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The Effect of Terrorism on Public Confidence: An Exploratory Study

Decision and Information Sciences Division

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ABSTRACT

A primary goal of terrorism is to instill a sense of fear and vulnerability in a population and to erode confidence in government and law enforcement agencies to protect citizens against future attacks. In recognition of its importance, the Department of Homeland Security includes public confidence as one of the metrics it uses to assess the consequences of terrorist attacks. Hence, several factors — including a detailed understanding of the variations in public confidence among individuals, by type of terrorist event, and as a function of time — are critical to developing this metric. In this exploratory study, a questionnaire was designed, tested, and administered to small groups of individuals to measure public confidence in the ability of federal, state, and local governments and their public safety agencies to prevent acts of terrorism. Data were collected from the groups before and after they watched mock television news broadcasts portraying a smallpox attack, a series of suicide bomber attacks, a refinery bombing, and cyber intrusions on financial institutions that resulted in identity theft and financial losses. Our findings include the following: (a) the subjects can be classified into at least three distinct groups on the basis of their baseline outlook — optimistic, pessimistic, and unaffected; (b) the subjects make discriminations in their interpretations of an event on the basis of the nature of a terrorist attack, the time horizon, and its impact; (c) the recovery of confidence after a terrorist event has an incubation period and typically does not return to its initial level in the long-term; (d) the patterns of recovery of confidence differ between the optimists and the pessimists; and (e) individuals are able to associate a monetary value with a loss or gain in confidence, and the value associated with a loss is greater than the value associated with a gain. These findings illustrate the importance the public places in their confidence in government and law enforcement and also indicate that the level of importance is clearly of a magnitude on the order of other major terrorist event consequences, such as loss of human life and impacts to the economy.

PREFACE

Although the concept of "public confidence" is widely used in public administration and the development of policy, there is no universal definition, perhaps because its meaning is assumed to be obvious in context. Terrorist attacks are intended, in part, to erode public confidence; disrupt normal daily life; and shake society's faith in federal, state, and local governments' ability to manage risks and prevent future attacks. A large body of research substantiates that individuals interpret messages and act upon them differently, depending on the confidence they have in the source (see Drabek 1986; Lindell and Perry 1992; and Mileti and Sorensen 1990). If the public has confidence in the source, then they are more likely to act on the message as the source delivering it intends. A high level of confidence can improve the effectiveness of preparation for, response to, and recovery from, an emergency; a low level of confidence can inhibit compliance, resulting in delayed action by the public.

Reducing public confidence is in itself a goal of terrorist attacks. Homeland Security Presidential Directive/HSPD-7, which addresses critical infrastructure identification, prioritization, and protection (White House 2003), states as official policy that the "[t]errorists seek to destroy, incapacitate, or exploit critical infrastructure and key resources across the United States to threaten national security, cause mass casualties, weaken our economy, and damage public morale and confidence," and "… undermine the public's morale and confidence in our national economic and political institutions." HSPD-7 directs all federal agencies to ensure that the public's trust and confidence are not damaged by the actions of terrorists. In recognition of its importance, the Department of Homeland Security includes public confidence as one of the metrics it uses to assess the consequences of terrorist attacks. However, federal, state, and local officials have neither a standard definition nor a uniform understanding of "public confidence." Moreover, there is a dearth of research concerning the meaning of "public confidence" in the context of its implications for the prevention of terrorism. Therefore, it is necessary to understand how public confidence varies among individuals, how it is affected by different types of terrorist events, and how it changes over time.

The question we ultimately want to answer is this: "What value do individuals place on their confidence in government and law enforcement agencies to prevent terrorism?" Knowing how much citizens value their confidence in government and law enforcement agencies will help allocate resources to prevent terrorist attacks and to protect critical infrastructure. To gain this understanding, we first sought answers to the following questions in this exploratory study:

- What is the base level of confidence in governments (i.e., federal, state, and local) and law enforcement agencies to prevent terrorist attacks?
- Does this baseline confidence vary over different time horizons, and how does it vary among individuals?
- How is post-event confidence initially affected, and how does it vary in time among individuals?

- How does post-event confidence change in response to different types of terrorist attacks?

This research provides a foundation for further exploration and analysis of "public confidence" as it impacts infrastructure protection policy and emergency planning and preparedness. The public maintains preconceived ideas as to what types of events would do the greatest harm to the nation, which was illustrated in a 2008 study by the Homeland Security Institute (2008). Respondents in the study were asked to prioritize in order of importance 15 national icons administered by the U.S. Department of the Interior. In this study, the respondents were in greatest agreement on those icons that were important to the governmental infrastructure of the United States (e.g., the White House and U.S. Capitol Building). The report suggests that policy, planning, and preparedness should address public concerns regarding the importance of particular infrastructure assets either through assurances that current strategies are sufficient or increased attention to under-addressed areas.

Furthermore, understanding the effect of an attack on the public's confidence should help guide preparedness for response if such an event occurs. Our study resulted in a simultaneously robust and limited data set. Viewed in the aggregate, the data are able to give broad estimates about how the national confidence might be affected by a terrorist attack. However, we found evidence suggesting that different profiles of confidence exist among the study participants. It is important to understand what these differences mean in order to formulate mitigation and response policies that will be accepted by the public.

Several psychological responses, including fear, anger, anxiety, and vulnerability, need to be studied in greater detail to understand their relationship to confidence and the ability to cope with changes in these psychological responses following an attack. A better understanding of this relationship is important in order to effectively communicate response and mitigation measures in emergency situations, thereby ensuring the broadest compliance/acceptance by the public and the maintaining of public trust during an emergency.

Overall, there is a diversity of opinion in the population when it comes to confidence in government. On the whole, the study participants had an optimistic outlook about their government's ability to prevent terrorist attacks, even after one has occurred. This result may be viewed as a sign of resiliency, which our data on emotional responses suggest is the case. Post-attack confidence degradation is limited when viewed across all attack types. In essence, the value that the public places on its confidence in government is an asset being defended. Defending U.S. territory and infrastructures against attack is the physical act of defending against an assault on the trust and confidence of the American public.

Key words: Public Confidence, Government Authority, Law Enforcement, Risk, Terrorist Attacks

1 INTRODUCTION

A primary goal of terrorism is to decrease public confidence in government. Homeland Security Presidential Directive/HSPD-7, which addresses critical infrastructure identification, prioritization, and protection (White House 2003), states that "[t]errorists seek to destroy, incapacitate, or exploit critical infrastructure and key resources across the United States to threaten national security, cause mass casualties, weaken our economy, and undermine the public's morale and confidence in our national economic and political institutions." Federal agencies have the responsibility to prevent the erosion of public confidence by terrorist threats and attacks.

Following work by Baldwin, Ramaprasad, and Samsa (2008), Argonne National Laboratory (Argonne) researchers conducted a series of focus groups with members of the general public in order to further understand how terrorist events affect the public's confidence in government and law enforcement to prevent such acts. Seventy-nine (79) members of the general public participated in 10 focus-group sessions, three of which occurred in September and October of 2007 and seven in January and February of 2008.

2 DEMOGRAPHICS

Table 2-1 presents the demographic profile of the participant pool. Focus-group participants self selected by responding to an advertisement in a local newspaper. Respondents represented a relatively broad slice of the population, were evenly split between males and females, and followed a statistically uniform distribution by age, ranging from 25 years to 75 years of age, with a median age of 53 years. All but two had received at least some college education.

TABLE 2-1 Participant Demographic Profile

Individual Participant Demographic Profile				
Education	High School	Some College	Undergraduate	Graduate Degree
	2	24	33	20
Gender	Male		Female	
	40		39	
Age Range	Minimum	Maximum	Median	Average
	25	76	53	52

3 METHODOLOGY

To understand the change in public confidence following a terrorist attack, a baseline level of confidence was first established. Respondents were asked to estimate their level of confidence in government and law enforcement to prevent a terrorist attack. A questionnaire (which is reprinted in Appendix A) was used to measure each subject's level of confidence in the ability of federal, state, and local governments and law enforcement agencies to prevent acts of terrorism at seven time increments in the future. The time increments are one day, one week, one month, three months, one year, five years, and ten years in the future. We used a nine-point Likert scale to measure confidence, defined as follows:

1 – No confidence at all
3 – Not much confidence
5 – Some confidence
7 – A great deal of confidence
9 – Full confidence

The end-points of the confidence rating scale were defined for the subjects. A confidence level of one, no confidence at all, was defined as "You believe that government and law enforcement will not prevent any terrorist attack." A confidence level of nine, full confidence, meant that "You believe that government and law enforcement will prevent all terrorist attacks."

Baseline public confidence was measured with reference to preventing unspecified types of terrorist attacks in general. Following the baseline survey, each group of subjects was shown, in random order, mock video news coverage of four simulated terrorist events that varied in length, scale, and scope of consequences:

- Smallpox attack:
  This attack unfolds over two months' time and has international consequences, which include 2,000 fatalities, 15,000 illnesses, and high visual and emotional content;

- Series of shopping mall suicide bombings:
  These attacks occur over one week during the holiday season and have regional consequences, which include 150 fatalities and 700 injuries, with visual and emotional content;

- Refinery bombing attack:
  This attack occurs at a single refinery and has local consequences, which include 5 fatalities, 4 injuries, and the evacuation of 6,000 individuals; and

- Cyber intrusions on many financial institutions:
  These attacks result in incidents of identity theft over 2.5 months and, while they produce national economic consequences, there are no fatalities or injuries and emotional content is limited.

Each scenario was presented as a series of mock television news broadcasts spread over a time period consistent with the terrorist attack portrayed — from the initial report of the attack to its conclusion. The broadcasts showed people's reactions as well as the responses of government and law enforcement agencies.

After viewing each video, respondents were asked to answer a questionnaire similar to that which was used to establish the baseline. Post-scenario confidence estimates were elicited in two ways, in contrast to the one generic measure in the baseline: confidence in government and law enforcement to prevent *the same type of attack* as depicted in the mock news broadcasts, and confidence in government and law enforcement to prevent *other types of attacks*. This report focuses on the latter question, which gives a general confidence level in the government's ability to protect the population from terrorist attack.

Finally, respondents were shown a graph of their baseline confidence profile and asked to estimate the monetary value of incremental changes in their current confidence levels. This component of the study was performed through a face-to-face elicitation process in which the respondents were offered a remittance in exchange for accepting a permanent degradation in their level of confidence. In order to normalize across the population, an earnings measure was used in the form of some portion of their annual salary (one day, one week, one year, etc.). The offer process was repeated until the respondent could no longer decide on the money or his or her level of confidence, at which the median point between their previous acceptance and decline was taken as the value of the specified change in confidence.

This process evolved over the course of the study. We began by only eliciting a value for degradation. There were some respondents whose baselines did not leave any room to move down. In these cases, the same process was utilized to find a value at which the respondent would take a payment rather than an increase in level of confidence. Upon review of the data, there was evidence that a discrepancy existed between the value to respondents of an increase and a degradation in confidence. This finding prompted the addition of eliciting responses in both directions for the remaining study participants.

4 AGGREGATE RESULTS

Averaged across the sample, confidence in government and law enforcement agencies to prevent a terrorist attack was moderate and remained so across the 10-year time horizon, trending slightly upward or toward the optimistic. As shown in Figure 4-1, baseline confidence over the short term is moderate (i.e., around 5 on the 9-point scale); beginning at the three-month to one-year period, confidence begins to rise, albeit slowly to 5.5.

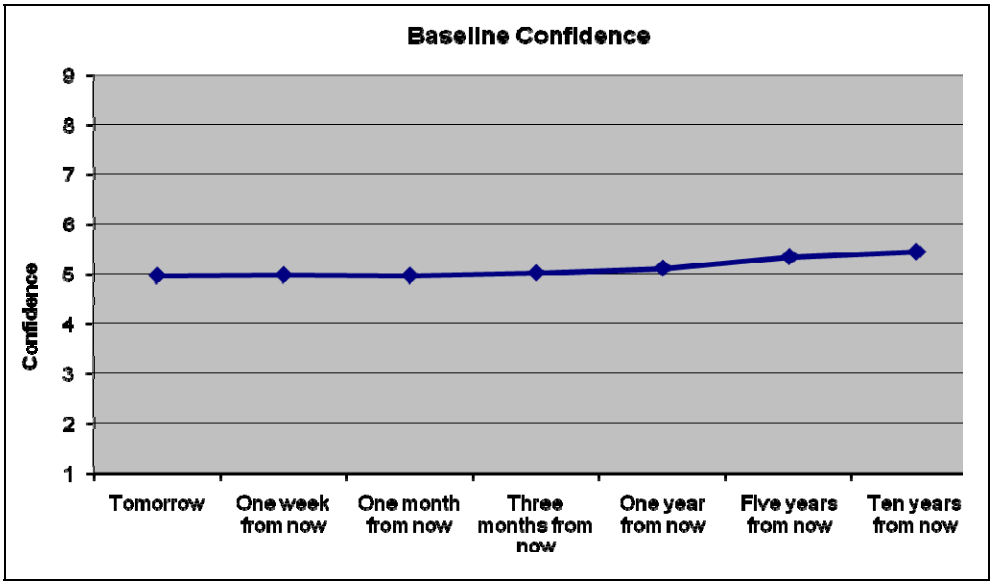

FIGURE 4-1 Baseline Confidence in Government and Law Enforcement to Prevent Terrorist Attacks

Looking at the sample as a whole, at the ends of the time horizon (i.e., the tomorrow and ten-years-from-now marks), the average loss of confidence after a terrorist attack is 13% and 3.6%, respectively. In our data, public confidence is most affected by attacks that utilize suicide bombing (Figure 4-2), which results in a 6.2% degradation out to ten years, which follows a 15.7% drop in the month following the attacks.

In addition to asking about their confidence in government and law enforcement to prevent terrorist attacks, respondents were asked to quantify their feelings of fear, anger, anxiety, and vulnerability with regard to these attacks, as well as their ability to cope with those feelings. Figure 4-3 shows the results, in which three of the four scenarios elicited moderately increased feelings of fear, anger, anxiety, and vulnerability relative to the levels that the respondents reported in the similar baseline questions, which had asked respondents to think generally about terrorist attacks before viewing any stimulus. A closer examination of the data through a one-way analysis of variance (ANOVA) uncovered that there were significant differences between how respondents reacted to each scenario.

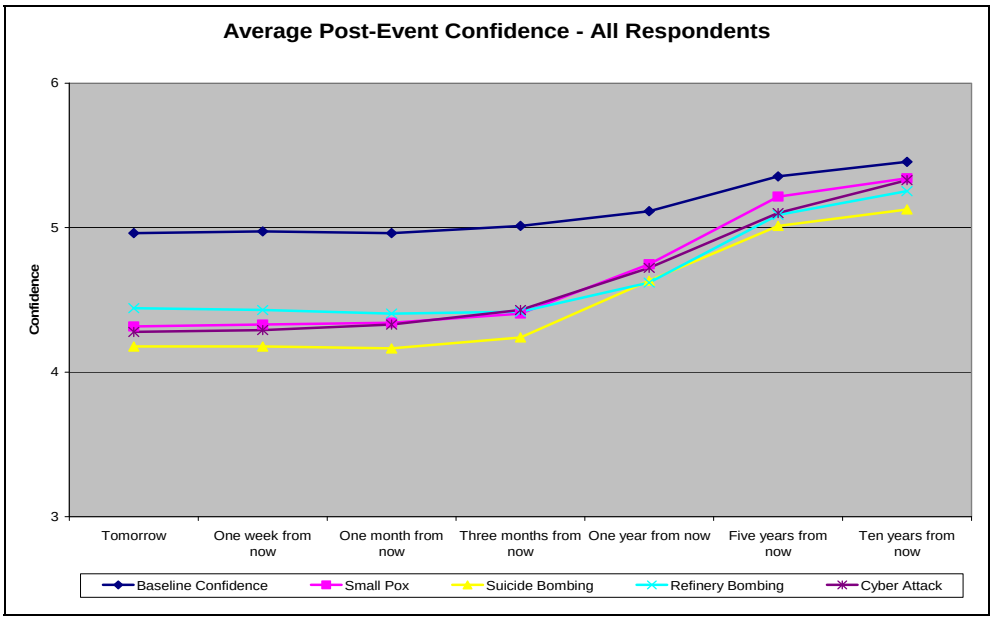

FIGURE 4-2 Post-scenario Confidence in Government and Law Enforcement to Prevent Other Types of Attacks

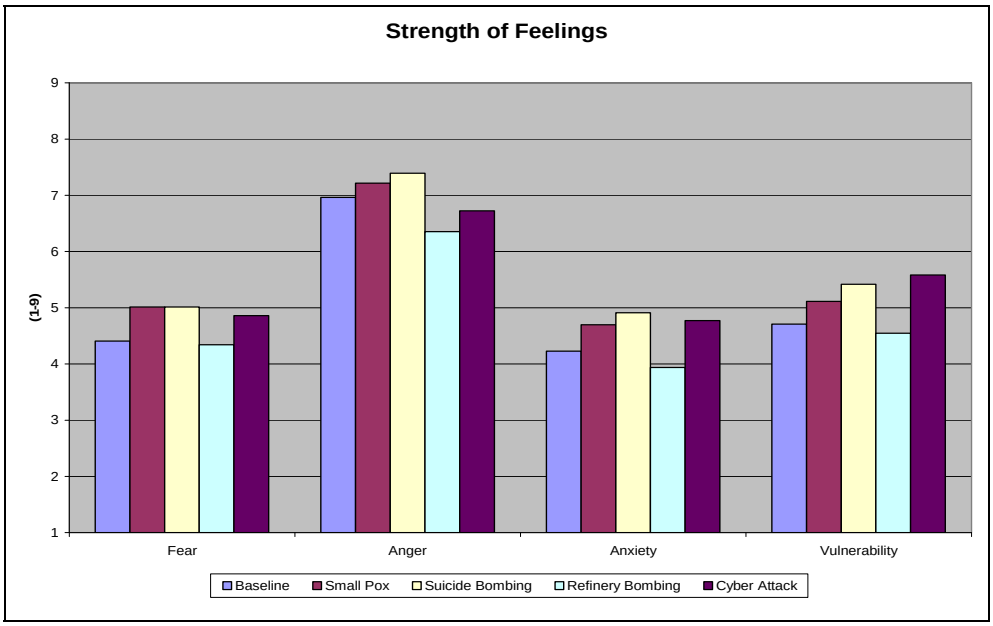

FIGURE 4-3 Average Strength of Feelings Regarding Terrorist Attacks

Among all respondents, three of the strength-of-feelings variables — anger, anxiety, and vulnerability — showed significant variance from one scenario to the next. For the anger variable, the refinery bombing and cyber attack scenario elicited significantly lower responses than the small pox and suicide bombing scenarios. Responses were similar for feelings of

anxiety. As with the anger variable, respondents reported strength of feelings of vulnerability significantly higher than the refinery bombing for two of the three other scenarios, the suicide bombing and cyber attack scenarios. Again, the refinery bombing elicited significantly lower reported strength of feelings for anxiety, when compared with two of the three other scenarios. These differences are shown in Table 4-1.

TABLE 4-1 Significant Differences in Strength of Feelings at the 95% Confidence Interval (Tukey Significant Difference Procedure)

Strength of Feelings Difference from Refinery Bombing				
	Mean	Difference	*F*	*p*
Anger (N = 79)[a]			5.75	0.008
Suicide bombing (Anger)	7.39	1.04		
Small pox (Anger)	7.22	0.86		
Refinery bombing (Anger)	6.54			
Anxiety (N = 79)			3.74	0.0116
Suicide bombing (Anxiety)	4.91	0.97		
Cyber attack (Anxiety)	4.77	0.84		
Refinery bombing (Anxiety)	3.94			
Vulnerability (N = 79)			3.79	0.0107
Cyber attack (Vulnerability)	5.58	1.04		
Suicide bombing (Vulnerability)	5.42	0.87		
Refinery bombing (Vulnerability)	4.54			

[a] N = number of respondents.

The complement to strength of feelings is the ability to cope with those feelings. This measure is representative of the public's confidence in itself; it is a self-assessment of resiliency. Figure 4-4 presents the average level of the public's confidence in its own ability to cope with feelings brought on by the types of terrorist attack included in the study. Generally, these two measures are inversely related; the stronger the psychological response, the lower the ability to cope with that response.

In general, respondents were equally confident in their ability to cope with their feelings of anger no matter the scenario with which they were presented. This result was not the case with the other three feelings metrics: fear, anxiety, and vulnerability. A one-way analysis of variance revealed results that are similar to the strength-of-feelings analysis. Respondents reported greater confidence that they could cope with the psychological effects of the refinery bombing in comparison to the other scenarios. Concerning the fear variable, the suicide bombing and small pox attacks resulted in significantly lower reported ability-to-cope-with-feelings scores than were reported for the refinery bombing. The same was true for feelings of anxiety and vulnerability. Table 4-2 shows these differences.

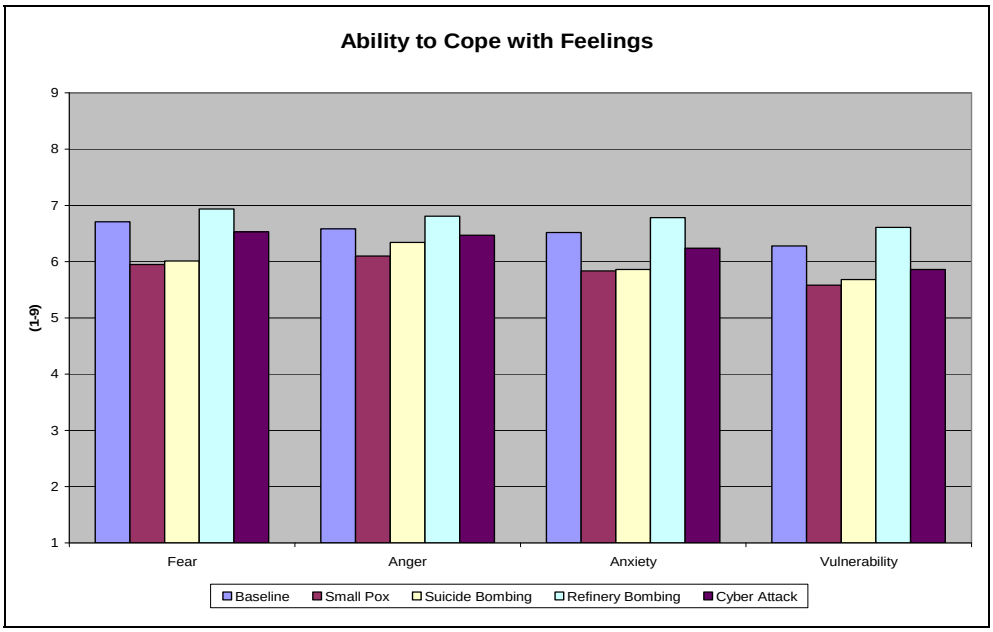

FIGURE 4-4 Ability of the Public to Cope with Feelings Brought on by Terrorist Attacks

TABLE 4-2 Significant Differences in Ability to Cope with Feelings at the 95% Confidence Interval (Tukey Significant Difference Procedure)

Ability to Cope with Feelings Difference from Refinery Bombing	Mean	Difference	*F*	*p*
Fear (N = 79)[a]			5.99	0.0006
Small pox (Fear)	5.95	-0.99		
Suicide bombing (Fear)	6.01	-0.92		
Refinery bombing (Fear)	6.94			
Anxiety (N = 79)			4.38	0.0049
Small pox (Anxiety)	5.84	-0.95		
Suicide bombing (Anxiety)	5.86	-0.92		
Refinery bombing (Anxiety)	6.78			
Vulnerability (N = 79)			4.49	0.0042
Small pox (Vulnerability)	5.58	-1.03		
Suicide bombing (Vulnerability)	5.68	-0.92		
Refinery bombing (Vulnerability)	6.61			

[a] N = number of respondents.

5 PUBLIC CONFIDENCE SPECTRUM

A more disaggregated view of the respondents' data indicates that there are distinct groups within the population that have differing levels of baseline confidence in government and law enforcement agencies to prevent terrorist attacks. Differences are manifested in two important ways: by the initial baseline level of confidence given by the response for confidence tomorrow and by the trajectory of confidence over time from tomorrow to ten years.

Using a three-by-three matrix, respondents with similar baseline responses were assigned to one of nine cells (Table 5-1). The three columns in Table 5-1 represent the trajectory of confidence values over time. The difference between the reported values in response to the question, "What is your confidence in government and law enforcement to prevent terrorist attacks?", for tomorrow and ten years from now is representative of the trajectory of a respondent's response over time, which is their response polarity. Those who had a positive change that was greater than or equal to two (2) in this value were assigned to the "Increasing" trajectory column. Those with a change of less than or equal to negative two (-2) were assigned to the "Decreasing" trajectory column. The remaining cases (i.e., those with a change of zero, plus one, or minus one) were assigned to the "Steady" trajectory column.

After assigning a response polarity to each respondent, the value of respondents' current confidence level (i.e., confidence in government and law enforcement to prevent a terrorist attack tomorrow) was used to classify their current confidence level. The nine-point Likert Scale was divided into thirds for high, moderate, and low levels of current confidence. A low level of confidence is defined as a score of one to three (1–3) on the scale; a moderate level of confidence as a score of four to six (4–6); and a high level of confidence as a score of seven to nine (7–9). Table 5-1 shows this matrix and the number of respondents in each category.

Each group was then classified by its confidence outlook: optimistic, pessimistic, or unaffected. Those cells with an increasing trajectory over time and those with a

TABLE 5-1 Confidence Typology Matrix

n = 79 [a]	Increasing $\Delta \geq 2$	Steady Δ +/- 1	Decreasing $\Delta \leq -2$
High (7–9)	0	5	3
Moderate (4–6)	18	29	11
Low (1–3)	9	4	0

	Optimistic
	Unaffected
	Pessimistic

[a] n = number of respondents.

high and steady outlook are characterized as "optimists." Those with a decreasing trajectory over time and those with a low and steady outlook are characterized as "pessimists."[1] Those remaining respondents, those with moderate confidence levels currently and with a steady outlook into the future, were classified as "unaffected."

Figure 5-1 shows the distribution of respondents across the spectrum of confidence types. The spectrum is dominated by those whose baseline confidence in government is moderate, does not change by more than one point, and trends toward the optimistic side of the scale.

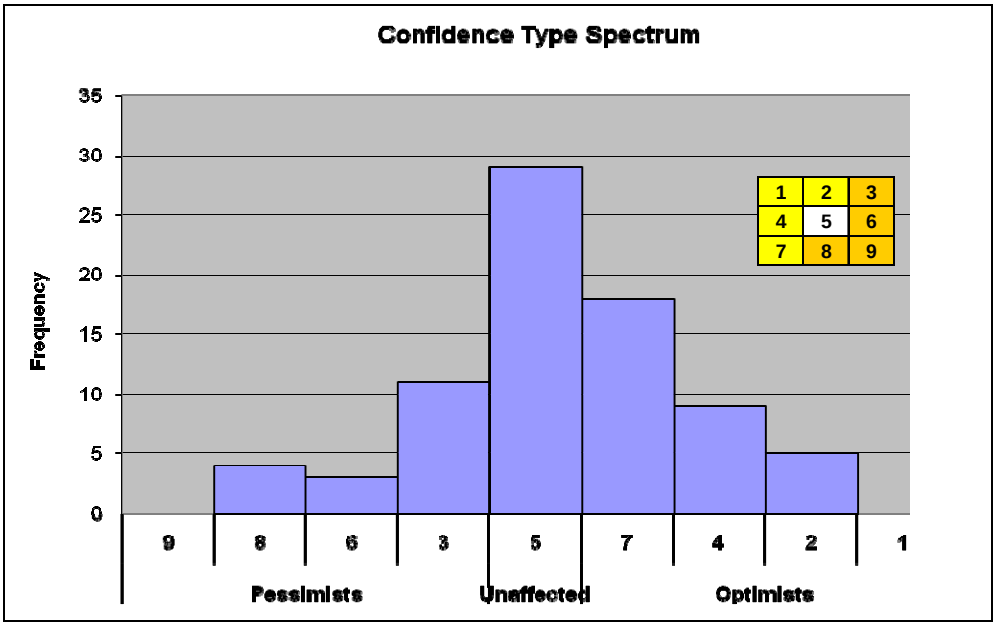

FIGURE 5-1 Distribution of Respondents across the Full Spectrum of Confidence Types

Future outlook was the main determining factor in assigning respondents into three groups: optimists, pessimists, and unaffected respondents. Optimists were drawn from the four yellow cells in the Table 5-1 matrix and had profiles that exhibited positive change over the course of the time horizon or had high confidence that did not change. Pessimists' profiles were the reverse of the optimists, in which there was either negative change over the course of the time horizon or low confidence that did not change. Unaffected respondents had an unchanging level of confidence in the middle portion of the scale. The distribution of respondents among these three groups is shown in Figure 5-2.

[1] Note that in our sample, there were no individuals with high baseline confidence and increasing trajectories, nor were there any individuals with low baseline confidence and decreasing trajectories.

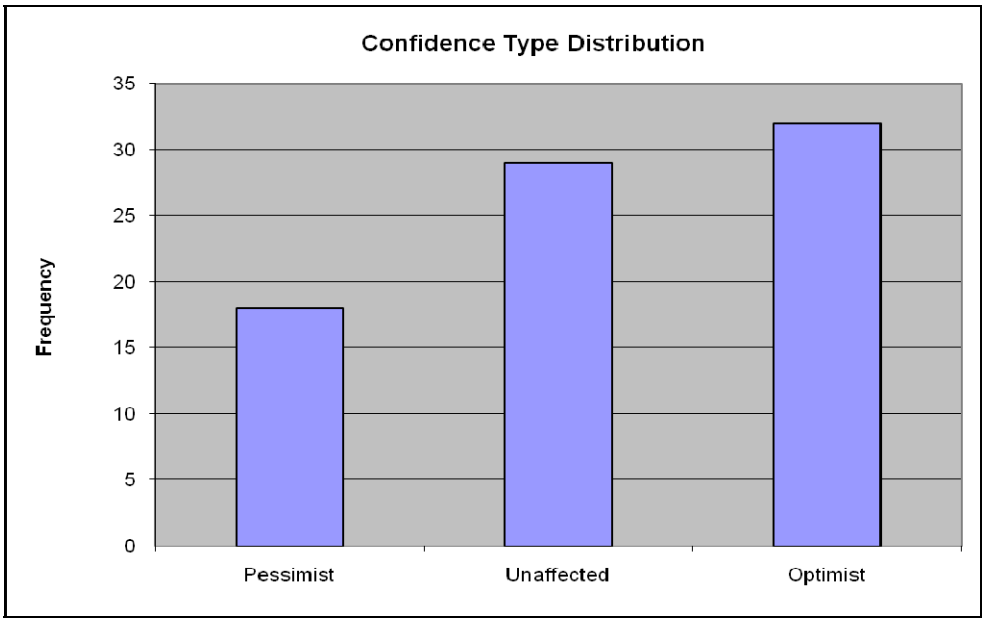

FIGURE 5-2 Distribution of Respondents by Future Confidence

6 CONFIDENCE OUTLOOK AND REACTION TO THE SCENARIOS

As evidenced in Figure 4-2, when averaged across the entire sample, public confidence is moderately impacted by terrorist attacks. Initially, following an attack, our aggregate sample shows a loss of some amount of confidence in government and law enforcement agencies to prevent terrorist attacks in the short-term; however, confidence is recovered over the long term to a 3.6% average net loss across all of the scenarios at ten years into the future. But within the whole, there are three groups that are very different in their current perspectives and outlook toward the future. The post-attack responses of these three groups (optimists, pessimists, and the unaffected) follow the trends of their baseline responses.

The baseline confidence levels of all three groups begin within less than one-half of a confidence point of each other, which was around five on the nine-point scale. However, they diverge between one and three months in time by increasing, remaining constant, or decreasing over time, as illustrated in Figure 6-1. An analysis of the three aggregate groups (optimists, pessimists, and the unaffected) that is based on their responses to the determinate variables — confidence tomorrow and confidence ten years from now — shows that there are statistically significant differences between the groups at the 95% confidence level for the value of confidence ten years from now.

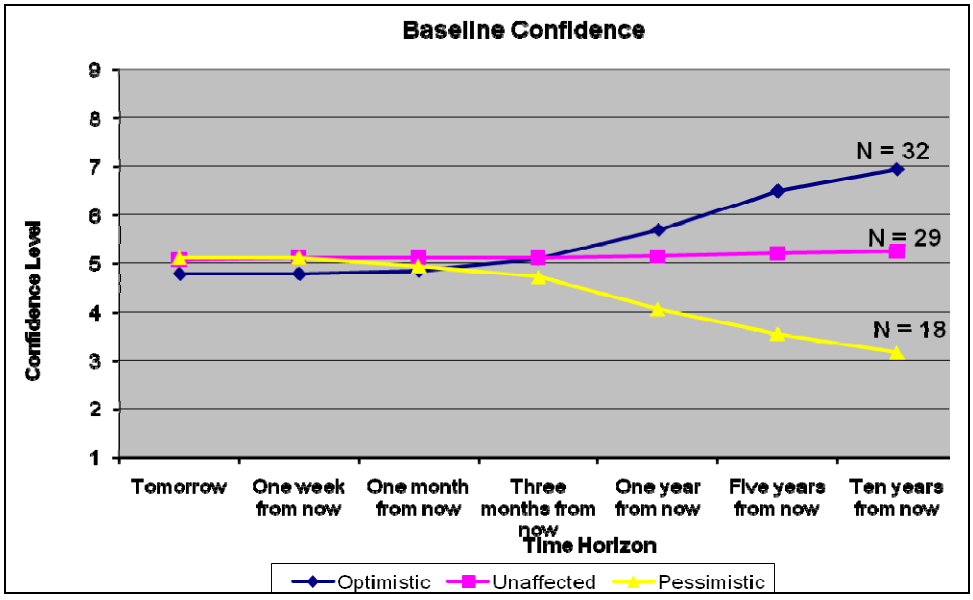

FIGURE 6-1 Baseline Confidence by Outlook

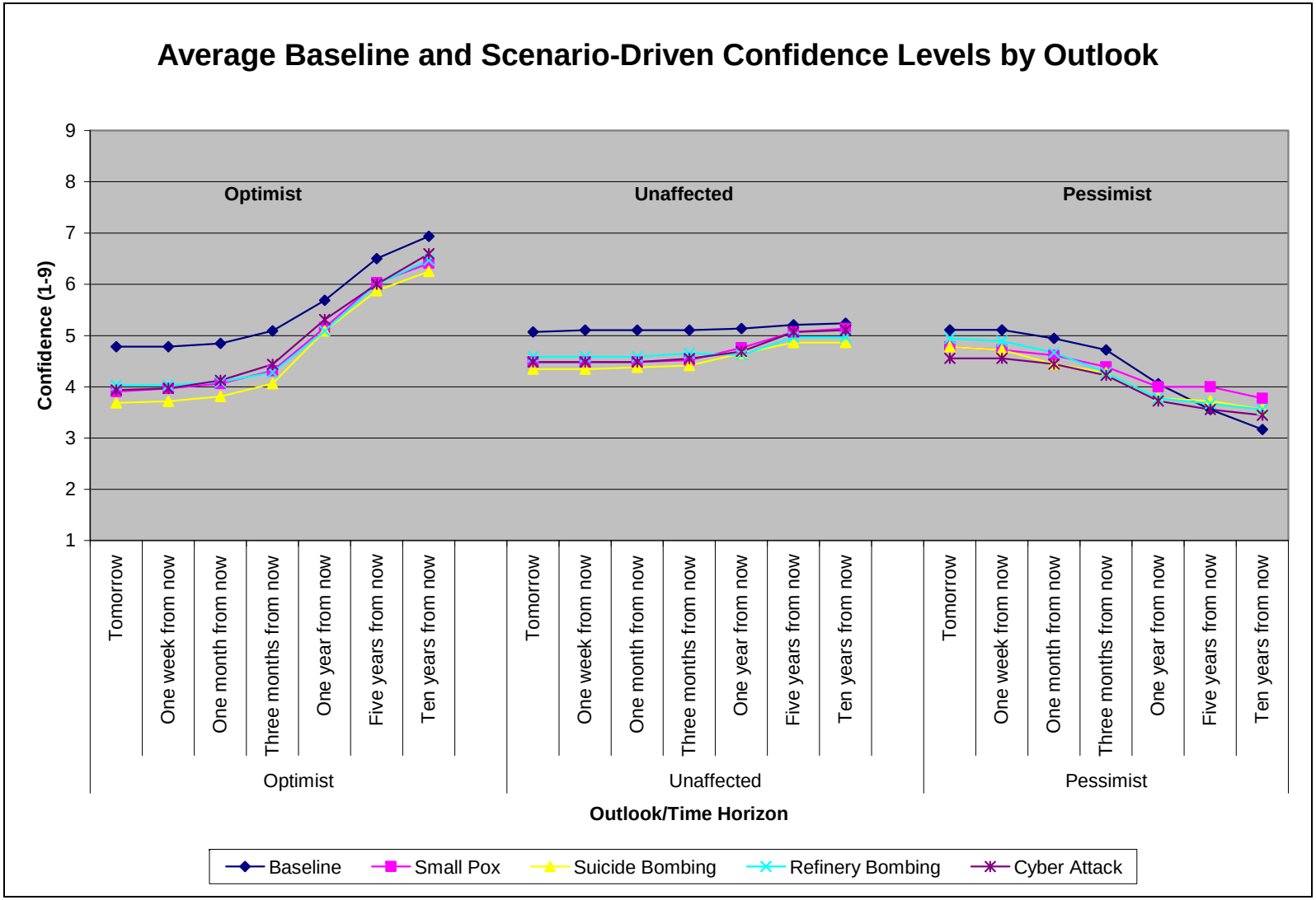

FIGURE 6-2 Post-scenario Confidence by Outlook Type

Differences between the groups are not only in the trajectories of their baseline confidence trends over time. Figure 6-2 shows the behavior of each group in its baseline confidence level and following each attack scenario. The data shows that the average degradation caused by a terrorist attack varies by group. Those who are optimistic about the ability of government and law enforcement agencies to protect against terrorist attacks have the greatest drop in confidence following an event, losing an average of -18.6% of their confidence value in the short term, with a loss of -7.3% at ten years. The average change from baseline following an attack for the unaffected respondents at the same points is -11.7% and -4.2%, respectively; for pessimists, the changes are -6.8% and +13%, respectively. From these results, one might posit an inverse relationship between the change over time of a group's confidence in government and the degradation of its confidence following a terrorist event.

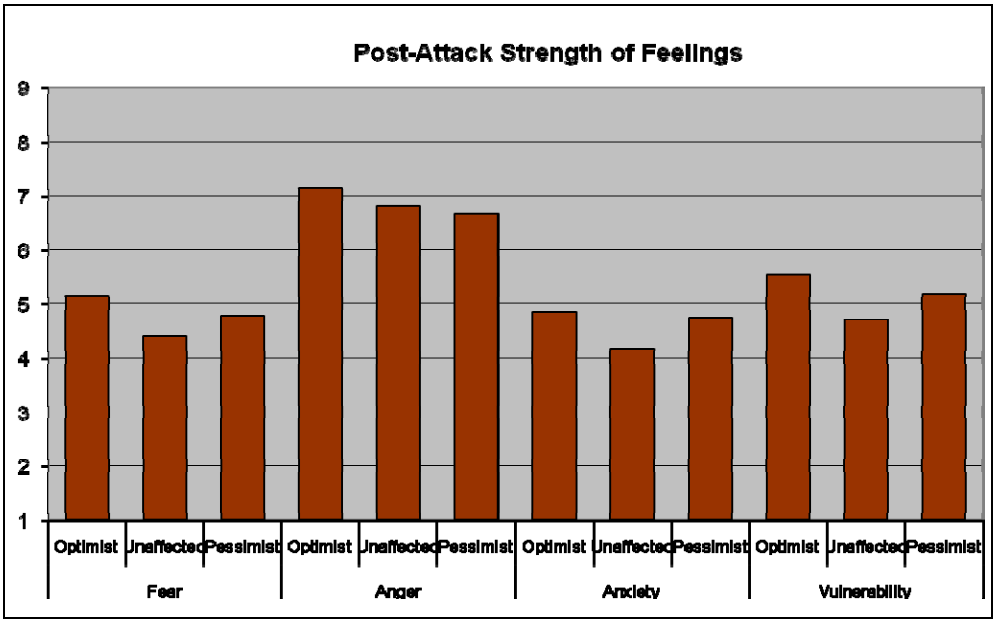

FIGURE 6-3 Post-attack Strength of Feelings Averaged across All Scenarios

The groups' strength of feelings also differ within each strength of feelings metric; however, variances did not reach the level of statistical significance. As shown in Figure 6-3, when averaged across the scenarios, optimists and pessimists generally had higher response scores for each metric than the unaffected cohort.

Within this average, there are variations within and between the groups based on the different scenarios. These variations rarely achieved a level of statistical significance, with the exception of a couple of within-group variances.

Optimists showed no statistically significant variation in their strength of feelings responses from one scenario to the next. There were, however, some significant differences within the responses of the unaffected and pessimistic respondents (Figure 6-3). These results are shown in Table 6-1. Among respondents in the unaffected group, feelings of anger and

vulnerability were, like the responses for the entire sample, lower following the refinery bombing than for the other three scenarios. The variance is significant when the anger scores are compared with the suicide bombing, and the vulnerability scores are compared with the cyber attack. For pessimists, the refinery bombing also elicited the lowest strength-of-feelings responses, particularly when compared with the suicide bombing.

TABLE 6-1 Within–group Strength of Feelings Variance between Scenarios at the 95% Confidence Interval (Tukey Significant Difference Procedure)

Within-group Strength of Feelings Difference from Refinery Bombing				
	Mean	Difference	*F*	*p*
Anger (N = 29)[a]			3.14	0.0282
Unaffected, suicide bombing (Anger)	7.31	1.24		
Unaffected, refinery bombing (Anger)	6.06			
Vulnerability (N = 29)[a]			2.83	0.0415
Unaffected, cyber attack (Vulnerability)	5.45	1.48		
Unaffected, refinery bombing (Vulnerability)	3.97			
Fear (N = 18)[a]			3.06	0.0340
Pessimist, suicide bombing (Fear)	5.33	1.56		
Pessimist, refinery bombing (Fear)	3.78			

[a] N = number of respondents.

Following an attack, public confidence in government and law enforcement to prevent terrorist attacks declines, and feelings of fear, anger, anxiety, and vulnerability are evident. However, people's confidence in their ability to cope with the situation remains high in all three outlook groups — optimists, pessimists, and the unaffected. Figure 6-4 illustrates the emotional resilience of the public. All three groups show high self-confidence in their ability to cope with their feelings following a terrorist attack.

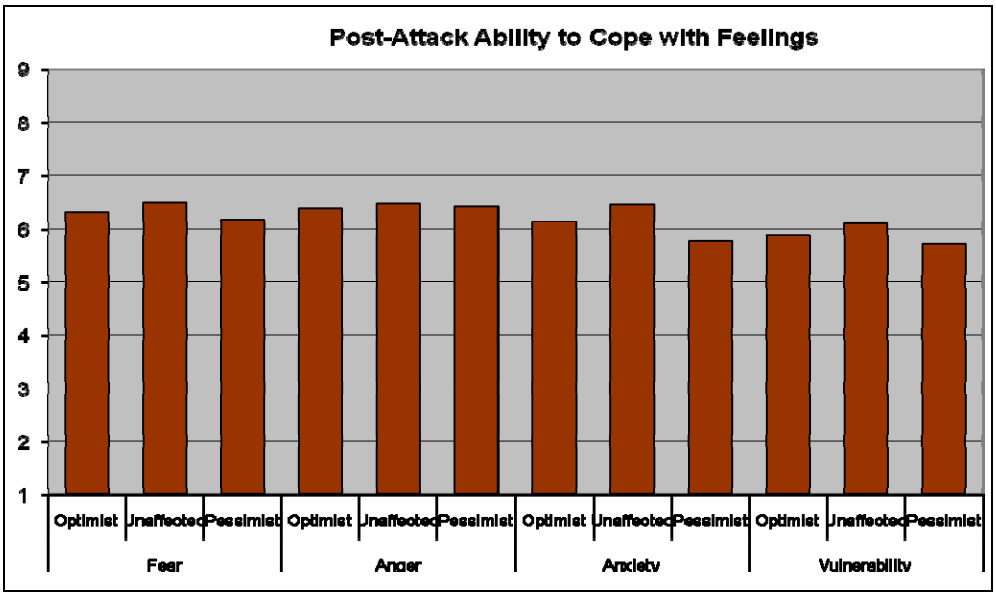

FIGURE 6-4 Post-attack Ability to CWFs Averaged across All Scenarios

The ability-to-cope metrics offered the greatest consistency across all scenarios and confidence profiles. One-way ANOVA within and between groups yielded very little variation. The one exception was within the pessimist group as shown in Table 6-2. When comparing the refinery bombing and suicide bombing scenarios, there were significant differences in their ability to cope with feelings of fear.

TABLE 6-2 Within-group Ability to CWF Variance between Scenarios at the 95% Confidence Interval (Tukey Significant Difference Procedure)

Within-group Ability to CWF Difference from Refinery Bombing				
	Mean	Difference	*F*	*p*
Fear (N = 18)[a]			3.03	0.0352
Pessimist (Fear)	5.39	-1.56		
Pessimist, refinery bombing (Fear)	6.64			
Anxiety (N = 18)[a]			3.17	0.0299
Pessimist (Anxiety)	5.11	-1.61		
Pessimist, refinery bombing (Anxiety)	6.72			

[a] N = number of respondents.

7 ASSESSING THE VALUE OF PUBLIC CONFIDENCE

Finally, what value does the public place on its confidence in government and law enforcement to prevent terrorist attacks? When confidence is lost and regained, is the value lost also regained? In the full data set, 77 of 79 respondents were able to quantify the value they placed on a single-point change in their confidence.[2] Of these, 35 respondents were able to quantify the value of incremental changes, both positive and negative, in their confidence in government and law enforcement agencies to prevent terrorist attacks.[3] An analysis of these data yields three important points of interest: (a) the relationship between the value of an increase and the value of a decrease in confidence expressed as a ratio, (b) the value of an incremental increase in confidence, and (c) the value of an incremental decrease in confidence. Figure 7-1 shows the relationship between a single-point increase in confidence to a single-point degradation for the 35 participants who were asked these questions. Evident from Figure 7-1 is the very wide scatter in the respondents' valuation of confidence.

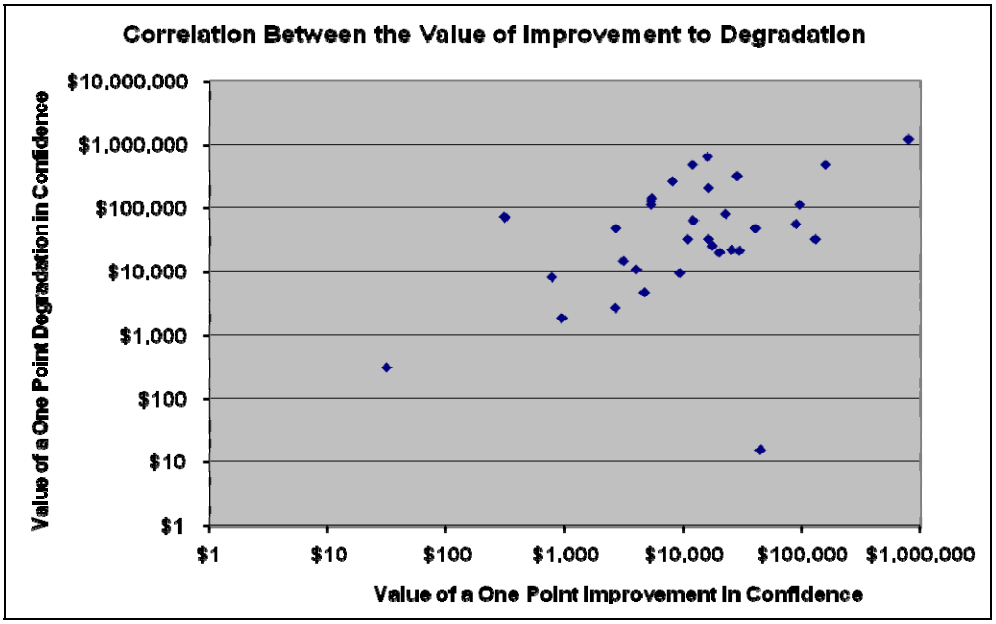

FIGURE 7-1 Correlation between the Value of a Single-point Increase and a Single-point Decrease in Confidence

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2 Two participants were unable place a value on their confidence in government and law enforcement to prevent terrorist attacks.

3 This process evolved over the course of the study. We began by only eliciting a value for degradation. There were some respondents whose baselines did not leave any room to move downward to avoid the endpoint of "no confidence at all." In these cases, the same process was utilized to find a value when the respondent would take a payment rather than an increase in confidence. Upon review of the data, there was evidence that a discrepancy existed between the value of an increase and a degradation. This result prompted the addition of eliciting responses in both directions.

The full data set, 77 data points, is used to define the value of incremental changes in confidence. When respondents were asked to quantify the value of a permanent incremental change in confidence to be based on a time-defined portion of their salary, responses ranged from 2 hours to 25 years (52,000 hours) of salary for an increase and from 1 hour to 100 years (208,000 hours) for a decrease. Because of the small sample size and wide variation of responses, the median value is believed to represent a more accurate measure of central tendency than the mean. The median responses were 780 and 2,631 hours, respectively. Based on 2005 median income data from the U.S. Census Bureau, the median hourly wage for an American worker is $15.45. Thus, the per-capita estimated value of a single-point increase in confidence is $12,050, and it is $40,650 for a single-point decrease. Integrating these values over a U.S. adult population of 218 million results in an aggregate value of $2.6 trillion for a one-point improvement and $8.9 trillion for a one-point degradation in the U.S. adult population's median confidence level. On this basis, public confidence lost as a result of a terrorist attack is indeed an important attribute. A one-point loss in the median level of confidence among the U.S. adult population would be equivalent to 64% of the annual gross domestic product (GDP) of the United States.

Data from the set of 35 respondents who were asked to value both an increase and a decrease in their confidence was used to calculate the ratio between an increase and a decrease. The median value of the individual respondent's ratio is used to determine this metric. By this method, the ratio for the value of a decrease in confidence to an increase in confidence is 3:1. This ratio corresponds closely to the ratio of the median decrease value to median increase value derived from the full data set, which is 3.4 to 1.

Figure 7-2 illustrates the value of the change in confidence by attack scenario. The value of loss in confidence is the difference between the post-attack level of confidence tomorrow and the baseline level of confidence, or the initial loss in confidence, multiplied by the value of a single-point loss in confidence, which is $40,650. The initial loss in confidence is viewed as a permanent change to the confidence trajectory, in effect establishing a new baseline after an attack. The value of a gain in confidence is the difference between post-attack confidence at ten years and post-attack confidence tomorrow multiplied by the value of an incremental increase in confidence. The sum of these values is the net value of changes in confidence.

Because the initial loss of confidence is generally not regained and the value of a loss is three times greater than an equivalent gain, any terrorist attack that negatively affects public confidence would result in a permanent loss of value to the U.S. adult population. Figure 7-3 shows the value of lost confidence following each scenario type. For the attack scenarios used in this study, that net loss in value ranges from $2.4 trillion (17% of GDP) for a single refinery bombing to $4.4 trillion (32% of GDP) for a series of suicide bombings. These values are plotted against the 2006 estimate of the United States' GDP, as reported in Table 1.1.5 of the Bureau of Economic Analysis quarterly GDP report (BEA, 2008).

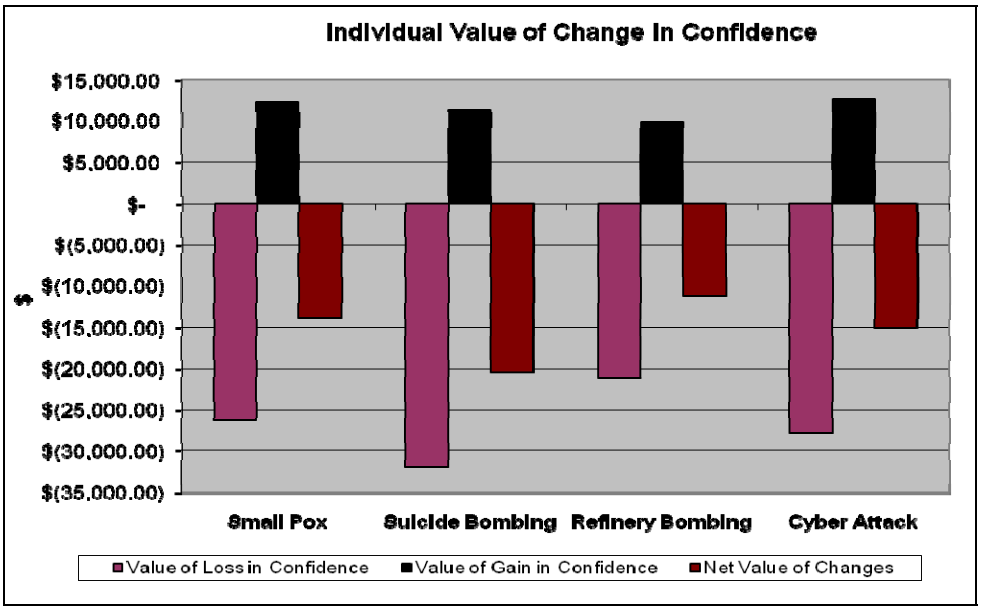

FIGURE 7-2 Net Value of Changes in Confidence (Pink bars represent the initial loss in value resulting from reduced confidence following an attack. Black bars represent the value of the change in confidence between tomorrow and ten years from now. Red bars show the sum of these two, or the net value of the confidence change.)

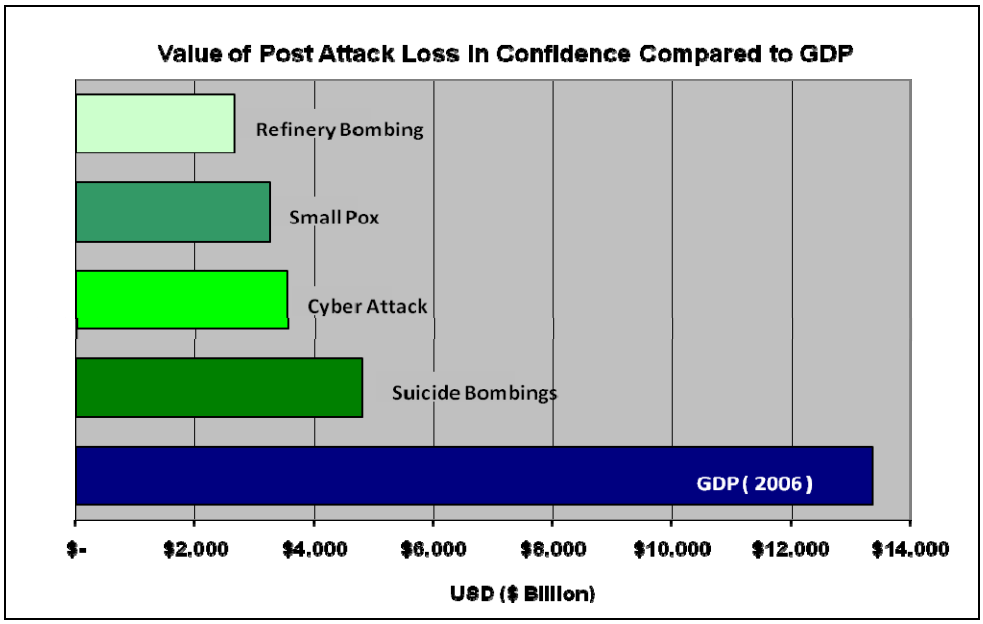

FIGURE 7-3 Population-wide Net Value of Loss in Confidence, with GDP Comparison (BEA, 2008)

8 CONCLUSIONS AND OBSERVATIONS

Our research strongly suggests that there are several dynamics affecting public confidence in the ability of government and law enforcement agencies to prevent acts of terrorism. On the basis of our sample, the public is somewhat confident, based on the definitions in the Likert scale provided, that government and law enforcement agencies will succeed in preventing terrorist attacks on the United States and, on average, that confidence would stabilize or increase slightly over time if no terrorist events occur.

However, were there to be an attack, the magnitude and duration of the resulting degradation in public confidence would be impacted by how that specific attack is carried out. Of the scenarios included in this study, the greatest immediate and long-term degradation in the public's confidence in government and law enforcement agencies to prevent such acts would result from a series of suicide bombings. The degradation caused by the other types of attacks tested in this study would be somewhat shorter in duration and lesser in magnitude over the long term.

Aggregate results suppress variations in the public's long-term confidence in the ability to prevent terrorist attacks. We defined nine possible confidence profiles and, from those, identified three distinctly different confidence groups that we characterized as optimists, pessimists, and unaffected individuals on the basis of the groups' current confidence levels and their trajectories of confidence into the future. Of the three groups emerging from this study, optimists have confidence that the government and law enforcement will, over time, gain skill and proficiency at preventing terrorist attacks. The unaffected remain very close to their moderate baseline confidence level throughout the ten-year horizon. Pessimists trend to the negative with less confidence over time. In this survey sample, 41% of respondents were classified as optimists, 37% as the unaffected, and 22% as pessimists.

The impact of terrorist events differs in severity across confidence profiles. Optimists and the unaffected lose more confidence in the period immediately following an event than do pessimists. Over a time horizon of ten years following an event, pessimists and the unaffected regain more of their confidence than do optimists. Examination of the loss and recovery trajectories supports the theory that confidence recovery has an incubation period after a terrorist event during which confidence remains low. Our data suggest that it takes between one and five years for confidence to reach a new equilibrium level without intervention or additional terrorist events. This recovery may be affected by intervention strategies designed to restore confidence, but the study did not attempt to examine the effect of such interventions.

Furthermore, the patterns of confidence are different for optimists, pessimists, and the unaffected. While optimists recover their confidence to nearly the initial level they possessed before an incident occurred, the pessimists never do. This finding can affect the choice of strategy pursued to restore public confidence. If public confidence is likely to recover on its own, less intervention is warranted; whereas greater strategic investment is needed if it does not. Similarly, if the baseline confidence level is below the desired level, policymakers might want to consider interventions that would raise it. It is also possible that a sufficiently high baseline

confidence level may inhibit the effectiveness of preparations to prevent future incidents. In such a case, it may be wise to invest resources to increase public awareness of potential threats. Further research is warranted to better understand the dynamics of public confidence, the dynamics and relationship between confidence and trust, and to establish their monetary value relative to other impacts of terrorist acts.

There are also psychological components to confidence that warrant further study. It is not yet clear how feelings of fear, anger, anxiety, and vulnerability influence public confidence. Nor is it clear how the ability to cope with these feelings is tied to the recovery of confidence following an attack. These measures do, however, lend insight into which types of attacks are of greatest concern to the public.

Defending U.S. territory and infrastructures against attack is the physical act of defending against an assault on the confidence of the American public. This research suggests that the confidence of the American people is an asset, in much the same way that territory and property are assets. Furthermore, the defense of this asset is reported by respondents as being of greater value at its current levels than if it were degraded by an attack and subsequently restored. The effect of this relationship, in which a gain in confidence is not valued as much as a loss in confidence, suggests that the net decrease of value resulting from lost confidence would be permanent. With an overall estimated impact valued in the trillions of dollars, it is apparent that maintaining public confidence in government and law enforcement has broad and important policy implications, and its importance in the eyes of the American public is on par with large impacts to the economy and human fatalities.

9 FUTURE RESEARCH DIRECTIONS

This research provides a foundation for further exploration and analysis of "public confidence" as it impacts infrastructure disruption consequences, protection policy, and emergency planning and preparedness. Although only an initial exploratory investigation into this important subject using a small sample size, this seminal study elucidates several important features, or properties, of the dynamics of the public's confidence in government and law enforcement agencies to prevent terrorist attacks, both as a baseline and in simulated post-event periods.

Our findings demonstrate that:

a) The subjects can be classified into at least three distinct groups on the basis of their baseline outlook – optimists, pessimists, and the unaffected;

b) The subjects are discriminating in interpreting the nature of a terrorist attack, the time horizon, and its impact;

c) Confidence recovery after a terrorist event has an incubation period and typically does not return to its initial level over the long term;

d) The patterns of recovery of confidence of the optimists and the pessimists are different; and

e) Individuals are able to associate a monetary value with a loss or gain in confidence, and the value associated with a loss is greater than the value associated with a gain.

These findings illustrate the importance the public places in its confidence in government and law enforcement. They also indicate that the level of importance is of a magnitude on the order of other consequences of major terrorist events, such as loss of human life and impacts to our economy.

Because of project resource constraints, the small sample size available for this study allowed for defining only three characteristic groups from the sample — optimists, pessimists, and the unaffected. When plotting the average baseline confidence level for each of the seven of nine populated cells shown in Table 5-1, the current confidence levels and future trajectories shown in Figure 9-1 result. This suggests that, with a larger sample, perhaps seven distinct groups, or possibly even nine groups (two of the nine cells are not populated), might better characterize the baseline confidence topology. However, several of these cells have too few members to disaggregate our current sample to this level.

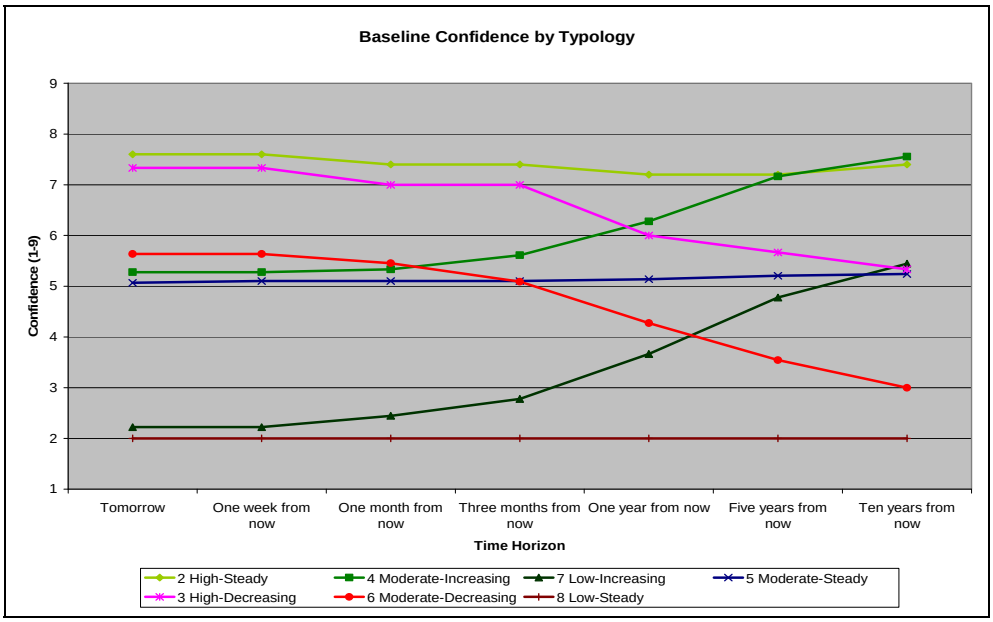

FIGURE 9-1 Average Baseline by Confidence Type

The study results and the study team's observations drawn from the data and during the confidence and value elicitation process suggest the following topics for future research:

- ***Expand the sample:*** This exploratory study strongly suggests the existence of between three and seven (possibly as many as nine) different confidence profiles ranging from optimistic to pessimistic. However, the social and economic characteristics of these groups remain unknown. A large-scale survey using a questionnaire derived from the baseline questionnaire used in this study would yield greater insight into the dynamics of public confidence. This survey should include additional questions to further characterize respondents' demographic, economic, and social characteristics, as well as broaden the geographic diversity to include greater penetration into urban and rural populations.

- ***Develop a theory of public confidence:*** The data in Figure 9-1 suggests that the average baseline confidence level in four of the seven populated cells shown in Tabl3 5-1 change enough over time and that their level of confidence, as defined by the segmentation of the Likert scale, is significantly higher or lower at the end of the time horizon than it was at the start. This change in status is important. Members transition from, for example, a level of confidence approaching "no confidence" to being "moderately confident." Fifty-one (51) of 79 respondents (65%) display this type of pattern that includes large changes in confidence over the time horizon. Further research should be conducted to understand whether this changing level of baseline confidence represents an ingrained trait of respondents' future outlook, or

whether it is a protean characteristic that could be influenced through effective preparedness and response policies.

- ***Establish a baseline time series:*** There is currently no regular collection of data with regard to the public's confidence in government and law enforcement agencies to prevent terrorist attacks. Without a robust data set that includes regular fluctuations over time, it is difficult to establish at what point a change in confidence is significant. A program to establish a long-term baseline measure of confidence in government and law enforcement agencies to prevent terrorist attacks would be beneficial to understanding the magnitude of changes resulting from terrorist attacks.

- ***Explore the underlying rationale of profile types:*** The elicitation protocol should be modified to include more post-scenario interview time. This step is important to clarify several research goals, which include (a) gaining a clearer understanding of the logic, leverage points, and feedback mechanisms that manage public confidence; (b) understanding what attributes of the scenarios control the direction and magnitude of post-event changes in confidence; and (c) determining whether there is an explanation for the "three month elbow" and gaining a deeper understanding of whether this time horizon could play an important role in determining the timing of public confidence management measures.

- ***Understand the dynamics of public confidence:*** What are the specific mechanisms of public confidence? Can equilibrium theory be applied to public confidence? This hypothesis centers on understanding confidence as being the product of oppositional forces driving confidence up and down. Knowledge of this system and the mechanisms behind the positive and negative forces acting on public confidence would contribute to enablng leaders to develop a more comprehensive public information strategy that reinforces positive forces and inhibits the negative.

- ***Develop an inoculation strategy:*** There is a small subset of the sample whose confidence level increased after watching the video scenarios. One reason for the increase could be that their level of confidence was very low to begin with and so the only possible movement was upward. Another reason, however, could be that the videos, as produced, educated them more than they elicited the types of emotional responses that are characteristic from real events. This result might possibly have resulted from the research design, which called for broadcasts "in the style of the British Broadcast Corporation," but could also be a fundamentally important variable in understanding public confidence formation in the aftermath of an event. Where respondents receive their news information — whether via print, television, radio, the Internet, etc. — and the stylistic and content trends of that medium should be studied in greater detail. Doing so would bring benefit by helping to ensure that messages are crafted to be effective based on the medium and audience.

- ***Explore the role of public confidence in specific infrastructures:*** The banking and finance and public health Sector Annual Reports (SARs) list among their highest priorities the maintenance of public confidence. In light of the value placed on confidence in government and law enforcement agencies to prevent terrorist attacks, confidence in nationally regulated (and funded) institutions would likely also have great value to the public. Understanding the long-term trends in confidence and the impact of shocks to these systems would assist the government in tailoring policies that would reduce the likelihood of panics in the case of an event.

10 REFERENCES

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APPENDIX A FOCUS GROUP QUESTIONNAIRE

Focus Group Questionnaire

The following questions will be asked of individual participants before (Pre) and after (Post) mock television broadcast coverage of terrorist attack scenarios are shown to the focus groups.

Four scenarios will be presented to the groups:

- Smallpox Attack
- Suicide Bomber Attacks
- Refinery Explosion Attack
- Cyber Attack on Financial Institutions with Identity Theft

The questions are identical for all four scenarios, except that the specific type of attack is substituted in the questions.

 ID: _____

Demographic Profile

Please provide the following demographic information. Your anonymity will be preserved throughout this study. The information you provide will be used for statistical analysis purposes only and it will not be associated with your name or the consent form that you signed.

Age: _____

Gender: ☐ Male ☐ Female

Education:
- ☐ High School
- ☐ Some College
- ☐ Undergraduate Degree
- ☐ Graduate Degree (Masters, PhD, or equivalent)
- ☐ Other _____

Occupation: _____
(If retired, state Retired and specify former occupation)

Baseline

Many Americans, like you, may be concerned about their nuclear family's present and future safety from a terrorist attack. Please indicate the personal feelings you have about the topics addressed in the following questions by circling the appropriate number.

		1 – No confidence at all		3 – Not much confidence		5 – Some confidence		7 – A great deal of confidence		9 – Full confidence
Thinking about terrorist attacks in general, how much confidence do you have in the federal, state, and local governments and law enforcement agencies together to <u>prevent</u> terrorist attacks from happening …										
01	tomorrow?	1	2	3	4	5	6	7	8	9
02	one week from now?	1	2	3	4	5	6	7	8	9
03	one month from now?	1	2	3	4	5	6	7	8	9
04	three months from now?	1	2	3	4	5	6	7	8	9
05	one year from now?	1	2	3	4	5	6	7	8	9
06	five years from now?	1	2	3	4	5	6	7	8	9
07	ten years from now?	1	2	3	4	5	6	7	8	9

		1 – Very Low		3 – Low		5 – Moderate		7 – High		9 – Very High
What are your feelings about terrorist attacks?										
08	How much do you fear such an attack?	1	2	3	4	5	6	7	8	9
09	How angry are you about such an attack?	1	2	3	4	5	6	7	8	9
10	How anxious are you about such an attack?	1	2	3	4	5	6	7	8	9
11	How vulnerable do you feel to such an attack?	1	2	3	4	5	6	7	8	9

		1 – No confidence at all		3 – Not much confidence		5 – Some confidence		7 – A great deal of confidence		9 – Full confidence
How much confidence do you have in your ability to <u>cope</u> with your feelings about a terrorist attack?										
12	Your feelings of fear?	1	2	3	4	5	6	7	8	9
13	Your feelings of anger?	1	2	3	4	5	6	7	8	9
14	Your feelings of anxiety?	1	2	3	4	5	6	7	8	9
15	Your sense of vulnerability?	1	2	3	4	5	6	7	8	9

Refinery Bombing Incident

You have watched a report of a terrorist attack on an oil refinery in the United States. Although you may not have been affected by such an attack either immediately or directly, you may be concerned about your nuclear family's present and future safety. Please indicate the personal feelings you would expect to have if an event like the one you watched were to occur. Please circle the appropriate number.

		1 – No confidence at all		3 – Not much confidence		5 – Some confidence		7 – A great deal of confidence		9 – Full confidence
How much confidence do you have in the federal, state, and local governments and law enforcement agencies together to <u>prevent a refinery bombing</u> terrorist attack from happening …										
01	tomorrow?	1	2	3	4	5	6	7	8	9
02	one week from now?	1	2	3	4	5	6	7	8	9
03	one month from now?	1	2	3	4	5	6	7	8	9
04	three months from now?	1	2	3	4	5	6	7	8	9
05	one year from now?	1	2	3	4	5	6	7	8	9
06	five years from now?	1	2	3	4	5	6	7	8	9
07	ten years from now?	1	2	3	4	5	6	7	8	9
How much confidence do you have in the federal, state, and local governments and law enforcement agencies together to <u>prevent other</u> terrorist attacks from happening …										
08	tomorrow?	1	2	3	4	5	6	7	8	9
09	one week from now?	1	2	3	4	5	6	7	8	9
10	one month from now?	1	2	3	4	5	6	7	8	9
11	three months from now?	1	2	3	4	5	6	7	8	9
12	one year from now?	1	2	3	4	5	6	7	8	9
13	five years from now?	1	2	3	4	5	6	7	8	9
14	ten years from now?	1	2	3	4	5	6	7	8	9
		1 – Very Low		**3 – Low**		**5 – Moderate**		**7 – High**		**9 – Very High**
What are your feelings about a <u>refinery bombing</u> terrorist attack?										
15	How much do you fear such an attack?	1	2	3	4	5	6	7	8	9
16	How angry are you about such an attack?	1	2	3	4	5	6	7	8	9
17	How anxious are you about such an attack?	1	2	3	4	5	6	7	8	9
18	How vulnerable do you feel to such an attack?	1	2	3	4	5	6	7	8	9

		1 – No confi-dence at all		3 – Not much confidence		5 – Some confidence		7 – A great deal of confidence		9 – Full confidence
How much confidence do you have in your ability to <u>cope</u> with your feelings about a <u>refinery bombing</u> terrorist attack?										
19	Your feelings of fear?	1	2	3	4	5	6	7	8	9
20	Your feelings of anger?	1	2	3	4	5	6	7	8	9
21	Your feelings of anxiety?	1	2	3	4	5	6	7	8	9
22	Your sense of vulnerability?	1	2	3	4	5	6	7	8	9

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