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University Student Voices on Healing and Recovery Following Tragedy

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Abstract

Objective: Guided by Conservation of Resources theory, this study provides empirical data on student psychosocial adjustment following a mass murder tragedy, what changed or did not change from their pre-tragedy adjustment levels, and their view on what helped most in the immediate aftermath.

Methods: Students (n = 593) who participated in a study of college adjustment the year prior to a mass murder that affected the university community were recontacted following the tragedy, providing prospective, longitudinal data (n = 141 pre-1 & post-tragedy; n = 73 pre-1, pre-2, post-tragedy).

Results: For both anxiety and depression, repeated measures ANOVA showed a significant time by resource loss interaction. Students with any resource loss had a steeper incline in symptoms than students reporting no resource loss. From pre- to post-tragedy, there was an increase in psychological sense of school membership, but no change in general self-efficacy and social support. Students with clinical levels of post-tragedy distress reported more childhood trauma and depression symptoms at college entry. Student-initiated and led memorial activities were rated as most helpful.

Implications: Perceived resource loss is important in understanding the impact of the trauma on mental health and could be a part of intake for supportive services. Given that it was the students with greater prior trauma exposure and depression symptoms who were more likely to have clinical distress post-tragedy, targeted outreach to current and former university counseling center clients to "check in" may be helpful to reach those who may be in most need.

Keywords: mass violence; university students; depression; anxiety; crisis response

"They weren't a statistic. They were people, friends, sons, daughters, and loved

ones . . ."

-- UCSB student

On Friday, May 23, 2014, a young man unaffiliated with the university

murdered six students from the University of California at Santa Barbara (UCSB) and

wounded over a dozen others, across 17 different crime scenes, before killing

himself (Santa Barbara County Sherriff's Office, 2015). The attack occurred in the

unincorporated community of Isla Vista, CA, immediately adjacent to the university,

where approximately half of the UCSB student population lives, and where even

more recreate, especially on weekends. The attack methods used by the

perpetrator included stabbing, shooting, and hitting cyclists and pedestrians with

his car. Events unfolded very quickly, and were ever-changing. The tragedy that

weekend reverberated throughout the grieving UCSB community and world, as

national and international media attention descended upon the community for

several weeks. This tragedy occurred towards the end of the quarter, shortly before

the stress of final exams.

The aims of this paper are to understand how perceived resource loss

impacts young adults who faced life threatening trauma, to discern how

psychosocial adjustment may change based on perceived resource loss, and to help

other colleges, universities, and trauma professionals better prepare and respond to

crisis events. Using prospective, longitudinal data, we provide empirical data on

student psychosocial adjustment following a mass murder tragedy, what changed or

did not change from their pre-tragedy adjustment levels, and students' views on

what helped most in the immediate aftermath. Most prior research on psychosocial

adjustment following tragedy is limited due to a lack of pre-trauma information on

psychosocial functioning. Even when prospective data is available, a recent review (Lowe & Galea, 2015) noted that existing studies have focused on a narrow set of indicators of post-tragedy adjustment, most often posttraumatic stress symptoms (e.g., Orcutt, Bonanno, Hannan, & Miron, 2014). In contrast, we present a range of psychosocial adjustment information, such as psychological sense of school membership, general self-efficacy, social support, and symptoms of depression and anxiety, which we explore for changes over time. Using Conservation of Resources (COR) Theory (Hobfoll, 1989, 2001) as a guide, we provide important information to both trauma research and practice communities on what does and does not change as university students grapple with tragedy, as both types of information are important in understanding the effects of trauma and the internal resources available for recovery.

Conservation of Resources (COR) Theory

Hobfoll (1989, 2001) proposes COR as a testable, integrative model of stress that accounts for both internal and environmental processes. In sum, COR states that people work to retain, protect, and build resources, and what is stressful is the threat or actual loss of resources, or the failure to gain resources after investing resources. Hobfoll (2001) emphasizes the ecological context of coping with stress, in that individuals are nested within families and communities, and this influence affects what is considered a resource and a threat. Resources are defined as the objects, personal characteristics, conditions, or energies that serve as means for gaining more resources. COR proposes many testable tenets, and the one most relevant to the current study is the central importance (primacy) of resource loss in understanding the impact of trauma.

Acute Collectively-Experienced Traumas

The shared experience of acute collectively-experienced traumas, like the Isla Vista tragedy, make them differ from individually-based traumas, as well as on-going traumatic events like war, in several ways that can affect the resources survivors have to cope. When these events occur on college campuses, there is a collective identity that can boost a sense of social support in the aftermath, and perhaps promote support-seeking (Smith, Donlon, Anderson, Hughes, & Jones, 2015). In contrast, there may be secrecy, isolation, and shame in survivors of individually-based traumas like sexual assault and domestic violence (Herman, 1992). As victims of mass, unexpected violence are often seen as innocent and defenseless (Shultz et al., 2014), there is often a great outpouring of support in the aftermath. The grief process is also shared, and there can be models of healthy mourning and coping (Smith et al., 2015), as well as a range of supportive community events to facilitate recovery. Due to the acute nature of the event, there is not the ongoing threat of danger that war and chronic community violence pose. Indeed, a review of mass shootings found that they often occur in relatively low crime areas (Shulz et al., 2014). Therefore, survivors may be able to return to relatively safe environments to grieve and heal.

Mass Murders and Their Aftermath

Unfortunately, mass murders on or near college campuses are not rare, and have a tendency towards increasing frequency (Lowe & Galea, 2015). These events most commonly involve gun violence, but can also involve knives and other weapons (Fox & Savage, 2009), as was experienced in Isla Vista. Recent reviews of research on mass shootings indicate that they are characterized by a large number of unsuspecting victims from the broader society that did not know, or were unconnected to the shooter, and that they can increase mental health (MH)

problems among community members, such as posttraumatic stress, depression, and anxiety symptoms (Lowe & Galea, 2015; Shultz et al., 2014). A range of factors associated with the tragedy (e.g., degree of exposure, loss of someone close), what the individual survivor brought to the event in terms of previous trauma exposure and prior psychological functioning, as well as social support in the aftermath show empirical relations to decreased MH in survivors (Lowe & Galea, 2015; Shultz et al., 2014).

There have been some prospective studies, with women only, following the Northern Illinois University (Orcutt et al., 2014) and Virginia Tech (Littleton, Grills-Taquechel, & Axsom, 2009) university shootings that have contributed substantial information on post-tragedy MH, and the factors affecting it. In the study by Orcutt and colleagues (2014), trajectories of posttraumatic stress symptoms (PTSS) following a mass shooting, where pre-shooting levels of PTSS were known, were examined over 31 months among women undergraduate students. Consistent with prior work on trajectories of distress following disasters and terrorism (Bonanno, Brewin, Kaniasty, & La Greca, 2010), the most common trajectory found was of resilience (60.9%). This group characterized by resilience had less exposure to the shooting, less prior trauma exposure, and greater emotion regulation skills than the other groups. The next most common group was that of recovery (29.1%), which is also consistent with prior research. This group had higher levels of pre-shooting PTSS, which increased further after the shooting, but dropped substantially six months after the shooting. There was also a moderate impact-moderate symptom trajectory (8.2%) and a trajectory characterized by chronic dysfunction (1.8%). The women in the chronic dysfunction group experienced higher levels of shooting exposure than the group that recovered. Interestingly, social support, commonly

conceptualized as an important protective factor, was not related to trajectory class membership. The impact of the Virginia Tech mass shooting was measured in terms of resource loss (Littleton et al., 2009). Pre-tragedy data were available on social support and distress levels, and both predicted resource loss post-shooting. This resource loss was related to distress symptoms at two and six months post-shooting.

In sum, although the empirical literature on mass violence is growing and plays a key role in public mental health efforts to support survivors, it is limited in several ways. There is a continued need for theoretically-guided, prospective studies, that include both genders, that can explore how these tragic events affect a range of indicators of psychosocial adjustment, beyond PTSS. There is also very limited empirical information on university crisis response efforts following mass murder, and this study begins to address this need by asking students what events they attended in the aftermath, perceived helpfulness, and what they want other schools to know about how to help.

Current Study

There are many possible ways to measure the impact of a collectively-experienced trauma. Often it is measured in terms of indicators of objective exposure, such as physical proximity to the events, what was seen and heard, potential life threat, and social proximity (loss or injury of someone close). It has also been measured in terms of peritraumatic emotional reactions, for example fear for safety for oneself and others. COR theory would suggest that the impact of a tragedy is felt in terms of the resource losses and gains (or lack thereof) it entails (Hobfoll, 2001). Indeed, following mass murders at a college, researchers have measured resource loss (Littleton et al., 2009). Based on COR theory, we put forth

the following hypothesis: *H1. Resource loss will have the strongest relation to post-tragedy psychosocial adjustment.*

Most prior work has measured post-trauma adjustment in terms of psychopathology. This is important, as the goal of public MH efforts following trauma is to reduce risk for chronic distress and impairment. However, it is also important to know how trauma affects other forms of adjustment, such as constructs considered assets or protective factors, including social support, general self-efficacy, and psychological sense of school membership (feelings of school belonging). We hypothesize: *H2. Resources loss will negatively impact post-tragedy psychosocial adjustment.* We also explore what pre-tragedy factors are related to post-tragedy clinical mental health concerns.

Finally, one purpose of trauma research is to inform policy and practice to help future trauma survivors. It is essential that we learn from the tragedies we experience and there is a need for data on crisis response efforts following a collectively-experienced trauma. We documented the types of recovery activities offered in the first few weeks, asked students what they attended, and what was helpful. We also asked students what other universities should know to help students recover, and we share their responses.

Methods

Participants and Procedures

Participants were originally recruited to participate in a study investigating how prior experiences with school bullying affected first-year students' adjustment to college. The survey center at the university was contracted to administer the online survey and all first-year students ($N = 4,631$) in Fall 2012 were invited to participate by email, and 832 responded (17.9%; partials and completes), with 593

providing data on the variables of interest for this study (pre-tragedy time 1 [pre-1]). A follow-up online survey was sent to participating students in Spring 2013 (pre-2), and at that time 247 of the original participants responded (30.0%). The original study was then closed, but after the tragedy human subjects approval was obtained to re-open the study and the 593 people with complete data at pre-1 were invited via email to participate in a post-tragedy survey in October and November 2014 (5-6 months post-tragedy). This was shortly after the Fall Quarter started which was in early October, when students returned to UCSB. Informed consent was obtained at the start of the online survey. Participants were offered the choice of a $5 Amazon gift card or a $5 donation to a memorial fund for the victims of the tragedy as a token of appreciation for the time it took to complete the survey. At the end of the survey, all students were provided contact information for the university counseling center.

A total of 141 students (23.7% response rate) completed the post-tragedy survey, and 73 students had complete data across all three waves (pre-1, pre-2, post-tragedy). The final sample consisted of 65.7% female and 40.4% White, 32.6% Asian/Pacific Islander, 12.1% Latino/a, and 14.9% mixed or other race students. In comparison, data from the UCSB Campus Profile 2012-13 (the year the study began), indicates that 53% of undergraduates were female, and ethnic breakdown of the undergraduate population was 43%White, 24% Latino/a, 24% Asian/Pacific Islander, 4% Black/African American, 1% Native American; and 3% Unknown. By initial study design, all students were in their first-year of college (18 or 19 years old) at the time of pre-1; therefore, we did not control for age in our analyses. We checked for any significant differences between the students who completed the post-tragedy survey and those that did not; there were no differences in gender,

ethnicity, or any of the psychosocial adjustment variables measured in the Fall of their Freshman year (pre-1).

Pre-Event Only Measure

Prior Victimization. To account for prior trauma exposure, we created a sum score from the responses to a question on prior bullying victimization (Swearer & Cary, 2003) and selected items (9) of the Juvenile Victimization Questionnaire (JVQ). The JVQ was designed to comprehensively assess crime, child maltreatment, and other victimization experiences that occur during childhood (Finkelhor, Ormrod, Turner, & Hamby, 2005). Specifically, the items assessed for victimization, physical dating violence, attempted/completed rape, emotional dating violence, and physical and psychological abuse by a family member. The response options were *yes* (1) or *no* (0), and items were summed to create a total score. This creates a lifetime experience to date sum score, but it does not address chronicity of victimization. The JVQ's reliability and validity has been supported in national studies (Finkelhor et al., 2005).

Pre and Post Event Measures

Psychological Sense of School Membership (PSSM). The PSSM scale was developed to measure individuals' school belongingness, specifically "the extent to which students feel personally accepted, respected, included, and supported by others in the school environment" (Goodenow, 1993, p. 80). The PSSM consists of 18 items with two subscales measuring school belonging and teacher support. Students responded to five items from the school belonging subscale, which were measured on a 5-point scale from 1 (*not at all true*) to 6 (*completely true*). We modified items to say "UCSB" instead of "school." The PSSM was given at Pre-1, and then in the post-tragedy survey. Our data yielded reliability estimates of

α = .75 (pre-1) and .78 (post).

General Self-Efficacy (GSE). The 10-item GSE scale (Schwarzer &

Jerusalem, 1995) asked students to indicate how true a series of statements are for

them on a 4-point scale (*not at all true* to *exactly true*). Items ask about the extent

to which students can solve problems and accomplish goals (e.g., "I can solve most

problems if I invest the necessary effort," "I can usually handle whatever comes my

way"). Studies support the scale's reliability and validity (e.g., Lusczcynska, Scholz,

& Schwarzer, 2005). Reliability for the current sample was strong: α = .92 (pre-

1), .94 (pre-2), and .89 (post).

Multidimensional Scale of Perceived Social Support (MSPSS). The

MSPSS (Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item self-report measure

designed to subjectively assess students' perceived social support from three

sources: friends (e.g., I have friends with whom I can share my joys and sorrows),

family (e.g., My family really tries to help me), and significant others. For this study,

the eight items from the friends and family subscales were used to create a total

social support score. Responses are provided on a 7-point response scale ranging

from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Previous research

demonstrated good internal and test-retest reliability and moderate construct

validity (Zimet et al., 1988). Our data yielded strong reliability estimates of α = .96

(pre-1), .93 (pre-2), and .92 (post).

Patient Health Questionnaire Depression Scale (PHQ-9). The PHQ-9 is

a nine-item self-report measure of symptoms of depression (Kroenke, Spitzer, &

Williams, 2001). The PHQ-9 is derived from the more comprehensive Primary Care

Evaluation of Mental Disorders (PRIME-MD) to efficiently diagnose depression, and

has demonstrated adequate psychometric evidence to support its use for detecting

depressive disorders (Kroenke, Spitzer, Williams, & Löwe, 2010). Respondents were asked how often they have experienced particular symptoms within the last two weeks (e.g., "feeling down, depressed, or hopeless") and response options are as follows: 0 (*not at all*), 1 (*several days*), 2 (*more than half the days*), and 3 (*nearly every day*). Internal consistency was good for the current study: α = .91 (pre-1), .93 (pre-2), and .90 (post). Scores were summed to form a total score. A dichotomous clinical score was also created based on symptoms reaching the moderate or higher level (a score of 10 or higher), based on the instruction manual.

Generalized Anxiety Disorder Scale (GAD-7). The GAD-7 was used to assess self-reported symptoms of anxiety (Spitzer, Kroenke, Williams, & Löwe, 2006) and was also derived from the PRIME-MD (Kroenke et al., 2010). It has good sensitivity and specificity for detecting generalized anxiety, panic, social anxiety, and post-traumatic stress disorder (Kroenke et al., 2010). Respondents were asked how often they experienced particular symptoms of anxiety within the last two weeks (e.g., "feeling nervous, anxious, or on edge"). A four-point response scale was used ranging from 0 (*not at all*) to 3 (*nearly every day*). Our data yielded strong reliability estimates of α = .90 (pre-1), .93 (pre-2), and .91 (post). A total score was formed by summing responses, with higher scores indicating increased likelihood of an anxiety disorder. A dichotomous clinical score was created based on symptoms reaching the moderate or higher level (a score of 10 or higher), based on the instruction manual.

Post-Event Only Measures

Exposure. Students were asked 14 yes/no questions to assess for objective exposure (e.g., if they heard screams or gunshots; if they saw the car with the gunman; if they were personally injured; if they could not reach friends, family or

loved ones to confirm safety) that were developed by the current authors based on the extant literature and prior experience. Responses to these items were summed to create a total objective exposure score. Students were asked two questions to assess their fear for safety that were based on prior work on mass shootings (Hughes et al., 2011). On a 10-point response scale ranging from 0 (*not at all*) to 10 (*extremely*), students were asked, "How fearful were you for your own safety?" and "How fearful were you for the safety of friends or loved ones?" The mean of the two item responses was used to create a total fear for safety score.

Memorial Events Attendance & Helpfulness. We asked a series of 20 questions to gather information on the UCSB or student-organized events that the students may have participated in following the tragedy (see Table 1 for examples). Students were asked to indicate if they participated in a variety of events (*yes/no*) and if they participated in the event, we asked how helpful the event was on a scale from 0 (*not at all*) to 10 (*extremely*). This measure was developed by the authors for the current study and its specific context. Students were also asked "Do you have any comments or suggestions about events to help universities respond to student needs in the aftermath of tragedies?" Open-ended responses were reviewed and summarized by the recovery events.

Conservation of Resources Evaluation (COR-E). Actual losses in resources following the tragedy were assessed with the COR-E. The COR-E (Hobfoll, 1989) is a widely used tool to assess for 74 areas in which losses and gains might occur following events. Fourteen items applicable for a college student population were selected from the longer measure (see Table S1 online supplemental material for the complete list of items used). Students were asked to rate their experience of actual loss using a 5-point response scale ranging from 0 (*not at all*) to 4 (*to a great*

degree) with higher numbers representing more loss and gain. Sample items include "sense of optimism," "time for adequate sleep," "intimacy with at least one close friend," and "feeling that I have control over my life."

Analytic Plan

Potential demographic differences were explored with t-tests and ANOVAs, with Bonferroni correction (*p*<.007) of the p-values to account for the multiple comparisons. Hypothesis 1, about the primacy of resource loss compared to other measures of the tragedy (e.g., objective exposure, peritraumatic distress), was assessed with correlations. To understand how the trauma affected student adjustment, initial analyses used paired-samples t-tests (pre-1 to post-tragedy) on the larger sample to determine any mean-level change in any of the psychosocial adjustment variables (psychological sense of school membership, social support, general self-efficacy, depression, anxiety). This allowed more power to detect any change. Consistency between this more powered analysis and the subsequent repeated measures ANOVA (pre-1, pre-2, post) strengthened our confidence in subsequent results. Hypothesis 2, about resource loss negatively impacting post-tragedy psychosocial adjustment, was determined through an interaction term in these ANOVA models. The interaction was graphed to facilitate interpretation. We checked that our data met all assumptions for the repeated measures ANOVA, and if Mauchly's Test of Sphericity indicated that the assumption of sphericity was not met, then the Greenhouse-Geisser correction was used. Our final research question on what helped in the initial aftermath was answered through frequencies on types of activities attended and their mean perceived helpfulness. Participant responses about the events were reviewed and summarized.

Results

Exposure to Traumatic Events

Students were asked about a variety of aspects of exposure to the tragic events (see Table 1). The tragedy occurred on a three-day holiday weekend due to Memorial Day and many students had left town to visit home or have a short break. Thus, around one-quarter of students (23.3%) reported no direct exposure to the events of that night or the weekend. Of the 37.3% who were in Isla Vista at the time of the crimes, the majority (74.0%) were indoors. Many students heard and/or saw events as they unfolded and had difficulty confirming the safety of loved ones. Correlations (Table 2) reveal partial support for Hypothesis 1, as resource loss had the strongest, and only significant, relation to depression and anxiety, compared to fear for safety and objective exposure. However, objective exposure had the stronger, and only significant, relation to general self-efficacy and psychological sense of school membership (PSSM).

Preliminary Demographics Analysis

We explored the role of gender in post-tragedy outcomes, based on prior research (e.g., Shultz et al. 2014). There were no gender differences in objective exposure to the events, perception of resource loss, or any of the indicators of post-tragedy adjustment. Differences by ethnicity were also explored. There were more similarities than differences to note, with ethnic groups reporting similar exposure to the events, perceived resource loss, social support, and MH. There were ethnic differences for PSSM at both pre-1 ($F[3,134]=6.75$, $p<.000$) and post-tragedy ($F[3,137]=6.02$, $p=.001$) with Asian/Pacific Islander students reporting lower levels than White and Mixed or other race students. A difference was also found for general self-efficacy at pre-1 ($F[3,134]=9.73$, $p<.000$) and pre-2 ($F[3,73]=6.65$, $p<.000$), with Asian/Pacific Islander students reporting lower levels than White

students. As these differences existed prior to the tragedy, it does not indicate a differential impact of the tragic events on Asian/Pacific Islander students. Given more similarities than differences across gender and ethnic groups, and the potential for Type II error due to limited power if the models tested include many variables, demographics were no longer included in the models.

Change in Psychosocial Adjustment from Pre- to Post-Tragedy

There are two pre-tragedy time points (pre-1 and pre-2), which allows for different ways to examine change in adjustment over time. Figure 1 displays changes in the adjustment variables over both two and three time points. There was a significant increase in depression symptoms (4.98 vs. 6.32; $t(130)=-2.59$, $p=.011$), anxiety symptoms (3.60 vs. 5.31; $t(130)=-4.08$, $p<.000$), social support (5.28 vs. 5.73; $t(133)=-3.07$, $p=.003$), and PSSM (3.77 vs. 3.92; $t(138)=-2.25$, $p=.026$). There was no change in participants' report of their general self-efficacy (3.26 vs. 3.29, *ns*). Although this generally provides support for change due to the tragedy, much of the change could have occurred over the course of the first year of college (pre-1 to pre-2); therefore, monitoring change over all three time points is needed (see Figure 1). In addition, the interaction of time and resource loss needs to be considered in determining the impact of the tragedy.

Repeated measures ANOVAs were used with the subsample of participants with data at all three time points ($n = 73$), to test Hypothesis 2 with depression, anxiety, self-efficacy, and social support as the outcomes. For depression, the assumption of sphericity was met. Results indicated no significant effects for time, but the time by resource loss interaction was significant $F(2,144)=9.43$ $p<.000$, partial $\varepsilon^2=.12$. The test of between-subjects effects, $F(1,71)= 14.41$, $p<.000$, was significant. A plot of the interaction (see Figure S1 online supplemental material)

showed that students with any resource loss had a steeper incline in depression symptoms than students reporting no resource loss. For anxiety, Mauchly's test of sphericity indicated that the assumption was not met, therefore the Greenhouse-Geisser correction was used. There was no main effect for time, but there was a significant time by resource loss interaction $F(1.69, 144)=4.50$, $p=.018$, partial $\varepsilon^2=.06$. The test of between-subjects effects, $F(1,71)= 8.74$, $p=.004$, was significant. A plot of the interaction (see Figure S1) showed that students with any resource loss had a steeper incline in anxiety symptoms than students reporting no resource loss. There were no time or time by resource loss effects for general self-efficacy or social support, suggesting that these assets were relatively stable.

Post-Tragedy Clinical Mental Health Concerns

In addition to exploring if overall symptoms increase following a traumatic event, it is also important to examine if the level of symptoms reach a cutoff indicating the need for a clinical referral for possible MH services. For depression symptoms, 14.4% reached the clinical cutoff at pre-1, 20.8% at pre-2, and 20.1% post-tragedy. For anxiety, 11.5% were at the clinical cutoff at pre-1, 11.7% at pre-2, and 17.2% post-tragedy. Overall, post-tragedy 27.6% of the sample reached the clinical cutoff criteria on at least one of the MH variables. Of these students, 17.9% ($n = 24$) reached clinical criteria on either the depression or anxiety scale, and 9.7% ($n = 13$) reached clinical criteria on both. Consistent with Hypothesis 2, those with clinical MH concerns reported higher mean resource loss (1.07 vs. 0.61; $t(125)=-2.63$, $p=.010$), but were no different on objective exposure or fear for safety.

Given the prospective nature of this study, there was also the ability to explore what pre-tragedy factors differed between the students with clinical levels of MH distress post-tragedy and those without clinical levels of distress. Using

independent-samples t-tests adjusted for unequal variances with Bonferroni

corrections ($p<.005$), the students with clinical levels of MH distress post-tragedy

reported more childhood trauma at college entry (2.44 vs. 1.21; $t[42.61]=-3.08$,

$p=.004$), and had significantly higher depression scores at pre-1 (8.00 vs. 3.84;

$t[43.66]=-3.35$, $p=.002$). In fact, their average score was in the mild depression

range upon entry to college, whereas students without clinical distress post-trauma

were on average in the no depression range at college entry. There were no

differences in prior general self-efficacy, sense of belonging at UCSB at college

entry, or social support.

What Was Helpful in the Weeks that Followed?

Table 3 lists the majority of events that were offered in the weeks following

the tragedy until graduation in mid-June, in the order of students' ratings of how

helpful each event or service was (higher scores indicate more helpful). Some

activities were organized by UCSB and were official events, and others were student

or community-led. The most commonly experienced events were the official campus

memorial, class discussions of the events, a chalk memorial near the site where a

student was killed, a host of different activities that were designed to build a sense

of community (e.g., wearing the school colors, community comfort food potluck), and

the student-organized candlelight vigil. Students rated the following events as most

helpful in the immediate aftermath of the tragedy: the candlelight vigil, religious or

spiritually-oriented memorial events, the memorial paddle out (in the ocean off-

campus), supportive and relaxing activities organized by the university or

community volunteers (e.g., therapy dogs, meditation and yoga at the beach), and

the chalk memorial.

Students had the option to respond to an open-ended question about whether

they had "any comments or suggestions about events to help universities respond

to student needs in the aftermath of tragedies?" and 27 provided answers, which are

summarized in Table 4. The common responses fell into the categories of the types of

response events, which included general campus/community response, talking with

professors, drop-in counseling services, academic supports provided, and the campus

memorial. Most student comments expressed positivity about the university and

community response. Students rated talking individually with professors about the

events as more helpful than class discussions about the events, and those who

provided comments about talking with professors were very positive about their

experience. A minority of students attended drop-in counseling services in the

immediate aftermath, and overall rated it positively. There was a wider range of

views about how helpful it was, given the larger *sd* for this item than other items, and

student written comments reflect the possible range of experiences. There were

mixed feelings about the campus memorial, as well as academic supports.

Discussion

Using COR theory as a guide, this prospective study explored the impact of a

mass murder tragedy on student psychosocial adjustment, and attempts to

document and learn from the response of one university and its students, with the

aim of sharing information that may improve the responses of others.

Student Psychosocial Adjustment from Pre- to Post-Tragedy

The students in this study experienced a high level of event exposure—37%

of respondents were in Isla Vista at the time of the attack and 29% personally knew

someone who was killed. As hypothesized, we found that resource loss, was more

strongly related to depression and anxiety than other indicators of exposure.

However, resource loss was not related to our other indicators of psychosocial

adjustment, such as social support, general self-efficacy, and sense of school belonging. This is perhaps because, theoretically, these indicators can be considered resources. In this sample and context, these assets were relatively stable across time, or increased (school belonging). It may be that more chronic versus acute traumas are more likely to affect these assets, or that these assets only change for the most highly exposed or traumatized subgroups. Indeed, Bonanno and Diminich (2013) articulate that after acute, potentially traumatic events, the likely outcome is a *minimal-impact resilience* group. Our findings fit this conceptualization as this study meets the criteria for assessing this form of resilience as we have both pre- and post-event data and measure multiple indicators or adjustment, measured over time.

We explored change across a variety of indicators of adjustment for both the larger sample of students with two timepoints of the data, and for a smaller subsample with three points of data, that included a closer pre-tragedy assessment of adjustment. Across both samples, we consistently found that assets like general self-efficacy were unchanged due to the tragedy. Social support increased over Freshman year, likely as students made friends, and remained unchanged by the tragedy. This could be because after collectively-experienced traumas, there can be an outpouring of mutual help and support in the immediate aftermath (e.g., Kaniasty & Norris, 1995), as can be seen at UCSB through both university- and student-organized memorial and recovery events, as well as in unseen acts of individual support to grieving friends. Sense of belonging at UCSB also increased, and as it is generally deemed a protective factor (e.g., Morrison, You, Sharkey, Felix, & Griffiths, 2013), it is encouraging that it remained strong despite the tragic events. This increase in the sense of belonging could indicate the development of

an *altruistic community* in the aftermath of a tragedy (Kaniasty & Norris, 1995).

Overall, these results contribute to the extant research by focusing on outcomes

other than the near exclusive focus on posttraumatic stress symptoms (PTSS) in the

mass shooting literature (Smith & Hughes, 2016), and by noting both what did and

did not change.

As hypothesized, increases in depression and anxiety were significantly

associated with resource loss. This is consistent with COR theory (Hobfoll, 1989),

which suggests that stress following crises is not as strongly associated with

availability of resources, as it is with the actual *loss* of resources as a result of the

crisis. Other research on college student responses to a campus attack also found

that resource loss was related to psychological distress (Littleton et al., 2009;

Littleton, Kumpula, & Orcutt, 2011). Our finding that resource loss is associated with

depression and anxiety among another sample of college students, and in the wake

of another attack, provides additional support for the importance of considering

resource loss when identifying individual differences in response to traumatic

events (Littleton et al., 2011). MH screenings and intakes post-tragedy may want to

consider including questions about resource loss to assess vulnerability for distress.

The prospective nature of our study allowed us to explore the association of

pre-tragedy factors with psychological distress post-tragedy. We found that

childhood trauma exposure was associated with clinically significant levels of

depression and anxiety, which is consistent with prior research on distress following

university shootings (Littleton, Grills-Taquechel, Axsom, Bye, & Buck, 2012). In

addition, those students with clinical levels of distress post-tragedy had greater

depression symptoms upon entry into college, which is also consistent with prior

research (Lowe & Galea, 2015; Shultz et al., 2014). This result offers considerations

for the nature of university response post-tragedy, in that most universities offer drop-in crisis counseling. However, as it is the students who experienced prior trauma and had elevated distress pre-tragedy that are most vulnerable for clinical levels of distress post-tragedy, instead of waiting for students to "walk-in," counseling center staff can do outreach to vulnerable students, such as former clients. Outreach phone calls to current and former university counseling center clients to check in on their coping, well-being, and offer psychoeducation on normal reactions to trauma and healthy coping may be beneficial, although this model needs evaluation.

University Response Post-Tragedy

This study is one of few studies examining college and university responses to a traumatic event. Information about student use of support services and perceptions of their helpfulness might provide important insights for future response efforts. A number of community grieving events were organized in the immediate aftermath, which provided opportunities for social support and models of coping and healthy grieving (Smith, et al., 2015). The paddle out, the candlelight vigil, some of the spiritual/religious memorials, and some of the community-building events were student initiated. Students rated student-initiated events as the most helpful to them, suggesting the need for universities to provide opportunities for students to organize and lead events to facilitate their grieving process.

In the current study, students found individual interactions with faculty to be helpful. Although there is little research on this topic, there is some evidence that university faculty have limited knowledge of MH, in general, and little information about available university MH services (Becker, Martin, Wajeeh, & Shern, 2002). Similarly, studies of K-12 teachers following trauma have found that teachers vary

greatly in their knowledge of student crisis-related needs and provision of classroom-based supports (Felix et al., 2010; Green et al., 2015). These studies suggest that providing training for faculty and instructors on student MH, in general, and guidelines around how to respond to trauma, specifically, might be particularly beneficial to students. For example, for years UCSB has offered an annual optional training on responding to distressed students for faculty members.

There is great complexity in responding to the diverse needs of student populations following trauma. This was exemplified in divergent responses to campus events, such as the memorial service, where some students found the event to facilitate a sense of community whereas others found the same event to be discomforting. It is important to consider student feedback, as a memorial service may be the most widely-attended and publicized event a university will offer in the aftermath of a tragedy, and can be a useful part of a healthy collective grieving process. By the nature of these events, there is very limited time to plan a memorial, and it is organized by people who are shocked and grieving themselves. Although a university cannot know what every speaker will say, it may be helpful to organize the memorial so that the last speaker ends on a note of resilience, strength, hope, or coping, to lift the audience back out of the more intense grieving and remembrance that may occur during middle parts of the memorial. This is so that attendees have an opportunity to recompose themselves as they return to their daily lives.

Crisis counseling services are commonly offered in the aftermath of tragedies affecting student populations, and there is often a need for trained volunteers to support the work of the existing university counseling center staff. Our results suggest students found the counseling services helpful, but that there was variation, with one student suggesting that the MH provider focused on "diagnosis."

This latter comment suggests that perhaps a provider may have thought the role in the aftermath was an intake for future counseling versus psychological first aide (PFA), which is more appropriate in the initial aftermath. Students received crisis counseling from a variety of different professionals including regular counseling center staff members, as well as licensed MH professional volunteers from elsewhere on campus, other UC campuses, or from the surrounding community. It is unknown who had prior training in PFA and who did not. This comment may highlight the general recommendation in the disaster MH community that in the immediate aftermath of a crisis, PFA should be offered, and not traditional therapy. In addition to universities having their own counseling center staff trained in a model of PFA (e.g., Vernberg et al., 2008), they should consider opening up these trainings to their broader community of MH professionals, and keeping a contact list of who is trained. This will create a cadre of trained community volunteers that can be called upon in a crisis to offer appropriate supportive services. MH providers that are not trained in a PFA model should be used as a referral list for the minority of affected individuals who will develop ongoing and clinical levels of distress that do require therapy.

The tragedy raised a number of problems for students that were not specific to MH, but needed to be immediately addressed. There are many student services and issues that a university must consider when a crisis like this occurs, such as when to start classes again, what to do about final exams and grades, what to do with students displaced from their normal housing, and how withdrawing from a class affects financial aid status for students. UCSB offered drop-in academic advising, financial aide advising, and emergency housing services, often located near one of the drop-in counseling locations. Academically, students were given the options of

either taking their grade as it was before the tragedy, taking an incomplete, or staying and finishing final exams. Colleges and universities will want to consider in advance the process by which decisions will be made regarding issues such as class cancellation, exam postponement, and housing displacement, to efficiently respond to student needs post-trauma. These topics can best be addressed in the context of emergency response planning (Fox & Savage, 2009).

Limitations and Conclusions

There are some limitations to the study that should be considered when interpreting the results and implications of the study. First, our final sample was relatively small, with 24% of the original sample completing the post-tragedy survey. This is consistent with another study of college students following a campus mass murder (Littleton et al., 2009) and is likely to be expected as the original study had ended a year prior to the tragedy; thus, there were no efforts to retain participants once the study was closed. Although there were no differences between the students who completed the follow-up and those that did not in terms of demographics and fall psychosocial adjustment, it is still possible the two groups differed systematically in their use of support services. Second, the timing of the surveys may have influenced results. The first pre-survey was conducted upon college entry, and much change can happen over the course of a student's college career, so may not be the best pre-tragedy baseline for students who were in their sophomore year at the time of the event. To address this, our analyses examined both changes from pre-1 to post-tragedy, as well as the smaller subsample with pre-1, pre-2, and post-tragedy. We found remarkable consistency in results. In addition, the post-tragedy survey was completed in the fall very shortly after students returned to campus (5-6 months post-event). It is unclear how experiences over the

summer might have impacted student MH or memory of the use and helpfulness of

campus resources immediately following the attack. Finally, results reflect one

university, but show consistency with extant research on campus shootings. By

sharing from the experiences of one university population, our hope is that other

colleges and universities can enhance their response planning efforts. Still, more

information is needed on strategies that are, and are not, effective in responding to

student needs following trauma. Collaborations among leaders at different

universities, as well as among university trauma-researchers, might help to

facilitate conversation about how to best support students after tragedy.

In conclusion, we want to thank the UCSB students who shared their voices

on healing and recovery following mass violence in the hope that this research will

inform how other colleges and universities support students. They hopefully

chanted "Not one more!" at the campus memorial, but in the days and months that

followed, several other colleges and communities were affected by mass violence. It

is clear that the time for crisis prevention and response planning is now.

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Table 1.

Exposure Experiences of the Students (N=134)

Exposure	% Yes (n)
Proximity Exposure—Where were you?	
On Campus	29.1% (39)

In Isla Vista	37.3% (50)
Exposure to the Events	
Saw police and ambulance responding to injuries	32.6% (43)
Knew someone personally who was killed	29.0% (38)
Heard gunshots	26.3% (35)
Knew someone personally who was injured	25.0% (33)
Heard Screams	18.0% (24)
Saw someone injured	6.8% (9)
Saw the car with the gunman	5.3% (7)
Saw someone hit by the car	3.0% (4)
Saw someone killed	2.3% (3)
Saw the car crash	0.8% (1)
Personally injured	0.8% (1)
Fear for Safety	
Could not reach friends or loved ones to confirm their safety for several hours	30.3% (40)
Could not reach friends or family to confirm that you were safe	12.9% (17)

Note. Participants had the option to indicate "Decline to State" for any item.

Table 2.

Correlations between Tragedy Experiences and Post-Tragedy Psychosocial Adjustment

Variables (N=134)

	1	2	3	4	5	6	7
1. Fear for Safety	--						
2. Objective Exposure	.38**	--					
3. Resource Loss	.25**	.11	--				
4. Social Support	.10	.10	-.09	--			
5. Depression	-.02	.01	.28**	-.29**	--		
6. Anxiety	.14	.04	.26**	-.18*	.69***	--	
7. Psych. Sense of School Membership	.21*	.18*	-.04	.36***	-.31**	-.25**	--
8. General Self-Efficacy	.07	.29**	.05	.14	-.27**	-.20*	.35**

* indicates *p* < .05; ** indicates *p* < .01; *** indicates *p* < .001

Table 3.

Participation in and Helpfulness of Organized Events in the First Weeks Post-Tragedy (N=119)

Event	Participated % (*n*)	How Helpful? *M* (*SD*)
Candlelight Vigil	35.3% (41)	8.85 (1.80)
Religious or Spiritual Memorial Event	11.6% (13)	8.85 (1.52)
Memorial Paddle Out	23.0% (26)	8.83 (1.66)
Organized Supportive and Relaxing Activities	26.5% (30)	8.03 (1.79)
Chalk Memorial	47.1% (56)	7.98 (1.73)
"Not One More" Rally	14.0% (16)	7.73 (2.19)
Compassion Center	8.1% (9)	7.71 (1.89)
Drop-In Counseling Services	11.8% (13)	7.69 (2.98)
Campus Memorial Service	59.1% (68)	7.60 (2.58)
Activities to Build a Sense of Community	43.0% (49)	7.58 (2.24)
Arts-Based Memorial Events	16.7% (19)	7.47 (1.87)
Community Dialogue and Reflection day	5.4% (6)	7.40 (2.30)
Talking Individually with Professors about the Events	27.4% (31)	7.35 (2.73)
Academic Advising Drop-In Hours	10.8% (12)	7.33 (2.90)
Class Discussions about the Events	51.8% (58)	6.63 (2.75)
Public Safety Forum	1.8% (2)	6.50 (2.12)
Fundraisers	22.3% (25)	6.08 (1.84)
Office of Financial Aid Advising	2.7% (3)	5.67 (0.58)
Community Forum	1.8% (2)	5.50 (0.71)

Note. Higher scores indicate greater perceived helpfulness.

Table 4.

Student Comments on the Response in the Initial Aftermath (n=27)

Theme	Exemplar Quotes
General campus response	"I think UCSB handled it extremely well and did a great job assisting the community. Especially making as many resources as possible available to students and in being sympathetic to students' needs."
	"The way to heal comes from the students, not the school itself. Case in point the paddle out. Also bring puppies onto campus like what's done during [finals] week. Being reminded of something innocent and good would be better than dwelling on the...depressing."
Talking with professors	"Professors definitely helped me out the most during that time and I appreciated it tremendously."
	"I appreciated a lot that professors went above and beyond in regards to cutting some slack academically and being willing to mourn with their students. That meant a lot to me, probably more than any organized event. It was just humanity manifesting in the classroom, which is something I wasn't used to seeing or perceiving within a classroom setting."
Drop-in counseling services	"Drop in was very helpful to me, it was a great quick response."
	"Please for others effected [sic], make the questioners less intense and direct. I understand it is needed for a diagnosis, but it might be too much for people."
Academic support services	"Finals should have been canceled. It was torture studying material for finals that I used to study with my friend who was killed in the shooting."
	"I think it was great that advisors reached out and I was able to understand my options...We were in the 9th week, I was not going to withdraw or drop my classes and have to learn the material later on... All together I decided to take the grades given to me because I did not want to...learn the material again later and postpone the final. Although my GPA dropped, it was a judgment call I made to just work on my GPA in the future...."
Campus memorial	"...I understand that we needed to pick ourselves back up from this, but we also needed to mourn the loss of our fellow classmates, I believe the memorial did not allow us to do so."
	"The memorial itself was a disservice to those who were lost...I never felt as if anyone was remembered. It was a statistic...devoid of any significant meaning. The only true consolation came from one on one interactions with professors, discussions among close friends, and hearing the names of those who were lost and what lives they lived."
	"I thought the responses were perfect (from the IV community and UCSB) with the exception of the memorial service. I thought some of

the speakers delivered shallow, insincere, or inappropriate remarks…
the whole thing seemed disorganized and strange."

"I think it was great to emphasize the sense of community. Not only
did friends and people I did not know come together, but there was
the support of faculty…. It was nice to have the memorial service."

Figure 1.

Change in Psychosocial Adjustment Pre- and Post-Tragedy

Two Time Points (N=140)

Three Time Points (N=73)