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Journal of Policing, Intelligence and Counter Terrorism

ISSN: 1833-5330 (Print) 2159-5364 (Online) Journal homepage: http://www.tandfonline.com/loi/rpic20

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**To cite this article:** Daniel P. Hepworth (2014) Terrorist retaliation? An analysis of terrorist attacks following the targeted killing of top-tier al Qaeda leadership, Journal of Policing, Intelligence and Counter Terrorism, 9:1, 1-18, DOI: 10.1080/18335330.2013.877374

**To link to this article:** http://dx.doi.org/10.1080/18335330.2013.877374

*Journal of Policing, Intelligence and Counter Terrorism,* 2014
Vol. 9, No. 1, 1–18, http://dx.doi.org/10.1080/18335330.2013.877374

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# Terrorist retaliation? An analysis of terrorist attacks following the targeted killing of top-tier al Qaeda leadership

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One controversial counterterrorism method employed by the United States is the targeted killing of terrorist leadership. Much has been written on this topic, but little of it is based on empirical research. Building on that existing empirical work, this study examined the attacks of al Qaeda and al Qaeda-related terrorist groups before and after the targeted killing of four of its top-tier leaders (Abu Musab al-Zarqawi, Abu Ayub al-Masri, Osama bin Laden, and Anwar al-Awlaki). Using data obtained from the Global Terrorism Database, the frequency, severity, type, and success of over 300 terrorist attacks were analysed with the primary goal of determining if there was any evidence of retaliation from these terrorist groups in the two months following the killing of one of their leaders. The results of the statistical analyses gave no indication of such retaliation. There were no significant changes in the type or target of attacks, no change in the frequency of attacks, and, in one regression model, evidence that the average number of fatalities per attack actually decreased following the targeted killings.

**Keywords:** al Qaeda; retaliation; targeted killing

## Introduction

On September 30, 2011, an American unmanned drone over Jawf Province, Yemen, fired a missile that killed, among others, Anwar al-Awlaki, the head of al Qaeda in the Arabian Peninsula (Obituary: Anwar al-Awlaki, 2011). The American-born al-Awlaki was a highly inspirational figure, having exchanged e-mails with Major Nidal Malik Hasan and reportedly having met with Umar Farouk Abdulmutallab, the so-called underwear bomber, shortly before his failed attack (Anwar al-Awlaki, 2012). Many hailed his death as a serious blow to the organisation (Al-Qaida recruitment, 2011), though others posited that al-Awlaki's death was unlikely to create significant problems for the group (Al Qaeda in Yemen, 2011). This event was the second loss of this magnitude suffered by Islamic terror groups in 2011 following the death of Osama bin Laden in Pakistan nearly five months prior.

The targeted killing of any terrorist leader is controversial in a number of ways. American President Barack Obama has come under fire from all political sides for his handling of US combat operations overseas. The right predictably views Obama as soft, pandering to America's enemies (Gerstein, 2010; Wallace, 2012), while the left decries continued American presence in the region as imperialist aggression (Seymore, 2009) and despairs at the 'human cost' of unmanned drone strikes

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(McVeigh, 2012). Some viewed al-Awlaki as a potentially valuable source of intelligence had he been captured and interrogated (Mukasey, 2011), while others feared the precedent established by the allegedly extra-Constitutional killing of an American citizen (Keating, 2011; Tapper, 2011). The killing of Osama bin Laden brought with it accusations of betrayal from an American ally (Harding & Ebrahim, 2012), fears of reprisal by that same ally for the violation of their sovereignty (Deeks, 2011), accusations of religious pandering from the American right (Editorial: An appropriate burial, 2011), accusations of religious insensitivity from the American left (Islamic clerics say, 2011), and accusations of politicisation of the event long after the fact (Bigelow, 2012).

Beyond these issues, there still lay additional operational and ethical questions regarding the targeted killings of terrorist leadership, a number of which, including some of the above, will be addressed here. One such issue is the moral question of specifically marking one person for death. A second point is the operational preference of capture in place of targeted killing for the sake of interrogation. Another revolves around the question of the effectiveness of this tactic in regard to both deterrence of terrorist groups and disruption of their plans. Finally, there is the concern of retaliation, referred to by Ganor (2008, pp. 129–135) as the 'boomerang effect'. Similar to a general argument against military involvement overseas, this concern is that following the explicit killing of a terrorist leader, the organisation will be so outraged that it will stage an attack or series of attacks designed to show its continued strength and to punish the aggressor-nation for this heinous act. This final issue is the primary focus of this study.

## Targeted killings

### *Distinguishing targeted killings and assassinations*

While both targeted killings and assassinations are similar, they are distinct phenomena and must be treated accordingly. Through examination of legal definitions, presidential executive orders, and congressional hearings, Lotrionte (2003) cleanly distinguishes assassinations from targeted killings. An assassination is a murder of a public figure committed during peacetime for a political purpose (see also Kasher & Yadlin, 2005; Stahl, 2010). Government-sanctioned assassinations have been explicitly banned by the United States via repeated executive orders; however, these orders also conveniently failed to define the term, creating a potential legal loophole. Disagreement exists as to whether or not international law bans assassinations; the debate revolves around the 1907 Hague Convention IV Article 23 (b), which forbids the deliberate killing or wounding "treacherously [of] individuals belonging to the hostile nation or army" (see Lotrionte, 2003; Luft, 2003; Stahl, 2010; Wilner, 2010).

Targeted killings, on the other hand, are carried out against an adversary during a state of war (Wilner, 2010). Some use this definitional component to impart an aspect of national, potentially pre-emptive, self-defence (Kasher & Yadlin, 2005). The application of these definitions against terrorist groups can get foggy, however, because as Byman (2006) notes, war is traditionally fought between multiple nations, not one nation and a sub-state entity. The distinction in this context then relies on a state of mutual conflict between the terrorist group and the nation carrying out the killing. Since 9/11/01, the United States Government has carried out targeted killing operations on a fairly regular basis against high-level enemy combatants. Regardless

of questions of legality, the fact remains that targeted killings are distinct from assassinations and are conducted by a multitude of nations, thus deserving examination.

### *Regulating targeted killings*

According to an interview with Colonel Daniel Reisner, former head of the Israeli Defense Forces International Law Division (IDF-ILD), conducted by Stahl (2010), in early 2001, the IDF-ILD drew up new legal rules to govern the use of targeted killings in Israel and Palestine. This five-pronged legal rule holds that a targeted killing can only be carried out (1) against a terrorist leader or fighter (not against mere supporters), (2) if capture is deemed unfeasible, (3) in a reasonable and proportionate manner, (4) in areas outside the control of Israeli security forces, and (5) only after receiving permission from both the prime minister and defence minister (see also Kasher & Yadlin, 2005).

These rules were established to ensure that targeted killings are used only in a judicious manner and with significant oversight. Also, while some aspects of the rules may frustrate Israeli operatives seeking to carry out such an operation, they do provide a fairly strong legal shield when an operation goes awry, assuming the proper procedures were followed (Stahl, 2010). American targeted killing policy and its transparency varies depending on which agency (the Central Intelligence Agency (CIA) or the military) is carrying out the action. Military policy for targeted killing is similar to that created by the IDF-ILD (FM 3-60, 2010, pp. 1–2–1–10) and, from what is known of CIA policy (Byman, 2008, pp. 115–116; Guiora, 2008, pp. 81–88), it also appears similar, namely, to capture terrorist operatives when feasible, minimise the risk to friendly agents and troops, minimise the risk of collateral damage, and provide significant oversight and accountability (see also Flynn, Juergens, & Cantrell, 2008; Williams, 2013, pp. 102–103).

### *Ethics of targeted killings*

Moral and ethical questions are difficult to answer due to their inherently individualistic and cultural natures, respectively. From the point of view of many individuals and cultures, there are a number of reasons to object to targeted killings. Many object to these policies on the ground that they are simply *wrong* (Ganor, 2008, pp. 112–120; Jenkins, 1987). It is seen as one thing to kill during combat or in active self-defence, but it is something entirely different to end someone's life during a non-combat state; to do so, it is argued, is tantamount to murder, regardless of what this individual has done or may do in the future. Others understand this concern, but see it as a necessary evil that is simultaneously moral and immoral, given the proper circumstances (de Wijze, 2009; for further conceptual discussion, see Stocker, 1987).

Another moral (and political) concern raised is that of possible civilian casualties, a concern especially relevant if the weapon used is any kind of explosive (Byman, 2006; Lotriionte, 2003). One response to this criticism is with a lesser-of-evils approach: wider-targeted military operations, such as an air raid or mortar shelling, are less discriminatory than even the broadest targeted killing technique and typically produce more civilian casualties, especially as terrorist groups have a tendency to establish their bases and training facilities in areas with high civilian

concentrations (David, 2002; Ganor, 2008, p. 116). Kasher and Yadlin (2005) argue that the possibility (even the certainty) of civilian collateral damage should not necessarily preclude the strike. Taking a needs-of-the-many verses the needs-of-the-few approach, they state that situations must be analysed case-by-case, weighing expected collateral damage from a targeted killing against the projected damage suffered from a terrorist attack should the target(s) not be eliminated. Williams (2013, pp. 99–101) conducted an analysis on drone attacks in Afghanistan (many of which are targeted killings) and found the civilian casualty rate to be quite low (e.g. 2010 rate of about five per cent).

Those arguing in favour of targeted killing policies point out their moral upsides (see David, 2003; Gordon, 2006). Primary among these justifications is the argument that it is preferable to eliminate one or a handful of evildoers in order prevent the deaths of completely innocent civilians (see Byman, 2006; Lotrionte, 2003). Also, it is argued that targeted killings can disrupt future attacks, prevent larger scale attacks (such as weapon-of-mass-destruction [WMD] attacks), and leave no prisoners for which other terrorists can barter (Jenkins, 1987; Lotrionte, 2003). That said, many of those who support such policies argue that targeted killings be used as a last resort if capture is not feasible and if the individual is truly considered a significant threat (Kasher & Yadlin, 2005).

Leading the opposition against targeted killing policies, Jenkins (1987) makes an impassioned plea against using assassinations (a term he uses, though one could arguably substitute 'targeted killing' given the context in which he uses this term). He begins by stating many of the common arguments against such actions: that the replacement may be worse than the current terrorist, it violates international law, and it may spur further recruitment and terrorist attacks. He then argues that not only is this practice morally wrong, but that the country carrying out the attack would be committing actions "indistinguishable from those of the terrorists themselves"; such an argument carries with it a heavy moral question that individuals and government agencies must consider (see also Carvin, 2012; Perry, 2005).

Stein (2003) makes similar arguments, questioning the legal ground of targeted killings by international law and Geneva Convention standards, noting that civilians (i.e. inactive non-combatants) cannot be targeted (see also Gross, 2006; Ratner, 2007; Sadat, 2012). She also points out a major flaw in the ethical argument, stating that many of the arguments made to justify Israeli targeted killing in Palestine (to protect Israeli citizens from Palestinian terrorists) could be turned on their head and used by the Palestinians to justify additional actions taken against Israel (see Miller, 2009, pp. 139–151 for a sound discussion of Stein's arguments).

### *Capture and interrogation*

In many situations, capturing a terrorist may be seen as preferable to killing a particular member or leader of a terrorist group. Capture raids typically require more precision than a targeted killing, reducing the risk of collateral damage. Additionally, a captured target can be interrogated later or even on the spot, which may lead to what Frankel (2011) calls 'follow-on raids'. And while some question the effectiveness of interrogation practices, especially enhanced interrogation techniques (EITs), many intelligence officials stand by them, arguing that they

work well, often providing very valuable information (see Rodriguez & Harlow, 2013, pp. 102–112).

One downside to a capture attempt is that it almost necessarily places troops and agents in greater peril than does a targeted killing. Also, an incarcerated terrorist may be able to associate with his fellows, potentially further radicalising them or even recruiting others. Incarceration also brings with it the risk that the terrorist group may seek to secure his release through the taking of hostages, creating a no-win scenario for the government. An additional point in support of targeted killings is that while a dead man cannot talk, he may leave behind his worldly possessions (e.g. journals, laptops) that may speak for him. That said, the chances of recovery are highly correlated with the type of weapon used to kill the terrorist and the recovery of such items does require boots on the ground.

### *Disruption and deterrence*

Terrorist leaders plan and coordinate attacks, recruit and train new terrorists, maintain morale, and raise funds. Theoretically, liquidation of even one of them can severely damage the group, even if it just affects morale (Ganor, 2008, pp. 109–112; Posen, 2001). Thus, the objectives behind any targeted killing scheme are twofold: to disrupt terrorist operations and deter others from stepping up to fill these now vacant positions.

When examining the research, however, there is no clear consensus as to whether targeted killing policies actually accomplish these goals (Byman, 2006; Fisher, 2007; Ganor, 2008, p. 128; Jenkins, 1987; Luft, 2003; Walsh & Piazza, 2010). One explanation for this lack of consensus is that each situation is unique; a tactic that works well in one scenario may prove ineffective in another (see Lupovici, 2010). For instance, some suggest that targeted killings are less disruptive when conducted against decentralised groups (Frankel, 2011), although this belief is not universally held (see Neumann, Evans, & Pantucci, 2011). On the other hand, they may have quite a strong impact on structured, bureaucratic groups with fewer leaders and few replacements for those leaders (Jenkins, 1987; Jones, 2007). And, while historically the capture or killing of terrorist leaders has played a significant role in the demise of relatively few terrorist groups, they were typically very hierarchal with strong, charismatic leaders (Cronin, 2006; see also Hoffman, Rosenau, Curiel, & Zimmermann, 2007; Sageman, 2008, pp. 143–146). Other research shows a systematic targeted killing campaign to be even more effective when combined with traditional military action (Davis & Jenkins, 2002; Morag, 2005) (for a discussion of a 'successful' counterterrorism campaign, see Byman (2008, pp. 49–82) and Miller (2007)).

In order to deter terrorist action, systematic targeted killing policies are designed to strike fear into the hearts of remaining and recently promoted leaders and other key actors (e.g. bomb makers). The hope is that with their comrades falling around them, their attention will shift from carrying out terror attacks to staying alive (Byman, 2006; David, 2002; Wilner, 2011; for a thorough discussion of the effectiveness of drone strikes in Afghanistan, see Williams, 2013, pp. 106–119). They may even be less inclined to carry out some attacks out of fear of further provoking the opposition.

Deterrence is a two-pronged concept of both punitive and defensive components (Van de Velde, 2010). Punitive deterrence is self-explanatory. Defensive deterrence

works not only by preventing an attack from occurring (Dicter & Byman, 2006) but, in addition, terrorists lose crucial public credibility when authorities foil an attack. This should create a no-win scenario for the terrorist group: if it successfully carries out an attack, it is punished, but if it attempts an attack and fails, it is seen as weak and incompetent. Neither outcome is seen as positive, thus serving as a group deterrent.

Some argue that deterrence against terrorist groups is possible, but requires a different approach than has been taken in the past, both in regard to policy and theory (see Knopf, 2010; Wilner, 2011). Deterring a terrorist organisation may be more difficult than a nation-state (such as the mutual nuclear deterrence between the United States and Soviet Union during the Cold War): it requires more customisation to the situation and the objectives of the terrorist group. It is also possible, and arguably significantly easier, to deter any 'rogue nation' that is sponsoring the terrorist group, thus indirectly deterring the terrorists as well.

One key assumption of deterrence is rationality, evidence for which has been found in prior research studying both individual terrorists and terrorist groups (see Black, 2004; Dugan, Lafree, & Piquero, 2005; Hepworth, 2013; Kramer, 1998, pp. 144–146; McCartan, Masselli, Rey, & Rusnak, 2008; Sandler, Tschirhart, & Cauley, 1983). While it has been argued that traditional counterterrorism deterrents of death or incarceration may have little to no impact on a terrorist willing to die for the cause, other options are available, such as the reduction or elimination of the suicide bomber's posthumous celebrity status or threatening to punish his family upon his death (Ganor, 2008, pp. 78–79).

Fortunately, not all terrorists are as willing to die as the suicide bomber (Davis & Jenkins, 2002). There is reason to believe that most terrorists, especially leaders, are not as ready to die and thus may be more easily deterred (Ganor, 2008, p. 76). Even if a specific terrorist fails to heed the threat of elimination and is killed, this action may cause his potential replacement to pause, knowing all the better the potential consequences for his actions.

While deterrence of an entire group may be difficult, it should be possible (Davis & Jenkins, 2002; Wilner, 2011). Trager and Zagorcheva (2005) note that deterring a terrorist group is significantly easier if the group's motivation is relatively low and/or if the government the terrorist group is opposing is able to accommodate at least some of the terrorists' goals. This type of deterrence depends largely on the government's ability and willingness to act, as well as the potential for popular condemnation of the terrorist group.

### *Retaliation*

Another concern regarding the effectiveness of a targeted killing policy is retaliation by the terrorist group. While calls for and claims of vengeance following a targeted killing abound (see ICT special report, 2011), there is disagreement as to whether such actions actually occur and, if so, in what circumstances (Ganor, 2008, pp. 129–135; Jenkins, 1987; Lotrionte, 2003). Though the killing of a leader may create chaos, an inspirational martyr may be created, especially if the local population is supportive of the terrorist group or of that leader in particular (Byman, 2006; Cronin, 2006). If the group is resilient enough, it may attempt to strike back at the nation that carried out the attack (Jenkins, 1987). Lotrionte (2003) points out that if

the terrorist leader is also the leader of a country or region, his removal may cause additional instability, creating even more problems.

Hunter (2009, pp. 64–65) refers to this as the 'martyrdom effect'. He states that given the proper circumstances, the targeted killing of a terrorist leader may elevate him to 'mythic status', leading to additional attacks either out of a need for revenge or from a sense of inspiration stemming from this now-mythical figure. He goes on to note that even if the elimination of the leader does not inspire future attacks, if the deceased leader becomes a martyr, it may actually boost morale.

### *Empirical studies of targeted killings*

While more empirical research on a topic is always welcome, a number of sound studies have been conducted, testing the effectiveness of targeted killing policies; however, the results are far from consistent. Kaplan, Mintz, Mishal, and Samban (2005) studied the impact of Israeli targeted killings of Palestinian terrorists on the frequency of suicide bombings. They found that the targeted killing programme, primarily of potential suicide bombers and lower-level leadership, appeared to have a significant effect. While the targeted killing programme did reduce terrorist 'stock', it also stirred up the hornet's nest: terrorist recruitment appeared to go up and the rate of Palestinian suicide bombings increased. However, it is noteworthy that this study did not take into account the number of casualties per attack. As a result of their study, they suggest an emphasis on capturing instead of killing these terrorists. A follow-up study by a subset of these authors found similar results (Kaplan, Mintz, & Mishal, 2006) and another study of the same topic by different researchers (Hafez & Hatfield, 2006) found this method of counterterrorism to have little if any impact on the actions of Palestinian terrorists, positive or negative.

Jacobson and Kaplan (2007) also examined Israeli targeted killing policies, applying game theory in order to determine policy effectiveness. They found the programme resulted in a reduction in casualties in both the Israeli and Palestinian populations, clearly a net-gain for both sides. While the authors acknowledge the shortcomings and assumptions inherent in game theory, they are nonetheless confident that their results indicate the effectiveness of targeted killing strategies. Their research was consistent with the findings of Morag (2005), who, in a brief analysis of annual fatalities, found Israeli offensive counterterrorism policies (including targeted killings) to be effective in saving Israeli lives.

Shifting focus from Israel to American operations in south Asia and the Middle East, Lamb and Munsing (2011, pp. 1, 55–56) conducted an in-depth analysis of the effect that interagency Special Operations Forces (SOF) high-value target (HVT) teams had on counterinsurgency operations in Iraq. While initial results in regard to the overall strategy were not promising, when some important changes were implemented, such as network-based targeting and improved interagency cooperation and communication, the authors credited the teams with making a significant 'contribution to reversing the deteriorating situation in Iraq'.

Neumann, Evans, and Pantucci (2011) challenged the commonly held notion that targeted killing is ineffective against decentralised groups, specifically al Qaeda. This case-study analysis of the elimination of multiple al Qaeda 'middle managers' suggests that these are the individuals who functionally hold the group together. These members of the terrorist organisation communicate between higher leadership and individual cells and also between multiple cells, both giving and carrying out

commands on a regular basis. Elimination of these types of individuals may not bring such an organisation to its knees, but it can severely frustrate day-to-day operations and can serve as a crucial component in a larger counterterrorism scheme.

Wilner (2010) examined Taliban attacks before and after a series of mid-level targeted killings. While the number of attacks directly following a targeted killing increased, more effective and sophisticated attacks (e.g. suicide bombings) waned while simpler and less effective attacks (e.g. small arms assaults) increased. In addition, failure rates for these sophisticated attacks rose, indicating a 'decrease in professionalism' among the terrorists. With operational leaders eliminated, performance suffered; less effective tactics were used more often and complicated operations were more prone to failure.

One specific form of targeted killing worthy of mention is the targeting of top-tier leaders with the end-goal of cutting off the snake's head, commonly known as decapitation. Research on the effectiveness of this strategy is mixed. Jordan (2009) conducted a very respectable study in which she found the process not only ineffective, but at times counterproductive. While her results found decapitation to be slightly more effective against younger, smaller, and more ideological (as opposed to religious) groups, overall, decapitated groups were less likely to suffer dissolution than those that were not. Mannes (2008) found the strategy questionable at best, concluding that it may work in some, limited circumstances, but that "the limited effect of the decapitation strategy … raises doubts about its overall efficacy".

On the other hand, Johnston (2012) found organisational decapitation effective (i.e. reducing and/or ending hostilities) against a myriad of groups, regardless of ideological foundation, including Islamic groups. He also proposes that decapitation may be effective against cellular, decentralised organisations, a suggestion supported by research conducted by Hardy and Lushenko (2012). Price (2012), examining the decapitation of 207 terrorist organisations and applying a longer-term standard for effectiveness than did Jordan (2009), also found decapitation effective. He states that, depending on which variables were applied in certain models, decapitated terrorist groups were many times more likely to end when compared to those that were not decapitated. Like Johnston's study, the overall findings were significant regardless of common factors, such as ideology, structure and size. In the majority of the above-cited research, empirical research is largely supportive of targeted killing policies (decapitation-oriented or otherwise), especially when carried out as a single component of a larger counterterrorism strategy.

## Study methodology

It has been said that instead of asking *if* terrorist retaliation exists, one should inquire rather *when* and *in what circumstances* it might occur (Ganor, 2008, p. 132). The research here seeks to build upon the existing literature and to address these questions in regard to the impact of the elimination of four top-level al Qaeda leaders. Specifically, this research examined terrorist attacks to determine if, following the targeted killing of these leaders, there was a significant change in terrorist attack behaviour that may be considered an illustration of retaliation. The targeted killings of terrorist leaders, regardless of whether they were carried out by a CIA drone or military team, is being examined here separately from the elimination of those leaders from a standard combat situation expressly because of the *targeted*

nature of a targeted killing. The presumed outrage felt and potentially expressed (in the case of retaliation) is thought to stem largely from the fact that the leader in question was specifically marked for death (in the same vein as the argument against targeted killing policies made on moral grounds).

Al Qaeda and its substituent groups have a host of operational leaders, many of whom are killed and captured by coalition forces on a fairly regular basis; the focus here is not on them and the potential operational disruptions caused by their elimination. Instead this study seeks to determine if the targeted killing of the top-tier leadership inspires and/or enrages the terrorist groups to strike back at the forces responsible, as they often threaten to do.

Abu Musab al-Zarqawi (killed June 7, 2006) was the leader of al Qaeda in Iraq until his death, succeeded by Abu Ayub al-Masri (killed April 16, 2010). Osama bin Laden (killed May 2, 2011) requires no introduction and Anwar al-Awlaki (killed September 30, 2011) led al Qaeda in the Arabian Peninsula and was a major spiritual leader for the global al Qaeda movement. Each of these four leaders was more than higher-ranking members; they were major public spiritual and operational leaders of their respective organisations until their deaths at the hands of American forces, and as such, it is the impact of their deaths that is the focus of this study. Other targeted leaders could certainly have been selected for study; these four were selected based on their influence as top organisational leaders (bin Laden, al-Zarqawi and al-Masri) and public and spiritual figures (al-Awlaki and bin Laden). Data analyses were used to check, subsequent to a targeted killing, for the following: a rise in the number of attacks, a rise in the average number of fatalities resulting from these attacks, a change in the success ratios, a shift in the types of targets attacked, and a shift in the type of attack carried out. The explanations for the expected rise in the number of attacks and average fatalities are self-evident. Previous research suggests that if a change in target or attack type occurs, it will be towards softer targets and simpler methods out of a desire to quickly inflict maximum carnage and because of a potential reduction in professionalism (Wilner, 2010).

### *Data*

The data for this study comes from the Global Terrorism Database (GTD, http://www.start.umd.edu/gtd/). The GTD is a dynamic collection of data covering over 100,000 terrorist attacks, maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) and the University of Maryland with assistance from the Department of Homeland Security. The attacks analysed were carried out not only by al Qaeda proper, but also by other closely related organisations, which, when taken with al Qaeda proper, have been previously dubbed the al Qaeda network (AQN). The AQN, which originated in Hepworth (2013), is a loose organisation of allied terrorist groups, according to the Terrorist Organization Profiles (TOPs), an element of the GTD (http://www.start.umd.edu/start/data_collections/tops/). To ensure the quality of the data, only attacks classified by the GTD as 'unambiguous' were studied.

Data on terrorist attacks that occurred two months prior to and following the targeted killing of each of the four leaders were recorded. This before-and-after research design, commonly used for programme evaluation, provides a small enough time frame that any significant change in behaviour should be largely attributable to the break in the period of time, which here is the killing of the terrorist leader.

The two-month period was selected for a number of reasons. Previous research of a similar nature (see Wilner, 2010) utilised a two- or three-week before-and-after period surrounding the targeted killing of mid-level Taliban leadership. The leadership here was significantly more important, thus warranting a larger window. Second, given the relatively small number of attacks, to decrease the time-period would reduce the number of attacks to a level below that allowed for sound statistical analysis. Third, while much of the research of the topic of targeted killing and decapitation focuses on the termination of the terrorist group, that is not the focus here. As such, a larger period of time (or even a longitudinal analysis) would allow for the influence of far too many historical events on terrorist behaviour. Also, this study seeks to determine the presence of a retaliatory strike, which would presumably happen within a reasonably short period of time after the targeted killing, thus reducing the significance of terrorist attacks as time passes. Given this, the two-month period was selected in order to get a clear understanding of terrorist behaviour both before and after the event while minimising the influence of other outside (historical) events.

### *Variables*

Variables recorded for analysis included the date of each attack (time frame) and the specific terrorist group that carried out the attack. These two variables were later recoded into a single variable (time frame/group) with four values: (1) attacks that occurred within two months before a targeted killing and by a group other than that led by the leader killed, (2) before a killing by the group led by the leader, (3) within two months after a killing by an 'other' group, and (4) after a killing by the group led by the leader. This was done not only to account for the two periods of time, but to take into consideration that the specific group led by the eliminated leader might react more strongly than the others.

The type of target attacked was also included. The GTD records 22 different types of targets, which were recoded into a four-value variable (target type), including (1) military, (2) police, (3) other government, and (4) civilian. This was later recoded again into a dichotomous variable of (1) government and (2) civilian for regression analysis.

An additional set of variables all involve the type of attack carried out. The first is whether the attack was primarily considered a bombing or an armed assault. Also included were indicators of a suicide attack (yes/no), an assassination (attempt) (yes/no), and a kidnapping/hostage situation (yes/no). These variables were deemed important as certain attacks are more difficult to carry out than others, inherently kill at different rates, and send different messages. For instance, a kidnapping with an on-camera execution or an assassination of a political leader may each kill only one individual, but the messages they send are significant and unique compared to a roadside bombing. Additionally, all attacks were coded as successful or not. Multicollinearity tests were run on all variables, and no problems were found.

The number of fatalities was used to reflect the severity of the attack instead of the number of injuries. Fatalities are more reliably reported (especially when the number of injuries is high) and are more uniform in severity (e.g. an injured victim who loses a limb is reported equally to one who suffers a minor flesh-wound).

**Data analyses and results**

Members of the AQN carried out 305 recorded terrorist attacks over the 16 months studied in total. The attacks were split as evenly as possible between the two months prior to a targeted killing (152, 14 by the group of the leader killed) and the two months after (153, 18 by the group of the leader killed). Two chi-square analyses were conducted, one between the time frame variable and the categorical variables and the other between the four-value time frame/group variable and the categorical variables (see Table 1). The only statistically significant relationship was found (barely) in the second analysis between the independent variable and suicide ($p$ = .082), with a slightly increased number of suicide attacks carried out after the killing, but by groups other than those led by the leader killed.

In order to determine what, if any, changes occurred in the severity of attacks after the targeted killing of the terrorist leaders, two negative binomial regression analyses were conducted using the number of fatalities from each attack as the dependent variable. The analyses were identical but for one variable: in the first model, the time frame variable (before or after the leader was killed) was used; in the second, a dummy-coded version of the four-value time frame/group variable was used (the variable designated for after/other group was left out as the reference variable). Independent variables for both analyses were the dichotomised target type (government or civilian), hostage taking, assassination attempt, attack type (bombing or armed assault), suicide, and success.

Overall significance was found in the first model (likelihood ratio chi-square = 198.252, overall $p < .001$). However, the only variable found to be significant was

Table 1. Time frame/group distribution table and chi-square results.

| | Before-other groups[a] | Before-group of leader | After-other groups[b] | After-group of leader |
|---|---|---|---|---|
| Military target | 12 (13) | 1 | 8 (9) | 1 |
| Police | 24 (26) | 2 | 17 (19) | 2 |
| Other government | 36 (41) | 5 | 35 (38) | 3 |
| Civilian | 67 (73) | 6 | 74 (86) | 12 |
| Hostage yes | 21 (22) | 1 | 25 (25) | 0 |
| Hostage no | 118 (131) | 13 | 109 (127) | 18 |
| Assassination yes | 16 (19) | 3 | 15 (19) | 4 |
| Assassination no | 123 (134) | 11 | 119 (133) | 14 |
| Bombing | 77 (87) | 10 | 71 (84) | 13 |
| Armed assault | 62 (66) | 4 | 63 (68) | 5 |
| Suicide* | 16 (21) | 5 | 23 (25) | 2 |
| Non-suicide | 123 (132) | 9 | 111 (127) | 16 |
| Successful | 123 (136) | 13 | 122 (139) | 17 |
| Unsuccessful | 16 (17) | 1 | 12 (13) | 1 |

*$\chi^2$ analysis significant at $\alpha$ = .10 for the second test, with time frame/group as the independent variable.
[a]Number in parentheses is total attacks before the leader was killed, regardless of group.
[b]Number in parentheses is total attacks after the leader was killed, regardless of group.

Table 2. Negative binomial logistic regression, Model 1.[a]

| | *B* | SE | Wald chi-square | *p* |
|---|---|---|---|---|
| (Constant) | 1.689 | .3871 | 39.278* | <.001 |
| Time frame | .153 | .1427 | 1.154 | .283 |
| Target type[b] | .153 | .1490 | 1.058 | .304 |
| Hostage taking | .399 | .2442 | 2.666 | .102 |
| Assassination | .233 | .2443 | .906 | .341 |
| Attack type | .194 | .1823 | 1.129 | .288 |
| Suicide | −1.874 | .1909 | 96.355* | <.001 |
| Success | −.433 | .2571 | 2.479 | .115 |

*Significant with $\alpha = .01$.
[a]Likelihood ratio Chi-Square = 198.252, overall $p < .001$.
[b]Variable target type dichotomised (government, civilian).

Table 3. Negative binomial logistic regression, Model 2.[a]

| | B | SE | Wald chi-square | *p* |
|---|---|---|---|---|
| (Constant) | 5.230 | .6380 | 73.667* | <.001 |
| Before/other groups | −.565 | .1572 | 12.892* | <.001 |
| Before/group of leader | −.897 | .3341 | 7.216* | .007 |
| After/group of leader | −1.972 | .2980 | 43.759* | <.001 |
| Target type[b] | .081 | .1508 | .288 | .592 |
| Hostage taking | .396 | .2466 | 2.574 | .109 |
| Assassination | .325 | .2496 | 1.691 | .193 |
| Attack type | −.310 | .1969 | 2.476 | .116 |
| Suicide | −2.301 | .2012 | 130.788* | <.001 |
| Success | −.126 | .2850 | .197 | .657 |

*Significant with $\alpha = .01$.
[a]Likelihood ratio Chi-Square = 252.721, overall $p < .001$.
[b]Variable target type dichotomised (government, civilian).

suicide ($b = -1.874$, Wald chi-square = 96.355, $p < .001$). No other variable, including time frame, was statistically significant (see Table 2).

Overall significance was also found in the second model (likelihood ratio chi-square = 252.721, overall $p < .001$). Individual variables with significance were suicide ($b = -2.301$, Wald chi-square = 130.788, $p < .001$) and time frame/group (each of the three dummy coded variables was significant: before/other group $b = -.565$, Wald chi-square = 12.892, $p < .001$; before/group of leader $b = -.897$, Wald chi-square = 7.216, $p = .007$; after/group of leader $b = -1.972$, Wald chi-square = 43.759, $p < .001$) (see Table 3).

## Discussion

Many argue that the current American targeted killing programme in and around the Middle East has been successful insofar as it has disrupted terrorist activities (see FM 3-60, 2010; Flynn, Juergens, & Cantrell, 2008). Williams (2010) states that it is 'abundantly clear' that the Predator drone campaign in the FATA region of Pakistan against both terrorist leadership and foot soldiers has disrupted activity and

generally made life difficult for both al Qaeda and the Taliban by killing some leaders and pushing others into a siege mentality. Frankel (2011) offers some suggestions to improve the programme, but appears optimistic as to the programme's success and potential.

The purpose of this study was to determine if, following the targeted killing of a top-tier leader of a member of the AQN, the member groups would increase or otherwise alter their attacks in response. The raw data suggest this did not occur and the statistical analyses back them up. The number of attacks in the two months before and two months after an attack was essentially identical at 152 and 153, respectively. The average number of fatalities per attack actually decreased after a killing from 4.16 to 3.01. When examining only the groups directly led by the dispatched leader, a slight increase in the number of overall attacks was found (14 before and 18 after), but that change was insignificant. Also, the average number of fatalities per attack carried out by these groups also fell, from 9.43 to 7.89. The time frame/group variable was found significant in the second regression model (the time frame variable was not significant in the first), but in the direction indicating a decrease in effectiveness, not an increase as would be expected if the terrorists were stepping up their attacks. The only variable found significant in both models was suicide, which unsurprisingly generated far more fatalities than non-suicide attacks.

There was also no indication of any significant change in tactics indicating retaliatory actions (e.g. no increase in assassinations). None of the categorical variables tested were found significant when tested against the time frame variable. Only suicide was found significant (with a high $\alpha = .10$) when tested against the time frame/group variable with a slight increase in suicide attacks after a targeted killing, but only by groups other than that led by the slain leader. This one weak relationship is hardly a resounding indication of retaliation on the part of the terrorist groups.

One could argue that it is possible that the groups still attempted to strike back, but that this was offset by the structural damage to the group caused by the targeted killing. This thought harkens to Ganor's (2008, p. 42) 'terrorism equation', which, simply put, proposes that two elements are required for a terrorist attack to occur: sufficient motivation and sufficient resources. The core of the argument of terrorist retaliation is that terrorist groups already have the necessary resources and the killing of the leader creates (further) motivation to carry out (additional/more severe) attacks. Applying the equation to the above explanation for the absence of change, one would surmise that the groups' motivation increased, but that the strikes reduced their resources, presumably in the form of lost leadership.

There is another potential explanation for the lack of significant changes indicating retaliation. It is possible that the terrorist groups are already 'maxed out' in regard to motivation. Consider an analogy of an angry voter. A politician is up for election in a year's time, and the voter has already decided to go out and vote for the opposition, whoever that might be. Additional motivation (e.g. scandals, endorsing unpopular legislation) might get the voter even more riled up, but in the end, she is already dedicated to go vote, so nothing really changes. If the terrorist groups already wish to attack, and it is resources, not motivation, holding them back, then additional motivation means little.

There does appear to be some indication of a decrease in professionalism following a targeted killing, as seen in the Wilner (2010) study, in the form of the decrease in average fatalities per attack found in the second regression model. Average fatalities fell after a targeted killing for both the groups led by the leader

killed and the 'other' groups. That said, there were not any statistically significant changes in success rates, the targeting of softer targets, or use of presumably more difficult tactics (e.g. bombings, assassinations, hostage takings). In the end, this study produced some indication of a weakening of terrorist groups in regard to the decrease in average fatalities per attack; however, there appeared no other significant changes and certainly no evidence of retaliation on the part of the terrorist groups.

## Study implications and avenues for further research

While there were minor positive changes seen following the examined targeted killings (decrease in average fatalities), these data analyses failed to find evidence of terrorist retaliation, contradicting one of the common and primary arguments against these actions. While the debates over the ethics of targeted killing, capturing instead of killing terrorist leaders, and the killing of terrorists overseas who may be American citizens continue, this study suggests no reason to fear significant retaliation following the targeted killing of high-level terrorist leadership.

The findings here can also be used to further inform leadership in all levels of government and the military, as one of the primary factors in the targeted killing decision-making process is to ascertain the level of risk of an operation. While clearly the direct risk of a given operation depends on present environmental factors, this research suggests that the risk of post-operational blowback is minimal. Finally, this study suggests, by extension, that the targeting of top-tier leadership can be a very effective element of a larger counterterrorism strategy if utilised properly, as described by Lamb and Munsing (2011, pp. 55–58).

This study was intentionally limited to the aggregated attacks surrounding the separate killings of four terrorist leaders. There are countless other leaders targeted on a regular basis in this current conflict and in many others. Replication of this study applied to other terrorist leaders (at all levels) and in other theatres would be invaluable. Additionally, a qualitative study of the motivations of individual and/or significant terrorist attacks (e.g. the 9/11/12 attacks on the US embassy in Libya) would shed some much needed light on these events, especially in regard to the motivation for said attacks. Finally, another worthwhile study would focus on the impact of targeted killing operations on the civilian populations living in the targeted areas, both in regard to public opinion of the nation carrying out the attacks as well as general quality-of-life issues.

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