

Meaning, Self-Efficacy, and Posttraumatic Growth in University Students: A Study of Tornado Impact and Survivor Resilience

Marcela C. Weber, MA, Jeffrey Pavlacic, BS, Erin Buchanan, PhD, & Stefan E. Schulenberg, PhD



Tornado in Holly Springs Mississippi, Dec. 2015

INTRODUCTION

Posttraumatic growth refers to positive psychological changes individuals sometimes undergo following traumatic experiences. Research has suggested that a sense of meaning after a disaster-related traumatic experience can lead to posttraumatic growth (Dursun, Steger, Bentele, & Schulenberg, 2016; Park & Ai, 2006).

Presence of meaning prior to the disaster and meaning-making after the disaster may be key factors in building resilience (Weathers, Aiena, Blackwell, & Schulenberg, 2016). Research suggests that disaster experience, particularly high impact experience, is related to increases in proactive action to prepare for future disasters (Kohn et al., 2012; Wachinger, Renn, Begg, & Kuhlicke, 2012). However, it is unclear whether resilience and posttraumatic growth after a disaster are linked to proactive preparedness behaviors.

Considering that tornadoes are one of the most frequently-occurring disasters in the United States (National Weather Service, 2016), there is a need to examine the positive internal factors (e.g., posttraumatic growth) and external factors (e.g., preparedness behaviors) that are associated with the experience of a tornado. Thus, the purpose of this study was to examine the relationship between tornado impact, resilience, meaning, posttraumatic growth, and preparedness behaviors of university students in a tornado-prone region.

HYPOTHESES

1. Meaning in life would be related to both resilience and posttraumatic growth.
2. Greater tornado impact would be related to posttraumatic growth.
3. Specifically, individuals who provided first aid after a tornado would report greater degrees of posttraumatic growth.
4. Both greater tornado impact and greater resilience would be related to disaster preparedness behavior.
5. A path analysis was conducted to examine the relationships of these variables together.

PARTICIPANTS

Participants ($N = 413$) were undergraduate (73.1%) and graduate (26.9%) students at the University of Mississippi during the Fall semester of 2015. 31.2 percent identified as male and 68.8 percent identified as female. 85.0 percent identified as White, 8.5 as Black, 2.9 as Asian, 0.5 as Hispanic/Latino/a, and 0.5 as Native American or Pacific Islander, which was roughly representative of the student body.

PROCEDURE

Students at a university in a tornado-prone area participated in a 10-minute online survey. Students were recruited via a link on the university news webpage and a mass email sent to all students.

MEASURES

Tornado Experience

"Which of the following emergency situations have you personally experienced?"

- Tornado
- Items for 5 other disasters

"Approximately how many tornadoes have you experienced in your lifetime?"

- 1
- 2
- 3 or more

"Approximately how long has it been since the last tornado you experienced?"

- Less than a year
- 1 to 2 years
- 3 to 5 years
- More than 5 years

Tornado Impact

Sum Score $\alpha_{\text{sample}} = .661$

With regard to the most recent tornado, which of the following did you experience as a result of this event?

- Saw others injured or killed
- Got injured yourself
- Felt a direct threat to your life
- Provided First Aid
- Lost a significant amount of material possessions
- Could not get in touch with other family members
- Were separated from members of your immediate family
- Could not get to a store for three or more days
- Lost electricity for three or more days
- Were forced to leave your community or neighborhood due to an evacuation order
- Had to leave home for three or more days
- Had to leave work/school

Abbreviated Impact of Events Scale (IES-6)

$\alpha_{\text{sample}} = .93$
 $\alpha_{\text{scale}} = .80$ (Thoresen et al., 2010)

Purpose In Life Test – Short Form (PIL-SF)

$\alpha_{\text{sample}} = .82$
 $\alpha_{\text{scale}} = .84$ (Schulenberg et al., 2011)

Posttraumatic Growth Inventory – Short Form (PTGI-SF)

$\alpha_{\text{sample}} = .96$
 $\alpha_{\text{scale}} = .87$ (Cann et al., 2010)

Brief Resilience Scale (BRS)

$\alpha_{\text{sample}} = .89$
 $\alpha_{\text{scale}} = .87$ (Smith et al., 2010)

Self-efficacy for Tornado Response

"How sure are you that you know what to do if the following situations [tornado listed] were to occur at UM?"

- 7-point Likert-type response ranging from "I have no idea what to do" to "I have a very good idea what to do"

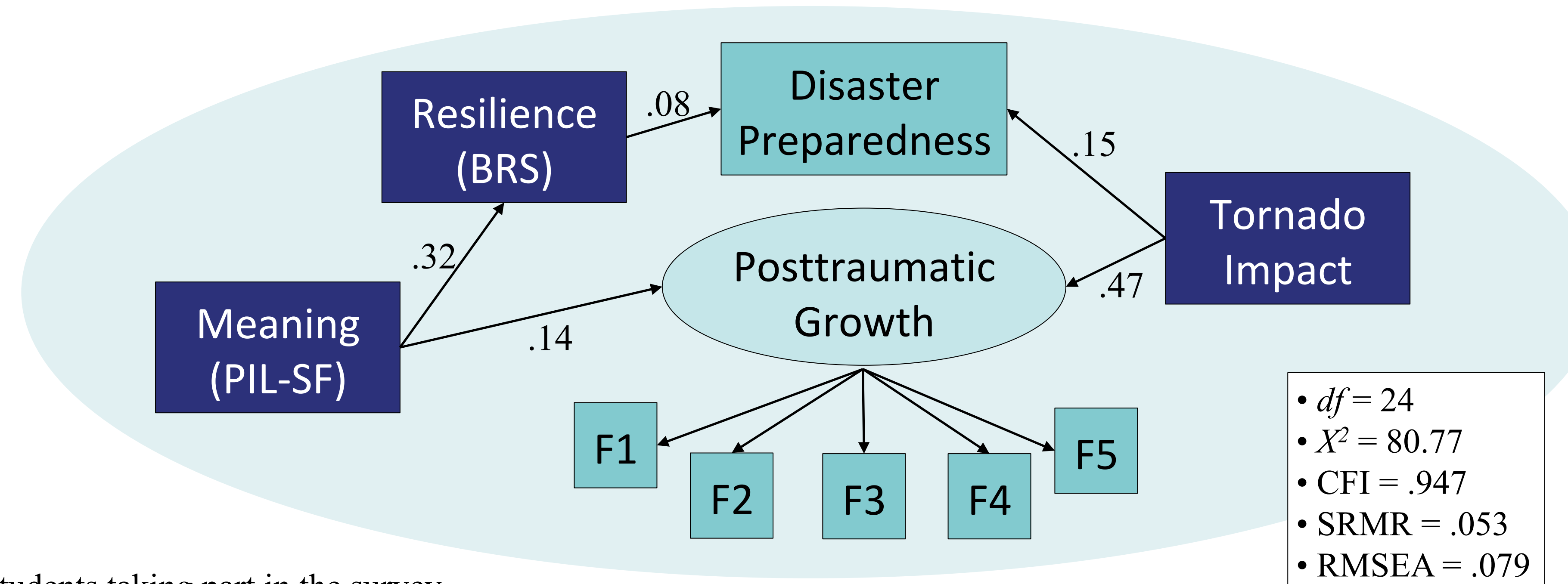
Disaster Preparedness Behaviors

Sum Score $\alpha_{\text{sample}} = .38$

Which of the following emergency preparedness measures have you taken?

- I am currently certified in First Aid/CPR training
- I have taken Psychological First Aid (PFA)
- I have participated in an interactive drill relating to weather in the last 6 months
- I have an established emergency meeting place
- I have taken PSY 417 (Disaster Mental Health)
- I have downloaded a smart phone app for use other than checking the daily weather (e.g. severe weather notifications, general emergency preparedness information, etc.)

RESULTS



- All students taking part in the survey had experienced at least one tornado.

- Significant ($p < .05$) scale correlations:

	Resilience (BRS)	Posttraumatic Growth (all 5 factors)
Meaning (PIL-SF)	$r = .23$	$r_s = .15-.19$
Tornado Impact (Sum)	$r = .22$	$r_s = .22-.31$

- Forms of tornado impact significantly ($p < .05$) correlated with all five PTG factors:

	PTG (all 5 factors)
Having seen others killed	$r_s = .20-.22$
Having felt direct threat to one's life	$r_s = .14-.22$
Having provided first aid	$r_s = .16-.27$
Inability to get to a store for three or more days	$r_s = .10-.13$
Loss of electricity for three or more days	$r_s = .17-.22$

- Significant ($p < .05$) correlations with disaster preparedness items:

	Tornado Impact		
	Sum	Injured	Forced to evacuate
Trained in Psychological First Aid	$r = .14$	---	---
Participated in interactive weather drill	$r = .10$	---	---
Knew residential emergency meeting place	$r = .12$	---	---
Took Disaster Mental Health college course	$r = .16$	$r = .38$	$r = .24$

- Significant ($p < .05$) correlations with disaster preparedness items:

	Resilience (BRS)
Conducted First Aid/CPR	$r = .16$
Knew residential emergency meeting place	$r = .14$
Knew location/operation of fire extinguishers	$r = .22$
Knew location/had tested smoke alarms	$r = .14$

DISCUSSION

Our study corroborates Park and Ai's model (2006) of meaning-making as a process for cultivating posttraumatic growth following a tornado. Tornado impact and posttraumatic growth are related in such a way as to suggest that even extreme trauma can lead to positive psychological outcomes. Specifically, the relationship between providing first aid and the growth of personal strength exemplifies one of the ways tornado impact can be transformed meaningfully. The relationships between injury or evacuation and intensive disaster preparedness behavior suggest that traumatic experiences may also lead to positive behavioral changes. Furthermore, the relationship between resilience and preparedness behaviors suggests there could be a link between positive emotional and behavioral responses to disaster experiences.

Additionally, we conducted an exploratory path analysis to examine the predictive nature of the different variables utilized in our student-based questionnaire. We calculated the following fit indices in order to examine model fit: X^2/df ratio, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR). The model demonstrated good fit for CFI and SRMR and acceptable fit for RMSEA. Our model suggests that both meaning and tornado impact predict posttraumatic growth after a disaster, in this case a tornado. Additionally, meaning also predicts resilience. Resilience and tornado impact both predict disaster preparedness. This model allows researchers to determine how these variables are related in explaining responses to tornadoes.

REFERENCES

For a complete list of references, please refer to the handout.

ACKNOWLEDGEMENTS

We would like to thank the University of Mississippi Incident Response Team (IRT) for sponsoring this research.