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## The Effect of TERRORISM Risk Perception and Agency's Interaction on Police Homeland Security Preparedness

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### Abstract

Since 9/11, terrorism has been widely recognized as a significant political and social problem, with countries all over the world increasing their counterterrorism efforts. In the United States, the Department of Homeland Security (DHS) was created in 2002 to consolidate 22 federal agencies into one massive department focused on keeping the country safe, largely through antiterrorism and counterterrorism efforts. DHS also coordinates efforts on the state, county, and local levels to enhance police terrorism preparedness, since local law enforcement will likely be first responders in the event of a terrorist attack. In fact, in 2016, DHS allocated \$1.6 billion in grant funding to prepare state and local law enforcement to prevent and respond to such attacks as part of their "National Preparedness and Resilience" priorities.

Most of the local agencies in this initiative are smaller law enforcement agencies with 1-25 full-time employees. What is the level of terrorism preparedness of these small agencies and what factors influence that level of preparedness? Recent research has explored terrorism's etiology and law enforcement's preparedness on its risk. Some argue that police risk perceptions or police interactions with a larger agency influence the level of homeland security preparedness. However, there is a lack of empirical research on the determinants of police homeland security preparedness. The present study will empirically analyze the effect of police terrorism risk perceptions and police interactions on the level of police homeland security preparedness.

Contingency theory is used as an explanatory framework to understand risk perception, organizational behavior, and preparedness. To address gaps in the literature regarding homeland security policing, the present study simultaneously tests hypotheses derived from contingency theory, namely, whether police terrorism risk perceptions effectively influence the level of police homeland security preparedness and whether police agency's interactions with a larger agency effectively influence the level of police homeland security preparedness.

This study uses data from a national survey of 350 small municipal law enforcement agencies from March 2011 to June 2011 in the United States. A multinomial logistic regression analysis revealed that police terrorism risk perceptions and frequent interactions with a larger agency are positively associated with the level of homeland security preparedness in small law enforcement agencies in the United States. In other words, the primary findings from this study indicate that police agencies with higher levels of perceived terrorism risk and interactions with a larger agency are more likely to enhance their preparedness for future terrorism and cyber terrorism incidents. The contributions, limitations and suggestions for the future study were discussed in discussions and conclusion.

**[Keywords]** *Terrorism Risk Perception, Interaction, Contingency Theory Homeland Security Preparedness, Multinomial Logistic Regression*

## 1. Introduction

Following the tragic events of the 9/11 terrorist attacks, almost every country enforced their preparedness systems against terrorism.

In particular, the U.S. government created a new Cabinet-level department solely for this mission: the Department of Homeland Security (DHS), which merged 22 federal agencies into one large, salient agency with 240,000 employees. In fact, at \$36 billion, the budget of this agency is larger than some countries' whole economy[1]. Homeland security policing focuses on both anti-terrorism and counter-terrorism[2]. Oliver claimed that homeland security had become the new era of policing[2][3]. DHS has enormously invested in terrorism preparedness at the state and local levels, giving \$1.6 billion in grants to these lower levels of government in 2016 alone[4]. Therefore, local law enforcement agencies have also been given significant responsibilities and duties in maintaining homeland security against terrorism threats as first responders[5].

Recently, some scholars have begun to debate police homeland security preparedness for terrorism incidents. A review of relevant literature reveals there is a paucity of empirical research on the determinants of police homeland security preparedness, compared to typical types of policing research (e.g., traditional policing, community policing, and problem-oriented policing). The present study seeks to provide an accurate assessment of police homeland security preparedness among local police agencies. More specifically, the purpose of this study is to empirically examine the effect of terrorism risk perception and agency's interactions on police homeland security preparedness regarding terrorism and cyber terrorism. The article will draw upon the contingency theory used by Giblin, Burruss, and Schafer[6], and Haynes and Giblin[7], Roberts and Liedka[8] and Zhao, Ren, and Lovrich[9] to explain the relationships between risk perception and interaction and preparedness. Finally, we use a multinomial logistic regression method in this study to investigate the important questions posed in this study.

## **2. Research on Contingency Theory and Homeland Security Preparedness**

The author used contingency theory as an explanatory framework to understand risk perception, organizational behavior, and preparedness. The theory argues that when law enforcement agencies are "out of fit with their environment, they should change their structure to reshape, fit and appropriately regain performance"[7][10]. In a study of contingency theory, Zhao et al.[9] asserted that a good fit between an organization and its environment over time leads to high-level performance and efficiency, whereas "a poor fit leads to poor performance and inefficient operation"[9][11].

Research on police homeland security preparedness has relied primarily on two hypothesized determinants of differentiation derived from contingency theory, namely, police terrorism risk perceptions and the agency's interactions with larger agencies. Several relevant studies used risk perceptions and interactions as independent variables to predict homeland security preparedness[6][7][12][13]. For example, in their study of homeland security risk and preparedness in police agencies, Haynes and Giblin[7] empirically assessed the risk-preparedness relationship by examining the impact of risk perception. Their findings indicate that subjective risk perception was a significant predictor of preparedness. In their study reexamining small police agency's homeland security practices, Giblin et al[6]. examined whether inter-department interactions contributed to homeland security preparedness in local police agencies. They found that inter-department interactions are necessary to enforce homeland security preparedness. Randol[5][12] investigated the relationship between terrorism prevention activities and terrorism response preparedness. His findings revealed that the more agencies engaged in terrorism prevention activities, the more agencies invest in terrorism response preparedness. Thus, the findings of all these independently conducted studies suggest that risk perceptions and interactions are significant predictors regarding the degree of homeland security preparedness.

The previous empirical literature on police homeland security preparedness has only

partially considered a viable theoretical explanation for how much risk perception and interaction factors impact the level of preparedness. In a broad sense, the present study simultaneously tests hypotheses derived from contingency theory, namely, whether police terrorism risk perceptions effectively influence the level of police homeland security preparedness and whether police agency's interactions with a larger agency effectively influence the level of police homeland security preparedness.

### 3. Methodology

#### 3.1. Data

The data come from a national survey of small municipal police agencies from March 2011 to June 2011 in the United States, which mainly provides indicators of homeland security preparedness, perceived risk of terrorism, police homeland security activities and interactions, and environmental influences[14]. Small law enforcement agencies were defined as employing between 1 – 25 full-time officers and account for approximately 78% of all local agencies. With over 13,000 such agencies in the United States alone, a stratified random sampling technique was used to choose the participating agencies to ensure responses represented diverse cities by population sizes and areas (rural vs. urban) creating a sample size of 810 agencies. It was then discovered 24 of those randomly chosen were no longer in operation, leaving 786 small municipal agencies in the sample.

The chief executive of each agency (e.g., director, commissioner, officer in charge) was requested to participate in the self-report survey asking various questions about topics such as agency interactions, terrorism risk perception, and terrorism preparedness. After four attempts (three by mail and one by phone), 350 agencies, or 44.5% responded to the survey. Agency characteristics of respondents versus non-respondents were analyzed, however, no response bias was found. Furthermore, in 19.1% of responses, an employee other than the agency's chief execu-

tive filled out the survey, however, each respondent is believed to have sufficient knowledge about the agency's operations in order to accurately answer the survey.

#### 3.2. Measures

**Dependent variable.** Two dependent variable items – expertise level and preparation level – were respectively used to more specifically measure the level of homeland security preparedness. Both dependent variable items are coded (1 = inadequate, 2 = adequate, 3 = excellent). The first dependent variable, the expertise level, was measured by asking respondents, “How would you rate your own agency's expertise about responding to homeland security-related incidents?” The second dependent variable, the preparation level, was measured by asking respondents, “How would you rate your own agency's level of preparation for large-scale incidents?”

**Independent variables.** The researcher posits that the police-perceived terrorism risk and police interaction will differentiate the levels of police homeland security preparedness. Thus, the perceived terrorism risk and police interaction were measured as the independent variables. A series of factor analyses were employed to reduce the number of items to a risk perception factor and an interaction factor without significant losses[7][15][16].

Similar to Haynes and Gibling's research[7], in the present study, six terrorism-related homeland security incident items (likelihood of a chemical, biological, radiological, conventional explosive, cyber-terrorism, and military weapon) were selected. And these items were factor analyzed, producing a single perceived risk component (Cronbach's Alpha reliability test .895). Respondents were asked, “How would you rate the likelihood of the following types of terrorism-related homeland security incidents occurring within your jurisdiction in the next five years?” Also, ten items of the agency's interactions with a larger agency were factor analyzed, producing a single interaction component (Cronbach's Alpha reliability test .904). Respondents were asked: “How often are you in contact with members of this large agency for sharing crime-related

intelligence?”, “How often are you in contact with members of this large agency for sharing terrorism-related intelligence?”, “How often are you in contact with members of this large agency for participating in joint homeland security training exercises?”, “How often are you in contact with members of this large agency for discussing mutual aid agreements about homeland security matters?”, “How often are you in contact with members of this large agency for discussing equipment sharing related to homeland security prevention, preparedness, response, and recovery?”, “How often are you in contact with members of this large agency for applying for grant funding related to homeland security prevention, preparedness, response, and recovery?”,

“How often are you in contact with members of this large agency for training on issues unrelated to homeland security prevention, preparedness, response, and recovery?”, “How often are you in contact with members of this large agency for discussing crime control strategies?”, “How often are you in contact with members of this large agency for planning for the provision of security for a large event?”, “How often are you in contact with members of this large agency for exchanging information on successful programs or practices?” Descriptive statistics for variables used in the current study are provided in <Table 1>.

**Table 1.** Descriptive statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
Knowledge / Expertise level	347	1	3	2.05	.55
Preparation level	346	1	3	1.87	.55
Terrorism risk perception	344	-1.21	4.31	.00	1.00
Agency’s interaction	339	-.46	7.35	.00	1.00
Valid N (listwise)	328				

### 3.3. Analysis

Multinomial logistic regression is suitable for the analysis of categorical dependent variables. In the present study, the two dependent variables are coded as either 1 if inadequate, 2 if adequate, and 3 if excellent. Thus, this analysis employs multinomial logistic regression. Multinomial logistic regression equations were used to model the associations between covariates (independent variables) and the scale of each form of homeland security preparedness (dependent variable). The category, “inadequate” was the reference category in these analyses.

From the multinomial logistic regression model, <Tables 2 and 3> present parameter estimates for the relationships between risk perception, agency’s interaction, and level of police homeland security preparedness. <Table 2> demonstrates the odds that the level of expertise about responding to homeland security-related incidents being adequate is 70% higher for some police chiefs who are in the higher level of perceived terrorism risk when compared to the level of expertise being inadequate. The odds that the level of expertise being excellent is approximately 112% higher for some police chiefs who are in the higher level of perceived terrorism risk when compared to the level of expertise being inadequate.

Also, the odds that the level of expertise being adequate is 12.5 times greater for some

## 4. Results

police agencies that are frequently interacting with a larger agency, when compared to the level of expertise being inadequate. The odds that the level of expertise being excellent is approximately 13.4 times greater for

some police agencies that are frequently interacting with a larger agency when compared to the level of expertise being inadequate.

**Table 2.** MLR model 1 for risk perception/interaction and expertise level.

Variables	Adequate		Excellent	
	B	Exp(B)	B	Exp(B)
Terrorism risk perception	.517*	1.676	.756**	2.129
agency's interaction	2.605*	13.530	2.669*	14.426
constant	2.711		1.335	
-2 log likelihood		456.423		456.423

Note: Inadequate is the reference category. \*p<.05. \*\*p<.01. \*\*\*p<.001

<Table 3> illustrates that the level of preparation for large-scale incidents being adequate did not statistically have any significant result for some police chiefs who are in the higher level of perceived terrorism risk, when compared to the level of preparation being inadequate. The odds that the level of preparation for large-scale incidents being excellent is approximately 54% higher for some police chiefs who are in the higher level of perceived terrorism risk when compared to the level of preparation being inadequate.

Also, the odds that the level of preparation for large-scale incidents being adequate is 67% higher for some police agencies that are frequently interacting with a larger agency when compared to the level of preparation being inadequate. The odds that the level of preparation for large-scale incidents being excellent is 123% higher for some police agencies that are frequently interacting with a larger agency when compared to the level of preparation being inadequate.

**Table 3.** MLR model 2 for risk perception/interaction and preparation level.

Variables	Adequate		Excellent	
	B	Exp(B)	B	Exp(B)
Terrorism risk perception	.103	1.109	.430*	1.538
agency's interaction	.516*	1.675	.803**	2.231
constant	1.199		-.897	
-2 log likelihood		480.883		480.883

Note: Inadequate is the reference category. \*p<.05. \*\*p<.01. \*\*\*p<.001

## 5. Discussion and Conclusion

The present study used contingency theory to examine relationships between risk perception and interaction and terrorism prepar-

edness in a sample of 350 local police agencies. Our findings are similar to those of most previous studies that demonstrated a positive association between perceived terrorism risk and interaction and overall preparedness.

However, this study attempted to more specifically measure the level of homeland security preparedness along with three categorical references: inadequate, adequate, and excellent. Risk perception factor concerning conventional terrorism and cyber terrorism is a significant predictor, which could moderately enhance the level of homeland security preparedness. More importantly, interaction factors, such as sharing crime and terrorism-related intelligence, participating in homeland security training exercises, discussing equipment sharing, applying for grant funding related to homeland security, is a very significant predictor, which could reinforce the level of homeland security preparedness. In short, the primary findings from this study indicate that police agencies with higher levels of perceived terrorism risk and interactions with a larger agency are more likely to enhance their preparedness for future terrorism and cyber terrorism incidents.

While this research makes important contributions, a few limitations should be noted. Although the current study explored two major elements of counterterrorism preparedness, there are others it could not examine, including homeland security-related training and practices, equipment acquisition, proximity to the larger agencies, and mutual aid agreements with nonpolice agencies. In accordance with it, future research should examine the relationship between other elements of counterterrorism and homeland security preparedness.

In conclusion, the results of this national survey study provide an insightful lens to explain how organizational activities and environmental situations influence the degree of terrorism response preparedness.

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