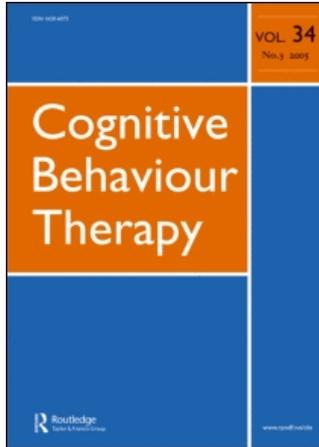


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Post-Traumatic Growth and Optimism as Outcomes of an Internet-Based Intervention for Complicated Grief

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Abstract. This explorative study examines the effects of an internet-based cognitive-behavioural therapy for complicated grief on post-traumatic growth and optimism. The study is part of a larger randomized controlled trial described in Wagner, Knaevelsrud, and Maercker (2006). The patients were randomly assigned to either a treatment group ($n=26$) or a waiting list control condition ($n=25$). The internet-based intervention consisted of exposure to bereavement cues, cognitive reappraisal exercises, and a module on integration and restoration. A short form of the Post-traumatic Growth Inventory (PTGI), the Life Orientation Test-Revised (LOT-R), and measures of complicated grief and psychopathological outcomes were administered. Results indicate that post-traumatic growth increased in the treatment group. No treatment effect was found for optimism. These findings contribute to the growing literature on personal growth in psychotherapy. *Key words:* post-traumatic growth; personal growth; optimism; complicated grief; bereavement intervention; online therapy; internet.

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The death of a significant person triggers painful emotions, and bereaved individuals often experience impaired psychological and physical functioning. However, the death of a family member or a friend can also initiate stress-related or post-traumatic growth in some people (Tedeschi, Park, & Calhoun, 1998). Many bereaved individuals show increases in resources such as wisdom, maturity and religious beliefs, experience changes in life perspectives (Kessler, 1987), increased compassion, and improvements in their marital and family relationships (Shanfield & Swain, 1984). However, there is still relatively little research on stress-related or post-traumatic growth after bereavement, and there is no clear consensus on the definition of psychological growth after the loss of a significant person. Tedeschi and Calhoun (1996) defined post-traumatic growth after traumatic events in terms of 3

main categories: changes in self-perception, changes in interpersonal relationships, and changed philosophy of life. The present study is based on this definition.

The concept of optimism as a self-reported general expectation of good things happening more often than bad things has also been related to post-traumatic growth (Zöllner & Maercker, 2006a). Research in clinical psychology has shown that optimists are more likely than pessimists to employ adaptive coping skills (Weintraub, Carver, & Scheier, 1986). Moreover, a large body of research demonstrates that optimism has beneficial effects on behavioural choices when people are confronted with adverse experiences such as cancer (Allison, Guichard, Fung, & Gilain, 2000).

In recent years, research has provided significant evidence that complicated grief is characterized by a specific pattern of

symptoms, and that it is an entity distinct from depression, post-traumatic stress disorder (PTSD), and adjustment disorder (Boelen, van den Bout, & de Keijser, 2003; Prigerson et al., 1995). Drawing on stress response theory, Horowitz et al. (Horowitz et al., 1997; Langner & Maercker, 2005), characterized complicated grief disorder as a combination of sustained intrusion, avoidance, and maladjustment symptoms. It is generically related to PTSD in the sense that it results from exposure to a stressful event.

Evaluation of a newly developed internet-based cognitive-behavioural intervention for complicated grief (Wagner, Knaevelsrud, & Maercker, 2005, 2006) has shown that patients can benefit from this combination of technology and psychotherapy. The 5-week intervention comprises 2 components: structured writing disclosure and cognitive behavioural therapy. Results of a randomized controlled trial showed that, relative to the waiting list group, the treatment group experienced statistically and clinically significant reductions in the main symptoms of complicated grief (i.e. intrusion, avoidance, failure to adapt) and in general psychopathology at post-treatment and 3-month follow-up (Wagner & Maercker, 2006).

The present study had 2 objectives. First, it explored the impact of the internet-based intervention on post-traumatic growth and dispositional optimism. We expected both outcomes to increase during the therapeutic process. Secondly, it investigated whether the extent of symptomatic improvement was related to the increase in post-traumatic growth or optimism. We hypothesized that the extent of treatment success would positively predict levels of post-traumatic growth and optimism.

Method

The analyses presented here are based on data from a randomized controlled trial of an internet-based cognitive-behavioural intervention for complicated grief (Wagner et al., 2005). Details of the recruitment process are given in Wagner et al. (2006). A total of 213 persons applied, and 143 returned completed questionnaires.

Exclusion criteria included risk of psychosis, dissociative tendency, severely depressed

mood or suicidal intentions, substance abuse, currently receiving treatment elsewhere, and age younger than 18 years (details given in Wagner et al., 2006).

Table 1 presents descriptive statistics for demographic variables and other relevant characteristics of the participants who completed the treatment and patients in the waiting list control condition.

There were no significant differences between the treatment and the control groups on any baseline variables. Scores for intrusion and avoidance (see below) indicate that the majority of participants had high distress levels (details in Wagner et al., 2006). Of the participants who began the treatment, 8% ($n=4$) dropped out in the first phase of treatment without providing post-treatment data, leaving a sample of 26 participants in the treatment group and 25 in the control group. Two therapists (first and second authors) conducted the treatment. One is a psychologist trained in cognitive behavioural psychotherapy; the other had received special training in the implementation of writing

Table 1. *Demographics and sample characteristics.*

Characteristics	Treatment group ($n=26$)	Control group ($n=25$)
Age, mean \pm SD (years)	37.3 \pm 11.7	37.9 \pm 8.9
Time since loss, mean \pm SD (years)	4.4 \pm 6.1	4.8 \pm 7.0
Female sex, n (%)	22 (84.6)	25 (100)
Marital status, n (%)		
Single	5 (19.2)	8 (32)
Partnership	16 (61.5)	12 (48)
Divorced	4 (15.4)	2 (8)
Education, n (%)		
High school	5 (19.2)	3 (12)
College	10 (38.4)	10 (40)
University	11 (42.3)	5 (20)
Cause of death, n (%)		
Disease	10 (36)	9 (36)
Accident	7 (28)	6 (24)
Suicide/homicide	5 (20)	5 (20)
Stillbirth/SID	4 (16)	5 (20)
Relationship with the deceased, n (%)		
Child	17 (64)	15 (60)
Partner	3 (12)	2 (8)
Brother/sister	1 (4)	1 (4)
Mother/father	1 (4)	2 (8)
Relative	1 (4)	1 (4)
Friend	3(12)	4 (16)

assignments for the treatment of PTSD and complicated grief. The therapists participated in weekly supervision sessions.

All contact between therapist and patient during the 5-week period of 10 writing assignments was conducted via e-mail. The treatment comprised 3 modules: (i) exposure to bereavement cues; (ii) cognitive reappraisal; and (iii) integration and restoration (see Wagner et al., 2005, 2006, for further details of the treatment protocol). No particular instructions were given to enhance post-traumatic growth or optimism specifically. Participants were assessed by self-report. Outcome measures were assessed at baseline, post-treatment, 3-month and 1.5-year follow-up.

The Post-Traumatic Growth Inventory (PTGI, Tedeschi & Calhoun, 1996) assesses perceived positive outcomes of traumatic or stressful events on the following subscales: personal strength, spiritual change, relating to others, appreciation of life, and new possibilities. We administered a short form of the instrument (PTGI-SF), comprising the items with the highest power on each subscale (α values between 0.87 and 0.92) in the German validation of the PTGI (Maercker & Langner, 2001). The Life Orientation Test-Revised (LOT-R, Scheier, Carver, & Bridge, 1994) was used to assess dispositional optimism.

Psychopathological outcomes were measured using a comprehensive set of symptom criteria based on Horowitz's stress response model of complicated grief (Horowitz et al., 1997; Langner & Maercker, 2005). Three symptom clusters are covered: intrusion, avoidance, and failure to adapt. Intrusion and avoidance were measured by the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979). Failure to adapt was measured by a newly developed scale (Wagner et al., 2006). The depression and anxiety subscales of the short form of the SCL-90 (Brief Symptom Inventory; BSI, Derogatis, 1992) measured symptoms of depression and anxiety. The SF-12 (Ware, Kosinski, & Keller, 1996) was used to assess psychological functioning.

Results

Treatment effects on post-traumatic growth and optimism

Treatment effects were measured in terms of change in mean scores between pre- and

post-test. Effect sizes were calculated using the effect size index for repeated measures (Cohen's d); in psychotherapy, effect sizes $d \geq 0.80$ for treatment effects are considered large.

Repeated measures univariate analyses of variance (ANOVAs) revealed a significant group \times time interaction for post-traumatic growth (PTGI), $F(1,47)=13.23$, $p<0.001$, $d=1.16$. A separate ANOVA for optimism showed a significant effect for time, $F(1,48)=9.97$, $p<0.01$, but no significant interaction effect, $F(1,48)=1.33$, $p=0.25$, $d=0.50$ (Table 2).

Predictor variables

To estimate the influence of post-traumatic growth and optimism on symptomatic treatment outcomes, residual gain scores¹ were calculated for each of the outcome measures. We correlated these residual gain scores with mean PTGI-SF and LOT-R scores at post-treatment and, for control purposes, at pre-treatment.

Table 3 shows the bivariate correlations between post-traumatic growth, optimism, and the residual gain scores on the criteria variables. Looking first at correlations with post-treatment outcomes, only the reported level of psychological functioning, measured with the SF-12-MH scale, showed a significant correlation with post-traumatic growth at post-treatment (the SF-12-MH scale is reverse scored; thus, a positive correlation was found). Relations of the other residual gain scores to post-traumatic growth and optimism were weak or non-existent. There

Table 2. Means and standard deviations of outcome variables at pre-treatment and post-treatment by group.

	Pre-treatment Mean (SD)	Post-treatment Mean (SD)
Post-Traumatic Growth: PTGI [0–25]		
Treatment	14.92 (4.39)	19.46 (3.32)
Control	15.44 (3.77)	15.69 (4.44)
Optimism: LOT-R [0–40]		
Treatment	11.46 (3.97)	13.35 (3.44)
Control	12.28 (5.26)	12.92 (5.77)

Treatment group: $n=26$, control group: $n=25$. PTGI-SF=Post-Traumatic Growth Inventory–Short Form; LOT-R=Life Orientation Test–Revised; SD=standard deviation.

Table 3. Means, standard deviations, and correlations of complicated grief symptoms (residual gain scores) with the Post-Traumatic Growth Inventory (PTGI) and the Life Orientation Test-Revised (LOT-R) at pre-treatment and post-treatment ($n=25$).

	Correlations with:					
	Mean	SD	PTGI-SF		LOT-R	
			Pre-treatment	Post-treatment	Pre-treatment	Post-treatment
Residual gains (Δ)						
Δ CG–Intrusion	11.88	9.55	–0.14	–0.12	0.02	0.26
Δ CG–Avoidance	10.72	10.07	–0.41*	–0.02	–0.40*	–0.10
Δ CG–Maladaptive behavior	5.78	4.23	–0.24	0.07	–0.19	–0.01
Δ BSI–Depression	5.72	3.76	–0.16	0.09	–0.19	–0.02
Δ BSI–Anxiety	3.60	3.84	–0.29	0.27	–0.16	0.14
Δ SF-12–Mental health**	4.41	7.32	0.21	–0.41*	0.03	0.24

Residual gain scores=pre-/post-treatment change; CG=complicated grief; BSI=Brief Symptom Inventory; PTGI-SF=Post-Traumatic Growth Inventory-Short Form; SF-12=SF-12 Mental Health Scale; SD=standard deviation.

* $p < 0.05$.

**The SF-12-MH is reverse scored.

was, however, a significant inverse correlation between pre-treatment scores on post-traumatic growth and optimism and grief-related avoidance.

Discussion

Psychotherapeutic treatments have long been assumed to have positive effects on health, but these assumptions have seldom been subjected to scientific investigation (Zöllner & Maercker, 2006b). Previous analyses of the present randomized controlled trial data (Wagner et al., 2006) have shown our internet-based intervention for cognitive grief to be associated with clinically and statistically significant reductions in complicated grief symptoms and general psychopathology. In this study, we were specifically interested in whether our intervention also affects the health-related aspects of subjectively perceived post-traumatic growth and optimism.

First, our findings indicated that the intervention was associated with a significant overall increase in post-traumatic growth. This result clearly confirmed the work of Calhoun and Tedeschi (1998), who theorized that therapeutic interventions can increase post-traumatic growth. Contrary to our exploratory assumptions, however, the intervention was not associated with increased

optimism. One explanation for this finding may be that optimism is a relatively stable aspect of personality (Scheier & Carver, 1985), and that the treatment was too short for effects on optimism to occur.

Secondly, we examined whether levels of post-traumatic growth and optimism at post-treatment were linked to treatment outcomes. Only one significant association between psychological functioning and post-traumatic growth emerged; residual scores representing treatment success on the other symptoms of complicated grief did not predict levels of post-traumatic growth or optimism. It appears that the level of general psychological functioning may have a stronger impact on post-traumatic growth than other, more specific, symptoms of complicated grief.

Finally, we explored whether the extent of treatment success was associated with higher levels post-traumatic growth or optimism at pre-treatment. A negative relation emerged between post-traumatic growth and optimism at pre-treatment and residual gain scores on avoidance, indicating that high levels of growth or optimism were related to less reduction in avoidance. One possible explanation for these findings is that post-traumatic growth and optimism are not entirely functional, but can also be seen as avoidance-related protective illusions, as outlined in

the Janus-Face model of post-traumatic growth (Maercker & Zöllner, 2004; Zöllner & Maercker, 2006b).

There are a number of limitations to these analyses. As mentioned above, our analyses were intended to be exploratory because of the lack of accepted models or previous data on this issue. Additionally, although the randomized controlled design ensured a high standard of clinical research, the relatively small sample size may have had insufficient power to detect any but the largest effects. Finally, we cannot rule out the possibility that the short form of the Post-Traumatic Growth Inventory may have biased the findings with regard to previously assessed post-traumatic growth (Zöllner & Maercker, 2006a).

Despite these limitations, our results indicate that internet-based bereavement treatment can facilitate post-traumatic growth. In addition, to our knowledge this is the first study to examine these outcomes in the area of post-traumatic growth.

Note

1. Residual gain scores were calculated to serve as a dependent variable to indicate an increase in outcome measures from pre-test to post-test. Each participant's residual gain score at each post-treatment assessment point was the deviation of the post-treatment score on that measure from the pre-treatment assessment. Residual gain scores were reversed as appropriate, so that higher scores indicated greater improvement (e.g. greater reduction in depression as measured by the BSI).

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