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, volcano 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 6 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 the potential role of teachers in assisting students cope with chronic stress in their community. Lessons learned from this program of research can inform long-term community intervention efforts following disasters across the world.

Keywords: Earthquake, Natural Disasters, Teacher self-efficacy, Indonesia
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Disasters and other large-scale traumatic events often spill over beyond those directly exposed to affect the wider community as well. 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 (cf., 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 causality 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. As a significant part of the life of children in the area, as well as 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, 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.

Teachers and school staff are particularly important when considering the impact of disasters on children. Children are at increased risk of long-term distress following adversity (Belfer, 2006; Norris et al., 2002), and due to the large role of school personnel in children’s daily lives, schools may serve an important function in assessing and supporting child mental health following collective traumas (Klingman, 2001; Wolmer et al., 2003). 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 (Rolfsness & 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, the impact of 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 either academic or 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: 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 parents making a living through agriculture or small-scale sales activity. 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 a part of the area of geological instability known as the “Ring of Fire,” Indonesia 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: 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 posttraumatic stress symptoms attributed specifically to the earthquake to be as high as 17% among elementary school children (Widyatmoko et al., 2011). A sample of parents in the region also found rates of post-earthquake probable PTSD to be 28% (Seyle, Tan, Widyatmoko, Lam, & Silver, under review). 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 would 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 posttraumatic distress and increased perceived benefits to teaching performance and student achievement.

Methods

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 a three full-day intervention 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 from six schools in the educational subdistricts of Bambanglipuro and Pundong in Bantul, Special District of Yogyakarta, Indonesia (10 M, 33 F). Mean age was 37.33 (range = 21-59, SD=12.33). All participants completed both waves of the study. 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 (such as partner violence, motor vehicle accidents, and illness or injury) (modified from Silver et al., 2002). Demographic variables included age, gender, income, and living arrangements (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 self-efficacy was assessed using the Teacher Efficacy Scale (Gibson & Dembo, 1984), with general teaching efficacy recoded so that higher scores indicated more perceived general 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: 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, to identify the final wording.

*Analysis*

There was some missing data present (per-item rates of missingness 0-7% 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.). Dependent measures were imputed using regression estimation in the SPSS 11.0 missing values module. Measures of independent variables were not imputed.

The initial analyses 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, Tan, Widyatmoko, Lam, & Silver, under review). 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 adapted PCL and CES-D scores using ANOVA.

The second analyses assessed whether there was a relationship between post-disaster mental health and teacher perceptions of self-efficacy or student classroom behavior. 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 analyses 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, they reported significantly lower mean posttraumatic stress scores on the PCL than the parents. No differences emerged between parents and teachers on the CES-D.

The second set of analyses assessed the relationship between measures of posttraumatic mental health and teacher performance prior to the intervention. The final regression model for negative classroom behavior found that CES-D scores were a significant predictor of reported negative student behavior ($\beta = .354, p = .037$). Teacher age was a predictor of lower reported negative behavior ($\beta = -.428, p = .013$). Teacher gender was not a significant predictor ($\beta = .171, p = .288$), but 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. PCL was
not a significant predictor of negative behavior in initial models, and was not included in the final model.

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, such that older teachers reported fewer negative behaviors in the classroom ($\beta = -.365, p = .019$). Gender and CES-D scores were not significant predictors of teacher reports of classroom behavior, and were not included in the final model.

For personal teaching efficacy, there was no significant relationship found between any predictor we measured and personal teaching efficacy before the intervention. We found no relationship between CES-D ($\beta = .209, p = .27$), PCL ($\beta = -.162, p = .38$), gender ($\beta = .170, p = .33$), or age ($\beta = .308, p = .10$) and ratings of personal teaching efficacy. After the intervention, age was a significant predictor such that older teachers reported greater personal teaching efficacy ($\beta = .371, p = .027$), but gender was not significant ($\beta = .281, p = .091$). CES-D scores were not significant, and were not included in the final model.

The final regression model for general teaching efficacy before the intervention found that PCL scores were a significant predictor of increased general teaching efficacy ($\beta = .343, p = .025$). Neither age, gender, nor CES-D scores were significant predictors of general teaching efficacy in initial models and were not included in the final model. After the intervention, neither CES-D ($\beta = .191, p = .312$), PCL ($\beta = .142, p = .142$), gender ($\beta = -.27, p = .789$), nor age ($\beta = .266, p = .155$) were significant predictors of general teaching efficacy.
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 computed including sum-scores on the subscales of the PCL assessing the PTSD diagnostic criteria B (reexperiencing), C (avoidance), and D (arousal) (American Psychiatric Association, 2000). Summary scores of reexperiencing or avoidance symptoms were not significant predictors of general teaching efficacy ($\beta = .03, .00; p = .87, .999$). However, there was a significant relationship between arousal symptoms such that increased arousal was associated with increased perceptions of general teaching efficacy ($\beta = -.474, p = .047$).

Pre- and post-intervention scores on the PCL, CES-D, CBCL, and TES are presented in Figure 1. Paired-sample t-tests using one-tailed $p$ values found a significant drop in PCL scores ($t(42)=1.95, p = .029$) and in CES-D scores ($t(42)=2.307, p = .013$). There was no significant change in perceptions of personal teaching efficacy ($t(42)=-.957, p = .17$), general teaching efficacy ($t(42)=-.136, p = .45$), or reports of classroom behavior ($t(42)=1.311, p = .10$) 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: a sample of active teachers is inherently an employed sample, and teachers had significantly higher wages than the parent sample. Moreover, educational requirements for teachers in Indonesia mean that they are more likely to be educated than the general population. Demographic variables such as SES and 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 found a relationship between CES-D scores and reports of negative classroom behaviors. It is possible that depression influences teachers’ ability to identify and stop 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 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 the teachers, 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. There is no clear reason why this would only affect general teaching efficacy, however.

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
from before to 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 no significant change in teaching efficacy or in reported classroom behavior, however. 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 from a traumatic event, they may be better able to support children in their adjustment process as well.

The impact of the intervention is additionally supported by the analysis of post-intervention predictors of teaching efficacy and classroom behavior. Before the intervention, depression was a predictor of increased negative classroom behavior, but this relationship was not found in post-intervention analyses. Similarly, PCL scores predicted perceptions of general teaching efficacy before the intervention, but this was not true at the post-assessment analysis. This suggests that the intervention may have removed the variance in classroom behavior and general teaching efficacy associated with posttraumatic distress and left variance associated with other causes, supporting the finding that the participants’ posttraumatic distress symptoms changed.

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 more fully map out the relationships between variables identified in this study, 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: teachers (and school staff in general) 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. In the aftermath of disasters or significant traumatic events, teachers and schools 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, then this suggests that 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).

In general, to the best of our knowledge, 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. This 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. Research into the post-intervention change in depression and posttraumatic stress symptoms suggests 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. While future research is needed, these data do demonstrate the importance of teacher training and the potential utility for post-disaster support delivered to teachers. This suggests the importance of training in best-practices for psychological recovery delivered to all schools, not only those in urban or high-resource areas.
References


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

<table>
<thead>
<tr>
<th>Gender</th>
<th>Teachers</th>
<th>Parents</th>
<th>Statistic</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>10</td>
<td>M=101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
<td>307</td>
<td></td>
<td></td>
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<tr>
<td>Unknown</td>
<td>N/A</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
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<tr>
<td></td>
<td>37.33</td>
<td>41.17</td>
<td>( \chi^2 (7) = 32.75 )</td>
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<tr>
<td>(SD=12.3)</td>
<td>(SD=9.8)</td>
<td></td>
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<tr>
<td>Monthly income</td>
<td></td>
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<tr>
<td>(IDR 10,000 = approx USD 1)</td>
<td></td>
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<tr>
<td>RP &lt;250,000</td>
<td>0%</td>
<td>16%</td>
<td></td>
<td></td>
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<tr>
<td>RP 250,000-500,000</td>
<td>20%</td>
<td>26%</td>
<td></td>
<td></td>
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<tr>
<td>RP 500,000-750,000</td>
<td>3%</td>
<td>19%</td>
<td></td>
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<tr>
<td>RP 750,000-1,000,000</td>
<td>14%</td>
<td>15%</td>
<td></td>
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<td>RP 1,000,000 - 1,250,000</td>
<td>11%</td>
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<td>RP 1,250,000 - 1,500,000</td>
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<td>5%</td>
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<td>RP 1,500,000 - 2,000,000</td>
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<tr>
<td>RP &gt; 2,000,000</td>
<td>14%</td>
<td>5%</td>
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<td></td>
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<tr>
<td>Earthquake experiences</td>
<td>Experienced earthquake</td>
<td>97%</td>
<td>88.6%</td>
<td>$\chi^2(1) = .227$</td>
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<td>------------------------</td>
<td>------------------------</td>
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</tr>
<tr>
<td>Major material loss in earthquake</td>
<td>83.3%</td>
<td>85.3%</td>
<td>$\chi^2(1) = .419$</td>
<td>n.s.</td>
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<tr>
<td>Knew someone who died in earthquake</td>
<td>71.8%</td>
<td>78%</td>
<td>$\chi^2(1) = 1.93$</td>
<td>n.s.</td>
</tr>
<tr>
<td>Knew someone who was badly injured in earthquake</td>
<td>71.1%</td>
<td>75%</td>
<td>$\chi^2(1) = 1.39$</td>
<td>n.s.</td>
</tr>
<tr>
<td>Saw dead body in earthquake</td>
<td>61.9%</td>
<td>65.4%</td>
<td>$\chi^2(1) = .361$</td>
<td>n.s.</td>
</tr>
<tr>
<td>Personally badly injured in earthquake</td>
<td>2.4%</td>
<td>9.3%</td>
<td>$\chi^2(1) = 2.29$</td>
<td>n.s.</td>
</tr>
<tr>
<td>Post-disaster impact</td>
<td>PCL</td>
<td>35.64</td>
<td>42.59</td>
<td>$F(1, 467)=7.28$</td>
</tr>
<tr>
<td></td>
<td>CES-D</td>
<td>16.47</td>
<td>18.07</td>
<td>$F(1, 467)=1.47$</td>
</tr>
</tbody>
</table>
Figure 1: Teachers’ Scores on Pre- and post-test measures