


Dimensions of posttraumatic growth in a German-speaking sample using mixed methods

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ABSTRACT

Background: Highly adverse events can shatter fundamental assumptions about one's self and the expected course of life actuating a process of adjustment regarding new appraisals. This struggle in the aftermath of adversity might yield posttraumatic growth (PTG), which refers to positive transformation within the person. PTG is a concept that has been established within a Western cultural framework and has both universal and culture-specific characteristics. Although across cultures individuals perceive benefits from their struggles with life crises, the nature of PTG might be coloured by cultural factors.

Objective: This study aimed to identify aspects of PTG in a German-speaking sample (Austria and Germany) that are unique to this individualistic culture and not yet covered by the Posttraumatic Growth Inventory (PTGI).

Method: We used a convergent parallel mixed methods design. In sum, 188 German-speaking adults were recruited via snowball sampling. They reported on their worst experience ever and completed the PTGI, and 54 participants detailed in open-ended questions possible positive changes additionally to the questionnaire.

Results: The existing growth dimensions of the German PTGI were confirmed by participants' qualitative statements. Additionally, qualitative data analysis revealed the elaboration of two PTGI dimensions, and the emergence of two new domains: (1) 'lessons learned', which involves newfound knowledge about oneself and one's life, and (2) 'processing of adversity with potential growth experiences', which illustrates the tightrope walk of growth.

Conclusions: The results support Tedeschi and Calhoun's model of the process and outcomes of PTG. By including qualitative methodology this study contributed to (1) revealing culture-specific growth experiences (i.e. different sub-forms of individualism were identified), and (2) underscoring the importance of 'potential growth' so that further promotion of growth is possible at an early stage of processing adversities.

Dimensiones del crecimiento postraumático en una muestra de habla alemana, utilizando métodos mixtos

Antecedentes: Los eventos altamente adversos pueden destruir las suposiciones fundamentales sobre uno mismo y el curso de vida esperado, activando un proceso de adaptación con respecto a las nuevas valoraciones. Este conflicto después de la adversidad podría producir un crecimiento postraumático (CPT), que se refiere a la transformación positiva dentro de la persona. CPT es un concepto que se ha establecido dentro de un marco cultural occidental y tiene características tanto universales como específicas de la cultura. Aunque en todas las culturas las personas perciben los beneficios de sus conflictos con las crisis de la vida, la naturaleza del CPT puede verse influida por factores culturales.

Objetivo: Este estudio tuvo como objetivo identificar aspectos de CPT en una muestra de habla alemana (Austria y Alemania) que son exclusivos de esta cultura individual y que aún no están cubiertos por el Inventario de crecimiento postraumático (ICPT).

Método: Utilizamos un diseño de métodos mixtos paralelos convergentes. En total, 188 adultos de habla alemana fueron reclutados mediante muestreo de bolas de nieve. Informaron sobre su peor experiencia y completaron el ICPT, y 54 participantes detallaron en preguntas abiertas posibles cambios positivos adicionales al cuestionario.

Resultados: Las dimensiones de crecimiento existentes del ICPT alemán fueron confirmadas por las declaraciones cualitativas de los participantes. Además, el análisis de datos cualitativos reveló la elaboración de dos dimensiones ICPT y la aparición de dos nuevos dominios: (1) 'lecciones aprendidas', que implica un nuevo conocimiento sobre uno mismo y la propia vida, y (2) 'procesamiento de la adversidad con potenciales experiencias de crecimiento', que ilustra el camino del crecimiento en la cuerda floja.

Conclusiones: Los resultados apoyan el modelo de Tedeschi y Calhoun del proceso y los resultados de CPT. Al incluir una metodología cualitativa, este estudio contribuye a (1) revelar experiencias de crecimiento específicas de la cultura (es decir, se identificaron diferentes sub-formas individualismo) y (2) subrayar la importancia del 'crecimiento potencial', de modo que sea

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关键词

创伤后生长; 应激性生活事件; 创伤后应激障碍; 混合方法; 西方文化; 心理健康

HIGHLIGHTS

- The beneficial use of mixed methods compared to a single methodology: Identified themes represent participants' voices as additional dimensions of growth.
- Informing the clinical practice – the emergence of the growth process: the dimension 'potential growth' serves as a basis for the promotion of growth at an early stage in processing of adversities.
- The study findings underscore individualistic components of growth, for example, expressed in the domain 'lessons learned', which are in line with the PTG concept.

posible una mayor promoción del crecimiento en una etapa temprana de procesamiento de adversidades.

一个德语国家样本中创伤后成长的维度：使用混合方法

背景：严重的不良事件可能会破坏个体自我的基本假设和生活引发对新评估调整的预期进程。逆境之后的这种挣扎可能导致创伤后成长 (PTG), 这是指人内部的积极转变。PTG是在西方文化框下确立的概念, 具有普遍性和文化特异性的特征。尽管跨文化个体会从与生活危机的斗争中受益, 但PTG的性质可能会受到文化因素的影响。

目标：本研究旨在确定一个德语样本 (奥地利和德国) 中PTG的个体主义文化独有但尚未列入《创伤后成长评定量表》(PTGI) 的方面。

方法：我们使用了收敛的并行混合方法设计。总体而言, 通过滚雪球抽样招募了188名说德语的成年人。他们报告了自己有史以来最糟糕的经历并完成了PTGI, 有54名参与者在开放式问题中详细说明了问卷未涉及的可能的积极变化。

结果：参与者的定性陈述证实了德国PTGI现有的维度增长。此外, 定性数据分析还展现出PTGI两个维度的细化, 和两个新领域的产生: (1) ‘汲取的教训’, 涉及到关于自己和生活新发现的知识, 以及 (2) ‘处理具有潜在成长的逆境经验’, 这也阐明了成长的处境艰难。

结论：结果支持Tedeschi和Calhoun关于PTG过程和结果的模型。通过纳入定性方法, 这项研究有助于 (1) 揭示文化特定性的成长经历 (即, 识别出了个体主义的不同亚形式), 以及 (2) 强调‘潜在成长’的重要性, 从而有可能进一步在处理逆境的早期阶段促进成长。

1. Introduction

Even though in ancient times personal gain was found in suffering, it was only in 1995 that Tedeschi and Calhoun introduced the term post-traumatic growth (PTG), which is defined as positive changes resulting from an individual's struggle with trauma. Within their PTG model, a traumatic or stressful event is the starting point of growth and serves as a ‘seismic’ challenge for an individual. A trauma shatters a person's fundamental assumptions about one's self (e.g. self-control), others (e.g. people are benevolent), and one's world (e.g. events are meaningful or predictable), and consequently, the expected course of one's life (Janoff-Bulman, 1992). Thus, the individual is forced to reconfigure his or her assumptive world, and ruminative processes can lead to transformations within the person, that may drive individuals to a higher level of functioning than prior to the negative event (Calhoun & Tedeschi, 2006). An individual can perceive growth in three general domains (Tedeschi & Calhoun, 1995): ‘perceived changes in self’, ‘changed sense of relationship with others’, and ‘changed philosophy in life’. In 1996, Tedeschi and Calhoun empirically identified in a U.S. sample five PTG dimensions, resulting in a quantitative measure, namely the Posttraumatic Growth Inventory (PTGI). The domain ‘perceived changes in self’ was divided in ‘personal strength’ and ‘new possibilities’, ‘changed philosophy in life’ was split into ‘appreciation of life’ and ‘spiritual change’, and ‘relating to others’ remained as a single factor. The term ‘posttraumatic’ emphasises that growth occurs in the aftermath of a traumatic event but the term is used in a broader way (e.g. PTG has been studied in people after romantic relationship break-ups, Tashiro & Frazier, 2003).

1.1. Assessment of PTG and culture

Following a wide array of stressful events, reports of PTG have been recognized in populations from different cultures (e.g. Australia: Morris, Shakespeare-Finch, Rieck, & Newbery, 2005; China: Ho, Chan, & Ho, 2004; Germany: Maercker & Langner, 2001; the Netherlands: Jaarsma, Pool, Sanderman, & Ranchor, 2006). Even though all these quantitative studies confirm that possible growth is universal, they clearly point to unique features of PTG in specific cultures as the factor structures of the PTGI vary between two and five domains. For example, in a Chinese context, the growth dimensions were broadly dichotomised into an interpersonal and intrapersonal dimension (Ho et al., 2004), which reflected a collectivistic and individualistic worldview, respectively (Triandis, 1995). The interpersonal dimension described increased engagement in relationships, whereas the intrapersonal dimension focused on changes within the individual (Ho et al., 2004). The former factor was more closely aligned with a collectivistic worldview given the fact that interdependence is emphasised in collectivism. The latter one comprised changes in growth rather attributed to individualism because independence is of great importance in an individualistic culture (Triandis, 1995).

To identify the uniqueness of PTG Pals and McAdams (2004) recommend the analysis of affected people's narrative accounts on this topic. Although the findings of a majority of the studies that included qualitative methods or solely used them broadly supported Tedeschi and Calhoun's (1995) original growth model, most study findings clearly revealed specific aspects of PTG that were unique either to particular cultures and/or specific types of trauma (e.g. Iran/Cancer: Heidarzadeh, Rassouli, Brant, Mohammadi-Shahbolaghi, & Alavi-Majd, 2017; Iraqi living in Turkey/war-related trauma: Kilic, Magruder, & Koryürek, 2015). Studies on cultures

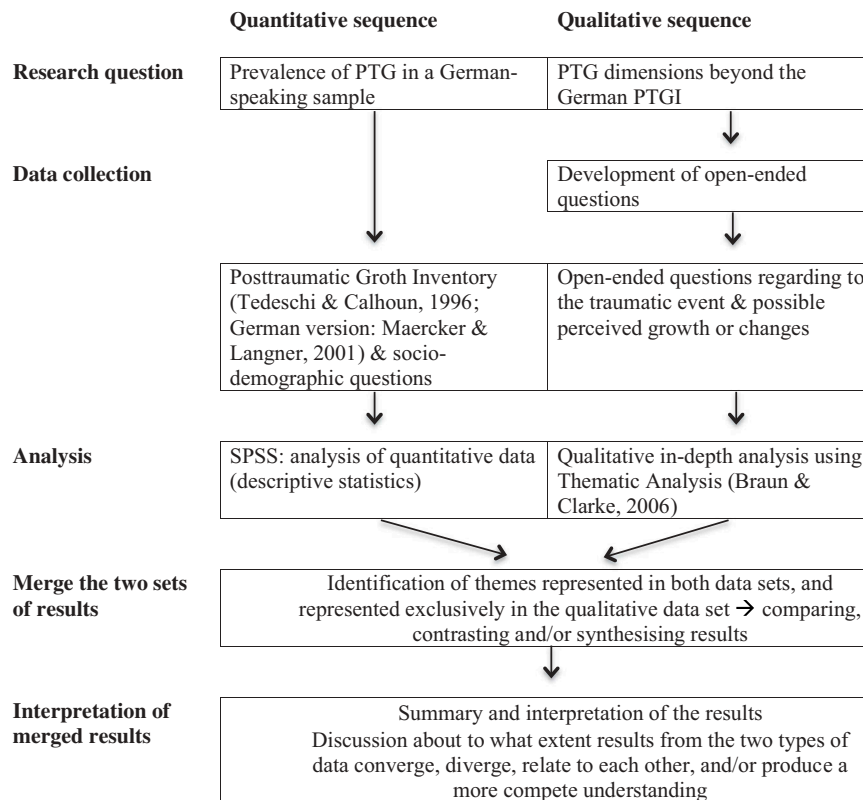


Figure 1. Flowchart of the convergent parallel design (data-validation variant) adapted from Creswell and Plano Clark (2011).

different to the Western culture revealed new growth dimensions or expanded the existing ones found by Tedeschi and Calhoun. In their qualitative study, Uy and Okubo (2018) investigated the PTG process and outcome in Cambodian community leaders who were survivors of the Khmer Rouge genocide and presently lived in the U.S. The core themes for the PTG outcome replicated more or less the growth dimensions captured by the PTGI. The new developed growth dimension 'effective leadership' was closely related to their specific traumatic experience. They wanted to give back to their community, i.e. they wanted support healing and unity within their respective communities because they have had opportunities for higher education and resources (Uy & Okubo, 2018). However, also in European and Anglo-Saxon cultures (i.e. cultures rather similar to the U.S.) new growth domains could be identified. For example, Shakespeare-Finch and Copping (2006) discovered in their qualitative study with an Australian sample that, on the one hand, empathy became of such great importance that a separate dimension 'compassion' was formed. On the other hand, the authors discovered the absence of spiritual/religious growth in their sample.

The emergence of new or specified growth aspects in qualitative studies indicates that people respond differently to stressful events based on their sociocultural context. The present mixed methods study aims

to discover if there are dimensions of PTG in a German-speaking sample (Austrian and German participants) that are not yet covered by the PTGI. Austria and Germany share the same language (they are the two European countries where German is the *only* official language). They are also geographically and historically related cultures and they show the greatest similarity within the patterns of personality profiles across 36 cultures (Allik & McCrae, 2004). People from Austria and Germany appear to be outgoing, open to new experience and antagonistic (Allik & McCrae, 2004). According to Hofstede's (n.d.) country comparisons, both countries are individualistic with a high preference for a loosely knit social framework in which individuals are expected to take care of themselves and their immediate families only.

The main purpose of this investigation was to develop a more thorough understanding of the PTG phenomenon in this specific German-speaking sample using a convergent parallel mixed methods design (data validation-variant, see Figure 1). The quantitative data examined the prevalence of PTG among traumatised and non-traumatised adults, gender and age differences in perceived growth, and the relation between (1) elapsed time since the traumatic event, (2) objective severity of a worst experience (corresponding to the criterion A of PTSD in DSM-V), and

(3) religiosity and PTG. The qualitative data provided possible emergent dimensions to validate the quantitative survey findings, and explored the experience or non-experience of PTG more in depth.

2. Method

2.1. Research design

Through a convergent parallel mixed methods design, qualitative and quantitative data are collected in a parallel way, analysed separately, and then merged (see Figure 1).

2.2. Participants and procedure

From July to December 2017 we recruited a non-clinical sample of 188 adults (62 men, 123 women and three participants without information on their gender) via snowball sampling (Noy, 2008). Inclusion criteria were being German-speaking, and self-identifying as Austrian or German from a cultural perspective. Out of these 188 participants, 54 randomly selected participants were also part of the qualitative inquiry. The participants' mean age was 28.91 years ($SD = 12.36$, age range: 18–76 years), the mean age during the event was 20.86 ($SD = 11.35$), the elapsed time since the event was on an average 7.88 years ($SD = 7.78$). About 66.5% of the participants ($N = 125$) stated that they are no active believers, 27.1% ($N = 51$) were active believers, 0.5% ($N = 1$) did not specify, and for 5.9% ($N = 11$) no information was available. The analysis of the critical event revealed that 28.2% of the participants ($N = 53$) described a traumatic event according to DSM-V (Criterion A for PTSD) (American Psychiatric Association, 2013), and the remaining 71.8% ($N = 135$) reported about a critical life event.

Participants gave oral or written informed consent before participation. Participation was voluntary and anonymous and participants could resign from participation at any moment. Participants had the possibility to contact the first author for consultancy or referral to another psychological service in case the study participation triggered something negative. We followed APA ethical standards in the conduct of the entire study (American Psychological Association, 2017). Due to the nature of the study, which neither involved patients nor required medical treatment or other medical procedures, no approval was needed from the ethics committee for this study ("Federal Act on the Organisation of Universities and their Studies (Universitätsgesetz 2002 – UG)," 2002/amended 2018; "Hospitals and Health Resorts Act (Bundesgesetz über Krankenanstalten und Kuranstalten – KAKuG)," 1957/amended 2016).

2.3. Qualitative and quantitative study

All data were collected in written form. The following materials (questionnaire set) are used for the inquiry of all participants ($N = 188$); 54 participants (out of 188) were part of both the qualitative (open-ended questions included on the PTGI) and the quantitative inquiry.

2.4. Materials

2.4.1. Demographic characteristics

Participants reported their age, age at the time of the experienced adversity, gender, and whether they were active believers or not.

2.4.2. Open-ended questions included on the PTGI German version

First, participants ($N = 54$) were asked to describe in detail their worst experience ever. Second, they were requested to detail their positive changes in case they have experienced some.

2.4.3. Posttraumatic growth inventory (PTGI, Tedeschi & Calhoun, 1996)

The questionnaire starts with an indication or brief description of the participants' worst experience ever, which indicates the objective severity of the most stressful event. This description was then categorised according to criterion A of PTSD in the DSM-V. Then, the five growth factors are measured with 21 items on a 6-point Likert scale ranging from 0 (no experienced change) to 5 (experienced change to a great degree) (scale range: 0 to 105): (1) relating to others means a greater connection to other people; (2) new possibilities comprise the discovering of new paths in life; (3) personal strength means that people became aware of their own vulnerability and yet they are much stronger than they thought; (4) spiritual change refers to that even atheistic people can grow; and (5) appreciation of life indicates that people changed their priorities of life.

For this study, the German version of the PTGI (Maercker & Langner, 2001) was used. The scale was found to have satisfactory reliability for the total score ($\alpha = .92$) and for the subscales (relating to others = .85, new possibilities = .81, personal strength = .76, appreciation of life = .73, spiritual change = .81) (Maercker & Langner, 2001).

2.5. Data analysis

2.5.1. Quantitative study

The PTGI outcome assessment used ordinal variables. Data between women and men, and trauma and non-trauma were paired. A Student's t-test was used for the analysis, with an alpha level of 0.05. The null hypothesis for each test was the mean of the

population from which the sample was taken, was the same for both groups. A Pearson's correlation coefficient was calculated for the total scores of the PTGI and descriptive factors associated with the potential trauma. These factors were not distributed normally.

2.5.2. Qualitative study

The qualitative approach offers the possibility to gather unstructured, subjective, and in-depth insights as experienced by individuals after adversities. This richness of data was systematically structured and processed with the software MAXQDA 2018 using Thematic Analysis (TA, Braun & Clarke, 2006). Before starting with the coding process, we familiarized ourselves with the data by reading and re-reading the texts. This process is meant to generate initial ideas about the data. Then, we used an inductive approach to extrapolate the main characteristics of the most stressful events in the participants' lives. Thereafter, we rated whether these characteristics were traumatic experiences or not according to DSM-V. We focused on possible phenomena after having experienced a stressful event. This step was twofold: on the one hand, we searched for descriptions that mirrored the existing PTG dimensions; on the other hand, we systematically coded the sequences referring to new descriptions of phenomena experienced after adversities that did not fit into these existing dimensions. In the next step we developed codes, similar codes were grouped together to form dimensions (represented usually as themes within TA). These dimensions were then grouped and regrouped to review the dimensions and to consequently identify higher order domains. This means that we developed codes, which explicate the range of dimensions. Dimensions are then clustered into higher order domains (see Table 3).

The first and the last author coded the text simultaneously. Inconsistencies in new emerging components of PTG were discussed until consensus was reached. After finalisation of analysis, an agreement was calculated for the analysis of the codes concerning PTG and the rating whether an experience was traumatic or not. For the interrater agreement Cohen's kappa coefficient was calculated: Interrater agreement ranged from .79 to 1 for PTG dimensions (Tedeschi & Calhoun, 1996). For newly developed dimensions interrater-agreement ranged from .82 to 1. For traumatic events and coding of events as either traumatic or not, Cohen's kappa was .87.

3. Results

3.1. Quantitative study

3.1.1. Nature of event

A broad range of stressful life events was reported. Those categories that account for more than 2% of the sample

Table 1. Description of the trauma or worst event comparing women and men ($N = 185^{\dagger}$), and total ($N = 188$).

	German-speaking adults		
	Women ($n = 123$) frequencies (%)	Men ($n = 62$) frequencies (%)	Total ($n = 188$) frequencies (%)
Death (e.g. sudden death of a loved one)	27 (22%)	13 (21%)	40 (21,3%)
Adverse childhood experiences (according to Felitti et al., 1998)	21 (17,1%)	6 (9,7%)	28 (15,1%)
Suicide (e.g. finding the dead person)	15 (12,2%)	4 (6,5%)	20 (10,9%)
Accident (e.g. cause of an accident)	8 (6,5%)	9 (14,5%)	17 (9,0%)
Impairment of health condition (e.g. own health or the one of loved ones)	11 (8,9%)	4 (6,5%)	15 (8,2%)
Separation from partner	10 (8,1%)	3 (4,8%)	13 (7,0%)
Mental disorder (e.g. self or loved ones)	6 (4,9%)	5 (8,1%)	11 (6,0%)
Accumulation of events	5 (4,1%)	4 (6,5%)	10 (5,4%)
Mobbing	5 (4,1%)	2 (3,2%)	7 (3,8%)
Conflicts self-involved	3 (2,4%)	3 (4,8%)	6 (3,3%)
Critical life event	3 (2,4%)	3 (4,8%)	6 (3,3%)
Potentially lethal events (e.g. canoeing accident without being a swimmer)	2 (1,6%)	2 (3,2%)	4 (2,2%)

[†]There is no information about gender for 3 subjects.

are listed in descending order for women and men separately and the total sample in Table 1. Stressful life events that accounted for less than 2% were: rape, sexual harassment, omission of a responsibility, witness of institutional violence, and mental and physical stress after drug use.

3.1.2. Prevalence

PTGI total scores ranged from 2 to 98 (maximum score: 105) ($M = 45.99$, $SD = 21.19$). The majority of the participants had total scores of 45 or higher (52.5%), which reflects some perceived change (Table 2). The Student's t -test revealed there were no significant differences in experienced growth between women and men except in the factor appreciation of life ($p = .033$), and between participants reporting a traumatic event (trauma group) and reporting no traumatic event (non-trauma group) in the factor relation to others ($p = .015$).

The comparison of the quantitative and the qualitative analysis with regard to perceived growth showed a slightly different picture as shown in Table 2. The main difference is reflected within the personal strength dimension, which represents the highest growth in the PTGI ($M = 2.62$) compared to the third-most frequently assigned codings in the qualitative data (43 assignments). The quantitative and qualitative rankings of the remaining growth dimensions show a similar picture (Table 2).

3.1.3. Correlations between PTGI total score and socio-demographic factors

There was a small significant negative correlation between age and the total PTGI score ($r = -0.17$, $p < 0.05$, $N = 177$), slightly indicating that the older

Table 2. Comparison of means and standard deviations of PTGI domains comparing trauma vs. non-trauma, women vs. men.

PTGI domains	Trauma (n = 51)		Non-trauma (n = 128)		t-test (df, p-values)		Women (n = 119)		Men (n = 60)		t-test (df, p-values)		PTGI sum scores total sample (n = 179) ^a		PTGI mean scores total sample (N = 179) ^b		Total qualitative sample (N = 54) assignments of codings
	mean±SD ^a	mean±SD ^a	mean±SD ^a	mean±SD ^a	t(177)	p	mean±SD ^a	mean±SD ^a	mean±SD ^a	mean±SD ^a	t(177)	p	mean±SD ^a	mean±SD ^b	mean±SD ^b		
Personal strength	10.17 ± 5.62	10.47 ± 4.87	10.47 ± 4.87	10.17 ± 5.62	t(177) = -3.55, p = .723		10.18 ± 5.29	10.80 ± 4.66	10.80 ± 4.66	10.18 ± 5.29	t(177) = -7.63, p = .447		10.39 ± 5.08	2.62 ± 1.28	2.62 ± 1.28	43	
Relating to others	14.21 ± 8.43 ^c	17.62 ± 8.35 ^c	17.62 ± 8.35 ^c	14.21 ± 8.43 ^c	t(177) = -2.458, p = .015		17.12 ± 8.55	15.71 ± 8.37	15.71 ± 8.37	17.12 ± 8.55	t(177) = 1.048, p = .296		16.65 ± 8.49	2.38 ± 1.21	2.38 ± 1.21	57	
Appreciation of life	6.84 ± 4.60	7.18 ± 3.61	7.18 ± 3.61	6.84 ± 4.60	t(177) = -5.31, p = .596		7.52 ± 4.04 ^c	6.21 ± 3.48 ^c	6.21 ± 3.48 ^c	7.52 ± 4.04 ^c	t(177) = 2.143, p = .033		7.08 ± 3.90	2.38 ± 1.31	2.38 ± 1.31	61	
New possibilities	9.64 ± 6.59	10.00 ± 6.45	10.00 ± 6.45	9.64 ± 6.59	t(177) = -3.35, p = .738		10.23 ± 6.27	9.25 ± 6.88	9.25 ± 6.88	10.23 ± 6.27	t(177) = .960, p = .338		9.90 ± 6.48	1.99 ± 1.30	1.99 ± 1.30	16	
Spiritual change	1.66 ± 3.01	2.07 ± 2.88	2.07 ± 2.88	1.66 ± 3.01	t(177) = -8.34, p = .405,		2.19 ± 3.11	1.48 ± 2.43	1.48 ± 2.43	2.19 ± 3.11	t(177) = 1.542, p = .125		1.95 ± 2.91	0.99 ± 1.48	0.99 ± 1.48	6	
PTGI total	42.54 ± 22.89	47.36 ± 20.41	47.36 ± 20.41	42.54 ± 22.89	t(177) = -1.376, p = .171		47.26 ± 20.92	43.46 ± 21.69	43.46 ± 21.69	47.26 ± 20.92	t(177) = 1.134, p = .258		45.99 ± 21.19	2.20 ± 1.01	2.20 ± 1.01		

^aMissing PTGI values of 9 participants.^bMean and SD calculated for the PTGI using the sum of the scale ratings. Range of the scale ratings: total PTGI (0 to 105), personal strength (0–20), relating to others (0–35), appreciation of life (0–25), spiritual change (0–10).^cMean and SD calculated for the PTGI.^dSignificant contrasts, Bonferroni adjusted.

the participants, the less the growth experiences and vice versa. No correlations were found between the total PTGI score and the socio-demographic factors gender, time elapsed since the trauma, religiousness, and the worst experienced event evaluated as a traumatic event.

3.2. Qualitative study

The analysis of the qualitative data resulted in replication of the original PTGI dimensions (Tedeschi & Calhoun, 1996). We categorised the existing PTGI dimensions into the domain ‘positive life changes after an adversity’. Within this domain, the two dimensions ‘appreciation of life’ and ‘new possibilities’ were elaborated. Additionally, we found two new domains: ‘lessons learned’ and ‘processing of adversity with potential growth experiences’ (see Table 3). In the following, we will give an overview of the new codes within the existing PTGI dimensions, the newly developed domains and the respective dimensions.

3.2.1. Positive life changes after an adversity

In general, participants reported an increased ‘appreciation of life’ in a multi-faceted way. Specifically, a new code ‘gratitude’ could be identified. A small but not negligible group of participants told about being thankful for what life offers them in general, and what they got from life in the past.

A husband who lost his spouse after a serious illness, for example, said: ‘*I fondly recall the wonderful time I spent with my wife and I am grateful that I was lucky enough to be with her.*’ Other participants expressed their gratitude that faith let them off lightly: ‘*I had so much pain and I was afraid that something really bad had happened, something that would restrict my health forever. The fact that in the end this was not the case made me incredibly happy and thankful.*’

Even though the study participants mentioned to a much lesser extent the growth factor ‘new possibilities’, and delineated this dimension in a less multi-faceted way, a new code ‘inspiration’ could be detected. A few people stated that their life crises with all negative consequences also contained a chance for a new beginning. It was the source of an intuition: ‘*A few days after his suicide it already became clear to me that I myself would like to have kids someday*’ (participant who found his friend who committed suicide).

3.2.2. Lessons learned

Over time, some participants reported that they were able to consider a value of their suffering in terms of lessons learned about their lives: ‘*After the age of 15, I was turning things around because this stressful period of time [being in conflict with the police] taught*

Table 3. Domains, dimensions, and codes of PTG in a German-speaking sample.

Domains, dimensions, and codes		
Domains	Dimensions	Codes
Positive life changes after an adversity (183) ^a	Appreciation of life (61)	Gratitude ^b (4)
	Relating to others (57)	
	Personal strength (43)	
	New possibilities (16)	Inspiration ^b (4)
	Spirituality (6)	
Lessons learned ^c (80)	Conscious preparedness (31)	Adequate behaviour in stressful situations (14); preparation for future dangerous situations (7); lessons learnt from experiences (7); endurance (3)
	Authenticity (26)	To deal with oneself (13); to be yourself (7); to listen to oneself (6)
	Being realistic (17)	Facing problems (10); critical view on former life (7)
	Being valued (6)	
Processing of adversity with potential growth experiences ^c (21)	Becoming aware of (own) mortality (16)	Finality of life (8); confrontation with death (5); re-assessing omnipotence (3)
	Assessing potentially disruptive event (5)	Dialectic (2); rumination (2); beliefs challenged (1)

^aNumber in brackets refers to the assigned codings.

^bNewly developed codes.

^cNewly developed domain with its corresponding newly developed dimensions and codes.

me that I want to do more with my life than having constantly troubles with the law.' Others appraised their negative experience positively because they now realized that everyone could face adversities as part of one's life and that nobody is exempt. In recognition of this, the participants reported that they feel better prepared for future adversities and that they will show adequate behaviour in such challenging situations. Others consciously prepared themselves for a similar future situation, because they decided not to cease, for example, a specific form of sport but to undergo a more intense training. Some participants reported that their adverse experiences brought them back to earth. They started to question their own life: *'I got cancer and I had to go to the hospital to get my uterus out ... the operation went well ... but I got a bad bleeding inside ... I almost died. Almost dying, led me to questioning my past life, especially my marriage.'* Others told that they learned to face problems as soon as possible instead of sweeping them under the carpet and pretending that everything is all right.

The participating adults viewed 'authenticity' as a personal ethical value. Thus, they took themselves absolutely serious, in the sense of listening to one's

body and soul, and to act accordingly: *'I fight for things that I care about'*. They also learned from their crisis to be true to who they are because they got confronted with themselves (*'For me it is very important to agree with my behaviour and not acting in a way to impress others'*). Another benefit reported by some participants involved the appreciation of themselves. They learned from their difficult life struggle that other people help and support them if needed, so they experienced that they are valuable and loveable persons: *'I got clear about how many great people like me'*.

3.2.3. Processing of adversity with potential growth experiences

Participants became aware of their own and others' finality of life irrespective of age. The realization that life is extremely fragile was for the participants on the one hand frightening, on the other hand, they learned that they need to live in the here and now. As a person, who unexpectedly lost a loved one, put it: *'The positive thing is that I really understood that life can suddenly be over ... I understood, I should enjoy life ... but I also should take life seriously'*. Life-threatening situations and injuries after an accident challenged participants to deal hypothetically with their own death. Moreover, people who barely escaped death caused by natural force questioned their 'omnipotence' towards nature: *'Throughout the years I lost respect for the power of water, I forgot that even small rivers can have strong currents'*.

Other participants became aware of the dual focus on misery, i.e. they somehow accepted the negative side of the coin and found something positive in a negative event. For example, a young man, who provided terminal care for his mother during adolescence, mentioned many years after her death a dialectical view of misfortune: *'When I look back ... suddenly, I was free in my decisions, I could do as I pleased'*. The repeated and deliberate thinking about a stressful event was not considered to be negative. On the contrary, thinking which included problem solving and trying to make sense out of the happened helped participants to view the positive side of the coin.

A minority of participants reported that they could not get something positive out for themselves of the negative event. On the one hand, they did not undergo personal transformation because of their suffering, on the other hand, they also did not face negative consequences.

4. Discussion

This mixed methods study attempted to gain a thorough understanding of PTG in an individualistic European sample. The findings support Calhoun,

Cann, and Tedeschi (2010) revised model of the process and outcomes of PTG and elaborate the experience of growth in Austrian and German participants. In general, Splevins, Cohen, Bowley, and Joseph (2010) emphasized the usefulness of the cultural syndrome of individualism-collectivism (Triandis, 1995) as a framework to debate the universality and culture-specificity of the PTG concept. The main components of individualism comprise independence, autonomy, and agency, and the main components of collectivism are interdependence, relatedness, and group harmony (Triandis, 1995). Triandis (1995) stated that individualism and collectivism are not two opposite poles but rather two attributes that can coexist in each culture depending on the situation. Given the fact that the PTG concept was developed within a Western cultural framework (U.S. population) and the current study was conducted in a European setting – thus both are individualistic cultures – the culture-specificity is mainly reflected in the identification of different sub-forms of individualism (Realo & Luik, 2002). Even though our qualitative data slightly indicated a collectivistic component in the experience of growth (e.g. ‘processing of adversity with potential growth experiences’), the individualistic component (e.g. ‘lessons learned’) in the elaboration of growth was dominating.

Our sample had PTG scores in a similar proportion to previous findings with participants from a similar cultural background of German (Maercker & Langner, 2001), and Dutch origin (Jaarsma et al., 2006). Quantitative and qualitative findings converge when emphasis is given to the prevalence of PTG dimensions as the participants’ qualitative statements confirmed the occurrence of the existing growth dimensions. The results regarding age and gender are partly in agreement with the findings of Helgeson, Reynolds, and Tomich (2006) meta-analytic review of benefit finding, which showed that younger age was associated with more growth and that women experience higher rates of growth. In further accordance with Helgeson et al. (2006) was the result that the elapsed time since trauma and religiosity were unrelated to PTG. Furthermore, the starting position of the PTG model postulates that extreme events may be necessary to shatter fundamental assumptions and produce more positive change than less extreme events (Tedeschi & Calhoun, 1996). However, our results were contradictory to this supposition. First, the variables traumatic event and growth were not correlated. An explanation could lie in the fact that we did not ask the participants to rate the subjective severity, as it is an individual’s perception that allows the event to be comprehended as traumatic (Michélsen, Therup-Svedenlöf, Backheden, & Schulman, 2017). Second, our findings indicated that the trauma group experienced significantly less growth in the dimension of ‘relation with others’ compared to

the non-trauma group. The same tendency was shown within the other growth dimensions but these differences were non-significant. To get more insight into this finding we should have assessed the posttraumatic stress symptoms of our participants as Levine, Laufer, Hamama-Raz, Stein, and Solomon (2008) ascertained that PTG is greatest at moderate posttraumatic stress levels.

From the qualitative data, we identified an expansion of the two existing growth dimensions (Tedeschi & Calhoun, 1996) ‘appreciation of life’ (new code: gratitude) and ‘new possibilities’ (new code: inspiration). ‘Gratitude’ also emerged in Uy and Okubo’s (2018) study. They investigated the PTG outcome in Cambodian community leaders who survived the Khmer Rouge genocide. In contrast to the Cambodian participants, our participants rarely mentioned gratitude as a growth experience. This could be traced back to the fact that religious commitment and gratitude are strongly related (Rosmarin, Pirutinsky, Cohen, Galler, & Krumrei, 2011). Religion plays a central role in collectivistic cultures (Gelfand et al., 2011), which the Cambodian community leaders belonged to, but is of less importance in individualistic cultures (see Table 2). Moreover, this finding might indicate a different sub-form of individualism because low experience in religious growth is a common result in European samples (e.g. Jaarsma et al., 2006/Netherlands) but not in U.S. samples (Tedeschi & Calhoun, 1996). The study of Reynolds (2004) about the influence of long-term illness on creativity provided some support for our newly identified code ‘inspiration’. Participants reported that their illness had an inspiring effect by sharpening their perceptions, and by increasing their emotional sensitivity (Reynolds, 2004). In our study, the participants had a flash of a deep understanding (knowing what is right and wrong in life) in the aftermath of the stressful life event.

Moreover, the qualitative data revealed the novel domain ‘lessons learned’ – consisting of the four dimensions ‘conscious preparedness’, ‘authenticity’, ‘being realistic’, and ‘being valued’. Janoff-Bulman (2004) originally postulated ‘preparedness’ as a different type of PTG. She claimed that survivors who feel better prepared for subsequent tragedies, as a consequence are apt to be less traumatized by them. In contrast, Calhoun and Tedeschi (2006) view ‘preparedness’ as indirectly represented in the growth dimensions ‘personal strength’ and ‘philosophy of life’. However, the intentness of our participants to prepare for future potential adversities was indicative of a new growth dimension accordingly an individualistic worldview. Concretely speaking emphasis was put on participants’ belief to make their lives more predictable and controllable through their own acting, and this sense of controllability and agency in the

world may be primarily associated with individualism (Laungani, 1997). Our participants' experience that oneself is valuable and loveable is in full agreement with Janoff-Bulman's (1992) studies with trauma survivors who reported newfound knowledge and appreciation of themselves. 'Authenticity' is found in psychological well-being – which comprises according to Ryff (1989) well-being aspects such as self-acceptance and positive relationship with others – that Joseph and Linley (2005) described as a characteristic of growth through adversity. Referring to this, the here investigated participants viewed themselves as persons who know themselves better and know what is important to them after a stressful event.

Even though we did not ask the participants about something other than positive outcomes after an adversity, they reported how they still were struggling to find personal gain through their suffering (domain 'processing of adversity with potential growth experiences'). A minority of the participants stated that they see neither anything good nor extremely bad in what has happened to them, it just happened. In terms of Joseph and Linley (2005), they assimilated their experience to their assumptive world beliefs prior to the trigger event; thus, their event fits into their assumptive beliefs. Other participants reported about negative consequences and simultaneously about experienced growth, a finding that confirms the coexistence of these two outcomes of trauma (Calhoun & Tedeschi, 2006). For some participants, it seemed as if they were not sure yet whether the critical life event would become the basis for a new positive perspective or not. According to Calhoun et al.'s (2010) growth model, these participants may be still at the beginning of the PTG process dealing with the realisation how fragile life was.

4.1. Limitations

It would have been preferable to include an additional open-ended question regarding possible negative changes because a minority of participants went with their answer about possible positive changes beyond the asked question and reported about negative changes as well. Thus, one could assume that also the other participants would have reported about negative changes (posttraumatic depreciation) if gotten the chance as, for example, in the study of Michélsen et al. (2017). By extension, the PTGI-42 (Cann, Calhoun, Tedeschi, & Solomon, 2010), which assesses positive (posttraumatic growth) and negative (posttraumatic depreciation) changes, could be used. Furthermore, participants were not requested to rate the severity of their chosen critical event, but perceived

intensity plays an important role to predict growth (Michélsen et al., 2017).

4.2. Implication for practice

All five growth dimensions of Tedeschi and Calhoun (1996) were confirmed in the qualitative phase; thus, the use of the PTGI as a valid instrument to measure PTG in a German-speaking population is highly recommended. Moreover, our results indicated that growth seems not to be limited to the existing growth domains as new dimensions emerged. For example, 'gratitude' is associated with positive outcomes such as general well-being and pro-sociality (McCullough, Emmons, & Tsang, 2002), and Rash, Matsuba, and Prkachin (2011) found that gratitude contemplation intervention resulted in higher levels of self-esteem and satisfaction with life. The newly identified dimension 'authenticity' should also be acknowledged by health professionals because it could be an approach of clients to accept and value themselves including their strengths and weaknesses. Furthermore, we subsumed different statements of our participants with regard to perceived positive changes under the novel growth domain 'lessons learned', i.e. the participating adults told us that they learned something good from that experience. According to Zoellner and Maercker (2006) such statements ('If it had to happen, then, at least, it should have been good for something', p. 640) indicate some insight into self-deception. The health professional needs to be aware of this illusory side of PTG: it could preclude active coping, but it also may serve as a short-term adaptive palliative coping strategy (Zoellner & Maercker, 2006). However, from our perspective, this kind of thinking 'misery evokes something positive' might be a gentle push to encourage clients to employ another form of mindset than the Western linear, analytic thinking style (i.e. each cause has an effect, and each effect is tied to a cause). The dual focus on misery, i.e. that misery and well-being are intertwined and that each depends on the other for contrast and meaning, is reminiscent of the Eastern mindset, which is shaped by cyclical reasoning. Research findings indicate that cyclical reasoning, that is belief in change, especially in reversal change, may have implications for psychological well-being, such as responses to frustrations or losses (Exenberger, Banzer, Christy, Höfer, & Juen, 2018; Ji, Nisbett, & Su, 2001).



Finally, this mixed methods study revealed additional dimensions of growth in Austrian and German participants, who faced various stressful life events, and confirmed the existing PTGI factors. These data suggest that the concept of PTG fits in an individualistic cultural framework. However, to grasp culture-specific growth dimensions, i.e. to identify different sub-forms

of individualism, this kind of research is needed to get deeper insight into the growth experiences of people belonging to different cultures. For practice, our findings imply that professionals need to have accurate knowledge of what the general dimensions of PTG tend to be and to listen carefully for dimensions of growth or positive change and to acknowledge them.

Disclosure statement

No potential conflict of interest was reported by the authors.

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