

Methodological Issues in Studying Suicide Terrorism

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September 2008

To appear in: Political Psychology, Volume 30, issue 1, February 2009

Abstract

Research on suicide terrorism is often plagued by methodological problems such as selection bias and selection effects, use of anecdotal evidence that can be contradicted with competing anecdotal evidence, small sample size, and lack of measurement validity. Whereas theoretical advancement in this field is impressive and some theoretical arguments intriguing, the empirical analysis and evidence are often problematic and do not lend confidence in the results. We are aware of the counter-argument, that it is better to conduct research based on a small sample size and anecdotal evidence than not to conduct it at all. Yet, since some results and inferences from this line of research often lead to policy recommendations adopted by governmental entities, authors who study suicide terrorism and other forms of terrorism should be much more cautious about their "findings", claims, and policy recommendations which are potentially based on invalid inferences. We illustrate these points with the Kruglanski et al. (2009) article.

Introduction

Theoretical claims by scholars of suicide terrorism advance our understanding of this important phenomenon and advances knowledge on the subject. Kruglanski, et al.'s (2009) theoretical argument as well as research by other scholars of suicide terrorism are intriguing and promising. They add to our understanding of the motives of suicide terrorism. Consequently, such research has the potential to lead to important policy implications. However, the data and evidence presented by Kruglanski, et al. (2009) cannot be viewed as support of the theoretical claims that are made concerning the motivations of suicide terrorists.

We are sympathetic to the challenges facing researchers with a paucity of data available for conducting the systematic study of suicide terrorism – it is very difficult and often even impossible to get more data. We are also aware of the counter-claim that it is better to conduct an analysis based on a small number of cases and with anecdotal evidence than do no analysis at all. However, *solid inferences* cannot be drawn from such an analysis. When scholars offer policy recommendations based on these inferences, the stakes determine the confidence we must have in the validity of scholars' inferences. Some invalid findings may imply recommendations that would, at worst, waste taxpayer money. But when lives are at stake, solid inferences are required. Kruglanski, et al. (2009) offer policy recommendations intended to save lives that would otherwise be lost due to suicide attacks. Such recommendations may or may not be correct. Based on the authors' research we simply cannot say, as there are a number of problems with their piece, which cast serious doubt on their findings, conclusions and recommendations. We offer potential solutions to these problems. We conclude that while Kruglanski, et al.'s (2009) research is valuable and the concept of significance quest very important, the authors should be more circumspect about their findings and any potential policy recommendations.

1) Construction of Empirical Tests

Kruglanski, et al. (2009) conceive of a process by which individuals choose suicide terrorism in an effort to restore or maintain significance. The dimensions of significance thought to be of importance are personal, ideological and social. The integrative framework is quite general in the sense that a perceived loss in the significance of an individual or group, or culture may serve as a root cause of suicide terrorism. The authors claim that their explanation effectively subsumes a variety of existing theories, from those concerning personal trauma to relative deprivation.

However, it is commonly asserted that theories should be evaluated according to the extent to which they are 1) logically consistent, 2) explicit, and 3) testable and falsifiable (e.g., Waltz 1979; King, Keohane and Verba 1994; Bueno de Mesquita 1996). Although scientific progress is achieved by comparing new explanations with old ones (Lakatos 1970), theories should typically possess the desirable characteristics listed above. In order for researchers to show that a new explanation (such as significance quest) is superior to older ones, the task is to identify novel hypotheses and construct tests that corroborate these hypotheses while controlling for competing explanations (Lakatos 1970). However, Kruglanski, et al. (2009) have developed a theory that does not appear to be falsifiable. By falsifiable, we mean that it is possible for the theory to be proved wrong, even if only in principle (King, Keohane and Verba 1994: 19).

Because Kruglanski, et al.'s (2009) key causal concept, significance quest, is so general and nebulous, practically any justification for turning to suicide terrorism (personal, ideological, and social) can be said to be consistent with the framework. The analyses presented as evidence supporting the framework appear to buttress this point by pitting one part of the framework against the others. For example, if individuals who emphasize ideological or social values are

more likely to support suicide attacks than those who emphasize personal values, the framework is right (Kruglanski, et al. 2009: 17). But the framework is also right and would not be refuted if a supporter or perpetrator of suicide terrorism emphasized personal values because personal justifications are also part of the framework. The authors do not spell out conditions under which the theory could be falsified, even in principle (King, Keohane and Verba 1994: 19). They simply “rename” existing explanations by discussing how a given perspective might be consistent with their own. Their empirical tests have been constructed such that they appear to propose a “heads, I win; tails, you lose” bet (see Vasquez 1997).

2) Use of Anecdotal Evidence that can be Contradicted

The second problem is the use of anecdotal evidence that can be contradicted based on competing evidence. Rather than construct a systematic research design, Kruglanski, et al. (2009) bring together a variety of supportive evidence, much of it illustrative. For example, they refer to interviews and/or brief descriptions of cases that appear to support their thesis concerning ideological justifications and a sense of social stigma in decisions to become suicide attackers. However, such evidence can be easily refuted by simply presenting evidence to the contrary. Relying on anecdotal evidence to support the theoretical argument deprives readers of the extent to which the authors are certain of their findings. For example, Kruglanski, et al. (2009: 22) refer to a number of cases in which female suicide bombers apparently chose terrorism in an effort to compensate for their own personal deviations from social norms. However, another study (Speckhard and Akhmedova 2005) – which the authors reference – suggests that females may choose suicide attacks as a means of carrying out vendettas as *part of* a recognized system of societal norms.

3) Small Sample Size

The authors bring together a variety of evidence from disparate sources. However, these “pieces” of evidence are plagued by problems associated with small sample size. Conclusions and recommendations based on a small number of cases can be misleading. For instance, Kruglanski, et al. (2009) report the findings from their content analysis of 13 terrorists’ farewell messages and 14 interviews of attackers’ mothers. A small sample size increases the uncertainty we have in the findings (King, Keohane and Verba 1994: 214-215), and consequently in inferences and policy recommendations. The measure of uncertainty associated with a sample statistic – in contrast to a population parameter – is adjusted for the sample size.¹

But a small sample size produces more problems than simply increased uncertainty in the findings and questionable conclusions. If a sample does not adequately represent the population of interest, the findings are likely biased. In other words, conclusions drawn from a sample of outliers are likely to be systematically wrong. Against the relatively large population of potential suicide attackers, the sample of 13 attackers analyzed by the authors is very small indeed. Most importantly, however, the sample the authors examine is clearly unrepresentative.

To be sure, we understand that data on suicide attackers are rare and recognize the value of the cases Kruglanski, et al (2009) examine. Moreover, we are sympathetic to the efforts of the authors in the face of such data limitations. But we believe the authors should have expressed less confidence and perhaps greater circumspection concerning their results. Given the uncertainty inherent in inferences gleaned from small samples, readers would have been better served by an explicit recognition on the part of the authors of this fact.

¹ As the reader will likely recall from introductory statistics courses, this is the adjusted standard error: $\sigma = \sqrt{\frac{\sigma^2}{n}}$, where n refers to the sample size. See (among many others) Fowler 2002:30.

3) Selection Bias and Selection Effects

The bias inherent in a small sample is exacerbated by two forms of selection bias – selecting cases on values of the dependent variable and selection effects. In their analysis of attackers' farewell messages, Kruglanski et al. (2009) examine only suicide attackers. But the authors claim to explain the *choice* to become a suicide terrorist. The form of selection bias here is due to the selection of cases on an outcome of the dependent variable – in this case, all observations were suicide attackers. Selection of cases on the outcome of the dependent variable prevents the detection of covariation with hypothesized causal factors and, therefore, makes causal inference impossible (e.g., King, Keohane, and Verba 1994; Collier and Mahoney 1996). In other words, we cannot say that, for instance, the presence of some factor (X) is responsible for the presence of the outcome (Y), unless X is absent when Y is absent (see Lijphart 1971). To be able to conclude with any confidence that such factors as religion or nationalism are associated with the choice to become a suicide attacker, we should also observe the absence (or lower intensity) of such factors among individuals who choose *not* to become suicide attackers (see Ashworth, et al. 2008).

We understand that recent efforts to systematically investigate suicide terrorism face the obvious obstacle of obtaining data. Moreover, we appreciate the significance of recorded farewell messages and laud the effort to analyze such “raw material,” which may prove invaluable to researchers and policy makers alike. But ultimately, inferences are invalid when made on the basis of a sample in which the dependent variable *does not vary*. In order to conclude that ideology is associated with the choice to become a suicide attacker, the text of the farewell messages would need to be systematically compared with statements from a comparable group of non-terrorists. Such an effort would create variation on the dependent variable (i.e., the

choice to become a suicide attacker), yielding valid inferences. Analysis which includes the text of non-terrorists is likely to also reveal that ideology, national aspirations, and emphasis on religion are used to justify the activities of a comparable group of non-terrorists. Such a finding would suggest that these factors are not necessarily unique to suicide attackers.

But suppose that the Kruglanski, et al. (2009) were able to acquire a comparison group of texts of statements from non-terrorists, enabling causal inference. In such a situation, the media of farewell messages is likely to facilitate the introduction of the second form of selection bias – “selection effects.” Selection effects refers to bias resulting from the possibility that individuals may select themselves into certain processes on the basis of unobserved factors associated with the dependent variable (e.g., King, Keohane, and Verba 1994: 135; Bueno de Mesquita 1996). When such unobserved factors are correlated with the dependent variable, the effect of included explanatory variables may be biased, leading to erroneous inferences (e.g., King, Keohane, and Verba 1994: 130). It is possible that attackers who leave farewell messages are more likely than those who leave no message to purport to hold views that are consistent with Kruglanski, et al.’s (2009) framework. But, again, this is a possibility that cannot be assessed with the authors’ research design.

Kruglanski, et al. (2009) also briefly discuss the results of an electronic survey conducted in 14 predominantly Muslim countries, which is also likely biased due to selection effects. According to the poll, respondents emphasizing egocentric goals are less supportive of suicide attacks against the United States than those who emphasize societal or national goals (Kruglanski, et al. 2009: 24, Figure 1). The poll results may very well be correct. However, an electronic survey made available to potential respondents in less developed countries is likely to restrict the sample to individuals with access to electronic media, which in some of these

countries constitutes a set of outliers – specifically, the relatively well off or more highly educated (Norris 2001). Respondents with higher socio-economic status may offer responses that are sufficiently different from the remainder of society to bias the poll results. But the poll does not (as far as we could ascertain) control for the socio-economic status of the respondents.²

Electronic surveys can teach us a lot about those who use the internet. But we can hardly deduct from them how the population in developing societies thinks.

4) Lack of Measurement Validity

Perhaps one of the more troubling aspects of the several analyses presented in the Kruglanski et al. (2009) paper concerns a lack of measurement validity. For example, the use of content analysis to identify keywords that are related to the pursuit of significance in light of one's ideology does not appear to produce valid indicators of the concept the authors study – significance quest. This is due primarily to the lack of careful conceptualization of significance quest. If a concept has not been adequately defined, it is unlikely to be adequately measured (Collier and Adcock 2002). Indeed, in the analysis of farewell messages, the authors appear to be measuring the presence of ideological justifications for suicide attacks, but not necessarily indicators of significance quest.

Implications for Counter-terrorism Policy and Recommendations

Research on motivations of suicide terrorists identifies three main categories of motivations: personal, ideological, and cultural (Kruglanski, et al. 2009, p. 4-5). Kruglanski, et al. (2009) propose an overarching motive that connects among the various explanations:

² But it is not clear what conclusions one should draw from the poll given that personal significance is regarded as an important dimension of the concept of significance quest.

significance quest. Their claim is that significant loss explains suicide terrorism. This is an innovative and important theoretical proposition.

The primary problem with inference in Kruglanski, et al. (2009) is not the small sample size. The primary weakness is centered on the selection of cases on the outcome of the dependent variable in the analysis of the farewell messages. The authors cannot conclude that their hypothesized influences are responsible for the choice to become a suicide attacker because the choice to become a suicide attacker is constant in their sample. Our key point is that invalid inferences might be drawn from such an analysis, and that conclusions drawn based on selection biases, a very small sample size and anecdotal evidence may lead to misleading policy recommendations.

King, Keohane, and Verba (1994) assert that a possibly incorrect inference based on a small number of observations is better than nothing. If such recommendations involve little more than reallocations of government expenditures to programs that are worthwhile for a host of reasons, implementing policy recommendations based on faulty inferences may not be costly. However, if implementing such recommendations is likely to result in the loss of lives – a reasonable expectation given the aims of suicide terrorism and counter-terrorism efforts – invalid inferences are very problematic.

Although the comments and problems identified in this paper are addressed at the Kruglanski, et al. (2009) article, they are rather common in research on suicide terrorism and suicide bombings. Empirical analysis of suicide terrorists' motives based on small sample size is better than nothing and should not be discouraged. However, as findings and conclusions drawn from such research influence policy makers and counter-terrorism policy, scholars should base their claims on solid evidence based on a systematic research design before they provide solid

policy recommendations or alternatively, reserve judgment concerning findings and recommendations.

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