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PTSD and trauma in Austria's elderly: influence of wartime experiences, postwar zone of occupation, and life time traumatization on today's mental health status—an interdisciplinary approach

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Background: While in recent years epidemiological studies on World War (WW) II-related traumatization and prevalence of posttraumatic stress disorder (PTSD) in elderly persons have been conducted for various European countries, for Austria, these numbers are unknown.

Objective: The focus of this epidemiologic study was to picture the current mental health status and prevalence of PTSD and lifetime traumatic events in Austria's elderly with respect to WWII and subsequent occupation.

Method: In an interdisciplinary approach of psychologists and historians, 316 elderly Austrians (born before 1946) were interviewed for symptoms of PTSD and lifetime traumatization (Traumatic Life Events Questionnaire, PTSD Checklist-Civilian Version), current mental health (Brief Symptom Inventory), wartime-related trauma, and traumatic experiences with occupational forces. These factors were also compared regarding the zone of occupation (Allied vs. Soviet). Data were collected between March and September 2010.

Results: 97.5% of the sample reported at least one lifetime trauma. War-related traumata were reported by 92.7% and non-war-related traumata by 82.3%; 40.2% experienced traumatic events with occupational forces. PTSD was present in 1.9% of the sample and up to 13.9% taking subthreshold PTSD into account. Both, the presence of symptoms indicative of PTSD and subthreshold PTSD implied weaker current mental health (regarding General Distress: odds ratios up to 25.51; 95% CI = 9.82 to 66.27). Independent of PTSD diagnosis persons from the Soviet occupied zone showed higher levels of Interpersonal Sensitivity, Global Distress, and Phobic Anxiety. Prevalence of PTSD was independent of gender.

Conclusions: Our results corroborate findings from other European countries that PTSD is a common disorder in the elderly due to WWII experience and that PTSD and trauma affect mental health even across long periods of time. Postwar distressing conditions also pose a further risk factor for symptomatology and distress in later years.

Keywords: World War 2; epidemiology; subthreshold PTSD; elderly; general population

For the abstract or full text in other languages, please see Supplementary files under Reading Tools online

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Epidemiological surveys of posttraumatic stress disorder (PTSD) prevalence in community samples for the United States (3.5%) and Europe (1.1%) showed that prevalence rates decrease with older age (Darves-Bornoz et al., 2008; Kessler et al.,

2005). However, this is not true for societies where the elderly (≥ 65 years) have been exposed to traumatic events of World War II (WWII). In Germany, the elderly show a higher lifetime trauma exposure than younger persons (Spitzer et al., 2008) and a doubled PTSD prevalence rate (3.4%) (Maercker, Forstmeier, Wagner, Glaesmer, & Brahler, 2008). The influence of war trauma becomes even more salient in high-risk populations. Several German studies found PTSD prevalence rates between 4.3 and 11% in samples of former nurses, displaced persons and refugees from the eastern parts of Germany, and survivors of bombings (Fischer, Struwe, & Lemke, 2006; Maercker, Herrle, & Grimm, 1999; Teegen & Cizmic, 2003; Teegen & Handwerk, 2006; Teegen & Meister, 2000). All studies reported prevailing lower quality of life and a variety of psychological symptoms. Among those who experienced WWII related traumata as children or adolescents, PTSD prevalence also surpassed 10% (Kuwert, Spitzer, Trader, Freyberger, & Ermann, 2007a). Comparing these results to a country where today's elderly did not experience war, such as Switzerland, rates range around 0.7% (Maercker & Pielmaier, 2010).

Although subthreshold PTSD is not an accepted DSM diagnosis, it must also be considered a distressing condition (Favaro, Tenconi, Colombo, & Santonastaso, 2006). Taking it into account, prevalence rates of 25% have been reported in samples that were highly exposed to WWII-related traumata (Teegen & Meister, 2000). Likewise, in a German community survey, an increase of prevalence rates from 3.4 to 7.2% was reported when taking into account subthreshold PTSD (Glaesmer, Gunzelmann, Braehler, Forstmeier, & Maercker, 2010).

Generally, 25 to 30% of the German elderly population still suffers from mental health problems that are related to traumatic WWII experiences (Fischer et al., 2006). Trauma reactivation (Heuft, 1999) and delayed-onset PTSD have to be considered relevant phenomena in the elderly (Andrews, Brewin, Philpott, & Stewart, 2007).

Results on the influence of gender on the experience of trauma and PTSD are still equivocal. While some studies report higher lifetime trauma exposure in men (Breslau, 2001), others found no such effect (Glaesmer et al., 2010; Hapke, Schumann, Rumpf, John, & Meyer, 2006). Some studies on WWII-related traumata, however, found that men experienced certain types of wartime-related trauma more often than women (Glaesmer et al., 2010; Spitzer et al., 2008; Teegen & Meister, 2000). Under certain circumstances women, have a higher risk in developing PTSD (Brewin, Andrews, & Valentine, 2000) and also show higher rates of PTSD (Darves-Bornoz et al., 2008).

Another issue pertains to the influence of severity of traumatic events and related to this, regional differences on the prevalence of posttraumatic symptomatology. Although it is known that severity of trauma is a relevant

factor for later PTSD (Brewin et al., 2000), the historical dimension of trauma severity of WWII survivors was not explicitly integrated into epidemiological research designs. Some studies compared different recent conflict zones regarding prevalence of PTSD and traumatic events (de Jong et al., 2001). In past years, research on PTSD prevalence and other mental disorders among WWII survivors has been conducted for different regions of Europe (Bramsen, van der Ploeg, & Boers, 2006; Favaro et al., 2006; Hautamaki & Coleman, 2001; Kuwert et al., 2007a; Lis-Turlejska, Luszczynska, Plichta, & Benight, 2008). However, to our knowledge, existing studies did not compare different regions with reference to WWII directly. The post-WWII time of occupation (relevant for Germany and Austria) and the effect of different occupational zones (Allied vs. Soviet) on elderly's current mental health was also not considered in previous research.

Austria, a country of some 8.2 million people and birthplace of Adolf Hitler, was incorporated into the *Third Reich* in 1938. It experienced a similar history of WWII as Germany and was occupied by Western allied (British, French, and U.S. troops) and Soviet forces from 1945 until 1955 after the liberation from the Nazi-regime.

In some regions of Austria, heavy bombing and fighting took place during and at the end of WWII. Historical research revealed that people in Austria and Germany also experienced traumatic events during the time of occupation, such as physical and psychological violence, rape, and robbery by soldiers of the occupation forces (Karner & Stelzl-Marx, 2005; Kuwert, Brahler, Glaesmer, Freyberger, & Decker, 2009; Kuwert, Spitzer, Trader, Freyberger, & Ermann, 2007b; Teegen & Meister, 2000). Respectively, fears and rumors also circulated in the population at that time, contributing to wide-spread distress and unease. Findings also suggest that the traumatic load was higher in the Soviet than in the Allied zone (Karner & Ruggenthaler, 2005; Knoll & Stelzl-Marx, 2005; Mulley, 2005).

There is a lack of epidemiologic surveys and screenings in the Austrian population on mental health (Rohrauer, 2006). Prevalence of PTSD and trauma has not been investigated in Austrian society on a broader scale yet. Even less is known about Austria's elderly and whether a similar prevalence pattern of PTSD, PTSD symptoms, and trauma like in German samples (Spitzer et al., 2008) can be found.

The focus of this study was to picture the current mental health status and prevalence of PTSD symptoms and lifetime traumatic events in Austria's elderly. In an interdisciplinary approach, historians and psychologists worked together to map out high impact trauma areas of WWII for later psychological investigation. The impact of wartime-related trauma, traumatic experiences with

occupational forces, lifetime traumatic events, and gender differences on PTSD and psychopathological symptomatology were investigated. These factors were also compared regarding the zone of occupation (Allied vs. Soviet).

Method

Procedure and subjects

Between March and September 2010, 316 persons (see Table 1) were recruited in all nine counties of Austria through announcements in local newspapers and posters in shops, doctors' practices, and pharmacies and by contacting institutions and residences for the elderly. Inclusion criteria were as follows: year of birth before 1946, residency in Austria during WWII and/or the time of occupation (and of the interview), and a Mini-Mental State Examination (MMSE; Folstein et al., 2000) score at or above 22. The common cutoff of 23 was lowered due to the high age of our sample and the large proportion of participants with less than 10 years of education. This approach is supported by empirical data (Crum, Anthony, Bassett, & Folstein, 1993) and was recommended by an advisory board of psychologists and psychiatrists specialized in gerontology. The study was conducted according to the ethical regulations for clinical research in Austria. All participants provided written informed consent and were interviewed at home. Interviews were conducted by master students and a doctoral student of clinical psychology, trained in psychotraumatology and interview techniques for an elderly population. There were weekly supervision

sessions with two clinical psychologists (one was the research group leader). The number of interviews conducted in each county corresponded to the population density of each county (Statistik Austria, 2011), and the number of interviews with respondents from former Allied ($n=126$) and Soviet ($n=184$) occupation zones also corresponded to present-day population densities in these regions. Five participants indicated that they had resided post-WWII in more than one zone, and one participant did not provide details. These six participants were not included in analyses regarding different zones. Surveys on population movements between the years 1938 to 1945 are not available; therefore, the sample had to be recruited by the rationale described above.

Instruments

Instruments and mode of assessment were chosen to picture the *current* mental health and posttraumatic distress status. Epidemiological research suggests that estimating lifetime prevalences has to be considered as problematic (Kruijshaar et al., 2005). Especially among the elderly, recall bias and cognitive prolepsis have to be expected (Nyberg, Backman, Erngrund, Olofsson, & Nilsson, 1996). Being read out symptoms, which is done in most clinical interviews (Van Ameringen, Mancini, & Patterson, 2011)—instead of recalling them freely—poses further risks of recall bias and to the validity of the data (Kruijshaar et al., 2005; Patten, 2003; Patten, Gordon-Brown, & Meadows, 2010). A recent German study (Spitzer et al., 2008) did not report how lifetime prevalence and possible recall bias were estimated. To arrive at reliable estimates, we assessed 1-month rather than lifetime PTSD prevalence rates and current mental health status.

The interview comprised the following instruments. Cognitive functioning was assessed with the MMSE (Folstein et al., 2000). The Brief Symptom Inventory (BSI; Franke, 2000) was used to determine current clinically relevant (T values [adult norm] ≥ 63) psychological and somatic symptoms and distress. Frequency and type of lifetime traumatization were assessed with the Traumatic Life Events Questionnaire (TLEQ; Teegen, 2003; original Kubany et al., 2000). WWII-related traumata or those caused by the occupational forces (subsumed under "war-related traumata" in the following; WRT) were explicitly excluded in this assessment with the TLEQ. Instead, WRTs were assessed in detail with a structured interview that was developed in cooperation with historians of the Ludwig Boltzmann Institute for War-Research. This interview asked for current socio-demographics, wartime experiences, and experiences with occupational forces (Table 2 and Table 4 list the respective assessed categories). The items were designed by the historians, taking into account historical data on traumatic and other relevant events specific to that time.

Table 1. Sociodemographic characteristics ($N=316$)

Characteristic	<i>N</i>	%	General population (%) ^a
Gender			
Female	197	62.3	58.4
Male	119	37.7	41.6
Marital status			
Single	29	9.2	7.6
Married	125	39.6	44.4
Widowed or divorced	162	51.3	48.0
School education ^b			
< 10 years	161	51.1	45.9
10–12 years	115	36.5	40.9
> 12 years	39	12.4	13.2
	Mean (SD)	Range	
Age (years)	81.9 (6.8)	64–99	74.9

^aAccording to Statistik Austria (2011), with regard to all persons aged between 65 and 99 years living in Austria.

^b $N=315$.

Formulations of items pertaining to WRTs were matched to the format of the TLEQ. Experiences with occupational forces assessed in this interview were considered to be traumatic only in accordance with DSM-IV criterion A (1+2); i.e., “robbed by soldiers” was considered traumatic, when persons indicated that they also felt intense shock, horror, or fear, while “occupational force caused fear” did not qualify. Traumatic experiences with occupational forces also entered Table 2 (WRT by occupational forces).

Symptoms of posttraumatic stress and 1-month prevalence of PTSD symptoms were assessed with the Posttraumatic Stress Disorder Checklist-Civilian Version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL-C assesses PTSD symptoms in the past month according to DSM-IV criteria. Respondents are required to rate the five reexperiencing symptoms (criterion B), seven avoidance symptoms (criterion C), and five arousal symptoms (criterion D) on a 5-point-

scale (1 = “none” to 5 = “very”). Symptoms with ratings of 3 or higher were considered clinically relevant. For a probable full-blown PTSD, one symptom of criterion B, three symptoms of criterion C, and two symptoms of criterion D had to be present. For a probable subthreshold PTSD I, criterion B and either criterion C or D had to be fulfilled (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Shelby, Golden-Kreutz, & Andersen, 2008). For a probable subthreshold PTSD II, at least one symptom of criteria B, C, and D had to be present (Stein, Walker, Hazen, & Forde, 1997). The rationale for using both definitions of subthreshold PTSD was to compare more strict (subthreshold PTSD I) with less strict (subthreshold PTSD II) diagnoses with regard to distress and symptomatology.

Statistical analysis

All analyses were conducted with SPSS 15.0. Categorical variables were investigated with χ^2 tests. Odds ratios

Table 2. Traumatic events in relation to gender and PTSD prevalence

	Total		Women		Men		Univariate statistics		Model adjusted for age		
	N	%	N	%	N	%	χ^2	p	OR	95% CI	P
Any trauma	308	97.5	190	96.4	118	99.2	2.21	0.137	4.40	0.53–36.27	0.169
War-related trauma (WRT)	293	92.7	180	91.4	113	95.0	1.42	0.234	1.88	0.71–4.94	0.201
Bombing	250	79.1	155	78.7	95	79.8	0.06	0.807	1.12	0.63–1.98	0.698
Civilian WRT	64	20.3	42	21.3	22	18.5	0.37	0.544	0.81	0.46–1.45	0.486
By occupation forces	127	40.2	81	41.1	46	38.7	0.19	0.665	0.89	0.56–1.42	0.623
War effort^a	43	13.6	2	1.0	41	34.5	70.56	<0.001			
Prisoner of war^a	51	16.1	3	1.5	48	40.3	82.57	<0.001			
Other trauma	260	82.3	159	80.7	101	84.9	0.88	0.348	1.26	0.68–2.35	0.470
Physical assault	22	7.0	10	5.1	12	10.2	2.95	0.086	2.03	0.85–4.89	0.113
Rape	18	5.7	14	7.1	4	3.4	1.89	0.169	0.46	0.15–1.43	0.181
Robbery	8	2.5	5	2.5	3	2.5	0.00	0.998	1.01	0.24–4.33	0.988
Battered child	26	8.3	7	3.6	19	16.2	15.56	<0.001	5.11	2.07–12.62	<0.001
Childhood sexual abuse	10	3.2	6	3.0	4	3.4	0.02	0.877	1.07	0.29–3.87	0.923
Partner violence	13	4.1	12	6.1	1	0.8	5.16	0.023	0.12	0.02–0.95	0.045
Sudden death of loved one	133	42.2	83	42.1	50	42.4	0.00	0.967	0.98	0.62–1.56	0.938
Accident	103	32.6	57	28.9	46	38.7	3.19	0.074	1.50	0.92–2.44	0.109
Natural disaster	130	41.3	80	40.6	50	42.4	0.10	0.758	1.03	0.65–1.65	0.898
Witnessed trauma	35	11.1	18	9.1	17	14.3	2.00	0.158	1.61	0.79–3.27	0.191
Other	51	16.2	33	16.8	18	15.4	0.10	0.751	0.87	0.46–1.63	0.661
PTSD prevalence (1 month) ^b											
Subthreshold I	27	8.8	17	8.9	10	8.5	0.02	0.887	0.96	0.42–2.18	0.920
Subthreshold II	37	12.0	24	12.6	13	11.0	0.18	0.672	0.85	0.42–1.75	0.665
Full	6	1.9	4	2.1	2	1.7	0.06	0.800	0.81	0.15–4.50	0.808
Subthreshold I+Full	33	10.7	21	11.1	12	10.2	0.06	0.808	0.93	0.44–1.96	0.841
Subthreshold II+Full	43	13.9	28	14.7	15	12.7	0.25	0.618	0.84	0.43–1.65	0.614

Note: Significant ($p < 0.05$) traumatic events are printed boldface.

^aNo model adjusted for age was computed because of a significant Hosmer–Lemeshow test statistics ($p < 0.001$).

^bPercentages refer to those with a positive trauma history ($N = 308$).

(ORs) and 95% confidence intervals (CIs) are provided. Potential confounders were controlled using logistic regression analysis. Continuous variables were analyzed with robust Mann-Whitney-*U*-tests. Tests on the representativeness of the sample were conducted with *z* tests, comparing observed proportions to population values. Figures of effect size—equivalent to Cohen's *d*—are provided, where appropriate. Significance was set to $p < 0.05$.

Results

Table 2 lists the prevalence rates of WRT and non-WRT trauma types, prevalence rates of full and subthreshold PTSD symptoms, and results of statistical tests (controlling for age for better comparability to other studies; e.g., Spitzer et al., 2008), however, men and women did not differ in age, $z = -1.06$, two-sided $p = 0.287$ in the total sample, stratified by gender. MMSE mean score was 27.1 (SD=2.2) and ranged between 23 and 30 (proportion of scores $\leq 23 = 8.6\%$, $N = 26$). The sample was representative of the Austrian population aged 65 years or older, concerning gender distribution, marital status, and education (*z* tests, p 's ≥ 0.266 ; see Table 1).

At least one traumatic event had been experienced by 97.5% of the sample. Experience of some type of WRT was reported by 92.7%, while at least one non-WRT was reported by 82.3%. Traumatized persons ($N = 308$) reported in total on average (mean \pm SD) 3.52 ± 1.75 different traumatic events (range, 1–10), of which 1.74 ± 1.01 were WRTs (range, 0–5) and 1.78 ± 1.36 were non-WRTs (range, 0–6).

The most frequent WRT was bombing (79.1%), the least frequent traumatic war efforts (13.6%), describing active involvement in acts of war, e.g., as a member of the *Wehrmacht*. Traumata experienced under the occupational forces were reported by 40.2%. Men and women differed in none of the WRT prevalence rates, with the exception of traumatic war efforts and of being a prisoner of war (nearly exclusively reported by men). As expected (Spitzer et al., 2008), men reported on average more WRTs than women (2.14 ± 1.19 vs. 1.49 ± 0.78 ; $z = 4.83$, one-sided $p < 0.001$). Excluding traumatic war efforts and being prisoner of war alleviated this difference ($z = -0.80$, two-sided $p = 0.422$).

The most frequent non-WRTs were the sudden death of a loved one (42.2%) and natural disaster (41.3%), the least frequent was robbery (2.5%). Men and women did not differ in non-WRT prevalence rates, with the exception of physical violence during childhood (=battered child; higher among men) and partner violence (higher among women). Contrary to expectation (cf. Spitzer et al., 2008), men and women reported similar numbers of non-WRTs ($z = 1.11$, one-sided $p = 0.134$).

Symptoms of a full 1-month PTSD afflicted six persons (1.9% of all traumatized persons), subthreshold PTSD I and II were more frequent (8.8 and 12.0%, respectively). All persons indicating PTSD rated symptom severity consistently higher than 3 (see Instruments) on their relevant symptoms. Thus, PTSD symptomatology was severe in all persons, regardless of a probable full or subthreshold PTSD diagnosis.

Regarding gender and zone of occupation (see Table 4), there was no difference in full and subthreshold PTSD prevalence rates. However, persons with full PTSD reported more WRTs than all other traumatized persons (2.50 ± 0.84 vs. 1.72 ± 1.01 ; $z = 2.09$, exact two-sided $p = 0.031$), but a similar number of non-WRTs ($z = 1.06$, exact two-sided $p = 0.595$). Combining full PTSD and subthreshold PTSD I, this specific difference in numbers of reported WRTs vanished; yet, the combined group reported still a slightly higher number of total trauma events (3.97 ± 1.85 vs. 3.47 ± 1.73 ; $z = 1.66$, two-sided $p = 0.097$). This difference became significant when comparing the combined group with full PTSD or subthreshold PTSD II against all other traumatized persons (4.16 ± 1.94 vs. 3.42 ± 1.69 ; $z = 2.47$, two-sided $p = 0.013$).

As expected, cognitive functioning was more impaired in persons with PTSD (full PTSD and subthreshold PTSD I vs. all other traumatized persons: 26.48 ± 2.05 vs. 27.17 ± 2.21 ; $z = -2.01$, one-sided $p = 0.022$, $d = -0.23$; full PTSD and subthreshold PTSD II vs. all other traumatized persons: 26.70 ± 2.05 vs. 27.16 ± 2.22 ; $z = -1.56$, one-sided $p = 0.059$, $d = -0.18$). These differences were independent of age; diagnosed and non-diagnosed persons were of similar age (two-sided p 's ≥ 0.539 ; details omitted).

Persons with full PTSD or subthreshold PTSD II had heightened probabilities to exhibit current clinically relevant symptoms in all scales of the BSI, controlling for zone of occupation, see Table 3. The highest ORs occurred for Global Distress, Hostility, and Psychoticism, the lowest for Somatization.

Independent of PTSD diagnosis, former residents of the Soviet zone had significantly increased odds for Interpersonal Sensitivity, Global Distress, and Phobic Anxiety, see Table 3. Residents of the Soviet zone also reported higher rates of distressing or traumatic experiences with the occupational forces, see Table 4. They felt less safe, occupational forces caused more fear, and more likely robbed residents. A larger proportion of former residents still felt fear when being reminded of the occupational forces today.

Compared to Table 3, persons with full PTSD or subthreshold PTSD I had even higher ORs of current clinically relevant symptoms, regardless of zone: nearly twofold for Interpersonal Sensitivity (9.17), Depression (9.13), and Anxiety (10.89); somewhat higher for Somatization (3.76), Phobic Anxiety (5.49), Paranoid

Table 3. Prevalence of current clinically relevant psychopathological symptoms in relation to a full PTSD or subthreshold PTSD II diagnosis

Scale	PTSD ^a (N = 43)		No PTSD (N = 272)		Model adjusted for zone of occupation			Impact of Soviet zone (adjusted for PTSD diagnosis)		
	N	%	N	%	OR	95% CI	P	OR	95% CI	p
Somatization	20	46.5	65	23.9	2.76	1.42–5.37	0.003	1.53	0.90–2.60	0.117
Obsessive-compulsive	5	11.6	8	2.9	4.29	1.33–13.80	0.015	1.15	0.36–3.66	0.809
Interpersonal sensitivity	5	11.6	8	2.9	4.78	1.44–15.86	0.011	9.54	1.21–75.25	0.032
Depression	8	18.6	12	4.4	5.02	1.91–13.22	<0.001	1.77	0.65–4.84	0.266
Anxiety	12	27.9	17	6.2	6.02	2.60–13.94	<0.001	2.11	0.87–5.08	0.097
Hostility	12	27.9	12	4.4	8.47	3.48–20.60	<0.001	1.57	0.62–3.96	0.342
Phobic anxiety	9	20.9	19	7.0	3.88	1.59–9.48	0.003	2.79	1.08–7.24	0.035
Paranoid ideation	9	20.9	16	5.9	4.81	1.93–11.97	<0.001	1.13	0.46–2.75	0.792
Psychoticism	8	18.6	8	2.9	8.40	2.87–24.62	<0.001	0.82	0.28–2.41	0.719
Global distress	15	34.9	12	4.4	13.01	5.35–31.63	<0.001	3.32	1.20–9.16	0.021

^aEither a full PTSD or subthreshold PTSD II diagnosis.

Ideation (7.04), and Psychoticism (12.42); and similar for Obsessive-Compulsive (4.10) and Hostility (8.19; all p 's < 0.001; Obsessive-Compulsive: $p = 0.025$). The OR of current Global Distress was 25.51 (95% CI = 9.82 to 66.27, $p < 0.001$). The effect of Soviet zone remained constant (Interpersonal Sensitivity: OR = 9.38; Phobic Anxiety: OR = 2.69; Global Distress: OR = 3.30, all p 's ≤ 0.043).

Discussion

In the past decade, there has been an increasing interest on WWII-related traumatization and posttraumatic symptomatology in the elderly, especially in European societies (Bramsen et al., 2006; Favaro et al., 2006; Hautamaki & Coleman, 2001; Lis-Turlejska et al., 2008). The purpose of this study was to get an impression of the prevalence of PTSD and comorbid symptoms in a

Table 4. Prevalence of distressing and traumatic experiences with members of the occupational forces and PTSD prevalence rates

Kind of experience	Allied		Soviet		χ^2	p	OR	95% CI
	N	%	N	%				
Occupational force caused fear	17	13.5	116	63	74.96	<0.001	10.94	6.05–19.78
Robbed by soldiers of occupation forces	8	6.3	87	47.8	59.78	<0.001	13.51	6.24–29.26
Physical and/or psychological violence	11	8.7	47	25.5	13.9	<0.001	3.59	1.78–7.23
Fears related to rumors ^a	31	24.6	108	59	35.71	<0.001	4.41	2.67–7.28
Occupational force gave feeling of safety	55	46.2	48	27.4	10.99	0.001	0.44	0.27–0.72
Today still feelings of fear when reminded of occupational forces	2	1.6	22	12.1	11.43	0.001	8.53	1.97–36.94
Victim (or witness) of sexual violence	8	6.3	31	16.8	7.49	0.006	2.99	1.32–6.74
PTSD prevalence (1 month) ^b								
Full	3	2.4	3	1.7	0.19	0.665	0.7	0.14–3.53
Subthreshold I + Full	13	10.4	20	11.3	0.06	0.805	1.1	0.52–2.30
Subthreshold II + Full	19	15.2	24	13.6	0.16	0.688	0.88	0.46–1.68

Note: Percentages within the subgroups are reported. OR are displayed for Soviet zone.

^aSuch as "The Russians are going to rape all women!"

^bPercentages refer to those with a positive trauma history and a non-ambiguous allocation to one of the two zones (N = 302).

sample of elderly Austrians who experienced WWII and the occupation by Allied and Soviet forces. We also used a new approach, as psychologists and historians worked together interdisciplinary.

While previously reported PTSD prevalence rates for the German elderly ranged between 3.4 and 11.0% (Fischer et al., 2006; Glaesmer et al., 2010; Kuwert et al., 2007a; Maercker et al., 1999; Spitzer et al., 2008; Teegen & Cizmic, 2003; Teegen & Handwerk, 2006; Teegen & Meister, 2000), we found a rate of 1.9%. Including also subthreshold PTSD II, this rate increased to 13.9%, which seemed in good accordance with previous community-based findings (Glaesmer et al., 2010). Persons indicated PTSD symptoms as highly distressing and reported poor mental health, regardless of full or subthreshold PTSD (mirroring also previous findings, cf. Spitzer et al., 2008). Thus, our results buttress previous results that persons with subthreshold PTSD seemingly do not suffer less (Favaro et al., 2006). Yet, the more PTSD criteria were fulfilled (subthreshold PTSD I), the worse were mental health outcomes. Hence, we strongly propose to apply subthreshold PTSD (I or II) also in future investigations, as it was clearly found to be clinically relevant.

More than 97% reported at least one life-time trauma. This rate is much higher than in previous epidemiological studies, where rates ranged between 20 and 80% (Hapke et al., 2006; Maercker et al., 2008; Spitzer et al., 2008), but comparable to a small study with elderlies in need of care (Teegen & Cizmic, 2003). Almost 93% reported some type of WRT; 79% of our sample experienced bombings, whereas 20% in a German community sample (Glaesmer et al., 2010). However, prevalence of traumatic experiences with occupational forces was lower (40%) than in another German study (54%) (Kuwert et al., 2007b). Sexual violence was experienced or witnessed by almost 13%, with a higher prevalence in the Soviet zone. This important topic (Kuwert & Freyberger, 2007; Kuwert et al., 2010) will be addressed elsewhere (Lueger-Schuster, Glück, Tran, & Zeilinger, 2012). In total, persons in our study reported less direct involvement in actions of war or experiences in combat zones (apart from bombing) than in other studies (Kuwert et al., 2007b; Maercker et al., 2008; Spitzer et al., 2008). This may be due to differences in assessment, e.g., Spitzer et al. (2008) did not clearly delineate their "combat or war zone experiences" category.

Men and women did not overly differ in type of life-time traumatization and also not in full or subthreshold PTSD prevalence rates. The overall similarity of life-time traumatization of men and women found here is in good accordance with other studies (Hapke et al., 2006), while previously reported sex differences regarding the total number of traumatic events (Spitzer et al., 2008) could not be replicated. Yet, another study

(Glaesmer et al., 2010) found no differences in relation to war-related experiences such as war effort that was observed here. Regional differences may account for these findings. Intriguingly, persons with full PTSD reported a higher number of WRTs. Thus, war may confront persons with most distressing and hardest to handle experiences (Glaesmer et al., 2010; Kuwert et al., 2007a).

Previous studies also reported higher rates of distress and trauma, caused by the Soviet forces in Germany (Kuwert et al., 2007a; Teegen & Meister, 2000). Here, former residents of the Soviet zone reported more distressing and traumatizing experiences with the occupational forces as well. However, our study is the first to highlight that living under Soviet occupation was more adverse, with regard to mental health in general, and social and phobic anxiety in particular. These results seem remarkable, given the time spans involved (Glaesmer et al., 2010; Kuwert et al., 2007a, 2007b) and correspond with historical reports (cf. Karner & Stelzl-Marx, 2005).

As previously discussed (Floyd, Rice, & Black, 2002; Hiskey, Luckie, Davies, & Brewin, 2008; Ullman, 2000), PTSD symptomatology and traumatization likely influence cognitive impairment and various neurocognitive functions (Menning, Renz, Seifert, & Maercker, 2008; Sailer et al., 2008). We observed a small but significant effect of PTSD diagnosis on cognitive impairment, independent of age and gender. It remains to be seen whether this effect is amenable to treatment (König, Lueger-Schuster, & Kryspin-Exner, 2008).

Limitations to the generalizability of our findings are the reliance on data from a—yet rather large and representative—convenience sample and assessing PTSD with a self-report measure and not a clinical interview. This may have biased some of our findings regarding the prevalence of PTSD and mental health indicators in the elderly population.

Our results corroborate findings from Germany and other European countries (Bramsen & van der Ploeg, 1999; Fischer et al., 2006; Maercker et al., 1999; Teegen & Cizmic, 2003; Teegen & Handwerk, 2006; Teegen & Meister, 2000) that PTSD is a common disorder in the elderly due to their experience of WWII and that PTSD and trauma seem to affect mental health even across long periods of time. Postwar adverse and distressing conditions, like in the former Soviet zone, pose also further risk for posttraumatic symptomatology and distress in later years. With a growing proportion of older people in Europe's societies, we affirm previous claims (Spitzer et al., 2008) that screenings for PTSD should be integrated in regular examinations of the elderly. Sequelae of WRTs need to be considered in treatment and care. Furthermore, we recommend interdisciplinary

collaboration for future research on historical traumatization and on the different aspects and effects of traumatization.

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There is no conflict of interest in the present study for any of the authors.

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