Hostage Taking and Kidnapping in Terrorism: Predicting the Fate of a Hostage

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This article examines how open source data collected and organized in a relational database can be used to better understand the factors that contribute to the decision to kill or release a hostage in a terrorist kidnapping situation. This study is significant because of its quantitative approach since this area of study has suffered a shortage of quantitative data and corresponding analyses. Thus, most studies and articles on this topic have been descriptive and narrative. This study uses 765 cases of terrorist hostage taking and kidnapping data originally collected by the Institute for the Study of Violent Groups (ISVG). Binary logistic regression is used to predict the outcome of terrorist kidnapping situations using independent variables derived from prior studies in this area. Many of the findings in this study are contradictory to the prior literature, the views of experts in this substantive area, and the public opinion overall about terrorist hostage-taking and kidnappings.

Terrorist hostage taking and kidnapping has become an international concern in recent years. Since the mid 1990s, hostage taking and kidnapping have dramatically increased as a preferred tactic of political terrorists. According to police statistics, nearly 2,000 people worldwide have been taken hostage during the last 10 years. However, the actual number of cases could be several times higher. Hostage taking and kidnapping can occur anytime and anywhere. No community or country is immune to this growing phenomenon (Poland, 2005).

On one hand, the renewed popularity of hostage taking and kidnapping seems a byproduct of a series of important international developments in the war on terrorism. After September 11, 2001, the United States-led coalition forces conducted offensive military operations against Al Qaeda affiliated Islamic terrorists in various regions of the world, especially Iraq and Afghanistan. Responding to this massive military offense, Islamic terrorists adopted alternative ways to continue their fight and exact revenge based on the understanding that their conventional fighting capabilities are no match for the combined coalition forces. Hostage taking and kidnapping has well served terrorists as a supplement tactic to campaign against coalition forces. Hostage taking and kidnapping has become one of the most valued weapons in the modern terrorist arsenal (MacIntyre, 2006).

On the other hand, the monetary profit motive has become another driving force for the upward swing of kidnapping and hostage taking in recent years. After the Cold War, many Leftist groups lost their traditional financial support from the former Soviet Union. As a result of this loss of support, terrorists have been forced to find alternative financial sources (Curtis, 2002; Jurith, 2003; Billingslea, 2004). Drug trafficking was one option (Bibes, 2001; Curtis, 2002; Jurith, 2003), and hostage taking and kidnapping another (Poland, 2005; Memmott & Brook, 2006). After re-discovering this new income source, some terrorist groups have engaged in kidnapping and hostage taking to support their continuing terrorist activity (Musharbash, 2005; Yun, 2006), while others do so exclusively for the purpose of generating revenue (Auerbach, 1998; Murphy, 2004). As a result, by 2005 hostage taking/kidnapping has become an increasingly lucrative business for terrorist groups (Maceda, 2003; Murphy, 2004; Ramachandran, 2005).

Nevertheless, there has been little criminal justice research on this emerging concern. One reason for this lack of study can be explained by the shortage of a meaningful data on terrorist hostage taking and kidnapping. Difficulty of gathering data tends to discourage criminal justice researchers to study this topic. Also, this situation seems to force researchers to rely on descriptive and anecdotal study. Highly descriptive data collected in real time and stored in a relational database may be an important breakthrough in these types of analyses.

By utilizing data collected by the Institute for the Study of Violent Groups[1], this study attempts to predict the fate of hostage victims. When a hostage is taken by terrorists, the probability of hostage's safe return or execution is an important piece of information that the hostage negotiator wants to know to successfully resolve the incident. This study assumes that based on knowing some important predicting variables it is possible to anticipate that probability. Thus, this study examines predictive variables as well as the probability of a hostage's execution or return.

Literature Review

As previously mentioned, studies on the topic of terrorist hostage taking and kidnapping is mostly descriptive, anecdotal, and narrative. Of course, a rich and valuable body of knowledge has been discovered and accumulated from these studies, but this knowledge has seldom been empirically tested. These descriptive and narrative studies or suggestions may be broken down into several different areas, although they are not mutually exclusive. They include general threat assessment, study of hostage survival strategy, study of effective negotiation strategy, crisis management issues, developing prevention or security strategy, and various specific case studies.

General threat assessment studies examine the threat of terrorist hostage taking and kidnapping. This type of study may not necessarily address the specific area of terrorist hostage taking and kidnapping. These studies are, by nature, preliminary, descriptive, and broad. They tend to show prevalence of current and future security threats of terrorist hostage taking/kidnapping or provide an overview of the problem in order to illustrate the nature of the threat and its effect. Russell (1985) examined a general trend of hostage taking and kidnapping as a terrorist tactic, especially that of kidnapping a corporate executive or manager, by providing a statistical review of terrorist kidnappings in the 1970s and early 1980s.

Study of hostage survival strategy tends to provide guidance, which increases the chance of the hostages' survival. Mostly, the guidance includes what hostages should do and should not do to increase their chances of survival. A well known hostage negotiator, Bolz, Jr. (1987), wrote about various survival or coping strategies for hostages. Jenkins (1976), another prominent expert, also provides some tips for hostages in captivity, although his study is not limited to this topic only. Jenkins's study specifically focused on situations in which United States officials abroad or foreign officials in the United States might be held hostage by terrorists. Also, Reber, Singer, and Watson (1978) focused on effective coping strategies in terrorist kidnapping cases for key business executives. They argue that the awareness of the dynamics of the kidnapping process and quick adjustment to the hostages' new life as hostages is essential to their

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[1] The Institute for the Study of Violent Groups is a terrorism research center wholly funded by the Bureau of Justice Assistance, US Department of Justice, to explore the feasibility of using highly descriptive data collected on acts of terrorism to model the actions and activities of terrorist groups.

survival. Quarles (1988) also touched on a similar area of study. He argued that the kidnapping victim's own actions largely determine whether he or she will survive captivity, and that introjections (stress-formed association between hostage takers and hostages) could save the victims' life.

By evaluating an effective negotiation strategy, the investigator focuses on the hostage negotiator instead of the hostage. This type of study aims at developing effective negotiation strategies and providing guidance for future hostages' safe return. Voss (2004) suggested the Crisis Negotiation Unit (CNU) method of negotiation as a response to international kidnapping. The CNU combines crisis intervention, sound aggressive business negotiation, academic negotiation research, and hard earned experience into an aggressive effort against hostage takers. Davis's study (1993) sought to assist agencies in developing their anti-terrorist contingency planning. It suggested eleven different guidelines for negotiations. Nudell and Antokol (1990) exclusively focused their study on barricade hostage taking situations. They argue that an effective negotiator must structure the dialogue with the hostage taker to retain the maximum amount of control over the process. They also identified three tactics which have been successfully employed in past incidents. They are (a) keeping the hostage taker in a detailed coping mode, (b) ignoring deadlines by trying to talk through them, and (c) manipulating the environment of hostage takers. Strentz's (1991) study can be placed in this type of study. In his study, he identified 13 criteria which may indicate serious problems developing during a hostage situation. By doing so, he intended to measure the volatility of a situation for the sake of the negotiator.

Crisis management issues are another related area of hostage taking and kidnapping study. This issue focuses on the management level of crisis situations during a crisis including the negotiation team. The management issues can be applied to both government and private corporations. The issue here is how to coordinate and use these resources and tools to resolve crisis incidences at the command level. Clutterbuck (1985) addressed this issue by reviewing the complexities involved in managing a kidnapping episode. His suggestion was directed at the Corporate Security Director. The core of his advice was to establish a Crisis Management Committee (CMC) for the corporation headquarters and Local Negotiating Teams (LNT) for the corporation's distant branch as part of contingency planning. Also, Van Zandt (1993) addressed a similar issue. He suggested Crisis Management Team (CMT) in the corporation headquarter-level and the company's on-scene representative in the local level. McMains and Mullins (2001) talked about crisis management issues from the governmental side, especially that of the police commander. They argued that a separate and sequential use of negotiation and tactical assault is ineffective, and that the police commander should use the negotiation team, the tactical assault team, the intelligence unit, and other support and logistics units in a cooperative and concurrent fashion. Bloomfield (2001) examined basic principles which the government should follow in hostage crisis situations. Those principles are (a) no concessions with hostage takers, (b) the primacy of life, and (c) treating hostage takers as criminals. Also, he suggested guidelines for how the government should deal with a hostage victim's family and the media.

Developing prevention or security strategy considers pre-hostage taking/kidnapping periods. This type of study tends to suggest tips or guidance to avoid or prevent a possible tragedy. Guidance may be directed to a specific individual working in a risky area or a governmental or non-governmental organization in general. Cole (1980) proposed several anti-hostage taking and kidnapping prevention strategies for business executives stationed in at-risk regions. Ronso, Jr. (1986) suggested the Terrorist Target

Assessment Package (TTAP) as an effective risk reduction and prevention strategy. According to him, this program is a simultaneous evaluation of the personnel who are vulnerable and how to enhance their protection in a systematic fashion. Wurth (1985) discussed the issue of private bodyguards. He discussed the private sector bodyguard's proper function and how it can be properly used. Healy (1985), on the other hand, turned his attention to the facility, instead of the person. His study addressed the issue of the requirements of security at the potential target's office.

Various specific case studies are also a part of hostage taking and kidnapping studies. This category tends to look at specific cases of hostage taking and kidnapping by incidence. This has particular merit because it gives a qualitative understanding of the dynamics of hostage taking/kidnapping. Aston (1982) studied the siege at the 1972 Munich Olympics. His study followed the timeline of the entire incident. Taillon (2002) studied three hijacking cases, two successful resolutions (Entebbe and Mogadishu) and one tragic failure (Malta). By comparing those three, he tried to uncover general principles for successful crisis resolution in similar cases. Aside from this, Nedkov and Wilson (2003) studied the 2002 Moscow theater hostage taking case. Dunlop (2005) studied a more recent tragic case the Beslan incident. By closely examining this single case, he intended to provide policy makers, researchers, and journalists with a detailed account of what actually happened in Beslan, which was independent of the Russian government's official version.

There are other addressed issues not falling under these sub-categories of terrorist hostage taking/kidnapping studies. These studies touch various areas and topics which are directly or indirectly linked to terrorist hostage taking and kidnapping. For example, McKenzie (1984) studied necessary conditions for the Stockholm syndrome to develop. He identified six conditions by examining four hostage incidents qualitatively. Onder (1999) examined media and law enforcement relations during terrorist hostage taking incidences. He argued that creating an effective liaison between the media and police officers, especially before any real incident, is key to resolving an incident successfully. Hermann and Hermann (1998) turned their focus on the United States President, the ultimate authority of crisis management. They explored the stressful impact of hostage taking situations on presidents, the constraining effects that this stress can have on decision-making, and some ways to help limit the impact of stress in the future.

Of course, there are few empirical and analytic studies on terrorist hostage taking and kidnapping. Sandler and Scott (1987) tested the empirical feasibility of the rational choice model and bargaining theory to identify variables which significantly affect terrorist success in a hostage-taking incident. Recently, Dugan, LaFree, and Piquero (2005) empirically tested a rational choice model of airline hijackings. By examining 1,101 attempted aerial hijackings that occurred around the world from 1931 to 2003, they found that new hijacking attempts are less likely to be undertaken when the certainty of apprehension or severity of punishment increases, and they concluded that rational choice model indeed works. However, these empirical studies are still very rare.

Also, most recent terrorist hostage taking and kidnapping incidents in the past five years are yet empirically analyzed in significant ways. In other words, the recent picture of hostage taking and kidnapping development has not been addressed in the empirical criminal justice research. Since the September 11th attacks, terrorism has significantly transformed and evolved. Islamic extremism, a force multiplier, has been a primary impact on that evolution (White, 2003; Fuller, 2006; Stern, 2006). Accordingly, as with other areas

of terrorism, it is reasonable to expect a parallel evolution of terrorist hostage-taking and kidnapping. Nevertheless, previous studies failed to grasp the significant change because a majority of studies were conducted before September 11th. Of course, there are some studies done after September 11th. However, these studies used data of hostage taking and kidnapping before September 11th (Meyr, 2002; Giebels, Noelanders, & Vervaeke, 2005) or included only a portion of airline hijacking incidents after September 11th (Dugan et al., 2005). Thus, hostage taking and kidnapping issues after September 11th are still relevant and in need of meaningful empirical research.

Methods

The primary purpose of this study is to propose and test a workable statistical prediction model for the fate of hostage victim. Data used in this study are a portion of the database on terrorism incidents worldwide collected by the Institute for the Study of Violent Groups (ISVG). The data has been collected entirely from open sources, which are defined as information that is not deemed classified or restricted and are readily accessible without the need for a security clearance from a governmental organization. The data collected here come from thirteen specific categories of sources: books, broadcast transcripts, court documents, datasets, FBIS[2] (Foreign Broadcasting Information System), governmental reports, journals, magazines, mailing lists, NGO reports, newspapers, websites, and wire reports (*ISVG codebook*, 2005).

Initially, the data in this study included 765 cases of hostage taking and kidnapping, excluding airplane hijacking cases, from January 1, 1996 to December 31, 2006. From this initial dataset, the total number of cases for study was reduced to 411 cases after removing cases where the disposition of the hostage was unknown. The excluded cases were resolved by other means, such as hostage rescued by government, hostage accidentally killed during the rescue attempt, hostage making an escape, a hostage's natural death from disease, or unknown. This approach is consistent with the purpose of this study, which is to predict the fate of the victim by the hostage taker's decision in the negotiation process to either execute the hostage or release him/her.

Finally, 245 cases were selected for the analysis after removing cases that had missing values. It is an inherent limitation of open source research that differing amounts of information are available about each terrorist activity. Simply put, so long as the data is collected from open sources such as newspaper articles, magazines, or internet websites, there is often no way to improve on missing values. Imputation, which is sometimes used to overcome this limitation, is not possible for cases where the missing variable is the demand of the hostage taker.

This reduction in sample size did adversely affect the validity of the analyses in this study, largely because the original 765 cases are not a probability sample drawn from the total population of terrorist hostage-taking events. Comparative examination of descriptive statistics and correlations between independent variables suggested that the reduced sample size, 245 cases, is not significantly different from the original 765 cases or reduced 411 cases.

This study examines whether a hostage's fate, either execution or release, can be predicted by various independent variables. This research question is ideal for binary logistic regression. Binary logistic

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[2] As publicly accessible through World News Connection

regression is used to predict a group membership of the binary dependent variable. For the current study, the dependent variable is dichotomous, hostage executed or hostage safely released. Thus, logistic regression is an appropriate method (Mertler & Vannatta, 2005). Generally, logistic regression requires a substantial number of cases relative to the number of independent variables, particularly nonmetric variables. In principle, one independent variable to 20 cases is accepted as substantial. In the current study, 245 cases are used for 6 predicting variables. Thus, this analysis satisfies this assumption associated with logistic regression. Also, Piquero, MacDonald, Dobrin, Daigle, and Cullen (2005) pointed out that the bias decreases with sample size in logistic regression, and in standard situations it is negligible with 200 observations or more. Following this standard, the current 245 cases satisfy the requirement of logistic regression as well.

Dependent Variables

The dependent variable is the fate of the hostage victim. Two types of the fate of the hostage victim are logically drawn in this study. One is the safe return. In this case, the hostage survives and safely returns to his or her family and work. The hostage's life is preserved. By contrast, the other category is the death of the victim. In this case, the hostage victim is killed or executed by the terrorist hostage taker. The dependent variable, fate of hostage victim, is dichotomized to two categories. Zero is given to safely release cases and 1 is given to execution cases.

Independent Variables

For this study, six predicting variables are chosen due to their relative significance in the dynamic of terrorist hostage taking and kidnapping. These variables were identified as important factors by various experts' opinions or their previous studies. These variables include Islamic religion, hostage taker's demand, hostage's length of detention, geographical location, date of incident, and the presence (or absence) of a barricade situation. First, religion can be an important predicting factor for the outcome of a hostage taking and kidnapping incident. According to White (2003), religious influenced terrorists are more likely to kill their victims. In this context, when hostage takers are strongly influenced by religious fanaticism, they are more likely to execute their hostage than non-religious hostage takers. They may want to punish non-believers or traitors, or eliminate individuals seen as evil. In recent years, Islamic fundamentalist terrorists have seized on hostage-taking as a powerful tactic for advancing their ideology, as seen by the rash of kidnappings in Iraq, Afghanistan, Chechnya, and the Philippines. Thus, for this study, Islamic religion is selected for an independent variable to capture this recent important development. By doing so, this study attempts to determine whether hostage taking groups that claim fundamentalist Islam as an ideology are more likely to execute their hostages than hostage taking groups that claim other religions or no religious affiliation. Accordingly, this variable religion (Islam) will have two categories.

Second, the variable "demand" can be used to predict the fate of the hostage victim. The importance of this variable in hostage negotiation has been well recognized by many experts (Miller, 1980; Taylor Jr., 1989; Nudell & Antokol, 1990; McMains & Mullins, 2001). According to them, hostage takers' demands tend to provide rich information on hostage takers and help hostage negotiators to develop effective negotiation strategies. In this sense, the chance of hostage's survival increases. Also, the hostage

takers' demand may be a sign of their willingness to resolve incidents peacefully. Regardless, hostage takers with clearly stated demands seem to be more likely to allow a safe return of the hostage. This variable is categorized into three groups: ransom demand, non-ransom demand, and no demand. To distinguish ransom demand from non-ransom demand, ransom demand was defined as a demand of money or other financial instrument, whereas non-ransom demand was defined as any other demands made. In cases where both monetary and non-monetary demands were made, the demand was considered to be a ransom demand. For this variable, it is hypothesized that, when there is a demand, either ransom demand or non-ransom demand, a hostage is more likely to be safely released in comparison with a no-demand situation.

Third, the variable, the "length of detention," is selected for a predicting variable. The length of detention means how long a hostage had been under the custody a of hostage taker. According to experts (Miller, 1980; Taylor Jr., 1989; Nudell & Antokol, 1990; McMains & Mullins, 2001), this time factor is one of the most important predictors of a hostage's safe return. In general, longer detention times increase the chance of a hostage's safe return. There are several reasons behind this. As time lapses, the friendly relationship between a hostage taker and a hostage may be developed, and thus the hostage taker are reluctant to kill his hostage. Or, lapsed time may make a hostage taker tired, bored, or impatient, all of which lead him to give up. In any regard, as more time passes, the chance of a hostage's survival increases. Thus, it is hypothesized that, as length of detention increases, a hostage is more likely to be safely released. The length of detention is expressed as number of days. This is the only metric independent variable in this study.

Fourth, the variable, "geographic location," is selected for an independent variable. The geographical location (crime scene) has been long recognized as an important predictor of crime (Cohen & Felson, 1979; Canter, 2003). Especially, according to Canter (2003), the location, namely where crime had occurred, is the most objective and observable aspect of any crime. Following this argument, this study also recognizes the significance of the geographic location, where an incident had occurred. In this context, this study assumes the location may be significantly related to the chance of hostage's survival or execution. Here, different geographical locations were dichotomized into two categories. One is Iraq and the other is others. After the War in Iraq, Iraq has been the most internationally publicized hotspot of terrorist hostage taking and kidnapping. Also, many beheadings of hostages were broadcasted out of Iraq. The category "others" includes all other places where hostage taking and kidnapping occurred except Iraq. It is hypothesized that, when an incident occurred in Iraq, a hostage is more likely to be executed than when an incident occurred in other countries but Iraq.

Fifth, the variable, "date of incident," is selected for an independent variable. This variable is selected to compare the recent terrorist hostage taking and kidnapping incidents with the older cases. Although there are no distinct theories, research findings, or expert's advice on this variable, it seems important to include this variable into the predicting variables of the current study. By comparing recent cases with old cases, any historical development or tactical change may be identified in terrorist hostage taking and kidnapping. This variable was dichotomized into two categories, pre-9/11 and post-9/11. This is a valid criterion because it is a historically pivotal moment in the history of terrorism in general and also the nature of terrorism was reshaped after that tragic event. Thus, it seems meaningful to compare the incident

occurred after September 11 with those occurred before September 11th to examine any significant change of the terrorist hostage taker's tactical decision by uncovering any change of the chance of a hostage's execution (or survival). Here, it is hypothesized that there is a significant difference between incidents after 9/11 and those before 9/11 concerning either a hostage's execution or hostage's return.

Last, the variable,the presence (or absence) of barricade is selected for an independent variable. Experts (Miller, 1980; McMains & Mullins, 2001) recognized the significance of this variable in the dynamics of hostage taking and kidnapping. Incidents are called hostage taking when a barricade is present. Those with the absence of barricade are considered to be kidnappings. In hostage taking, crisis responder or hostage negotiator has a great advantage because a hostage taker is contained and thus he cannot go anywhere. In kidnapping case, a hostage taker has a great advantage, since his whereabouts is usually unknown and he enjoys a great freedom of movement. Thus, according to those experts (Miller, 1980; McMains & Mullins, 2001), the chance of hostage's safe return is usually higher in hostage taking cases than kidnapping cases. This variable is dichotomized, 1 = hostage taking and 0 = kidnapping, to empirically test this argument. It is hypothesized that, in kidnapping case, a hostage is more likely to be executed than one in a hostage taking case.

Analyses and Findings

The results of the binary logistic regression results indicated the overall logistic model of the current study was statistically significant in distinguishing "safely released" from "executed" (-2 Log Likelihood = 226.963; Model Chi-Square = 91.806, df = 7, p<.001). See Tables 1 and 2.

Table 1

Logistic Results of Model Summary

-2 Log likelihood	Cox & Snell R Square	Negelkerke R Square
226.963*	.313	.429

*Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 2

Logistic Results of Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Model	91.806	7	.000

Also, as shown in Table 1, Cox-Snell and Negelkerk R^2 statistics shows the overall model is relatively good. Based on the result, 43% of the variance in the fate of the hostage victim can be explained by the current six predictor logistic model. The Logistic Results of Classification Table also show the goodness of the current prediction model, with an overall hit-ratio of 84.9% correct. In other words, the current model correctly classified 84.9% of the cases as either safely released or executed. This result shows that the current model is good. See Table 3.

Table 3

Logistic Results of Classification Table

		Predicted			Percentage correct
		Fate of hostage			
Observed		Safely released	Executed by hostage takers		
Fate of hostage	Safely released	137	21		86.7%
	Executed by hostage takers	16	71		81.6%
Overall percentage					84.9%

Note. The cut value is .500

In summary, the Goodness-of-fit indicators for the model shows that the current model is appropriate for this analysis. This means that the addition of the six predictor variables significantly improved the predictive power of the model. Accordingly, by having information of certain predicting variables, we may predict whether a hostage victim can be executed or safely released.

Table 4 demonstrates that only one predicting variable, demand of hostage taker, is significantly related to the dependent variable. The variable, rdemand (1), represented the comparison between ransom demand cases and no-demand cases. The ransom demand cases where hostage takers made a distinct ransom demand were compared to no-demand cases where hostage takers made no distinct demand. No-demand cases were used as the basis of comparison. The statistical results show that this variable is statistically significantly related to the fate of victim ($p < 0.01$). Thus, the fate of the victim can be predicted by knowing whether hostage takers made a distinct ransom demand or not. Also, nrdemand (2) represents the comparison between non-ransom demand cases and no-demand cases. The non-ransom demand cases where hostage takers made a distinct non-ransom demand were compared to no-demand cases where hostage takers made no distinct demand. No-demand cases were also used as the basis of comparison. The statistical results show that this variable is also statistically significantly related to the fate of victim ($p < 0.01$). Thus, the fate of victim can be predicted by knowing whether hostage takers made a distinct non-ransom demand or not. In sum, when a hostage taker makes a distinct demand, either ransom or non-ransom, the chance of hostage's safe return increases. In other words, the statistical findings tell us that hostage takers making a distinct demand, either ransom or non-ransom, are more likely to safely release their hostage compared with hostage takers who make no distinct demand.

Table 4

Logistic Results of Variables in the Equation

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
religion (1)	-.575	.609	.889	1	.346	.563
demandht			33.074	2	.000	

rdemand (1)	-2.154	.496	18.884	1	.000	.116
nrdemand (2)	-1.956	.430	20.731	1	.000	.141
Lengthdt	-.004	.005	.666	1	.414	.996
Geolocirq (1)	-.111	.460	.059	1	.809	.895
dateinci (1)	.807	.599	1.813	1	.178	2.241
barricade (1)	.775	1.122	.477	1	.490	2.171
Constant	-.623	1.246	.250	1	.617	.536

Note. Variable(s) entered on step 1: religion (1), demandht, lengthdt, geolocirq (1), dateinci (1), barricade (1)

Yet, the odds ratio for this variable is fairly small (.116 for ransom demand and .141 for non-ransom demand). This indicates little change in the likelihood of a hostage victim's safe release (or execution). Thus, although this variable is statistically significantly related to the dependent variable, it is not a strong predictor of the fate of hostage. According to the statistical finding, hostage takers making a ransom demand are 0.116 times more likely to release their hostage, compared with hostage takers making no demand. Also, hostage takers making non-ransom demand are 0.141 times more likely to release their hostage, compared with hostage taker making no demand at all. This magnitude of effect on the dependent variable is fairly minor and trivial.

Except the variable demand, all other predicting variables did not have a statistically significant relation to the dependent variable, according to the result. Thus, for the variable "religion," Islamic hostage taking groups are no more likely to execute (or release) their hostages than other non-Islamic hostage taking groups. For the variable, "the length of detention," the chance of hostage's execution (or release) is about the same regardless of the hostage's length of days in custody. For the variable, "geographical location," the chance of hostage's execution (or release) is about the same whether he or she is taken hostage within Iraq or elsewhere. For the variable, "date of incident," the chance of the hostage's execution (or release) has not been significantly changed in time.

Thus, where the chance of hostage's execution is concerned, there is no distinctive difference between the incidents before September 11th and the recent cases after September 11th. Last, for the variable, "barricade," there is not a significant difference between hostage taking case and kidnapping cases regarding the chance of hostage's execution (or release). These findings do not support many of the assertions about hostage taking/kidnapping made in the prior literature or by other experts' suggestions and opinions. These findings are very interesting because they are contradictory to what is held to be commonsense and the established experts' suggestions and wisdom.

Discussion and Conclusion

The primary purpose of this study was to empirically predict the fate of a hostage in a terrorist hostage-taking or kidnapping situation. Using variables derived from previous studies and the general consensus of experts in this area, a sample of terrorist hostage-taking and kidnappings were drawn and modeled using binary logistic regression to predict the hostage's fate. The findings on the terrorists' demand variable were as expected. When there is a demand, ransom or non-ransom demand, the chance of the hostage's safe return increases. This suggests that hostage's life can reasonably be expected to be

spared so long as the hostage taker has something to gain from this hostage exchange. Yet, the findings on all other predicting variables were contradictory and unexpected.

For the variable that tested the impact of the terrorist group's stated religion, Islamic hostage takers were found to be no more likely to execute their hostages than non-Islamic hostage takers. A feasible explanation for this unexpected result seems that the effect of Islam may be exaggerated due to several highly televised hostage executions by Islamic terrorists in Iraq. These events may have created an image that Islamic hostage takers are more likely to kill their hostages, although, in fact, their killing tendencies are about the same as any other terrorist hostage takers. Accordingly, at least in the area of hostage taking and kidnapping, religion (especially Islam) effect, as a force multiplier, does not seem to exist.

For the variable, "length of detention," the findings are also at odds with the experts' suggestions (Miller, 1980; Taylor Jr., 1989; Nudell & Antokol, 1990; McMains & Mullins, 2001). For this sample of terrorist hostage-taking and kidnapping situations, there is no statistically significant relation between the length of detention and the fate of the hostage victim. This means that, although the length of detention increases, the chance of a hostage's safe return (or execution) is about the same. Although this contradiction may need to be explained, at this point, there seems no feasible explanation for this surprising result. Future research on this phenomenon is needed to identify a probable explanation for this result.

Also, for the variables, "geographical location" and "date of incident," the chance of hostage's execution (or safe release) is about the same across the different categories. This tells that hostages taken in Iraq are no more likely to be executed than those taken in any other places. Also, it suggests that hostages in the recent years are no more likely to be executed than those of the past. These findings, again, seem contradictory to the common perception that hostages in Iraq and hostages in the recent years are more likely killed by their hostage takers. This contradiction might be explained by the effect that media coverage on Iraq has had on perceptions of terrorist activities overall. Accordingly, the public's perception on the higher chance of hostage execution in Iraq or in the recent years might be the product of this unequal media effect rather than the actual difference of the chance of hostage's execution.

Finally, the findings on the variable, "barricade," were also unexpected. According to experts (Miller, 1980; McMains & Mullins, 2001), hostage taking cases have a higher chance of hostage's safe return comparing with kidnapping cases. Yet, the current findings show no statistically significant difference of the chance of hostages' return (or execution). This unexpected result might be due to the unequal sizes of two categories. Unlike other predicting variables in this study, this variable had the problem of unequal size of cases across two categories. The data used in this study includes a very small number of hostage taking cases (18 cases) comparing with a great number of kidnapping cases (227 cases). The comparison of these two categories with the fairly unequal size might cause this surprising result. Thus, further methodological articulation of this variable needs to be conducted.

In conclusion, this study shed new light on the phenomenon of terrorist hostage taking and kidnapping. Many of the common beliefs, expert assertions, and prior literature on terrorist hostage taking and kidnapping were not confirmed by the model proposed and tested in this study on a sample of these terrorist attacks from 1996 to 2005. There is strong evidence that the rise of terrorist activity in Iraq has strongly shaped public opinion and expert views on this phenomenon, and that these perspectives may not

be rooted in empirical facts. Without a doubt, further study of this phenomenon is required before any concrete understanding can be achieved.

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