

Traumatic experiences and post-traumatic stress disorder among elderly Germans: results of a representative population-based survey

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ABSTRACT

Background: Only a few population-based studies on the epidemiology of post-traumatic stress disorders (PTSDs) are available to date. Most of the existing studies are from the U.S.A. Against the background of World War II, the extent and long-term effects of war-related traumatic experiences in the German elderly population are of special interest. Nevertheless, population-based data on this topic are lacking to date.

Methods: This study examines the occurrence of traumatic experiences and the prevalence rates of PTSD according to DSM-IV and of partial PTSD in a randomly selected sample of the German general population aged 60 years and over (N = 814) using self-rating instruments.

Results: PTSD is apparent in 3.4%; when partial post-traumatic stress syndromes are included, a total of 7.2% of the aged population are involved. The most common individual symptoms resulting from war-induced trauma are avoidance of thoughts and feelings, sleep disturbances, distressing dreams and intrusive thoughts. The most frequently mentioned traumatic experiences of the generation examined in this study were war-related trauma experienced as children or in early adulthood during World War II. As a person's age increases, so does the prevalence of war-related traumatic experiences. There are some gender differences in traumatic experiences, but not in post-traumatic symptoms.

Conclusion: The results emphasize the importance of war-related traumatic experiences from World War II in the German elderly population and their impact on the prevalence of PTSD more than 60 years later.

Key words: post-traumatic stress disorder; prevalence; elderly, World War II, war trauma, Germany, symptoms

Introduction

Clinical experience with elderly patients has called attention to the fact that mental and somatoform disorders can be partially evaluated as post-traumatic stress disorder (PTSD), which could be considered to result from a reactivation of traumatic experiences from their earlier lives (Phifer and Norris, 1989; Macleod, 1994; Averill and Beck, 2000; Maercker, 2002; Radebold, 2003; Bramsen *et al.*, 2006; Heuft, 2006; Kuwert *et al.*, 2009). These experiences can lie decades in the past. For the generation that experienced youth or

young adulthood during World War II, war-related trauma such as bombings, military war service, displacement or war captivity play a central role. This generation experienced such trauma in a phase of life that is not equipped with the ability to differentiate and cope with situations in comparison to the middle and later years of adult life, resulting in an increased vulnerability to post-traumatic stress disorder (Maercker, 2002). These experiences had potential consequences for the development of the personality – creating social contacts or developing coping strategies for the demands and burdens of life, which form the mental resources that are later mobilized for dealing with the aging process (Schneider *et al.*, 2006). Advanced age itself can also involve accumulating burdens, experiences of loss, and developmental crises based on growing age-related risks for decreasing cognitive capabilities, a dwindling social network, loss of roles in life and/or

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the development of chronic illnesses. This can result in a depletion of psychological coping mechanisms, allowing earlier traumatic experiences to take effect again (Maercker, 2002). Being confronted with the losses connected with advanced age can also call up the remembrance of losses connected with earlier traumatic experiences (Solomon and Ginzburg, 1999). In addition, the feeling of being at the mercy of the irreversible and unavoidable changes occurring in advanced age can also cause trauma-reactivation (Heuft, 2004).

More recent studies have suggested that chronic PTSD, linked to the events of World War II, are apparent among up to 5% of all elderly persons (Teegen and Meister, 2000; Hunt and Robbins, 2001; Teegen and Handwerk, 2006; Maercker *et al.*, 2008a). However, several studies indicate frequencies between 10% and 20% (Favaro *et al.*, 2006; Fischer *et al.*, 2006; Kuwert *et al.*, 2008). Yet the studies dealing with this question are very heterogeneous concerning the groups studied (e.g. child soldiers, victims of flight and displacement, nurses from the war front, children growing up with no fathers, prisoners of war), the sampling procedure, the operationalization of trauma consequences and the conclusions drawn about their effects on advanced age. In addition, some previous studies relied on convenience samples of elderly persons – i.e. elderly individuals who responded to a call for participation in a study of their traumatic experiences during the war. This calls into question the extent to which the data can be generalized to apply to the entire elderly population, since those not wanting to be confronted with their earlier traumatic experiences or those less burdened and not interested in participating will not have responded. Some studies were based on clinical samples (e.g. geriatric patients, psychiatric patients, psychotherapy patients) and thus their results are also difficult to apply to the general population.

Our study aims to determine (1) the frequency of war-related and non-war-related potentially traumatic experiences in the elderly general population in Germany, (2) the prevalence rates of post-traumatic stress disorder in the different age groups of the elderly and in both genders, and (3) the frequency of the different post-traumatic symptoms in the different age groups of the elderly and in both genders.

The data are from a large scale population-based representative study. An experience of trauma was not a criterion for inclusion in the study. The data determined here may thus provide a more realistic estimation of the prevalence of traumatization and PTSD in advanced age than is the case with the recently available studies specifically dealing with

trauma experiences or with clinical samples. Results of representative surveys across age groups have already been reported elsewhere (Maercker *et al.*, 2008b).

Methods

Subjects

A representative sample of the German general population was selected with the assistance of a demographic consulting company (USUMA, Berlin). The area of Germany was divided into 258 sampling areas representing the different regions of the country. Households in the respective area and members of this household fulfilling the inclusion criteria (age at or above 14, able to read and understand the German language) were selected randomly. The sample was aimed to be representative in terms of age, gender, and education. A first attempt involved 4,243 addresses, of which 4,118 were valid. If no-one was at home, a maximum of three attempts were made to contact the selected person. Nine hundred and ninety-nine subjects (24.3%) refused participation, 543 subjects (13.2%) could not be reached after four attempts, and 27 subjects (0.6%) refused participation because of severe health problems. All subjects were visited by a study assistant, who informed them about the investigation and gave them a self-rating questionnaire. The assistant waited until participants answered all the questions, and offered help where necessary. A total of 2,507 people between the ages of 14 and 92 years completed the self-rating questionnaires (participation rate: 60.9% of valid addresses) in 2005, of which 42 (1.7%) were not useable. The ethical guidelines of the international codex for the practice of social and marketing research of the European Society for Opinion and Marketing Research were observed.

The results relating to the frequency of traumatic experiences and of PTSD in the entire sample are presented in Maercker *et al.* (2008b). For the current study everyone who was at least 60 years old at the time of the survey was included. The people in this cohort therefore belonged to a group born in 1945 or before and so would have experienced the war years and its aftermath as children or young adults. This random sample encompasses 814 persons. Table 1 shows the sociodemographic characteristics of the sample.

Instruments

LIST OF TRAUMATIC EVENTS

Corresponding to the trauma list of the PTSD module (Perkonig *et al.*, 2000) of the Munich

Table 1. Sociodemographic characteristics of the sample

	TOTAL (N = 814)	MEN (N = 357)	WOMEN (N = 457)
Age (Mean/SD)	69.6 (7.0)	68.3 (6.6)	70.7 (7.2)
	N (%)	N (%)	N (%)
Age groups			
60–64 years	241 (29.6)	128 (35.9)	113 (24.7)
65–69 years	208 (25.6)	102 (28.6)	106 (23.2)
70–74 years	158 (19.4)	59 (16.5)	99 (21.7)
75+ years	207 (25.4)	68 (19.1)	139 (30.4)
Living in western Germany	635 (78.0)	280 (78.4)	355 (77.7)
Family status			
Married/living together	461 (56.6)	264 (73.9)	197 (43.1)
Married/ living separated	4 (0.5)	2 (0.6)	2 (0.4)
Single	21 (2.6)	13 (3.6)	8 (1.8)
Divorced	46 (5.6)	14 (3.9)	32 (7.0)
Widowed	282 (34.6)	64 (17.9)	218 (47.7)
Living with partner	469 (57.6)	268 (75.1)	201 (44.0)
Not living together with partner	345 (42.4)	89 (24.9)	256 (56.0)
Displaced people	162 (20.2)	68 (19.4)	94 (20.8)
Bombed and lost home/evacuated	215 (26.8)	95 (27.2)	120 (26.6)

Composite International Diagnostic Interview (M-CIDI) (Wittchen and Pfister, 1997), eight potential traumatizing events are presented to the participants

- You were the victim of a rape
- You were the victim of a natural disaster
- You received strong bodily threats (e.g. with a weapon), were attacked, injured, or tortured
- You had horrible experiences during military war service
- You experienced another terrible event or a catastrophe
- You were bombed
- You were driven out of your homeland
- You have been diagnosed with a life-threatening illness

After the presentation of these potential traumatic events, an item representing the DSM-IV A2 criterion (intensive fear, shock, and helplessness) was presented. Finally, questions were asked about the most harrowing event (if more than one event had been mentioned). If the participants had talked about several events, the follow-up questions and the determination of symptoms were related to the event that troubled them most.

MODIFIED PTSD SYMPTOM SCALE

The diagnostic criteria for PTSD according to DSM-IV were assessed using the Post-Traumatic Symptom Scale (PSS) (Foa *et al.*, 1993), which is based on the occurrence of symptoms in the last month on a 4-point scale from 0 (“not at all”), 1 (“once a week or more seldom”), 2 (two to four

times per week/half the time”) to 3 (“several times per week/almost always”). Some of the PTSD symptom criteria which, according to Breslau *et al.* (1999), show a negligible diagnostic prediction (sensitivity, specificity), were not included (criteria B3, B4, C2, C3, D2–D4), based on their screening character. The F-criterion (general DSM-IV restriction criteria based on normal life before trauma) was retained.

PSS has shown very satisfactory reliability and validity in studies carried out in the U.S.A. (Foa *et al.*, 1993) and in Germany (Stieglitz *et al.*, 2001). The abbreviated item selection from Breslau *et al.*, which turned out to be the most effective item selection according to receiver operating characteristic analysis, defined positive PTSD cases compared to the complete symptom criteria list with 80% sensitivity, a specificity of 97%, a positive predictive value of 71% and a negative predictive value of 98% (Breslau *et al.*, 1999). In our study the PSS shows very good internal consistency (Cronbach’s $\alpha = 0.93$).

PTSD DIAGNOSIS AND PARTIAL PTBS

A PTSD Diagnosis was determined according to the DSM-IV criteria by using the algorithm of the modified PTSD symptom scale according to Breslau (with the A1 and A2 criteria, B criteria at least 4 of 7 symptoms according to Breslau with scale values ≥ 2 and F criteria). Since epidemiological and clinical studies are already accustomed to analyzing partial (subsyndromal) distortion images (Schuetzwohl and Maercker,

1999), and since the DSM-IV criteria contain a more strict definition of PTSD than the more broadly defined ICD-10 description of PTSD (Rosner and Powell, 2007), this study has also used the more broadly defined criteria for partial PTBS. In recent times the clinical impairment criterion has been a particular focus, since its status for the mental burden resulting from PTSD is still uncertain (Breslau and Alvarado, 2007).

Two partial PTSD syndromes were specified:

Partial PTSD I: At least two symptoms from the symptom clusters B to D and the F criterion (impairment criterion in the DSM IV) must be fulfilled (Schuetzwohl and Maercker, 1999)

Partial PTSD II: As with partial PTSD I, at least two symptoms from the cluster B to D are fulfilled, yet the F criterion is not mentioned (Breslau and Alvarado, 2007).

Statistical analyses

Statistical analyses were conducted using the SPSS 15.0 statistical package. Since χ^2 tests require 80% of expected values to be greater than 5, and our sample shows partially lower values, Fisher's exact tests were applied to test the differences of traumatic events and of post-traumatic symptoms between the different age groups.

Results

Frequency of potentially traumatic experiences

Table 2 shows the frequencies for the different events from the trauma list for the different age groups and both genders.

The percentage of persons who had experienced at least one trauma during their life increases across the age groups. Those aged 75 years and older show the highest percentage (64.3%) (Table 2). All age groups experienced more war-related trauma than civilian trauma, but increasing age is associated with an increasing frequency of different war-related traumatic experiences: 64.3% of the oldest age group reported at least one traumatic event, and 59.7% reported at least one war-related traumatic event (Table 2). Additionally, the frequency of experiences of physical violence and witnessing traumatic events increases significantly with increasing age.

In a second step, people were asked to indicate their worst traumatic experience. War and violence-related experiences are frequently evaluated as the worst traumatic experiences, even though these experiences took place decades ago. Except for displacement from home, the frequencies of all war-

and violence-related events significantly increase over the age groups (see Table 3).

As well as the differences across age groups, some gender differences were found. Interestingly, women are exposed to as many different war-related traumatic events as men. Only imprisonment/hostage is experienced significantly more often by men. Men experienced serious accidents, physical violence and life-threatening illnesses significantly more often (Table 2), but only life-threatening illnesses and imprisonment/hostage were mentioned significantly more often as the worst traumatic experience in men compared to women (Table 3).

Frequency of PTSD in advanced age

The individual symptoms of PTSD resulting from war-related traumatic experiences are listed in Table 4. With a prevalence of 25% across all age groups, avoidance of thoughts and feelings is the most frequent symptom cluster, followed by sleep disturbances, recurrent intrusive thoughts and an exaggerated startle response (Table 4). Differences in the symptoms across the age groups and both genders were tested using Fisher's exact tests. No significant differences were found.

A PTSD within the last four weeks was determined in 3.4% of the elderly, with 1.0% showing a partial PTSD with impairment (Partial PTSD I), and 2.8% showing a partial PTSD without impairment (Partial PTSD II). In summary, 7.2% of those aged over 60 years showed significant symptoms of PTSD.

Discussion

The present study examines experiences of war-related and civilian trauma in a representative sample of elderly persons (60+ years of age) from the German general population (using data collected for the study in 2005). This cohort experienced World War II during childhood and adolescence. Using established instruments, the prevalence of PTSD according to DSM-IV and according to partial syndromes was examined. The experience of trauma was not a selection criterion in the sampling procedure.

In the elderly German general population, war and violence-related traumatic events were experienced to a markedly greater extent than civilian trauma. Increasing age brought about an increasing proportion of persons having experienced war and violence-related trauma and having witnessed a traumatic event. Moreover, an age-specific distribution of the traumatic events shows that, in the oldest age groups, nearly 45% of

Table 2. Frequency of potential traumatic experiences in people aged 60+ years by age groups

	60–64 YEARS (N = 241)		65–69 YEARS (N = 208)		70–74 YEARS (N = 158)		75 + YEARS (N = 207)		FISHER'S EXACT TEST (AGE GROUPS)	WOMEN (N = 457)		MEN (N = 357)		FISHER'S EXACT TEST (GENDER)
	N	%	N	%	N	%	N	%		N	(%)	N	(%)	
War-related trauma														
War effort	16	6.7	43	20.7	41	25.9	92	44.7	93.39***	109	24.0	83	23.3	0.05
Bombing	20	8.3	40	19.3	43	27.6	64	31.7	43.92***	93	20.5	74	20.8	0.01
Displacement from home/ eviction	29	12.1	38	18.3	36	22.8	43	20.9	9.69*	83	18.2	63	17.6	0.05
Prisoner/hostage	–	–	4	1.9	4	2.5	28	13.7	49.83***	6	1.3	30	8.5	23.88***
At least one war-related trauma	46	19.2	82	39.4	74	46.8	123	59.7	83.07***	182	56.0	143	44.0	0.00
Civilian trauma														
Serious accident	8	3.3	17	8.2	10	6.3	11	5.3	5.07	17	3.7	29	8.2	7.36**
Physical violence	1	0.4	14	6.7	16	10.3	38	18.5	53.82***	23	5.1	46	12.9	15.72***
Life-threatening illness	8	3.4	17	8.2	6	3.8	14	6.8	6.37	18	4.0	27	7.6	5.06*
Childhood abuse	3	1.3	2	1.0	1	0.6	1	0.5	0.95	7	1.5	–	–	5.56*
Rape	1	0.4	2	0.9	1	0.6	4	1.9	2.52	7	1.5	1	0.3	0.15
Natural catastrophe	2	0.8	7	3.4	2	1.3	2	0.9	4.57	8	1.8	5	1.4	3.22
Other trauma														
Witnessed trauma	19	7.9	35	16.9	24	15.2	50	24.6	23.61***	74	16.4	54	15.2	0.20
Other trauma	8	3.4	15	7.4	9	5.7	15	7.4	4.71	31	6.9	16	4.5	2.02
At least one traumatic experience	68	28.2	104	50.0	81	51.3	133	64.3	62.03***	210	54.4	176	45.6	0.90

*p<0.05; **p<0.01; ***p<0.001.

Table 3. Worst traumatic experience by age groups

	60–64 YEARS (N = 241)		65–69 YEARS (N = 208)		70–74 YEARS (N = 158)		75 + YEARS (N = 207)		FISHER'S EXACT TEST (AGE GROUPS)	WOMEN (N = 457)		MEN (N = 357)		FISHER'S EXACT TEST (GENDER)
	N	%	N	%	N	%	N	%		N	%	N	%	
War-related trauma														
War effort	9	3.7	19	9.1	14	8.9	44	21.3	35.79***	50	10.9	36	10.1	0.16
Bombing	9	3.7	19	9.1	25	15.8	18	8.7	17.49***	39	8.5	32	9.0	0.05
Displacement from home/eviction	16	6.6	17	8.2	17	10.8	16	7.7	2.22	37	8.1	29	8.1	0.00
Prisoner/hostage	–	–	1	0.5	–	–	6	2.9	9.63**	–	–	7	2.0	9.03**
Civilian trauma														
Serious accident	6	2.5	7	3.4	5	3.2	5	2.4	0.62	9	2.0	14	3.9	2.78
Physical violence	–	–	2	1.0	6	3.8	1	0.5	10.44**	5	1.1	4	1.1	0.00
Life-threatening illness	5	2.1	10	4.8	1	0.6	10	4.8	8.15*	9	2.0	17	4.8	5.05*
Abuse of children	2	0.8	–	–	1	0.6	–	–	2.74	3	0.7	–	–	2.35
Natural catastrophe	1	0.4	1	0.5	1	0.6	–	–	1.64	2	0.4	1	0.3	0.14
Rape	1	0.4	1	0.5	–	–	2	1.0	1.59	1	0.3	3	0.7	0.58
Other trauma														
Witnessed trauma	9	3.7	11	5.3	4	2.5	15	7.3	4.96	27	5.9	12	3.4	2.85
Other trauma	3	1.2	4	1.9	–	–	2	1.0	2.93	7	1.5	2	0.6	1.73
At least one trauma	61	25.3	92	44.2	74	46.8	119	57.5	50.91***	191	41.8	155	43.4	0.21

*p<0.05; **p<0.01; ***p<0.001.

Table 4. Current consequences of war trauma (war service, being bombed, displacement from home, prisoner/hostage) by age group[#]

CURRENT CONSEQUENCES	60–64 YEARS (N = 241)		65–69 YEARS (N = 208)		70–74 YEARS (N = 158)		75 + YEARS (N = 207)		FISHER'S EXACT TEST (AGE GROUPS)	WOMEN (N = 457)		MEN (N = 357)		FISHER'S EXACT TEST (GENDER)
	N	%	N	%	N	%	N	%		N	%	N	%	
Recurrent intrusive thoughts	2	10.0	9	20.9	6	12.8	15	22.1	3.60	100	61.0	86	67.2	1.20
Recurrent distressing dreams of the event	3	15.0	10	23.3	7	14.9	12	17.9	2.19	80	49.1	75	58.6	2.61
Avoiding thoughts and feelings	6	30.0	14	32.6	8	17.4	16	23.9	5.91	81	50.0	74	57.8	1.75
Diminished interest or participation in activities	2	10.0	6	14.0	7	15.2	11	16.7	5.03	63	39.1	53	41.4	0.15
Detachment or estrangement from others	1	5.0	3	7.0	4	8.5	7	10.5	2.85	44	27.0	32	25.0	0.15
Restricted range of affect	1	5.0	6	14.0	5	10.9	9	13.6	4.48	45	28.0	38	29.7	0.11
Sense of foreshortened future	1	5.0	5	11.6	7	15.2	12	18.2	4.66	45	28.0	45	35.2	1.72
Sleep disturbances	3	15.0	8	18.6	8	17.4	15	22.1	3.28	79	48.5	66	51.6	0.27
Exaggerated startle response	3	20.2	5	11.6	8	17.0	16	23.5	3.55	70	42.7	62	48.4	0.96
Distress or impairment in social, occupational or other important areas of functioning	1	5.0	1	2.3	5	10.6	12	18.2	11.07	60	37.0	56	43.8	1.34

2–4 times/week and almost always.

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

[#] Referring to the subjects (n = 230) who indicated a war-related trauma as the worst traumatic experience.

participants indicated war service as their traumatic experience, since these people are old enough to have played an active part in the war. On the other hand, the differences between the age groups concerning displacement and eviction as a traumatic experience are less obvious, because the younger age groups were affected as children while the oldest age groups were affected as young adults. The war-related traumatic experiences are also frequently evaluated as the worst traumatic experience, although these events are decades in the past. Additionally, only life-threatening illness plays an important role as the worst traumatic experience. This finding agrees with expectations, because health problems intensify in the elderly. In contrast with the war-related experiences, which took place a long time ago, illness-related events are expected in old age, making them proxy experiences.

As mentioned above, in the group born at the end of World War II (the youngest age group) there is a lower frequency of war-related traumatic experiences than in the generation having consciously experienced war and its consequences as children or young adults. While Radebold (2006) estimates that about one-third of the generation of war children/youth had specific experiences of a mild nature, and a further third had experiences of extreme nature, this current study has found frequencies of nearly 20% for the 60–64 year olds. But almost 40% of the 65–79 year olds, 47% of the 70–74 year olds, and 66% of those aged 75+ can remember war-related trauma.

Even though age differences in the traumatic experiences have been shown, no age differences in the post-traumatic symptoms were found. This seems to suggest that the people who were younger and experienced less traumatic events are equally affected by post-traumatic symptomatology. One possible explanation is that the younger children were more vulnerable in the war. Only a few gender differences in the frequency of traumatic experiences were found in our study, especially for war-related traumatic events. This is a very interesting finding, as men are first and foremost seen as those affected by direct acts of war. Nevertheless, there are no gender differences in recent the post-traumatic symptoms.

Based on the findings of our study, PTSD is apparent in 3.4% of the elderly population. When partial post-traumatic stress syndromes are included, this rises to 7.2%. The study by Teegen and Meister (2000) revealed a prevalence rate of 5%; however, those data originate from a convenience sample recruited following a newspaper advertisement for participants. In the study by Maercker *et al.* (1999), which surveyed the victims of the Dresden bombings, the prevalence

of PTSD was about 4%. Our survey of persons from the general population, who were not selected according to a criterion of having suffered some degree of war trauma, leads to a slightly lower estimation of PTSD. In a study of people with specific war experiences, it is possible that those who agree to participate may still be reliving their experiences or have a special sensitivity to this topic due to the enduring mental consequences. Moreover, the results are comparable to European studies from countries involved in World War II, like the Netherlands (van Zelst *et al.*, 2003) and France (Legeai *et al.*, 2009), and with a study from Australia (Creamer *et al.*, 2001). War experiences do not have to have a direct connection to current PTSD symptoms, but they can increase the risk of incidences of new symptomatology after subsequent trauma (e.g. Perkonig *et al.*, 2000). Yet Maercker *et al.* (2008a) found markedly lower prevalence rates for PTSD of 0.7% in a study of the elderly in Switzerland – much lower than in the general elderly German population studied here. This supports the idea that traumatization in childhood or youth in World War II results in a higher prevalence of PTSD, since Switzerland escaped much war-related trauma.

A number of shortcomings of the study need to be noted. One is the restrictive definition of trauma. Furthermore, retrospective studies have to consider the possible distortion of memory or memory problems whenever events in the distant past need to be recorded or when the interviewees were infants during World War II. The exclusive gathering of point prevalences of the disorders can also be considered as a weakness of the study. Finally, because the PSS (according to Breslau *et al.* 1999) includes only 10 of the 17 symptoms of PTSD, it can be assumed that this could influence the prevalence rates identified in the study. As mentioned above, our findings are consistent with comparable studies, and the psychometric properties of the PSS according to Breslau have now been confirmed in two other investigations (Siegrist and Maercker, in press; Bohnert and Breslau, in press), making this objection seemingly negligible. On the other hand, it is well known that prevalence rates depend on the instruments used, as shown in relation to PTSD by Spiro *et al.* (1994), for example.

Based on the prevalences determined here, increasing symptom frequency with increasing age has important psychiatric-psychotherapeutic consequences (Cook and O'Donnell, 2005; Radebold, 2005; Tagay *et al.*, 2009). The current results confirm the clinical experience of several authors, such as Radebold (2005), who argue that a historical-biographical perspective is necessary for understanding mental burdens among the elderly.

On the other hand, the prevalence rates of 3–5% also demonstrate that those who experienced war-related trauma nevertheless deal with it rather well in advanced old age. This speaks for salutogenetic developments and for the potential of personal growth after trauma. The results of a study by Kuwert *et al.* (2008), which looked at a group of former World War II child soldiers and the possible influence of a sense of coherence in coping with war experiences, underpin this presumption. Forstmeier *et al.* (2009) found that the most important predictors for post-traumatic growth among former child soldiers from World War II were social recognition as survivors and an increased sense of coherence. Viewed from a resource-oriented perspective, future studies should pay special attention to the psychosocial adaptations that are being activated by the elderly and the important therapeutic approaches that could result from this.

In summary, the German elderly population frequently experienced war and violence-related trauma in World War II. These experiences were mostly evaluated as the worst traumatic experiences of their lives and induced relevant traumatic symptoms and PTSDs even 60 years later. These findings underpin the widespread and long-lasting consequences of wars.

Conflict of interest

None.

Description of authors' roles

Heide Glaesmer and Thomas Gunzelmann wrote the paper and undertook the statistical analyses; Elmar Braehler and Andreas Maercker were responsible for designing the study; and Simon Forstmeier assisted in writing the paper.

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