of War and HRVs Trauma (HTQ-Trauma Events) and Childhood Trauma (PTCEs) With Symptoms and Quality of Life

	Models by HTQ-Trauma Events Alone[a]		Models by PTCE-Sum Alone[a]		Models by HTQ-Trauma Events and PTCE-Sum Together[b]			
					HTQ-Trauma Events	PTCE-Sum	Total F, p Value, and R^2	
Outcome Variable	***coef* [CI Low, High] *p***	R^2	***coef* [CI Low, High] *p***	R^2	***coef* [CI Low, High] *p***	***coef* [CI Low, High] *p***	***F* (*df*) *p***	R^2
Self-reported symptoms								
PTSD-Total	**0.022** [0.002, 0.042] 0.032	0.088	**0.044** [0.009, 0.080] 0.015	0.112	0.014 [−0.008, 0.036] 0.203	0.034 [−0.005, 0.073] 0.090	**4.02** (2, 49) 0.024	0.141
PTSD-Reexperiencing	**0.039** [0.010, 0.068] 0.009	0.129	0.036 [−0.018, 0.090] 0.187	0.035	**0.037** [0.005, 0.070] 0.024	0.008 [−0.050, 0.065] 0.791	**3.68** (2, 49) 0.033	0.130
PTSD-Arousal	0.016 [−0.006, 0.037] 0.147	0.042	**0.040** [0.003, 0.078] 0.036	0.085	0.007 [−0.016, 0.031] 0.525	0.034 [−0.007, 0.076] 0.103	2.50 (2, 49) 0.092	0.093
PTSD-Avoidance	0.017 [−0.009, 0.042] 0.190	0.034	**0.051** [0.008, 0.094] 0.021	0.101	0.005 [−0.022, 0.032] 0.694	0.047 [−0.001, 0.095] 0.056	2.85 (2, 49) 0.067	0.104
Anxiety	−0.005 [−0.031, 0.021] 0.705	0.003	0.026 [−0.020, 0.072] 0.260	0.025	−0.014 [−0.043, 0.015] 0.339	0.037 [−0.014, 0.088] 0.156	1.11 (2, 50) 0.336	0.043
Depression	0.011 [−0.013, 0.035] 0.351	0.017	0.030 [−0.012, 0.071] 0.163	0.038	0.005 [−0.021, 0.031] 0.708	0.026 [−0.021, 0.073] 0.273	1.06 (2, 50) 0.355	0.041
Self-reported QOL								
Physical Health	0.16 [−0.46, 0.78] 0.598	0.006	−0.41 [−1.51, 0.69] 0.459	0.011	0.32 [−0.36, 1.01] 0.351	−0.65 [−1.87, 0.57] 0.287	0.72 (2, 49) 0.492	0.029
Psychological Health	−0.03 [−0.74, 0.69] 0.939	0.000	−1.21 [−2.43, 0.02] 0.054	0.072	0.32 [−0.44, 1.09] 0.401	**−1.45** [−2.81, −0.09] 0.037	2.30 (2, 49) 0.111	0.086
Social Relationships	−0.39 [−1.44, 0.65] 0.454	0.011	**−2.24** [−4.00, −0.49] 0.013	0.116	0.18 [−0.92, 1.28] 0.743	**−2.38** [−4.34, −0.42] 0.019	**3.28** (2, 49) 0.046	0.118
Environmental Conditions	−0.63 [−1.43, 0.17] 0.119	0.048	**−1.42** [−2.82, −0.02] 0.047	0.077	−0.35 [−1.23, 0.52] 0.419	−1.15 [−2.71, 0.41] 0.144	2.39 (2, 49) 0.102	0.089

Symptoms of PTSD are measured by the HTQ, Part IV. Symptoms of anxiety and depression are measured by the Hopkins Symptom Checklist-25 (HSCL-25). QOL are measured by the World Health Organization Quality of Life-BREF (WHOQOL-BREF), in four domains: Physical Health, Psychological Health, Social Relationships, and Environmental Conditions. Significant values ($p < 0.05$) are in bold. HTQ-Trauma Events: $N = 53$; PTCE-Sum: $N = 54$; HTQ, Part IV: $N = 52$; HSCL-25: $N = 53$; and WHOQOL-BREF: $N = 52$; 95% Confidence Intervals (CI).

coef indicates unstandardized regression coefficients. Positive values indicate more symptoms or better quality of life; negative values indicate less symptoms or poorer quality of life.

[a]Linear regression.

[b]Multiple regression.

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TABLE 5. Relationships of Subtypes of Potentially Traumatic Childhood Experiences (PTCEs) With Symptoms and Quality of Life

	Loss	Illness	Family Violence	External Violence	All (Total Model)	
Outcome Variable	***coef* [*CI* Low, High] p^u**	***coef* [*CI* Low, High] p^u**	***coef* [*CI* Low, High] p^u**	***coef* [*CI* Low, High] p^u**	***F* (*df*) *p***	R^2
Self-reported symptoms						
PTSD-Total	−0.063 [−0.130, −0.004] 0.064	0.128 [−0.033, 0.290] 0.117	0.056 [−0.059, 0.171] 0.335	**0.121** [0.056, 0.186] 0.001	**4.5** (4, 47) 0.003	0.279
PTSD-Reexperiencing	−0.082 [−0.189, 0.026] 0.134	0.179 [−0.083, 0.440] 0.176	0.069 [−0.118, 0.255] 0.462	0.105 [0.000, 0.210] 0.051	1.7 (4, 47) 0.164	0.127
PTSD-Arousal	−0.052 [−0.123, 0.019] 0.148	0.046 [−0.127, 0.219] 0.598	0.070 [−0.053, 0.194] 0.257	**0.118** [0.048, 0.187] 0.001	**3.6** (4, 47) 0.012	0.235
PTSD-Avoidance	−0.060 [−0.144, 0.024] 0.155	0.164 [−0.040, 0.368] 0.112	0.040 [−0.105, 0.185] 0.581	**0.131** [0.049, 0.212] 0.002	**3.3** (4, 47) 0.018	0.219
Anxiety	−0.056 [−0.144, 0.033] 0.212	0.016 [−0.201, 0.232] 0.885	**0.176** [0.021, 0.331] 0.027	0.063 [−0.024, 0.151] 0.152	2.2 (4, 48) 0.078	0.158
Depression	−0.067 [−0.147, 0.013] 0.098	0.105 [−0.091, 0.300] 0.287	0.021 [−0.119, 0.161] 0.763	**0.117** [0.038, 0.196] 0.005	**2.6** (4, 48) 0.049	0.177
Self-reported quality of life						
Physical Health	1.81 [−0.31, 3.93] 0.093	−0.32 [−5.46, 4.83] 0.902	−3.39 [−7.06, 0.27] 0.069	−1.71 [−3.78, 0.35] 0.102	2.2 (4, 47) 0.084	0.157
Psychological Health	**2.37** [0.18, 4.56] 0.034	−1.69 [−7.00, 3.62] 0.525	**−4.55** [−8.33, −0.78] 0.019	**−3.77** [−5.90, −1.64] 0.001	**5.6** (4, 47) 0.001	0.323
Social Relationships	−2.18 [−5.82, 1.45] 0.233	0.08 [−8.75, 8.92] 0.985	−3.61 [−9.90, 2.68] 0.254	−2.28 [−5.82, 1.27] 0.203	1.7 (4, 47) 0.157	0.129
Environmental Conditions	−0.63 [−3.39, 2.13] 0.647	3.50 [−3.21, 10.21] 0.299	**−4.90** [−9.68, −0.13] 0.044	−2.09 [−4.78, 0.61] 0.126	2.5 (4, 47) 0.057	0.174

Multiple linear regression analysis. PTCEs: $N = 54$; HTQ, Part IV: $N = 52$; HSCL-25: $N = 53$; and WHOQOL-BREF: $N = 52$; 95% Confidence Intervals (CI).

coef indicates unstandardized regression coefficients. Positive values indicate more symptoms or better quality of life; negative values indicate less symptoms or poorer quality of life. p^u indicates significance of unique contribution. Significant values ($p < 0.05$) are in bold.

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positively related to Psychological Health (*coef* = 2.37, $p = 0.034$) and tentatively and negatively to PTSD-Total (*coef* = −0.063, $p = 0.064$); see the Discussion section. Participants' own Illness was not significantly related to any outcome variable. When fitted with the four subtypes of PTCE, the Total Model explained 32.3% of the variance in Psychological Health, 27.9% of the variance in PTSD-Total, 23.5% of the variance in PTSD-Arousal, 21.9% of the variance in PTSD-Avoidance, 17.7% of the variance in Depression, 17.4% of the variance in Environmental Conditions, 15.8% of the variance in Anxiety, 15.7% of the variance in Physical Health, 12.9% of the variance in Social Relationships, and 12.7% of the variance in PTSD-Reexperiencing.

The results support our first hypothesis that more pre-flight events related to war and HRVs was significantly related to more symptoms of PTSD, as demonstrated in previous studies (*e.g.*, Bogic et al., 2012). We found that the number of HTQ-Trauma Events was significantly and positively related to PTSD-Total and to PTSD-Reexperiencing symptoms, but a significant relationship was not demonstrated for the other two symptom clusters of PTSD, or for Anxiety, Depression, or any QOL domains. Our second hypothesis was supported in that extent of adverse events experienced during childhood was significantly and positively related to PTSD-Total and to PTSD-Arousal and PTSD-Avoidance symptoms, significantly and negatively to the QOL domains Social Relationships and Environmental Conditions, and sub-significantly and negatively to the Psychological Health domain but not to PTSD-Reexperiencing, Anxiety, Depression, or Physical Health. Further, we found that, overall, PTCE-Sum was more strongly related to increases in symptoms of mental disorder and lowered QOL than HTQ-Trauma Events. Finally, when childhood PTEs were categorized into subtypes, this model explained more of the variance in outcome variables than the model displayed in Table 4. Childhood experiences of extra- and intrafamilial violence were significantly related to outcome variables implying lower mental health and poorer QOL.

DISCUSSION

We found a high frequency of childhood adverse and potentially traumatic experiences among our adult refugee participants, who had also experienced later PTEs related to war and HRVs, mainly in early adulthood. The childhood experiences included losses in close relationships, participants' own illness, accidents, and injuries, extra- and intrafamilial violence, and war-related events. The HTQ-Trauma Events tapping war and HRVs demonstrated a high frequency of severe experiences like torture, captivity, rape, military attacks, near-death experiences, and witnessing the violent death of others. Further, the level of symptoms among our participants was higher or equal to, and the QOL lower than comparable clinical samples in Western countries (*e.g.*, Huijts, 2012; Keller et al., 2006; Teodorescu et al., 2012).

Our results supported part of our hypotheses in that both sum of war and HRV experiences (HTQ-Trauma Events) and extent of adverse childhood experiences (PTCEs) were significantly related to total symptoms of PTSD, thus confirming the dose–response model of traumatization (*e.g.*, Bogic et al., 2012). In the refugee literature, severity of symptoms has frequently been related to pre-flight war and HRV trauma. In our study, HTQ-Trauma Events was significantly related only to the reexperiencing symptoms of PTSD and to PTSD-Total, and to none of the other outcome variables, whereas a greater sum score of PTCEs was significantly related to more arousal and avoidance symptoms of PTSD and to poorer quality of social relationships and of psychological health. In this sample of adult refugee patients, extent of childhood trauma was overall more strongly related to "present" mental health and QOL than pre-flight war and HRV trauma. Further, PTCE-Sum explained a greater percentage of the variance in outcome variables than HTQ-Trauma Events, and when PTCEs were divided into subtypes of childhood PTEs, this model explained yet higher percentages of the outcome variables. These percentages were still relatively low, indicating that many other aspects were important to explain the variance in participants' mental health and quality of life as they entered treatment.

The relationships between the PTCE-Sum and PTSD arousal and avoidance symptoms were no longer significant when controlling for HTQ-Trauma Events. A plausible explanation is the overlapping experiences of war and HRVs in HTQ-Trauma Events and PTCEs, in that war-related events, imprisonment, and torture experienced in childhood and adolescence evoke more problems with emotional and physiological regulation (arousal symptoms) than when experienced in adulthood, and that these experiences in childhood contributed to the significant relationship with arousal symptoms. Illustrating such severe childhood experiences, two participants reported having been imprisoned, isolated, and tortured in mid-adolescence, and one participant reported having been imprisoned as a small child with his father and seen him being tortured.

When PTCEs were divided into the variables Loss, Illness, Family Violence, and External Violence, the total model accounted for 12.7% to 32.3% of the variance in symptoms and QOL variables. Violence both within and outside the family, experienced during childhood, were significantly related to present mental health and QOL. Among childhood experiences, Family violence was the only variable significantly related to symptoms of anxiety and to poorer QOL in Environmental Conditions, while both Family Violence and External Violence were related to Depression and to poorer QOL in Psychological Health. Only External Violence was significantly related to PTSD (total symptoms, avoidance, and arousal symptoms). The participants' experiences of Illness and accidents in childhood were not significantly related to mental health symptoms and QOL. The counterintuitive finding that childhood Loss was related to less negative Psychological Health and to less severe symptoms of PTSD should be seen in relation to the atrocities experienced in this highly exposed sample. Overall, our findings are compatible with a cumulative effect of repeated trauma and with the conclusion of Olema et al. (2013) that the negative impact of child maltreatment exceeds the negative impact of war trauma on psychological health and also, according to our findings, on QOL.

Developmental research (Schore, 2002, 2009) has shown that specific vulnerabilities resulting from childhood trauma predispose to the development of PTSD later in life. In our study, the potential ways in which PTCEs influenced reactions to later PTEs can only be hypothesized. The negative impact of repeated and/or severe childhood adverse experiences and PTEs, discussed in the Introduction section, suggests the possibility that the childhood experiences of our participants had affected their personality functioning in a negative way and made them less capable of dealing with later stress, including war atrocities and HRVs (*e.g.*, Breslau et al., 2014; Schore, 2009).

We find it noteworthy that childhood trauma related significantly to the Arousal and Avoidance subscales of PTSD, whereas the generally more recent pre-flight war and HRV experiences related significantly only to the PTSD Reexperiencing subscale. Given that the capacity to alleviate emotional stress develops in infancy and childhood (Crittenden and Landini, 2011; Fonagy, 2001) and is further consolidated in adolescence (Akhtar, 1999), it is reason to hypothesize that childhood PTEs have reduced our participants' capacity to self-soothe and regulate emotions, thus accounting for the elevated Arousal score. More research is needed regarding the mechanisms and differential responses involved in different types and amounts of PTEs occurring at different developmental stages.

The participants' mean score on the QOL-Physical Health domain was very low, and throughout the interviews with participants, we noted the frequency with which they reported pain and other physical symptoms. A core feature of extreme, prolonged, or repeated

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trauma is problems with affect regulation (Schore, 2009), which reflects the ability to transform bodily affective experience into mental content that can be contained as thoughts and feelings in coherent psychic structures. Memories of traumatic events are understood as fragmented and transformed into bodily symptoms rather than mental content, both when traumatized in childhood and in adulthood. Accordingly, we understand some of the physical symptoms expressed by our participants as a transformation into physical symptoms of non-mentalized content where neurovegetative changes may play a role (Terranova et al., 2011) and sometimes as a physical response to acute or chronic stress when regulatory mechanisms are dysfunctional or insufficient (Hinton and Kirmayer, 2013). Culturally dependent paraphrasing of psychological problems may also contribute to expressing mental distress in the form of bodily symptoms.

Overall, more childhood PTEs were significantly associated with poorer QOL, whereas the same was not true for PTEs related to war and HRVs. The PTCE-Sum (controlled and not controlled for HTQ-Trauma Events), External Violence, and Family Violence variables were significantly related to several QOL variables. We find it premature, however, to interpret discrete relationships between the various childhood trauma variables and the various QOL domains. We broadly suggest, instead, that participants with more childhood trauma had more problems with their relationships, their environmental conditions, their psychological health, and, tentatively, with their physical health. An alternative explanation that we find less likely would be that individuals who were less content with their QOL reported significantly more childhood adverse events, but not significantly more HTQ-Trauma Events.

Our results must be interpreted with caution owing to several limitations. The sample was relatively small and did not permit inclusion of or controlling for other potentially important variables in the analyses, *e.g.*, like hardships in exile and social support. Symptom scores were generally high, with little variability between participants, making it less likely for statistical relationships to become significant. Next, we tried to capture childhood adverse and potentially traumatic experiences. Although we asked for specific examples of relationships and events to facilitate memory and counteract distortions, we certainly did not capture all the relevant experiences. Later experiences and cognitive and emotional difficulties may have disturbed recall functions and distorted internal representations and reporting of childhood adverse experiences. The list of PTCEs was derived from the qualitative material and represented the experiences of this particular sample. The events, items, and subtypes could surely have been systematized and scored differently. The quantitative use of the PTCE scores in the statistical analyses must be viewed as tentative and partly explorative. Since the PTEs in the HTQ-Trauma Events and in the PTCEs were not mutually exclusive, we could not get a full picture of the relative impact on adult mental health and well-being of childhood trauma versus experiences of war-related trauma in adulthood. Differences in culture and language between participants and researchers may have led to misunderstandings, when using interpreters or not, but were sought lessened through the measures described in the Methods section. Significant relationships found in the research literature and in this study, between various refugee adverse experiences and individual symptom clusters of PTSD, symptoms of anxiety or depression, and QOL in individual domains, could not be further investigated within the scope of this study.

A main strength of this study lies in our investigation of childhood adverse and potentially traumatic experiences, which have rarely been studied in clinical samples of adult refugees. Further, with an obtained 75% inclusion rate in our study, our sample was probably representative of the refugee patients typically referred to specialist treatment services in Norway at that time. The inclusion of individuals who could and could not speak Norwegian, as well as literate and illiterate individuals, counteracted bias towards better functioning participants. A comparable study requiring Norwegian skills (Teodorescu et al., 2012) found lower levels of symptoms on comparable measures, better QOL, and their rate of employment was nearly twice the rate in our study. We obtained statistically significant and theoretically and clinically meaningful results despite the sample size, the cultural diversity, and the difficulties inherent in studying this group.

The cultural diversity of patients found in Norwegian mental health clinics, and probably in the services of other Western countries as well, makes specific cultural knowledge and interventions aimed at culturally specific groups unfeasible. We chose to recruit a sample representative of this diversity, and to focus on what was common among traumatized refugee patients and on significant relationships appearing despite the cultural differences.

Our results raise the awareness of potential childhood adversities and developmental trauma in refugees' lives preceding war and HRV experiences that lead to their flight. Further, our results point to the importance of addressing childhood issues in treatment and research for this group. The high level of symptoms and the low level of well-being among our participants indicated that these were individuals at risk. Developmental research demonstrates the possibility of transgenerational transmission of trauma-related problems (Wiegand-Grefe and Möller, 2012; Yehuda and Bierer, 2007). This raises a concern for the children in these families. We propose that longer and more comprehensive treatment, including family treatment and rehabilitation measures, are required for patients who are more complexly traumatized.

The relationships between war-related events and reexperiencing symptoms of PTSD versus those between childhood adverse events and arousal and avoidance symptoms of PTSD may imply that different psychological processes are involved. New studies should be designed to yield further insights into the relationships between early and later PTEs, mental health problems, and QOL among traumatized refugees. Also, culturally contextualized studies are needed to validate, supplement, and enhance our findings.

CONCLUSIONS

In our sample of adult refugees assessed at treatment start, we found significant associations between extent of childhood PTEs and mental health, as well as between number of war and HRV PTEs and mental health, supporting the notion of a cumulative effect of repeated trauma. The relationships of childhood PTEs to mental health and QOL were stronger than the relationships of preflight war and HRV PTEs to mental health and QOL. Further, the significant association of war and HRV PTEs with reexperiencing symptoms of PTSD versus the significant associations of childhood PTEs with both arousal and avoidance symptoms of PTSD indicate different mechanisms and timing in the "production" of various symptoms after potentially traumatic events experienced in different developmental phases. We find it likely that childhood adverse experiences had induced a vulnerability to later stress in our participants, and also that the psychological impact of their childhood experiences had been accentuated through later experiences of war and HRVs. Childhood experiences of extra- and intrafamilial violence were significantly associated with increased mental health symptoms and reduced quality of life, indicating the potential for lasting harmful consequences of childhood exposure to violence. This study points to the importance of taking into consideration possible traumatization in childhood when planning research of and treatment for traumatized refugee patients. The results need validation through further studies.

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DISCLOSURES

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Running head**:** RORSCHACH ASSESSMENT OF TRAUMATIZED REFUGEES

Rorschach Assessment of Traumatized Refugees: An Exploratory Factor Analysis

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Abstract

Fifty-one multi-traumatized mental health patients with refugee backgrounds completed the Rorschach (Meyer & Viglione, 2008), Harvard Trauma Questionnaire and Hopkins Symptom Checklist-25 (Mollica et al., 2004), and World Health Organization's Quality of Life-Bref questionnaire (WHOQOL Group, 1998) before the start of treatment. The purpose was to gain more in-depth knowledge of an understudied patient group and to provide a prospective basis for later analyses of treatment outcome. Factor analysis of trauma-related Rorschach variables gave two components explaining 60 % of the variance; the first was interpreted as trauma-related flooding versus constriction and the second as adequate versus impaired reality testing. Component 1 correlated positively with self-reported re-experiencing symptoms of posttraumatic stress ($r = .32$, $p < .05$). Component 2 correlated positively with self-reported quality of life in the physical, psychological and social relationships domains ($r = .34$, .32, and .35, $p < .05$), and negatively with anxiety ($r = -.33$, $p < .05$). Each component also correlated significantly with resources like work experience, education, and language skills.

Keywords: factor analysis, HSCL-25, HTQ, personality assessment, prospective, PTSD, refugees, Rorschach, traumatized, WHOQOL-BREF

Rorschach Assessment of Traumatized Refugees: An Exploratory Factor Analysis

Worldwide, the population of persons with refugee background is increasing. This calls for urgent efforts to develop helpful ways to understand and treat individuals with incapacitating suffering from trauma. Traumatization broadly affects mental and physical well-being and health, natural functions, emotional life, and cognitive abilities (e.g., Briere, 2004; Kaser-Boyd & Evans, 2008; van der Kolk, 1994). People with refugee background have often experienced multiple gravely stressful situations in their homeland, comprising many of the variables listed in the trauma literature as most likely to increase the risk of developing severe posttraumatic stress disorder (PTSD; e.g., Briere, 2004). The complexity and duration of their trauma exposure and the subsequent implications for later health, emotional, cognitive, and interpersonal functioning, may be better conceptualized by terms like *complex trauma* (i.e., Curtois, 2004) or *disorders of extreme stress/ extreme traumatization* (Herman, 1992; Van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005).

Interpersonal victimization is associated with far more trauma-related symptoms than disaster exposure (Briere & Elliot, 2000). Further, rates of PTSD are especially high in populations exposed to torture and rape in the context of refugee trauma (i.e., Keller et al., 2006). Potentially traumatic experiences, early and later losses, and repeated confrontation with the cruelty of fellow human beings, like torture and witnessing killings, have often been an extensive part of these individuals' developing years. Research has shown that repetitive childhood traumas have pervasive effects on personality development (Cassidy & Mohr, 2001). Previous exposure to traumatic events increases the risk of developing PTSD from subsequent trauma (e.g., Breslau, Chilcoat, Kessler, & Davis, 1999; Briere & Elliot, 2000). Not only PTSD, but many psychological disorders like depression, anxiety, substance abuse, and suicidal ideation, as well as bodily pain and disability are related to the traumatization, grief, and losses of this population.

Trauma always entails losses; of close persons, home, country, or more on a symbolic level, in terms of identity, meaning, hope, and ability to symbolize (Lemma & Levy, 2004; Varvin, 2003). Garland (2004) claims that fear of painful reminders and thoughts connected with traumatic experiences that are not processed or grieved, may lead to a loss in the capacity for symbolic thought and an inability to mentalize, leaving the traumatic experience and its repercussions as the main organizer of mental life. Van der Kolk (2006) has demonstrated how extreme stress affects brain functions and makes the individuals "lose their

way in the world" (p. 277). Moreover, Van der Kolk, McFarlane, and Weisæth (1996) emphasized the impoverishment of all aspects of life when one is absorbed in warding off the impact of traumatic experiences. They describe the danger of breaking down the "stimulus barrier," designated by Freud (1920, 1926), which might lead to overwhelming anxiety and helplessness (Yorke, 1986). Varvin and Rosenbaum (2003) argue that the experience of helplessness and object loss are the two most salient aspects of psychological trauma. This concerns both the loss of important objects in the external world and the loss of what is conceptualized as internal representations of comforting objects. Rosenbaum and Varvin (2007) view Freud's notion of stimulus barrier as an early forerunner of the theoretical conception of the empathic object as a protective shield and the subsequent internalized object as a precondition for symbolization and regulation of negative affects. They further maintain that extreme traumatization may lead to disturbed internal subject-object relationships that manifest themselves in these individuals' ways of relating to others, for instance with anger, fear, shame, and distrust. In this way traumatization may subsequently affect parents' relationship to their children. This may have adverse consequences through several generations (e.g., Cassidy & Mohr, 2001; Scharf, 2007). According to Varvin (2003), the individual's efforts at adaptation are to a greater extent determined by individual history, personality, and contextual factors than the immediate reaction to overwhelming experience. Extreme traumatization can, moreover, lead to enduring personality changes (e.g., van der Kolk et al., 1996). Ephraim (2002), in his study of severely traumatized survivors of torture, concluded that the results from Rorschach personality assessment (Meyer & Viglione, 2008; Rorschach, 1942) of these individuals supported the conception that the ultimate goal of torture is the destruction of the victim's personality.

Though there is considerable knowledge about various consequences of traumatization, we still have insufficient data about how personal history relates to traumatization, about individual differences in immediate and long-term response to trauma, how repeated and diverse kinds of trauma affect the personality, and how personality functioning relates to treatment needs and outcome. Such in-depth knowledge is lacking in the research literature about traumatized refugees. As a step towards filling these gaps, the present study aimed, by use of the Rorschach personality assessment method, to investigate the personality functioning of traumatized refugees as they entered treatment.

The notion of a *biphasic psychological response to trauma* (Horowitz, 1976; van der Kolk, 1994) implies two types of trauma responses; one with emotional flooding, intrusive recollection, re-experiencing, intense fear reactions, arousal, and mobilization for fight or

flight and another with avoidance and emotional and cognitive constriction. Ephraim (2002) found the simultaneous presence of both constricted and intrusive phenomena in his Rorschach study of victims of torture. He underlined the importance of not reducing posttraumatic constriction to a personality style or ego-syntonic character trait, but recognizing the effect of trauma on a wide range of psychological functions. Rorschach studies of traumatized individuals have repeatedly shown elevations in specific variables that can be theoretically related to traumatization (Arnon, Maoz, Gazit, & Klein, 2011; Briere, 2004; Everly & Lating, 2004; Kaser-Boyd & Evans, 2008; Luxenberg & Levin, 2004; van der Kolk & Ducey, 1989). These Rorschach findings, indicating two types of trauma responses, sometimes with alternation between them, support the concept of the biphasic psychological response to trauma.

The Rorschach method is a performance based personality assessment method that requires the participants to use available cognitive, perceptual, affective, problem solving, and coping resources when solving tasks in an unfamiliar situation (Meyer & Viglione, 2008). The behaviors coded during the Rorschach response process provide data about the person's way of functioning in the immediate present, and the assumption is that this way of responding has implications for the person's approach to events outside the assessment (McGrath, 2008). The method is less dependent on language and cultural factors than are most assessment methods. Thus, Allen and Dana (2004) have emphasized the Rorschach's unique positive characteristics as a cross-cultural instrument, by its composition of neutral, nonverbal, imperfectly suggestive visual forms of stimuli, with no need for translation of individual items. The authors maintained that the methodological problems inherent in trying to make normative comparisons or conclusions in using the Rorschach across nationality and culture are shared with other methods used in multicultural studies. The findings from a large international study supported establishing adult international normative reference standards (Shaffer, Erdberg, & Meyer, 2007). The authors acknowledged the importance of sociocultural background, but found impressive similarities in the ways individuals responded to the Rorschach images across cultures (Meyer, Erdberg, & Shaffer, 2007).

Factor analytic studies of the Rorschach have shown a consistent underlying structure where the first one or two factors were strongly defined by *number of responses* (*R;* Meyer, 1992; Meyer, 1999). In Meyer's (1992) study the first factor showed a tendency for all determinants to increase as *R* increased. Varying from defended and constricted to exaggerated and *dilated*, this factor was seen as an indication of the responder's engagement

with the test and possibly more as an artifact of the test administration and statistics than as a psychological dimension. The Rorschach is not usually interpreted by its factor structure.

A related line of research relevant for the present study is the conceptualization of "Response-Character Styles" in the Rorschach and the effort to devise criteria to define such styles (Meyer, 1999). Ways of responding to different kinds of assessment methods have bearing on the correspondence of results from these methods. One individual's response style on the Rorschach need not be the same as when responding to other methods. Results from various kinds of assessment, when taking response style into consideration, can be sources of important complementary information about the person. Whether a subject is spontaneous or inhibited when responding to the Rorschach images determines the complexity or richness of the protocol (Meyer 1999). Defensive operations leading to constricted data or an exaggerated or excessive response style leading to dilated data may confound results and interpretation. Such response patterns can be a result of the participant's deliberate manipulation of his or her responses as well as of that individual's character structure.

In the following, we have chosen the term *flooding* to represent Rorschach indications of hyper-arousal/emotional flooding. Flooding implies an element of feeling overwhelmed. We have chosen the term *constriction* to denote Rorschach indications of limited emotional, cognitive, associative, and verbal activity. Constriction implies severe restriction of an individual's freedom of movement, action or expression. Constriction is a familiar term in psychoanalytic writings (Kardiner, 1941; van der Kolk & Greenberg, 1987; Wilson, 1994) and, as seen above, has been used as a term to describe a response-character style in assessment (Meyer, 1999). The term is not apparent in the general trauma field, where *avoidance* and *emotional numbing* are used.

First Aim: Assessing Personality Functioning by the Rorschach

Since in-depth knowledge of traumatized refugee patients is lacking in the research literature, we wanted to explore personality functioning of traumatized refugees by use of the Rorschach. The mental processes that are activated in the production of Rorschach responses tap into and trigger the test person's underlying personality structures, which are not tapped by self-report measures and interviews (Meyer & Viglione, 2008; Weiner, 2003).

To our knowledge there have not been principal components analyses (PCA) or factor analytic studies conducted using Rorschach data from traumatized samples. An exploratory PCA was conducted in order to examine possible patterns in Rorschach variable scores, supposed to reflect underlying personality dimensions. For our factor analysis we chose

Rorschach variables that have been related to traumatization and to Horowitz' (1976) concept of the *biphasic psychological response to trauma*[1]. We expected that a Rorschach manifestation of such a pattern might show up in some form in the PCA, but the analysis was mainly exploratory, without specific hypothesis.

A related aim of the Rorschach assessment was to provide a prospective basis for later analyses of treatment outcome. In former studies of traumatized refugees no clear relation between outcome and aspects of treatment, demographics, past traumatic experiences or symptoms have been established (i.e. Boehnlein, Kinzie, Sekiya, Riley, Pou, & Rosborough, 2004; Carlsson, Mortensen, & Kastrup, 2005; Carlsson, Olsen, Kastrup, & Mortensen, 2010). Thus, more research is needed to explore what individual characteristics might relate to differences in outcome and how this may throw light on individual treatment needs.

Second Aim: Exploring Relationships Between Rorschach and Self-Report Data

Rorschach findings were studied in relation to demographics, trauma history, symptoms, and quality of life (Harvard Trauma Questionnaire [HTQ] and Hopkins Symptom Checklist-25 [HSCL-25], Mollica, McDonald, Massagli, & Silove, 2004; World Health Organization's Quality of Life-Bref questionnaire [WHOQOL-BREF], WHOQOL Group, 1998); variables that have commonly been studied in related research. Whereas self-report depends on the respondents' willingness to reveal the asked-for information about themselves, their perceived risk or gains by revealing certain information, and their self-knowledge, Rorschach may give information about the individual's problem solving style and uncover aspects of the personality that the individual is unaware of or tries to hide (Meyer, 1997; Meyer & Viglione, 2008). Self-reported characteristics thus cannot, in general, be used as validity criteria for Rorschach constructs, but the relationship between the respective results may be informative and add incremental validity to the results. Viglione (1999) found that Rorschach results were significantly related to behavioral events and observable life outcomes that tend to develop over time. In their large-scale validity study, Mihura et al. (2012) found that Rorschach variables had a mean correlation of $r = .08$ with introspectively assessed characteristics like self-reported data, while the mean correlation with externally assessed characteristics like psychiatric diagnosis or observer ratings was $r = .27$. Consequently, we could expect the demographic data, representing more external data, to

[1] We are in debt to Jim Allen for alerting us in an early phase of our study to the concept of the "biphasic response to trauma", to the Rorschach findings of traumatized samples, and to the possibility of using factor analysis to explore this.

yield higher correlations, if any, with the Rorschach results than the self-reported symptoms or quality of life. Meyer (1999), however, found that the correlation between Rorschach results and self-report was higher when the individual's response style towards both methods was similar. Consequently, the correlation between our Rorschach findings and the participants' self-reported symptoms and quality of life would depend on the similarity of their response style across these methods. We therefore chose an explorative approach to investigate the relationships between these data.

Method

Participants

Participants were 51 adult mental health patients, 33 men and 18 women, with refugee backgrounds and extensive traumatic experiences. They came from 15 different countries: 57% from the Middle East, 18% from other Asian countries, 18% from the Balkans, and 10% from various African countries. The largest group was from Iraq, constituting 31% (N = 16) of the total sample. Demographics are listed in the first part of Table 1. Mean age was 39 years, mean education from country of origin was 10 years, and mean stay in Norway was 11 years; 67% were married and 82% had children. While 61% had held a paid job at some time during their years in Norway, less than one third had been employed within the last 2 years before admittance to treatment.

Insert Table 1 about here

Further, it can be noted that only two of the participants had managed to complete any levels of further education in Norway. Most had not completed the mandatory Introduction Program with Norwegian language and social subjects and had only limited work experience in Norway. About 45 % had been in mental health treatment previously, mostly of shorter duration or with infrequent sessions (M = 18.5 sessions, SD = 18.1). None had been hospitalized. One had been shortly imprisoned in Norway. All but two persons had either Norwegian citizenship or a non-time-limited permission to stay in the country. No major rights or decisions were at stake that should systematically influence the way the participants responded to the research questionnaires and interviews.

Enrollment

During the time period 2006 – 2009 eligible adult refugee mental health patients were recruited consecutively from two public specialist mental health out-patient clinics and from psychologists and psychiatrists in independent specialist practice with public funding.

Inclusion criteria were refugee background, past traumatic experiences related to war or persecution, and mental health problems at least partly related to the traumatic experiences. Exclusion criteria were psychosis or severe drug problems. Ability to communicate in Norwegian was not required. After decisions were made by the intake teams about offering treatment, they picked out patients who fit the inclusion criteria of the study according to information and evaluation supplied by the referring medical doctor.

The response rate between eligible patients was 70 %. Fifteen patients did not accept to take part, four said yes, but withdrew after one interview. Reasons given for not taking part in the study were: not wanting to open up to more persons than necessary, not wanting to go into details about their trauma history, or lack of trust in interpreters. We found no systematic non-participation characteristics in terms of sex or country of origin. Of the remaining 54 participants three did not complete the Rorschach but remained in the main study.

Instruments

The Rorschach has been found equally reliable and valid as other widely accepted personality assessment instruments, like the MMPI (Meyer & Viglione, 2008). The Rorschach is of special value to the trauma field by its capacity to assess a wide array of psychological functions affected by trauma. This method may also reveal how trauma memories radically interfere with the capacity to perceive objectively and think clearly and logically (Ephraim, 2002). The Rorschach's ability to elicit trauma memories and feelings allows individuals who are unable or unwilling to report their traumatic experiences openly to communicate their trauma images in an indirect way (Kaser-Boyd & Evans, 2008; Levin & Reis, 1997). Evans (2008) has cautioned against using the Rorschach with victims of torture and extreme violence, as these individuals risk becoming emotionally overwhelmed by their evocative associations to the images of the test. This risk is particularly high shortly after the traumatic event. Evans agreed, however, that the Rorschach can be a valuable tool in revealing traumatic experiences that are buried by the avoidant/numbing symptoms of PTSD, in demonstrating the deep fear and torment brought on by systematic persecution, and to assess cognitive disturbances associated with traumatic intrusion, defense patterns, issues of identity and relatedness, and problems with self-regulation and dissociation.

The Harvard Trauma Questionnaire (Mollica et al., 1992; Mollica, McDonald, Massagli, & Silove, 2004) was developed to tap the multiple traumas of refugees and has been rated as one of the research tools that perform best in refugee populations (Hollifield, Warner, & Lian, 2002). We used the HTQ, Part I, Trauma events (*HTQ_trauma events*),

which is a checklist of potentially traumatic experiences; and the HTQ, Part IV, Symptoms of PTSD (*HTQ_ptsd*). In Part IV we used the first 16 items that are derived from the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) criteria for PTSD. In Mollica et al.'s (1992) validation study of this instrument a score of ≥ 2.5 on the HTQ resulted in a sensitivity of 78 per cent and a specificity of 65 per cent for PTSD, which was then considered *checklist positive* for PTSD. The ability of the HTQ to distinguish between PTSD cases and non-PTSD cases varied greatly among more recent HTQ validation studies investigated by Jakobsen, Thoresen, and Johansen (2011), with cut-off values ranging from 1.17 to 2.5. In their own study, Jakobsen and colleagues found cultural differences in reported symptoms and emotional problems on translated self-administered versions of the HTQ and HSCL-25 in newly arrived asylum-seekers from the Middle-East, North -, and East Africa. The questionnaire results were compared with results from the Composite International Diagnostic Interview (CIDI; Wittchen, 1994), used as a "gold standard". In general, the mean results of pathology corresponded well between the questionnaire data and the CIDI, showing that the participants were highly symptomatic. However, a lowered clinical cut-off point on the HTQ of 2.0 corresponded better to the CIDI-diagnosis of PTSD. This cut-off point still under-estimated the pathology of the Somali subgroup and over-estimated the pathology of the Middle East and North-African subgroup. We recognize that there may be similar differences between the cultural subgroups in our study but chose to keep the cut-off point at 2.5, since a majority of our participants came from the Middle East and few from East Africa. For further analyses, we singled out questions that according to the manual were tapping symptoms of re-experiencing (questions 1, 2, 3, and 16), arousal (questions 6, 7, 8, 9, and 10), and avoidance (questions 4, 5, 11, 12, 13, 14, and 15).

The Hopkins Symptom Checklist-25 (Mollica, Wyshak, et al., 1996; Mollica et al., 2004) taps anxiety (10 items) and depression (15 items). An anxiety score or a depression score of > 1.75 is found to be consistent with clinically significant anxiety in the form of generalized anxiety disorder, or major depression, with high sensitivity and specificity (Mollica, Wyshak, et al., 1996; Thapa & Hauff, 2005). The HSCL-25 has good reliability and validity in clinical refugee samples (Jakobsen et al., 2011). The HTQ and the HSCL-25 have been widely used internationally in the assessment of mental disorders in traumatized populations (i.e., Mollica et al., 2004; Keller et al., 2006; Jakobsen et al., 2011) and also as outcome measures (i.e., Hinton et al., 2004). For both instruments scoring is straightforward. Symptoms for the last week are rated on a four-point scale from 1 (not at all) to 4 (extremely).

The World Health Organization Quality of Life-Bref (WHOQOL-BREF; WHOQOL Group, 1998) has 26 questions divided in the four domains of Physical health, Psychological health, Social relationships, and Physical environment. Scoring is marked on 5-point Likert scales that range from very dissatisfied to very satisfied, or disagree strongly to agree strongly and similar formulations. We used the conversion of scores to a scale from 1 – 100, with 50 indicating mean satisfaction. In a field trial by Skevington, Lotfy, and O'Connell (2004) carried out in 23 countries, with 11830 sick and well responders from different socio-demographic layers, the WHOQOL-BREF was found to be a sound and cross-culturally valid instrument for measuring quality of life, with satisfactory internal consistency reliability (Cronbach's $\alpha \geq .80$ for Domains 1, 2 and 4, consisting of six to eight items each, but lower [.68] for Domain 3, which consists only of three items). Theuns, Hofmans, Mazaheri, Acker, and Bernheim (2010), however, warned that this instrument should be used with great caution in cross-national comparisons. The WHOQOL-BREF has been used in numerous studies from various fields, including traumatized refugees (i.e., Araya, Chotai, Komproe, & de Jong, 2007; Carlsson, Mortensen, & Kastrup, 2004; Correa-Velez, Gifford, & Barnett, 2010; Huijts, Kleijn, van Emmerik, Noordhof, & Smith, 2012; Teodorescu et al., 2012).

Procedures

The assessment took place in a naturalistic setting within the specialist mental health services. The participants gave written informed consent and were treated according to the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 1992). The study was passed by the local medical research ethics committee following the principles of the World Medical Association Declaration of Helsinki; Ethical principles for medical research involving human subjects (World Medical Association, 2010).

The initial pretreatment assessment consisted of about 5 sessions, each of 1 ½ - 2 hours' duration. We used two interviewers (the first author of this article and the leader of the main study) who were both experienced clinicians. Careful efforts were made to give the participants emotional support in the interview situation and secure follow up. Interpreters were used in about 45 % of the cases. The interpreters were mostly engaged from the specialist health interpreter service, and were trained in interpreting in clinical settings. Eventual errors in oral translations were assumed to be varied and unsystematic.

The questionnaires were administrated personally by the researchers, most often presented in interview form, question by question, and translated orally on the spot. Associations to the questions and exemplifications of the answers by the participants were

allowed. We asked several follow-up questions before placing the checkmark noting the intensity of the problem. These procedures were time consuming, but gave us indications on how the questions were understood and added important information elaborating the fixed choices of answers in the questionnaires. Mollica et al. (2004) recommended that the HSCL-25 and HTQ always be administered to traumatized refugees by health care workers, in an atmosphere of listening with empathy. They stated that neither instrument was designed as a self-report. To our knowledge the HSCL-25 and HTQ have been extensively administered as self-reports in refugee studies but also as oral interviews by health care personnel (i.e. Lie, Lavik, & Laake, 2001) or as a combination of self-administration and oral translation depending on the language of the participants (i.e. Carlsson, Mortensen, & Kastrup, 2006). We refer to Opaas and Varvin (in progress) for further descriptions of instruments, procedures, and findings of the non-Rorschach parts of the study.

The Rorschach was administered by the first author on the third or fourth session, preceded by completion of the questionnaires and a qualitative interview about pre- and post-migration history. Administration of the Rorschach generally followed the Comprehensive System (CS; Exner 2003), but more prompting was given. The interpreters were instructed by the Rorschach administrator (first author) to translate as accurately and closely to the responders' words as possible. Procedures were adjusted to the participants in the following ways: When patients seemed upset by the images, they were given time to calm down, opportunity to talk about what they were experiencing, and were asked if they would go on. Administration was ended if patients gave no responses to the first two Rorschach cards in spite of support and prompting and if they did not want to go on after responding to some of the cards. Three persons did not complete the Rorschach; other patients were asked if they wanted to stop when showing strong emotional reactions but decided to go on. In one case, where the reality of the ink-blots seemed to be lost, the interviewer pointed out the ambiguity of the images and that different people see different things, depending on their life experiences. Thus, we altered the standard administration when clinical and ethical considerations made it necessary. Even though the Rorschach usually was administered when an empathic atmosphere and some trust had developed, many subjects needed time to adjust to this unknown situation. Despite prompting, a majority of participants gave few responses during the response phase. During inquiry, however, some seemed to relax and feel more secure, and added more associations to the images. As the protocols generally were shorter than what is recommended, we therefore included responses given during inquiry.

Selection of Rorschach variables

Kaser–Boyd and Evans (2008) have summarized the findings of Rorschach studies related to trauma. Low Affective Ratio (*Afr*), low Blends (single responses containing multiple determinants), low *R* (< 14), and high *Lambda* have been found to reflect emotional numbing and traumatic avoidance. Unusually low Erlebnistypus Balance ('introversive' *EB*; more *M*-responses compared to Weighted Color Responses) is linked to these findings. Elevation of Form Dimension (*FD*) and Human Movement (*M*) responses has been found characteristic of dissociation. Unstructured Color Responses (*CF* + *C* > *FC*), extratensive *EB*, elevation of Shading Responses (*Y* and *V*), Inanimate Movement (*m*), the Hypervigilance Index (*HVI)*, and the Traumatic Content Index (*TCI)* have been found indicative of traumatic flooding and hyper-arousal. A positive *HVI* requires absence of Texture (*T*) responses, and frequent responses with Human figures, Human-like figures, details of Human or Human-like figures, and Animals or Animal details in a specified relation to each other; responses including protective or disguising Clothing gear; a general concern with how parts of the images relate to each other (*Zf*); careful inspection of the images (*Zd*), and using the white Space of the images (Weiner, 2003). The *TCI* is the sum of images of blood, anatomy, sex, aggressive action, and morbid responses, divided by *R*; Armstrong & Loewenstein, 1990). A *TCI* of .3 and above was posited by Armstrong (1991) to suggest traumatic intrusions. Kamphuis, Kugeares, and Finn (2000) found a mean *TCI* of .32 in a sample of outpatients with a definite history of sexual abuse, elevation of *TCI* in patients with other forms of trauma as well, and a near linear relation between *TCI* and presence or severity of abuse. Brand, Armstrong, and Loewenstein (2006) found that severely dissociated psychiatric inpatients' mean *TCI* was above .50. These patients had significantly more signs of emotional flooding, illogical thinking, and distorted view of others (*M*-) than comparison groups, indicating "traumatic thought disorders," although positive signs of empathy and cooperative relationships with others were also found. Ephraim (2002) found cognitive disturbances to be associated with intrusive recollections, and underlined the importance of acknowledging their trauma-related nature when interpreting these results. Kaser-Boyd and Evans underlined the high occurrence of impaired reality testing and thought disorder found in all Rorschach trauma research, including low *X+%*, high *Xu%*, illogical combination of ideas (*INCOM*s and *FABCOM*s), and loss of task focus (*DR*).

Arnon et al. (2011), in a study of security service subjects who claimed disability due to traumatizing experiences, found that subjects diagnosed with PTSD versus non-PTSD, had more Anatomy Content (*An*), Incongruous Combination (*Level 1, INC 1*), Botany Content

(*Bt*), and Fire Content (*Fi*); and less Vista (*SumV*), Texture (*SumT*), Achromatic Color (*C'*), Color Naming (*Cn*), Household Content (*Hh)*, Food Content (*Fd*), and Idiographic Content (*Id*). The authors pointed out that variables correlating negatively with PTSD may also contribute to Rorschach assessment of PTSD.

For our analysis we wanted to include variables that 1) empirically or theoretically have been related to traumatization in the literature (e.g., Briere, 2004; Ephraim, 2002; Everly & Lating, 2004; Kaser-Boyd & Evans, 2008; Luxenberg & Levin, 2004), 2) have sound empirical evidence for their interpretation (Mihura et al., 2012; Meyer, Viglione, Mihura, Erard, & Erdberg, 2011) and 3) whose standard clinical interpretations (Exner, 2003; Weiner, 2003) made it reasonable to expect them as relevant to measures of extended interpersonal and violent traumatization. Considerations restricting the number of variables and which to include were related to the factor analytic method, to be described later. Even though important variables in the Rorschach trauma literature may have been accordingly low or elevated in our material, they were not included if they did not clearly vary together with the other variables in the factor structure.

According to the Rorschach trauma literature the potential variables for our factor analytic study were thus *Afr*, *Blends*, *R, Lambda*, *EB*, *FD*, *M*, *CF+C (>FC)*, *Shading* (*Y* , *V, and T*), *m*, *HVI*, *TCI*, *X+%, Xu%, X-%, INCOM*, *FABCOM* and *DR*. Some of Arnon's (2011) variables were included (as constituents) in this list, others were among the variables considered to be unreliable (Meyer & Viglione, 2008; Meyer et al., 2011; Mihura et al., 2012) or need to be confirmed by further studies as central to traumatized samples.

TCI, indicating traumatic content; *m*, indicating inner stress and fear of forces outside personal control; *Blends*, reflecting ability to identify and articulate multiple features of the environment, and when very high, may imply excessive complexity in processing that may lead to confusion; and *CF+C,* representing lack of emotional control, were seen as central to the trauma field and to our study. To account for indications of traumatic thought disorder, we chose the Rorschach Performance Assessment System (R-PAS; Meyer et al., 2011) variable *SevCog* (*Severe Cognitive Codes;* unweighted sum of CS Level 2 Cognitive Codes: *DV2*, *DR2, INCOM2*, and *FABCOM2* + *CONTAM* and *ALOG)*, as we wanted to get an indication of the more serious disturbances in logical and coherent thinking. Level 1 Cognitive Codes, which includes verbal slips and slight strangeness in wording that appear in 80 % of normal populations (Exner, 2003), was left out. We found *M* important to include for several reasons. *M* is mostly interpreted as an indication of resources, commonly related to empathy and to how people view themselves and others. It may be the single component of

the test most revealing of the individual's role in interpersonal relationships (Weiner, 2003). Depending on the connection with other variables in the Rorschach protocol a high *M* may also be interpreted as a sign of inner doubt and brooding. In the trauma literature *M* is related to dissociation (Kaser–Boyd & Evans, 2008). Clinically intuitive and well known from the literature about traumatized refugees, the relationship to other human beings is often greatly affected by the interpersonal violence they have suffered. We therefore assumed that an elevated *M* also might represent alertness and fearful wariness towards other people's acts, facial expressions, and every move. The *HVI* is found to be important in trauma research (Luxenberg & Levin, 2004), but was left out of the factor analysis because of its complexity. We chose to let human *movement* (*M)* represent an aspect of vigilance rather than human *figure*/*shape* (*H*), which is a part of the *HVI*. Though *Lambda* is frequently referred to in the Rorschach trauma literature and has consistent research support (Mihura et al., 2012), it can produce problems for parametric statistical analyses. We therefore exchanged *Lambda* with the interpretively equivalent pure *F*% as recommended by Meyer, Viglione, and Exner (2001). Low *X+%* and elevated *Xu%* were seen as important indications of the potential perceptual idiosyncrasies and difficulties with reality testing of traumatized individuals. *X-%* could also be an important variable for checking out to what extent the individuals' perception was distorted. We chose to use the guidelines in the R-PAS manual (Meyer et a., 2011) to score Form Quality; FQo, FQu, and FQ-, parallel to *X+*, *Xu*, and *X-* in the CS. *Shading* responses (elevated *Y* and *V,* and low *T*) have been found in traumatized samples and could also be potential variables in our factor analysis. We added *R* as a control variable, and location variable *D* (common detail of the image), a marker of attending to the ordinary and obvious parts of the visual environment, which has strongly defined components in previous factor analytic Rorschach research (i.e. Meyer, 1992; Linting & van der Kooij, 2012).

We chose not to include *Afr* and *EB*, which are calculated as ratios and found to be unstable (Meyer et al., 2011). Meyer et al. recommended changing *EB* to the more stable proportion M/M+WSumC, but also noted that the relative strength of *M* was probably the more important component of this proportion. The authors further maintained that proportion scores are less stable than their variables. As we had already selected *M* and *CF+C,* we decided not to use this proportion. *FD* was not frequent in our material, and was not included.

Brief Rorschach protocols

Protocols down to seven responses were included. Traditionally, brief protocols ($R <$ 14) have been considered invalid, as Exner (1988) reported that the temporal stability of CS

scores was lower when the Rorschach protocols had fewer than 14 responses. However, brief protocols are not unanimously found invalid (e.g., Janson, 1999; Janson & Erdberg, 1998). Kaser-Boyd and Evans (2008), among others, have pointed out that brief protocols may be part of traumatized individuals' typical ways of responding. In the study by Brand et al. (2006), 40 % of 100 severely dissociated psychiatric inpatients with PTSD had short protocols ($R < 14$), interpreted as the patients' attempt to limit and escape painful associations. These brief records were nevertheless found "interpretatively robust" without high *Lambda*, low *Blends*, and the scant replies that would usually indicate defensiveness. Thus, the researchers decided that inclusion of brief records would yield a more accurate representation of the patient group. Arnon et al. (2011) provided a summary of the discussion and findings concerning brief protocols and PTSD, concluding that brief protocols are characteristic of posttraumatic stress disorder and should not be ruled out. They included brief protocols down to six responses, and found no significant differences between characteristics of complete ($R \geq 14$) and incomplete protocols. We have chosen not to exclude brief protocols as that probably would have biased the findings.

Statistical method

We chose PCA to explore possible underlying dimensions of the Rorschach variables. The use of an ordinary linear PCA was supported by Linting and van der Kooij's (2012) study comparing nonlinear and linear principal components analyses of the Rorschach data. They found small differences, indicating that most relationships between Rorschach variables are close to linear.

A ratio from 10:1 to 5:1 was previously recommended of participants to variable entered into factor analysis. Costello and Osborne (2005) found that the most replicable results were obtained from larger samples (20:1), unless the data were unusually strong. Other studies (MacCallum, Widaman, Preacher, & Hong, 2001; MacCallum, Widaman, Zhang, & Hong, 1999; Velicer & Fava, 1998) have shown that *N* can be quite low if indicators are strong. When communalities are high (in the range .6 to .8), if there are a number of strong markers for each factor (3 or more variables loading .50 or more on each factor), if most indicators of each factor do not overlap with others, and if the factors extracted explain a large percentage of the variance, the data are considered strong. Weakness in one area can be compensated for by strong markers in others. Costello and Osborne (2005) propose that the meaningfulness of a factor is also a relevant issue to consider when deciding

how many factors to retain. MacCallum et al. (2001) point to the importance of being careful in choosing what number of factors to retain.

The first factor in Meyer's (1992) study, termed "Response-engagement", was defined by *R* and an increase of all determinants. The second factor was defined by *R* and *pure form* (*F%*) responses to *details of the cards* (*D*), contrasting frequent but superficial involvement with the task with infrequent but more profound engagement. When rotated, the first factor remained basically the same, strongly defined by *R* and by common determinants like movement and form-dominated color and shading responses. The second factor appeared as a measure of the depth of cognitive and emotional investment, much the same as before rotation, but unaffected by *R* and *Affective Ratio (Afr*).

Linting and van der Kooij (2012) analyzed Rorschach data from 378 outpatients, comparing results from a linear and a non-linear PCA. In their PCA, variables were controlled for *R*, while *R* was also kept as a variable. We think controlling for *R* seems like a useful approach. Controlling for *R* is already implemented in the structure of R-PAS.

As our N was relatively small, we had to restrict the number of variables to include in the factor analysis. Also, variables could only be used once; not again as part of a composite variable. Finally, we could not use variables that added up to 100 % of the variance, or depended on each other with a resultant forced correlation. A trial PCA with the selected variables including *FQo%*, *FQu%*, *FQ-%,* entered separately or pairwise, showed that *FQo%* and *FQ-%* loaded significantly on one of the main factors. *FQu%*, slightly elevated with a mean of 31.5, compared to 29.2 in the Non-modeled reference sample (Meyer et al., 2011), did not load significantly on any main factor and was left out. Likewise, shading variables, all low in our sample, when tried out separately or together, loaded insignificantly, and were left out. A PCA with the final Rorschach "raw"- scores was run, yielding two strong factors, where the first had much in common with Meyer's (1992) first factor. We then, in line with Linting and van der Kooij (2012), controlled for *R* by making all variables a proportion of *R,* kept *R* as a variable, and conducted the same PCA.

Scoring and interrater reliability

Due to the special nature of the Rorschach protocols, with a density of highly emotional, trauma related answers; all protocols were consensus scored twice. Then a Rorschach expert without knowledge of the study co-scored 20 of the protocols drawn by chance. Interrater reliability, calculated by two-way Intraclass correlation (ICC; 2, 1) for single judge reliability on protocol level scoring, ranged from .79 (*m*) to .98 (*M*), except for

SevCog and FQ-, that initially were somewhat low. We studied differences in scoring of the variables, reviewed guidelines and all protocols one more time, made some corrections, drew another chance sample of 20, and had a new co-scoring. The intraclass correlation for *SevCog* and *FQ-* were now excellent (.96 and .81). We did not have ICC for the sum of *CF+C*; but ICC of *CF* was .80. ICC was not reported for *C* as the frequency was low. A frequency of < 5 % is considered to yield an unstable ICC (Acklin, McDowell, Verschell, & Chan, 2000). Intraclass correlation values above .74 have been interpreted as excellent reliability, between .60 and .74 as good reliability, .40 to .50 as fair, and below .40 as poor (Meyer et al., 2002). The intraclass correlation coefficients were thus excellent for all variables included (Table 2).

Results

Potentially traumatic experiences in life related to war, imprisonment, and human rights violations were investigated by the HTQ, Part I (*HTQ_trauma events*). Participants had a mean of 17 of 37 listed types of traumatic war-related experiences. Worth noticing is that 53 % confirmed having been tortured and 22 % having been raped. Almost all had experienced military attacks, being forced to evacuate, and had experienced the violent death or murder of a family member or friend. About 75 % had witnessed others being killed or die due to violence, and 75 % had been close to being killed themselves.

PTSD was not required for inclusion in the study, as we were interested in various clinical manifestations of the suffering of these patients. However, all patients were admitted to mental health specialist services, which require serious mental health problems. On the *HTQ_ptsd*, 78 % of the participants (n = 40) qualified for a diagnosis of PTSD (cut-off score ≥ 2.5). On the HSCL, 94 % of the participants had clinically significant anxiety and 96 % had clinically significant depression (cut-off score > 1.75). Mean Quality of life scores on Domain 1 (Physical health), Domain 2 (Psychological health), Domain 3 (Social relationships), and Domain 4 (Physical environment) were 28.2, 25.3, 35.0, and 45.0, respectively, compared to the mean scores in the international field trial (64.8, 60.0, 57.2, and 54.0, respectively; Skevington et al., 2004). The results thus showed that over ninety percent had substantial anxiety and depression, 78 % met indications for PTSD, and the quality of life was well below international means. Only three participants, according to the clinical interviews, described former serious drug- and alcohol problems.

In our sample 17 (33 %) of the Rorschach protocols were brief ($7 \leq R < 14$; M = 10.7 responses). Of the total 910 Rorschach responses included, 118 (13 %) were given during

inquiry. According to Meyer's (1999) profile criteria[2] for defining Response-Character Styles on the Rorschach, 47 % of our participants had a constricted response style and 14 % had a dilated response style. The remaining 39 % fell in between. There were no significant differences in self-reported traumatic events or symptoms of PTSD, anxiety or depression between those who produced brief versus more normal length Rorschach protocols, neither when using our mean or the international mean *R* as a cut-off point.

The 11 selected Rorschach variables for our factor analysis were: *M*, *m*, *CF + C*, *Blends*, *F%, D, and R* from the CS, the *TCI* (Armstrong & Loewenstein, 1990), and R-PAS variables SevCog, FQo%, and FQ-%. Statistics of the variables are presented in Table 3. Skew and kurtosis values were modest and well below benchmarks indicative of problems (Curran, West, & Finch, 1996). The international norm means (Meyer et al., 2007; Meyer, 2010 [see notes to Table 3]) and z-scores are inserted for reference. Although the many low *R*s in this study make direct comparisons difficult, our mean values indicate a high level of psychological problems. *TCI* , *SevCog, and FQ-%* were especially high, pointing to a possible relationship between trauma content, thought disturbances, and perceptual distortions. The many Rorschach responses related to experiences of war and persecution explain the very high *TCI*. The *TCI* criteria (Armstrong, 1991) identified 59 % of our sample as likely to have traumatic intrusions. The HTQ's criteria (PTSD score ≥ 2.5) identified 78 % as qualifying for a diagnosis of PTSD. By these measures 53 % were identified both as having traumatic intrusions on the Rorschach (*TCI* > .3) and qualifying for PTSD on the HTQ, while 10 % were identified as neither.

Insert Table 3 about here

Principal Components Analysis of Rorschach Variables

In the correlation matrix we found 49 % of correlations above .3. Communalities ranged from .45 to .80 (*M* = .62). The Kaiser-Meyer-Oklin value was .69, exceeding the recommended threshold value of .6 (Kaiser, 1970, 1974). Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p < .001$), supporting the factorability of the correlation matrix. The PCA, adjusted for *R*, extracting components with eigenvalues above 1.0, resulted in three components with eigenvalues 4.49, 2.07, and 1.19, respectively, which

[2] The criteria defined for a behaviorally defensive and constricted response-character style was *R* < 21 and *Lambda* > 0.55; for an exaggerated or dilated style it was *R* > 21 and *Lambda* < 0.55. (*Lambda* is interpretatively similar to *F%*, indicating a tendency to simplify complex stimuli fields [Meyer, Viglione, & Exner, 2001]).

accounted for an accumulated 70.5 % of the variance (40.8 %, 18.8 %, and 10.8 % respectively; see Table 4). An inspection of the scree plot revealed a clear break after the second component. Horn's parallel analyses (Horn, 1965), was computed in R (Ihaka & Gentleman, 1996; The R-project for Statistical Computing, 2012) to compare eigenvalues in our analyses with eigenvalues appearing in randomly generated data sets of the same size (51 respondents x 14 variables) with 10000 reiterations. The parallel analyses showed that our first two components had eigenvalues above the randomly generated, whereas the third random factor had an eigenvalue superseding our third. The scree plot and results of the parallel analyses supported keeping two components.

Insert Table 4 about here

The Varimax rotation of our two-factor extraction PCA controlling for *R*, revealed a number of variables loading substantially on only one component (see Table 5).The variables loading on Component 1 were *Blends*, *(CF + C), m, TCI, M,* and *SevCog* on the positive pole and *F%* on the negative pole. The variables loading on Component 2 were *FQo%*, *D*, and *R* on the positive pole and *FQ-%* on the negative pole. Oblimin rotation of the PCA and Principal Axis Factoring (PAF) gave basically the same results, suggesting stability of the factor structure across extraction methods. The minimal correlation (-.112) between the components in the oblique rotation supported the use of Varimax.

Reliability of each of the resultant two components was computed by Cronbach's Alpha. The variables with negative loadings were reversed for the computation. Cronbach's Alpha for Component 1 (9 items) was .84. As the variables of Component 2 (4 items) were scaled differently, Cronbach's Alpha based on standardized items is reported, which was .67. An Alpha reliability coefficient > .90 is considered excellent, > .80 good, and .70 or higher acceptable in most social science research. The alpha value is sensitive to number of items, which may explain the somewhat low inter-item reliability for Component 2 (Field, 2009). Component scores were generated by SPSS. The participants' scores on Component 1 varied from -1.82 to 2.60 and on Component 2 from -2.50 to 1.52.

Insert Table 5 about here

Component 1 had much in common with the first component found in Meyer's (1992) Varimax rotated two-factor solution (positively defined by *Color-Shading-Blends*, *FC*, *CF+C*, *m*, *W*, *Morbid*, *M, and R*, among others, and negatively by *Lambda*), understood as having resulted from a general tendency of all determinants to increase with *R.* Our first component, however, had high loadings by *CF+C*, *Blends*, *TCI* (where *Morbid* is contained) *m*, *M,* and *SevCog* at the positive pole and by *F%* (interpretively equivalent to *Lambda*) at the

negative pole, despite controlling for *R*. *R* itself did not load substantially on this component. Contrary to the first component in Meyer's (1992) analysis, ours seemed to be psychologically meaningful. Thus, it seemed justified to interpret Component 1, *"Trauma Response"*, as a trauma-related component, indicating traumatic flooding, traumatic thought disturbance, and trauma-related interpersonal difficulties when high, and traumatic constriction when low. This dimension could be seen as representing the Rorschach manifestation of the *biphasic response to trauma*.

Component 2 was defined principally by *FQ-% and FQo%* (comparable to X+% and X-% in CS), but also by *D* and *R*, like Meyer's (1992) second Varimax rotated component and Linting and van der Kooij's (2012) second component, and also had some elements in common with Linting and van der Kooij's fourth component ("ordinary well-fitting perception"). Component 2, "*Reality Testing"*, was interpreted as intact reality testing and ordinary perception - and a readiness to give more responses when high/positive, and as impaired reality testing, less adequate perception, less attention to ordinary aspects of the environment, and less readiness to give responses when low/negative.

Relationships of Rorschach Components with Self-Report and Background Variables

The two-factor solution controlled for *R* yielded 10 significant correlations between the Rorschach components on the one hand, and demographics, HTQ, HSCL-25, and WHOQOL data on the other (see Table 6). Component 1 correlated significantly positively with *Any work in Norway, Recent employment, Years of education,* and *HTQ_ptsd re-experiencing* (r = .35, .33, .30, and .32, respectively, $p < .05$). Component 2 correlated significantly positively with *Years of education* (r = .39, $p < .01$), and with *QOL_social relationships, QOL_physical health, QOL_psychological health* (r = .35, .34, and .32, respectively, $p < .05$) and significantly negatively with *Interpreter use and HSCL_anxiety* (r = -.28 and -.33, $p < .05$).

Insert Table 6 about here.

Focusing on the demographic variables, Component 1 was positively associated with recent or former work experience in Norway and with education from country of origin. Component 2 was positively associated with intellectual resources like education and Norwegian language skills (i.e. less need for an interpreter). Combining the two components, increasingly reality oriented and flooded on the Rorschach correlated with more years of education, larger proportion that had been employed at some time in Norway, larger proportion that had been recently employed and better Norwegian language skills.

Constriction and impaired reality testing on the Rorschach were thus negatively related with these resources. The Rorschach components also turned out to be significantly related to self-reported symptoms and quality of life. The more flooded on the Rorschach (positive direction of Component 1) the more self-reported symptoms of PTSD. The more reality oriented and adequate perception on the Rorschach (positive direction of Component 2), the less anxiety, and the better the self-reported quality of life, and vice versa. As noted, the symptom load was high among our participants. Since there was little variation in symptom scores, and our sample size was relatively small, reaching significance required a strong relationship.

Discussion

Our aim was to explore pretreatment personality functioning of traumatized refugees as assessed by the Rorschach, provide a prospective basis for our later outcome study, and explore possible relationships between personality and trauma history, current functioning, symptoms, and quality of life. The Rorschach data exposed a vivid picture of the emotional, perceptual, and cognitive difficulties of these deeply troubled people. The content of the Rorschach responses was highly trauma related. The Rorschach results of the group as a whole indicated limited productivity, limited fantasy and creativity, perceptual and emotional restrictedness, anxiety, and fluctuation between rigid and lacking emotional control. The group as a whole had a relatively ordinary mean result on human movement, *M*, usually understood as a sign of intellectual and empathic abilities. We think the *M*-responses in our study also reflected a kind of vigilance – careful attentiveness towards other people's every move, learned through years of suppression, threat, and abuse.

The foremost finding was two personality dimensions that seem to underlie the Rorschach responses, revealed by a principal components analysis of trauma-related variables. The first component, *Trauma Response*, was seen to vary along a continuum from constriction to flooding, and the second component, *Reality Testing*, was seen to vary from deficient to more adequate reality testing and conventional perception. Our interpretation of the first Rorschach component was consistent with the standard clinical interpretation of the individual Rorschach variables of the component (except *M,* in part) and with research findings linking these to traumatization (Briere, 2004; Ephraim, 2002; Everly & Lating, 2004; Kaser-Boyd & Evans, 2008; Luxenberg & Levin, 2004). The variable *M* indeed turned out to be an important ingredient in these participants' trauma-related response to the Rorschach. A flooded Trauma Response was thus construed as high affectivity, poorly

modulated affects, excessive openness to multiple features of the environment, vigilance towards people's verbal and non-verbal behavior, preoccupation with trauma related imagery, problems in logical reasoning, inner stress, and perception of being at the mercy of outside forces. A constricted Trauma Response was interpreted as inhibition of cognition, creativity, and feelings, supposedly an effort to ward off trauma-related material. Our first component had much in common with the *Complexity* variable in R-PAS (Meyer et al., 2011), derived from the first factor found in previous Rorschach factor analytic research (i.e. Meyer, 1992, Meyer, 1999). A high complexity-score is associated with psychological strength, intellectual resources, and differentiated and integrative functioning, and when low, with inhibition or unwillingness to engage in responding. However, high *Complexity* can also be associated with losing ideational control or focus as a result of for instance trauma (Meyer et al., 2011). Our first component, however, was also strongly defined by traumatic intrusions (*TCI*) and thought disturbances (*SevCog*), which makes obvious that serious problems were involved. As can be seen from our correlational analyses; Component 1 was significantly correlated with having had work in Norway at some time as well as with symptoms of PTSD. The elevation of the first component variables could thus have elements of both psychological strength, loss of control, and trauma intrusion. Our first dimension can be seen as representing the Rorschach manifestation of the biphasic response to trauma. Component 2 consisted of Rorschach measures of perception and reality testing, with relatively conventional perception and adequate reality testing at the higher end and unconventional perception and impaired reality testing at the lower. Several authors have pointed to the way traumatic themes, easily elicited by the Rorschach, may replace otherwise intact reality testing (Armstrong, 2002; Ephraim, 2002; Kaser-Boyd & Evans, 2008; Levin & Reis, 1997). The Rorschach variables used were carefully chosen and a PCA resulting in about 60 % explained variance is considered a strong finding. The components came out significantly and psychologically potent, despite the diversity of culture and ethnicity.

According to Mihura et al. (2012) externally assessed characteristics are more likely to correlate with Rorschach data than self-report. In line with her findings, our variables tapping education, employment, and language skills may be seen as more externally assessed aspects of past and present functioning. The positive direction of both components were significantly associated with more pre- and post-traumatic resources and better functioning. In terms of work, a flooded response to the Rorschach (and allegedly to the traumatic experiences/memories) seemed thus to be related to less post-trauma functional impairment than a constricted response. Adequate reality testing and conventional perception in response

to the Rorschach (and allegedly to life in general when under stress) was associated with better educational background and seemingly better post-trauma cognitive functioning, allowing acquisition of the language of the exile country.

A flooded *Trauma Response* (high Component 1 score) on the Rorschach was significantly related to higher levels of self-reported PTSD re-experiencing symptoms and sub-significantly also with arousal and the PTSD sum-score. There were no significant relationships between any of our components, on the one hand, and self-reported symptoms of avoidance (*HTQ_ptsd avoidance),* on the other. As noted previously, many participants stated that they would be happy to avoid traumatic reminders but couldn't. So, even if many participants had a constricted response style on the Rorschach, which we consider might be related to self-reported avoidance, the participants expressed that they were not able to avoid traumatic reminders and difficult feelings. Consequently constriction or avoidance seemed not to protect them against the pain of past trauma at the time of entering treatment and taking part in the assessment. Impaired *Reality Testing* on the Rorschach (low score on Component 2) was significantly associated with more anxiety and poorer self-reported quality of physical health, psychological health, and social relationships, and sub-significantly with environmental conditions (*QOL_environment*).

Subsequently, we found meaningful and significant relationships between our Rorschach components on the one hand and relevant self-reported symptoms and aspects of quality of life on the other, even though *N* was relatively small and the symptom load was high, with little variability. Meyer (1999) found correlation of similar scales in Rorschach and MMPI at $r = .50$ when the response-character style towards both methods was the same, but only $r = -.27$ when styles differed. Although MMPI is a more complex method, the correspondence between some self-report data and Rorschach in our study may indicate that the participants' response-character style towards these methods did not differ substantially. We think the correspondence between them added to the validity of our findings.

Related to the questionnaire data, there have been ongoing research efforts at pinpointing how modes of administration affect the responses given. A general finding is that responders report more problems on sensitive topics in self-administered questionnaires than face to face with an interviewer, also in treatment settings (i.e., Moum, 1998; Schroder, Carey, & Vanable, 2003; Tourangeau & Yan, 2007). This has been related to the greater concern with social desirability of responses in personal interviews. If this were the case in our study, it should have led to underreporting. Bowling (2005) described the cognitive demands involved when answering questionnaires. She proposed that a face-to-face interview

by a friendly, interested interviewer probably was the least burdensome to the responder, as this allowed for clarifications, did not require reading and writing skills, could increase item response rates, and maintain the responder's motivation. We regard such considerations vital in doing research with traumatized refugees.

Our personal oral administration of the questionnaires and our follow-up questions probably evened out some of the participants' differences in reporting symptoms, in addition to contributing to more assurance that the questions were understood. In our experience research with refugee populations necessitates flexibility, empathic presence, and certain modifications of procedures. We believe the procedures used increased the validity/quality of our data. Important factors were that our respondents had little to gain from malingering or covering their symptoms and problems, that the research assessment was also in the participants' interest, as results were to be shared with their therapists, and that assessment was carried out in a therapeutic setting where the social desirability issue would not be so pressing. The interviewers had a feeling of increasing rapport with most participants. Our impression was that the participants tried to convey their suffering and problems sincerely; often in a modest or constricted way that seemed to reflect anxiety or lack of awareness more than unwillingness to admit problems. At times suffering was conveyed in a pronounced manner, but the interviewers' impression was that this was related to being overwhelmed rather than an intension to mislead.

In this study, we have captured certain aspects of traumatized individuals' personality characteristics. Their responding to the Rorschach was marked by traumatic intrusions and, we believe, by the way they handled their traumatization. In addition, many Rorschach protocols were brief. Therefore, we do not expect to have acquired or given the full picture of the participants' personalities. Herman (1992) warned that the clinical pictures of traumatized individuals are often wrongly taken to represent their underlying character. Many authors have noted the often grave and long-lasting effects on and depletion of personality, identity, and relationships in the aftermath of prolonged exposure to interpersonal traumatization and human rights violations (i.e. Herman, 1992; Kaser-Boyd & Evans, 2008). Of further relevance may be our observation through all assessments of most of the participants, that symptoms, attitudes, ways of relating to others, and adaptations in living were all influenced or saturated by trauma, in a way that seemed to override other aspects of personality.

Use of Rorschach with Traumatized Refugee Patients

The Rorschach has previously been found useful at an individual level in clinical and forensic settings with traumatized refugees, but warnings about its use with this group of individuals have also been raised, due to the potential for re-traumatizing (Evans, 2008). Although we initially expected the Rorschach to be a potentially useful instrument in our research, we were surprised to find that it could be used with such meaningful results with traumatized refugee patients of highly diverse origin. Our experience was that the Rorschach in a sense was 'easier' for the participants to respond to than the questionnaires. The Rorschach instruction was easily understood, the images were immediately evocative for many, and the participants could concentrate on finding words to express their own thoughts, instead of trying to understand more or less finely nuanced questions.

Simultaneously, many of the participants seemed to be afraid of what might come up on their "inner screens" when looking at the Rorschach images. Our impression was that the Rorschach acted as a trigger of intruding images and painful traumatic memories for most participants. Many had problems keeping in mind that the images were only inkblots. One woman asked why the administrator kept showing her all these images of injured female genitals. A man commented that the person who had made these images had to be an expert on weapons. Many saw blood, injured humans or burned flesh. Although many were evidently emotionally aroused by the images, only three chose to stop. Care was taken to support the participants through the assessment and give time for debriefing. We suggest that the ethical dilemma of exposing responders to potential re-traumatizing can be handled by the use of experienced clinical researchers and by securing follow-up in a therapeutic relation.

Like Brand et al. (2006) we found that many Rorschach protocols were brief but highly psychologically expressive and did not bear evidence of not cooperating. Rather, many of our participants seemed to get stuck in their first trauma related imagery and were not able to change perspective, resulting in only one response to each card. For some, restriction of verbal responses seemed to be part of their effort at not getting overwhelmed. In line with Freud's formulations (1920/1926), fear of breaking the stimulus barrier against reminders of the trauma could be seen as having prevented these individuals from allowing themselves to fantasize and from letting thoughts into their minds. The participants' fear, which could be called a phobia of their own inner world (Garland, 2006), seemed to result in constrained psychological, cognitive, and emotional processes and limited inner 'space'.

Limitations, Strengths, and Implications

Important limitations when interpreting these results are the relatively low number and heterogeneity of participants. Cultural differences could not be explored, as there were fairly few participants from each of the15 countries. Another important limitation was the many brief Rorschach protocols, which restricted the possibility to give a more complete personality description and compare our results to normative data. Also the inclusion of responses produced during inquiry must be taken into consideration when comparing with other Rorschach research. The lack of fluency in Norwegian and the use of interpreters may have led to some loss of nuances or misunderstandings, which may have influenced the results. The value of our findings must be evaluated by further research.

A methodological strength of our study was its clinical validity. The participants were recruited from ordinary mental health specialist services and the response rate was high. We chose broad selection criteria to ensure that our sample would be representative of refugee trauma patients seeking mental health treatment in these clinics. Another asset was the different assessment tools used, allowing self-report to structured questions, relatively free expression in semi-structured interviews, and observation of performance, perceptual focus, structuring, associative activity, emotional reactivity, and self-regulation in the Rorschach.

Although causal relationships cannot be inferred, the significant correlation between the Rorschach Reality Testing component and the self-reported Quality-of-Life may have implications for clinical work. The two main dimensions underlying the participants' Rorschach responses may expand our understanding of traumatized individuals, their strengths, problems and treatment needs. We anticipate that the two Rorschach components alone or in combination might throw light on individual differences in treatment outcome. If any significant relations are found and replicated in other studies, this may have implications for future treatment planning and choice of interventions for the individual traumatized refugee patient.

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Table 1

Demographics, Traumatic Events, Symptoms, and Quality of Life; Statistics

Variable	*N*	*M*	*SD*
Demographics/Background			
Male gender[a]	51	.65	
Age	51	39.4	8.0
Years of education	51	9.7	4.4
Years living in Norway	51	11.2	6.3
Married[a]	51	.67	
Had children[a]	51	.82	
Any work in Norway[a]	51	.61	
Recent employment[a]	51	.31	
Interpreter use[a]	51	.45	
Trauma events			
HTQ_trauma events	50	16.7	6.4
Symptoms			
HTQ_ptsd	49	2.8	0.5
HTQ_ptsd re-experiencing	49	2.9	0.7
HTQ_ptsd arousal	49	3.1	0.5
HTQ_ptsd avoidance	49	2.6	0.6
HSCL_anxiety	50	2.9	0.6
HSCL_depression	50	2.9	0.5
Quality of Life			
QOL_physical health	49	28.2	13.8
QOL_psychological health	49	25.3	15.7
QOL_social relationships	49	35.0	21.7

QOL_environment	49	45.0	18.5

Note. Years of education = Education from country of origin. Any work in Norway = Any paid work in Norway at all. Recent employment = Any paid work within last 2 years. Interpreter use = Interpreter use in assessment. HTQ_trauma events = Harvard Trauma Questionnaire (HTQ), Part I. HTQ_ptsd = PTSD score, questions 1-16, HTQ, Part IV. HTQ_ptsd re-experiencing = Mean score on symptoms of re-experiencing, questions 1, 2, 3, and 16; HTQ, Part IV. HTQ_ptsd arousal = Mean score on symptoms of arousal, questions 6, 7, 8, 9, and 10; HTQ, Part IV. HTQ_ptsd avoidance = Mean score on symptoms of avoidance, questions 4, 5, 11, 12, 13, 14, and 15; HTQ, Part IV. HSCL_anxiety = anxiety score, questions 1-10 of Hopkins Symptom Checklist-25 (HSCL-25). HSCL_depression = depression score, questions 11-25 of HSCL-25. QOL_physical health, QOL_psychological health, QOL_social relationships, and QOL_environment = Scores on Domains 1, 2, 3, and 4, respectively, of the World Health Organization's Quality of Life-bref (WHOQOL-BREF).
[a]Given as proportions of *N* in table.

Table 2

Intercoder Reliability of Rorschach Scores

Variable	ICC (2,1)	95 % CI
m	.79	.54 - .92
M	.98	.94 - .99
SevCog	.96	.89 - .98
F%	.97	.93 - .99
TCI	.87	.68 - .95
FQo	.95	.87 - .98
FQ-	.81	.58 - .92
CF[a]	*.80*	.55 - .92
D	.93	.84 - .97

Note. ICC = intraclass correlation; CI = confidence interval. SevCog = unweighted sum of Level 2 Cognitive Codes + CONTAM and ALOG (Severe Cognitive Codes; R-PAS; Meyer et al 2011). FQo = Ordinary Form Quality (R-PAS). FQ- = Form Quality minus (R-PAS).
[a] We did not have an ICC for the sum of *CF+C*; *C* alone had a frequency of 2.2 % of *R*, which did not allow computing a reliable ICC.

Table 3

Descriptive Statistics of Selected Rorschach Variables, Corresponding Values of the International Normative Reference Sample, and Z-Scores of the variables

	Our study (N = 51)						Z-Scores[a]		International Norms[bc]	
Variable	Min	Max	Mean	*SD*	Sk[d]	Ku[e]	M_z	SD_z	M_{int}	SD_{int}
R	7	36	**17.84**	6.92	.67	.11	**-0.57**	0.88	**22.31**	7.90
Blends	0	12	**3.57**	3.04	.89	.15	**-0.15**	1.02	**4.01**	2.97
CF+C	0	8	**2.47**	1.97	.62	-.08	**0.25**	1.05	**1.99**[c]	1.88[c]
m	0	11	**2.31**	2.74	1.33	1.03	**0.53**	1.78	**1.50**	1.54
M	0	12	**3.00**	2.89	1.38	1.78	**-0.27**	1.08	**3.73**	2.66
SevCog[f]	0	8	**1.90**	2.09	1.33	1.14	**1.56**	2.32	**0.5**[g]	0.9[g]
F%	.00	1.00	**.42**	.25	.21	-.46	**0.20**	1.44	**0.39**	0.17
TCI	.00	1.44	**.44**	.35	1.04	.75	**2.08**	2.67	**.17**[c]	.13[c]
FQo%[h]	.15	.73	**.47**	.14	-.01	-.39	**-.86**	.93	**.60**[g]	.15[g]
FQ-%[i]	.00	.50	**.20**	.12	.93	.30	**1.54**	1.80	**.10**[g]	.07[g]
D	.00	.73	**6.45**	.19	-.07	-.49	**-0.59**	0.77	**9.89**	5.81

Note. Means are in bold. Percentages are listed as proportions. M_{int} = means of the international norm data; SD_{int} = standard deviations of the norm data.
[a]To compute z-scores, the international norm means were subtracted from our raw scores and the sums were divided by the standard deviations of the norms. [b]International CS adult normative reference data (Meyer, Erdberg & Shaffer, 2007). [c]Greg Meyer computed this for us by a subset (1396 protocols) of the 2007 data set, from the following adult samples: Argentina, Belgium, Brazil, Denmark, Finland, France, Greece, Israel (Berant's sample), Italy, Portugal, Romania, Spain, and US (partial data from Exner; Shaffer et al.; and Viglione). [d]*SE* of Skewness = .333. .[e]*SE* of Kurtosis = .656. [f]SevCog = unweighted sum of Level 2 Cognitive Codes + CONTAM and ALOG (Severe Cognitive Codes; Rorschach Performance Assessment System; R-PAS manual; Meyer et al 2011). [g]Mean and *SD* from Non-Modeled Reference Sample, R-PAS manual (Meyer et al., 2011). [h]FQo% = Ordinary Form Quality % (R-PAS). [i]FQ-% = Form Quality Minus% (R-PAS).

Table 4

Total Variance Explained by Principal Components Analysis of 13 Rorschach Variables controlling for R

Components	Initial Eigenvalues	Percent of Variance	Cumulative % of Variance	Rotation Sums of Squared Loadings[a]		Horn's Parallel Analysis[b] 95 % *CI*	
				% of Variance	Cumulative %	lower	upper
1	**4.49**	**40.84**	**40.84**	39.32	39.32	1.765	2.317
2	**2.07**	**18.83**	**59.67**	20.35	59.67	1.563	1.947
3	1.19	10.77	70.45			1.392	1.703
4	.85	7.70	78.15			1.246	1.513
5	.65	5.91	84.06			1.109	1.354
6	.56	5.05	87.84			0.984	1.216
7	.39	3.57	91.29			0.873	1.089
8	.31	2.78	95.45			0.764	0.974

Note. Figures for the first 8 of 13 extracted components. Values for the retained components are in bold. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .69. Bartlett's Test of Sphericity was significant; $p < .001$.
[a]Rotated 'forced' 2-component solution. [b]Parallel random eigenvalues (51 observations, 14 variables, 10000 reiterations), 95th percentile upper and lower values.

Table 5

Variable Loadings in Principal Component Analysis with Varimax and Oblimin Rotation, Forced 2-Factor Solutions, Controlling for R

	Rotated Component Matrix[a] Principal Component Analysis Varimax Rotation Component		Pattern Matrix[b] Principal Component Analysis Oblimin Rotation Component	
Variable	1	2	1	2
Blends/R	**.89**	.07	**.90**	.13
CF+C/R	**.83**	-.19	**.83**	-.14
m/R	**.79**	.03	**.80**	.09
F%	**-.79**	-.19	**-.80**	-.24
TCI	**.77**	-.32	**.76**	-.27
M/R	**.69**	-.06	**.69**	-.01
SevCog/R	**.60**	-.29	**.59**	-.25
FQ-%	.16	**-.82**	.13	**-.80**
FQo%	-.05	**.74**	-.02	**.74**
D/R	-.25	**.69**	-.22	**.68**
R	.24	**.53**	.26	**.55**

Note. Variables with component loadings > .40 in bold are considered the main constituents of the components. Kaiser-Meyer-Olkin value = .69, Bartlett's test of Sphericity = <.001.

[a]Rotation converged in 3 iterations. [b]Rotation converged in 5 iterations; component correlation = -.112.

Table 6

Correlations between Rorschach Factors and Demographics, Traumatic Events, Symptoms, and Quality of Life

	Component 1 *"Trauma Response"; Flooded/Constricted*		Component 2 *"Reality Testing"; Adequate/Impaired*	
Variable	*r*	*p*	*r*	*p*
Demographics/ Background				
Years of education	**.30***	.032	**.39****	.005
Any work in Norway	**.35***	.012	.22	.120
Recent employment	**.33***	.020	.25°	.072
Interpreter use	-.27°	.053	**-.28***	.048
Trauma events				
HTQ_trauma events	.08	.575	.21	.147
Self report Symptoms				
HTQ_ptsd	.27°	.057	-.08	.584
HTQ_ptsd re-experiencing	**.32***	.026	.04	.788
HTQ_ptsd arousal	.25°	.078	-.18	.213
HTQ_ptsd avoidance	.15	.303	.00	.998
HSCL_anxiety	.18	.207	**-.33***	.020
HSCL_depression	.19	.19	-.15	.314
Selfreport Quality of Life				
QOL_physical health	-.00	.991	**.34***	.016
QOL_psychological health	-.12	.430	**.32***	.023
QOL_social relationships	-.19	.191	**.35***	.015
QOL_environment	.14	.343	.26°	.073

Note. Bivariate correlations and two-tailed significance testing. r = Pearsson's correlation. Significant correlations are in bold. **p < .01; *p < .05; °p < 0.10.

III

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Relationship of Pretreatment Rorschach Factors to Symptoms, Quality of Life, and Real-Life Functioning in a 3-Year Follow-Up of Traumatized Refugee Patients

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ABSTRACT
Response to mental health treatment varies highly among refugee patients. Research has not established which factors relate to differences in outcome. This study is a follow-up of Opaas and Hartmann's (2013) Rorschach Inkblot Method (RIM; Exner, 2003) pretreatment study of traumatized refugees, where 2 RIM principal components, Trauma Response and Reality Testing, were found descriptive of participants' trauma-related personality functioning. This study's aims were to examine relationships of the RIM components with measures of anxiety, depression, posttraumatic stress, quality of life (QOL), employment, and exile language skills throughout 3 years. We found that impaired Reality Testing was related to more mental health symptoms and poorer QOL; furthermore, individuals with adequate Reality Testing improved in posttraumatic stress symptoms the first year and retained their improvement. Individuals with impaired Reality Testing deteriorated the first year and improved only slightly the next 2 years. The results of this study imply that traumatized refugee patients with impaired Reality Testing might need specific treatment approaches. Research follow-up periods should be long enough to detect changes. The reality testing impairment revealed by the RIM, mainly perceptual in quality, might not be easily detected by diagnostic interviews and self-report.

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Exposure to torture, threats to one's life, and the additive effects of other adverse experiences of war and human rights violations (HRVs) have repeatedly been related to a heightened risk of mental health disorder (e.g., Steel, Silove, Phan, & Bauman, 2002). Many traumatized refugees remain with severe symptoms and poor functioning long after the traumatizing events and arrival in the exile country (e.g., Vaage et al., 2010).

Refugees often have a history of repeated wars or other adverse conditions. Intergenerational trauma associated with decades or centuries of oppression and wars can upset child care and parent–child attachment (e.g., Van Ee, Kleber, & Mooren, 2012). Severe or repeated adverse experiences in vital periods of development can seriously affect emotional and physiological regulation and interpersonal relating, and lead to increased vulnerability to later stressors (e.g., Fonagy & Target, 2005; Hinton & Kirmayer, 2013; Schore, 2002). Previous adverse experiences might thus aggravate the effects of war experiences in adult years.

The proposed diagnoses "*complex posttraumatic stress disorder (C–PTSD)*" or "*complex trauma*" (Curtois, 2004; Herman, 1992) represent efforts to incorporate the disturbances in intra- and interpersonal functioning, the difficulties in overall adjustment, and the comorbid disorders often found in individuals exposed to early, severe, or repeated trauma (Schottenbauer, Glass, Arnkoff, & Gray, 2008). Further, the ICD–10 diagnosis "*enduring personality change after catastrophic experience*" (F62.0; World Health Organisation Geneva, 1994) accounts for lasting, serious alterations in personality functioning after traumatic exposure. Hinton and Kirmayer (2013) recommended focusing on negative affective states rather than PTSD per se, arguing that trauma commonly results in a wide range of negative states as well as PTSD.

Treatment of traumatized patients

Psychotherapies of various orientations have been found effective for PTSD, but severity of the condition and other personal characteristics affect the rate of change (e.g., Lambert, 2013). Positive outcome can be low in patient groups with complex and chronic posttraumatic stress, comorbidity, and more diverse constellations of symptoms. Treatment dropout might be high. Lambert (2013) estimated around 30% dropout in this patient group, compared to around 20% in the general patient population (Swift & Greenberg, 2012). Treatment outcome studies of traumatized refugees and asylum seekers are scarce, but indications of positive treatment gains are found in systematic overviews of randomized, controlled studies (e.g., Crumlish & O'Rourke, 2010), naturalistic studies (e.g., van Wyk & Schweitzer, 2014), and in an overview covering 30 years of intervention studies (McFarlane & Kaplan, 2012). However,

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when studying individual gains as well as group-level improvement, the rate of nonresponse was found to be high. Neither past trauma, sociodemographics, nor differences in treatment significantly explained these differences in outcome (Boehnlein et al., 2004; Carlsson, Olsen, Kastrup, & Mortensen, 2010).

Predictors of treatment outcome

Psychotherapy research points to comorbidity, initial functional impairment, and duration of the current episode as predictors of poorer outcome (Clarkin & Levy, 2004), which might explain poorer treatment gains in traumatized refugees with comorbid conditions. Complex interactions are at play in psychotherapy, between the personal characteristics of the patient and the therapist, their match, and the therapeutic approach. Still, patient personal characteristics are more important to outcome than therapist characteristics and treatment method (Bohart & Wade, 2013; Norcross & Lambert, 2011). Patient qualities, such as secure attachment and high ego strength, affect outcome positively but are also connected with healthier functioning overall. Personality-related variables, such as patient's coping style and openness to emotion and inner experiences, seem to interact with the personal style of the therapist and the treatment approach to yield different results (Bohart & Wade, 2013). Refugees' unfamiliarity with psychotherapy can make relationships even more complex.

The Rorschach Inkblot Method

The Rorschach Inkblot Method (RIM; Exner, 2003) is a performance-based personality assessment method, designed to assess a combination of implicit and explicit processes, reflecting underlying psychological characteristics. RIM requires the participant to use perceptual, cognitive, and affective resources to solve the unfamiliar task of proposing what 10 cards with suggestive, but nonfigurative inkblots might look like (Meyer, Viglione, Mihura, Erard, & Erdberg, 2011; Weiner, 2003). The accuracy of RIM results does not depend on a person's self-knowledge, as self-report measures do, and is less vulnerable to intentional distortion of responses (Hartmann & Hartmann, 2014). The RIM method can produce significant data that are not accessible through more direct and less time-consuming instruments (Meyer & Viglione, 2008). RIM results correspond better with more objective, functional measures, like observer ratings and measures of perceptual and cognitive disturbances, than with introspectively assessed criteria, such as self-report on questionnaires (e.g., Bornstein, 2012; Mihura, Meyer, Dumitrascu, & Bombel, 2013). Grønnerød's (2003) examination of RIM variables showed high test–retest stability, although stability was higher for variables reflecting trait-like aspects of personality, and lower for variables reflecting state-like features of personality. Comprehensive research has documented the reliability and validity of RIM variables (e.g., Mihura et al., 2013), as well as their cross-cultural applicability (Shaffer, Erdberg, & Meyer, 2007). Its composition of visual, nonverbal stimuli with no need for translation of individual items makes it especially suitable as a cross-cultural instrument (e.g., Allen & Dana, 2004).

In traumatized individuals, RIM stimuli tend to elicit trauma-related images and feelings (Kaser-Boyd & Evans, 2008), which enable communication of traumatic experiences in an indirect way, allowing observation of the impact of traumatic recollections on cognition, affect, and behavior (Levin & Reis, 1997). Studies of traumatized individuals have identified RIM indications of a biphasic response to trauma (van der Kolk, 1994; van der Kolk & Ducey, 1989), in which traumatic intrusions, hyperarousal, and emotional flooding alternate with emotional and cognitive avoidance, numbing, and constriction. Ephraim (2002) and Evans (2008) found indications of flooding or constriction shifting from one RIM response to the next, whereas Opaas and Hartmann's (2013) study found that either flooded or constricted characteristics tended to dominate the RIM protocols of the participants at the time of assessment. Viglione, Towns, and Lindshield (2012) observed how RIM responses reveal the struggle between loss of control and overcontrol, which they considered crucial to posttraumatic reactions.

Several authors have pointed to the value of the RIM as a tool for investigating how traumatization might affect a range of psychological functions (e.g., Ephraim, 2002; Kaser-Boyd & Evans, 2008). Further, brief protocols ($R < 14$) have been found to be characteristic of patients with PTSD (e.g., Arnon, Maoz, Gazit, & Klein, 2011), and to still be "interpretatively robust," meaning that they do not possess the high Lambda (indicating a tendency to simplify complex stimuli fields) and low Blends (indicating little richness and flexibility in thinking) that are often found in brief records. Brief responses have been interpreted as the patients' attempt to limit and escape painful associations (Brand, Armstrong, & Loewenstein, 2006). Several authors have dissuaded exclusion of short protocols in trauma populations as this could bias the findings (e.g., Arnon et al., 2011).

The RIM has been associated with behavioral and relational outcomes that develop over time (Viglione, 1999). Grønnerød's (2004) meta-analysis revealed that the RIM was a valid indicator of personality changes following psychotherapy and that RIM variables related to stress, control capacity, and affect changed the most in the course of therapy. Effect sizes of differences between test and retest RIM scores increased with therapy intensity and duration. Several variables and indexes of the RIM indicate psychologically healthy functioning; for example, the Ego Impairment Index (EII; Viglione, Perry, Giromini, & Meyer, 2011). Furthermore, Graceffo, Mihura, and Meyer (2014) found the Mutuality of Autonomy Scale (MA/MAO; Urist 1977) to be a valid measure of relational health as well as of general psychopathology across clinical and nonclinical samples. There is, however, limited research on how RIM variables might predict change. The Rorschach Prognostic Rating Scale (RPRS; Klopfer, Kirkner, Wisham, & Baker, 1951), the EII, the MOA, and Holt's (1977) Primary Process Aggression Score (AGG1) have predicted treatment outcome in psychiatric adult and child populations (e.g., Meyer & Handler, 1997; Perry & Viglione, 1991; Smith, Van Ryzin, Fowler, & Handler, 2014; Stokes et al., 2003). Hilsenroth, Handler, Toman, and Padawer (1995) found the RIM Comprehensive System (CS; Exner, 2003) variables Cooperative Movement (COP), Texture-Shading (T), and Aggressive Movement (AG) to discriminate between patients who terminated psychotherapy prematurely and those who stayed on in treatment. Fowler et al. (2004) found that changes in A1 (AGG1) and MOA measures at retest

correlated significantly with behavioral changes according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [*DSM−IV*]; American Psychiatric Association, 1994) Axis V scales, concluding that this supported the ecological validity of the changes in Rorschach scores. Apparently, no single Rorschach measure or index has been widely used to evaluate treatment outcome or general improvement.

The index study

This study is a follow-up of Opaas and Hartmann's (2013; called *the index study* henceforth) factor-analytic RIM study of 51 traumatized patients (64.7% male) with a refugee background. Participants were recruited during the years 2006 to 2009 at specialist mental health outpatient services with public funding. The inclusion criteria were adult patients (age 18−65) with refugee background and mental health disorder at least partly related to traumatic experiences of war, persecution, and flight. A formal PTSD diagnosis was not required. Present and severe psychosis or drug problems were exclusion criteria.

Seventy-two refugee patients were evaluated as eligible, 75.0% ($n = 54$) consented to take part in the study, and 70.8% ($n = 51$) met the further requirement of a minimum of seven responses to the RIM. Mean age was 39.4 ($SD = 8.0$), 66.7% were married, and 82.4% had children. They came from 15 different countries in Asia, Eastern Europe, and Africa (56.9% from the Middle East). Their mean stay in Norway was 11.2 years ($SD = 6.3$), most had Norwegian citizenship, mean education in their country of origin was 9.7 years ($SD = 4.4$), and few had completed any further education in Norway.

The first and last authors, experienced clinicians external to the treatment sites, assessed the participants at treatment start with the RIM, qualitative interviews, and with questionnaires about mental health symptoms and quality of life. We used professional interpreters when needed. The participants reported on average 16.7 ($SD = 6.4$) different kinds of potentially traumatic experiences of war or HRVs. Most had experienced military attacks, being forced to evacuate, and had experienced the violent death, murder, kidnapping, or disappearance of family or friends; 74.5% had been close to death and dying, 52.9% had been tortured, and 22.0% had been raped. At treatment start, 81.6% qualified for PTSD, 96.0% had clinically significant anxiety, and 98.0% qualified for major depressive disorder. The participants' quality of life (QOL) was low, with scores related to their experience of psychological health, physical health, and social relationships in the lower third of the scale.

The first author conducted the RIM in the third or fourth assessment session to allow time for some trust to develop. Administration followed the CS guidelines, moderated by more prompting and inclusion of new responses during inquiry, due to the few responses given by many participants. Thirty-three percent of the RIM protocols were still brief (7−13 responses), but without evidence of noncollaboration. The first and second author jointly scored all the protocols. An external RIM expert independently scored 20 randomly drawn protocols. Intraclass correlation scores ranged from .79 to .98. RIM variables for the principal component analysis (PCA) were selected by their established (e.g., Kaser-Boyd & Evans, 2008) and potential relevance to traumatization, by their interpretational validity (e.g., Mihura et al., 2013), and by their parametric qualities for statistical analyses (e.g., Meyer, Viglione, & Exner, 2001), and were all controlled for R.

The PCA resulted in two strong components, assumed to indicate underlying personality dimensions, accounting for 59.7% of the variance. The first component, *Trauma Response*, explained 40.8% of the variance; the second component, *Reality Testing*, explained 18.8% of the variance. The Trauma Response component consisted of the RIM variables Blends, CF+C, m, M, the Trauma Content Index (TCI), and Severe Cognitive Codes (SevCog), all positively weighted, and F%, negatively weighted. The Reality Testing component consisted of the variables FQo%, D, and R, all positively weighted, and FQ−%, negatively weighted. Blends (an indication of complexity), CF+C (poorly modulated emotions), m (fear of forces outside personal control), M (resourceful interest in or vigilance toward people), F% (a tendency to simplify or not notice complex external or internal information), D (attention to obvious parts of the environment), and R (verbal productivity, task engagement, and perceptual and associative capacity) were all derived from the CS. The TCI (sum of images of blood, anatomy, sex, aggressive action, and morbid responses, divided by R; indicating intrusive imagery) was derived from Armstrong and Loewenstein (1990). SevCog (suggestive of severe thought disturbances), FQo% (reality testing and conventionality of perception), and FQ−% (distorted perception) were derived from the Rorschach Performance Assessment System (R−PAS; Meyer et al., 2011).

The component scores, a standardized measure based on the relative contribution of each RIM variable, ranged from −1.82 to 2.60 on Trauma Response and from −2.50 to 1.52 on Reality Testing. Positive values of Trauma Response, *flooding,* represented RIM indications of being cognitively and emotionally overwhelmed by traumatic intrusions, trauma-related thoughts, memories, and strong emotions. Negative values, *constriction,* represented RIM indications of restricted emotional, cognitive, associative, and verbal activity. Reality Testing was termed *adequate* when values were positive, indicating an ability to accurately perceive and recognize obvious features of the environment, and *impaired* when negative, indicating less adequate perception, limited ability to recognize obvious aspects of the perceptual field, and a tendency to give few responses. Participants with a flooded Trauma Response on the RIM had significantly more reexperiencing symptoms of PTSD, whereas participants with impaired Reality Testing had more anxiety and poorer QOL in physical health, psychological health, and social relationships. For details, see Opaas and Hartmann (2013). Choices and limitations of the index study constitute the terms of this work.

The follow-up study

Aims and hypotheses

This study comprises a 1-year and 3-year follow-up of the traumatized refugee patients of the index study. We aimed

at further studying the characteristics of the RIM components of the index study and their relationships to mental health, QOL, and functional outcome over the 3 years. We expected that these components, Trauma Response and Reality Testing, describing two trauma-related dimensions of the participants' personality functioning, would be related to their mental health and QOL during follow-up, with how they responded to treatment, and with their course of change. Findings might contribute to better understanding of personal characteristics associated with mental health, response to treatment, and the capacity to improve under the influence also of any favorable or adverse factors outside therapy. Moreover, findings could generate hypotheses for further studies and inform treatment planning for similar patients.

First, we more closely evaluated the RIM components and the relationship between them. We understood the Reality Testing component as linear and one-directional, with increasingly positive scores representing increasingly more adequate reality testing (i.e., good functioning). Our first hypothesis was, therefore, that high and positive Reality Testing scores corresponded with normal and healthy personality functioning, whereas lower values increasingly indicated more problematic personality functioning. Neither direction of the Trauma Response component, however, seemed to represent good functioning; high negative values indicated more severe constriction and high positive values indicated more severe flooding. Our next hypothesis was, therefore, that midrange Trauma Response scores represented more normal or healthy personality functioning, whereas more positive (flooding) or more negative (constriction) scores represented less normal or less healthy personality functioning. Further, even though the components were relatively independent of each other in the PCA of the index study (also when using oblique rotation; $r = -.11$), we wanted to test the hypothesis that more "extreme" values of Trauma Response, in either direction, related to poorer Reality Testing.

Second, we aimed at investigating the relationships of the pretreatment RIM components, separately and in interaction, with symptom severity of anxiety, depression, and posttraumatic stress, level of subjectively experienced QOL, employment, and Norwegian communication skills, and with the change in these outcome variables during the 3 years of follow-up. Our hypothesis was that participants with more impaired Reality Testing would have more mental health symptoms and poorer QOL and be less likely to be employed or be able to communicate with us in Norwegian during follow-up, compared to participants with adequate Reality Testing; and similarly for participants with more constricted or more flooded Trauma Response, compared to participants with midrange Trauma Response, scores. We did not have any hypotheses regarding how the participants' scores on the components would relate to the rate or amount of change.

Our third aim was to investigate the relationships of the RIM components with frequency of therapy sessions and duration of treatment. From interviews with the therapists, we knew that they mostly scheduled weekly or biweekly sessions with their patients, but many patients' attendance was, for various reasons, less frequent.

Method

Participants

Participants were the same as in the index study. At treatment start (T1) there were 51 participants; at 1-year follow-up (T2), 50 participants (the one missing participant came for the next follow-up); and at the 3-year follow-up (T3), 46 participants (90.2% of the original sample). Even if participants dropped out of or terminated their treatment early, they mostly did not drop out of our study. Among the five that did not meet at T3 assessment, we knew (through telephone contact with them or through other sources) that one was working at T3 and three were not. Their situation seemed about the same as when they met with us at T2. We had no updated information about the fifth participant.

Treatment

All patients were offered psychotherapy, which to a certain extent addressed the patient's life history, traumatic experiences, current relationship issues, and problems in daily living. The therapies were of multiple theoretical orientations, not manualized, and not part of any special program for refugees. We were not able to record medication systematically. Most had used psychopharmacological medication at some time, but reported negative side effects and few positive effects of medication. Nonadherence to prescriptions was typical, with overuse of sleeping medication and discontinuation of other medication.

Psychotherapy was performed by specialists in clinical psychology (58.8%, $n = 30$), specialists in psychiatry (25.5%, $n = 13$), and by licensed clinical psychologists, medical doctors in training for the psychiatric specialty, and nurses or social workers with clinical specialties (15.7%, $n = 8$), some with extensive experience in treating refugee patients, and many with limited experience with this patient group. Length of treatment was flexible, at the most 1 to 2 years in the clinics, and without specific time limits in the individual practices.

Measures

The Rorschach components

We used the two pretreatment RIM components of the index study to investigate the aims and test the hypotheses of the study. The Trauma Response component, varying from constricted (−) to flooded (+), was understood as a dimension of personality functioning comprising degrees of complexity in thinking, emotional modulation problems, fear of forces outside personal control, traumatic intrusions, vigilance toward other people, and traumatic thought disorder (captured by Blends, CF+C, m, TCI, M, and SevCog, positively weighted, and F%, negatively weighted). Reality Testing, varying from impaired (−) to adequate (+), was understood as a perception based dimension comprising extent of faulty perception, ability to see features of the environment the way others see them, and notice prominent details and multiple aspects of the environment (captured by FQo, D, and R, positively weighted, and FQ−%, negatively weighted). The strength and relevance of the

components led us to expect that they might predict outcome of treatment and concurrent life events during follow-up.

The Harvard Trauma Questionnaire

The Harvard Trauma Questionnaire (HTQ; Mollica, McDonald, Massagli, & Silove, 2004) was developed to assess refugee trauma. We used Part I (HTQ−Trauma Events), which is a checklist of potentially traumatic experiences, and Part IV, Questions 1 to 16, symptoms of PTSD, derived from the *DSM−IV* criteria for PTSD. Symptoms for the last week are ranked on a 4-point scale ranging from 1 (*not at all*) to 4 (*extremely*). To compute mean scores we required 80% of the questions completed. We computed the mean score of the 16 items for the PTSD sum score (PTSD−Total), and the mean of scores on each *DSM−IV*-based symptom cluster; PTSD−Reexperiencing (Questions 1, 2, 3, and 16), PTSD−Arousal (Questions 6, 7, 8, 9, and 10), and PTSD−Avoidance (Questions 4, 5, 11, 12, 13, 14, and 15). An HTQ interview with a PTSD score of ≥2.5 is considered positive for PTSD. In research with traumatized refugees, internal consistency for HTQ Part IV, Questions 1 to 16, has been reported with Cronbach alphas ranging from .74 to .95 (e.g., Bentley, Thoburn, Stewart, & Boynton, 2012; Jakobsen, Thoresen, & Johansen, 2011; Kleijn, Hovens, & Rodenburg, 2001). We obtained a Cronbach's alpha of .85 at T1, .89 at T2, and .93 at T3. In most social science research, a Cronbach's alpha value of .70 is considered acceptable, and .80 is good (Fayers & Machin, 2007).

The Hopkins Symptom Checklist−25

The Hopkins Symptom Checklist−25 (HSCL−25; Mollica et al., 2004) assesses anxiety (10 items) and depression (15 items). The HSCL−25 has been found to have good reliability and validity in clinical refugee samples (e.g., Hollifield, Warner, & Lian, 2002). Symptoms for the last week are ranked on a 4-point scale from 1 (*not at all*) to 4 (*extremely*). To compute mean scores we required 80% of the questions completed. An anxiety score of > 1.75 represents a clinical level of anxiety that was found to be consistent with several anxiety diagnoses, whereas a depression score > 1.75 represents a clinical level of depression found to be consistent with major depressive disorder (Mollica et al., 2004). In studies of traumatized refugee populations of various ethnic backgrounds, internal consistency for the HSCL−25 has been reported with Cronbach's alpha ranging from .83 to .96 (e.g., Bentley et al., 2012; Renner, Salem, & Ottomeyer, 2006; Teodorescu et al., 2012). We obtained a Cronbach's alpha for the HSCL−25 of .91 at T1, .94 at T2, and .94 at T3.

The HTQ and the HSCL−25 have been widely used internationally in the assessment of mental disorders in traumatized populations (e.g., Jakobsen et al., 2011; Mollica et al., 2004) and as measures of treatment outcome (e.g., Carlsson et al., 2010; Hinton et al., 2004).

The World Health Organization Quality of Life−BREF

The World Health Organization Quality of Life−BREF (WHOQOL−BREF; WHOQOL Group, 1998) has 26 questions divided into four domains: physical health (Domain 1), psychological health (Domain 2), social relationships (Domain 3), and environmental conditions (Domain 4). The WHOQOL−BREF has frequently been used in research of traumatized populations, often in conjunction with the HTQ and the HSCL−25 (e.g., Teodorescu et al., 2012). Scoring is marked on 5-point Likert scales ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*), *disagree strongly* to *agree strongly,* and related formulations. Computation of mean scores required completion of a minimum 6 of 7 items, 5 of 6 items, 2 of 3 items, and 6 of 8 items on Domains 1, 2, 3, and 4, respectively. We used the manual's conversion of raw scores to a 0 to 100 scale (*very poor* to *very good* [QOL]).

In a large international field trial by Skevington, Lotfy, and O'Connell (2004) among adults recruited from different sociodemographic backgrounds in the population and from physical and mental health clinical settings, the WHOQOL−BREF was found to be a valid QOL measure. The mean QOL values in Skevington et al.'s study were 64.8, 60.0, 57.2, and 54.0 for Domains 1, 2, 3, and 4, respectively. The internal consistencies for Domains 1, 2, and 4 (consisting of 6−8 items each) were reported with Cronbach's alpha values of .80 or more, and for Domain 3 (3 items only) it was .68 (Skevington et al., 2004). The Cronbach's alpha is sensitive to number of items (fewer than 10), and alpha values must then be interpreted with caution (Cortina, 1993). In this study we obtained $\alpha = .67$ for Domain 1, .76 for Domain 2, .59 for Domain 3, and .79 for Domain 4 at T1; at T2 we obtained .87, .77, .70, and .59; and at T3 we obtained .78, .76, .68, and .62 on the four domains, respectively.

Real-life functioning

The following variables were recorded at T1 and again at T3, and scored yes (1) or no (0) for the situation at each point in time: *Communicated in Norwegian,* determined by whether the participant was able to take part in the research interviews without an interpreter, and *Presently Employed,* determined by whether the participant held a job, part time or full time, even if on temporary sick leave. These indications of real-life functioning were crude. Being employed and learning the Norwegian language, or not, could be related to many factors. However, as unemployment in Norway is low, and language training is obligatory, we regarded getting work or starting to communicate in Norwegian as signs of healthier functioning, possibly cognitively, emotionally, and socially.

Variables related to treatment

We calculated *Frequency of Sessions* (number of sessions per month of treatment) and *Treatment Length* (in months) from information in the treatment records and from therapists' reports at T2 and T3. In addition, we recorded terminations, new periods of treatment, and any new treatment plans.

Procedures

In their written informed consent to take part in the study, the participants also allowed us to interview their therapists and access information about their treatment. The study was approved by the Norwegian Regional Committee for Medical and Health Research Ethics (REK, South-East; see https://helseforskning.etikkom.no) and adhered to the Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects (World Medical Association, 2010).

Treatment followed the Norwegian health laws and the ethical principles of the professions involved.

All patients were reassessed at T2 and T3, whether still in treatment or not, with a semistructured, qualitative interview and the HSCL−25, Part IV of the HTQ, and the WHOQOL−BREF. Interpreters were used when needed. The first and last authors administered all interviews and questionnaires, allowing time for participants to give associations, examples, and to ask for clarifications in response to the questions. Treatment charts and interviews with therapists provided us with details about treatment. Due to the participants' limited endurance, the numbers that completed the different questionnaires at follow-up varied.

Statistical procedures

To investigate the relationship between the RIM components, we correlated absolute component scores of Trauma Response with ordinary Reality Testing component scores. In addition, a scatterplot of the two components was drawn, including a smooth lowess (locally weighted scatterplot smoothing) curve, which showed that Trauma Response values around zero corresponded with positive Reality Testing scores, whereas flooded Trauma Response scores approximately above 1.0 and constricted Trauma Response scores below −0.5 corresponded with increasingly impaired Reality Testing. We used the mean absolute value of the "turning points" of the Trauma Response component on the scatterplot (−0.5 and 1.0) to divide our participants into three subgroups. Specifically, participants with Trauma Response component scores < -0.75 were labeled constricted, participants with Trauma Response scores between −0.75 and 0.75 were labeled middle (centered around our sample mean), and participants with Trauma Response scores >0.75 were labeled flooded. We used analysis of variance to compute subgroup means of the RIM variables constituting the component, and compared the means with international norms (Meyer, Erdberg, & Shaffer, 2007). We used the same procedure with the Reality Testing component scores, and used the same component values (−0.75 and 0.75) to divide participants into impaired, middle (around sample mean), and adequate Reality Testing subgroups. The division into subgroups was performed to evaluate the meaning of different component scores compared to RIM variable norms; otherwise, the continuous component scores were used in the analyses.

We used linear mixed effects modeling in a hierarchical setup to study relationships of the RIM components with the continuous outcome variables (symptoms and QOL). Interpretation of the estimated fixed effects coefficients in linear mixed effects models is analogous to interpretation of coefficients in linear regression models, in which regression coefficients are interpreted as adjusted slopes for continuous independent variables and adjusted differences between categories for categorical independent variables. We calculated change in percentage points (PP) per unit change in the predictor variable (100 × estimate/range of the scale), to allow comparison of the amount of change between differently scaled outcome variables (symptoms scaled 1−4, QOL scaled 0−100).

In our mixed effects models, the RIM components were modeled as continuous and time (T1, T2, and T3) was modeled as categorical. As the sample size did not allow investigation of nonlinear relationships, we used a technical procedure to permit different linear relationships of the Trauma Response component below and above zero. This was achieved by splitting Trauma Response into a positive and negative part. In the positive part, negative values were set to be zero, and in the negative part, all positive values were set to be zero. In the first stage of the mixed effects analysis, separate models included the relationship between each RIM component and the outcome variables, adjusted for time. Next, we included both RIM components and their interaction in a model with no time variable. Finally, in the mixed effects analyses, separate models included interactions between each component and time, comprising contrasts between T1 and T2, T2 and T3, and T1 and T3. Due to the sample size, it was not possible to include all effects in a unified model. We chose not to regard p values $< .05$ of the total model as an absolute requirement for considering a statistic effect as potentially real (Altman, 1991, pp. 168−169). We were concerned with characteristics of the process over time, as well as the total model. Along with one significant total model, we therefore included two models with significant time contrasts only, for further elaboration and discussion. Significant interactions and possible trends were visualized by a figure. We fitted a model where component scores were set to −1, 0, and 1, respectively. The figure was fashioned to illustrate that the time span from T1 to T2 was 1 year, and from T2 to T3 twice as long (2 years).

We used logistic regression to analyze the relationships between each RIM component and the dichotomous real-life variables Communicated in Norwegian and Presently Employed. As the degrees of freedom did not allow splitting of the Trauma Response component, we here used the absolute value of Trauma Response to account for the potential effects of deviations from zero in both directions. Finally, by linear regression in a hierarchical setup, we analyzed the relationships between the RIM components and the continuous variables Frequency of Sessions and Treatment Length, using the split Trauma Response component and Reality Testing separately and in interaction.

We used a method developed by Nakagawa and Schielzeth (2013) for calculating marginal R^2 as a measure of effect size in general linear mixed effects models. Marginal R^2 is defined as the proportion of variance attributed to the fixed factors, compared with the sum of variances for random effects. Further, we computed an effect size measure r defined as the square root of the marginal R^2. The strength of the relationships in the logistic regressions was estimated by odds ratios (OR), and is also reported as the square root of Nagelkerke's R^2. To estimate effect sizes in the linear regressions, we used partial eta (computed as the square root of partial eta squared), regarded as commensurate with r. According to Cohen's (1992) benchmarks, a Pearson correlation coefficient $r = .10$ represents a small effect, $r = .30$ a medium effect, and $r = .50$ a large effect. The linear mixed effects analyses were estimated using R (The R Foundation for Statistical Computing, Vienna, Austria, 2013; nlme package), and remaining analyses were run in SPSS (IBM SPSS Statistics, Version 20, 2011).

Results

Descriptives

Table 1 shows that from T1 to T3, the number of participants who could communicate in Norwegian increased, the number who were employed increased, all QOL measures increased, and all symptom measures decreased. However, the participants still suffered from high levels of mental health symptoms at follow-up, and comorbidity was still high. At T3, 65.9% still concurrently qualified for PTSD, major depressive disorder, and a clinical level of anxiety, compared to 81.6% at T1. Moreover, the mean QOL measures were still low at T3 compared with international means (Skevington et al., 2004). An exception was QOL-Environmental Conditions, where the score was closer to the international mean, probably indicative of the relatively good welfare system in Norway. Only one participant lived in a refugee reception center; the others lived in ordinary flats in the community. See Table 1 for details.

The diagnoses given in the clinics also demonstrated the comorbidity of these patients. According to treatment charts and written information from the therapists, 82.4% ($n = 42$) of the patients were diagnosed with the ICD-10 diagnoses PTSD (F 43.1) or enduring personality change after catastrophic experience (F 62.0) and 5.9% ($n = 3$) with other reactions to severe stress (F43) as main diagnoses, accompanied by various comorbid anxiety-related, depressive, dissociative, and somatoform disorders. Among the 51 patients, 5.6% had been given four diagnoses, 14.8% three, 57.4% two, and 22.2% had been given only one diagnosis.

There was great variation in frequency, length, and continuity of treatment. Within the first year, mean frequency of sessions per month of treatment was 1.8 ($SD = 1.4$) and mean treatment length was 10.6 months ($SD = 2.5$). At T2, 37.3% ($n = 19$) of the treatments were terminated. Only three patients had dropped out without notice or against the therapists' advice. For the entire follow-up period, mean Frequency of Sessions was 1.7 ($SD = 1.1$) and mean treatment length was 24.5 months ($SD = 13.7$). At T3, 29% ($n = 15$) were still in treatment and 14% ($n = 7$) who had terminated at some time during follow-up had an appointment to start in treatment again.

Characteristics of the RIM components

When using absolute values of the Trauma Response component, the correlation between the components was significant and of medium effect size ($r = -.30$, $p = .035$), showing that degree of Reality Testing difficulties and degree of flooding or constriction were not independent of each other. The scatterplot described in the Statistical Procedures section indicated a relationship between poorer Reality Testing and more "extreme" values of Trauma Response. These findings confirmed our hypothesis that extreme values of Trauma Response in both directions were related to poorer Reality Testing.

As can be seen in Table 2, means of the individual RIM variables constituting the Reality Testing component approached international norms with increasing component scores and were similar to international norm means in the high, adequate subgroup. The means of the Trauma Response component also confirmed our assumptions reasonably well: The mean values of most of the RIM variables constituting Trauma Response in the middle subgroup were close to the international norm means, and far below or above in the constricted and flooded subgroups. Exceptions to these findings were with the TCI and the SevCog, which were closer to international norms in the low, constricted subgroup and increasingly elevated with higher component scores.

Table 1. Real-life functioning, symptoms, and quality of life, at Time 1 (T1), Time 2 (T2), and Time 3 (T3).

	T1 (treatment start)			T2 (1-year follow-up)			T3 (3-year follow-up)		
Variable	*N*	*%/M*	*n/SD*	*N*	*%/M*	*n/SD*	*N*	*%/M*	*n/SD*
Indications of real-life functioning									
Communicated in Norwegian	51	50.9%	26[a]				50	70.0%	35
Presently Employed	51	21.6%	11				50	34.0%	14[b]
Indications of psychological disorder									
Anxiety > 1.75, indicating clinically significant anxiety	50	96.0%	48	46	89.1%	41	45	86.7%	39
Depression > 1.75, T1, indicating major depression	50	98.0%	49	46	91.3%	42	45	91.1%	41
PTSD-Total ≥ 2.5, indicating PTSD	49	81.6%	40	20	75.0%	15	41	65.9%	27
Symptom scores									
Anxiety	50	2.87	0.59	46	2.68	0.67	45	2.65	0.63
Depression	50	2.94	0.52	46	2.81	0.61	45	2.74	0.64
PTSD-Total	49	2.82	0.47	20	2.88	0.53	41	2.64	0.69
PTSD-Reexperiencing	49	2.91	0.68	20	2.84	0.67	49	2.75	0.78
PTSD-Arousal	49	3.10	0.49	20	3.13	0.47	41	2.86	0.78
PTSD-Avoidance	49	2.57	0.58	20	2.72	0.67	41	2.43	0.68
Quality of life (QOL)									
QOL-Physical Health	49	28.2	13.8	17	36.1	20.0	42	38.3	17.7
QOL-Psychological Health	49	25.3	15.7	17	30.0	15.1	42	33.5	16.6
QOL-Social Relationships	49	35.0	21.7	17	44.4	25.8	42	42.4	21.4
QOL-Environmental Conditions	49	45.0	18.5	17	44.6	14.9	42	48.5	14.1

Note. Anxiety = Questions 1–10, Depression = Questions 11–25, Hopkins Symptom Checklist–25 (HSCL–25), scaled 1–4. PTSD-Total = Questions 1–16; PTSD-Reexperiencing = Questions 1, 2, 3, and 16; PTSD-Arousal = Questions 6, 7, 8, 9, and 10; PTSD-Avoidance = Questions 4, 5, 11, 12, 13, 14, and 15, Harvard Trauma Questionnaire (HTQ), Part IV, scaled 1–4. QOL-Physical Health, QOL-Psychological Health, QOL-Social Relationships, and QOL-Environmental Conditions = Domains 1, 2, 3, and 4 of the World Health Organization Quality of Life–BREF (WHOQOL–BREF), scaled 1–100. For comparison, the international means on WHOQOL–BREF (Skevington et al., 2004) were 64.8, 60.0, 57.2, and 54.0 on Domains 1 to 4, respectively. T1 measures of HTQ, HSCL–25, and WHOQOL–BREF were presented in Opaas and Hartmann (2013).

[a]Two of the remaining participants communicated in English and did not need an interpreter. [b]Four individuals started to work and one gave up working during follow-up.

Table 2. RIM variable means in subgroups with low, medium, and high component scores.

	Trauma Response subgroups[a]							
	Constricted ($n = 12$)		Middle ($n = 29$)		Flooded ($n = 10$)		International norms	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	M_{int}	SD_{int}
Trauma Response score	**−1.20**	.30	**−.01**	.45	**1.47**	.68		
Blends	**0.33**	.49	**3.62**	2.06	**7.30**	2.87	**4.01**	2.97
CF+C	**0.50**	.67	**2.45**	1.48	**4.90**	1.60	**1.99**	1.88
m	**0.33**	.89	**1.86**	1.90	**6.00**	2.91	**1.50**	1.54
F%[b]	**.68**	.20	**.41**	.18	**.16**	.12	**.39**	.17
TCI	**.14**	.17	**.42**	.25	**.84**	.40	**.17**	.13
M	**0.42**	.52	**2.90**	1.76	**6.40**	3.81	**3.73**	2.66
SevCog	**.25**	.45	**1.72**	1.51	**4.40**	2.50	**0.5**	0.9
	Reality Testing subgroups[a]							
	Impaired ($n = 11$)		Middle ($n = 28$)		Adequate ($n = 12$)		International norms	
	M	*SD*	*M*	*SD*	*M*	*SD*	M_{int}	SD_{int}
Reality Testing score	**−1.53**	.51	**.10**	.42	**1.16**	.23		
FQ-%[b]	**.37**	.11	**.17**	.07	**.13**	.07	**.10**	.07
FQo%[b]	**.33**	.12	**.46**	.10	**.62**	.08	**.60**	.15
D	**1.82**	2.23	**6.32**	3.40	**11.0**	3.79	**9.89**	5.81
R	**13.45**	5.41	**17.57**	5.99	**22.50**	7.73	**22.31**	7.90

Note. RIM = Rorschach Inkblot Method. Means are shown in bold. M_{int}= means of the international norm data; SD_{int} = standard deviations of the norm data. Trauma Response and Reality Testing: RIM principal components (Opaas & Hartmann, 2013). Blends, CF, C, m, M, F%, D, R (Comprehensive System; Exner, 2003); TCI (Trauma Content Index; Armstrong & Loewenstein, 1990); and R−PAS (Meyer et al., 2011) variables SevCog (Severe Cognitive Codes: unweighted sum of Level 2 Cognitive Codes + CONTAM and ALOG), FQo% (Ordinary Form Quality%), and FQ-% (Form Quality Minus%). International norms from Meyer, Erdberg, and Shaffer (2007), Meyer et al. (2011; SevCog, FQo%, FQ-%), and Meyer (for Opaas & Hartmann, 2013; CF+C, TCI).
[a]The subgroups: RIM component scores < -0.75 (Low), -0.75 to 0.75 (Middle), and > 0.75 (High). [b] Stated as proportions.

Relationships of RIM components with symptoms, QOL, and real-life functioning

The mixed effects analysis, adjusted for time (Table 3), revealed a significant and negative relationship between Reality Testing and Anxiety, and between Reality Testing and PTSD-Arousal, and a significant, positive relationship between Reality Testing and QOL-Psychological Health. The Reality Testing component, adjusted for time, explained 9% to 13% of the variance in these outcome variables (r = .29, .31, and .35), resulting in a reduction of 5.3 and 5.0 percentage points on the symptoms scale and a 4.2 point increase in QOL-Psychological Health per unit change in Reality Testing. There were no other significant relationships. This implies that more adequate Reality Testing significantly predicted less Anxiety, less PTSD-Arousal symptoms, and higher QOL-Psychological Health throughout the study. Between the two components, adjusted for time, there were no significant interaction effects ($p \geq .27$) on symptoms and QOL.

Table 4 shows the overall interaction effects of RIM components and time on symptoms and QOL. For PTSD-Avoidance the interaction between the Reality Testing component and time was significant ($p = .016$, $r = .34$). Most other p values for the models were high, with no specific indications of overall interaction effects. In addition to the model involving PTSD-Avoidance, two other models had significant interaction with the time contrast T2 versus T1.

Table 5 shows details of the three interaction models with significant values overall (PTSD-Avoidance) or with significant interaction between Reality Testing and the time contrast T1 versus T2 (PTSD-Avoidance, PTSD-Reexperiencing, and PTSD-Total). Figure 1 illustrates the model-based differences in outcome variables over time for these three models when component scores were set to −1, 0, and 1, respectively. The models indicate that adequate Reality Testing (component score = 1) predicted a decrease in symptoms of PTSD the first year (in Avoidance, Reexperiencing, and Total symptoms), and retention of this improvement from T2 to T3. In contrast, impaired Reality Testing (component score = −1) predicted increasing symptoms of PTSD the first year (in PTSD-Avoidance symptoms, Reexperiencing, and Total symptoms) and decreasing symptoms from T2 to T3, but only back approximately to the T1 level.

According to the logistic regressions, a higher score on Reality Testing significantly and positively increased the chance that the participant communicated in Norwegian at T1 (OR = 2.00 [1.06, 3.77], $p = .033$, $r = .36$) and at T3 (OR = 2.28 [1.16, 4.51], $p = .017$, $r = .41$). A higher score on Reality Testing also significantly and positively increased the chance that the participant was employed at T1 (OR = 3.71 [1.27, 10.88], $p = .017$, $r = .48$) but not significantly at T3 (OR = 1.77 [0.85, 3.66], $p = .126$, $r = .27$). The absolute value of Trauma Response was nonsignificantly related with the real-life outcome variables ($p \geq .34$). Thus, increasing values of Reality Testing increased the chance of communicating in Norwegian at T1 and T3 and of being employed at T1.

Participants with more impaired Reality Testing, compared to those with adequate Reality Testing, had more mental health symptoms, had poorer QOL, and were less likely to communicate with us in Norwegian throughout follow-up, supporting our hypothesis. This was demonstrated by Anxiety and PTSD-Arousal symptoms, QOL in the psychological health domain, and in the proportion that communicated in Norwegian, but not Depression, other PTSD clusters, other QOL domains, or

Table 3. Relationships of RIM components with symptoms and QOL, adjusted for time.

	Estimate [95% CI]	PP	*t*(*df*)	*p*	R^2	*r*
Anxiety						
Trauma Response, negative values	−0.15 [−0.49, 0.19]	−5.0	−0.88 [1, 48]	.38	.06	.25
Trauma Response, positive values	0.22 [−0.05, 0.49]	7.3	1.64 [1, 48]	.11		
Reality Testing	−0.16* [−0.31, −0.01]	−5.3	−2.17* [1, 49]	.035	.09	.29
Depression						
Trauma Response, negative values	−0.04 [−0.37, 0.29]	−1.3	−0.23 [1, 48]	.82	.03	.18
Trauma Response, positive values	0.11 [−0.15, 0.37]	3.7	0.89 [1, 48]	.38		
Reality Testing	−0.06 [−0.21, 0.08]	−2.0	−0.88 [2, 49]	.38	.03	.18
PTSD-Total						
Trauma Response, negative values	0.09 [−0.22, 0.41]	3.0	0.58 [1, 48]	.56	.04	.21
Trauma Response, positive values	0.07 [−0.17, 0.31]	2.3	0.58 [1, 48]	.57		
Reality Testing	−0.13† (-0.27, 0.01)	−4.3	−1.86†[1, 49]	.069	.08	.28
PTSD-Reexperiencing						
Trauma Response, negative values	0.24 [−0.16, 0.63]	8.0	1.22 [1, 48]	.23	.05	.23
Trauma Response, positive values	0.07 [−0.23, 0.38]	2.3	0.48 [1, 48]	.63		
Reality Testing	−0.10 [−0.28, 0.09]	−3.3	−1.06 [1, 49]	.29	.03	.17
PTSD-Arousal						
Trauma Response, negative values	0.01 [−0.33, 0.35]	0.3	0.07 [1, 48]	.95	.04	.20
Trauma Response, positive values	0.07 [−0.19, 0.34]	2.3	0.57 [1, 48]	.57		
Reality Testing	−0.15* [−0.30, −0.01]	−5.0	−2.08* [2, 49]	.043	.09	.31
PTSD-Avoidance						
Trauma Response, negative values	0.11 [−0.23, 0.45]	3.7	0.45 [1, 48]	.66	.03	.18
Trauma Response, positive values	0.06 [−0.21, 0.32]	2.0	0.44 [1, 48]	.66		
Reality Testing	−0.11 [−0.27, 0.04]	−3.7	−1.68 [1, 49]	.099	.06	.25
QOL-Physical Health						
Trauma Response, negative values	6.85 [−2.33, 16.04]	6.9	1.50 [1, 48]	.14	.12	.34
Trauma Response, positive values	−5.40 [−12.70, 1.90]	−5.4	−1.49 [1, 48]	.14		
Reality Testing	3.92† [−0.16, 7.99]	3.9	1.93† [1, 49]	.059	.13	.36
QOL-Psychological Health						
Trauma Response, negative values	−0.85 [−9.85, 8.15]	−0.9	−0.19 [1, 48]	.85	.07	.26
Trauma Response, positive values	−1.74 [−8.90, 5.42]	−1.7	−0.49 [1, 48]	.63		
Reality Testing	4.21* [0.37, 8.06]	4.2	2.20* [1, 49]	.032	.13	.35
QOL-Social Relationships						
Trauma Response, negative values	−1.60 [−13.50, 10.30]	−1.6	−0.27 [1, 48]	.79	.06	.25
Trauma Response, positive values	−5.46 [−14.93, 4.00]	−5.5	−1.16 [1, 48]	.25		
Reality Testing	4.69† [−0.61, 9.99]	4.7	1.78† [1, 49]	.081	.08	.28
QOL-Environmental Conditions						
Trauma Response, negative values	6.51 [−2.36, 15.37]	6.5	1.48 [1, 48]	.15	.04	.21
Trauma Response, positive values	−1.92 [−8.97, 5.12]	−1.9	−0.55 [1, 48]	.59		
Reality Testing	3.49†[−0.46, 7.43]	3.5	1.78† [1, 49]	.082	.05	.23

Note. RIM = Rorschach Inkblot Method; QOL = quality of life. Linear mixed effects analysis. Trauma Response and Reality Testing = RIM principal components (Opaas & Hartmann, 2013). Estimate (fixed effects coefficient) = difference in outcome for a one-unit increase in a RIM component. PP = Estimate transformed to percentage points = 100 × estimate/range of the outcome scale. R^2 was computed by Nakagawa and Schielzeth's (2013) method for obtaining marginal R^2 from generalized linear mixed effects models. *r* = square root of the marginal R^2. Negative and positive values of Trauma Response were included in the same model.
*$p < .05$. †$p < .10$.

the proportion that was presently employed. The corresponding hypothesis for participants with highly flooded or highly constricted Trauma Responses was not supported. The results indicate a relationship between Reality Testing and the direction, amount, and path of change in symptoms of PTSD from T1 to T2 to T3, but did not demonstrate associations of any of the components with changes in other variables.

Relationships between RIM components and therapy "dosage"

According to the linear regression, Reality Testing was significantly and positively related, with medium effect sizes, with Frequency of Sessions during the first year ($t = 2.67$, $p = .010$, partial $\eta = .36$) and during all 3 years of follow-up ($t = 3.43$, $p = .001$, partial $\eta = .45$). The flooded half of Trauma Response (positive part) was subsignificantly and positively related to Frequency of Sessions the first year ($t = 1.81$, $p = .076$, partial $\eta = .25$). The interaction between Reality Testing and the flooded half of Trauma Response was subsignificant and positive for the 3 years of follow-up ($t = 1.79$, $p = .081$, partial $\eta = .26$). There were no other significant or subsignificant relationships of Trauma Response and Reality Testing, separately or in interaction, with Frequency of Sessions ($p \geq .25$), or with Treatment Length ($p \geq .31$).

Discussion

Two strong RIM components, Trauma Response and Reality Testing, characterized the trauma-related personality functioning of our sample of traumatized refugees at treatment start. In our further investigation of these components, we found that higher, positive scores of the Reality Testing component corresponded with values of the constituent RIM variables that were close to the international norms, indicating normal, healthy personality functioning in the associated areas of personality. Accordingly, lower component scores corresponded with less normal or healthy personality functioning. Derived from the interpretations of the individual RIM variables, adequate Reality Testing (positive component scores) indicated ability to

Table 4. Overall interaction effects of RIM components and time on symptoms and QOL.

	Overall interaction			
	F value (*df*)	*p*	R^2	*r*
Anxiety				
Time × Trauma Response, negative values	0.21 (2, 84)	.81	.06	.25
Time × Trauma Response, positive values	0.14 (2, 84)	.87		
Time × Reality Testing	0.75 (2, 86)	.48	.09	.30
Depression				
Time × Trauma Response, negative values	0.06 (2, 84)	.94	.04	.20
Time × Trauma Response, positive values	0.88 (2, 84)	.42		
Time × Reality Testing	0.07 (2, 86)	.93	.03	.18
PTSD-Total				
Time × Trauma Response, negative values	0.85 (2, 53)	.43	.06	.24
Time × Trauma Response, positive values	0.12 (2, 53)	.89		
Time × Reality Testing	*2.67*† *(2, 55)*	*.078*	*.11*	*.33*
PTSD-Reexperiencing				
Time × Trauma Response, negative values	0.38 (2, 53)	.69	.06	.24
Time × Trauma Response, positive values	0.20 (2, 53)	.82		
Time × Reality Testing	*2.29 (2, 55)*	*.11*	*.05*	*.23*
PTSD-Arousal				
Time × Trauma Response, negative values	0.55 (2, 53)	.58	.06	.25
Time × Trauma Response, positive values	0.93 (2, 53)	.40		
Time × Reality Testing	0.90 (2, 55)	.41	.10	.32
PTSD-Avoidance				
Time × Trauma Response, negative values	1.28 (2, 53)	.29	.05	.23
Time × Trauma Response, positive values	0.06 (2, 53)	.94		
Time × Reality Testing	*4.48** *(2, 55)*	*.016*	*.12*	*.34*
QOL-Physical Health				
Time × Trauma Response, negative values	0.14 (2, 51)	.87	.12	.35
Time × Trauma Response, positive values	0.10 (2, 51)	.91		
Time × Reality Testing	0.50 (2, 53)	.61	.13	.36
QOL-Psychological Health				
Time × Trauma Response, negative values	0.44 (2, 51)	.65	.07	.27
Time × Trauma Response, positive values	0.05 (2, 51)	.95		
Time × Reality Testing	0.29 (2, 53)	.75	.12	.35
QOL-Social Relationships				
Time × Trauma Response, negative values	2.55† (2, 51)	.088	.10	.31
Time × Trauma Response, positive values	0.29 (2, 51)	.75		
Time × Reality Testing	1.58 (2, 53)	.22	.09	.30
QOL-Environmental Conditions				
Time × Trauma Response, negative values	0.87 (2, 51)	.42	.05	.23
Time × Trauma Response, positive values	0.70 (2, 51)	.50		
Time × Reality Testing	0.91 (2, 53)	.41	.06	.25

Note. RIM = Rorschach Inkblot Method; QOL = quality of life. Mixed effects analyses of RIM components interacting with time. R^2 was computed by Nakagawa and Schielzeth's (2013) method for obtaining marginal R^2 from generalized linear mixed effects models. r = square root of the marginal R^2. Negative and positive values of the Trauma Response component are included in the same model for each outcome variable, resulting in one R^2value for each. Negative and positive values of Trauma Response were included in the same model. Models with significant overall values or significant time contrasts, detailed in Table 5 and visualized in Figure 1, are shown in italics.
$^{*}p < .05$. $^{\dagger}p < .10$.

accurately perceive and recognize obvious, composite, and multiple aspects of the environment, whereas lower scores indicated faulty perceptions and limited ability to recognize obvious, contextual, and multiple aspects of the perceptual field.

Further, middle values of the Trauma Response component corresponded with values on the constituent RIM variables close to international norms, thus associated with normal, healthy functioning. Higher positive or lower negative scores, indicating more severe flooding or constriction, corresponded with less normal or less healthy personality functioning in the associated areas. Exceptions among the RIM variables constituting this component were the TCI and SevCog, which were closer to the international norms in the low, highly constricted group and increasingly elevated with higher scores. This means that, except for those few who were severely cognitively and emotionally constricted, almost all our participants showed RIM evidence of traumatic intrusions (TCI) and disturbance of formal thinking (SevCog) above normal values, consistent with findings from other traumatized samples (e.g., Kaser-Boyd & Evans, 2008).

When using ordinary component scores in the index study, Trauma Response and Reality Testing had been relatively independent. However, the medium-size correlation between the components when using absolute scores of Trauma Response might indicate a curvilinear relationship. Viglione et al. (2012) posed several questions for further research regarding the RIM responses of traumatized individuals; for example, whether perceptual and thought disturbances were associated with overall complexity and thematic richness. We found that individuals with a highly flooded Trauma Response (indicating complexity, thought disturbances, and emotional control problems)—but also individuals with a highly constricted (impoverished) Trauma Response—showed less adequate Reality Testing (indicating perceptual disturbances).

We expected that the participants' scores on the components might be relevant to their progress through treatment and follow-up. We found that participants with adequate—compared to more impaired—Reality Testing throughout the study had better mental health (significantly less Anxiety and PTSD-Arousal symptoms), better QOL (higher score on QOL-Psychological Health), better real-life functioning (significantly more who communicated in Norwegian), and a more regular attendance at therapy (significantly higher Frequency of Sessions). These results could not be attributed to treatment, because the lower level of distress and better QOL were apparent at treatment start. We believe these results were sustained by more stable functioning in general in these patients. The relationship between Reality Testing and PTSD-Arousal was also negative at treatment start, but did not reach significance until follow-up. The significant relationships of Reality Testing with the QOL domains of Physical Health and Social Relationships, found in the index study, were not significant at follow-up.

Contrary to our expectations, we found no significant relationships between Trauma Response and any of the outcome variables. In the index study, a more flooded Trauma Response was significantly associated with more PTSD-Reexperiencing symptoms, but at follow-up, the relationship was nonsignificant. This indicates that participants' changes in PTSD-Reexperiencing during follow-up happened irrespective of their "position" on the Trauma Response component. It could appear as if Trauma Response had little association with the participants' mental health and functioning, and with their capacity to improve.

One explanation of the weak predictive capacity of the Trauma Response component could be the varying clinical presentations of traumatized individuals, fluctuating between flooded and constricted responses when exposed to traumatic reminders (e.g., Ephraim, 2002; Kaser-Boyd & Evans, 2008). Many of the individual variables constituting the Trauma Response component of this study are among the more state-like, less temporally stable, RIM variables in the study of Grønnerød (2003). Grønnerød's (2003, 2004) studies support

Table 5. Changes in symptoms and QOL related to interaction effects of RIM components and time, details.

	Difference between T1 and T2			Difference between T2 and T3			Difference between T1 and T3		
	Estimate [95% CI], *t*	PP	*p*	Estimate [95% CI], *t*	PP	*p*	Estimate [95% CI], *t*	PP	*p*
PTSD-Total									
Time × Reality Testing	−0.26* [−0.50, −0.02], −2.15	−8.7	.041	0.12 [−0.13, 0.37], 0.95	4.0	.34	−0.14 [−0.32, 0.05], −1.50	−4.7	.14
PTSD-Reexperiencing									
Time × Reality Testing	−0.31* [−0.60, −0.01], −2.10	−10.3	.041	0.28 [−0.03, 0.58], 1.80	9.3	.077	−0.03 [−0.26, 0.20], −0.27	−1.0	.79
PTSD-Avoidance									
Time × Reality Testing	−0.39**[−0.67, −0.11], −2.83	−13.0	.006	0.20 [−0.09, 0.49], 1.36	6.7	.18	−0.20†[−0.41, 0.02], −1.83	−6.7	.073

Note. QOL = quality of life; RIM = Rorschach Inkblot Method. Mixed effects analyses of RIM components interacting with time. Interaction models with significant values overall (PTSD-Avoidance) or with significant time contrasts (T1−T2). See Figure 1 for visualization. Degrees of freedom = 2, 55. Estimate = interaction coefficient in the mixed effects model. PP = Estimate transformed to percentage points = 100 × estimate/range of the outcome scale.
*$p < .05$. **$p < .01$. †$p < .10$.

the interpretation of Trauma Response as a more fluid personality dimension, more amenable to change and less likely to predict future relationships. Variables constituting the Reality Testing component seemed to be more trait-like, according to Grønnerød's (2003) findings.

Analyses of changes in symptoms and QOL associated with the RIM components showed significant interaction effects of Reality Testing in the period T1 to T2 in PTSD-Total, PTSD-Avoidance, and PTSD-Reexperiencing. There were no significant interaction effects with Trauma Response from T1 to T2, and no interaction effects of any component from T1 to T3. This means that we could not demonstrate that differences in Reality Testing or Trauma Response were associated with extent of improvement during the 3 years. One of the reasons for this was probably that improvement did not happen smoothly and incrementally from T1 to T2 to T3. As indicated by the models in Figure 1, different and partly opposite trajectories of change seemed to characterize subgroups among the participants. According to the model, patients with adequate Reality Testing improved markedly the first year, and, although the paths of change differed somewhat among the PTSD symptom clusters, these participants retained their overall improvement in symptoms of PTSD from T2 to T3. Patients with only slightly deficient Reality Testing (around sample mean) improved gradually, but modestly. Patients with impaired Reality Testing showed a marked increase in symptoms of PTSD from T1 to T2 and a decrease from T2 to T3, approximately back to the T1 level. The trajectories in anxiety, depression, and QOL were not significantly affected by the participants' "position" along the Reality Testing or Trauma Response personality dimensions.

Frequency of Sessions was positively and significantly associated with Reality Testing throughout follow-up, which indicated that patients with more adequate Reality Testing met more frequently for treatment. However, length of treatment was not significantly related with the patients' degree of Reality Testing or flooded or constricted Trauma Response. We found no significant relationships between treatment length and the components, and we did not find significant relationships between frequency or length of treatment and improvement.

The investigated changes in symptoms and QOL represented the interaction effects of the personality dimensions and time. In this case, time not only included the treatment received during follow-up, but also other life events happening during this time. We found that adequate Reality Testing was important to the continued and significantly lower psychiatric

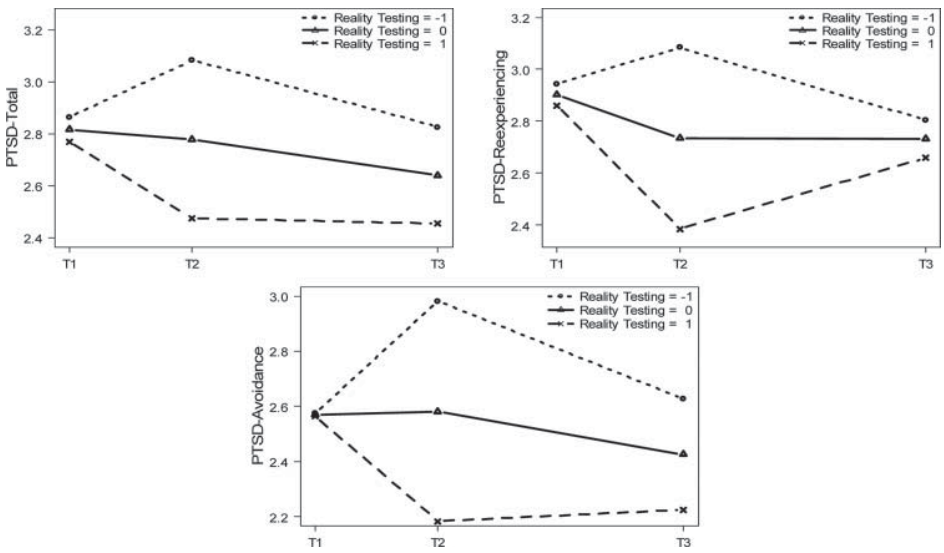

Figure 1. A model illustrating interaction effects over time of the Reality Testing component on outcome variables PTSD-Total, PTSD-Reexperiencing, and PTSD-Avoidance when component values are set to −1 (impaired Reality Testing), 0 (sample mean/somewhat lowered Reality Testing), and +1 (adequate Reality Testing).

symptomatology, better QOL, and Norwegian communication skills. The modeled paths of change throughout the 3 years suggest that improvement had different trajectories depending on whether Reality Testing scores were high, medium, or low. Some of the progress in participants with poorer Reality Testing did not show up until the second or third year of treatment, suggesting that treatment of these patients takes time. The total extent of change or improvement from treatment start to the 3-year follow-up did not significantly relate with any of the RIM components.

Most of the participants had RIM scores indicating disturbances of perception, Reality Testing, and logical thinking. Still, in our extended contact with them, only a few expressed psychotic-like ideas during interviews. Furthermore, none of the patients were diagnosed with a psychotic disorder by their therapists. Available research suggests that in posttraumatic conditions, traumatic intrusions disrupt thinking, judgment, concentration, and Reality Testing, but these functions remain intact when associated with nontrauma thoughts (e.g., Viglione et al., 2012). Although our data do not allow causal interpretations, these findings together with theories and findings within developmental psychology and neuropsychology (e.g., Fonagy & Target, 2005; Schore, 2002) provisionally guide our suggestion that the observed impaired Reality Testing and the elevated level of thought disturbances (SevCog) among many of our participants should be understood as primarily trauma-based.

Such impairment might be harder to detect than more predominant breaches in formal and logical reasoning. The therapeutic relationship is an arena where therapists can discover context-dependent misperceptions and faulty logic, although it might take time to identify. RIM assessment is another, faster method, that might give valid assessment before therapy starts. Rorschach-based assessment provides, to our knowledge, the only means of obtaining normatively based information concerning the conventionality of one's perceptions.

There could be several reasons why personality functioning, in terms of the two RIM components, did not have a greater impact on outcome. Patient characteristics interact with other variables in treatment in a dynamic process (Clarkin & Levy, 2004), making it unlikely to find simple and significant relationships of therapy variables or patient variables, with outcome. In a small sample like ours, this would be even harder. Furthermore, influences from treatment interact with the patients' living conditions, relationships, and external events.

Limitations

Our results must be interpreted with caution due to several limitations. The low sample size did not allow controlling for premorbid symptom level and examining interactions between both RIM components and time in a unified model. Furthermore, the low sample size prevented us from conducting curvilinear analyses of the Trauma Response variable, which would have been more appropriate than the technical procedure of splitting the sample. Our participants almost uniformly had high values on anxiety and depression, and a high and limited range on posttraumatic symptoms. With little variation and low sample size, we might have missed potentially important relationships. The study involved relationships that have not previously been addressed in research, which might generate new hypotheses and be included in meta-analyses. We therefore adopted a liberal stance to p values in reporting mixed effects models, including potential trends with significant time contrasts only. This must be taken into consideration when interpreting the results.

Other limitations were the variable response to the questionnaires and the possible misunderstandings and loss of information due to language barriers. Through the first and last authors' personal administration and presence through all data collection, we could observe that the research procedures to a fair degree seemed to mitigate these barriers. We responded to nonverbal expressions indicating difficulties in comprehension, allowed time for mutual clarifications, and welcomed the participants' associations and examples.

A reasonable concern is whether the assessments put too much strain on a vulnerable group. Several participants referred to our long, repeated, and clinically informed research interviews as part of their treatment. Our impression was that most of our participants experienced the assessment as therapeutic. This probably contributed positively to the participants' experience of taking part in research, and to the low dropout rate. At the same time, the research interviews represented an important deviation from ordinary care.

One advantage of the naturalistic design was that it increased the external validity of the results and the generalizability to ordinary refugee patients. In this respect, the wide inclusion criteria, the high response and inclusion rate, and the low dropout rate of the study, even among patients who dropped out of or terminated treatment, were strengths of our study.

Implications

Our model showed a rapid improvement in symptoms of PTSD in participants with adequate Reality Testing, across various therapists, treatment sites, and theoretical orientations. This could indicate that patients with adequate Reality Testing can benefit from various therapeutic approaches. On the other hand, the modeled increase in symptoms of PTSD the first year among patients with impaired Reality Testing, and their slight improvement, suggest a need to study under which conditions such patients might improve. Based on this study, for patients with impaired Reality Testing, we recommend efforts at securing regular attendance to therapy and a focus on how they perceive the therapy and the realities around them. Further, helping highly constricted patients to develop language and other symbolic expressions of their experiences and emotions, and highly flooded patients to tolerate trauma reminders, will probably enhance regulation of emotions, and perhaps improve Reality Testing. Follow-up periods in research should be long enough to detect changes. The RIM components found to be characteristic of this sample of traumatized refugees might extend our understanding of the psychology of traumatization and be of use in the continuing work toward finding the best therapeutic approach for the individual patient along the therapeutic process. Comparable studies are needed to validate and extend these results.

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ERRATA LIST

Marianne Opaas' thesis, April 11th 2016

The following details have been changed in the present edition of the thesis:

- List of papers, p. vi: Reference to the published printed version of Paper III is added.
- Rorschach 'images' is substituted for 'pictures' on pages ix, 23, 41, 42, 50, 52, and 53.
- P. iv, second paragraph, first line: *in* was repeated twice. One is removed.
- P. 30: 'See Appendix' was removed from the reference to the REK approval.

References:

- The incomplete reference to Breslau et al. (2014) is corrected.
- The missing article title is added in the reference to Davila & Levy (2006).
- The extra reference to Eckart et al. (2012) is removed.
- The reference to Opaas & Varvin (2015): The extra Journal name is moved to the correct place in the next reference.
- The reference to Opaas, Hartmann, Wentzel-Larsen, & Varvin (2015) is now supplied with the Journal name and doi-number. In addition, the reference to the published printed version is added.
- Minor oversights of style, e.g. italicizing, are corrected.

Papers:

- My own word-file of Paper III is exchanged with the journal version. Only lay-out differs.
- There is an error in Paper I (not corrected): In Table 5, the Confidence Interval (CI) of the coefficient for Loss with PTSD-Total is given as -0.130 to -0.004. The last digit should be positive (i.e., +0.004).