

Research Project Summaries

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Analyzing Projected Behavioral and Emotional Responses to Terrorism Threat

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Analyzing Projected Behavioral and Emotional Responses to Terrorism Threat
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1. Executive Summary

During the second year of this project, we have continued to collect data in which we examine responses to terrorism threat. Our basic technique is to present hypothetical scenarios in which terrorists do their evil deeds. Because the main objective of terrorists is to instill fear, we ask people to imagine how they would feel if these attacks occurred, as well as how their plans would be affected. We elicit numerical ratings of the strength of the feelings generated by the scenarios. We also ask respondents how future action would be affected.

The substantive goal has been to examine factors anticipated to affect fear regarding terrorism threats. We inquire about several feelings, including fear, worry, and sense of riskiness. The respondent conveys the intensity of the feeling numerically. When we ask about projected actions, the natural way to respond is with words. The methodological goal has been to develop a parallel analysis for verbal responses. We have developed a new method (Nanova) for statistically analyzing the impact of experimentally manipulated factors when responses are nominal rather than numerical. The method has been described and illustrated with our scenario responses in two recently published papers.

Examining both emotion and projected action is an important feature of our research. A working hypothesis is that actions taken in response to terrorism threats are constrained by pragmatic limitations. There is only so much one can do. Accordingly, factors that generate varied emotional responses may not generate variation in actions. The psychological importance of such a result is that putting people in a situation where they cannot find an appropriate response to a threat is a recipe for generating the classic phenomenon of learned helplessness. This may provide an explanation for observed apathetic public responses to warnings.

We attempt to influence the feelings and projected actions by manipulating governmental responses and public reaction within the scenarios. Governmental agencies inevitably address terrorist actions, and it is of practical interest to determine whether people feel or behave differently depending on what the government says or does. People also use social cues to guide their actions, so perceptions of how other folks are handling the threat may influence one's

response as well. Of particular concern is the way in which these factors might combine. This question is addressed using functional measurement methodology, which can determine whether the combination rule is additive or multiplicative. Additive combination, the simplest hypothesis, means the factors operate independently, which has the practical implication that the factors can be applied straightforwardly. Multiplicative combination, on the other hand, is a kind of interaction. Interaction is a more complex pattern that means one must check on possible amplification or cancellation effects when factors are applied in concert.

We have used a MANPAD attack as the core of the two major studies we carried out during the past year. A MANPAD is a shoulder-fired missile capable of downing a commercial plane. Its portability would make it an attractive weapon for a small group. In the first study, we described a plot to cripple the airline industry by distributing MANPADs to terrorist cells around the country. Neither fear nor projected actions were systematically affected by the manipulations we built into the scenarios. The plot elicited only moderate fear, and most of the scheduled flights were going to be taken as planned.

In our second study, we attempted to escalate the fear by including reports that airplanes had actually been attacked by MANPADs. Furthermore, the scenarios contained additional attacks continuing over a three-week period. As the attacks unfolded, we asked the respondent to report feelings and projected actions after each successive wave. This set of manipulations was more powerful, in that high degrees of fear were reported and flights were canceled.

2. Research Accomplishments

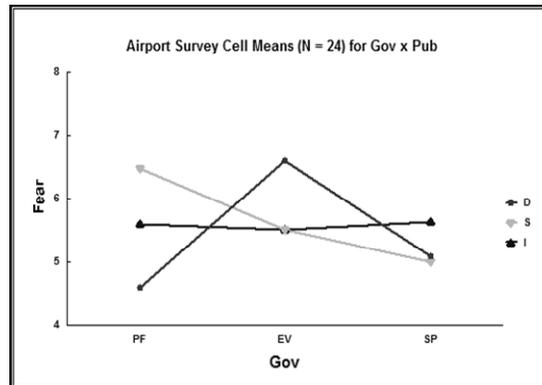
We carried out data collection using a private web site, using undergraduates from USC and Cal State LA as the participant population. We used the Qualtrix system to present the instrument and gather responses. The scenarios were described as simulated news reports. Each of the manipulated factors, government response and public reaction, had three levels. Each respondent received only one of the nine combinations, as we were concerned about possible contrast effects if a respondent were to see more than one. Also, our view is that seeing only one combination is more realistic.

2.1. Study featuring Plot to distribute MANPADs

The common element in all scenarios is that an intercepted email indicates a plot in the advanced stages of planning. The government response was an announcement that (1) the plot has been foiled; (2) we are still evaluating; (3) there is a serious problem. We expected fear to increase as the level increased. The public reaction, made plausible by a air industry price decrease, was (1) flying rates increased; (2) flying rates remained steady; (3) flying rates decreased. For this factor, we expected fear to decrease across successive levels. Twenty-four respondents were in each of the nine design cells, thereby generating a total $N = 216$.

Emotional responses

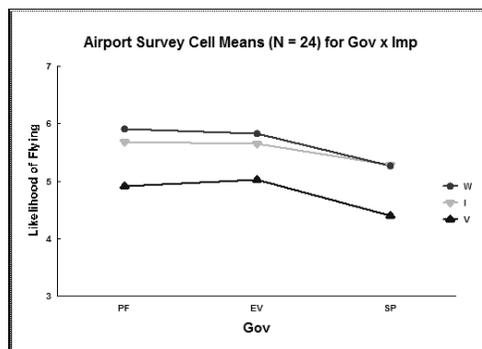
Responses were made on a 10-point scale where 10 represents the highest degree of fear. The means shown below evince only moderate fear (“How fearful would you be after learning of this terrorist plot?”), and our manipulated variables did not influence the behavior in the expected way. Analysis of variance results confirmed the graphic results, in that only the interaction proved significant. These results were not unique to the fear response; we asked similar questions about worry (“To what degree would you be worried after learning of this terrorist plot?”) and risk (“To what degree would you feel that you were at risk after learning of this terrorist plot?”), and obtained similar results.



Behavioral responses

We also incorporated a within-subject factor when we inquired about projected behavior. All respondents were asked to imagine 3 forthcoming trips in which they were scheduled to attend an event 1500 miles away within one month of the terrorist incident. We attempted to manipulate the importance of the trip. The three levels of importance were (1) best friend’s wedding (2) job interview with wonderful prospects (3) long-awaited vacation with friends and family. They were told they already had tickets (we did not mention whether the tickets were refundable) and asked what they would do about the trip. Although any response was possible because the option was presented as open-ended, the preponderant choice was to go on the trip as planned. That decision was not influenced distinctively by government response or public reaction, nor by the importance of the trip. No main effects emerged in the Nanova analysis, only interactions.

We backed up the nominal responses with an item calling for a numerical response, “How likely are you to fly on a major airline to the destination?”



With the more sensitive numerical response, the anticipated effect of trip importance did appear; people reported a lower likelihood of flying on the vacation trip. We view this difference in outcomes as occurring because the limited number of plausible behavioral options available compresses a range of likelihoods into one reported action (fly as planned). The projected behavior itself is insensitive to cognitive variation. From a practical perspective, then, namely whether people will actually fly, the nominal responses capture the more interesting outcome.

2.2. Study featuring Multiple MANPAD attacks

The moderate levels of fear expressed in response to the terrorist plot suggested that more gore was called for. Accordingly, in the next study, the scenarios described a series of three MANPAD

attacks in which airplanes were fired upon near LAX, with increasingly serious casualties resulting. The attacks were presented as news reports separated in time. After each reported attack, the respondent answered our questions about fear and future travel. They did not know another attack was coming. We were interested in the cumulative effect of an ongoing threat.

For this study, the government response was the announcement of a defensive action it had undertaken. The three levels were (1) improve airport perimeter security; (2) harden the fuselage of aircraft; (3) install laser jamming technology on planes to interfere with the MANPAD guidance system. The public reaction factor again consisted of changes in flying rates, with traffic either holding steady or decreasing by either 10% or 50%. As in the previous study, each respondent gets exposed to only one of the nine combinations. All of the respondents address the three attacks.

The full set of data for this study has not yet been analyzed. Preliminary indications suggest that, as the attacks continue, higher levels of fear were aroused than we saw in the previous study; but the government response is not having an effect. Public reaction is having an impact. By the time of the third attack, the projected actions express reluctance to fly as planned.

3. Applied Relevance

The MANPAD threat described in our scenarios is one that a person can avoid simply by not flying. Thus, unlike a biological or dirty bomb attack, one's degree of exposure to personal risk is under individual control. The economic consequence of widespread reluctance to fly would be devastating to airlines and to a host of associated industries. Accordingly, it is crucial to understand the connection between the emotional and behavioral responses to the threat. It is also important to understand how mitigation strategies or explanations that government agencies provide affect these responses. So far, we have not been able to find government responses that generate consistent effects.

In a more general sense, the research paradigm we employ here may be particularly valuable because it exemplifies how scenario studies can inform policy decisions. Our group is currently preparing a manuscript whose central theme is that factorial manipulations give the policy maker a chance to see if particular components or combinations of components have the desired effect. In contrast to asking experts or lay members of focus groups their opinions about a proposed policy change, the scenario study calls for respondents to imagine being in the new situation. To the extent that lay people can envision themselves in a hypothetical situation, this approach can predict the success of a modification in the physical, political, or economic environment.

Projected action may be quite inconsistent with general attitude. There are usually tradeoffs involved in deciding whether to take action. Manipulating the levels of the factors embedded in the scenarios allows the researcher to find the sweet spot, the optimal combination that yields the greatest likelihood of obtaining the desired response.

4. Collaborative Projects

Weiss has been active in presenting this research at conferences. Perhaps as a result, three international teams will be using translated versions of our questionnaires in studies in their countries. The first group to come on board is headed by Thomas Baumert of the Universidad Complutense de Madrid. They are using the MANPAD plot scenario. The Spanish team is



currently in the data collection phase. Spain has had a long history of terrorism. One of the research team’s hopes is to see whether respondents who have lost a family member to, or who have themselves been injured by, terrorism respond in a characteristic way that differs from other Spaniards.

More recently, two other groups have requested to collaborate. Tal Shavit, of the College of Management, and Mosi Rosenbloom, from the Ben-Gurion University of the Negev, are Israeli academics who have previously published work on emotional responses to war. They speculate that Israeli respondents, who have lived with war and terrorism for most of their lives, will not allow their planned actions to be affected. They are translating the MANPAD multiple attacks scenario into Hebrew. A team headed by Guilio Vidotto of the University of Padova is also currently translating the MANPAD multiple attacks scenario into Italian. Our ultimate ambition is to publish joint papers with our international collaborators in which we compare responses across countries.

5. Research Products

Research Products		#
5a	# of peer-reviewed journal reports published	1
5a	# of peer-reviewed journal reports accepted for publication	1
5a	# of non-peer reviewed publications and reports	
5a	# of scholarly journal citations of published reports	1
5b	# of scholarly presentations (conferences, workshops, seminars)	11
5b	# of outreach presentations (non-technical groups, general public)	
5c	# of products delivered to DHS, other Federal agencies, or State/Local	
5c	# of patents filed	
5c	# of patents issued	
5c	# of products in commercialization pipeline (products not yet to market)	
5c	# of products introduced to market	

5.1. Publications and Reports

CREATE PUBLICATIONS		Research Area	Referred	Not Referred	PDF Available for DHS
Weiss, David - California State University, Los Angeles					
1.	Weiss, D., “Nominal Analysis of Variance,” <i>Behavior Research Methods</i> , 41, 901-908, 2009	RA	x		x
2.	Weiss, D., “Using Nominal Data to Examine Information Integration,” in press, <i>Psicologica</i> , 2009	RA	x		x



5.2. Presentations – Conference

1. Baumert, T., Weiss, D., Buesa, M., Valino, A., John, R., Rosoff, H., Hovsepian, M., “Terrorists Scare Us, but Will They Interfere with our Plans?” paper presented at the *Bi-annual Conference on Subjective Probability, Utility, and Decision Making*, Rovereto, Italy, August 2009
2. Weiss, D., “The Use of Nominal Data in Functional Measurement,” paper presented at the *Functional Measurement Conference*, Brussels, Belgium, June 2009
3. John, R., Rosoff, H., “Fear and Loathing in Hollywood and Elsewhere: Studies in Perception of Risks from Terrorism (Asymmetric Threats),” paper presented at the *2nd Annual MIT Conference on Security and Human Behavior*, Cambridge, MA, June 2009
4. Weiss, D., “What’s in a Name? Variance!” paper presented at the *Edwards Bayesian Research Conference*, Fullerton, CA, January 2009
5. Weiss, D., “NANOVA - Nominal Analysis of Variance,” poster presented at the *Judgment/Decision Making Conference*, Chicago, IL, November 2008
6. Weiss, D., John, R., Rosoff, H., Hovsepian, M., “Emotional and Behavioral Responses to Terrorism Threats.” paper presented at *The International Meeting of the Brunswik Society*, Chicago, IL, November 2008
7. Weiss, D., “NANOVA: Nominal Analysis of Variance,” *Computing Symposium*, Chicago, IL, November 2008

5.3. Presentations – Outreach

1. Weiss, D., “How Does the Threat of Terrorism Affect Fear and Behavior?” presented at the University of Basel, Switzerland, August 2009
2. Weiss, D., “How Does the Threat of Terrorism Affect Fear and Behavior?” presented at a CREATE Brown Bag event, University of Southern California, Los Angeles, CA, July 2009
3. Weiss, D., “How Does the Threat of Terrorism Affect Fear and Behavior?” presented at the University of Stirling, Scotland, June 2009
4. Weiss, D., “How Does the Threat of Terrorism Affect Fear and Behavior?” presented at the Tokyo Institute of Technology, Japan, March 2009

6. Education Products

Our research team has benefitted from the contributions of USC graduate students, Heather Rosoff and Marcel Hovsepian. Ms. Rosoff received a doctorate in 2009 and is now continuing with the project while a post-doctoral scholar at USC. Mr. Hovsepian received a master’s degree in 2009 and is now working in the Los Angeles Mayor's Office of Homeland Security and Public Safety. We have also had contributions from a year-long intern (Whitney Axley, BA, Cal State Los Angeles) and summer intern (Anna Sheveland, MA, Univ. of Maryland)