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# Coping with natural disasters in Yogyakarta, Indonesia: A study of elementary school teachers

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## Abstract

The nation of Indonesia is in an area of geological instability, resulting in repeated and severe natural disasters including earthquakes, volcanic eruptions, and tsunamis. Teachers, as adult authority figures and people with whom students spend a majority of their day, can play a major role in the lives of children in a disaster-prone community. Four years after a 6.3 magnitude earthquake that devastated a primarily rural community in Central Java, we studied 43 elementary school teachers from six primary schools who are responsible for educating hundreds of students annually. First, we examined the relationship between post-earthquake distress and teacher beliefs about efficacy and teacher-reported classroom behavior. Second, we designed a brief psychosocial skills-based intervention to reduce teacher distress and support their capacity to reduce student distress and improve student achievement. Finally, we assessed the impact of this intervention on reducing teacher distress and on improving student behavior and school performance over time. Analyses revealed a significant relationship between teachers' depression and self-reported negative classroom behavior, a significant relationship between teachers' posttraumatic distress and general beliefs about teacher efficacy, and a significant drop in depression and posttraumatic stress symptoms from before to after the intervention. This research extends a growing body of research on

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the potential role of teachers in assisting students in coping with chronic stress in their community. Lessons learned from this program of research can inform schools, school personnel, and long-term community intervention efforts following disasters across the world.

**Keywords**

Chronic stress, coping, Earthquake, indigenous, Indonesia, natural disasters, teacher self-efficacy, trauma

Disasters and other large-scale traumatic events often spill over beyond those directly exposed to affect the wider community. By disrupting the physical infrastructure and leaving a significant personal and psychological residue on a large number of people within the community, disasters have the potential to disrupt community functioning (Adams & Adams, 1984; Ursano, McCaughey, & Fullerton, 1994; Wicke & Silver, 2009). This is significant because social networks and pre-existing community interactions can be an important element of immediate support following a disaster, leading to improved aid and resource distribution as well as psychosocial support (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). In contrast, the lack of support or effective post-disaster response can have significant and long-lasting impacts. For example, Bland and colleagues (1996) found significant distress in people seven years after a major earthquake in Italy. Similarly, a study of children affected by Hurricane Katrina found that at three to four years post-event, more than 28% of children presenting to pediatric health care centers had psychological or behavioral issues (Olteanu et al., 2011). While the authors were unable to specify the cause of these problems, they reported that many of the problems appeared directly attributable to the impact of the hurricane or associated issues such as displacement from one's home.

Schools have a large role to play in post-disaster response as a way of mitigating problems in a community (Clettenberg, Gentry, Held, & Mock, 2011; Heath, Nickerson, Annandale, Kemple, & Dean, 2009; Ying, Wu, & Lin, 2012). First, they play a significant part of the life of children in the area. Moreover, they provide a physical space that can serve as a gathering point for people affected by the disaster or a centralized location for response coordination or resource distribution. Thus, schools are an important part of the local community and potential first-line and long-term post-disaster response (Evans & Oehler-Stinnett, 2006; Wolmer, Laor, & Yazgan, 2003). The question of the impact of disasters on schools and their personnel is therefore an important issue in considering the immediate and long-term impact of community disasters: If schools can play a significant role in supporting post-disaster recovery, then it is important to know what impact disasters may have on school staff's ability to perform their duties.

School personnel are particularly important when considering the impact of disasters on children. School psychologists, counselors, teachers, and peers can strengthen emotional support and ease painful feelings associated with grief

(Cohen & Mannarino, 2011). Children are at increased risk of long-term distress following adversity (Belfer, 2006; Norris et al., 2002), and due to the large role school personnel play in children's daily lives, schools may serve an important function in assessing and supporting child mental health following collective traumas (Klingman, 2001; Little & Akin-Little, 2011; Nastasi, Jayasena, Summerville, & Borja, 2011; Wolmer et al., 2003; Zeng & Silverstein, 2011).

Past research has demonstrated that teachers can be an effective resource for the quick initial assessment of the impact of a disaster on children across a large area (Widyatmoko, Tan, Seyle, Mayawati, & Silver, 2011). Additionally, research has demonstrated that school-based psychological interventions delivered by teachers can be an effective tool for supporting student psychosocial health (Jorm, Kitchener, Sawyer, Scales, & Cvetkovski, 2010), especially following disasters or traumatic events (LaGreca, Silverman, Vernberg, & Prinstein, 1996; Wolmer, Hamiel, Barchas, Sloan, & Laor, 2011; Wolmer, Hamiel, & Laor, 2011; Wolmer, Laor, Dedeoglu, Siev, & Yazgan, 2005). A recent meta-analysis of school-based interventions supporting child behavioral health after traumas—including data from interventions conducted in nine countries—concluded that school-based interventions had a significant and medium to large effect on improving child recovery from traumatic events (Rolfness & Idsoe, 2011).

Less research has been conducted looking at the impact of disasters on school staff or teachers specifically, or the relationship between disaster impact and teacher work performance. There is reason to believe that there may be such a relationship: One core element of teacher performance is teacher self-efficacy, or the belief that a teacher has the capacity to affect student performance. This can occur either via the general potential of schools to impact students (general teaching efficacy) or the specific capacity of the teacher as an individual to impact performance (personal teaching efficacy) (Tschannen-Moran, Hoy, & Hoy, 1998). Research has connected teaching efficacy to student performance in middle school (e.g., Ross, 1992). Teaching efficacy also has been associated with perceptions of teacher psychological health such as burnout (Egyed & Short, 2006) or depression, with depression being linked to low self-efficacy (Bandura, 1993). While depression and emotional instability have been identified as potential impacts of traumatic events in the general population (Norris et al., 2002), to the best of our knowledge, no research has directly examined the links between traumatic events and teacher efficacy. Potentially, traumatic events may affect teacher performance and teacher capacity. In the aftermath of a disaster, this may in turn degrade teacher capacity to support students in both their academic and emotional recovery.

The important role that schools can play in post-disaster response and recovery is heightened in rural and underserved communities. In regions that do not have significant resources or specialized systems devoted to emergency response or psychological aid, schools (along with religious institutions and local governments) may represent one of a handful of local institutions to which people affected by a disaster may turn for help. However, this potential benefit is challenged by some of the constraints of working in rural, indigenous, or low-resource

areas: These schools are less likely to have significant resources to devote to training or preparedness for helping teachers support students, and even fewer resources to support activities in general. Moreover, the impact of disasters on school staff in rural areas is potentially more significant than in urban or more developed areas. That is, in small communities, the teachers and staff from the schools are likely to be living in the area and hence likely to be directly exposed to the same dangers as others in the area.

Thus, in general schools are an important potential resource for supporting child recovery from disasters. However, there is limited information available about the impact of posttraumatic distress on teacher functioning in general. Moreover, teachers working in rural, indigenous, or underserved areas may be both a particularly important resource for post-disaster recovery and also at particular risk for experiencing unique post-disaster responses or responses not otherwise identified by the existing literature. More research is needed that addresses these questions. The present study represented an attempt to do so.

## **Current study**

This research was conducted in the region of Bantul in the Special District of Yogyakarta in south central Java, Indonesia. In May, 2006, this area was struck by a major earthquake measuring 6.3 on the Richter scale and leading to significant and widespread devastation including more than 5,000 deaths and the displacement of nearly 140,000 families whose homes were destroyed (Asian Disaster Reduction Center, 2007). This area is primarily rural, with the majority of adults making a living through agriculture or small-scale sales activities. This makes it an appropriate context for examining questions related to indigenous populations. In addition, Indonesia is a particularly important area for intervention and research surrounding the impact of natural disasters as it is a part of the area of geological instability known as the 'Ring of Fire.' Thus, it is a country exposed repeatedly to natural disasters including tsunamis, earthquakes, volcanic eruptions, and mudslides (Asian Disaster Reduction Center, 2010). This makes questions of the impact of natural disasters particularly relevant as the risk that a citizen of Indonesia will be exposed to one or more disasters over the course of his or her lifetime is quite high.

This study was conducted four years after the earthquake. Despite the time that had passed, some of the infrastructure had not been rebuilt and physical evidence of the destruction remained visible throughout the community. Moreover, the psychological effects of traumatic events can persist for many years after a devastating natural disaster (e.g., Olteanu et al., 2011), and an initial needs assessment of schools in the region found teacher-reported rates of problematic behavior as a result of the earthquake to be as high as 17% among elementary school children (Widyatmoko et al., 2011). A study conducted of parents in the region also found rates of probable PTSD to be 28% (several years after the earthquake Seyle, Tan,

Widyatmoko, Lam, & Silver, 2010). There is therefore significant evidence that the impacts of the earthquake persisted in the region.

This study examined the impact of the earthquake on teachers' overall and school-specific functioning through three specific questions:

1. What is the impact of the earthquake on teachers at local schools in the context of its impact on other members of the community (collapsing across individual differences in susceptibility to post-earthquake distress; cf. Norris et al., 2002)? We expected that, to the extent to which teachers were exposed to the natural disasters to the same degree as others in the community, their responses would be similar.
2. What is the relationship between posttraumatic mental health impacts and teacher perceptions of their teaching performance and classroom behavior? We expected that psychological responses to the earthquake might spill over to teachers' perceptions of their ability to perform their jobs, which was expected to be demonstrated in their perceptions of teaching performance and classroom behavior.
3. What is the impact of a brief intervention designed to support teacher recovery on teacher psychosocial health and perceived teaching efficacy and classroom behavior? We anticipated that the intervention would result in decreased post-traumatic distress and increased perceived benefits to teaching performance and student achievement.

## Method

### *Design*

The current research was part of a larger research project on the impact of a significant natural disaster on families of school-age children, conducted by Psychology Beyond Borders, Universitas Sanata Dharma, and the University of California, Irvine. Teachers belonging to schools identified as highly affected by the earthquake in an initial needs assessment (Widyatmoko et al., 2011) were invited to participate in a brief intervention training designed to support teacher recovery after the disaster and provide information about child recovery. This intervention was designed as three sequential days of training using components appropriate for a general population rather than for those individuals specifically identified as having posttraumatic stress symptoms, and using only elements considered likely to avoid triggering upsetting reactions among participants with distress. It was developed as a low-cost, low-resource intervention that could be delivered by trained school staff.

The intervention included three primary elements. The first was psychoeducational material about the impact of disasters on thoughts, emotions, and behaviors in adults, along with relaxation and coping exercises such as deep breathing. The second day included psychoeducational information about the impact of disasters

on children and basic information about supporting children's emotional stability. The third day focused on child misbehavior and supporting children's attention in class (e.g., Bernaus & Gardner, 2008). The intervention was developed by Psychology Beyond Borders with consultation and contributions from Patricia Watson and Melissa Brymer of the United States National Child Traumatic Stress Network.

The intervention was advertised to schools participating in the larger research project through the school administration and teachers were invited to attend. The research goals and structure were introduced to teachers attending the intervention and teachers were asked to consent (if they desired) to participate in the study. Teachers completed a survey at the beginning of the first day of the intervention (prior to the administration of the intervention). At six weeks post-intervention, follow-up surveys were distributed to the schools and teachers completed measures and returned them to the researchers.

### *Participants*

The sample included 43 teachers (10 males, 33 females; mean age of 37.33 years, range = 21–59,  $SD = 12.33$ ) from six schools in the educational subdistricts of Bambanglipuro and Pundong in Bantul, Special District of Yogyakarta, Indonesia. All participants completed both pre- and post-intervention assessments. Because the invitation and recruitment of the teachers was handled by the school principals, information about nonparticipation rates of invited teachers is not available.

### *Measures*

Independent variables assessed in this study included exposure to the earthquake, prior exposure to traumatic events, and demographic variables. Earthquake exposure was assessed using a 15-item scale modified from previous research on disaster exposure (Holman & Silver, 1998; Koopman, Classen, & Spiegel, 1994). Prior exposure to traumatic events was assessed using a 26-item inventory of potential traumatic events (e.g., partner violence, motor vehicle accidents, and illness or injury) (modified from Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). Demographic variables included age, gender, income, and living arrangements (e.g., cohabitation with family, friends, or others).

Dependent variables assessed included posttraumatic distress symptoms, depression, perceptions of teaching efficacy, and perceptions of classroom behavior. Posttraumatic stress symptoms regarding the 2006 earthquake were measured using the PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993), an event-specific measure that assesses the three clusters of posttraumatic symptoms diagnostic of PTSD recognized in the DSM-IV-TR (American Psychiatric Association, 2000): re-experiencing, avoidance/numbing, and hyperarousal. Depression symptoms were assessed using the Center for Epidemiologic



Studies Depression Scale (CES-D; Radloff, 1977). Teacher perceptions of general and personal self-efficacy were assessed using the Teacher Efficacy Scale (TES, Gibson & Dembo, 1984), with general teaching efficacy recoded so that higher scores indicated more perceived general efficacy (consistent with the scoring of personal teaching efficacy). Classroom behavior was assessed using a modified version of the Child Behavior Checklist (CBCL, Achenbach & Edelbrock, 1983), modified to track teacher perceptions of overall levels of classroom bad behavior rather than individual behavior.

Due to existing evidence that culture affects how posttraumatic distress is expressed and experienced (Osterman & DeJong, 2007), a cultural adaptation process was performed using the 'brief ethnography' model (Bolton & Tang, 2004). Interviews with key informants in the affected regions confirmed that the symptoms assessed by the PCL and CES-D were appropriate for tracking distress in the Javanese population, but also identified three additional symptoms of distress including problems with regulation of anger (*amok*), excessive thinking or racing thoughts, and a phenomenon (*ndomblong*) that was described as 'blank staring' or 'mind going blank.' A single item assessing each symptom was added to the PCL.

All measures were translated from English to Indonesian (*Bahasa Indonesia*) using dual-forward translation; then the translations were compared by a team including monolingual English and Indonesian speakers, as well as bilingual English-Indonesian speakers, in order to identify the final wording.

## Analysis

There were some missing data (per-item rates of missingness 0% to 7% for all scales except the modified CBCL, up to 16% for the CBCL). These data were treated as Missing Completely At Random (Little's MCAR test  $\chi^2(7472) = 1302$ , n.s.). Independent variables were not imputed; dependent measures were imputed using regression estimation in the SPSS 11.0 missing values module.

The initial analysis compared the teacher sample with a separate sample of 423 parents of children from the affected area participating in our larger research project (see Seyle et al., 2010). Teacher and parent samples were compared on demographics and items assessing exposure to earthquake-related events using chi-square. Teacher and parent samples were also compared on the CES-D and the modified PCL scores using ANOVA.

The second analysis assessed whether there was a relationship between post-disaster mental health and teacher perceptions of self-efficacy or student classroom behavior prior to the intervention. Summary scores from time 1 on the PCL and CES-D were entered into multiple regressions as predictors of teacher ratings of classroom behavior, personal teaching efficacy, and general teaching efficacy. Age and gender were also entered as potential predictors. The model was trimmed until a final model was reached. A similar analysis was conducted for post-intervention efficacy and classroom behavior scores, using post-intervention ratings of PCL and



CES-D. The final analysis compared pre- and post-intervention scores using paired-sample *t*-tests to assess whether there was a change from before to after the intervention on outcome measures.

## Results

Demographic and earthquake exposure items for teachers as compared to parents from the community are presented in Table 1. Teachers reported significantly higher income than a sample of parents from the population. In addition, although teachers and parents did not differ in terms of degree of exposure to the earthquake, teachers reported significantly lower mean posttraumatic stress scores on the PCL than the parents. No differences emerged between parents and teachers on the CES-D.

We used multiple regression to assess predictors of teachers' perceptions of negative classroom behavior pre- and post-intervention. Pre-intervention, CES-D scores were a significant predictor of reported negative student behavior ( $\beta = 0.354$ ,  $p = 0.037$ ). Teacher age was a predictor of lower reported negative behavior ( $\beta = -0.428$ ,  $p = 0.013$ ) pre-intervention, such that older teachers reported fewer negative behaviors in the classroom. Although teacher gender was not a significant predictor ( $\beta = 0.171$ ,  $p = 0.288$ ), it was included in the final model because it acted as a moderator of depression such that when gender was removed from the model, CES-D scores were not significant. Pre-intervention, PCL was not a significant predictor of teachers' perceptions of negative classroom behavior.

An identical analysis was conducted for post-intervention measures of classroom behavior, using post-intervention scores on the PCL and CES-D. In this analysis, only teacher age was a significant predictor of reported negative behavior (older teachers reported fewer negative behaviors in the classroom,  $\beta = -0.365$ ,  $p = 0.019$ ). Gender and CES-D scores were not significant predictors of teacher reports of classroom behavior post-intervention.

We also used multiple regression to assess predictors of teaching efficacy pre- and post-intervention. There was no significant relationship found between any predictor we measured and personal teaching efficacy before the intervention. That is, we found no relationship between CES-D ( $\beta = 0.209$ ,  $p = 0.27$ ), PCL ( $\beta = -0.162$ ,  $p = 0.38$ ), gender ( $\beta = 0.170$ ,  $p = 0.33$ ), or age ( $\beta = 0.308$ ,  $p = 0.10$ ) and ratings of personal teaching efficacy prior to the intervention. After the intervention, age was a significant predictor such that older teachers reported greater personal teaching efficacy ( $\beta = 0.371$ ,  $p = 0.027$ ), but gender remained non-significant ( $\beta = 0.281$ ,  $p = 0.091$ ). CES-D scores were not significant predictors of personal teaching efficacy after the intervention.

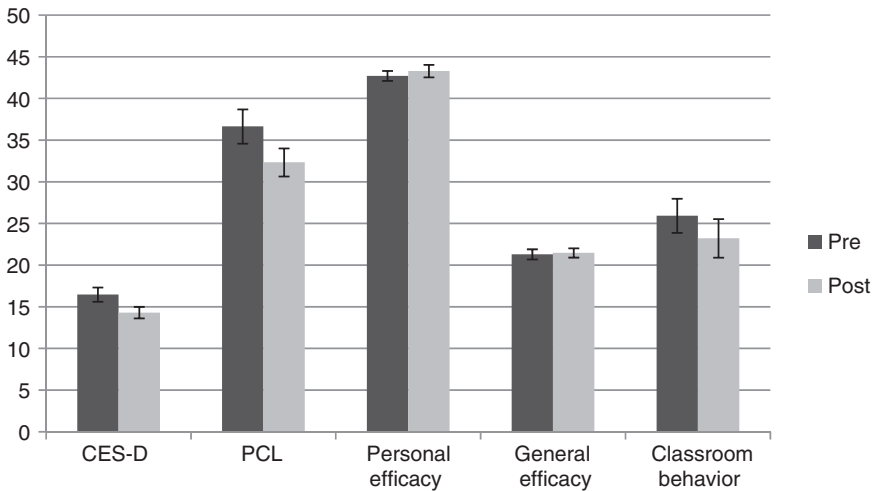
The final regression model for general teaching efficacy found that PCL scores were a significant predictor of increased general teaching efficacy before the intervention ( $\beta = 0.343$ ,  $p = 0.025$ ). After the intervention, neither CES-D ( $\beta = 0.191$ ,  $p = 0.312$ ), PCL ( $\beta = 0.288$ ,  $p = 0.142$ ), gender ( $\beta = -0.27$ ,  $p = 0.789$ ), nor age ( $\beta = 0.266$ ,  $p = 0.155$ ) were significant predictors of general teaching efficacy.

**Table 1.** Comparison of teachers (pre-intervention) to sample of parents from region on demographics, 2006 earthquake exposure and measures of distress

		Teachers	Parents	Statistic	P
Gender	Male	10	101		
	Female	33	307		
	Unknown	N/A	15		
Age		37.33 (SD = 12.3)	41.17 (SD = 9.8)		
Monthly income <sup>1</sup>				$\chi^2(7) = 32.75$	<0.001
	RP < 250,000	0%	16%		
	RP 250,000–500,000	20%	26%		
	RP 500,000–750,000	3%	19%		
	RP 750,000–1,000,000	14%	15%		
	RP 1,000,000–1,250,000	11%	6%		
	RP 1,250,000–1,500,000	20%	5%		
	RP 1,500,000–2,000,000	17%	7%		
	RP > 2,000,000	14%	5%		
Earthquake experiences	Experienced earthquake	97%	88.6%	$\chi^2(1) = 0.227$	n.s.
	Major material loss in earthquake	83.3%	85.3%	$\chi^2(1) = 0.419$	n.s.
	Knew someone who died in earthquake	71.8%	78%	$\chi^2(1) = 1.93$	n.s.
	Knew someone who was badly injured in earthquake	71.1%	75%	$\chi^2(1) = 1.39$	n.s.
	Saw dead body in earthquake	61.9%	65.4%	$\chi^2(1) = 0.361$	n.s.
	Personally badly injured in earthquake	2.4%	9.3%	$\chi^2(1) = 2.29$	n.s.
Post-disaster impact	PCL	35.64	42.59	$F(1, 467) = 7.28$	<0.01
	CES-D	16.47	18.07	$F(1, 467) = 1.47$	n.s.

Note: 10,000 Indonesian Rupiah = approximately 1 USD as of 2011 exchange rates.

To clarify what aspects of the posttraumatic stress response were most strongly related to belief in general teaching efficacy pre-intervention, a second regression was conducted including summary scores on the subscales of the PCL assessing the PTSD diagnostic criteria B (re-experiencing), C (avoidance), and D (arousal) (American Psychiatric Association, 2000) in place of the PCL total score. Neither scores of re-experiencing nor avoidance symptoms were significant predictors of general teaching efficacy (re-experiencing:  $\beta = -0.030$ ,  $p = 0.87$ ;



**Figure 1.** Teachers' Scores on Pre- and Post-test Measures.

avoidance:  $\beta=0.00$ ,  $p=0.999$ ). However, there was a significant relationship between arousal symptoms such that increased arousal was associated with increased perceptions of general teaching efficacy pre-intervention ( $\beta=0.474$ ,  $p=0.047$ ).

The final analysis assessed change from before to after the intervention on outcome measures. Pre- and post-intervention scores on the PCL, CES-D, TES (personal and general efficacy) and CBCL are presented in Figure 1. Paired-sample  $t$ -tests using one-tailed  $p$  values found a significant drop in PCL scores ( $t(42)=1.95$ ,  $p=0.029$ ) and in CES-D scores ( $t(42)=2.307$ ,  $p=0.013$ ) from before to after the intervention. There was no significant change in perceptions of personal teaching efficacy ( $t(42)=-0.957$ ,  $p=0.17$ ), general teaching efficacy ( $t(42)=-0.136$ ,  $p=0.45$ ), or reports of classroom behavior ( $t(42)=1.311$ ,  $p=0.10$ ) from before to after the intervention.

## Discussion

This study addressed three specific research questions. First, we sought to assess the impact of the earthquake on teachers in a rural area in the context of the experience of others in their area. Teachers in our sample showed no significant differences in earthquake exposure than a sample of parents drawn from the same area. Indeed, our sample of teachers was highly exposed—over 80% experienced major material loss in the earthquake, over 70% knew someone who died, and over 60% saw a dead body at that time. Similarly, teachers reported levels of depression that were not significantly different from parents approximately four years after the earthquake. However, teachers did report significantly lower levels of posttraumatic distress than a sample of parents drawn from the population. Although their

levels of exposure to the earthquake may have been comparable, posttraumatic distress level differences may have been a result of demographic differences between the teachers and the parents. This study's sample was fully employed, and teachers enjoy significantly higher wages than the parent sample. Moreover, educational requirements for teachers in Indonesia mean that they are likely to be more educated than the general population. Demographic variables such as low SES and lack of education have been associated with vulnerability to posttraumatic distress (Norris et al., 2002), and therefore it is possible that the differences in PCL scores reflect these underlying demographic differences. Nonetheless, teachers in this sample were exposed to the same traumatic events associated with the earthquake as was the general population in the region, and many teachers did report symptoms of posttraumatic distress. This serves as an important reminder that teachers, particularly teachers in rural areas where they are integrated with the community, represent a potentially affected population in the aftermath of a natural disaster and may require attention and support alongside other groups.

We also sought to examine the relationship between posttraumatic impacts and teacher perceptions of self-efficacy and classroom behavior. Pre-intervention analyses revealed a relationship between CES-D scores and reports of negative classroom behaviors. It is possible that depression influences teachers' ability to identify and deter bad behavior. Depression is associated with a lack of motivation and depressed teachers may allow a higher level of negative behavior in their classroom or feel less capable of disciplining students. Alternatively, classes comprised of students who exhibit more negative behaviors may further increase teacher depression. If teachers are unable to control their students' classroom behavior, this may serve to damage self-efficacy and increase depression. We note, however, that no relationship between depression and self-efficacy was found. It is also possible that these findings reflect generally depressed perceptions, and teachers with higher scores on the CES-D are reporting more negative behaviors in general due to their depressed emotional state. Work on 'depressive realism' provides an interesting context for this interpretation, suggesting that if teachers see student negative behavior as reflecting on their ability, ratings of student behavior may be distorted by depression. However, if they see the questionnaire as an evaluation of others rather than themselves, they may actually be providing a more accurate assessment of child behavior than that offered by nondepressed teachers (Ackerman & DeRubeis, 1991).

We found no relationship between teachers' reports of depressive symptoms or posttraumatic stress symptoms and perceptions of teaching efficacy. However, we did find a relationship between posttraumatic stress symptoms (and specifically arousal symptoms) and general teaching efficacy such that increased posttraumatic arousal symptoms were associated with a general belief that teachers and the school environment were more impactful than parents and the home environment. This was an unexpected finding, and one that needs further research to clarify. A speculative interpretation is that this reflects the predicted association between physiological arousal and perceived efficacy that was identified by Bandura as a source of beliefs about efficacy (Bandura, 1977; Tschannen-Moran et al., 1998). Teachers

with higher post-earthquake arousal may show correspondingly higher impacts of behavior that reduces arousal, improving perceptions of efficacy. However, there is no clear reason why this would only affect general teaching efficacy.

Finally, we examined whether a low-cost, low-resource intervention delivered to teachers could support posttraumatic psychological health and improve perceptions of teaching efficacy. Results indicate a significant drop in posttraumatic stress symptoms and depression symptoms after the intervention; these data are consistent with the interpretation that the intervention was successful in reducing posttraumatic stress symptoms, at least in the short-term. There was, however, no significant change in teaching efficacy or in reported classroom behavior. This may reflect the fact that teachers already had fairly well-established perspectives and routines about teaching efficacy and behavior control, and an intervention focusing primarily on post-disaster recovery was not sufficiently impactful to change these areas. Nonetheless, in general these data suggest that similar low-cost and low-resource interventions may be a useful tool in assisting teachers in coping with their own recovery from traumatic events. This can be a helpful part of assisting community recovery because schools play an important role in the life of the children of a community. If teachers are more adjusted following a traumatic event, they may be better able to support children in their adjustment process as well.

## Limitations

It is important to acknowledge limitations of this research. This intervention was not delivered via a randomized controlled trial and assessments were conducted using self-reported pre–post measures. This does raise the significant potential that the findings may reflect other changes in the participants' context or potentially the impact of the assessment itself (e.g., Adair, 1984). Additional research is required to analyze the relationships between variables identified in this study more fully, and further research should be conducted using experimental or other methodologies that are better able to tease out the causal impacts of the intervention used or the relationships between arousal and teaching efficacy. Additionally, the use of the CBC-L in this context was a novel use of this instrument, and as such the ratings of negative classroom behavior cannot be assumed to share the same psychometric properties as the CBC-L used in its standard function as an individual assessment tool.

## Implications for those working with schools

This research underscores an important point: *Educators are a part of the communities in which they live, and are affected by events that impact the broader community.* This is likely to be particularly true when considering schools in rural populations, where a smaller overall population is likely to increase the social connections of teachers with the general community. Moreover, schools (and particularly those in rural areas) are often a reflection of the communities in which

they live and face issues and challenges consistent with the specific cultural needs and issues of that community. This is reflected in the cultural specificity of some of the trauma symptoms found in this study and is explored more in articles in this special issue (Burack et al., 2013; Fryberg, Covarrubias, & Burack, 2013; Laguarda & Woodward, 2013; Little, Akin-Little, & Johansen, 2013; Yeung, Craven, & Ali, 2013).

In the aftermath of disasters or significant traumatic events, teachers and schools, particularly those working with indigenous populations and serving rural areas, are an important resource for assisting with the community's recovery. However, the personal impact of traumatic events on the teachers must be considered: *This research suggests that posttraumatic impacts such as depression may play a role in teacher's perceptions of child behavior, and that there may be an association between posttraumatic impacts and teacher perceptions of efficacy.*

Our findings also provide some suggestive evidence that relatively brief interventions delivered directly to teachers have the capacity to impact teacher recovery following disasters or other traumatic events. Within the limitations allowed by this design, these data suggest that such interventions may be able to reduce teacher distress. If future research confirms the potential of similar interventions, it may be wise for schools to develop training programs for teacher recovery to be executed in the aftermath of traumatic events (e.g., Wolmer et al., 2003). This role may best be undertaken by the school psychologist or the personnel who fulfill that role in rural, indigenous schools.

We believe this research represents the first examination of the impact of natural disasters and posttraumatic distress on teacher beliefs about efficacy and classroom performance carried out in a rural setting using culturally appropriate measures. Our research suggests that teachers in the area studied were exposed to substantial numbers of traumatic events, and showed levels of depression similar to the general population in the community in which they lived. Depression scores appear to be related to heightened perceptions of child misbehavior in class, while posttraumatic arousal symptoms are associated with increased belief in general teaching efficacy. These findings suggest that posttraumatic impacts may play a role in teacher performance, potentially hindering teachers' abilities to support posttraumatic recovery in their students. Findings regarding the post-intervention change in depression and posttraumatic stress symptoms suggest that low-cost, low-resource interventions delivered to teachers may have potential as a tool for supporting teacher recovery and potentially teacher performance through this recovery. These data further demonstrate the potential utility for post-disaster support delivered to teachers.

## Note

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## References

- Achenbach, T. M., & Edelbrock, C. S. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VA: University of Vermont.
- Ackerman, R., & DeRubeis, R. J. (1991). Is depressive realism real? *Clinical Psychology Review, 11*, 565–584. doi: 10.1016/0272-7358(91)90004-E.
- Adair, J. G. (1984). The Hawthorne Effect: A reconsideration of the methodological artifact. *Journal of Applied Psychology, 69*, 334–345. doi: 10.1037/0021-9010.69.2.334.
- Adams, P., & Adams, G. (1984). Mount Saint Helen's ashfall: Evidence for a disaster stress reaction. *American Psychologist, 39*, 252–260. doi: 10.1037/0003-066X.39.3.252.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*, 4th ed. Washington, DC: Author.
- Asian Disaster Reduction Center. (2007). *Natural disasters data book: An analytical overview—2006*. Kobe: Asian Disaster Reduction Center.
- Asian Disaster Reduction Center. (2010). *Disaster information archive: Indonesia*. Retrieved June 15, 2010 from Asian Disaster Reduction Center, website: [http://www.adrc.asia/latest\\_disaster.php?NationCode=360&Lang=en&Mode=country&NationNum=03](http://www.adrc.asia/latest_disaster.php?NationCode=360&Lang=en&Mode=country&NationNum=03).
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191–215. doi: 10.1037/0033-295X.84.2.191.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*, 117–148. doi: 10.1207/s15326985sep2802\_3.
- Belfer, M. L. (2006). Caring for children and adolescents in the aftermath of natural disasters. *International Review of Psychiatry, 18*, 523–528. doi: 10.1080/09540260601048877.
- Bernaus, M., & Gardner, R. C. (2008). Teacher motivation strategies, student perceptions, student motivation, and English achievement. *The Modern Language Journal, 92*, 387–401. doi: 10.1111/j.1540-4781.2008.00753.x.
- Bland, S. H., O'Leary, E. S., Farinaro, E., Jossa, F., & Trevisan, M. (1996). Long-term psychological effects of natural disasters. *Psychosomatic Medicine, 58*, 18–24.
- Bolton, P., & Tang, A. M. (2004). Using ethnographic methods in the selection of post-disaster, mental-health interventions. *Prehospital and Disaster Medicine, 19*, 97–101.
- Burack, J. A., D'Arrisso, A., Ponizovsky, V., Troop-Gordon, W., Mandour, T., Tootootsis, C., Robinson, S., Iarocci, G., & Fryberg, S. A. (2013). Friends and grades: Peer preference and attachment predict academic success among Naskapi youth. *School Psychology International, 34*(4), 371–386.
- Clettenberg, S., Gentry, J., Held, M., & Mock, L. A. (2011). Traumatic loss and natural disaster: A case study of a school-based response to Hurricanes Katrina and Rita. *School Psychology International, 32*, 553–566. doi: 10.1177/0143034311402928.
- Cohen, J. A., & Mannarino, A. P. (2011). Supporting children with traumatic grief: What educators need to know. *School Psychology International, 32*, 117–131. doi: 10.1177/0143034311400827.
- Egyed, C. J., & Short, R. J. (2006). Teacher self-efficacy, burnout, experience, and decision to refer a disruptive student. *School Psychology International, 27*, 462–474. doi: 10.1177/0143034306070432.



- Evans, L., & Oehler-Stinnett, J. (2006). Children and natural disasters: A primer for school psychologists. *School Psychology International*, 27, 33–55. doi: 10.1177/0143034306062814.
- Fryberg, S. A., Covarrubias, R., & Burack, J. A. (2013). Cultural models of education and academic performance for Native American and European American students. *School Psychology International*, 34(4), 439–452.
- Gibson, S., & Dembo, M. H. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology*, 76, 569–582. doi: 10.1037/0022-0663.76.4.569.
- Heath, M. A., Nickerson, A. B., Annandale, N., Kemple, A., & Dean, B. (2009). Strengthening cultural sensitivity in children's disaster mental health services. *School Psychology International*, 30, 347–373. doi: 10.1177/0143034309106944.
- Holman, E. A., & Silver, R. C. (1998). Getting 'stuck' in the past: Temporal orientation and coping with trauma. *Journal of Personality and Social Psychology*, 74, 1146–1163. doi: 10.1037/0022-3514.74.5.1146.
- Jorm, A. F., Kitchener, B. A., Sawyer, M. G., Scales, H., & Cvetkovski, S. (2010). Mental health first aid training for high school teachers: A cluster randomized trial. *BMC Psychiatry*, 10(51). doi: 10.1186/1471-244X-10-51.
- Klingman, A. (2001). Israeli children's reactions to the assassination of the Prime Minister. *Death Studies*, 25, 33–49. doi: 10.1080/07481180125937.
- Koopman, C., Classen, C., & Spiegel, D. (1994). Predictors of posttraumatic stress symptoms among survivors of the Oakland/Berkeley, California, firestorm. *American Journal of Psychiatry*, 151, 888–894.
- LaGreca, A. M., Silverman, W. K., Vernberg, E. M., & Prinstein, M. J. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: A prospective study. *Journal of Consulting and Clinical Psychology*, 64, 712–723. doi:10.1037/0022-006X.64.4.712.
- Laguarda, A. I., & Woodward, W. P. (2013). They own this: Mother tongue instruction for indigenous Kuku children of Southern Sudan. *School Psychology International*, 34(4), 453–469.
- Little, S. G., & Akin-Little, A. (2011). Responses to childhood trauma: An international perspective. *School Psychology International*, 32, 441–447. doi: 10.1177/0143034311402915.
- Little, S. G., Akin-Little, K. A., & Johansen, A. (2013). Bi-cultural Aotearoa/New Zealand: Provision of psychological services to the Maori population of rural New Zealand: Combining best practice with cultural considerations. *School Psychology International*, 34(4), 428–438.
- Nastasi, B. K., Jayasena, A., Summerville, M., & Borja, A. (2011). Facilitating long-term recovery from natural disasters: Psychosocial programming for tsunami-affected schools of Sri Lanka. *School Psychology International*, 32, 512–532. doi: 10.1177/0143034311402923.
- Norris, F., Friedman, M., Watson, P., Byrne, C., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I: An empirical review of the empirical literature, 1981–2001. *Psychiatry*, 65, 207–239.
- Norris, F., Stevens, S., Pfefferbaum, B., Wyche, K., & Pfefferbaum, R. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41, 127–150. doi: 10.1007/s10464-007-9156-6.

- Olteanu, A., Arnberger, R., Grant, R., Davis, D., Abramson, D., & Asola, J. (2011). Persistence of mental health needs among children affected by Hurricane Katrina in New Orleans. *Prehospital and Disaster Medicine, 26*, 3–6. doi: 10.1017/S1049023X10000099.
- Osterman, J. E., & DeJong, J. T. V. M. (2007). Cultural issues and trauma. In M. J. Friedman, T. M. Keane, & P. A. Resick (Eds.), *Handbook of PTSD: Science and practice* (pp. 425–446). New York, NY: Guilford Press.
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401. doi:10.1177/014662167700100306.
- Rolfness, E. S., & Idsoe, T. (2011). School-based intervention programs for PTSD symptoms: A review and meta-analysis. *Journal of Traumatic Stress, 24*, 155–165. doi: 10.1002/jts.20622.
- Ross, J. A. (1992). Teacher efficacy and the effects of coaching on student achievement. *Canadian Journal of Education, 17*, 51–65. doi: 10.2307/1495395.
- Seyle, D. C., Tan, E., Widyatmoko, C. S., Lam, S., & Silver, R. C. (2010, November). *The psychological impact of repeated exposure to natural disasters: A study of residents of Java, Indonesia*. Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, Montreal, Canada.
- Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *JAMA: The Journal of the American Medical Association, 288*, 1235–1244. doi: 10.1001/jama.288.10.1235.
- Tschannen-Moran, M., Hoy, A. W., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research, 68*, 202–248. doi: 10.3102/00346543068002202.
- Ursano, R., McCaughey, B., & Fullerton, C. (Eds.) (1994). *Individual and community responses to trauma and disaster: The structure of human chaos*. Cambridge: Cambridge University Press.
- Weathers, F., Litz, B., Herman, D., Huska, J., & Keane, T. (1993, October). *The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility*. Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, San Antonio, TX.
- Wicke, T., & Silver, R. C. (2009). A community responds to collective trauma: An ecological analysis of the James Byrd murder in Jasper, Texas. *American Journal of Community Psychology, 44*, 233–248. doi: 10.1007/s10464-009-9262-8.
- Widyatmoko, C. S., Tan, E. T., Seyle, D. C., Mayawati, E. H., & Silver, R. C. (2011). Coping with natural disasters in Yogyakarta, Indonesia: The psychological state of elementary school children as assessed by their teachers. *School Psychology International, 32*, 484–497. doi: 10.1177/0143034311402919.
- Wolmer, L., Hamiel, D., Barchas, J. D., Sloan, M., & Laor, N. (2011). Teacher-delivered resilience-focused intervention in schools with traumatized children following the second Lebanon war. *Journal of Traumatic Stress, 24*, 309–316. doi: 10.1002/jts.20638.
- Wolmer, L., Hamiel, D., & Laor, N. (2011). Preventing children's posttraumatic stress after disaster with teacher-based intervention: A controlled study. *Journal of the American Academy of Child and Adolescent Psychiatry, 50*, 340–348. doi: 10.1016/j.jaac.2011.01.002.
- Wolmer, L., Laor, N., Dedeoglu, C., Siev, J., & Yazgan, Y. (2005). Teacher-mediated intervention after disaster: A controlled three-year follow-up of children's functioning.

- Journal of Child Psychology and Psychiatry*, 46, 1161–1168. doi: 10.1111/j.1469-7610.2005.00416.x.
- Wolmer, L., Laor, N., & Yazgan, Y. (2003). School reactivation programs after disaster: Could teachers serve as clinical mediators? *Child and Adolescent Psychiatric Clinics of North America*, 12, 363–381. doi: 10.1016/S1056-4993(02)00104-9.
- Yeung, A. S., Craven, R. G., & Ali, J. (2013). Self concepts and educational outcomes of indigenous Australian students in urban and rural school settings. *School Psychology International*, 34(4), 407–427.
- Ying, L-H., Wu, X-C., & Lin, C-D. (2012). Longitudinal linkages between depressive and posttraumatic stress symptoms in adolescent survivors following the Wenchuan earthquake in China: A three-wave, cross-lagged study. *School Psychology International*. doi: 10.1177/0143034311421271.
- Zeng, E. J., & Silverstein, L. B. (2011). China earthquake relief: Participatory action work with children. *School Psychology International*, 32, 498–511. doi: 10.1177/0143034311402921.

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