

Resiliency, Posttraumatic Growth, and Psychological Distress after the Attacks on America

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Introduction

During the first few weeks after the terrorist attacks on the United States on September 11, 2001, the country was in a period of great uncertainty. When would the responsible persons and organization(s) be identified, and could they be brought to justice? What was the motive? Would additional attacks occur, and if so, how and when? What actions should the U.S. government take to prevent future attacks?

Mental health professionals and those in the human services professions, such as psychology and social work, were especially concerned not only about the well being of those most directly affected by the attacks but also of other Americans across the country. What types of distress reactions were they experiencing, what services were they in most need of receiving, and which interventions would be most helpful? In order to address these and other essential questions, three weeks after the attacks I conducted a study in New York, South Carolina, Colorado, and Washington. The study grew out of more than a decade of research and experience gained by traveling to disaster sites and studying human responses to large-scale traumatic events, including hurricanes and earthquakes.

Because of the important parallels between the attacks and other types of catastrophic stressors, and the lack of research on responses to terrorist attacks, it will be helpful to briefly review existing theory and research on responses to other types of large-scale traumatic events. This review will be followed by a discussion of the study, an overview of how it was conducted, and its primary findings. The conclusion considers the implications of the findings and explores directions for future work.

Responses to Traumatic Events

Theory and research examining responses to traumatic events and catastrophic stressors, such as natural and technological disasters, military combat experience, and life-threatening assaults, provide a useful guide to understanding responses to the September 11th attacks. The attacks share a number of important characteristics with many of these events, but also have several unique features. Like other large-scale catastrophic events, the attacks affected a large number of people, occurred suddenly, were unpredictable, exposed many people to horror, appeared to be beyond the control of any one person, threatened life and the lives of family members and friends, and placed excessive demands on coping (Baum, 1991; Lazarus and Cohen, 1977; Sattler et al., 1997). Research suggests that many of these characteristics are associated with survivors' reporting that they feel some loss of their sense of control, predictability, safety, and trust (Baum, 1991; Updegraff and Taylor, 2000). The unique characteristics of the attacks include being deliberate acts intended to inflict harm; creating uncertainty concerning future attacks and when the responsible individuals and organizations would be brought to justice; prompting an extensive response from the U.S. government both domestically and internationally to locate members of terrorist organizations and to prevent future attacks; and causing citizens throughout the United States to feel directly affected and at risk.

Responses to large-scale traumatic events tend to occur in stages, or time periods. The acute stage occurs within the first few months, and the chronic stage occurs several months to years after the event. Research has documented a variety of psychological responses, including anxiety (Canino et al., 1990), acute stress disorder symptoms (Sattler et al., 2002; Waelde et al., 2001), posttraumatic stress disorder (Norris, 1992; Waelde et al., 2001), depression (Kaiser et al., 1996; Shore et al., 1986), problems in cognitive functioning (Freedy et al., 1994; Sattler et al., 1995), sleep disturbances (Wood et al., 1992), relationship difficulties (Adams and Adams, 1984), and substance abuse (Gibbs, 1989). Distress reactions that followed the bombing of the Federal Building in Oklahoma City—a domestic act of terrorism—were similar to those experienced after other types of traumatic events, and included fear, depression, and posttraumatic stress disorder symptoms (Benight et al., 2000; North et al., 1999; Shalev, 1992; Tucker et al., 1997, 2000). Fortunately, most distress symptoms that follow natural disasters last for only a few weeks or months and may not constitute severe mental illness. However, a relatively small percentage of persons may develop more serious problems (Rubonis and Bickman, 1991). Additional research is needed to explore how distress responses to terrorism may vary over time.

Recent research also has shown that people may have positive experiences during the recovery that can help them cope and to move forward. For example, during the acute stage, people tend to pull together and help one another (Baum, 1991; Sattler et al., 1995). Social support provided by friends and family can play a vital role in helping people cope with tragedy (Kaniasty and Norris, 1995).

The conservation of resources stress theory provides a useful framework for understanding responses to the attacks (Hobfoll, 1989, 1998). The theory suggests that people build and retain resources to enhance the self and maximize positive reinforcement. The theory predicts that psychological stress occurs when there is a **threat** of resource loss, **loss** of resources, or **lack** of resource gain after investment of resources (Hobfoll, 1989). Four resource types are identified: condition (e.g., marriage, employment, or other social roles), personal characteristic (e.g., age, knowledge, locus of control, self-esteem, skills), energy (e.g., money, insurance), and object (e.g., house, car, or other physical possessions). The theory also predicts that resource gains may have positive effects. For example, survivors of a natural disaster or other traumatic event may learn about the value of preparation, learn new coping skills, and develop an enhanced sense of self-efficacy (Calhoun and Tedeschi, 1998; Monnier and Hobfoll, 2000; Sattler et al., 2000).

The conservation of resources stress theory has received direct and indirect support. Several studies show that resource loss accounts for a greater portion of psychological distress variance than variables such as coping style, sense of coherence, and general anxiety after a natural disaster (Freedy et al., 1994; Kaiser et al., 1996; Sattler et al., 2002). For example, four to five weeks after Hurricane Georges struck the U.S. Virgin Islands, Puerto Rico, the Dominican Republic, and the U.S. Gulf Coast, Sattler et al. (2002) found that in each of these locations, resource loss (especially loss of personal characteristic resources) was a more important predictor of psychological distress than prior exposure to traumatic events, stressful life events, or social support. The contribution of personal characteristic resources to distress may be due, in part, to changes associated with the significant disruption of daily routines and activities during recovery.

Taylor's (1983) theory of cognitive adaptation also suggests that traumatic events can challenge people's sense of meaning, mastery, and self-esteem. According to the theory, people may try to counter feelings of loss of meaning, mastery, and self-esteem by generating thoughts and ideas that enhance the self. For example, to regain a sense of meaning, an individual might reevaluate his or her attitudes and life priorities in relation to the event. To reestablish or maintain a sense of control and mastery, an individual might focus on areas in which he or she has control (Taylor et al., 1991). To maintain self-esteem, a person may focus on aspects of the self that are "relatively unaffected or improved, or by comparing oneself to less fortunate

others in an effort to cast oneself in a more positive light” (Updegreff and Taylor, 2000, p. 7). Through these processes, individuals may learn about resiliency and useful coping strategies, clarify values and life priorities, and experience some positive outcomes that offset—to some degree—the negative outcomes (see Janoff-Bulman and Berger, 2000).

The theory of posttraumatic growth also explores how persons adapt to traumatic events and ways in which they might “perceive at least some good emerging from their struggle” (Tedeschi, 1996, p. 455). Growth may occur in any or all of three areas: the self, relationships with others, and philosophy of life. Growth in the self may include learning about one’s vulnerabilities, the value of preparation, and new problem-solving skills; and developing an enhanced sense of self-efficacy or self-reliance. Growth in relationships may involve a deepening appreciation of relationships, increased self-disclosure and emotional expressiveness, and increased willingness to accept help from others. Growth in philosophy of life may include an increased appreciation for life and stronger spiritual beliefs (Calhoun and Tedeschi, 2001; Monnier and Hobfoll, 2000; Sattler et al., 2000; Tedeschi and Calhoun, 1995).

It is likely that the resource gains, adaptive thoughts, and posttraumatic growth reactions, discussed in the three theories just reviewed, can help survivors balance out and cope with some of the negative outcomes after a traumatic event. Calhoun and Tedeschi (2001) speculate that the changes are fundamental, represent a new way of viewing the world, and can endure for years (see Updegreff and Taylor, 2000, for a review of this literature).

Given the unique nature of the attacks, consideration of how Americans responded when the country was attacked in 1941, and informal conversations with colleagues, I was especially interested in studying posttraumatic growth and resiliency in addition to psychological distress.

Overview of the Study

Three weeks after the attacks, I conducted a study to examine psychological distress, posttraumatic growth, resiliency, and coping. Based on research, theory, anecdotal evidence, and the nature of the threat posed by the attacks, I speculated that in addition to experiencing fear and some degree of distress, citizens were reflecting on and/or reassessing their own lives and showing resiliency. The study also was designed to examine if and how responses varied as a function of distance from the areas struck. As a professor and educator, I was especially concerned about the welfare of college students and how they were responding to the attacks. Information about the needs of students and how they respond to such traumatic events can help mental health professionals in college counseling centers and other facilities provide appropriate services and design effective interventions to minimize or prevent

subsequent mental health problems. For these reasons, this study includes samples of college students from four regions of the country (the Northeast, Southeast, Midwest, and Northwest). In order to make comparisons across the four regions, the study was designed so that the samples had similar demographic characteristics. Participants completed the same questionnaire in a similar environment (their classrooms) three weeks after September 11th. During class, participants were asked if they would be willing to complete the questionnaire.

The questionnaire, which was confidential and anonymous, had five sections. The first section asked about demographic characteristics (e.g., gender, age). Questions in the second section asked about losses and gains in resources, and were based on the conservation of resources stress theory. These items asked if, since the attacks, participants had experienced decreases, increases, or no changes, in their personal characteristic, energy, and condition resources as a result of the attacks. Participants used a 7-point scale, where -3 = quite a decrease, 0 = no change, and $+3$ = quite an increase, to indicate their answers. Items asking about loss of object resources were not included, because it was assumed that the vast majority of participants did not lose any personal property in the attacks. The third section assessed psychological distress with a measure designed to assess symptoms associated with acute stress disorder (Sattler et al., 2002). Acute stress disorder is related to posttraumatic stress disorder, but it lasts for a minimum of two days and a maximum of four weeks after the traumatic event. Several studies have documented symptoms associated with acute stress disorder in the first months following exposure to a traumatic event (Classen et al., 1998; Sattler et al., 2002; Waelde et al., 2001) (examples of items can be seen in Table 3). Participants used a 4-point scale, where 1 = not at all to 4 = very much, to indicate their answers. The fourth section assessed depression (adapted from Berndt, 1986), concern for future attacks (adapted from Sattler et al., 2002), posttraumatic growth (adapted from Tedeschi and Calhoun, 1996), and coping (adapted from Sattler et al., 1995) (examples of the items can be seen in Table 2). Participants used a 4-point scale, where 1 = not at all to 4 = very much, to indicate their answers. The final section asked about social support and prior experience with traumatic events (adapted from Sattler et al., 2002). Participants used a 2-point scale answer the traumatic events items.

With the assistance of colleagues and graduate students, the questionnaires were administered to students in New York, South Carolina, Colorado, and Washington. In each location, the questionnaires were administered according to the same guidelines. There were a total of 1,283 college student participants (426 men, 857 women) who were attending universities in New York, New York; Charleston, South Carolina; Boulder, Colorado; and Bellingham, Washington. They did not receive any inducements to participate. Table 1 presents the demographic characteristics

Table 1. Demographic characteristics.

Characteristic	New York (n = 414)	South Carolina (n = 259)	Colorado (n = 280)	Washington (n = 329)
Gender				
Women	76	76	48	74
Men	24	24	52	26
Ethnicity				
White	64	91	86	87
Latino American	13	1	4	2
African American	8	6	1	1
Asian American	3	1	3	7
Other	1	1	7	3
Marital Status				
Single	91	93	97	98
Married	4	4	0.3	1
Separated/ Divorced	2	1	0.3	0.3
Widowed	1	1	0.3	0.3
Other	2	1	2	0.2
Age (<i>M</i> years)	21	22	20	19

Note: Gender, ethnicity, and marital status are percentages.

of each sample, including the number of participants at each location. Most of the participants were white and single, and the average age ranged from 19 to 22 years. Most persons asked to complete the questionnaire did so, resulting in a response rate of 99%.

Results

The results are presented in two sections. The first section consists of descriptive analyses that examine concern about future attacks, posttraumatic growth and resiliency, actions taken since the attacks, and prevalence of psychological distress symptoms. The second section contains analyses that examine factors that are associated with psychological distress.

Concern about Future Attacks and Safety

Items dealing with concern about future attacks and safety are listed in Table 2. The table shows that when considering the possibility of a future attack, about three-quarters of participants in each location were concerned the safety of a family member, and about half to three-quarters were concerned about their own safety. Between one-third and about two-thirds of the participants believed that the safety of a family member or friend might be at risk as a result of the response of the United States.

Posttraumatic Growth and Resiliency

Table 2 also presents items asking about growth and resiliency since the attacks. Most participants at each location reported experiencing posttraumatic growth and resiliency. About three-quarters of the participants reported that since the attacks they had new priorities about what is important in their lives, had new respect for people in their community, appreciated each day more, discovered that they are stronger than they thought they were, and learned that they can count on others in times of trouble. Participants also reported substantial increases in patriotism, and spending time with loved ones. In considering these findings, two points are especially noteworthy. First, a large percentage of participants—about three-quarters—reported increases in growth and resiliency. Second, the percentages of persons reporting growth and resiliency were vastly similar, irrespective of distance from the attacks.

Actions since the Attacks

Between half and almost three-quarters of the participants reported that since the attacks they had displayed the American flag (Table 2). Between one-third and half donated money to a charity.

Psychological Distress: Symptoms Associated with Acute Stress Disorder

Symptoms that are associated with acute stress disorder are presented in Table 3. The table shows that the prevalence of symptoms was relatively low (in the single digits to mid-teens), but higher in New York and South Carolina compared to Colorado and Washington. The most common symptoms in New York and South Carolina were avoiding things that reminded the person of the attacks, feeling anxious, having difficulty sleeping, having nightmares, feeling emotionally numb, and feeling irritable or on edge.

Table 2. Concern about future attacks, posttraumatic growth and resiliency, and actions.

Concern About Future Attacks	NY (n=414)	SC (n=259)	CO (n=280)	WA (n=329)
Afraid that a family member might lose his/her life or be seriously injured due to future terrorist attack	82	69	61	76
Afraid that I might lose my life or be seriously injured due to future terrorist attack	71	54	48	60
Have a family member or friend who will be at increased risk due to the U.S. response	65	42	47	52
Posttraumatic Growth and Resiliency and Feeling Patriotic *				
Feeling patriotic	82	85	80	84
Have new priorities about what is important in my life	77	81	73	76
Have new respect for people living in my community	77	83	78	87
Appreciating each day	77	78	75	82
Feeling closer to one or more family members	76	80	78	77
Discovered that I am stronger than I thought I was	75	74	66	65
Knowing that I can count on people in times of trouble	73	74	73	75
Feeling valuable to others	68	66	65	67
Showed concern for someone I did not know	60	61	60	57
Feeling that my life has purpose	60	46	35	50
Spending time with loved ones	53	43	42	50
Actions since the attacks				
Following news reports about the situation	98	99	98	99
Displaying American flag	81	54	51	71
Praying more	53	49	34	53
Donated money to charity	48	52	36	40

* Posttraumatic growth and resiliency numbers reflect the percentage of participants indicating an increase since the attacks.

Predicting Psychological Distress

To examine which variables were associated with psychological distress, a hierarchical multiple regression analysis was conducted for each location. For each analysis, the variables were entered in nine predictor blocks: demographic characteristics, fear of future attacks, changes in daily routines and activities as a result of the attacks, feeling angry, depression, posttraumatic growth, social support, actions taken to support the community since the attack, and somatic problems.

Table 3. Examples of symptoms associated with acute stress disorder.

Item	New York (<i>n</i> = 414)	South Carolina (<i>n</i> = 259)	Colorado (<i>n</i> = 280)	Washington (<i>n</i> = 329)
Avoiding things that remind me of the attacks	18	14	12	8
Feeling anxious	17	19	11	7
Having difficulty sleeping	16	21	11	11
Having nightmares	12	17	10	6
Feeling emotionally numb	11	13	6	8
Feeling irritable or on edge	10	13	4	2
Having difficulty remembering important things about the situation	5	5	2	3

Note: Data presented are percentages.

New York—The predictor blocks accounted for 69% of acute stress disorder symptom variance, $F(14, 360) = 58.33, p < .001$. Every block accounted for a significant portion of the acute stress disorder symptom variance (Table 4). For blocks that had more than one variable, the beta coefficients indicate that acute stress disorder symptoms were associated with being female, safety fears, and posttraumatic growth (life priorities and strength, motivation and purpose).

South Carolina—The predictor blocks accounted for 70% of acute stress disorder symptom variance, $F(14, 215) = 35.00, p < .001$. All blocks except social support accounted for a significant portion of the variance (Table 4). For blocks that had more than one variable, the beta coefficients indicate that acute stress disorder symptoms were associated with being female, prior exposure to traumatic events, safety fears, and posttraumatic growth (life priorities and strength, motivation and purpose).

Colorado—The predictor blocks accounted for 59% of acute stress disorder symptom variance, $F(14, 247) = 25.42, p < .001$. All blocks except

Table 4. Prediction of acute stress disorder symptoms by demographics, fear of future attacks, change in daily routine, anger, depression, posttraumatic growth, social support, community involvement, and somatic problems.

Variable	New York ² (n = 414)			South Carolina ³ (n = 259)			Colorado ⁴ (n = 280)			Washington ⁵ (n = 329)		
	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
Step 1: Demographics												
Gender	.23	.06	.21***	.29	.07	.26***	.19	.05	.23***	.17	.04	.24***
Age	.02	.00	.03	-.03	.00	-.02	-.01	.01	-.01	-.02	.00	-.02
Prior Traumatic Exposure ¹	.01	.03	.03	.12	.03	.25***	.020	.03	.04	—	—	—
Step 2: Fear												
Fear for Safety	.35	.03	.56***	.35	.04	.50***	.25	.03	.43***	.20	.02	.43***
Fear of Future Attacks	.04	.04	.05	-.02	.05	-.03	-.02	.04	-.03	-.20	.02	-.04
Step 3: Change in Routine	.16	.03	.29***	.22	.03	.34***	.17	.03	.34***	.09	.02	.24***
Step 4: Anger	.15	.02	.31***	.16	.03	.29***	.09	.02	.22***	.10	.02	.22***
Step 5: Depression	.20	.05	.16***	.33	.05	.29***	.30	.04	.34***	.16	.04	.21***
Step 6: Posttraumatic Growth												
Life Priorities and Strength	.23	.03	.34***	.14	.05	.19**	.09	.03	.17**	.10	.02	.25***
Importance of Relationships	.06	.01	.06	.01	.01	.01	.10	.01	.13*	.10	.00	.13*
Motivation and Purpose	-.02	.01	-.17***	-.02	.01	-.17**	-.02	.01	-.13*	-.10	.01	-.09
Step 7: Social Support	.06	.03	.09*	.02	.04	.04	-.02	.03	-.05	-.35	.02	.09
Step 8: Community Involvement	.05	.02	.12**	.05	.02	.13**	-.08	.02	-.03	.15	.01	.05
Step 9: Somatic Problems	.44	.04	.41***	.43	.05	.43***	.37	.05	.35***	.32	.04	.34***

* = $p < .05$ ** = $p < .01$ *** = $p < .001$

¹ Prior exposure to traumatic events was included in the analyses for New York, South Carolina, and Colorado. Due to an oversight, participants in Washington did not complete these items.
² Step 1: $R^2 = .04, p < .001$; Step 2: $R^2 = .29, p < .001$; Step 3: $R^2 = .07, p < .001$; Step 4: $R^2 = .08, p < .001$; Step 5: $R^2 = .02, p < .001$; Step 6: $R^2 = .07, p < .001$; Step 7: $R^2 = .01, p < .05$; Step 8: $R^2 = .01, p < .001$; Step 9: $R^2 = .10, p < .001$.
³ Step 1: $R^2 = .10, p < .001$; Step 2: $R^2 = .22, p < .001$; Step 3: $R^2 = .09, p < .001$; Step 4: $R^2 = .07, p < .001$; Step 5: $R^2 = .07, p < .001$; Step 6: $R^2 = .03, p < .001$; Step 7: $R^2 = .00, p > .05$; Step 8: $R^2 = .02, p < .01$; Step 9: $R^2 = .10, p < .001$.
⁴ Step 1: $R^2 = .05, p < .01$; Step 2: $R^2 = .17, p < .001$; Step 3: $R^2 = .10, p < .001$; Step 4: $R^2 = .04, p < .001$; Step 5: $R^2 = .10, p < .001$; Step 6: $R^2 = .05, p < .001$; Step 7: $R^2 = .00, p > .05$; Step 8: $R^2 = .00, p > .05$; Step 9: $R^2 = .08, p < .001$.
⁵ Step 1: $R^2 = .06, p < .001$; Step 2: $R^2 = .18, p < .001$; Step 3: $R^2 = .05, p < .001$; Step 4: $R^2 = .05, p < .001$; Step 5: $R^2 = .04, p < .001$; Step 6: $R^2 = .07, p < .001$; Step 7: $R^2 = .01, p > .05$; Step 8: $R^2 = .00, p > .05$; Step 9: $R^2 = .08, p < .001$.

social support and community actions accounted for a significant portion of the variance (Table 4). For blocks that had more than one variable, the beta coefficients indicate that acute stress disorder symptoms were associated with being female, prior exposure to traumatic events, safety fears, and posttraumatic growth (life priorities and strength, importance of relationships, and motivation and purpose).

Washington—The predictor blocks accounted for 54% of acute stress disorder symptom variance, $F(13, 315) = 27.94, p < .001$. All blocks except social support and community actions accounted for a significant portion of the variance (Table 4). For blocks that had more than one variable, the beta coefficients indicate that acute stress disorder symptoms were associated with being female, prior exposure to traumatic events, safety fears, and posttraumatic growth (life priorities and strength, importance of relationships).

Conclusions, Implications, and Future Directions

The results show four key findings. First, most participants were concerned about the possibility of future attacks, and concerned for their own safety and the safety of family and friends due to future attacks. Second, the prevalence of acute stress disorder symptoms (i.e., psychological distress) was relatively low overall (in the single digits and teens), but somewhat higher in New York and South Carolina than in Colorado and Washington. Third, acute stress disorder symptoms were associated with concern about safety, changes in daily routines and activities as a result of the attacks, feeling angry, depression, posttraumatic growth, and somatic problems. Further, in New York, social support and actions taken to support the community since the attack were associated with acute stress disorder symptoms. Fourth, nearly three-quarters of the participants at each location reported posttraumatic growth, cognitive adaptation, resource gain, and resiliency. The areas of growth or resiliency included the self, relationships with others, and philosophy of life. Participants reported reflecting on and reassessing their lives (e.g., having new priorities about what is important in their lives; trying to grow as a person as a result of the experience), and being resilient (e.g., discovering that they were stronger than they thought they were). Many participants were taking positive action by showing concern for someone they did not know and showing unity by displaying the American flag, and donating money to charity.

These findings are especially important, given that the study was conducted only three weeks after the attacks, the participants were college students, and the samples comprised persons living in four distinct areas of

the country. Together, these findings support the conservation of resources stress theory, posttraumatic growth theory, and the theory of cognitive adaptation, and extend previous research (e.g., Freedy et al., 1994; Sattler et al., 2002; Smith and Freedy, 2000).

One influential factor associated with growth and vulnerability after the experience of a traumatic event is coping style. Three general styles of coping include active or problem-solving coping, acceptance and positive reinterpretation, and avoidance (Carver et al., 1989). Active coping involves responses that attempt to solve problems by taking direct action in order to reduce negative consequences of the experience. Acceptance and positive reinterpretation refers to accepting the stressor as unavoidable and focusing on the positive aspects of the situation. Avoidance coping generally refers to emotion-focused strategies, and may involve denial or withdrawal from the situation in an attempt to reduce distress.

Active coping has been shown to be effective in handling severe stressors (Taylor and Clark, 1986), and associated with lower levels of depression (Aldwin, 1991) and symptoms associated with posttraumatic stress disorder (Solomon et al., 1988). In situations where direct action is not possible, positive reinterpretation also may be an effective coping strategy. In these situations, it may only be possible to accommodate, rather than change, the stressor. "Positive reinterpretation can be used to manage one's emotions in an uncontrollable situation and to motivate the use of active coping strategies in a controllable situation. Most important, positive reinterpretation and acceptance coping strategies appear to be significant determinants of stress-related growth. By allowing individuals to accept a situation and focus on its positive aspects and implications, these coping strategies may be the most responsible for contributing to people's beliefs that they have benefitted from a stressful life experience" (Updegraff and Taylor, 2000, p. 13). It is likely that the types of growth and resiliency shown in the present study involve both active coping and positive reinterpretation. It is also possible that the growth shown in this study is a form of coping occurring during the acute stage. Future research needs to examine how such responses are associated with long-term psychological functioning.

Secondary stressors have continued since the attacks, and at the time this paper was written—nine months after the attacks—the stressors continue for many Americans. Secondary stressors include stressful life events, strains, and hassles that develop in the wake of a disaster, and can include delays in obtaining resources, employment difficulties, financial difficulties, and threats to one's safety. Secondary stressors can tax personal characteristic, energy, and condition resources; exacerbate the influence of preexisting stressors; and

contribute to psychological distress and relationship difficulties (Baum, 1991; Norris and Uhl, 1993).

Americans have endured a number of secondary stressors: lengthy clean-ups at the World Trade Center site and Pentagon; uncertainty concerning whether persons and organization(s) responsible for the attacks would be brought to justice; the U.S. government's declaring that the country is at war and on heightened alert; the U.S. government's warning of possible future attacks; anthrax sent in letters to government officials and news personnel; and possible military action in countries other than Afghanistan (e.g., Iraq).

As a direct result of the attacks, many companies have faced financial hardships, especially the travel and airline industries. Short-term, long-term, and permanent job layoffs have occurred, and it is not clear whether certain companies and industries will be able to recover. Because these secondary stressors have been prolonged, it is possible that delayed mental health problems, as well as additional growth, may develop many months after the event.

Understanding the nature and role of secondary stressors is critically important to intervention and recovery programs. Since these stressors continue to exist, research should continue to examine the mental health and psychological implications of the terrorist attacks and threats. Especially important issues are identifying which persons are most at risk of adjustment difficulties, which interventions may minimize or prevent adjustment problems, and which interventions are most helpful. It would be useful for studies to examine factors associated with growth and distress, including optimism, perceptions of control over life events, sense of self, preexisting vulnerabilities, and the characteristics of the situation.

It is likely that some participants have had more exposure to regional large-scale disasters than others, and that such exposure might modify responses to subsequent stressors. For example, Charleston, South Carolina, had experienced more large-scale disasters and disaster threats in recent years than the other three locations included in this study. In 1989, Hurricane Hugo, a category four storm, struck Charleston and caused \$7 billion in damage. During the 1990s, about one-half dozen storms seriously threatened the area. In 1999, a large and powerful storm, Hurricane Floyd, was predicted to strike Charleston, and almost three-quarters of the residents fled their homes (Sattler, 2001). Research and theory suggests that prior and repeated exposure to large-scale traumatic events and threats can sensitize persons to future traumatic events (Sattler et al., 2000). This might explain, in part, the comparable levels of distress in New York and South Carolina. The higher levels in those two locations also may reflect the fact that these communities are closer to the areas attacked than Colorado and Washington. This idea is

supported by the finding that more persons in New York and South Carolina were concerned about future attacks than in Colorado and Washington.

This correlational study has several limitations. First, because participants were college students at select campuses in four states, the findings may not generalize to all college students or to all Americans. The findings offer detailed information about how persons within a specific demographic group responded to the tragic event. Future research should extend these findings by examining individuals who represent other groups. Second, we do not know about preexisting psychopathology among the participants. It is possible that a small proportion of participants were experiencing distress or living with a mental health issue prior to the attacks. If so, these issues may have been reflected, to some degree, in the participants' answers, and we cannot conclude with complete certainty that the levels of distress shown in the results are solely due to the attacks. Obtaining information about psychological functioning before the traumatic event is the best way to address this problem. However, since the attacks were not foreseen, it was not possible to obtain this information. Third, this study relied on self-report and it is possible that some participants may have tried to present themselves in a favorable or unfavorable light. However, special care was taken to minimize such response biases, including making participation completely anonymous and confidential. In reviewing participation in other disaster studies, Norris (1992) suggests that self-report data following disasters appear to be reliable. A longitudinal study is underway to examine any delayed mental health problems as well as growth and resiliency since the initial assessment reported here.

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