Posttraumatic growth, social acknowledgment as survivors, and sense of coherence in former German child soldiers of World War II

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Abstract

Objectives: To examine posttraumatic growth and its predictors social acknowledgment as survivors, sense of coherence, trauma severity, and further factors in former child soldiers more than 60 years after deployment. Design: Cross-sectional. Setting: University-based geropsychiatric center in Germany. Participants: 103 former German child soldiers of World War II, mean age 78 years, 96% experienced at least one war trauma. Measurement: Subjects completed the Posttraumatic Growth Inventory (PTGI), Social Acknowledgment Questionnaire (SAQ), and Sense of Coherence Scale (SOC). Trauma exposure and PTSD symptoms were assessed by the Posttraumatic Diagnostic Scale (PDS). Depression, anxiety, and somatization were assessed using the Brief Symptom Inventory (BSI). Results: Number of traumas, recognition by significant others, and general disapproval as facets of social acknowledgment as a survivor, and meaningfulness as a dimension of sense of coherence correlated significantly with posttraumatic growth. In a multiple hierarchical regression analysis, recognition as a survivor by significant others (SAQ) and meaningfulness (SOC) remained the only significant predictors of posttraumatic growth. Conclusion: Social acknowledgment as a survivor by significant others and the belief that the world is meaningful are among the most important factors contributing to posttraumatic growth. Further research should investigate whether treatments of PTSD in people who experienced war traumas recently or many years ago might benefit from a focus on the belief system and the role of family and social support.
Posttraumatic Growth, Social Acknowledgment as Survivors, and Sense of Coherence in Former German Child Soldiers of World War II

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Results: Number of traumas, recognition by significant others, and general disapproval as facets of social acknowledgment as a survivor, and meaningfulness as a dimension of sense of coherence correlated significantly with posttraumatic growth. In a multiple hierarchical regression analysis, recognition as a survivor by significant others (SAQ) and meaningfulness (SOC) remained the only significant predictors of posttraumatic growth.

Conclusion: Social acknowledgment as a survivor by significant others and the belief that the world is meaningful are among the most important factors contributing to posttraumatic growth. Further research should investigate whether treatments of PTSD in people who experienced war traumas recently or many years ago might benefit from a focus on the belief system and the role of family and social support.

Key words: Posttraumatic Stress Disorder, war trauma, child soldiers, posttraumatic growth, social acknowledgment, sense of coherence
Some 300,000 children are currently being abused as child soldiers around the world [1]. They are deployed in military activities such as radio communication, manning sentry posts, digging bunkers, and even armed combat. The traumatic events they experience include threat to their life, injuries, detention, torture, death of others, as well as more indirect stressors, such as displacement and lack of food [2]. There is a dearth of research on both the short-term mental health impact of being a child soldier and the long-term effects of the experience. Prevalence rates of posttraumatic stress disorder (PTSD) in child soldiers involved in recent conflicts are reported to be very high, ranging from 31% to 97% [2-4].

The long-term effects of these experiences can best be studied in former child soldiers who have now grown old. The *WWII Anti-Aircraft Auxiliaries Project* is the first study worldwide to investigate the late-life effects of deployment as a child soldier [5]. During the final years of World War II (WWII), approximately 200,000 German children aged 9 to 17 years were recruited as soldiers by the Nazi government; most of them were deployed as anti-aircraft auxiliaries at air force or marine bases [6]. In a recent paper emerging from this project, we reported a high rate of trauma exposure, with 96% of respondents recalling at least one traumatic event [5]. Surprisingly, only 2% suffered significant PTSD symptoms on average 63 years later, a figure even lower than that reported for German civilian child survivors of WWII [11%, 7].

The huge gap between PTSD symptom rates shortly after deployment as a child soldier and more than 60 years later is partly attributable to methodological issues, such as the tendency of elderly respondents to underreport psychological problems [8] and the higher mortality of less resilient individuals [9]. It may also be partly attributable to the observation that traumatic experiences not only lead to psychopathology, but can also prompt positive psychological changes in the long run. This posttraumatic growth [PTG; 10,11,12] can be defined as “the experience of significant positive change arising from the struggle with a
major life crisis” ([13], p. 521). Examples of positive psychological change are an increased appreciation of life, setting of new life priorities, a sense of increased personal strength, identification of new possibilities, improved quality of intimate relationships, and positive spiritual change [11].

Various predictors of PTG in survivors of traumatic events have been reported, most importantly sociodemographic variables (e.g., age, education, gender), trauma characteristics (e.g., severity, duration), psychopathological symptoms (e.g., PTSD symptoms, depression, anxiety), personality characteristics (e.g., extraversion, openness to experience, neuroticism, optimism, sense of coherence, self-efficacy), coping style, religious variables, and social support [see 10,11,12]. To the best of our knowledge, predictors of PTG in former child soldiers more than 60 years after deployment have not previously been investigated. In this study, we tested the hypotheses that social resources (having a partner and social acknowledgment as a survivor) [14,15], personal resources (sense of coherence) [16], and trauma characteristics (number of traumas and duration of deployment) [17] were positively related to posttraumatic growth. We also hypothesized that, more than 60 years after the war, PTSD symptoms, depression, anxiety, and somatic symptoms would not be related to PTG [18,19].

**Methods**

**Sample**

The study design and sample characteristics are described elsewhere [5]. In brief, former child soldiers of World War II were recruited by articles in regional German newspapers as well as in journals catering for those expelled from Germany’s former eastern territories after the war. Inclusion criteria were deployment as a soldier in World War II and
age not exceeding 18 years at onset of deployment. Traumatization and current PTSD symptoms were not necessary criteria for inclusion.

102 male and one female former child soldiers participated in the study. Their mean age was 78.8 years (SD 1.3, see Table 1). 79.6% were married, 18.4% widowed, 1% divorced, and 1% single. All participants were retired. 61.3% had a university degree, 28.1% had been employed as skilled workers, 10.6% as unskilled workers. Their mean age at onset of combat was 15.6 years (SD 1.2; range 9–17). Their mean length of deployment in WWII was 11.8 months (SD 10.3); their mean length of captivity was 20.6 months (SD 21.5; median 7; mode 2). Reasons given for the end of deployment were war captivity (50.5%), injury (11.7%), end of the war (21.4%), and other reasons (16.5%).

Traumatic events and PTSD symptoms are reported in detail elsewhere [5]. In short, participants reported an average of 2.7 traumatic events during deployment, the most frequent being direct combat exposure (90.3%), traumatic events during captivity (42.7%), witnessing the death of a fellow soldier (37.9%), own injury (17.5%), and witnessing Nazi war crimes, e.g., executions of prisoners in concentration camps (11.7%). Five participants (4.9%) met the DSM-IV criteria for possible PTSD, diagnosed on the basis of the PDS, at some time after WWII, and 2 participants (1.9%) were still suffering from significant PTSD symptoms indicating possible PTSD at the time of the present study. Table 1 also presents standard deviations for social acknowledgment as a survivor, sense of coherence, posttraumatic growth, and psychological wellbeing.

**Posttraumatic Growth**

Posttraumatic growth was assessed by the Posttraumatic Growth Inventory [PTGI; 20,21]. This 21-item self-report measure gauges positive change after traumatic experience on the following subscales: New possibilities, Relating to others, Personal strength, Appreciation of life, and Spiritual change. Participants rated their experience of growth using
a 6-point response format ranging from 0 (not at all) to 5 (very strongly). All items are positively scored, with higher scores indicating greater experience of posttraumatic growth. In this sample, Cronbach’s $\alpha$ was .83, .88, .70, .80, and .84 for the five subscales, respectively, and .93 for the PTGI total score. The factor structure of the German version resembles that of the original version [21]. Test-retest reliability over two months was acceptable, at $r = .71$.

**Traumatic Events and Psychopathology**

The Posttraumatic Diagnostic Scale [PDS; 22], a 49-item self-report instrument, was used to assess trauma characteristics and PTSD symptoms. The items correspond to the criteria A to F of the DSM-IV [23], and a diagnosis is very likely if all six criteria are met. Criterion A1 is covered by a checklist of 12 traumatic events. In case of more than one trauma, individuals are asked to refer to the most distressing event when completing the subsequent sections, including criterion A2 (subjective response to the event), B (5 intrusion symptoms), C (7 avoidance symptoms), and D (5 arousal symptoms). The frequency of each symptom in the past month is rated on a 4-point scale ranging from 0 (not at all or only one time) to 3 (five or more times a week/almost always). Finally, the duration of PTSD and impairment in various life areas are assessed. Additionally, the scale allows symptom severity to be quantified by summing the individual’s responses on the PTSD symptom clusters of intrusions, avoidance, and arousal. In this sample, Cronbach’s $\alpha$ for the three scales was .87, .77, and .78, respectively. For the purpose of our study, the PDS was modified as follows: Respondents were asked to name the four worst experiences of their deployment as child soldiers, and to refer to the most distressing event when completing the questionnaire as described above. In addition, the duration of deployment and captivity in months was assessed.
The Brief Symptom Inventory 18 [BSI-18, 24] was used to assess current psychopathology. This short form of the BSI and SCL-90 includes items measuring somatization, depression, and anxiety (6 items each) as well as a Global Severity Index (GSI) summary score. Participants were instructed to respond to items based on how they had felt in the past 7 days. The GSI correlates highly with analogous scores on the longer versions of the questionnaire (e.g. the correlation between the BSI-18 and the SCL-90 is 0.93). Cronbach’s α for somatization, depression, anxiety, and GSI in this sample was .79, .85, .78, and .89, respectively.

Social and Personal Resources

One item asked whether the respondent currently had a partner.

The Social Acknowledgment Questionnaire [SAQ; 14] was used to assess the traumatized individual’s perception of his or her recognition as a victim or a survivor and of his or her support from family, friends, acquaintances, and local authorities. This 16-item self-report is rated on a 4-point Likert scale, from 0 (not at all) to 3 (completely). It contains the three subscales: Recognition as a survivor by significant others, General disapproval as a survivor, and Family disapproval as a survivor. A total score can also be calculated. A validation study revealed moderate negative intercorrelations between the first and second scale and between the first and third scale, and moderate positive intercorrelations between the second and third scale [14]. Test-retest reliability over two months was good, at $r = .74$ to .85. Cronbach’s α for the total score and the three sub-scores was .86, .79, .82, and .78, respectively.

The 29-item Sense of Coherence (SOC) Scale [25] was administered as a measure of personal resources. According to Antonovisky [25], SOC is a global orientation that expresses a pervasive and enduring, though dynamic, feeling of confidence (a) that the stimuli deriving from one’s internal and external environments are structured, predictable, and explicable
(comprehensibility); (b) that the resources needed to meet the demands of these stimuli are available (manageability); and (c) that these demands are challenges worthy of investment and engagement (meaningfulness). Participants rated their sense of coherence on a 7-point response format. In this sample, Cronbach’s $\alpha$ was .72, .66, and .75 for the three subscales, respectively, and .87 for the SOC total score. Because many studies have shown that the SOC scale is highly correlated with depression and anxiety [26], these factors should be controlled for to disentangle the personal resource part of SOC.

**Data Analyses**

Bivariate correlations were calculated to explore relationships between sociodemographic variables, trauma characteristics, social and personal resources, and psychopathological symptoms as predictors, and posttraumatic growth as criterion. According to Cohen [27], an $r = .10$, .30, and .50 is considered as small, medium, and large, respectively. Only predictors with $r > .15$ and psychopathological symptoms as control variables were included in the multiple regression analyses (5 predictors and 4 control variables) [28]; trauma characteristics were entered in step 1, psychopathology scales as control variables in step 2, and social resources (SAQ) and personal resources (SOC) in steps 3 and 4, respectively.

**Results**

**Bivariate Associations between Variables**

Table 1 presents Pearson correlations between all variables and posttraumatic growth. The following variables exhibited significant correlations with the PTGI Total score: number of traumatic experiences ($r(101) = .29; p < .01$), SAQ Recognition by significant others ($r(101) = .47; p < .01$), General disapproval ($r(101) = .32; p < .01$), and SOC Meaningfulness
In addition, duration of deployment and captivity ($r(101) = .25; p < .01$) and SAQ Total score ($r(101) = .36; p < .01$) correlated with PTGI Relationship to others. Intrusion symptoms correlated with PTGI New possibilities ($r(101) = .26; p < .05$). In terms of power, effect size was large only for Recognition by significant others, medium for General disapproval and number of traumas, and small to medium for Meaningfulness.

Intercorrelations between PTGI subscales are presented at the bottom of Table 1, and correlations between SAQ, SOC, and psychopathology variables are presented in Table 2. Notably, Recognition as a survivor showed a positive correlation with General disapproval ($r(101) = .44; p < .01$), but a negative correlation with Family disapproval ($r(101) = -.27; p < .05$). The SOC scales correlated highly with depression and anxiety ($rs = -.39 - -.62$, all $ps < .01$, df = 101).

**Prediction of Posttraumatic Growth**

A multiple hierarchical regression analysis was performed to compare the power of the assessed variables to predict posttraumatic growth. Table 3 summarizes the results of a regression analysis predicting the PTGI Total score. In step 1, trauma characteristics, i.e., duration of deployment/captivity and number of traumas, were entered simultaneously in the regression equation. The adjusted $R^2$ was .13, with standardized regression coefficients of $\beta = .30$ ($t = 2.29, p < .05$) for both variables. In step 2, psychopathological symptoms were entered. No significant change in $R^2$ was expected or indeed observed after this step. However, given the moderate to high correlations of the SOC variables and the mild to moderate correlations of the SAQ variables with psychopathological symptoms, it was important to control for these variables before testing the predictive validity of the SAQ and SOC. In step 3, we entered social resources, i.e., Recognition as a survivor and General disapproval. Only the coefficient for Recognition was significant $\beta = .37$ ($t = 2.65, p < .05$). Finally, Meaningfulness as personal resource was entered. Table 3 shows the final model of
the regression analysis. The two significant regression coefficients in the final model were for Recognition by significant others ($\beta = .31; t = 2.28; p < .05$) and Meaningfulness ($\beta = .39; t = 2.47; p < .05$). Social resources (social acknowledgment as a survivor) explained incremental variance in posttraumatic growth ($R^2_{\text{change}} = .20; p < .01$), as did personal resources (Meaningfulness; $R^2_{\text{change}} = .08; p < .05$). Overall, 36% of the variance was explained (adjusted $R^2 = .36$; corresponds to an effect size of $\varepsilon^2 = .56; F = 4.16; p < .001$).

**Discussion**

This was the first study to investigate predictors of posttraumatic growth in former child soldiers of WWII. The number of traumas, two facets of social acknowledgment as a survivor (i.e., recognition by significant others and general disapproval), and one facet of sense of coherence (i.e., meaningfulness) correlated significantly with posttraumatic growth. In a multiple hierarchical regression analysis, recognition as a survivor by significant others and meaningfulness remained the only significant predictors of PTG.

**Social Acknowledgment as a Survivor**

Our finding that PTG is positively influenced by social acknowledgment as a survivor adds to the empirical knowledge base on the role of social support in PTG [14,15]. In contrast to social support, social acknowledgment as a survivor does not encompass the structural (e.g., the number of supporters) or functional (e.g., emotional aspects) supportiveness of the direct environment [29,30]. Social acknowledgment as a survivor is defined as the survivor’s perception that individuals or society react positively and appreciate their traumatic experiences, as opposed to societal disapproval, criticism, or rejection [14]. In a previous study, subjective social acknowledgment predicted PTSD better than a conventional measure of perceived social support. This findings was attributed to the higher trauma-related specificity of the SAQ [14]. Self-perceived general disapproval as a trauma
victim has been found to be positively associated with PTSD symptoms in development aid workers [31], crime victims [29], and former political prisoners [14].

Like the WWII Anti-Aircraft Auxiliaries Project, most studies of PTSD in former child soldiers are cross-sectional in nature, and cannot determine the causal direction of the relationship between social support and PTG. Appropriate social support may promote growth, or growth may be an artifact of perceived positive social support. A controlled comparison study of breast cancer survivors may shed light on the direction of this association [32]: Survivors whose friends and family did not wish to hear about the illness reported less PTG. Interestingly, the relationship between lack of social support and lower PTG seemed to be mediated by inhibited cognitive processing. In their model of PTG, Tedeschi and Calhoun [11] suggest that “supportive others can aid in posttraumatic growth by providing a way to craft narratives about the changes that have occurred, and by offering perspectives that can be integrated into schema changes” (p. 8). The degree of social acknowledgment offered by those around the trauma survivor can be crucial in fostering the willingness to incorporate new perspectives, set new goals, and find meaning in the traumatic events.

Interestingly, the intercorrelations of the three social acknowledgment subscales in this sample differed from those reported in previous studies. Recognition as a survivor by significant others has been previously found to show moderate negative correlations with General and Family disapproval as a survivor [14,29]. In the present study, Recognition correlated positively with General disapproval and negatively with Family disapproval. The Recognition scale refers to the reactions of significant others, whereas the General disapproval scale refers to society as a whole. The reason for the altered role of societal disapproval might be found in this particular study population. In comparison to previous studies using the SAQ [14,29,31], our study population is older (in their 70s and 80s vs. 40s
and 50s), experienced a trauma longer ago, and was not only victim but also aggressor (trauma in war vs. development aid, crime, and political imprisonment). In terms of age, the close environment seems to be more important to elderly people than society in general [33]. In terms of being part of the aggressor, societal disapproval may have been a common experience for German soldiers after WWII and thus reappraised by the subjects. Disapproval by society might even prompt victims to seek personal growth and acknowledgment as survivors by significant others.

**Sense of Coherence**

Tedeschi and Calhoun [11] suspected a curvilinear relation between sense of coherence and PTG. People high in SOC might have coping abilities that make them better able to deal with the challenge of trauma, and contending with trauma can be considered crucial for PTG. Those very high in SOC should thus experience little additional benefit relative to those who are moderately capable. Additionally, people very low in SOC may have insufficient resources to benefit much at all from trauma. We found no such curvilinear relationship, but a moderately positive linear association between one aspect of SOC – meaningfulness – and PTG, even when depression and anxiety were controlled for. To our knowledge, there is only one other study on this association, and its findings are perfectly in line with ours [16]: In a sample of patients with spinal cord injuries and a sample of bereaved parents, PTG was moderately positively related to meaningfulness and not to the other SOC scales.

These findings seem plausible: people who generally believe that the world is meaningful are more likely to experience growth and find meaning in traumatic events. However, as previously stated [12], the concepts of SOC and PTG might overlap, and cannot be disentangled in cross-sectional studies. Measures of meaningfulness and PTG might assess the same underlying factor. Alternatively, people who indicate that they generally
believe in a meaningful world may also be more likely to indicate that they found meaning in their experience in order to reduce cognitive dissonance.

**Trauma Characteristics, Psychopathology, and Sociodemographic Factors**

The number of traumatic events and the duration of deployment/captivity were predictive of PTG when first entered in the regression equation. When the other predictors were included, however, they lost their predictive power. These findings might be attributable to recall problems in old age. However, it certainly makes sense that people only experience strong growth and initiate changes in their lives when traumatic experiences are severe. Previous studies have found objective and subjective trauma severity to be generally associated with higher levels of PTG [17,18,32,34,35]. Other studies suggest that the relationship between trauma severity and PTG is not always positively linear, but curvilinear, such that PTG is stronger at intermediate than at high and low levels of exposure [36]. Because trauma severity in the present sample was relatively consistent, a curvilinear relationship could not be observed. Moreover, the number of traumatic experiences may be only a very vague indicator of trauma severity.

General PTSD severity was not associated with PTG in this study. Only intrusive symptoms were related to New possibilities, a subscale of the PTGI. Most cross-sectional studies investigating the link between PTSD symptoms and PTG have not found systematic relationships [12]. Consistent with our findings, some studies found no correlations between PTSD severity and PTG [15,16,18,19]. However, others found positive [37] or negative correlations [17,35,38]. These mixed findings can be explained by the two-dimensional stress response perspective, which suggests that growth and distress may be two separate, independent dimensions of experience [10,11]. For example, a study with American veterans who served in WWII or Korea, self-reported desirable effects of military service (comparable to the construct of PTG) decreased the relationship between combat exposure and PTSD,
whereas undesirable effects (e.g., losses in career and relationships) increased it [39]. Desirable and undesirable consequences of war are found to be independent predictors of PTSD symptoms in this study.

Depression, anxiety, and somatization were not found to correlate with PTG in this study either. Most cross-sectional studies investigating the association between PTG and depression or anxiety have not found a systematic relationship between the two [15,32]. Any significant relations found have been negative [38]. Again, the two-dimensional stress response perspective may account for these findings.

Age at onset of deployment, age at the time of the study, and education were not associated with PTG in this study. In this context, it is important to note that our sample was quite homogenous, with low variation in age at the time of the study or at onset of deployment. Other studies have found an age effect, with younger victims being generally more likely to report posttraumatic growth [15]. When measured longitudinally, PTG has proved to be relatively stable over time, e.g. after 3 years in a sample of survivors of natural and man-made disasters [35], after 5–7 years after motor vehicle accidents [34], and after 8 years in a sample of heart attack victims [40]. Thus, we can assume that former child soldiers are most likely to experience PTG in the first few years after the end of deployment or captivity in WWII.

Limitations and Conclusions

Several limitations warrant discussion. Participants were recruited via advertisements in newspapers, which raises the question of participation bias. On the one hand, people may have been interested in participating because of their personal grief; on the other hand, there is evidence that highly traumatized subjects have difficulty participating in research that might undermine their defenses [41]. Highly traumatized subjects and generally those poorer in health may have experienced reduced longevity. These possibilities cannot be ruled out
because of the cross-sectional nature of the study. Furthermore, due to the decades elapsed between trauma and assessment, recall bias may be another important limitation. PTSD assessment was based on a self-report screening instrument (PDS) and was not validated by a structured interview. Although the scale showed a high level of agreement (82%) with the PTSD module of the SCID [22], PTSD diagnoses based on the PDS must be considered presumptive. The somewhat small sample, the reliance on correlational tests, and the high chance of type I errors because of the high number of bivariate correlations can be considered to be further limitations. Finally, the cross-sectional nature of this study does not allow conclusions about causal relationships.

Despite these limitations, the present study underscores the impressive ability of the human race to experience personal growth, even after severe traumatic exposure as child soldiers. Social acknowledgment as a survivor by significant others and the belief that the world is meaningful are among the most important factors contributing to posttraumatic growth. Future studies using a longitudinal design should investigate possible pathways of PTG. For example, PTG might predominantly depend on positive traits (such as SOC), then individuals would experience PTG very briefly after the traumatic event. Alternatively, PTG might develop after a longer struggle with the trauma because the individual needs time to activate supportive relationships or insufficient coping strategies. The influence of other childhood events must be taken into account since it influences adjustment in old age [42]. We surmise that different pathways are possible for different individuals, but that PTG is most likely to be developed in the first few years after the trauma (see above) and shows a nonlinear course.

These insights can inform strategies for the counseling and treatment of children who experienced war traumas, and suggest that a focus on the belief system and the role of family and social support is warranted [43]. Further research should investigate whether these
strategies could be generalized to geriatric patients in a sense that elderly people who experienced a trauma at some point in their life and are still or again suffering a significant level of distress [44], could benefit from psychotherapies that support biographic integration of the trauma into their life and that facilitate finding meaning in adversity [45,46].
References