



Yes, No, and Maybe in the World of Terrorism Research: Reflections on the Commentaries

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Responses to our target article afford a welcome opportunity to discuss fundamental issues in terrorism research, related to substantive as well as philosophical and methodological concerns. Some of the comments offered expand the scope of the discussion and address important levels of analysis that, even though falling beyond the scope of our specific contribution, might well be included in a multifaceted analysis of suicidal terrorism. Other comments set the occasion for clarifying aspects of our analysis that may have been obscure, yet others stimulate a dialogue about the role of theory, data, and policy recommendations in a domain of phenomena as refractory to controlled empirical investigation as is terrorism.

Six of the seven commentators (Crenshaw, Post, Victoroff, Moghaddam, Mintz & Brule) expressed (varying degrees of) appreciation for our work, while the seventh (Bloom) expressed disapproval. Thus, Crenshaw (2009) saw our argument as “a serious and discerning examination of a perturbing subject that is high on the national policy agenda” and stated that “The analysis is

sophisticated. . . . The study recognizes the multifaceted complexity of causation in explaining this particular aspect of terrorism. . . . Such integrative efforts are critically important to cumulative knowledge” (p. 359).

Post (2009) commented that “The quest for personal significance as a unifying concept explaining the motivation for terrorists who are led to commit suicide terrorism is very useful and clarifying,” and he accepted “the argument that suicide terrorism provides a sense of significance” (pp. 381, 384). In a similar vein, Moghaddam (2009) viewed “The concept of *significance quest* [as] integrative and potentially very useful in helping us interpret some of the information being accumulated on terrorism” (p. 373), adding that “Kruglanski et al. have rightly highlighted the cultural conditions which give rise to suicide terrorism” (p. 376). Victoroff (2009) stated that “Kruglanski et al. offer an eloquent and sophisticated review of theories regarding the motivation of suicide terrorists and their own persuasive theory” (p. 397). Furthermore, he opined that we “offer several good arguments to explain why suicide bombers are very much in the minority” and characterized our theory as “articulate” (pp. 397–398). Finally, Mintz and Brule (2009) viewed our “theoretical argument . . . [as] intriguing and promising” (p. 365) and noted that “Kruglanski et al.’s (2009) research is valuable and the concept of significance quest [is] very important” (p. 366). In contrast to the general appreciation of the value of our enterprise expressed by her counterparts, Bloom thought that our arguments and evidence “betray a limited understanding and narrow interpretation of terrorist psychology . . . and a failure to acknowledge the complexity of how motivation is conceptualized in contemporary psychology” (p. 387).

In the following pages we reflect on the added insights, misunderstandings, and genuine philosophical differences in the fundamental approach to science that emerge from the present exchange of views on the nature of terrorism research and its challenges.

Significance Quest in a Broader Context

An explicit premise of our argument has been that channeling of the universal quest for significance into terrorism in general and suicide terrorism in particular tends to occur in circumstances where one’s group is perceived to be in an intense conflict with some enemy and to face a severe danger to its existence, calling for extreme means. Moghaddam’s insightful analysis suggests, in the case of the jihadist’s terrorism, what such perceived danger may consist of. In his words, “Terrorism is a (dysfunctional) defense mechanism adopted by Islamic fundamentalists who perceive their way of life to be under threat and who view expanding westernization as representing a serious threat of extinction for them” (p. 378). Such extinction, according to Moghaddam, is implicit in a “sudden contact” under conditions of insufficient “preadaptation” that may lead to a “catastrophic evolution, the rapid decline or even extinction of one or both groups making contact”

(p. 378). In the “sudden contact” between Western (heavily Americanized) culture and traditional Muslim societies, the threat of extinction was assumed to prompt a “‘life and death struggle’ . . . being played out in Muslim communities around the world, with fundamentalists fighting for the survival of their way of life” (p. 379).

Along similar lines, Victoroff (2009) usefully cast the significance quest that propels suicidal terrorism into a broader evolutionary context of fitness maximization. In the framework of an intergroup context for survival, altruistic behavior of individuals taking the form of suicidal terrorism might increase the likelihood of the group’s survival, increasing its rate of fecundity, and therefore its members’ average fitness as compared to the competing groups. Moreover, *within* the group the altruistic member acquires a reputation that may indirectly augment this individual’s genetic fitness: If an individual “has a *reputation* for helping, others in the group will be more willing to help him” (p. 398). In the case of suicidal terrorism individuals may not themselves benefit from help, but then their family, with whom they share genes, may so benefit.

Moghaddam’s (2009) and Victoroff’s (2009) analyses outline a broader context of intergroup conflict (whether perceived or real) that may motivate group members to come to the group’s defense. This might take the form of altruistic sacrifice, which, as Victoroff shows, isn’t incompatible with the evolutionary imperative of fitness maximization.

However useful and compelling, broader context considerations cannot explain how an individual overcomes the survival instinct (that also claims evolutionary roots; cf. Brynner, 2007), and how the defense of one’s group takes the specific form of suicidal terrorism. The ingredients that our analysis adds to the mix are: (1) the uniquely human quest of significance, and (2) specific culturally based ideologies that identify suicidal terrorism as a supreme mode of significance attainment.

In this connection, Crenshaw (2009, p. 360) aptly asked whether, given the centrality of the collective crisis situation (the context of intergroup conflict discussed by Moghaddam and Victoroff), the individual level of analysis is even needed. In our view, the collective crisis context serves as a backdrop against which the universal quest for significance may take the form of suicidal terrorism sanctioned by the group’s ideology. It is the collective threat that affords the formulation of a suicide-justifying ideology, and it is the quest for significance that motivates individuals to embrace it. Moreover, it is the promise of immense significance that allows some individuals to overcome the survival instinct or the fear of death, whose force may forestall any attempts at suicidal terrorism. Indeed, in our target article we cite empirical evidence that commitment to cultural causes affording one a sense of significance is negatively correlated with the fear of death (see, e.g., Durlak, 1972; Mikulincer, Florian, Birnbaum, & Malishkevich, 2002, or Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997).

Overcoming the fear of death is helpful, yet insufficient. As Crenshaw (2009) inquired, “why does this particular action, killing oneself in order to kill others,

particularly civilians, become a way of attaining personal significance and overcoming the fear of mortality?" (p. 359). The answer lies in the specific ideology promoted by the group that touts suicidal terrorism as the ultimate path to significance. Such ideology may be constructed from extant cultural elements that are given a particular interpretation. The concept of *jihad of the sword*, interpreted as a warrant for suicidal terrorism, is a case in point. As Post (2009) put it "The evolution of the concept of jihad . . . [and in particular] the jihad of the sword . . . led radical theologians to justify [as jihad] . . . acts of martyrdom" (p. 381). Post usefully documents how the concept of martyrdom has been nourished and cultivated in the Palestinian society, from kindergarten years "throughout education, continuing into university" (p. 383).

The role of ideology in providing the warrant for suicidal terrorism appears to be general across terrorist organizations. The Liberation Tigers of Tamil Eelam (LTTE), who until the 2003 Iraq invasion held the world record in suicidal attacks (that they committed against Sinhalese targets), also viewed such attacks as acts of martyrdom. As Schalk (1997) put it, "In English texts distributed by the LTTE one can find the word martyr, rather frequently. This is then an additional term in the sacrificial ideology of the LTTE" (p. 1). The first LTTE proclamation of the Heroes Day in 1989¹ states: "Every freedom fighter who sacrifices his or her life is a martyr."

Just as does the Islamist concept of jihad, the LTTE concept of martyrdom is rooted in specific cultural elements, based this time on aspects of Hindu theology. Specifically, the notion of *tiyakam*, abandonment of life, is a specific Indian form of martyrdom, cultivated by both male and female fighters. Its roots lie in the last section of the Bhagavad-Gita. "The ideal tiyagi (suicidal martyr in the Sanskrit) is Arjuna who kills even his kin and teachers in dedication to Visnu. [Thus], the LTTE tiyāki (suicidal martyr in the Tamil) . . . stands in the tradition of the revivalist martial concepts that were emphasised during the Indian struggle for independence in the 20th century, especially in the sacrificial ideology of the Subhasists" (Schalk, 1997, p. 1).

In short, terroristic suicides do not seem to constitute random acts of violence or impulsive expressions of uncontrollable rage. Suicidal terrorists "know what they are doing": their acts possess *meaning* grounded in culturally based ideologies; they portray their perpetrators as martyrs, that is, individuals who sacrifice their lives for highly valued causes and who therefore deserve the ultimate veneration from their group members, bestowing on their person the aura of utmost significance. The intergroup conflict that the group experiences sets the stage for the construction of significance-affording ideologies that significance-seeking individuals may be motivated to accept and translate into action.

¹ Tamil Eelam Heroes Day. London. Central Committee, Liberation Tigers of Tamil Eelam (November 19, 1989).

Individual, Organizational, and Social Processes in Suicidal Terrorism

Our target article addresses the motivational bases of suicidal terrorism on the individual level of analysis. In other words, we considered how individuals' quest for significance, affected by their personal traumas, humiliations, and perceived opportunities for glory, facilitates their embracement of an ideology that touts suicide and the the killing of others as the path to personal greatness. That is not to suggest the irrelevance of social or organizational processes to understanding suicidal terrorism. Indeed, we view the individual, social, and organizational levels of analysis as completely interdependent, and jointly indispensable for a full explanation of the phenomenon. Thus, we agree with Crenshaw's (2009) comment that "Social networks are important. . . . [As are] the group leaders who construct the ideology . . . [and] considerations of organizational strategy, tactics, and effectiveness" (p. 360).

Indeed, we believe that it is the *organizations* (like Al Qaeda, Hamas, Hizbolah, or the LTTE) formed around an ideological core of some sort that often play a decisive role in determining the *where*, *when*, and *who* of suicidal terrorism.² And we also believe that it is via the *social psychological processes* of persuasion, leadership, and shared reality formation that organizations manage to convince some individuals to carry out acts of suicidal terrorism. Yet all this is accomplished on the basis of individual psychology whose fundamental properties allow the processes in question to take place. Briefly, those properties include the facts: (1) that all human beliefs have a motivational basis of some sort (see Kruglanski, 1989, 1996, 2004); (2) that a universal human motivation consists of the quest for personal significance (cf. Frankl, 2000; Becker, 1973; Maslow, 1943); and (3) that (in ways outlined in our target article) such motivation facilitates the adoption of beliefs (i.e., ideologies) that indicate how the quest for significance can be splendidly fulfilled through certain recommended activities including suicidal attacks on one's group's (real or imagined) enemies. Thus, an organization may activate an individual's significance quest by reminding him or her of the significance losses to their group via humiliating defeats dealt the group by its enemies (be it Christians, Jews, Americans, or the Sinhalese). Alternatively, the organization may exploit certain individuals' unique sense of *significance loss* borne of their personal frustrations and misfortunes. It may then offer a way of not only *restoring* one's lost significance but of *catapulting* it to unprecedented heights through a putative opportunity for an immense significance gain (appealing also to significance craving persons who may not have suffered personal humiliations) couched in the ideology of martyrdom or honor that the individual is induced to accept, often from an early childhood and throughout the entire educational system as Post importantly (2009, p. 383) documents.

² Though in some cases informal, ideologically committed networks may form aiming at the perpetration of terrorist attacks (see Sageman, 2004, 2008).

It is these fundamental properties of the individual psychology, the so-called “human nature,” that allow organizations to manipulate individuals into the readiness to sacrifice their lives for a cause. But the existence of such properties may allow the readiness for suicidal terrorism to emerge *without recourse* to structured organizational processes or intricate top-down decision making. Indeed, they allow the documented bottom-up processes of self-recruitment to (suicidal) terrorism (Coolsaet, 2005) and the emergence of terrorist plots in informal social networks as described by Sageman (2004, 2008). The foregoing considerations then identify individual psychology as the central piece in the suicidal terrorism puzzle, the necessary fertile ground in which the seeds of future terrorist attacks may be sowed by groups and organizations. It is these considerations too that warrant the individual level of analysis adopted in our target article, fully admitting the relevance of the social, organizational, cultural, and evolutionary analytic levels to numerous instances of suicidal terrorism.

Motivations *versus* Ideology or Motivations *for* Ideology

Terrorism researchers occasionally identify separate elements of terrorism and anoint one such element as critical, while relegating others to the status of peripheral, or worse yet, epiphenomenal correlates of the phenomenon. In such a spirit of disjunction between ideological reasons and personal motivations for suicidal terrorism, for example, Mintz and Brule (2009) criticize our framework for “pitting one part of the framework against the others” (p. 366). For instance, 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. 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, hence “heads, I win; tails, you lose.” But the implied *juxtaposition* of ideological values and personal circumstances represents a misreading of our position. Contrary to pitting personal circumstances against ideological values, our framework actually elaborates how the two *interact*. To reiterate, personal circumstances (like trauma, humiliation, or felt discrimination and ostracism), or indeed a chronically insatiable thirst for megalomaniacal significance (cf. Sprinzak, 2002), may create the facilitative conditions for embracement of an ideology that offers a direct pathway to a “significance heaven.” As Crenshaw (2009) observed “if we look at what is actually doing the work in the argument’s causal mechanism, it seems to be *ideology*” (p. 360, emphasis added). Indeed, as we noted earlier, acts of suicidal terrorism are imbued with profound meaning for their perpetrators, derived from the ideology to which they subscribe. And the readiness to embrace such ideology is facilitated by personally based quests for significance restoration or gain. In short, our framework is all about the conjunction of ideological values with personal causes to seek them out. No juxtaposition of values and personal

causes is implied, hence no pitting of elements of our framework against each other.

Theoretical Aspects of the Significance Quest Framework: On Its Internal Consistency and Testability

Mintz and Brule (2009) also criticize our framework for what they see as internal inconsistency and unfalsifiability, two flaws damaging to any theoretical enterprise. Yet their evidence for these contentions seems again misguided. For instance, they state that “Kruglanski et al. . . . 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 (Spekhard & 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” (p. 367). Contrary to Mintz and Brule’s suggestion, however, there is no internal inconsistency here. As a straightforward reading of our analysis would reveal, a compensation for a deviation from a given social norm (e.g., of sexual propriety) may involve an augmented adherence to a different (and supreme) norm of altruistic self sacrifice; such a norm is embraced also by Spekhard and Akhmedova’s subjects, albeit arising from a different personal circumstance: the trauma of losing a relative or a partner to enemy violence.

Nor can we agree with Mintz and Brule’s (2009) general implication that our framework is unfalsifiable. For instance, consider our “collectivistic switch” hypothesis that a sense of lost significance, arising from a failure to live up to cultural standards, should increase one’s tendency to embrace cultural values or support the ideology of one’s group. Such a hypothesis is eminently testable, and hence falsifiable. Suffice it to experimentally induce a failure in one condition and success (or a lack of outcome feedback) in another. If research participants in the failure (vs. the success or neutral) condition decreased (rather than increased) their support for various cultural values, and tended to adhere less to cultural norms, this would be inconsistent with our prediction, hence constituting a falsification.

To test these notions, we have recently carried out three studies of this sort. In one study we exposed participants to a failure experience in one condition and to a success experience in another. Participants then responded to a scale of collectivism. We found that, consistent with the “collectivistic switch” hypothesis, participants exposed to the failure experience scored significantly higher on collectivism than did those exposed to the success experience. In a second study, participants were asked to recall and write a short essay about a failure experience or a success experience. They then responded to separate measures of individualism and collectivism. Again, participants in the failure (vs. the success) condition scored higher on a collectivism scale and lower on the individualism scale. Finally, in a survey recently conducted by the START center on representative samples of respondents in Egypt, Pakistan, and Indonesia, a significant negative correlation

was found between respondents' sense of success in their personal pursuits and their tendency to support collectivistic causes ("making a contribution to one's nation and one's religion") consistent with the "collectivistic switch" argument. Numerous studies conducted the world over (and referred to in our target article) indicate that mortality salience significantly increases the tendency to support cultural causes or engage in cultural defenses (for a recent review, see Castano & Dechesne, 2006), which in an Iranian sample meant an increase in a positive evaluation of a suicidal martyr (Pyszczynski et al., 2006). We have argued that these results derive from the fact that mortality salience implies a threat of insignificance, the dread of *ending as an insignificant speck of dust in an uncaring universe*. To test this hypothesis one would have to devise other experimental ways of inducing a sense of insignificance, and see whether this conceptually replicated the cultural support effects reported by the terror management researchers. Experimentally, augmenting the perception that one's group valued sacrificial attacks should increase the support for attacks more by individuals induced to contemplate their failures and disappointments than by individuals induced to contemplate their successes, etc. In short, our theory may or may not be correct, but it surely is eminently testable and falsifiable.

Philosophy of Science and of Method Issues in Terrorism Research

The latter concerns with testability and internal consistency belong with the general line of philosophical and methodological critiques leveled not only at our target article but often at terrorism research as a category. The present exchange thus offers an opportunity to examine those issues more explicitly and in greater depth than they are typically accorded.

Particularism, Universalism, and the Aims of Science. Bloom (2009) chides us for adumbrating a general framework for the study of terrorism and what she sees as a failure to acknowledge that terrorism has been studied in specific contexts. In her words: "What Kruglanski et al. do not acknowledge is that . . . authors are studying terrorism in very unique and context-specific circumstances. Sageman's work on Al Qaeda is *sui generis* and not intended to explain other kinds of terrorism, in other areas, committed by other actors. In fact, whether Sageman's analysis of Al Qaeda in 2004 is even generalizable to the broader Al Qaeda social movement of today is itself debatable. . . . If 40 years of terrorism research has shown us anything it is that there can be no one explanation for all terrorism" (p. 388). According to Bloom, then, our attempt to construct a general framework for understanding suicidal terrorism as a general category of behavior and integrate it across different instances of terrorism is an impossible mission, or as she put it, "essentially . . . a 'straw man' argument" (p. 388). It is for that reason, presumably, that Bloom (2009, p. 389) objected to the integration of the multiple potential sources of the quest for significance under one conceptual umbrella and stated that "much of the field research that has been done substantiates the notion

that in fact, there are numerous motivations [for terrorism].” And that “The . . . nature of Kruglanski et al.’s argument reveals a lack of understanding of how multiple motivational sources coexist and are relevant for any particular individual . . . in the process of involvement in suicide terrorism” (p. 389).

In responding to this critique, let us note first that it does not appear to be shared by the remaining commentators. For instance, Crenshaw (2009) states that “Such integrative efforts are critically important to cumulative knowledge” (p. 359). Moghaddam (2009) states that our concept of significance quest is “integrative and potentially very useful” (p. 373). Victoroff (2009) refers to our theory as “persuasive,” and “articulate” (pp. 397, 398) and proceeds to outline an even broader and more integrative framework based on evolutionary logic. Post views (2009) “our “unifying concept . . . [as] very useful and clarifying” (p. 381). And Mintz and Brule (2009) view our “theoretical argument . . . [as] intriguing and promising” and “the concept of significance quest [as] very important” (pp. 365, 366).

Secondly, and more generally, a *central aim of science* (as we understand it) is to integrate across specific instances, seeking generalizations that hold across the maximal number of particular cases. Every two drops of water are dissimilar in some ways, yet the H₂O formula depicts the essential characteristics that they share in common, and that have proven of immense scientific and practical value. An elephant and a feather couldn’t be more different from each other but if both are dropped from a tall building, and barring air resistance, they would fall to the ground at exactly the same time because the force/mass ratio that determines acceleration is the same for each. In a chapter on *The Aim of Science*, Karl Popper (1983/2000) wrote that “The task of science [consists of] proceeding to explanations of a higher and higher level of universality” (p. 134) and that “For . . . any theory proposed, it is the wealth of its content [i.e., its degree of universality] that determines its interest” (p. 139). Indeed, “Only if we require that explanations use universal laws of nature . . . can we make progress . . . for universal laws may be independently tested everywhere, and at all times” (p. 134). Against this philosophic backdrop, Bloom’s (2009) position implies that no scientific explanation of terrorism should be possible because every instance of terrorism is “sui generis.” According to such *particularism*, there could be no learning from past instances of terrorism, nor any attempt to formulate intelligible counter terrorism *policy* because each instance of terrorism is presumably “unique” “novel” and “context specific.” Needless to say, we disagree.

In an incisive examination of claims that the “new terrorism” of the present is unique and hence completely distinct from the “old terrorism” of the past, Crenshaw (2007, p. 5) recently stated that “Today’s terrorism is not a fundamentally or qualitatively ‘new’ phenomenon but grounded in an evolving historical context. Much of what we see now is familiar, and the differences are of degree rather than kind. Contemporary terrorism shares many of the characteristics of past terrorism, dating back at least to the late nineteenth century and the use of

terrorism by groups of Russian revolutionaries, European and American anarchists, and Irish nationalists.” Therefore, “Rejecting our accumulated knowledge of terrorism would be dangerous. A misdiagnosis of what the ‘new’ actually entails could lead to mistakes of prediction and of policy as grave as those attributed to lack of recognition of the threat” (pp. 30–31), and finally, “a close look at the objectives, methods, and organizational structures of what is said to be ‘new’ and what is said to be ‘old’ terrorism reveals numerous similarities rather than firm differences” (p. 34).

It is precisely such similarities that warrant the advancement of universal statements about terrorism and that allow the scientific study of terrorism. *Yes*, all instances of terrorism are different, as are all instances of *any conceptual category* on aspects irrelevant to the category’s essence. *No*, this does not vitiate the possibility of general theories of terrorism any more than the differences between falling bodies disallow the possibility of theoretical physics

On the empirical base of terrorism research. A frequent critique of terrorism analyses is their putatively anecdotal character and their lack of grounding in solid empirical data. In this vein, Bloom (2009) cited Colin Wastell’s statement that “We are absolutely in need of more research that engages with the phenomenon, with the problem as it *really* exists” (p. 387, emphasis ours). She also states that “the evidence that Kruglanski et al. draw upon is unsatisfying and would benefit greatly from more rigor and more explicit sense of limitation” (p. 390), and she disparages our citing of Anne Speckhard’s evidence on grounds that her finding “represents an inference made from interviews of those *other than* the bombers themselves” (p. 391), and that our analysis of suicidal terrorists’ farewell tapes is suspect because it is based on anti-Palestinian sources “not without [their] own agenda to portray the Islamic world in the worst possible light” (p. 390).

Along the same lines, Mintz and Brule (2009) chide us for alleged methodological problems such as selection bias, selection effects, anecdotal evidence, and small sample size. Contrary to these views that imply the *sine qua non* of data collection, Moghaddam (2009) commented on a “reductionist-positivist reliance on data gathering on the assumption that data will allow us to mimic the success of the ‘real sciences’ such as physics” (p. 373), observing also that “since 9/11 we are drowning in oceans of information about terrorists . . . ; what we lack are conceptual frameworks powerful enough to interpret this information” (p. 373). Lurking beneath these stark differences of opinion are two contrasting philosophical approaches to science, whose divergent premises may well be exposed at this juncture.

Two philosophies of science: (1) positivism. One philosophy of science, often referred to as *verificationism* or *logical positivism*, assumes that the objective truth of scientific propositions can be established, proven, or rendered more probable by the cumulation of appropriate data. According to such an approach, too, some data (e.g., experimental data) are more “legitimate” and better suited to increase one’s degree of justifiable certainty in a scientific proposition than other data (e.g.,

correlational data, or case studies). Weimer (1979) characterized this scientific world view by what he termed “the conception of eternally valid knowledge inductively accumulating into the growth of science [in which] All successor theories are merely enlargements upon their predecessors—they can *never* contradict their predecessors. There can be no scientific revolutions within [this] conception of scientific history; only what Thomas Kuhn (1970) terms *normal science* growth is permitted” (p. 9).

A strong implication of the positivist position has been an unbridled faith in the scientific method which rules and conventional practices are believed to bring us incrementally closer to the Truth. This implies that certain methodological practices and conventions are superior in conferring *objective probability* on conclusions drawn on their basis. In psychology and the social sciences such practices have contained, among others, inclusions of control groups (avoiding “selection on the dependent variable”), random assignment of participants to experimental treatments, large sample sizes, etc. Mintz and Brule (2009) reveal such a positivistic creed when they write about “*solid* inferences [that] are required” (p. 365, emphasis added), or that “inferences are invalid when made [from] a sample in which the dependent variable *does not vary*” (p. 368), (that is, everyone in the sample (of those appearing in the farewell videos) is a suicide bomber). As the authors admonish, “Our key point is that invalid inferences *might be drawn* from such an analysis” (p. 370, emphasis added). Taken at face value this critique could imply that with a proper control group (e.g., of non-suicidal individuals’ videos), larger samples, and better measurement, conclusions would be objectively and verifiably more valid, and perhaps even worthy of serving as a basis for policy recommendations.

Two philosophies of science: (2) critical rationalism. It is worth noting that from about the mid-twentieth century onward, the buoyant optimism about our ability to attain quantifiable degrees of certainty through science has waned. In commenting on the history of verificationism and its “strong” conception of the “scientific method,” Popper (1983/2000), for example, stated: “The founders of the subject, Plato, Aristotle, Bacon and Descartes, as well as most of their successors, for example John Stuart Mill, believed that there existed a method of finding scientific truth. In a later and slightly more skeptical period there were methodologists who believed that there existed a method, if not of *finding* a true theory, then at least of ascertaining whether or not some *given* hypothesis was true; or (even more skeptical) whether some given hypothesis was at least ‘probable’ to some ascertainable degree” (p. 6). And he continued:

I assert that no scientific method exists in any of these three senses. (1) There is no method of discovering a scientific theory. (2) There is no method of ascertaining the truth of a scientific hypothesis, that is, no method of verification. (3) There is no method of ascertaining whether a hypothesis is ‘probable’ in the sense of the probability calculus.” (p. 6)

In social psychology, the (verificationist) concept of the “*true experiment*” introduced by Campbell and Stanley (1966) assumed that a study controlling for a predetermined list of threats to validity (to wit: (1) history, (2) maturation, (3) testing, (4) instrumentation, (5) statistical regression, (6) selection biases, (7) experimental mortality, and (8) selection-maturation interaction) safeguards the validity of one’s conclusions, implying that “the problems of internal validity are solvable” (p. 17). In a critique of this notion, Kruglanski and Kroy (1976) wondered “whether within those true experiments free of all [the listed threats] internal validity is fully safeguarded?” and replied that “the guarantee of validity may bounce within any design [because] no priority list of threats may . . . fully anticipate the validity problem. Standard research designs are intended to defend against standard alternative hypotheses. The lists of ‘threats’ given by Campbell and his coworkers are rosters of such standard possible threats; such lists *cannot in principle be exhaustive*, so no defense against criticism may be ultimate” (p. 169). In other words, every experimental manipulation inevitably contains theoretically irrelevant specifics (there can be no pure operationalization of abstract constructs); these could provide the basis for rival interpretations of its effects, undermining the validity of a proposition that ascribes the effects to the abstract construct. According to Popper (1983/2000) “*the so-called method of science consists in criticism*. Scientific theories are distinguished from myths merely in being criticizable, and in being open to modifications in the light of criticism. . . . We cannot justify our theories, or the belief that they are true; nor can we justify the belief that they are near to the truth. We can, however, rationally defend a preference—sometimes a very strong one—for a certain theory, in the light of the present results of our discussion” (pp. 7, 61).

The specificity imperative in scientific criticism. But on what grounds may one then criticize a theory or defend it? If one accepts that all data are fallible, and that no “method” can immunize an inference from claims of invalidity, it follows that criticisms based on *general* methodological conventions, e.g., based on sample size, selection of dependent variable, the allegation of “anecdotal” evidence, or imperfect measurement just wouldn’t do. Following such vague conventions doesn’t render the inferences more probable or valid. Rather, it behooves the critic to “get down to the weeds” as it were, that is, *get specific* in identifying compelling alternative interpretations that impugn the inferences drawn from a given body of information, and control for those.

Consider the convention that correlational designs are inferior to experimental designs because they fail to yield valid causal inferences. Yet there does exist specific correlational research that has led the scientific community to widely accepted causal conclusions (e.g., in domains of smoking and lung cancer or greenhouse gas emissions and climate change). In fact some scientific disciplines, like astronomy, are entirely based on correlational evidence, all the while many “true” experiments may lead to highly criticizable conclusions based on unintended confoundings in their treatments, discovered by some critic.

And it is in regard to the *specificity criterion* that the conventionalist critiques of our paper falter. Take Mintz and Brule's (2009) arguments that our samples are small, that "Conclusions . . . based on a small number of cases can be misleading," and that "The measure of uncertainty associated with a sample statistic—in contrast to a population parameter—is adjusted for the sample size" (p. 367). They level this critique against "the findings from . . . content analysis of 13 terrorists' farewell messages and 14 interviews of attackers' mothers" (p. 367). But note that our research wasn't meant to estimate the parameter of a *particular* population of suicidal terrorists, limited in time and space, but rather to make a *universal* statement about people's motivations for suicidal terrorism. In the same way as experimental psychologists, experimental economists, and others ubiquitously and legitimately make universal statements about human nature on the basis of experiments conducted with small samples of participants, it is justifiable to look at video or interview evidence with limited relevant samples (e.g., of the kind that Nasra Hassan (2001) carried out in Gaza) to draw universal inferences about various concerns of interest. These conclusions, as any scientific conclusions, are perennially tentative but nonetheless legitimate until such time when they were undermined by specific *cogent* counterarguments. The only legitimate *critique* of our own conclusions, for example, would have been to adduce cases where suicidal terrorists could not care less about ideology, e.g., if they were just wanting to die and kill because of their ideologically empty clinical depression or a hyperactive amygdala. Our critics fail to come up with such contradictory evidence, hence we find their general contentions unconvincing.

Or consider Mintz and Brule's (2009) critique that we are selecting on the dependent variable or missing a control group. As they put it "In their analysis of attackers' farewell messages, Kruglanski et al. (2009) examine only suicide attackers. . . . 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" (p. 368). But note that a diffuse application of the methodological convention in this case is misguided because it confuses the intended *universe of application* of the research—which are *suicide attackers*, with the *dependent variable of interest*—which is their *stated reasons* for their actions. There is no selection on this dependent variable here, as the terrorists were free to state whatever they wanted as their reasons. Furthermore, our argument addresses the *universe of suicidal terrorists*, hence a control group of nonsuicidal terrorists would be inappropriate and irrelevant to the inference of interest. The only type of counterevidence relevant to our inference would be a demonstration that the terrorists didn't mention ideological reasons in explaining their acts or that they did not believe their statements in the videos. Again, our critics supply no such specific evidence. Finally, consider the argument advanced by Bloom (2009, p. 390) that our sources (the Palestinian Media Watch and the Middle East Media Research Institute) are biased in an anti-Palestinian direction and hence unreliable. Once again, this allegation of bias is vaguely general, and

it fails to address the specifics of our argument. Thus, it is unclear how an *anti-Palestinian* bias would produce the *highly positive* image of suicide attackers as idealistically motivated individuals who perform an act of sacrifice for a cause they believe in.

In summary, conventionalist critiques of our findings are based on a positivist philosophy of science whereby some methodological practices are *generally* superior to others in conferring a greater degree of probability on inferences made. In contrast, the post-positivist philosophy of critical rationalism to which we subscribe questions the cogency of this assumption. Rather, we believe that the “proof of the pudding is in the eating” and that criticism of scientific inferences needs to put forth *specific* plausible alternative interpretations of the data. It is specificity (rather than generality) of critical claims that defines *scientific rigor*. The kind of general methodological restrictions espoused by Mintz and Brule (2009), for example, would render inadmissible a variety of evidence that forms the bread and butter of contemporary empirical research on terrorism: Interviews with failed suicide terrorists, content analyses of terrorists’ pronouncements (including farewell videos), surveys that seek to establish correlations between variables (e.g., personality variables and attitudes) in populations at which extremist propaganda is aimed, court case data revealing the “small world” networking of terrorist groups (Sageman, 2004, 2008); all “select on the dependent variables” in studying terrorists and not others, and often are based on small samples. They would be, therefore, ruled out of consideration if the Mintz and Brule (2009) approach were to be followed. This runs the risk of unduly restricting the empirical study of terrorism, with little justification from contemporary philosophy of science.

Percy Bridgman, the Nobel prize-winning founder of high-pressure physics, stated once that “The scientific method is doing the damnedest with your mind, no holds barred.” In reference to a societal problem as severe as terrorism, nothing less will do. Doing the best one can in this case is carefully considering and weighting all bits of evidence that appear pertinent to the problem and piecing them together in a comprehensive analysis of the phenomenon. That would include the kinds of evidence mentioned above and other possible relevant data (e.g., interviews with experts on terrorism, as carried out by Post, Ruby, & Shaw, 2000). Our target article attempted just such a comprehensive “connecting of the dots” in the domain of motivations for suicidal terrorism. Is our treatment of the phenomenon exhaustive? Does it include all levels of analysis pertinent to the phenomenon? Is it final and immune to criticism? Of course not, on all three counts. Rather, we view it as an attempt to illuminate a pernicious phenomenon, drawing on a variety of pertinent evidence and the relevant psychological insights into human motivation more generally. As with all scientific propositions, our “significance quest” notion constitutes a “conjecture” subject to potential “refutations” (Popper, 1963). Until *specific* and compelling refutations are put forth, however, it appears to furnish a useful overall understanding of suicide terrorists’ motivation.

On the actionability of social science knowledge. Mintz and Brule (2009) conclude their paper by stating that “scholars should base their claims on solid evidence or alternatively reserve judgment concerning findings and recommendations (p. 370). And they elaborate their position further by stating that “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” (p. 370, emphasis ours).

But recall that according to contemporary, post-positivist understandings of science, all scientific inferences are *potentially invalid*, and whether evidence is “*solid*” or not depends on the advancement of specific counterarguments and refutations rather than general statements about “systematic research design.” Indeed, it is our view that if a plausible general theory existed concerning a disturbing social problem, if it was based on a convergent variety of evidence, and if it was informed by up to date theory in the relevant scientific domain, it is not only desirable but morally incumbent (in our opinion) that social scientists share their understandings with policymakers and point to their implications for practical interventions. In this vein, Kurt Lewin (1946/1948), widely considered the founding father of modern social psychology, has argued for what he called “action research” wherein basic theoretical principles are translated into specific policies, which impact is then carefully monitored and potentially modified and improved. As he put it, “The research needed is . . . action-research, leading to social action. Research that produces nothing but books will not suffice” (pp. 202–203). And to cite Popper (1983/2000) on this topic, “The method of science [of conjectures and refutations] is rational; it is the best we have. It is therefore rational to accept its results; but not in the sense of pinning our faith in them: we never know in advance where we may be let down. Yet it *is* reasonable or rational, to rely on the results of science *for all practical purposes*. For practice always means a choice; we may act in this way or in that way” (pp. 61–62, emphasis in original). In other words, even though our scientific statements are perennially uncertain, never absolutely (or probably) “solid,” and always “potentially invalid,” conjectural scientific theories are the best knowledge we can realistically hope for; thus, they should well find their way to informing policy and practice. The alternative would seem to be leaving policy makers to their own devices, in hopes of a foolproof scientific tomorrow that may never come.

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