Post-traumatic stress disorder and life events among recently resettled refugees

Hans Peter Søndergaard

Stockholm 2002
Post-traumatic stress disorder and life events among recently resettled refugees

Hans Peter Søndergaard MD

Department of Public Health Sciences, Division of Psychosocial Factors and Health

Stockholm 2002
This work is dedicated to absent friends:
Hartmut Apitzsch for his clinical sensitivity and dedication, generous sharing of wisdom, and kind interest in so many people
Sten W. Jakobsson for his compassion, inspiration and sense of justice

Dissertation for the degree Doctor of Medical Science presented at Karolinska Institutet 2002.

Abstract

Background
In refugee health, one topic is the importance of posttraumatic stress disorder (PTSD) from a public health point of view.

The present study was initiated in order to study the prevalence of PTSD through structured assessment in a group of recently resettled refugees, and to study important classes of present life events and their interaction with health by means of qualitative and quantitative methods as well as hormonal markers. Further, associations between traumatisation, PTSD and alexithymia were of interest.

Subjects and methods
Participants eligible for the study were every fourth 18-48 years old recently resettled refugees from Iraq with at least five years of schooling. Eighty-six out of 321 eligible subjects participated.

The study was prospective in design and used questionnaires in order to collect information about life events and self-reported health at baseline and three follow-up assessments at three month intervals. At the same time, blood samples were collected and stored. At the end of data collection, samples were analysed for cortisol, thyroxine, prolactin, and dehydroepiandrosterone sulphate (DHEA-s). Participants were screened with a specific health interview, and subjects exceeding a low cut-off score – 75/86 -were examined using a structured clinical assessment procedure for posttraumatic stress disorder.

Questionnaires were translated into Arabic and South Kurdish and back-translated.

Results
The prevalence of PTSD among the participants was 37.2 % and was higher among males, which was consistent with lower self-reported trauma exposure among females.

The significant life events of importance for present health were distress in significant others, concerns related to issues of family reunion, and inordinate demands in the introduction programme. Housing problems were associated with deteriorated health in PTSD subjects.

The pattern of cortisol changes was the same in PTSD and non-PTSD subjects, whereas there was an interaction with PTSD for DHEA-s.

PTSD was associated with higher alexithymia score, but this was related to increased dysphoric affect.

The health screening interview was without complications. Subjects with concentration difficulties were 23 times more likely to have a PTSD diagnosis.

Conclusions
PTSD is prevalent in refugees. During the observation period, factors such as housing problems and self-perceived inordinate demands were associated with deteriorated health markers. Vulnerable subjects are easy to identify, and self-reported distress predicts deteriorated health. Distress in significant others abroad is a very prevalent stressor, and concern for significant others in the home country is thus a factor of importance for mental health in refugee populations. According to the longitudinal analysis, DHEA-s and related steroid molecules could be associated with pathophysiology in PTSD.

Recent life events are important for present health status of refugees and interact with previous traumatic experiences.

Key words: Refugee, posttraumatic stress disorder, life change event, dehydroepiandrosterone sulphate, prolactin, thyroid hormones, cortisol, questionnaires, emotions
List of publications

This thesis is based on the following papers, which will be referred to in the text by their Roman numerals.


Paper II: Søndergaard, HP, Hansson L-O, Theorell T: Elevated blood levels of DHEA-s vary with symptom load in posttraumatic stress disorder; findings from a longitudinal study of refugees in Sweden. Accepted for publication Psychotherapy and Psychosomatics.

Paper III. Søndergaard HP, Theorell T: A longitudinal study of hormonal reactions accompanying life events in recently resettled refugees. Accepted for publication Psychotherapy and Psychosomatics.

Paper IV: Søndergaard HP, Ekblad S, Theorell T: Screening for Post-traumatic Stress Disorder among Refugees. Accepted for publication Nordic J Psychiatry


The papers were reprinted with permission from the publishers Lippincott Williams and Wilkins, Inc.; S. Karger AG; Taylor & Francis
List of contents

Abbreviations ................................................................................................................................................. 3
Background .......................................................................................................................................................... 1
Prologue............................................................................................................................................................. 1
Refugees in the world and in Sweden ................................................................................................................ 1
The asylum process ............................................................................................................................................ 2
The recent history and peoples of Iraq............................................................................................................. 3
The introduction of refugees ............................................................................................................................ 4
Assimilation, integration, or marginalisation? ................................................................................................. 4
Extreme trauma and sequelae; posttraumatic stress disorder and alexithymia .............................................. 6
Neurobiological science and PTSD ................................................................................................................ 8
Alexithymia ....................................................................................................................................................... 9
Life event research .......................................................................................................................................... 9
"Stress hormones" .......................................................................................................................................... 12
Cortisol ........................................................................................................................................................... 12
Thyroxine ......................................................................................................................................................... 13
Prolactin .......................................................................................................................................................... 13
DHEA-s ......................................................................................................................................................... 13
Longitudinal studies in refugee populations ................................................................................................. 14
Table 1. Longitudinal psychosocial studies of refugees with repeated measurements .................................. 15
Aims of the study .............................................................................................................................................. 20
Method .......................................................................................................................................................... 20
Setting .............................................................................................................................................................. 20
Design .............................................................................................................................................................. 20
Subjects ........................................................................................................................................................... 20
Materials and instruments ............................................................................................................................. 21
Selection and diagnostic procedure .............................................................................................................. 22
Paper I: ......................................................................................................................................................... 23
Paper II: ......................................................................................................................................................... 23
Paper III: ......................................................................................................................................................... 24
Paper IV: ......................................................................................................................................................... 24
Paper V: ......................................................................................................................................................... 25
Ethical considerations ..................................................................................................................................... 26
Results ............................................................................................................................................................ 27
Background data .............................................................................................................................................. 27
Demographics ............................................................................................................................................... 27
Trauma history according to the HTQ, and PTSD diagnosis ......................................................................... 27
Table A: Findings from the Harvard Trauma Questionnaire ....................................................................... 28
Non-participation ........................................................................................................................................ 29
Drop-out (attrition) ...................................................................................................................................... 29
Self-rating score and hormone levels ............................................................................................................ 29
Treatment .................................................................................................................................................... 30
Five cases ....................................................................................................................................................... 30
Paper I: ......................................................................................................................................................... 32
Paper II: ......................................................................................................................................................... 33
Paper III: ......................................................................................................................................................... 34
Paper IV: ......................................................................................................................................................... 35
Paper V: ......................................................................................................................................................... 35
Discussion ...................................................................................................................................................... 36
Major findings ............................................................................................................................................... 36
Important life events ..................................................................................................................................... 37
Differential reaction patterns between PTSD and non-PTSD .................................................................... 39
Dehydroepiandrosterone and PTSD ............................................................................................................ 41
Screening for PTSD ....................................................................................................................................... 42
Alexithymia ..................................................................................................................................................... 43
Implications .................................................................................................................................................... 44
Limitations ..................................................................................................................................................... 46
Methodological problems and possible solutions ......................................................................................... 47
Recruiting participants .................................................................................................................................. 47
Measurement of life events in special groups ............................................................................................... 47

**Abbreviations**

ANOVA: Analysis of Variance  
ANCOVA: Analysis of Covariance  
CRF: Corticotrophin releasing factor  
CSF: Cerebrospinal fluid  
DHEA-s: Dehydroepiandrosterone sulphate  
GABA: Gamma-Amino-Butyric Acid  
GABA$_A$-receptor: The A Receptor subtype for GABA  
HPA axis: the integrated system comprising the hypothalamic, pituitary, and adrenal system governing cortisol secretion  
HT-3 receptor: Type 3 receptor for Serotonin (Hydroxytryptamine)  
IPM: The Swedish National Institute for Psychosocial Factors and Health  
PTSD: Post-traumatic Stress Disorder  
TAS-20: Toronto Alexithymia Scale with twenty items  
T4: Thyroxine  
T3: Triiodothyronine  
rT3: Reverse triiodothyronine  
UNHCR: United Nations High Commissioner for Refugees
Background

Prologue
During the original discussions leading to this work it became clear that there was a need to study the health of refugees with regard to the effects of previous trauma as well as present living conditions. It took some time to find ways to do this; but finally we were given the opportunity to co-operate with what is now the City of Stockholm’s Integration Department. For practical reasons, we chose to focus on the largest group, which, as was to be expected, consisted of Arabic and Sorani speaking refugees from Iraq.

Refugees in the world and in Sweden
The number of refugees world-wide is high. According to the statistics of the United Nations High Commissioner for Refugees (UNCHR) [1], the number of persons of concern to UNCHR worldwide has increased steadily from 15 000 000 (1990) to 22 000 000 in 2000. About twelve million are refugees in camps or in neighbouring countries, one million are asylum seekers in the Western world, and at least eight millions are internally displaced persons, which means that they lack the protection of international law.
Most refugees live in neighbouring countries and refugee camps. Many refugees are received in third countries and subsequently gain permission to remain permanently. Among the latter group of refugees accepted in third countries, a minority is granted asylum as political refugees, which gives certain rights. More commonly, they are seen as ‘de facto’ refugees, or are granted asylum for humanitarian reasons [2].
The number of foreign-born subjects in Sweden Dec. 31st, 2000 was 1 003 798, which is 11.3 per cent of the total population. A total number of 731 028 subjects were granted residency status during 1980-2000. Of these, 275 109 belonged to various legally defined refugee groups, while 354 032 were classified as relatives of these subjects.
On the other hand, during this period only 8 175 subjects obtained residency status as labour immigrants. Further, the number of guest students was 30 084, 17 163 children were adopted and 46 465 immigrants from other European countries with equal rights on the labour market entered Sweden.
Thus most of the immigration to Sweden during the past two decades is explained by refugee waves.
Of the total number (9045) of subjects granted residency during the year 2000 within the refugee regulations, 594 were Africans, the majority from Somalia, 144 were from South
America, 4,904 were from Asia, mostly Iraqi refugees, and 3,253 were Europeans with the largest group coming from former Yugoslavia.

The asylum process
The legal process by which a subject may eventually obtain residency in Sweden under the Immigration Act differs depending on the circumstances [3]. As mentioned earlier, the number of labour immigrants is small. Refugees and their first-rank relatives may belong to different groups from a legal point of view.

One such group is quota refugees, whose residency status has been decided beforehand after negotiations between the UNHCR and the national governments.

The normal process, however, is that a refugee applies for asylum, and that such an application is processed by the Migration Board. If an application is rejected, there is a possibility to appeal the decision to the Aliens Appeal Board, at this stage the applicant has the right to legal assistance. The mean time for processing an application during 1999, the most recent year with complete statistics, was 283 days in the cases where permission was granted, and 440 days in cases that were taken under consideration but finally rejected [4].

During 2001, 6,571 out of 12,782 applications (51.4%) were rejected, and of these an unknown number were appealed. In the annual report of the Aliens’ Appeal Board [5] the frequency of consent – a change of a decision of rejection - is said to be 16-19% depending on the category. The mean time for processing the appeal case is 211 days. The mean acceptance rate of about 50% conceals differences; in reality, asylum applicants from most countries have a high rejection rate, whereas a few countries show a high acceptance rate.

During the year 2000 and in preceding years Iraqi citizens had a high acceptance rate; according to the practice of the immigration authorities, Iraq was considered an unsafe country.

The reasons for, or legal categories of granted residency status, are the following (in parentheses; percentage for the year 2001): 'Refugees' (4%), 'Quota refugees' (14%), 'Humanitarian grounds' (72%), and 'Others in need of protection' (10%).

Subjects who have obtained residency status have the right to apply for family reunion; i.e. residency status for their spouse and children under 18 years of age. This process is often as time-consuming as the asylum application itself. Such an application process starts with an interview at a Swedish embassy, often in a third country when it is impossible or unsafe to do so in the home country. The waiting period before the interview is often 3-6 months, and the time for processing the application is about the same. Regarding this process, no statistics
exist [4]. In consequence, many resettled refugees have their nuclear family in an unsafe or financially strained situation for an extended period of time.

**The recent history and peoples of Iraq**

The history of Iraq during the past decades has been chaotic, due to the political situation [6]. The country is strategically situated, has vast resources of oil, and has been seen as a key country for political stability in the region. The dictatorship of Saddam Hussein has an extensive record of very severe human rights violations. A war raged between Iraq and Iran 1980-86. After the invasion of Kuwait 1990-1, massive air-strikes were launched against the country with severe consequences for the infrastructure; followed by an 'intifada', a rebellion against the regime mostly effected by the population in the south. This uprising was crushed severely.

Iraq has numerous population groups that are distinguished on the basis of their religion, language or culture. Often, specific groups have been put under severe pressure by the regime, used as scapegoats or deprived of their economic resources.

First and foremost, the Kurds in Northern Iraq have a long history of tensions in the relationship to Baghdad. In 1983, 8000 men and boys of a Kurdish clan were rounded up by the army and almost certainly killed. The most well-known crisis was the attack on Halabja 1988, where 4000 people were killed with chemical weapons. This is only one episode of the operation named al-Anfal (The spoils of war, as the operation was named), where numerous other incidents have been reported the use of chemical weapons. According to many sources, the operation amounted to a genocide [7]. Maybe 200 000 people disappeared.

The flight of hundreds of thousands of Kurds of Northern Iraq into the mountains after the Gulf War took place because a similar retribution was anticipated [6] (pp 256-9). There have also been civil wars or prolonged periods of unrest between the main clan leaders in the North.

The main Kurdish dialect is Sorani (South Kurdic). Another Kurdish group, traditionally inhabiting the border zone next to Iran, are the Feili Kurds, with their own language Feili. A large number of Feili Kurds –Kurds that are Shia Muslims- were deported to Iran in 1980; and in the process, their belongings were confiscated by the Iraqi regime.

Among the Arabic speaking population, a number of ethnic groups – distinguishable by religion - exist. Shia Muslims make up the majority of the population, but during the existence of Iraq, those in power have predominantly been Sunni Muslims. During the regime of Saddam Hussein, a clan or structure of kinship of probably no more than 10 000 individuals
have been governing Iraq through systems of patronage. There was a small number of Sefardic Jews, but they were expelled, killed, or managed to flee during the 1967 Yom Kippur War. Several Christian groups exist, comprising about 3% of the total population. The so-called Mande Baptists, one of the oldest Christian groups -followers of John the Baptist- comprise only 20,000.

The introduction of refugees
Refugees, once they have obtained residency status, are received into the community. This phase is regulated by a specific agreement between the state and the municipalities, which regulates the financial stimuli and the co-ordination of refugee reception [8]. According to this agreement, an individual introduction plan should be established in each case. Also, cooperation should be sought between different sectors responsible for health care, school system, and so on.

The goal of refugee introduction is that the subjects are able to live a normal life in the new society, which includes among others that the individual has the means to support himself and to take an active part in Swedish community life.

According to a recent report from the Swedish National Audit Office, the aims of refugee introduction defined by the Parliament have not been attained, mostly because of a lack of cooperation between different actors [9].

Assimilation, integration, or marginalisation?
A hot topic today is the integration of refugees; in Europe this has become a major political issue, and right-wing populist parties have obtained a high number of votes in several countries by campaigning against immigration. Lack of integration is used as an argument. With regard to the entry of foreign-born immigrants into the mainstream culture and social life of the host country, a number of different terms are used. These are often of sociological origin [10]. They denote different views of what is desirable; thus the term ”integration” means that the subjects have been fully amalgamated into the host country with regard to culture, language and participation in all aspects of the society.

”Assimilation” has a slightly different meaning and can be seen as a more gradual process. ”Creolization” is a term borrowed from linguistics and is sometimes used to denote a mixture of different cultures.

”Marginalisation” is used as a term for lack if integration, or assimilation.
The term used in the medical literature - as a Medical Subjects Heading - is "acculturation"; which denotes the acquisition of culture, or cultural competence. It has another meaning however, i.e. the directed change of one culture, instead of 'incorporation', the free interchange of artefacts, customs, and beliefs.

The above-mentioned terms share the perspective of the host country. Another view, the perspective of the immigrants, is rarely voiced. In sociological literature, exclusion [10] has been used to denote the keeping of certain groups outside societal structures, such as health care, working life, etc. by way of structural conditions.

The impact of psychological trauma on the first and second generation is rarely discussed in the context of integration, assimilation, or marginalisation in the sociological or anthropological literature on immigrants and ethnic minorities.

On the other hand, there exists a medical and psychological literature about refugees, immigrants, or cultures and populations outside the Western part of the world. A traditional view is exemplified by transcultural psychiatry, which often focuses upon ways in which culture – such as folk belief systems, religions, or traditions - can influence the expression of psychiatric or psychosomatic illness [11]. In social psychiatry, demographic factors are studied as predictors of illness.

Since the introduction of post-traumatic stress disorder (PTSD) to the diagnostic systems, and since wars, repression, and political violence have been recognised as decisive factors in refugee health, a large number of publications concern PTSD among refugees. However, the criticism has been made that knowledge regarding PTSD is sometimes wrongly used in situations where subjective meaning, cultural coping strategies, and social, political or existential context are disregarded [12] [13]. In this way, the diagnosis of PTSD can become a stigma instead of a meaningful diagnosis. Also, PTSD has been regarded as a "political" diagnosis with no true medical meaning [14], while others have stressed that clinical observations of war trauma sequelae have rapidly been forgotten after each war [15].

The possible role of PTSD as an obstacle of integration is virtually absent in the sociological literature on integration as well as in the general political discourse, possibly due to ignorance, or perhaps because of the fear of stigmatisation or "medicalisation" of specific groups.
It is undisputed that severe psychological trauma has adverse health effects in a high proportion of those exposed to it. Most refugees have experienced a series of such events, either first-hand or through threats to, or the loss or victimisation of significant others. Such events – or the imminent threat thereof - are often the reason for leaving the home country. It is often the sequelae that cannot be escaped.

A spectrum of health consequences has been described after severe traumatic events. In Norwegian survivors of an oil-rig disaster, the general, psychosomatic, and psychiatric morbidity was higher each year over the eight years follow-up period in comparison to control subjects [16]. After a landslide associated with the outbreak of a volcano, increased levels of anxiety, depression, and post-traumatic stress were found in a ‘dose-dependent manner’ [17]. After the Hanshin earthquake, Japanese internists noted an increase in pneumonias and fewer cases of acute asthma during the first months, and later on, an increased prevalence of severe stomach ulcers. Diabetes control also deteriorated in the aftermath of the earthquake [18].

An accident at the nuclear power plant situated on Three Mile Island lead to increased self-perceived distress and increased cortisol and katecholamine excretion in subjects living near the power plant, compared with three control groups [19].

Studies of subjects who experienced the Hurricane Andrew disaster in Florida showed among other things decreased natural killer cell cytotoxicity at follow-up, which was associated with damage caused by the hurricane, and with self-reported PTSD symptoms [20].

In a cohort of Armenians followed-up after an earthquake, mortality from all causes and from heart disease peaked 6 months after the disaster. A nested case-control study from this large cohort showed an association between loss of family members or material possessions, and risk of developing heart disease, hypertension, diabetes mellitus, and arthritis [21]. A number of other studies support increased specific somatic morbidity after severe psychological trauma [22-24].

A number of trauma-specific psychiatric disorders have been described during the history of psychiatry [25]. ‘Hysteria’, which today is termed dissociative disorders, was considered by Pierre Janet to be related to ‘traumatic reminiscences’. After the First World War, publications appeared concerning ”shell shock”, then considered to be caused by the pressure waves from detonations. Freud changed his opinion regarding the association of traumatic experiences and ‘hysteria’ several times [26]. His pupil Kardiner [25] was the first to describe what is to-day considered as core features of the post-traumatic stress disorder, namely severe...
sleep disorder with disturbed dreaming, and a number of other signs of increased arousal. Horowitz’ observations of the cycle of intrusion/denial and numbing in subjects after severe traumatic experiences [27], along with Kardiner’s observations of increased arousal, became incorporated into the diagnostic criteria for posttraumatic stress disorder (PTSD) in DSM-III [28]. Further, a number of overlapping trauma-related diagnoses are presently used by clinicians, such as DES (disorders of extreme stress)[29], or complex PTSD [30, 31]. This specific disorder is considered by some to be caused by excessive long-term on-going traumatisation during different maturation phases [30-35]. Or, expressed more plainly, sometimes PTSD is an acute disorder that is easy to treat or might heal spontaneously under favourable conditions, and sometimes it is chronic. In the latter case it is often associated with negative childhood experiences or cumulative trauma [36]. It is also possible that posttraumatic states might be incorporated in the character structure in such a way that PTSD is no longer the presenting issue [37, 38]. While these concepts make good sense to clinicians working with an array of traumatised populations, depression and PTSD are the most commonly diagnosed conditions in refugee populations [39-41].

Depression that is co-morbid with PTSD has been regarded as a specific clinical form [42, 43]. It has been discussed whether symptom overlap between PTSD and depression – notably anhedonia, disordered sleep, and concentration problems - could explain the apparent high co-morbidity; but this does not seem to be the case [44]. Co-morbid depression in subjects with PTSD has also been regarded as more difficult to treat than uncomplicated depression [45, 46].

The longitudinal course of PTSD has been studied in different groups. Various cohort studies suggest that chronic cases seldom enjoy permanent remission [47-50]. Even when PTSD may no longer be diagnosable, survivors may lead restricted lives [51]. The prevalence of PTSD in refugee groups varies between different groups. One of the lowest prevalence rates reported in the literature is 10 % [39], but in most studies it is ”disturbingly high”[52-57] [58-65], in the words of one author. Thulesius and Håkansson found a prevalence of 18-33 % in Bosnian refugees in Sweden, compared with 0.3-1 % in primary care visitors [66]. While it is established that PTSD is more prevalent in refugee populations, this has not necessarily made an impact on clinicians who treat refugee patients. In a diagnostic study of foreign-born patients at an outpatient clinic the prevalence of PTSD was 40%; but in a control sample of foreign-born patients from the same facility, this diagnosis was non-existent using routine diagnostic procedures [67, 68].
The functional impairment of PTSD sufferers is rarely described in the literature [69]. In order to fulfil the criteria for PTSD it is required that the individual should exhibit clinically significant distress or impairment in social, occupational, or other important areas of functioning. Several studies of different populations have shown cognitive problems in PTSD, affecting memory and visuo-spatial functions [70-81].

Neurobiological science and PTSD
The biological research on PTSD has been extensive since the diagnosis was established. It is not the intention to review the research literature on PTSD. Only hypotheses or findings that are relevant for the interpretation of findings in this project will be mentioned briefly. PTSD has been characterised as a multi-system disorder involving several neuroendocrine systems, which implies that medication is of limited effect in PTSD compared with depression, panic, etc. The systems that are best studied are the HPA-axis, and adrenomedullary system. Excretion of catecholamines is increased, and cortisol excretion is lowered. The combination of these findings has been considered to give PTSD a unique neuroendocrine profile compared with other diagnostic groups [82-84]. The HPA axis has showed changes on all levels. Accordingly, increased levels of corticotrophin releasing factor (CRF) in cerebrospinal fluid [85], decreased cortisol suppression at dexamethasone test [86-95], and increased levels of cortisol binding globulin [96] have been shown in PTSD. This has created an impression of a “static” picture of low cortisol in PTSD. It has, however, been shown that the cortisol regulation is highly dynamic in PTSD [97].

Other neuroendocrine systems have also been shown to be abnormally regulated in PTSD, such as the opioid [98-109], and immune systems [20, 24, 110-112]. Findings of diminished hippocampal volume in chronic PTSD have been published [113]. The findings have varied, and it is still disputed whether this finding is caused by PTSD or is preexistent and might indeed be a vulnerability factor in the development of PTSD. The matter is complicated since most of this research has been carried out on Vietnam veterans, with possibilities of confounding by post-war factors. Only a few longitudinal studies of hippocampal volume after psychological trauma have been carried out in accident victims and maltreatment-related PTSD in children [114, 115]. These studies, which were small, did not show any difference at baseline, but on the other hand there was neither any difference in hippocampal volume after 6 months in ten accident victims who developed PTSD nor after 2 years in nine children with maltreatment-related PTSD. It is thus concluded from both of these studies that a possible reduction in hippocampal volume may be a feature of long-
standing PTSD. The topic of possible changes in hippocampal volume is highly interesting since it has been found in chronic PTSD, and because hippocampal dysfunction could explain many of the cognitive problems and the clinical symptoms of PTSD subjects such as failure of explicit memory function [35, 116-118].

Alexithymia
The concept of alexithymia has been used to denote specific traits in drug abusers, subjects with certain psychosomatic disorders, and subjects with severe psychological traumata [119]. Alexithymia has been conceptualised in various ways. A related concept is pensée opératoire which has been observed in certain psychosomatic patients by Marty and de M’Uzan [120]. Sifneos defined alexithymia as a psychic dysfunction in which the expression of symbolic thinking and fantasies is reduced, somatisation is common, feelings are poorly communicated, empathy is impaired and intimate interpersonal relations are difficult to maintain [121]. Bagby et al. have developed a self-rating scale for alexithymia which consists of 20 items (TAS-20) [122]. The scale has been found in many studies, even cross-culturally, to consist of 3 factors, inability to identify affect, inability to describe affects, and operational thinking. Various studies of alexithymia have pointed to neurophysiological differences in alexithymic subjects [123, 124]. It has also been shown that subjects with PTSD show a higher prevalence of alexithymia, similar results being found using various methods [125-130] [131-134].

Life event research
One of the aims of the present work was to study how frequently occurring life events interact with previous health in affecting health changes in a group of refugees. The study of life events as predictors of disease has a long tradition in psychosomatic medicine and psychiatry. Adolph Meyer introduced life charts in the clinical assessment of psychiatric and psychosomatic patients [135]. This developed further into methods of describing, quantifying, and understanding the means whereby life events could interact with health. Life events have been studied as predictors of an array of diseases, ranging from illness in general to mental disorders [136-138], cardiovascular disorders [139, 140], immunological function [111, 112, 141-143], and cancer [144-146]. The methodological issues in this field of research are complicated since life events interact with genetic predispositions, social context, and coping style [147]. Confounding is possible in a number of ways; for instance subjects with an illness may attribute more weight to recent life events than control subjects.
Life change events can differ with regard to type; thus bereavement, loss, work stress, or traumatic stressors are not necessarily equal with regard to effects on health. Even the absence of events can be perceived as stressful [148]. Events perceived as positive may also act as stressors in certain persons [149] with low self-esteem. In the literature, a distinction is made between life events, daily “hassles”, and demanding life conditions.

One way of conceptualising the possible effect of life events - in the widest sense - on health is to use the concept of "allostatic load" [150]. Allostatic load – the 'deforming impact' has also been used in relation to excessive adaptation. Disturbed allostasis is common to various biological pathways leading from stress to disease.

In research on stressors and life events, many methods have been applied. The most obvious one is to interview subjects about their experiences and reactions. Such a method is time-consuming. The results of a few interviews, especially if they are done retrospectively, may be difficult to interpret; issues such as individual vulnerability, variance in reports, such as a tendency to over-report, or – the opposite - denial of threatening events, and various other factors may bias the interpretation. Brown et al. [151] maintain that such interviews should be strictly operationalised and that independent informers should confirm the occurrence of events. According to the sociological view, the event itself, and the contextual factors determine the outcome of the event.

Another method of recording life events is to use standardised checklists. Here again interpretation is subject to variability; e.g. an event on the list may have different implications for different subjects. Two views have been advanced. According to the one view [152], subjects tend to rate the impact of specified events similarly on average. Such studies have shown remarkable stability over time concerning impact ratings of specified life events in large groups. On the other hand, Dohrenwend et al [153] have raised the issue of variance within categories of events.

The most influential method in life event research has been the Social Readjustment Rating Scale (SRRS) [154] [155]. The instrument is based on the assumption that the adaptation required in order for the individual to be able to cope with an event is the important factor in deciding how stressful the event is, a concept similar to ‘allostatic load’. On the basis of a checklist of events, studies were carried out that seemed to point to the following implications; 1) the total ‘load’ of life events is decisive for the health consequences of life events. This load – of adaptation requirements - is common to both positive and negative events, at least theoretically. 2) The estimated impact of life events on a list, when these events are rated for impact by many subjects, shows a high correlation among subjects. The
implication of this is that people share the capacity to appreciate the stress involved in life events, and further that, in large samples, individual differences in susceptibility or sensitivity tend to be less important. Therefore, life change units can be calculated and explored as predictors of illness.

In the same book, Rahe [156] presents a model of the pathway between stress and illness. In this model, the following factors are discussed; past experience, psychological defences, physiological reactions, coping, and illness behaviour. The physiological reactions are ‘the black box’ wherein reactions that will lead to later disease might or might not happen.

In this classical book, Brown [157] presents his model and his criticism of the above-mentioned models. First of all, he points to validity issues. He lists three such issues. The first is that an illness that has developed after an event can retrospectively bias the subject or the researcher. This problem is eliminated by a prospective design.

The second source of validity problems, named indirect contamination, is when a factor in the subject, such as anxiety, can lead to both overreporting of certain events and subsequent illness, thus causing a spurious association. The third source of validity problems is when both the event and the illness are caused by another factor, i.e. the notion of confounding. Brown seems to feel that self-report approaches lead to so many sources of error that other methods are preferable, such as a rating of what he terms ‘contextual threat’ as a way of measuring and understanding social factors of importance for health outcome. For example, even if marriage might be a happy event to most people, it can also entail considerable stress and in specific cases could be a threatening event, e.g. if the marriage is arranged or forced. Another such example would be childbirth where external contextual factors could differ a great deal and be decisive for the subject’s perception of the event.

Without attempting to discuss the above-mentioned views it seems that size – the number of participants - and precise aim of a given study would influence the weight of the arguments posed above.

In the same volume, Antonovsky [158] discusses ‘resistance resources’. His research lies behind the widely used questionnaire ‘Sense of Coherence’, which will not be dealt with further here.

Cross-sectional studies of reported life events are plagued by retrospective recall bias; on the one hand, reports of events of daily life will often be unreliable with regard to time sequence. On the other hand, severe traumatic events in adults are unlikely to be forgotten [159]; although even for such events, variance in reporting may arise because of the impact on the
brain of severe traumatic events. In rare cases, amnesia will result. More often fluctuations of recall arise, especially for events that are regarded as peripheral by the subjects. Studies of the impact of life events on health should ideally be longitudinal, i.e. the outcome under consideration should be measured before and after the event, and comparisons should be carried out between individuals with and without the event.

Measurements of the effect of life events could be subjective ratings of impact, or differences on self-rating scales such as rating scales for depression or other symptoms under consideration. The interpretation of self-rating scales or subjective ratings of impact could also be subject to discussion since it could be argued that social desirability [160, 161] or personality features could bias the responses. If a longitudinal study involved support or assistance to the participants, a possibility of participants trying to impress the study leaders through their self-ratings could also exist with exaggerated self-rating scores as a result. On the other hand, cultural or characterological bias against showing distress could work in the other direction.

A special strategy that has been applied in longitudinal life event research is the measurement of hormonal reactions to stressors [162-165]; this will confirm whether specific events make a psychophysiological impression on the subjects studied.

"Stress hormones"
The above-mentioned strategy of measuring stress responses through assessment of hormonal changes in blood or otherwise is based on the knowledge of the physiology of the stress response, as described by Cannon and Selye [166]. Changes in blood or saliva concentration, as well as excretion of certain hormones, have been shown to be associated with stressful life events. Above all, catecholamines react to stress. These reactions are short-lived. Other hormones react slowly and are therefore more feasible to study as markers of psychosocial stress in longitudinal studies.

Cortisol
Cortisol is the most widely studied hormone in stress research. The interest in cortisol originated in Selye’s studies of stress in animals; after exposure to an array of harmful events, cortisol could be shown to be involved in the final common pathway of the stress response. The physiological role of cortisol is energy mobilisation. Cortisol facilitates some of the crucial physiological processes in acute “energy mobilisation” situations. The cortisol response is an integral part of the HPA-axis activity. Cortisol – either in serum or in saliva -
has been one of the most commonly used biological markers of stress in biopsychosocial research [167, 168] and has a long tradition.

**Thyroxine**
Thyroid hormones are also known to be involved in stress responses. Central mechanisms have been shown in animal models [169]. In the periphery, cortisol or catecholamines have been shown to reduce the conversion of T4 to T3 – the active metabolite [168, 169]. Thus T4 levels are assumed to mirror long-term stress. In some studies, the rates between thyroxine binding protein in plasma, free and total fractions of T3, reverse T3, and T4 have been calculated. In the present study, only free T4 and free T3 were analysed.

It has also been discussed whether in fact thyrotoxicosis can be caused by stressful life events [170]. The number of longitudinal studies of life events or psychosocial stressors in which thyroxine has been measured as a marker of stress is, however, limited [168].

T3 has also been found in increased levels in World War II veterans with PTSD. This has led to a hypothesis that these higher levels might be a factor underlying chronicity of PTSD [171].

**Prolactin**
Different forms of stress are known to interact with prolactin secretion [172] [166].

Circulatory levels of prolactin are controlled by pituitary dopamine, which acts as the common final pathway of a large number of stimulatory or inhibitory modulators. It has turned out that the prolactin response varies between different types of stressors. It has been suggested that decreased plasma prolactin level is associated with active coping, while increased levels are associated with reactions involving helplessness or possibly apathy [173].

**DHEA-s**
Dehydroepiandrosterone is an anabolic steroid that has been examined in a number of recent studies of psychosocial factors [174-177], because serum levels have been assumed to mirror good health. It decreases with age, and is lower in smokers and in patients with a number of somatic disease states [178-185].

A new development in the history of steroid biology was initiated with Majewska’s discovery 1986 [186] that DHEA-s existed not only in increased amounts in the mammalian brain, but that DHEA-s also showed an action on the GABA<sub>A</sub>-receptor. This is a so-called non-genomic effect; generally steroid hormones have been thought to exert their effect only through the general mechanism of activation of genes. Further research has shown that DHEA-s could be
produced in the brain in response to stress, namely in glial tissues, by independent pathways [187-190]. Since then, a new class of steroid molecules has been proposed, the neurosteroids, which have turned out to potentially influence at least three identified receptor systems, apart from the above-mentioned, the glutamate receptor family, and the 5-HT₃ receptor. Apart from DHEA-s, pregnenolone and the 3α-reduced metabolites of progesterone and deoxicorticosterone; 3α, 5α-THP, and 3α, 5α-THDOC, are considered as ‘neurosteroids’ by certain authors [191]. DHEA-s has been considered as ‘neuroprotective’ in some models of oxidative stress [192] [193].

Most studies of neurosteroids have focused on the possibilities of influencing the ageing process or Alzheimer’s disease. In one study of PTSD, blood levels of DHEA-s were increased, compared with control subjects [194]. In another study baseline levels of DHEA-s as well as levels after a metyrapone test were reduced in PTSD compared with control subjects [96].

**Longitudinal studies in refugee populations**

Considering that there is a high prevalence of previous traumatic events in refugee populations and accordingly also a higher prevalence of PTSD, the question arises as to how this influences adaptation as well as subsequent development of health after resettlement in the new country.

Numerous studies have analysed the life situation of refugees. Most of these are cross-sectional.

One such study in Sweden concludes “furthermore, a low sense of coherence, poor acculturation, poor sense of control, and economic difficulties in exile seemed to be stronger risk factors for psychosocial distress in this group than exposure to violence before migration” [195]. No assessment of PTSD was made in this study. In a similar vein, Hondius reports that refugees attribute 40% of their present health complaints to on-going life stressors [196]. Gorst-Unsworth found that social factors in exile, especially affective support, proved important in determining the severity of both posttraumatic stress disorder and depression [197]. While it is obvious that such present factors should influence health, it is a methodological question as to how strong inferences may be made from cross-sectional studies. For instance ”attribution”, the individual perception of causes, is not equal to causation, but might as well be explained by psychological defence factors such as projection. Such conclusions are theoretically more convincing if they are based upon longitudinal
studies and preferably upon studies that include relevant intervening factors. It might be difficult to study refugees longitudinally, but attempts have been made. Table 1 lists longitudinal studies of psychological health in refugees, retrieved from Medline May 2002. It can be seen that most of the studies explore predictors, either in the form of retrospective data, or prospectively with assessments at baseline. In some studies, measures of intervening factors between baseline assessment and follow-up are registered. These are sometimes recorded retrospectively; i.e. a new interview is performed at follow-up, which was not performed at baseline. Other studies have analysed demographic changes in such factors as household income, marital status, etc. In a few studies there have been assessments both of the presence of symptoms of PTSD at baseline, and intervening variables. In the studies listed in Table 1, twelve can be identified where intervening variables have been measured to any degree.

**Table 1. Longitudinal psychosocial studies of refugees with repeated measurements**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Number in study</th>
<th>Objective</th>
<th>Time perspective</th>
<th>Measurements</th>
<th>Outcome</th>
<th>Intervening variables (Life events or social factors)</th>
<th>Conclusions and comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almqvist, Brandell-Forsberg</td>
<td>29/50 Iranian pre-school children</td>
<td>Follow-up of PTSD</td>
<td>2 years</td>
<td>Parent interviews, standardised assessment of child</td>
<td>Stability of symptoms, 23% PTSD at follow-up</td>
<td>Parents unaware of child's trauma</td>
<td></td>
</tr>
<tr>
<td>Bauer, Priebe</td>
<td>122 East German refugees to West Germany who experienced crisis</td>
<td>Psychopathology, adjustment and symptoms</td>
<td>Six months</td>
<td>Interview</td>
<td>Prevalence of anxious-depressive-vegetative symptoms</td>
<td>Crisis intervention</td>
<td>Good long-term adjustment</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Participants</td>
<td>Measures</td>
<td>Duration</td>
<td>Findings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>--------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beiser 1989, 1993 [199, 200]</td>
<td>1348 south-east Asian refugees (Chinese/Vietnamese)</td>
<td>Effect of time perspective and social resources</td>
<td>Depression scale developed for study</td>
<td>2 years</td>
<td>Chinese less depressed (support from pre-existing Chinese group)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drozdek 1997 [201]</td>
<td>50 Bosnian refugees</td>
<td>Follow-up</td>
<td>Watson questionnaire; retrospective interview about psychosocial factors</td>
<td>3 years</td>
<td>Short-term treatment effect but 83% persistence of PTSD diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ekblad 2000[202]</td>
<td>91/343 evacuees from Kosovo</td>
<td>Study life events and PTSD</td>
<td>Structured interview HTQ Life event questionnaire</td>
<td>6 months (the majority repatriated before 6 months)</td>
<td>PTSD symptoms unchanged, On-going trauma and fear of repatriation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herlihy et al. 2002 [159]</td>
<td>39 refugees from Bosnia and Kosovo</td>
<td>Study fluctuations of recall</td>
<td>Repeated interviews, Assessment for PTSD and depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td>Sample</td>
<td>Follow-up</td>
<td>Age</td>
<td>Diagnosis</td>
<td>Study Design</td>
<td>Prevalence</td>
<td>Causes</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
<td>-----------</td>
<td>-----</td>
<td>-----------</td>
<td>--------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>Hjern, Angel 2000 [204]</td>
<td>49 (63) children</td>
<td>Follow-up of mental health</td>
<td>6-7 years</td>
<td>Parent and teacher interviews</td>
<td>22% (previously 47%) behavioural indicators of ill-health</td>
<td>Stress in family sphere</td>
<td>18% deviant in class-room setting</td>
</tr>
<tr>
<td>Kinzie 1989 [205]</td>
<td>27 Cambodian adolescents traumatised age 8-12</td>
<td>PTSD</td>
<td>3 year</td>
<td>Structured interview and self-rating</td>
<td>PTSD 48% and negative adjustment Depression 41%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ladson Hinton et al. 1997 [207]</td>
<td>114/209 Vietnamese and Chinese refugees</td>
<td>Predictors of depression</td>
<td>12-18 months</td>
<td>Interview regarding traumatic events; HSCL-25 depression</td>
<td>Depression at time 1 predicts depression at time 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mollica et al. 2001 [41]</td>
<td>77.7% of 534 adults in refugee camps</td>
<td>Development of found association between health and mass violence</td>
<td>3 years</td>
<td>HTQ HSCL-25 MOSSF-20 Cause of death</td>
<td>45% persistence of PTSD and/or depression. 16% new cases.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Migration: Healthier and better educated more likely to emigrate. Social isolation associated with mortality.
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Description</th>
<th>Follow-up Time Frame</th>
<th>Methodology</th>
<th>Stability of PTSD Symptoms</th>
<th>Resettlement Stressors</th>
<th>Validity of Screening Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nygard, Malteryd 1995 [62]</td>
<td>150 Bosnian refugees</td>
<td>Follow-up of PTSD 1 year</td>
<td>Checklist</td>
<td>Stability of symptoms: 82% and 60% PTSD in women and men, respectively</td>
<td>18% of PTSD cases delayed onset (&gt;5 years after exposure).</td>
<td></td>
</tr>
<tr>
<td>Stein et al. 1999 [209]</td>
<td>147/357 displaced Bosnian children in refugee camps</td>
<td>Follow-up of mental health Eight months</td>
<td>Self-rating questionnaires</td>
<td>Unchanged PTSD symptom levels</td>
<td>Greater symptom reduction in boys?</td>
<td></td>
</tr>
<tr>
<td>Weine et al. 1998 [210]</td>
<td>34 Bosnian refugees</td>
<td>Follow-up of PTSD 1 year</td>
<td>Standardised assessment</td>
<td>Substantial level of symptoms after 1 year</td>
<td>60% persistence of PTSD diagnostic status</td>
<td></td>
</tr>
<tr>
<td>Westermeyer, Uecker 1997 [211]</td>
<td>102 Hmong refugees</td>
<td>Demographic predictors of hostility 9 years</td>
<td>SCL-90 Interview about psychosocial factors</td>
<td>Marginality and loss of control predict hostility at follow-up</td>
<td>5-year recall of post-migration factors; education, financial problems, etc.</td>
<td>Lacks PTSD assessment at baseline</td>
</tr>
<tr>
<td>Westermeyer J, Her C 1996 [212]</td>
<td>idem</td>
<td>Predictors of English fluency 8 years</td>
<td>Self-assessment of fluency and formal test</td>
<td>Younger age, male gender, previous education, work experience predictor English fluency</td>
<td>Assessment of education, work and welfare utilisation</td>
<td>Early post-migration experiences predictors</td>
</tr>
</tbody>
</table>
From table 1 it can be seen that even in longitudinal studies, life events or PTSD diagnostic status have often been studied retrospectively. In a review [215], summarising studies published before October, 2001, Hollifield et al. discuss adopting methodologies from life events research to better define how and what events are weighted as traumatic and predictive of poor health. The majority of the studies focus on predictors; which is interesting only to extent that they are used for intervention purposes.
**Aims of the study**

The study was initiated in order to study refugees during the first period after resettlement. The prevalence of PTSD, screening methods for the lay identification of individuals at risk for a diagnosis of PTSD, and life events that were important for health at this early stage during the integration process were of interest. Further, the connection between psychological trauma, PTSD, and alexithymia was investigated.

**Method**

**Setting**
The study was carried out in co-operation with the Centre for Torture- and Trauma Survivors, the Swedish National Institute for Psychosocial Factors and Health, and the City of Stockholm department responsible for refugee reception. This department belonged to the administration dealing with educational matters. During the study it changed its name to the Department of Integration. Participants eligible for the study were invited by the responsible agency to an information meeting by post. At the meeting, participants were informed about the study. It was repeated that participation was voluntary, and that assistance would be offered if health care needs were detected through the screening procedure. After the meeting, participants who volunteered were given time for blood tests, a screening interview, and the questionnaires were distributed subsequently. Follow-up assessments, blood tests, and diagnostic interviews were carried out at the Centre for Torture and Trauma Survivors. Data collection started in October 1997 and was concluded April 2000.

**Design**
The study was planned and implemented as a follow-up study with baseline assessment and three follow-ups, carried out at three-monthly intervals. The follow-ups and baseline assessment included registration of self-recorded life events, self-rated health measurements, and collection of blood samples. A research assistant scheduled the follow-ups, contacted the participants, and collected blood samples between 8 and 10 a.m. Questionnaires were subsequently completed.

**Subjects**
Subjects were eligible for participation if they
- were recently resettled (< 3 months)
belonged to the largest language groups, i.e. Arabic or Sorani.  
were in the age range 18-48 years, with regard to the feasibility of hormone analysis.  
had at least five years of schooling, and were able to complete questionnaires in their own language.  
Every fourth subject fulfilling these criteria was invited to an information meeting, in which they were given written information about the study and informed that participation was voluntary.

Materials and instruments  
The principle guiding the choice of questionnaires was that the instruments, where possible, should have proven validity and reliability in previous transcultural research.  
The following instruments were used in the subsequent papers;  
'The Health Leaflet' (HL) [216], a lay screening questionnaire with binary responses performed by a social worker at the refugee reception agency. The maximum HL score is 15 points; subjects with a score above 4 points were clinically assessed.  
Emotion Protocol [217], a list of emotions developed at IPM; the presence of 24 emotions were rated in terms of 'clearly', 'somewhat', or 'not at all'.  
Toronto Alexithymia Scale (TAS-20) [218].  
General Health Questionnaire with 28 items (GHQ-28) [219].  
Hopkins Symptom Checklist with 25 items (HSCL-25) [220].  
"Life event questionnaire for refugees" [221], developed for this study from an 18-item checklist [222] based on the Holmes-Rahe Life event checklist [223]. The life event checklist consisted of an open-ended section ("Please mention the events during the last three months that were important") with space for a maximum of 10 events as well as 60 checklist items, derived from a pilot study of seven patients in treatment, and interviews with professionals. A module was attached containing questions about how the questions asked were received.  
Harvard Trauma Questionnaire (HTQ) [224].  
Impact of Event Scale (IES-22) [225].  
In self-rating questionnaires generally, a maximum of two missing values, or a maximum of ten per cent, are replaced with mean values of the rest. In Paper I, only cases with complete data were analysed.  
Questionnaires were translated and back translated by independent translators according to the method of Brislin [226].
Blood samples were cooled on ice immediately, centrifuged, and stored at –70 centigrades until analysis. Cortisol and T4 was analysed by AUTODELFIA assay (Wallac Oy), intra-assay variability < 3.6 % and < 2 %, respectively. Prolactin was analysed by Immulite assay (Diagnostic Products Corporation 1993); intra-assay variability 6.4-9.6 %. DHEA-s was analysed by Immulite assay (Diagnostic Products Corporation), intra-assay variability 6.8-9.5 %.

Selection and diagnostic procedure
Eligibility criteria for participation in the study were established with regard to the following requirements; participants should belong to the largest language group so that only a few interpreters – accustomed to the procedures in the study - would be necessary, and their age span should be narrow enough to allow for the analysis of hormones as a measurements of ongoing stress reactions. At an early stage, it became obvious that some participants wanted the questionnaires to be in Sorani (South Kurdic). The questionnaires were thus also translated into Sorani.

The “Health Leaflet” was chosen as a screening questionnaire.

The trauma history was obtained through the HTQ, where items from a list of traumatic events common in the experience of refugees are rated according to the following categories; "experienced", "witnessed", "heard about", "no".

Depression was estimated from the HSCL-25 (cut-off 22.5) and the GHQ-28 'severe depression’ subscale (cut-off 10.5).

Apart from self-rating scales, the intention was to conduct a comprehensive psychiatric interview as well. This was changed due to feasibility problems. Accordingly, the ambition was narrowed to obtaining an exact diagnosis of PTSD. Therefore, from case number 13 onwards, the SCID interview for PTSD was replaced with CAPS, the Clinician-administered PTSD Scale for DSM-IV [227]. The version used in the present study was 9/96. CAPS, compared with SCID, assesses the presence of a given symptom through a combined rating of frequency and intensity of symptoms during the last month (Frequency either as per cent of time or: zero = never, four = daily or almost daily. Intensity: zero = no distress, four = extreme).

In the scoring of CAPS, the standard so-called rule-of-three was applied, such that at least a frequency of one, and an intensity of two, of a given symptom was required if it was to be scored as present.
Paper I:
Self-reported life event patterns and their relation to health among recently resettled Iraqi and Kurdish refugees in Sweden. (Qualitative analysis of written statements).

An experienced interpreter translated written self-reported life events in the first part of the life event questionnaire into Swedish in the presence of the author. The translation was transcribed, and the life events were coded into categories. The validation of the list of categories derived from the transcriptions was carried out in the following way; two independent raters (one of the research supervisors and one doctoral student in qualitative research) were presented with the list of categories and coded a sample of the transcript independently.

The self-rated impact of the life event categories thus derived was analysed. Since it was discovered that subjects did not distinguish clearly between ‘positive’ and ‘negative’ the numeric value was assigned. The categorised events were then ranked according to an index of prevalence x impact.

Reported events were checked in order to exclude the possibility that the same event was reported twice. Consecutive reports of the same event were eliminated by controlling lateral sources of information in two ways; by comparing open-ended and closed questions, and by checking medical records, if available. The general rule was that an event was coded primarily as having occurred unless collateral information showed that it had occurred repeatedly or that it had occurred before the initial period. The cumulative number of categories of events during the study was computed. In subjects with complete data, events were explored by means of stepwise regression in different models in order to discern the important patterns of cumulative events.

The changes in the GHQ from baseline assessment and number of occurrences of five typical events after baseline were analysed using non-parametric methods (Spearman rank correlation).

Paper II:
Elevated blood levels of DHEA-s vary with symptom load in posttraumatic stress disorder; findings from a longitudinal study of refugees in Sweden.

During the analysis of the association of life events with changes in hormones, it appeared that similar categories of events changed DHEA-s levels in opposite directions in subjects with fully developed PTSD compared with non-PTSD. Therefore the association between PTSD diagnostic status and serum DHEA-s had to be explored separately. Cross-sectional
analysis of PTSD diagnostic status, depression according to HSCL-25, and age was carried out by means of ANCOVA (analysis of variance and co-variance). In PTSD cases, longitudinal analysis of differences in DHEA-s, and differences in self-rated symptoms of PTSD and co-variate depression were carried out by means of Spearman rank correlation and ANOVA. Regression models with change in DHEA-s as dependent variable, and change in depression and PTSD symptoms were also analysed.

Paper III:
A longitudinal study of hormonal reactions accompanying life events in recently resettled refugees.

Life events and stress-responsive hormones were analysed quantitatively according to specific rules. 1) First-time occurrences of self-reported events were included if the event under consideration was not reported at baseline and was reported for the first time at any of three follow-up assessments. 2) Categorised events from responses to open-ended questions, and checklist items were analysed. 3) A requirement for analysis of particular categories of events was that at least ten cases – negative at baseline - of the event under consideration, and ten cases without the event, were present in the database. 4) In order to increase the number eligible for analysis, instances of first-time occurrences of events, and the corresponding values (hormone measurements and self-rating scores) were transferred to the follow-up with the highest incidence, if they occurred at another follow-up. 5) Effects of events on hormone levels were analysed by way of two-way ANOVA (repeated measurements) under the condition that the distributions were appropriate (Levene’s test had to be non-significant before the event). If at least five subjects with and five subjects without PTSD reported an event, three-way ANOVAs were carried out. 6) Effects of cumulative events (occurring more than once), or longer-term effects (more than three months) were analysed under the condition that the number of subjects without the event(s) and the number of subjects with either one, two, or three occurrences of the event(s) were at least ten. Again, a general linear model (repeated measurements ANOVA) was performed. Further, a possible interaction with PTSD status was explored if at least six cases with and without PTSD were found.

Paper IV:
Screening for post-traumatic stress disorder among refugees. Interview, diagnostic procedure, and statistical analysis.
The screening procedure (HL) used in the present study in order to select subjects for
diagnostic assessment, was examined by comparison with structured assessment for PTSD,
and self-rating questionnaires for PTSD (HTQ, IES-22) and depression (HSCL-25, GHQ-28
depression subscale). The comparison with PTSD according to structured diagnosis was
analysed by means of Chi-2 analysis and odds ratios for single items. The items that seemed
to discriminate best were compared with PTSD diagnostic status, and self-rated depression by
Chi-2 test. The three instruments (HL, HTQ, and IES-22) were further compared with
structured clinical diagnosis of PTSD by means of discriminant analysis.

Paper V:
Alexithymia, emotions, and PTSD, findings from a prospective study of refugees.
The following instruments and measurements were used in order to explore the relationship
between alexithymia, emotions, and PTSD; TAS-20 with three sub-scales, EP (Emotion
Protocol), Trauma exposure in the HTQ, PTSD symptoms in the IES-22, and self-rated
depression (GHQ-28 and HSCL-25).
Since reliability analysis showed different values in sub-scales of TAS-20, and the number of
items varied between sub-scales, rules were established for the replacement of missing values.
A maximum number of 2 out of 7 in sub-scale (factor) I, 1 out of 5 in sub-scale II, 2 out 8 in
subscale III, and a maximum of three items totally were replaced.
After this procedure, analysis of variance was carried out for the TAS-20 score as dependent
variable and PTSD diagnostic status as the independent. The procedure was repeated on a
sub-scale level, and with the depression score as covariate. –Also, Spearman rank correlations
were computed for TAS-20, as well as subscales, and self-rated PTSD symptoms. Structural
equation modelling (SEM) was used in order to understand the relationship between trauma,
depression, PTSD, and alexithymia. Exploratory factor analysis (Varimax, principal
components analysis) was applied in order to discern patterns of traumatisation in the HTQ
trauma subscale, and to relate factor score to alexithymia in order to examine a possible
independent pathway from traumata to alexithymia. SEM and exploratory factor analysis
were performed in subjects with complete data only (n=66).
Longitudinal associations between alexithymia (TAS) and serum hormones were examined
with Spearman rank correlations.
Emotions and PTSD diagnostic status were cross-tabulated and analysed with non-parametric
methods. Again, exploratory factor analysis was used in order to discern patterns of emotions
and a possible association with PTSD.
The EP and subscales of TAS-20 were examined by means of Spearman rank correlations.

**Ethical considerations**
In the design of the study, medical or psychological assistance was a prerequisite for the ethical acceptability of the study. This may have ameliorated the effects of some of the stressors that made an impact on the participants in the study.

Another possible effect – at least from a theoretical point of view - of the study protocol was the reactualisation of traumatic experiences and subsequent health effects.

The study was approved by the regional research ethics committee of Karolinska Institutet (reference number 96-282).
Results

Background data
The background data are reported to a varying degree in papers I-V, but much is unpublished. The interested reader can therefore find this information in the following sections.

Demographics
Eighty-six subjects participated in the study, 32 women and 54 men. Twenty-seven were unmarried, 56 married, two separated, and one widowed. Fifty-seven had children. The median number of school years were fourteen, 48.8 % reported education beyond high school. The female participants tended to have slightly more school years (females: mean 13.66, s.d. 2.52, males 13.30, s.d. 3.53).
Among the married individuals, 20 had their nuclear family in Sweden at baseline, while 30 did not. In six cases the information was missing.

Trauma history according to the HTQ, and PTSD diagnosis
Among participants in the study, 30 subjects did not have a PTSD diagnosis, while 24 had a subclinical PTSD1, and 32 had a fully developed PTSD. The prevalence of fully developed PTSD was 37.2 %; 42.6 % among males and 30 % among females. Subjects with PTSD were 2.8 years older than subjects without PTSD (logistic regression; B= 0.051; n. s.). Men reported on average 7.31 different self-experienced traumatic events, women 5.31 (Mann-Whitney U; p=0.011).
The exposure to trauma can be seen in Table A.
The types of trauma that were most strongly associated with PTSD diagnosis in the present group were near-death experience (Exp(B)=11), murder of family member or friend (Exp(B)=14), and torture (Exp(B)=6), when these experiences were dichotomised into “experienced myself” and others.

1 Subclinical PTSD is defined as either formerly fully developed PTSD (lifetime PTSD) and /or the fulfilment of the A criteria, one B criterion, two C-criteria, and one D-criterion.
<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Heard about</th>
<th>Witnessed</th>
<th>Experienced myself</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of food or water</td>
<td>7.5%</td>
<td>18.8%</td>
<td>15.0%</td>
<td>58.8%</td>
</tr>
<tr>
<td>Disease without access to healthcare</td>
<td>11.4%</td>
<td>11.4%</td>
<td>27.8%</td>
<td>49.4%</td>
</tr>
<tr>
<td>Being homeless</td>
<td>23.1%</td>
<td>12.8%</td>
<td>21.8%</td>
<td>42.3%</td>
</tr>
<tr>
<td>Captivity</td>
<td>36.4%</td>
<td>22.1%</td>
<td>23.4%</td>
<td>18.2%</td>
</tr>
<tr>
<td>Seriously wounded</td>
<td>42.3%</td>
<td>14.1%</td>
<td>26.9%</td>
<td>16.7%</td>
</tr>
<tr>
<td>State of war</td>
<td>3.8%</td>
<td>6.4%</td>
<td>12.8%</td>
<td>76.9%</td>
</tr>
<tr>
<td>Brainwash</td>
<td>46.3%</td>
<td>37.5%</td>
<td>6.3%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Rape or sexual abuse</td>
<td>42.3%</td>
<td>44.9%</td>
<td>9.0%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Detention</td>
<td>18.8%</td>
<td>11.3%</td>
<td>18.8%</td>
<td>51.3%</td>
</tr>
<tr>
<td>Near-death experience</td>
<td>29.9%</td>
<td>19.5%</td>
<td>27.3%</td>
<td>23.4%</td>
</tr>
<tr>
<td>Separation from relatives</td>
<td>5.0%</td>
<td>1.3%</td>
<td>6.3%</td>
<td>87.5%</td>
</tr>
<tr>
<td>Murder of family member or friend</td>
<td>20%</td>
<td>15%</td>
<td>6.3%</td>
<td>58.8%</td>
</tr>
<tr>
<td>Unnatural death of family member or friend</td>
<td>19.2%</td>
<td>11.5%</td>
<td>2.6%</td>
<td>66.7%</td>
</tr>
<tr>
<td>Murder of other/stranger</td>
<td>21.8%</td>
<td>24.4%</td>
<td>24.4%</td>
<td>29.5%</td>
</tr>
<tr>
<td>Kidnapped or disappeared</td>
<td>24.4%</td>
<td>33.3%</td>
<td>9.0%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Torture</td>
<td>26.6%</td>
<td>20.3%</td>
<td>12.7%</td>
<td>40.5%</td>
</tr>
</tbody>
</table>
Non-participation
Three hundred and twenty-one subjects –every fourth of those eligible for participation- were invited to the information meeting; 86 (26.8 %) were willing to participate. Non-participants were 3 years younger than participants. They did not differ significantly with regard to language group, gender, and education from participants. With regard to the lower age among the non-participants, the association between age and likelihood of PTSD diagnosis was examined. The Beta coefficient for age among the participants (logistic regression) was found to be 0.051. Therefore, the age-adjusted prevalence of PTSD among the non-participants is calculated to about 30 %. Of course, many other factors might have influenced the decision to participate in the study. One factor, in view of the access to health-care, might have been self-perceived poor health. On the other hand, it has been shown that avoidance in PTSD sufferers could decrease participation [228, 229].

The most conservative estimate of PTSD prevalence among the 321 randomly chosen participants in the study is based on the assumption that none of the non-participants had a PTSD diagnosis; in that case the estimated prevalence of fully developed PTSD is around ten per cent.

Drop-out (attrition)
The attrition is expressed as the absence of blood samples at each follow-up. Of the 86 subjects included in the study, 66 (75 %) participated in the first follow-up, 67 (78 %) in the second, and 63 (73 %) in the third follow-up. Fifty-six subjects (65 %) participated at all four points of time; 64 in three follow-ups (74 %).

Some of the factors that may explain attrition in this study are mentioned in (Paper I). When attrition is defined as participation in only one or two assessments, the rate was 24.4 %. Comparison between groups did not show any statistically significant differences with regard to attrition on the one hand, and age, education, gender, as well as PTSD diagnostic status on the other hand. Subjects who remained in the study did not differ from drop-outs with regard to number of traumata and sum of trauma score in the HTQ, GHQ, or HSCL-depression subscale.

Self-rating score and hormone levels
In Table B and C in the Appendix, the values of self-rating questionnaires and serum hormone levels at each point of time are presented.
**Treatment**
The assistance given during the data collection can be divided into pharmacological prescriptions, supportive actions such as sick-leave or medical certificates during the process of family reunion etc., and regular psychotherapy.
The total number of visits for any treatment purposes during the study was 376 (mean 5.22, range 0-24).
The total number of psychotherapy sessions was 159 (mean 2.24, range 0-23), eight subjects were offered treatment during the data collection phase that could be characterised as psychotherapy, while 12 had one or a few sessions that were of a psychotherapeutic character. The total number of prescription periods was 54 (mean 0.76, range 0-3).
The total number of recorded actions taken was 92 (mean 1.28, range 0-5).
None of these factors were associated with change on the GHQ-28 during the study. In the IES-22, a weak correlation was found between the sum of actions taken and change in the IES-22 (Nonparametric correlation, Rho= 0.274, p=0.041), but not number of therapy sessions, or prescriptions. This suggests that the practical support may have been most important at this stage.

**Five cases**
On the basis of the largest differences in self-rated health (GHQ-28) between start and last follow-up during the study, five individual cases were chosen to illustrate the general situation of the participants. Three of the subjects chosen had the highest symptom reduction, whereas the other two showed the largest increase.

Case A (worse): Single male, 30 years old. One year before inclusion in the study, his father was killed; he was himself arrested and subjected to torture. He had been arrested several times during his 20-ies because of his father’s political activities. At the same time as his father was killed, three siblings and their families disappeared. Another sister is living in Sweden. A is depressed and has some symptoms of PTSD and has previously fulfilled the criteria for PTSD. He is offered supportive therapy and is prescribed antidepressant medication.

After the first assessment the treatment sessions show three main themes; childhood memories of persecution of his minority, his ambivalence towards the father whose political activity may have caused his death and the unknown fate of his siblings, as well as grave concern for his mother who is living in dire circumstances in a third country.
The therapist is very active in helping the patient establish contacts with helping agencies, such as lawyers, regarding his efforts to bring his mother to Sweden. At the end of the data collection, he suffers a major setback with regard to his mother. At a follow-up therapy session 3 months later, his mother has arrived and A expresses great relief.

Case B (improved): 37-year old male who has previously had PTSD after torture and imprisonment. He is married and lives with his wife and children, has completed university studies. Does not express anything at the clinical assessment apart from concern for relatives and friends in Iraq. No treatment offered. During the study, he participates in all follow-ups. In his responses in the life event questionnaires, the following pattern is revealed: A great deal of concern regarding relatives and the situation in the home country, with an expression of relief before last follow-up. On three follow-up occasions he reports having accomplished something positive (checklist items). The third child is born. There are no reports of impossible demands, and no housing problems are reported.

Case C (improved): 42-year-old female, well-educated, with a long marriage where the permanent problem has been that one of them belonged to an ethnic minority. This meant that both experienced severe threats and some persecution. After fleeing Iraq with the children, she was separated from her husband and does not know his whereabouts. She is bitter because they had opportunities to flee earlier and some of the persecution they both suffered might have been avoided. The flight included serious traumatisation because she was caught together with the children in a transit country and suffered considerable hardship and threat. After this experience she fulfils criteria for PTSD and depression. C is offered treatment and after seventeen therapy sessions the aims of the treatment are fulfilled according to patient and therapist.

Case D (improved): Woman, 30 years old, married, with 2 children. Experienced war and witnessed atrocities. Escaped internal conflicts in Kurdistan. Recently her father died in the home country, and her mother is frail. Is clearly depressed without PTSD. Develops low back pain. Is prescribed antidepressants but cannot tolerate the treatment. During the study, some concerns regarding close relatives diminish.

Case E (worse): Male, 39 years old. Single, skilled worker. Did military service during 2 wars. Wounded twice, lost many comrades during the wars. Severe PTSD at psychiatric assessment. E was offered treatment but did not continue after 3 visits, unclear why. Describes loneliness, difficulties remembering new information, difficulties of orientation to new environment. During the study he reports few events but the pervasive pattern is feeling
ill, out of control, confused, and worried about relatives. Immediately before last follow-up, he marries.

* 

As can be seen from these cases, the first phase after asylum is granted is associated with many post-migration stressors, where concern for relatives is one of the most pervasive. Another important factor has to do with having to adapt to a new and challenging environment without necessarily possessing the capacity to do so. Case B illustrates an uncomplicated early post-asylum phase; in spite of considerable hardship in the past, in the present he lives with his family and reports experiences of accomplishment. Case E did not accept treatment and feels bewildered, ill, and out of control. Case A and Case C needed support, and both seemed to use it constructively.

Another way of looking at these patterns is in quantitative terms. In an exploratory factor analysis of patterns of events, one could discern two major patterns; the first pattern was strongly associated with decreased number of PTSD symptoms at last follow-up, and reports of progress regarding family reunion. The other pattern was associated with an increased GHQ-28 score connected with reports of school stress and housing problems.

**Paper I**
This paper reports the categories of events derived from the responses to open-ended questions. The categories can be seen in the Appendix together with the total number of reported cases.

The impact ratings in the questionnaire did not work as expected because the notion of ‘positive’ and ‘negative’ impacts ratings were not usually understood in the Arabic or Kurdish languages. In the spontaneous comments, however, doubts regarding whether an event was perceived as “positive” or “negative” were uncommon. Therefore an index was calculated based on the total number of reports – including baseline - and the numeric impact rating. In this way it became possible to see which events were characteristic for the whole group, and the importance ascribed to them by the participants. Obtaining residency and attaining family reunion were rated as the most positive events, followed by reports of increased autonomy. The most negative events were distress, illness or similar trouble affecting significant others, and events of perceived hostility towards refugees.

One way of reducing the high number of different experiences was to cluster them into four groups; positive and negative events either outside Sweden, or inside Sweden. It turned out that adversity in Sweden, and positive events affecting significant others outside Sweden,
were correlated with changes in self-perceived health (change in the GHQ-28). The opposite, negative events outside Sweden, and positive events inside Sweden, were not correlated with significant changes in the GHQ-28.

The total (cumulative) numbers of characteristic events were analysed in sub-groups by gender and PTSD status. It turned out that housing problems, which were highly prevalent, seemed to affect subjects with PTSD much more strongly than those without PTSD. Reports of adaptation problems were associated with a decline in self-perceived health. The major groups of positive events abroad were associated with moderate improvement in health. One participant is cited because he voices a theme that was recurrent in the responses, namely grief and survivor guilt.

**Paper II**

During the analysis of hormonal reactions to life events (Paper III), it turned out that one of the hormones used as marker in the study, dehydroepiandrosterone sulphate (DHEA-s), behaved unexpectedly. It showed a different pattern in PTSD compared with non-PTSD subjects. It was therefore necessary to explore this phenomenon. The analysis of the phenomenon was further complicated by the well-known fact that DHEA-s shows a negative correlation with age.

DHEA-s is the water-soluble form of dehydroepiandrosterone, which is a precursor of anabolic and gonadal steroids. It has a low serum concentration in a number of diseases, especially in immunological disorders. Serum levels decrease with age. The concentration of DHEA is also known to vary highly among various tissues [188] and is higher in the brain than in other tissues. In the past decade new knowledge has been obtained regarding DHEA-s and a few other steroid molecules such as progesterone and pregnenolone. They are therefore termed “neurosteroids”. DHEA can be produced in the mammalian brain in astroglia in stress paradigms such as hypoxic stress. One implication of this is that circulatory levels of DHEA-s do not necessarily mirror the production in the adrenals only. DHEA-s and other neurosteroids have non-genomic effects by influencing common receptors in the brain, especially GABA. In some animal models relevant to stroke, DHEA-s has shown neuroprotective properties as well [193, 230, 231]. One study has shown increased levels of DHEA-s in PTSD [232].

In the analysis of serum DHEA-s there was an interaction between self-rated depression and PTSD diagnosis. DHEA-s was higher in PTSD but not significantly in the cross-sectional analysis. In a longitudinal analysis of PTSD cases, increased levels of DHEA-s were observed
with increased self-rated symptoms, and conversely lowered values with a decreased symptom level. This finding, in combination with the finding of different patterns of DHEA-s serum levels after different life events in PTSD compared with non-PTSD, should be followed up in future research. The conclusion of the study is thus that a possible role of DHEA-s and other neurosteroids in PTSD should be studied further. Another conclusion is that studies of DHEA-s in other psychiatric disorders such as depression or bulimia may be confounded by co-morbid PTSD.

Paper III
The effects of self-reported life events on stress-responsive hormones were analysed by means of ANOVA. Many events were ineligible for analysis because they were too few, or conversely, so prevalent that a contrast group did not exist among the participants. The results of the analyses are shown in Table 1 (open-ended responses) and Table 2 (checklist items) in Paper III.

The main results of this study are that the events that showed significant differences between subjects (measurements before and after / with and without reports of particular events) belonged to a few categories. First of all, negative events affecting significant others and perceptions of excessive demands were associated with increased serum cortisol. In a few of these stressful events, even T4 increased. Prolactin decreased after several events, the common denominator of which seemed to be frustration in situations of dependency.

After a number of events, serum DHEA-s changes showed an interaction with PTSD diagnostic status. DHEA-s also changed with positive events.

The longer-term effects of events, and possible effects of events cumulatively were analysed. Few events fulfilled the criteria for analysis, and the reported events that showed significance were few. Again, the pattern was compatible with the findings of the short-term analysis of hormones; strain in relationships and perceptions of excessive demands were associated with changes suggestive of stress. Here, the only finding of increased prolactin in the present study was related to repeated reports of housing difficulties.

After family reunion, an interaction effect of PTSD on DHEA-s levels was very clear-cut (F=17.688, df 3/33, p=0.000), when comparing subjects who had reported a family reunion during the study with the rest of the participants.

A seemingly paradoxical result emerged regarding presumably similar categories; the open-ended coded responses labelled ‘too high demands in school’ and the checklist response ‘too
high demands in language school’ showed different responses. In the checklist, responders had decreased cortisol levels, in the open-ended responses subjects showed decreased prolactin. In the longer term, subjects who complained spontaneously more than once, and subjects who checked the item – if they had PTSD diagnosis - showed increased cortisol levels and increased PTSD symptoms.

Paper IV
In this paper, the ‘Health Leaflet’ (HL) as a screening interview for PTSD in refugee reception is examined. It is compared with structured clinical diagnosis of PTSD, and two well-known self-rating instruments, the HTQ, and the IES-22. One question in the HL regarding concentration difficulties was associated with a highly increased risk of having a diagnosis of PTSD. Having difficulties concentrating is a symptom required for diagnosing PTSD, but this is also the case for several other questions in the interview. Apart from this, in the identification of PTSD cases, the HL with a cut-off level of 10.5 was inferior to self-rating questionnaires for PTSD when analysed with discriminant analysis.

Paper V
This paper explores alexithymia. TAS-20 scores and findings in the emotion protocol (EP) are compared and related to the clinical diagnosis of PTSD and self-rated symptoms of PTSD, as well as depression. It is found that a diagnosis of PTSD, as expected, is associated with an elevated alexithymia score. TAS-20 scores can be separated into three factors (subscales), difficulties identifying feelings, difficulties expressing feelings, and externally-oriented thinking. In the present study, an elevated alexithymia score in PTSD is explained by a high score on one of the three subscales (Factor I), namely ‘difficulties identifying feelings’. Change in this subscale had a positive correlation with change in self-rated PTSD symptoms in the longitudinal analysis. It was found that alexithymia, especially Factor I, was associated with a high prevalence of dysphoric affects. Thus alexithymia in PTSD can be understood as a defence against dysphoric affects that are common in PTSD. Some support was found for an independent pathway from trauma (near-death experience and murder of significant other) to alexithymia.
Discussion

**Major findings**
The major findings in this follow-up study of refugees after resettlement are as follows: Among the participants, more than one third had a PTSD diagnosis. The most conservative estimate of the prevalence in the population from which the participants were chosen, is ten per cent. A more likely estimate is 30 %, based on age adjustment. This is similar to the prevalence of 18-33 % found among Bosnian refugees in Sweden by Håkansson and Thulesius. The difference between these two populations is that the Bosnians had been living under peace-time conditions for most of their life until war and “ethnic cleansing” broke out, while the refugees from Iraq, irrespective of their ethnic origin, had experienced lifelong repression and several wars. The trauma exposure seemed to be higher among men than women, and this could explain the higher prevalence of PTSD in men in this specific population.

The implications of this finding are related to the capacity to adapt to the further challenge of integration. It is therefore important to identify which factors in their present life situation will ameliorate the condition, and which ones will lead to deterioration or chronicity? In other words, during the introduction period, which is eighteen to twenty-four months, there is opportunity to heal or harm. The problem is that many stressors - such as unresolved housing problems, protracted insecurity and the fear involved in waiting for a spouse or children- mean that a large portion of this so-called introduction phase is not genuinely an introduction, since a significant proportion of the subjects suffer from ongoing re-traumatisation. Such a phenomenon of retraumatisation has also has been described by Ekblad et al. among Kosovar refugees temporarily evacuated to Sweden [202]. This means that the window of opportunity offered by the introduction phase is non-existent in many cases. Language acquisition – a prerequisite for integration- is inhibited by PTSD symptom load (Søndergaard, Theorell: manuscript).

Next, if the massive traumatisation behind this figure could cause this high prevalence of PTSD, then what further stress-related morbidity might have been found in this group if they had been examined equally meticulously for disorders like arterial hypertension, diabetes, or hyperlipaemia? Several cases of previously undetected hypertension, diabetes, and hyperlipemias were found during this study.
An examination by the National Board of Health and Welfare found some indication of a health screening procedure during the asylum phase in only eleven per cent of the asylum applicants in Stockholm [233]. Such an examination should be routinely performed according to the National Board of Health and Welfare.

During the present study of subjects who should have access to health care, it was also observed that it was often hard to find health care when subjects had such needs. One factor, not the only one, seemed to be the lack of permanent housing or the participants’ frequent change of address.

We have not studied the children of the cohort under consideration, but one implication is that a significant proportion of the children will grow up with traumatised parents during some of their most formative years. As Almqvist and Brandell-Forsberg [59] have pointed out, a number of the children will have their own traumatic experiences as well; often unrecognised by their parents. These children are very important for this country in the future, and it seems to be of the utmost importance to direct attention to their possibility of a healthy development.

**Important life events**

The hypothesis of this study was that many factors in the participants’ present life could influence self-perceived health and stress-responsive hormones. This hypothesis was supported. After having analysed the study, however, the author is surprised that it was at all possible to find any specific patterns of associations in the group, since the clinical impression is that the first period after resettlement is a turmoil of stressors as well as positive events. Patterns were discernible despite the relatively small number of participants and the attrition. As can be seen in Table D, among the subjects retained in the study, there was a slight reduction in the IES-22 symptoms of PTSD while the GHQ-28 and HSCL-25 scores were unchanged.

The life events recorded during the study can be seen in the Appendix, table E and F. Both the advantages and the disadvantages of both approaches used can be studied, i.e. open-ended responses as well as the checklist approach. First of all, a comparison shows that events that are grouped in almost identical categories in the checklist and in the open-ended questions, respectively, are more frequently reported in the checklist. On the other hand, the events that were reported in the subjects’ own words were more often associated with a discernible impact, such as the self-report of school-stress analysed in Paper III.
Many circumstances, such as the deteriorated housing situation during the study, were not anticipated by the research group during the planning phase of the study. The effect of unanticipated events could not have been measured in the longitudinal design with the checklist items that were included after the pilot study.

In Paper I, it was found that positive events in Sweden did not have any measurable effects on self-perceived health. The positive events in Sweden were often grouped under ‘miscellaneous positive’ events, or were reports of small leaps forward such as increased autonomy, or accomplishments in school. Such positive events in Sweden were more often reported by subjects with good health at baseline, with the exception of “experiences of support”, which was often reported by subjects in distress.

Against the background of the concern, worry, or fear attached to negative issues generally, it is not in any way remarkable that effects of positive events were not very obvious in the short term.

In Paper I, another finding is that the cumulative number of negative events abroad reported in the open-ended responses did not exert any discernible effects on self-rated health. This may have several explanations. The first possibility is that anxious or depressed participants may have a propensity to report many such events. Another interpretation is that there may be a “ceiling effect”. This is supported by the high number of reports of concern for significant others in the home country in the checklist, an item that was generated in a pilot study and was checked by the majority of the participants. In other words, concern for significant others in the home country is a long-term on-going stressor in a high proportion of refugees.

The main finding, however, is that both positive events abroad – relief after a protracted period of concern for others or issues of family reunion, and cessation of wars or severe threats towards whole peoples or nations - as well as negative events in the new host country do exert a significant influence on self-perceived health. At least some of these can be influenced by political means.

It has been shown in several other studies, such as those mentioned above in the list of longitudinal studies of refugees that early post-migration adversity has long-term effects on health. It seems that distress experienced and expressed by the subjects is a good predictor of subsequent deterioration in health. The caseworkers in the reception programme can make a difference provided they are given the means to do so, something they do not have at present. Such resources would include easy access to health care, since the caseworkers themselves are not allowed to decrease the pressure on individuals. An alternative is of course that the
caseworkers themselves are allowed to rely on their common sense, judgement, and experience.

**Differential reaction patterns between PTSD and non-PTSD**

In Paper I it was also found that some events seemed to have differential effects in PTSD subjects compared with non-PTSD. One of the most commonly reported negative circumstances during the study was the difficult housing situation. Even if the situation was very difficult, we were not aware of any participants that were actually homeless during the study. It was, however, observed that many subjects feared such a development. Sometimes it was obvious that the participants had been given information they had not understood or remembered. The caseworkers were sometimes unaware of the cognitive deficits of some of the participants.

In the analysis of the hormones in Paper III, there was no reaction or interaction with diagnostic status concerning first-time reports of housing problems. Thus, a difference between PTSD and non-PTSD subjects seems to arise with long-term difficulties. From a clinical point of view, every therapist treating PTSD knows that the patients need to withdraw, have severe sleeping problems, and are easily startled by unexpected sounds. There was a very clear negative development in self-reported health related to housing problems among the PTSD subjects, which was not seen among the rest of the participants. The same might be said of subjects who reported difficulties of orientation even if the tendency was less obvious.

The reports of resolved housing problems showed an interaction between PTSD and non-PTSD with regard to thyroxine, prolactin, and DHEA-s. This is the only event during the study to influence three hormones at the same time. It might therefore be interpreted as an important event. The small numbers should caution against further interpretations, but it could be interpreted that PTSD subjects are less likely to experience relief after positive events. This has been observed clinically by the author, e.g. subjects who are granted residency after a long waiting period need considerable time before they are able to fully understand that the threat is no longer there.

Table 3 in Paper I shows data that too high demands – comprising category P and V in table E in the appendix - could not be explored among the PTSD subjects because of missing values, or missing reports. During the study it was common for the identified PTSD subjects to be on half-time sick-leave. It is noteworthy that the health effects of too high demands are obvious even in non-PTSD subjects.
The hormonal reactions to life events reported for the first time after baseline assessment are statistically significant in a number of situations. These have similarities with the situations reported in Paper I. Negative events pertaining to significant others influenced cortisol in both the open-ended responses and the checklist, whereas distress in relationships would more often be accompanied by decreased prolactin. Cortisol behaved mostly in the same way in PTSD as in non-PTSD. In the situations where there was an interaction, cortisol increased in PTSD. This contradicts the notion of ‘low cortisol’ in PTSD and supports the notion that cortisol is as dynamic in PTSD as in non-PTSD. On the other hand, PTSD subjects might react more strongly to some stressors.

The category “Stress over language school” and the checklist item “Demands in school too high” show a curious discrepancy. While the first occurrence of the item is associated with a subsequent clear reduction in cortisol, the self-voiced occurrence of the category is accompanied by a reduction in plasma prolactin indicating anxiety. The interpretation offered by the author is two-fold. The item seems to be confounded. There is no doubt that most participants appreciated starting a more normal life, and the reports coincided in time with this. It could thus mirror a relaxation. On the other hand; it could be seen that the category self-voiced distress with regard to language training repeatedly, and the item as well in PTSD cases, were associated with increased cortisol levels longitudinally. The next part of the interpretation is that there seems to exist a difference between formulating a situation in one’s own words, and checking an item. The category and item constitute one of the few comparable events in the open-ended responses and the closed questions. The other one is illness in significant others. In that case, however, the categories and items do not overlap completely, but the hormonal patterns are similar.

In studies of occupational stress, the demand-control model of Theorell and Karasek [234] has demonstrated repeatedly that lack of influence (control) is harmful when demands are high. Without having used this instrument in the present study, it is tempting to conclude that this also applies to the subjects studied here.

The conclusion of this study of life events is that refugees – as with everyone else - are in fact influenced by their ongoing living conditions. This is true regardless of a PTSD diagnosis. It is also an important finding that even if PTSD symptoms did diminish slightly during the study, self-perceived health in general did not improve during the study. This could be attributed to living conditions and too high demands in vulnerable subjects. These factors would be easy to identify. The most practical way of identifying them would be to listen to the clients.
Dehydroepiandrosterone and PTSD

During the data analysis, a strange pattern was noted with regard to DHEA-s. While there was no difference in blood levels of DHEA-s between PTSD and non-PTSD subjects, the hormone behaved differently; there were instances of interaction, and different correlations with changes in GHQ over time. DHEA-s was therefore analysed specifically with regard to PTSD diagnostic status. The conclusion of this analysis was that DHEA-s, after adjustment for age, was higher in subjects with PTSD on all four occasions. This attained statistical significance at first follow-up after baseline assessment only. Division of the subjects into depressed and non-depressed made it possible to reveal an interaction between PTSD and depression at baseline. This might mean that PTSD is a potential confounder in other studies of DHEA-s in mental disorders.

The strongest interaction between PTSD at inclusion in relation to long-term change in DHEA-s was the event of family reunion, when subjects granted family reunion were compared with the other subjects. It is interpreted that family reunion is of major importance to health in refugees.

In PTSD subjects, the longitudinal pattern was clearer. Subjects who improved showed lower serum levels over time, while higher levels coincided with deterioration.

At the time, there were no reports on DHEA-s in PTSD. One publication by Spivak et al. [194] was subsequently found; this publication was originally incorrectly categorised on Medline. It showed increased levels of DHEA-s in non-depressed Israeli war veterans with PTSD. Another study showed no difference in DHEA-s between PTSD and non-PTSD subjects before and after metyrapone challenge. The latter study reports higher depression scores in PTSD subjects but no attempt was made to extricate the effects of depression on DHEA-s. The difference between those studies and the present one is that the others are cross-sectional case-control studies. The present study, on the other hand, is a follow-up study with a number of subjects with sub-clinical PTSD among the non-PTSD subjects. This is both a weakness and a strength. The weakness resides in the possibility of confounding because of borderline cases and a high number of traumatised individuals even among the non-PTSD subjects. The strength is the longitudinal design, which confirms that change in DHEA-s is indeed related to change in PTSD symptoms and not to co-morbid depression in PTSD subjects.

It is far too early to draw any conclusions about the possible role of DHEA-s in PTSD.
However, many questions arise from this finding. For instance, is the possible increase of DHEA-s secondary to the findings of changed HPA regulation? This could, for instance, depend on a decreased synthesis of anabolic and gonadal steroids – metabolites of DHEA-s -, caused by inhibition of gonadal steroid hormone releasing factors effectuated by increased levels of CRF centrally as well as by central and peripheral effects of cortisol [235]. Interpreted in this way, increased levels of DHEA-s may possibly be an epiphenomenon of the numerous stress-induced changes in the regulation of steroid hormones generally.

A more exciting interpretation is the one of Spivak et al. They interpret their finding in view of the central effects of DHEA-s as a non-competitive blocker of the GABA\textsubscript{A} receptor. Also, they suggest that the increased circulatory levels might be of a central origin. The finding that DHEA-s and other steroid molecules can be produced in glial tissues implies that increased circulatory levels might be explained by such a mechanism. Implicit in this hypothesis is the further interpretation that an explanation may have been found for many PTSD symptoms, e.g. increased irritability, and cognitive problems. The irritability could be explained by decreased sensitivity to GABA caused by non-competitive inhibition, and the cognitive problems by a blockade of the glutamate receptors in the GABA receptor complex [73, 236].

One more question arises, that is, if the finding holds in further studies, namely the phylogenetic meaning. Is there a protective effect of DHEA-s, such as neuroprotection in the hippocampus?

All these questions can only find answers in further studies. Such studies would have to be longitudinal studies of PTSD subjects, and studies examining whether levels of DHEA or DHEA-s are increased centrally, as well as similar studies of the other putative “neurosteroids”.

DHEA-s was indeed associated with positive health effects in this study, but unfortunately a PTSD diagnosis is a confounder. It might, however, turn out to be a useful marker of symptom load in PTSD.

**Screening for PTSD**

A screening questionnaire that had previously been developed with the aim of assisting social workers and other non-medical professions was used for health screening. The questionnaire was analysed and it seemed to work less well than was expected. However, the cut-off chosen for selecting subjects for structured diagnostic interviews was comfortably lower than the best cut-off for identifying PTSD. It is thus highly unlikely that anyone with a diagnosis of PTSD remained unidentified because of the discriminatory performance of the screening interview.
The interview, or later developments, can play an important role in refugee reception. The main function of the interview, according to our view, is to break the “conspiracy of silence” that can arise from the professionals’ fear of intruding on the privacy of the client, and the avoidance of the trauma in the client. It was observed that some colleagues were apprehensive of the procedure, fearing to elicit “nervous breakdown” that would be difficult to handle. We observed no such reactions. The only case that we suspected to be elicited by the procedure, a paranoid reaction, turned out to have a different explanation. Although the screening interview may not have been optimal, it helped in identifying depression as well, and helped the caseworkers identify cases with specific needs. It is therefore strongly recommended that a health and needs assessment of some kind is included as a routine procedure in refugee reception, in order to avoid unrealistic introduction plans and harmful stress. Unfortunately, it has been the experience at other sites where the interview has been used that it is difficult to gain access to the health care system. In our study, access to health care, if such needs were identified, was an integral part of the study. Nevertheless, we also experienced difficulties in referring clients with non-psychiatric needs. There may be several explanations for this. Ongoing widespread privatisation of primary care may be associated with the avoidance of difficult patients. Strained economic situation, frequent changes of address of the refugees, and a general hesitancy to encounter refugee patients in some parts of the health care system might also contribute.

There is an understandable reluctance to ask clients about traumatic experiences, and therefore it is an important finding that a simple question about concentration difficulties had a high sensitivity with regard to a PTSD diagnosis. Such a question is easy to ask, and affirmative answers would probably identify others with specific needs as well.

**Alexithymia**

In the study it was decided to take a closer look at the role of alexithymia in PTSD. At the IPM, the late Kristoffer Konarski had a longstanding interest in alexithymia, and his earlier research that is to a large extent unpublished had been focused on alexithymia [237]. One early observation on the part of the author was that many colleagues were not able to observe anything abnormal in PTSD patients. Alexithymia might be part of the explanation of this intriguing experience. For a long time, alexithymia, psychic numbing, and affective flattening have been considered as features of severe psychopathology. In PTSD, alexithymia has been studied in several ways, first of all in the work of Henry Krystal on concentration camp survivors. This body of work was brought to my attention by my late colleague Hartmut
Apitzsch. Several studies have confirmed an association between alexithymia and PTSD. The methods that have been used vary. Clinical psychoanalytic observation, linguistic analysis of speech content, projective methods, and specific instruments developed to test alexithymia can be found in the literature. The most commonly used inventory is the Toronto Alexithymia Scale (TAS). The version used in the present work is TAS-20. In the present study, we included this instrument as well as a protocol designed to study emotions, the Emotion Protocol, developed by Konarski and Theorell. Combining these two instruments did lead to an unexpected finding. The TAS-20 alexithymia score was higher in PTSD than in non-PTSD participants. But the effect of the exploration was not a deeper understanding of alexithymia although the findings could be interpreted as providing support for a direct pathway from trauma to alexithymia. The most interesting finding was, however, that the part of TAS-20 that measures a factor called ‘inability to identify affects’ was clearly associated with prevalence of self-reported dysphoric affects. With regard to PTSD, we have thus confirmed what is already known about the important problems of dysphoria in PTSD and the ever-present struggle in the sufferers to ward off negative affects. With regard to TAS-20, we have unintentionally deconstructed the rating instrument. Today, alexithymia has almost become identified with TAS-20, and it is recommended to take a step backward in further studies of alexithymia. As mentioned in Paper V, there are practical interview-based methods that have been designed to measure alexithymia as a dynamic reaction to stimuli, such as the APRQ [128]. The finding of an association of decreased serum prolactin and increased TAS-20 factor I score in the longitudinal analyses is another way of understanding the association between negative affects and TAS-20. It might be possible that TAS-20 does measure alexithymia efficiently in other populations. It is concluded that the affective disturbances in PTSD should be studied with other approaches.

Implications
Many of the implications of the study have already been mentioned above. Before dealing with this, it will be necessary to mention preliminary results from some on-going projects from this group and associated researchers. Slower language acquisition is associated with PTSD symptom load over time (Söndergaard, Theorell, unpublished data), and poor results are found with the Benton Visual Retention Test in PTSD in comparison with refugees without PTSD (Abraha, Emdad, Söndergaard, Theorell; unpublished data). A few published studies have found academic difficulties in refugee children [238], and others, various perceptual or memory problems in PTSD. This is not unexpected, since it is a common
clinical experience for everyone working with refugees to hear PTSD sufferers explain that they are forced to go to school in spite of not remembering anything the next day. This symptom disappears, to an extent that could make an important difference, when PTSD symptoms abate. The research of Bremner [73, 238, 239], among others, has shown that hippocampal volume is decreased in PTSD. This finding is still disputed, but it fits well with the fact that explicit memory – a function of the hippocampus - is decreased in PTSD. It is not controversial that the brain is highly plastic and it is therefore possible that decreased hippocampal volume is not a static feature of PTSD; a possibility that fits well with the clinical observations of improved cognitive function with improvement in PTSD.

In the introduction phase, every refugee is required to take language classes. This demand is coupled with economic support, in order to speed up the process of becoming self-supporting. A recent study by the Swedish Audit Authority has noted that access to the work market is coupled with mandatory language proficiency. It is therefore possible that these structural factors contribute to a worsening of PTSD because of a large-scale implementation of an introduction system that causes distress and ultimately results in the unnecessary chronicity of PTSD, and thus exclusion, marginalisation, and worsening of second-generation effects. The prevalence of PTSD found in many refugee populations, and the high number of refugees that result from the state of affairs in the world today, might well be the largest undetected public health problem, not only in Sweden, but worldwide.

The goal of refugee introduction should be to create a secure situation in order to assist self-healing. Implicit in this is the access to work and attachment to society in as many ways as possible. It is possible that the mandatory language proficiency required for access to the working market is an unnecessary obstacle. For instance, language learning by way of memory systems other than the explicit, is the way we normally learn language in infancy. During this study I observed a woman with 5 years of schooling, and without PTSD, who was one of the quickest to pass the final test. This beautifully illustrates that there might exist an important intelligence reservoir in the refugee population and that integration can be rapid.

In some of the countries with historically the largest immigrant population, such as USA and Canada, it is possible to live and work for a whole lifetime without proficiency in the main language. This is of course not a desirable state of affairs, but on the other hand, a normal life with some security and a sense of self-efficacy is probably more salutary than any treatment programme. At least, it would reduce the need for treatment much more than other factors. Since it is undesirable that a great number of citizens do not speak the main language, language learning at a later stage could be stimulated through the removal of obstacles.
Outside, and sometimes inside psychiatry, criticism of the notion of PTSD has been voiced. Some of the criticism is aimed at the stigmatisation as a possible consequence. From a public health perspective, this is difficult to understand. If someone would choose to propagate against the prevention of broken legs, or to neglect broken legs, it would probably be seen as a manifestation of eccentricity. But in the field of refugee studies, anything seems to go. The fear of medicalisation is understandable but when its leads to a grave and harmful neglect of a large part of the population, whose political representation and means of influence are weak, it becomes one of the prerequisites for exclusion, racism and lack of integration that may influence several future generations. “Medicalisation”, if it is defined as an integration policy, which is informed with regard to psychosocial knowledge, will assist in modifying structural factors that are presently obstacles to integration, and in minimising retraumatisation. There are many more cases in society than there will ever be the capacity to treat. A number of these cases can probably self-heal to a significant extent if increased awareness informs policy decisions.

The main implication of this study is thus that for a significant subgroup of refugees the integration programmes are not optimal and lead to harmful stress. Further prospective studies of introduction programmes, preferably comparative, are strongly recommended.

Limitations
The present study has several limitations, some of which would have been difficult to avoid. First of all, the difficulties of recruiting participants, leading to a prolonged data sampling, would be difficult to avoid in further studies. It is likely that inclusion in the study is biased to some extent. The participants were often well-educated and older and may to a greater extent have been able to understand the purpose and importance of the study; another group that might have been ‘oversampled’ were subjects with health care needs. The non-participants were younger and thus probably healthier. Nevertheless it was also obvious that suspicion – as described in Paper I - and avoidance in PTSD subjects, which was also noted among the drop-outs, were also of importance. It is conceivable that subjects, who have lived their whole life in a severely repressive and dangerous political system, will react with at least some degree of suspicion and apprehension when asked to participate in a study of this kind.

On the other hand, the number of participants does not detract from the value of the actual findings. The study may be seen as being of an explorative kind and should lead to valuable ideas about phenomena that may be important to study in the future. On the other hand, some
phenomena that were not statistically significant in the analysis might have been missed because of the limitations in statistical power and various sources of error. Another question that could be asked is if more instruments should have been included, such as measurements of social support and quality of life [215]. The answer is both yes and no. In further studies such instruments could be introduced, but there is a limit to the number of items that subjects can realistically cope with, especially if we want participants under severe stress to participate. It can be argued that due to the open-ended questions, many such issues were registered anyway, albeit not in a standardised fashion.

Methodological problems and possible solutions

Recruiting participants
For ethical reasons, the participants were recruited by means of a letter and an information meeting in both of which the voluntary nature of participation was emphasised. The letter may have been anxiety-provoking and might have deterred participants from coming to the information meeting. At the information meeting it was noted that the group process, i.e. the attitude of one or a few subjects, was able to influence the decision to participate in the whole group. Suspiciousness seemed to vary greatly with political events abroad. If it had been possible instead to gain individual access to participants, for instance, as part of a systematic health assessment offered to everyone, a much better understanding of factors leading to attrition or non-participation might have been obtained. We undertook many measures in order to avoid suspiciousness. For instance, the research assistant who spoke fluent Arabic, was obviously non-Iraqi and we therefore expected to avoid suspicion of refugee espionage – something which participants had good reason to fear -, but such concerns were voiced anyway. In further studies, it is recommended that the recruiting procedure be done individually in connection with a health examination.

Measurement of life events in special groups
In this study, one goal – apart from accumulating knowledge about different aspects of PTSD - was to understand factors that were important for the development of health in refugees after resettlement. The methods chosen, a life event checklist in combination with qualitative interpretations of open-ended responses, have certain short-comings, as discussed above. Of these, the variance in propensity to report events that is eliminated with the checklist approach, is more of a problem in open-ended responses in which individual characteristics such as denial, cognitive problems, or anxiety are more liable to influence reporting. On the
other hand, combining the approaches proved useful. It was noted that many subjects were surprisingly honest and had a good understanding of the aims of the study.

Regarding the life event questionnaire that was developed for the study, it had been developed and tested in a pilot study of seven Swedish-speaking refugee patients. This pilot study helped generate many items in the life event checklist, but it did not forestall the complication that participants in the present study did not share the Western notion of distinguishing between positive or negative on a Likert rating scale. Some participants in the pilot study were Arabic and it was thus thought that this problem would disappear over time, but it did not.

Some of the main conclusions of this study, with regard to the deleterious effect of housing problems in PTSD, as well as the impact of perceived demands that exceeded the capacity of some participants, would not have been found as clearly without the open-ended qualitative approach. When studying special populations in dynamically shifting contexts it seems unavoidable that some surprises will be encountered.

Silove has suggested that torture victims and other refugee groups with a high prevalence of PTSD have suffered harm in a number of ways that are parts of different systems [240]. These systems are composed of issues regarding safety, attachment, justice, existential-meaning, and identity-role. Many of those issues are identical to the ones identified in the present study, although the categories were expressed in simpler terms. In future longitudinal studies it might be feasible to develop specific structured interviews or questionnaires in order to identify and monitor these areas and their connection with health. This could be done in a practical and concrete fashion.

**Measurements, validity and reliability issues**

Apart from the problems mentioned above there were only few instances of concern regarding the instruments applied in the study. Two instruments that are not reported in any of the papers above gave reason for concern. The first was Sense of Coherence (SOC) which yielded low Cronbach _ values. This does not necessarily preclude that it has construct validity.

Another instrument was a map of the social network which showed a very high variance in the number of individuals reported in different spheres, which did not seem to make any sense, apart from the fact that cultural bias seemed to influence some participants. Cultural bias caused by, for instance, religion might also have influenced the way participants rated themselves in SOC. It was found (unpublished data) that change in SOC was highly negatively correlated with change in PTSD symptoms longitudinally, and thus simply might
be an awkward way of measuring PTSD. Otherwise, the measurements worked well even if
many are old, and newer ones have been devised with claims of better psychometric
performance. The intercorrelation between the instruments was high and some are not
mentioned in the present work. Also, the reliability coefficients were high.
After the start of the study, questionnaires were translated into Sorani for political reasons. In
Arabic and in Sorani, Likert Scale orientations were different in some of the questionnaires.
There were complications because of this that it was fortunately possible to resolve. It is
therefore recommended that great care is exercised in harmonising lay-out in order to
minimise sources of error in coding the questionnaires.
A criticism of the present study might be that so many different aspects were examined that it
might seem that the interpretation of the study was more data-driven than theory or
hypothesis-driven. This is not so, there were simply different issues and hypotheses that each
co-author independently wanted to explore. For instance, the focus on life events and
hormones, the integration process and health of refugees, and the interest in PTSD were
independent contributions from each co-author. If the study had been more focused and
theory-driven, it might have been less expensive and time-consuming, but the unexpected
discoveries would probably not have been made. For instance, it would have been highly
unlikely to include DHEA-s as a hormonal marker in a study of PTSD at the time the study
was planned.
As has perhaps been noted, gender issues have not been touched upon apart from the
situations in which biological issues, such as in the analysis of prolactin, were important, or in
case material where they are sometimes obvious. The reason for this is only that the relatively
small numbers precluded pursuing this issue, not that it is unimportant. There were rare but
extreme situations in which cultural gender issues seemed to play a role during the
observation period. The same can be said about cultural issues; in this well-educated group
with a diversity of religious backgrounds, it was also rare, but important, to see cultural
factors - apart from linguistic issues - of any importance to the object of this study of health
determinants in refugees. Such issues would have been reported at least in the open-ended
responses, which was rarely the case. On the other hand, the participants sometimes showed
cultural sensitivity towards the research group by explaining cultural matters. Perhaps this
shows that culture in relation to health is not among the most important concerns in refugee
reception, compared with the massive impact of hardship and distress.
Future perspectives

Research of the integration process in refugee groups
It is highly recommended that future studies of health and psychosocial factors of interest for integration should be longitudinal, and that not only predictors and demographic factors should be included. The latter type of study would only lead to conclusions such as ‘depression predicts depression’, which is hardly enlightening. This study has shown the feasibility and fertility of studying the impact of the current life situation in refugees. Such studies will have to be refined and continued in order to improve our own future, which depends to a large degree on the capacity of societal structures to alleviate the health effects of past and ongoing distress in refugees.

Studies of a putative role of DHEA-s in PTSD
The next step forward will have to be invasive studies where neurosteroids are measured in cerebrospinal fluid, or in blood samples from the internal jugular vein. Further longitudinal studies would also be helpful. In such studies, repeated structured diagnosis of both PTSD and depression would be desirable.

Concluding remarks
The present study confirms that PTSD is a crucial factor in refugee health. As a consequence it is important to carry out assessments. Subjects at risk are readily identified with simple means.

The present study supports several of the conclusions of the few previous longitudinal studies of resettled refugees. Some of these are the importance of early post-migration stressors in determining long-term health outcome, and the longevity of PTSD symptoms and their interaction with present life. The results indicate that housing problems, concern for significant others, and inordinate demands related to integration policy exert a profound health effect on vulnerable subjects. Family reunion was the most important event both in subjective ratings and in ‘chemical’ terms. In spite of shortcomings the study also shows the feasibility of studies of psychosocial factors, which should inform policy in refugee introduction, and the potential gains, not only for the subjects, but for society as a whole.
Acknowledgements
Bengt Fyrö, for many years my boss, almost a second father and always a stimulating and supportive colleague.
Theo Lipin, who taught me to be aware of the activity of pathogenetic memory residues in networks of associations.
Aage and Bodil who were good parents to an eccentric son, and for teaching me about the Second World War in Denmark so I could see the almost imperceptible traces.
My psychoanalyst Gudrun Bidö for her invaluable support in helping me contain my strong emotional reactions to human evil and the widespread denial of it.
Many good teachers, co-workers and colleagues through the years.
Bjöörn Fossum who has been my closest friend and best supporter during this strange journey.
-It is very difficult to live with a person who is treating traumatic stress, and even worse to cope with such a person during the writing of a thesis!
My main research supervisor Töres Theorell for his invaluable help with structure, constant support, and efficient and rapid feedback in spite of an incredible workload and many obligations. Cloudy thoughts were clarified and contorted sentences were straightened out in a way that seemed to me miraculous.
My second research supervisor Solvig Ekblad, who was incredibly practical during the planning and implementation of the study, and supportive throughout. She saved the project from many sources of error, due to her long experience of working in transcultural contexts. Lotta Hartler, Gun Nerje and later Anette Hedberg were secretaries to my supervisors at different points of time. They were always efficient, kind and helpful during the different phases of the preparation and implementation of this work.
Every colleague at IPM for the helpful, creative, permissive, and inspiring environment.
All colleagues at the Centre for Torture and Trauma Survivors. Especially Luis Ramos-Ruggiero who supported me in every way he could in this endeavour, and Iréne Wallinder-Hellgren who always went out of her way to smoothly and efficiently assist me in my clinical work as well as in the implementation of this project. And Margareta von Zweigbergk Olsson whom I found in a mental hospital, or perhaps she found me… Anyway, she kept things together simply by being herself in many situations when they threatened to fall apart.
Many have been involved in the implementation of this study and it would have been impossible without their help. Two people have been especially important; Agneta Berner, head of the introduction group, and research assistant Ibrahim Omar. Agneta and her co-
workers gave generous access and constant, efficient and meticulous co-operation during the data collection. Ibrahim Omar was so easy to work with because of his conscientious efficacy, practical sense, humour and flexibility, which helped solve many unforeseen complexities during the data collection. Three interpreters were especially important for the work; Aziz Gharanfoli, Gabriel Lahdo, and Awrink Mati. They worked with the outmost professionalism through the emotional strain of listening to hours and hours of severely traumatic material. Kristoffer Konarski for appreciation and sharing his sophisticated knowledge.
Stig Elofsson gave statistical advice in a laid-back, stress-reducing way.
Hans Nidsjö at the Immigration Board supplied statistical information efficiently and promptly.
My colleagues Peggy Bernin, Gabriel Oxenstierna, Hugo Westerlund, Reza Emdad and Anna Hertting in the research group meetings for stimulating discussions. Bartholomé de la Torre was always eager to discuss and even helpful with practical matters.
Steven Wicks helped with the language.
Finally, I have nothing against anthropologists and social scientists, actually some of my best friends belong to this category; Jens and Ditte Sjørslev/Bojlén, Inger Sjørslev and Flemming Røgilds who have been so generous and stimulating over the years.

The studies in this thesis have been financed by grants from the Swedish National Board of Health and Welfare, and Stiftelsen för psykosomatisk forskning (The Foundation for Psychosomatic Research).
The Questionnaires GHQ-28 and HTQ were used with permission from the copyright holders.

References


30. Herman, J.L., *Sequelae of prolonged and repeated trauma: Evidence for a complex posttraumatic syndrome (DESNOS)*, pp 213-228., in *Posttraumatic...*


233. Socialstyrelsen, Innehåll i och omfattning av den vård landstingen åtagit sig att ge till asylsökande m.fl. 2000, Socialstyrelsen.


Appendix

Table B: Self-rating values of GHQ-28, Hopkins symptom checklist-25 anxiety and depression, and Impact of Event Scale-22 (mean, number of observations, and standard deviation) in whole group, and in subgroups according to PTSD diagnostic status with test of statistical significance.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Total</th>
<th>PTSD at inclusion</th>
<th>Non-PTSD at inclusion</th>
<th>Significance test</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHQ-28, first assessment α= 0,94</td>
<td>40,46, n=80, s.d.=17,81</td>
<td>50,26, n=31, s.d.=16,70</td>
<td>34,27, n=49, s.d.=15,70</td>
<td>t=4,330, df=78, p=0,000</td>
</tr>
<tr>
<td>GHQ-28, second assessment</td>
<td>42,64, n=69, s.d.=19,46</td>
<td>53,85, n=28, s.d.=18,12</td>
<td>35,86, n=43, s.d.=17,11</td>
<td>t=4,138, df=67, p=0,000</td>
</tr>
<tr>
<td>GHQ-28, third assessment</td>
<td>36,82, n=56, s.d.=18,9</td>
<td>46,90, n=20, s.d.=15,77</td>
<td>31,22, n=36, s.d.=18,45</td>
<td>t=3,202, df=54, p=0,002</td>
</tr>
<tr>
<td>GHQ-28, fourth assessment</td>
<td>36,44, n=54, s.d.=16,74</td>
<td>45,90, n=20, s.d.=15,56</td>
<td>30,8, n=34, s.d.=15,00</td>
<td>t=3,505, df=52, p=0,001</td>
</tr>
<tr>
<td>HSCL-25 anxiety, first assessment α= 0,91</td>
<td>12,17, n=84, s.d.=7,88</td>
<td>15,87, n=31, s.d.=6,73</td>
<td>10,00, n=53, s.d.=7,75</td>
<td>t=3,551, df=82, p=0,001</td>
</tr>
<tr>
<td>HSCL-25 anxiety, second assessment</td>
<td>13,32, n=71, s.d.=8,34</td>
<td>17,78, n=27, s.d.=8,23</td>
<td>10,59, n=44, s.d.=7,22</td>
<td>t=3,859, df=69, p=0,000</td>
</tr>
<tr>
<td>HSCL-25 anxiety, third assessment</td>
<td>13,62, n=59, s.d.=8,48</td>
<td>16,24, n=21, s.d.=7,88</td>
<td>12,18, n=38, s.d.=8,55</td>
<td>t=1,79, df=57, p=0,079</td>
</tr>
<tr>
<td>HSCL-25 anxiety, fourth assessment</td>
<td>12,98, n=56, s.d.=8,03</td>
<td>17,33, n=21, s.d.=8,44</td>
<td>10,37, n=35, s.d.=6,60</td>
<td>t=3,438, df=54, p=0,001</td>
</tr>
<tr>
<td>HSCL-25 depression, first assessment α=0,91</td>
<td>20,04, n=83, s.d.=10,55</td>
<td>26,10, n=30, s.d.=8,96</td>
<td>16,60, n=53, s.d.=9,87</td>
<td>t=4,351, df=81, p=0,000</td>
</tr>
<tr>
<td>HSCL-25 depression, second assessment</td>
<td>21,07, n=71, s.d.=11,47</td>
<td>27,12, n=25, s.d.=10,63</td>
<td>17,78, n=46, s.d.=10,62</td>
<td>t=3,537, df=69, p=0,001</td>
</tr>
<tr>
<td>HSCL-25 depression, third assessment</td>
<td>21,32, n=57, s.d.=12,76</td>
<td>26,25, n=20, s.d.=11,59</td>
<td>18,64, n=37, s.d.=12,71</td>
<td>t=2,220, df=55, p=0,031</td>
</tr>
<tr>
<td>HSCL-25 depression, fourth assessment</td>
<td>20,93, n=54, s.d.=15,06</td>
<td>30,21, n=19, s.d.=18,49</td>
<td>15,89, n=35, s.d.=9,92</td>
<td>t=3,719, df=52, p=0,000</td>
</tr>
<tr>
<td>Impact of Event Scale-22, first assessment α=0,88</td>
<td>60,61 n=79, s.d.=19,96</td>
<td>72,43 n=28, s.d.=11,16</td>
<td>54,12 n=51, s.d.=20,80</td>
<td>t= 5,092, df=76,98, p=0,000</td>
</tr>
</tbody>
</table>
### Impact of Event Scale-22, second assessment

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean ± SD</th>
<th>Mean ± SD</th>
<th>t Value</th>
<th>df</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD at inclusion</td>
<td>65.27 ± 19.978</td>
<td>53.98 ± 23.76</td>
<td>2.018</td>
<td>66</td>
<td>0.048</td>
</tr>
<tr>
<td>Non-PTSD at inclusion</td>
<td>62.41 ± 18.91</td>
<td>47.22 ± 27.64</td>
<td>2.336</td>
<td>44.06</td>
<td>0.024</td>
</tr>
</tbody>
</table>

### Impact of Event Scale-22, third assessment

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean ± SD</th>
<th>Mean ± SD</th>
<th>t Value</th>
<th>df</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD at inclusion</td>
<td>53.98 ± 27.10</td>
<td>54.53 ± 24.48</td>
<td>3.534</td>
<td>62.52</td>
<td>0.001</td>
</tr>
<tr>
<td>Non-PTSD at inclusion</td>
<td>62.41 ± 19.87</td>
<td>47.22 ± 27.64</td>
<td>2.336</td>
<td>44.06</td>
<td>0.024</td>
</tr>
</tbody>
</table>

### Impact of Event Scale-22, fourth assessment

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean ± SD</th>
<th>Mean ± SD</th>
<th>t Value</th>
<th>df</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD at inclusion</td>
<td>65.45 ± 26.03</td>
<td>54.53 ± 24.48</td>
<td>3.534</td>
<td>62.52</td>
<td>0.001</td>
</tr>
<tr>
<td>Non-PTSD at inclusion</td>
<td>62.41 ± 19.87</td>
<td>47.22 ± 27.64</td>
<td>2.336</td>
<td>44.06</td>
<td>0.024</td>
</tr>
</tbody>
</table>

---

**Table C: Serum levels of cortisol, thyroxine, dehydroepiandosterone, and log-transformed prolactin at each assessment.**

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Whole group</th>
<th>PTSD at inclusion</th>
<th>Non-PTSD at inclusion</th>
<th>Significance test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cortisol, first assessment</strong></td>
<td>321.32 ± 83.08</td>
<td>326.78 ± 84.10</td>
<td>318.06 ± 83.0</td>
<td>t=0.467, df=83, p=0.642</td>
</tr>
<tr>
<td><strong>Cortisol, second assessment</strong></td>
<td>314.64 ± 95.28</td>
<td>293.38 ± 84.65</td>
<td>328.45 ± 100.20</td>
<td>t=-1.474, df=64, p=0.145</td>
</tr>
<tr>
<td><strong>Cortisol, third assessment</strong></td>
<td>311.28 ± 111.52</td>
<td>292.42 ± 94.48</td>
<td>323.24 ± 120.68</td>
<td>t=-1.104, df=65, p=0.274</td>
</tr>
<tr>
<td><strong>Cortisol, fourth assessment</strong></td>
<td>329.64 ± 103.81</td>
<td>313.70 ± 84.39</td>
<td>340.84 ± 115.33</td>
<td>t=-1.022, df=61, p=0.311</td>
</tr>
<tr>
<td><strong>Free thyroxin, first assessment</strong></td>
<td>13.40 ± 1.66</td>
<td>13.28 ± 1.54</td>
<td>13.48 ± 1.74</td>
<td>t=-0.516, df=83, p=0.607</td>
</tr>
<tr>
<td><strong>Free thyroxin, second assessment</strong></td>
<td>13.20 ± 1.78</td>
<td>13.28 ± 1.99</td>
<td>13.15 ± 1.66</td>
<td>t=-0.283, df=64, p=0.778</td>
</tr>
<tr>
<td><strong>Free thyroxin, third assessment</strong></td>
<td>13.46 ± 1.97</td>
<td>13.69 ± 1.83</td>
<td>13.31 ± 2.06</td>
<td>t=-0.756, df=64, p=0.376</td>
</tr>
<tr>
<td><strong>Free thyroxin, fourth assessment</strong></td>
<td>13.79 ± 2.21</td>
<td>13.95 ± 2.69</td>
<td>13.68 ± 2.06</td>
<td>t=0.481, df=61, p=0.632</td>
</tr>
<tr>
<td><strong>DHEA-s, first assessment</strong></td>
<td>5.66 ± 2.67</td>
<td>5.74 ± 2.45</td>
<td>5.61 ± 2.81</td>
<td>t=-0.221, df=83, p=0.825</td>
</tr>
<tr>
<td><strong>DHEA-s, second assessment</strong></td>
<td>5.57 ± 2.58</td>
<td>5.88 ± 2.82</td>
<td>5.37 ± 2.43</td>
<td>t=0.779, df=64, p=0.439</td>
</tr>
<tr>
<td><strong>DHEA-s, third assessment</strong></td>
<td>5.33 ± 2.65</td>
<td>5.7 ± 2.71</td>
<td>5.24 ± 2.64</td>
<td>t=0.344, df=65, p=0.732</td>
</tr>
<tr>
<td><strong>DHEA-s, fourth assessment</strong></td>
<td>5.38 ± 2.54</td>
<td>5.70 ± 2.60</td>
<td>53.17 ± 2.50</td>
<td>t=0.807, df=61, p=0.423</td>
</tr>
<tr>
<td><strong>Log-transformed prolactin, first assessment</strong></td>
<td>0.9033 ± 0.199</td>
<td>0.9045 ± 0.209</td>
<td>0.9025 ± 0.94</td>
<td>t=0.044, df=83, p=0.965</td>
</tr>
<tr>
<td><strong>l-prolactin, second assessment</strong></td>
<td>0.8795 ± 0.205</td>
<td>0.8663 ± 0.182</td>
<td>0.8881 ± 0.222</td>
<td>t=-0.419, df=64, p=0.676</td>
</tr>
<tr>
<td><strong>l-prolactin, third assessment</strong></td>
<td>0.8700 ± 0.226</td>
<td>0.8151 ± 0.214</td>
<td>0.9048 ± 0.229</td>
<td>t=-1.601, df=65, p=0.114</td>
</tr>
<tr>
<td><strong>l-prolactin, fourth assessment</strong></td>
<td>0.8734 ± 0.196</td>
<td>0.8448 ± 0.196</td>
<td>0.8935 ± 0.196</td>
<td>t=-0.970, df=61, p=0.336</td>
</tr>
</tbody>
</table>
Table D: Paired samples t-test for IES-22, GHQ-28, and HSCL-25 anxiety / depression (first minus last measurement).

<table>
<thead>
<tr>
<th></th>
<th>Mean difference</th>
<th>S.D.</th>
<th>SEM</th>
<th>95 % confidence interval of the difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>lower</td>
<td>upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IES-22</td>
<td>6.68</td>
<td>19.34</td>
<td>2.56</td>
<td>1.55</td>
<td>11.82</td>
<td>2.61</td>
<td>56</td>
</tr>
<tr>
<td>GHQ-28</td>
<td>2.16</td>
<td>14.34</td>
<td>1.82</td>
<td>-1.48</td>
<td>5.80</td>
<td>1.19</td>
<td>61</td>
</tr>
<tr>
<td>HSCL-25 anxiety</td>
<td>-1.12</td>
<td>6.44</td>
<td>0.79</td>
<td>-2.70</td>
<td>0.46</td>
<td>-1.42</td>
<td>65</td>
</tr>
<tr>
<td>HSCL-25 depression</td>
<td>-2.39</td>
<td>12.28</td>
<td>1.51</td>
<td>-5.41</td>
<td>0.63</td>
<td>-1.58</td>
<td>65</td>
</tr>
</tbody>
</table>

Table E: Coded categories of life-events according to responses to open-ended questions and number of reports.

<table>
<thead>
<tr>
<th>Category</th>
<th>Baseline assessment</th>
<th>Second assessment</th>
<th>Third assessment</th>
<th>Fourth assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. A close relative or friend ill, in peril or in danger in the home country</td>
<td>10</td>
<td>11</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>B. Death of close relative or friend</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>C. Received residency status</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D. Given temporary housing</td>
<td>17</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>E. Starting language school</td>
<td>8</td>
<td>8</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>F. Lacking permanent housing</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>G. Relationship problems; own or in social network</td>
<td>10</td>
<td>9</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>H. Lack of co-ordination between social services and school</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I. Child has problems in school or</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>J. Negative situation in home country (civil war, poverty, impending war, or confiscation)</td>
<td>9</td>
<td>10</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>K. Contacts or visits with friends or relatives</td>
<td>15</td>
<td>13</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>L. Uncertainty regarding friends or relatives</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>M. Achievement in school</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>N. Housing problems: overcrowding, noise, lack of privacy, having to live with annoyed/annoying relatives, moving often, family separated.</td>
<td>17</td>
<td>19</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>O. Arrival of friends or relatives</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>P. Distress over language school</td>
<td>1</td>
<td>8</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Q. Significant others in risk or peril in third country</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>R. Hostility towards refugees</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>S. Experiences of social support</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>T. Social isolation</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>U. Illness experiences; PTSD, psychosomatic or somatic illness</td>
<td>18</td>
<td>15</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>V. Overwhelming demands in daily life</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>X. New contacts or friends</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Y. Increased autonomy</td>
<td>8</td>
<td>11</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Z. Lack of help from social worker</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>AA. Unsatisfying contacts with authorities</td>
<td>12</td>
<td>10</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>BB. Financial problems</td>
<td>10</td>
<td>7</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>CC. Longing, boredom, or loneliness</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>DD. Close friend or relative ill in Sweden</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>EE. Crisis in relationship resolved</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FF. Housing problem resolved</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>GG. Miscellaneous problems resolved</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>HH. Relief over situation in home country</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>II. Violence against relatives in home country: murder, execution, detention, or threat</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>JJ. Family reunion</td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>KK. Problems with flight or family reunion of nuclear family</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>LL. Progress regarding family reunion</td>
<td>8</td>
<td>11</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>MM. Child is denied residency</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>NN. Difficulties of orientation or adaptation to new environment</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>PP. Miscellaneous</td>
<td>15</td>
<td>10</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>
### Table F: Checklist items and number of reports

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Baseline Assessment</th>
<th>Second Assessment</th>
<th>Third Assessment</th>
<th>Fourth Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict with spouse</td>
<td>19</td>
<td>16</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Conflict with close relative or friend</td>
<td>38</td>
<td>28</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Illness or accident in spouse</td>
<td>21</td>
<td>16</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Illness or accident in close relative or friend</td>
<td>32</td>
<td>36</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Death of spouse</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Death of close relative or friend</td>
<td>31</td>
<td>10</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Own illness or accident</td>
<td>36</td>
<td>29</td>
<td>24</td>
<td>17</td>
</tr>
<tr>
<td>Miscarriage or abortion (own/spouse)</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Divorce/ separation</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Married or started cohabitation</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Moved or changed housing</td>
<td>47</td>
<td>25</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Adopted a child</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Change of school or work practice</td>
<td>42</td>
<td>31</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Change of work</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Change of assignment at work</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Conflict at work/work practice/school</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Reduced responsibility at work</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Increased responsibility at work</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Deteriorated economy</td>
<td>45</td>
<td>32</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>News from home country</td>
<td>61</td>
<td>56</td>
<td>40</td>
<td>41</td>
</tr>
<tr>
<td>Conflict with social worker</td>
<td>12</td>
<td>15</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Contact with authorities</td>
<td>23</td>
<td>18</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Contact with Swedish society</td>
<td>37</td>
<td>29</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>New friends</td>
<td>43</td>
<td>28</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>Episode of victimisation (crime or harassment)</td>
<td>26</td>
<td>14</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Experiences leading to flash-back</td>
<td>32</td>
<td>29</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Episode of excessive demands in school</td>
<td>10</td>
<td>24</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>Failure in language test</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Forced school attendance</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Episode of insult by teacher or social worker</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Episode of situation associated with pleasure, relief, or satisfaction</td>
<td>51</td>
<td>31</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>Event Description</td>
<td>15</td>
<td>16</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>--------------------------------------------------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Unexpectedly felt understood by significant person</td>
<td>29</td>
<td>23</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Feeling misunderstood by significant person</td>
<td>33</td>
<td>25</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Episode of feeling exploited</td>
<td>22</td>
<td>17</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Having accomplished something</td>
<td>39</td>
<td>26</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>Forced marriage</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Episode of conflict regarding religious issues</td>
<td>20</td>
<td>10</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Episode of conflict regarding political issues</td>
<td>19</td>
<td>12</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Not getting married</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Suspected of crime or committed a crime</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Disappointed by peer</td>
<td>27</td>
<td>25</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Losing control because of a temper</td>
<td>42</td>
<td>27</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Lost my way without knowing how it happened</td>
<td>19</td>
<td>14</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>An important person showed appreciation</td>
<td>36</td>
<td>28</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>Refusal of application to course or education</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Impossible demands from a relative</td>
<td>19</td>
<td>14</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Forgot an important meeting</td>
<td>13</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Political events in home country</td>
<td>57</td>
<td>48</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>Worried over relatives in home country</td>
<td>71</td>
<td>65</td>
<td>48</td>
<td>47</td>
</tr>
<tr>
<td>Others showed concern or friendliness</td>
<td>51</td>
<td>38</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>Experienced harassment or xenophobia</td>
<td>12</td>
<td>13</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>My temper has been difficult</td>
<td>20</td>
<td>22</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>I/ we had a child</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>The child was healthy</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Experienced sexual problems</td>
<td>26</td>
<td>25</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Insulted by relatives</td>
<td>17</td>
<td>12</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Threatened by relatives</td>
<td>12</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Ill-treatment in health care system</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Accident in close friend or relative</td>
<td>27</td>
<td>15</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Met a friendly person</td>
<td>44</td>
<td>32</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>