

## **Posttraumatic Growth in Parents After a Natural Disaster**

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*Posttraumatic growth (PTG) was examined in Norwegian parents 2.5 years after they were exposed, together with their children, to the 2004 Southeast Asian tsunami. Parents reported on their own and their children's disaster exposure and posttraumatic stress symptoms (PTSS) 10 months post-disaster. Children reported their own PTSS. Multiple regression analyses showed that children's distress 10 months post-disaster predicted parental PTG 1 year later, over and above the effects of parents' own distress and disaster exposure. This study demonstrates that stress and vulnerability related to parenting in and after a disaster situation may contribute to PTG.*

This study explores the reactions of parents in the context of their caregiving responsibility during the 2004 tsunami in Southeast Asia and their exposure to the reactions of their potentially traumatized children. Previous research has shown that children may have an evocative role in their parents' emotional reactions and feelings of vulnerability after disastrous events (Phillips,

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Featherman, & Liu, 2004). The present study aimed to investigate whether similar mechanisms work in the development of posttraumatic growth.

Although negative consequences following highly stressful events have been thoroughly studied, the last two decades have seen a growing body of literature describing less well-known consequences of trauma, the positive personal changes often referred to as posttraumatic growth (PTG) (Tedeschi & Calhoun, 1996, 2004). PTG has been reported in the aftermath of various highly challenging life events. Among these events are parenting an acutely or chronically sick child undergoing cancer treatment (Barakat, Alderfer, & Kazak, 2006), treatment in an intensive care unit (Colville, 2009), or having diabetes (Hungerbuehler, Vollrath, & Landolt, 2011). PTG has also been reported after parental bereavement (Büchi et al., 2007; Engelkemayer & Mewit, 2008). Finally, one publication has reported a positive relationship between parents' and their children's PTG after the 2004 tsunami (Hafstad, Gil-Rivas, Kilmer & Raeder, 2010). To the best of our knowledge, no previous study has investigated PTG and parenting in a natural disaster, which is the focus of the present study.

Previous research on parental PTG has found that most parents report some PTG after their children are exposed to potentially traumatic events (Barakat et al., 2006; Büchi et al., 2007; Engelkemayer & Mewit, 2008; Hungerbuehler et al., 2011), that mothers report higher levels of growth than do fathers (Barr, 2011; Büchi et al., 2007; Hungerbuehler et al., 2011), and that increasing seriousness of the potentially traumatizing event is related to higher PTG (Colville, 2009). The association also seems to be moderated by gender (Barakat et al., 2006). This last finding is consistent with empirical findings in the PTG literature (Helgeson, Reynolds, & Tomich, 2006) and a recent meta-analysis (Vishnevsky, Cann, Calhoun, Tedeschi, & Demakis, 2010).

The relationship between posttraumatic stress and PTG has been unresolved in the general posttraumatic literature, with some studies reporting positive relationships and others negative (Helgeson et al., 2006). A positive relationship between PTG and posttraumatic stress symptoms (PTSS) was found in parents whose children had been treated for leukemia or diabetes (Hungerbuehler et al., 2011). Centrality of event has been proposed as one of the factors explaining the inconsistent relationship between potentially traumatic events and posttraumatic growth (Schuettler & Boals, 2011). Centrality of event refers to the degree to which a potentially traumatizing event shakes basic core assumptions and catalyzes rumination. Only under these circumstances, according to Schuettler and Boals, will a potentially traumatic event carry the potential to start the process of posttraumatic growth in the individual. Phillips et al. (2004) found that, for adults, witnessing children's distress after terrorism had an evocative effect on core assumptions of safety and was further related to PTSS. For parents, the well-being and safety of their children is a major concern and central to their identity. By assessing the welfare of children both at the moment of catastrophe and the time after,

we believe we have selected a situation that will be central to understanding pathways to PTG in parents.

In summary, existent research indicates that parenting a child with a chronic or critical illness is related to PTG; however, no previous research has to our knowledge investigated how being a parent may affect the development of PTG after a natural disaster. The current study examines PTG in Norwegian parents who were exposed to the 2004 Southeast Asian tsunami together with their children. During their vacation in Thailand, these parents and their children were exposed to life-threatening situations, suffered serious physical injuries, and, in some cases, were separated from their loved ones for hours or days. However, unlike those living in the affected areas, the Norwegian families were able to return relatively soon to the safety and routine of their homes. This sample was therefore unique, as most did not face the ongoing stress or adversities that often accompany natural disasters. This study extends the extant research by investigating parental growth after the 2004 tsunami and by including a measure of children's self-reported distress.

In this sample of parents, we were interested in investigating the effect of parenthood on PTG. More specifically, we were interested in the relationship between being responsible for a child in the disaster situation, children's distress in the aftermath, and parents' PTG. Based on the event centrality hypothesis, as well as existing literature on posttraumatic reactions in parents, we hypothesized that being responsible for children in the disaster situation and having distressed children in the aftermath would be positively related to posttraumatic growth in parents, over and above the effects of perceived life threat and their own posttraumatic distress.

## METHOD

### Participants and Procedures

The present study reports data collected in a three-phase longitudinal study of Norwegian families exposed to the 2004 tsunami. The sample consists of the 68 parents and their 105 children who participated in all three data collection waves. In the first data collection wave, 6 months after the disaster (T1), background demographic information, self-reported trauma exposure, and other measures not relevant to the present investigation were collected through a postal questionnaire. The two subsequent phases of data collection were interview studies, and both parents and children were interviewed. At Time 2 (T2), approximately 10 months post-disaster, 87 of the 210 adults traveling with children participated, and 68 of these adults were interviewed 30 months post-disaster (T3). The response rate at T3 was 78.1% for the T2 sample and 32.4% for the T1 sample. The participants at T3 ranged in age from 34 to 57 years ( $M=44.8$ ,  $SD=5.4$ ), 68.2% were women, and 69.8% had completed education at the college or university level. None of the

participants were bereaved. Clinical psychologists and psychiatrists conducted interviews in participants' homes. The study was approved by the National Committee for Research Ethics in the Social Sciences and the Humanities in Norway.

## Measures

### PARENTAL TSUNAMI-RELATED EXPOSURE

Single items measuring physical danger, injury, and parental fear reactions were used as measures for exposure in parents. These issues are known to be particularly important for the development of posttraumatic stress (Weisæth, 1996). In addition, one item asking about responsibility for children in the disaster situation was used because it was of particular interest in the present study, and because this has previously been shown to predict posttraumatic distress in adults (Heir & Weisæth, 2008). The question was worded as follows: "Did you have the sole responsibility for one or more children in the disaster situation?" The item had five response options from no (0) yes, and it was an extremely stressful experience (4).

### CHILDREN'S TSUNAMI-RELATED EXPOSURE

Based on information about the critical events experienced during the tsunami, an exposure scale was developed for this study. The degree of exposure for each child was indicated by parental report. The checklist included eight yes/no exposure items (e.g., being in physical danger, seeing a dead body, being caught by the water).

### PARENTS' PTSS

This was assessed at T2 using the Impact of Event Scale-Revised (IES-R) (Weiss & Marmar, 1997), Norwegian version ( $\alpha = .93$ ). The IES-R consists of 22 items measuring reexperiencing symptoms, avoidance, and hyperarousal. Each item was rated for frequency of occurrence in the past week on a 4-point scale (0 = not at all, 3 = often).

### CHILDREN'S PTSS

Children's PTSS was evaluated using the self-report UCLA PTSD Reaction Index-Revision 1 (Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998). The 20-item scale assesses three PTSD-related symptoms: reexperiencing, arousal, and avoidance. Items assess the frequency of symptoms over the past month, with response options ranging from 0 (none) to 4 (most of the time). According to procedures suggested by Steinberg, Brymer, Decker, and Pynoos (2004), 17 items were summarized to create a total symptom score. The instrument has good internal consistency ( $\alpha = .87$ ).

## PARENTS' PTG

Posttraumatic growth was assessed at T3 using the Norwegian version of the Posttraumatic Growth Inventory (PTGI) (Tedeschi & Calhoun, 1996), comprising 21 items with six response alternatives (0 = no change, 5 = high degree of change) and assessing changes in five PTG domains: relating to others, new possibilities, personal strength, appreciation of life, and spiritual change. The Norwegian version was obtained by a standard back-translation procedure and showed high internal reliability ( $\alpha = .96$ ).

## Data Analysis

Data were analyzed using SPSS Version 16. Means and standard deviations were calculated for the outcome measure and for the independent measures where appropriate. Gender effects on PTG were analyzed using independent-sample *t* tests. Bivariate correlations (Pearson) were calculated for investigating the relations between the independent variables and PTG at T3. To calculate adjusted estimates, in which the predictor variables were controlled for each other, we computed a series of multiple hierarchical regression analyses. In line with our research perspective for this article, variables related to parenting in the disaster and children's distress in the aftermath were selected for these analyses. The independent variables were entered in the model in the following steps, based on their hypothesized influence on each other: parent's disaster exposure (perceived life threat and physical injury) (Step 1), child-related exposure (sole responsibility for children and children's exposure) (Step 2), parent's PTSS (Step 3), and children's PTSS (Step 4). Age of the children and gender were controlled for in the multivariate analysis given that, based on previous research findings, they might influence the analysis.

## RESULTS

Summary statistics for the key study variables are presented in Table 1. Overall, this sample experienced a high degree of tsunami-related exposure, with 20% reporting that they had been caught by the waves and 15.3% reporting that they had been physically injured in the disaster. In total, 66% of the parents reported having been responsible for children during the disaster. The parents had mild to moderate PTSS scores ( $M = 26.2$ ,  $SD = 20.5$ ) 10 months after the tsunami. Independent-sample *t* tests showed no significant gender differences in PTG. A post hoc analysis of gender effect size showed a low to medium effect size for gender (Hedges's  $g = .19$ ). Five variables showed a moderately strong positive relationship to PTG: parental perceived life threat, having responsibility for children, children's exposure, PTSS in children, and PTSS in parents.

**TABLE 1** Summary Statistics and Bivariate Correlations Among Key Variables.

	<i>n</i> (%)	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Parent gender: mother	48 (70.6)										
2. Perceived life threat <sup>a</sup> : yes	54 (80.3)	2.9	1.4	.08							
3. Physical injury <sup>a</sup> : yes	11 (16.7)	1.3	0.8	-.07	.35**						
4. Responsibility for children <sup>a</sup> : yes	47 (71.2)	2.3	1.1	-.01	.35**	.02					
5. Child exposure	3.7	1.9	1.9	-.01	.52**	.39**	-.25*				
6. Child age <sup>a</sup>	12.3	3.5	3.5	.23	-.10	.02	-.11	-.06			
7. Child PTSS 12 months post-disaster	14.4	9.6	9.6	-.13	.10	.11	.24*	.19	-.05		
8. Parent PTSS 12 months post-disaster	26.2	20.5	20.5	-.02	.49**	.18	.45	.52**	-.05	.26*	
9. Parent PTG 30 months post-disaster	41.0	26.4	26.4	-.09	.43**	.18	.38**	.36**	.09	.41**	.48**

Note. PTSS = posttraumatic stress symptoms; PTG = posttraumatic growth.

<sup>a</sup>During the disaster.

\* $p < .05$ ; \*\* $p < .01$ .

We then extended the bivariate correlations reported in Table 1 through a set of hierarchical multiple regression analyses (Table 2). The multiple regression model examined predictors of parental PTG 2.5 years after the tsunami. The first model including parents' exposure factors explained 18% of the variance in parental PTG. When child-related disaster exposure was entered in the model in Step 2, the explained variance increased to 25%. Parents' PTSS was included in Step 3 but did not improve the model significantly. Children's symptoms were entered in Step 4 and significantly increased the explained variance in PTG. This final model explained 32% of the variance in parental PTG (adjusted  $R^2$ ). When controlling for all variables, children's symptoms of posttraumatic stress were the only significant predictor of parents' PTG.

## DISCUSSION

This study investigated the relationship between exposure, posttraumatic stress symptoms, and PTG in parents 2.5 years after a high-impact natural disaster with their children. PTG was positively related to perceived life threat, having responsibility for children during the disaster, and posttraumatic stress symptoms in parents and in their children 10 months after the disaster. A multiple regression model based on these variables explained 32% of the variance in PTG.

Children's self-reported PTSS 1 year after the disaster was significantly related to parents' PTG. The results indicate that a certain level of distress over time was central to the development of PTG and that children's distress can be an important factor. This is in line with what we expected based on previous research on the evocative role of children's distress in adults' adjustment after

**TABLE 2** Hierarchical Regression Analysis Predicting Posttraumatic Growth.

Independent variable	$\Delta R^2$	$F$	Final $\beta$
Step 1: parent exposure	.18**	2.95	
Life threat			.20
Physical injury			.13
Step 2: child-related exposure	.08*	3.02	
Child exposure			-.01
Sole responsibility for children			.16
Step 3: parent symptoms	.02	2.77	
Parent PTSS			.21
Step 4: child symptoms	.13**	4.20	
Child PTSS			.37**

*Note.*  $R^2 = .32$ .  $\Delta R^2$  = change in explained variance for each additional step. Standardized regression coefficients are presented and controlled for parent gender and child age. PTSS = posttraumatic stress symptoms.

\* $p < .05$ ; \*\* $p < .01$ .

terrorism (Phillips et al., 2004) and the centrality of event perspective on the pathways to posttraumatic growth (Schuettler & Boals, 2011).

The lack of any gender effect in this study might be related to the limited sample size. Calculations of effect size showed an effect estimate of .19 (Hedges's  $g$ ), somewhat less than found in the Vishnevsky et al. (2010) meta-analysis ( $g = .27$ ).

The families in this sample were relocated to a safe and familiar context relatively soon after the event and were not exposed to the secondary stressors usually present in the aftermath of a disaster. Thus, for the most part, participants in this sample did not encounter a substantial struggle with adjusting to a new reality, as may be the case for many survivors of disasters. However, witnessing their children's distress may have served as a continuing source of distress that contributed to catalyzing the growth process.

There are limitations to this study. Mean scores on the PTGI were quite low, perhaps because survivors returned home relatively quickly. In particular, the spiritual change factor mean was exceptionally low. However, there was still substantial variation in the scores on other factors and the PTGI total score. By the time PTG was measured at 30 months, scores on the IES-R had declined substantially; many in the sample were reporting minimal stress, possibly deflating reports of PTG or indicating some change in perspective about the impact of the event on beliefs measured by the PTGI after a longer time frame. These survivors did not experience concrete long-term changes in their lives, so stress and growth probably focused on the existential questions posed by a brush with death rather than concrete stressors and life change.

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