Evaluating the Impact of Repeated Leadership Targeting on Militant Group Durability*

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Abstract

The research focuses on how repeated leadership targeting can affect militant organizations. To date, there has been little prior discussion regarding and almost no quantitative assessment of its repeated nature. This research undertakes to assess the policy's effectiveness by taking into account the repeated nature of targeting policies. An analysis of 207 militant organizations between 1970 and 2008 finds that repeated targeting can hasten a group’s demise, but in a quadratic way. While initial targeting interventions rather increase a group's resilience, a series of successive attacks has a significant impact in reducing their survivability. This effect is found to be particularly significant when the organization is still young. The findings suggest that for the targeting policy to be effective, patience and repeated interventions are required; it is erroneous to conclude its effectiveness based on the result of a single intervention.

Keywords: militant organizations; countermeasures; leadership targeting; repeated interventions; marginal structural model

Introduction

Countering militant operations has been a key domestic and foreign policy in many countries for decades. One of the most popular countering approaches has been targeting leadership, assuming that removing the top leaders would lead to the disruption of the group, as expected from the killing of Osama bin Laden. Based on this assumption, an increasing number of targeting policies have been implemented globally. For instance, Figure 1 shows leadership decapitation by drone strikes in Pakistan, Yemen, and Somalia. Numerous militant leaders were specifically targeted and removed

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from various groups. However, our understanding of how these countermeasures impact groups’ operations is often incorrect. Does leadership targeting increase their resilience through motivating members? Does it disrupt the organization itself through forcefully removing skilled leaders? The frequent use of leadership targeting has motivated researchers to evaluate the policy’s effectiveness, producing a number of findings (Jordan 2009; Johnston 2012; Price 2012; Abrahms and Mierau 2015; Abrahms and Potter 2015; Tominaga 2017a).

However, to date, little has been written about the cumulative nature of leadership targeting. Figure 1 also illustrates that each listed militant official and organization has been targeted multiple times. For instance, Baitullah Mehsud, the militant leader of Tehrik-i-Taliban Pakistan (TTP), was targeted seven times, finally being killed by the last of these attacks in 2008. As will be explained later, he is not a unique case. Many militant leaders and organizations experience multiple targeting interventions during their life span. However, the cumulative nature of leadership targeting has not been taken into account in earlier research. Failure to consider the repeated nature of targeting policies is critical, as it fails to consider possible bias by restricting analysis to the single-shot frame, thereby missing the important dynamics of the relationship between the mortality of militant organizations and cumulative leadership targeting.

In this paper, we illustrate that considering the repeated nature of leadership targeting enriches
the explanation of this policy's possible effects; we also argue that missing the dynamic nature of leadership targeting causes post-treatment bias/omitted variable bias in the single-shot analysis. Depending on whether a militant group is constructed to pursue collective goods (political objectives) or as a means for its members to form affective ties with fellow militants, we argue that repeated targeting policies have two alternative (and respective) outcomes: (1) increasing the cost of participation by reducing the likelihood of post-victory material benefits promised by the leader being achieved, or (2) creating a common enemy and actually increase the solidarity among militant group members. The former argument predicts the success of repeated targeting in reducing the mortality rate of militant organizations while the latter predicts failure in this regard.

In terms of methodological perspective, where leadership targeting is repeated multiple times, it is affected by and affects militant operations. For instance, the number of militant attacks affects the authorities’ decision to execute targeting policies, but the practice of decapitation also affects the number of militant operations, which could, in turn, also affect subsequent targeting policies. In this setting, ignoring time-varying factors such as the numbers of attacks causes omitted variable bias, but including those factors also causes post-treatment bias. We avoid both these biases and produce an accurate assessment of the cumulative effect of leadership targeting by utilizing marginal structural models.

An analysis of 207 militant groups between 1970 and 2008 inclusive supports the idea that repeated targeting policies reduce the mortality rate of militant organizations, but in a nuanced way: The relationship between the cumulative effect of targeting policies and the mortality rate is quadratic. The initial practice of leadership targeting actually increases the leader’s organization’s predicted survival years, but its repeated practice clearly reduces their survivability. The findings also indicate that repeated leadership targeting during the initial period of a militant group’s existence works better in reducing their total life span. The results suggest that for leadership targeting to be effective, “wait and see” is not good strategy; rather, patience and multiple interventions are required. Policy makers and practitioners needs to be cautious to avoid making a decision on the policy’s effectiveness based on a single intervention.

Evaluating the Impact of Leadership Targeting

Current explanations for the effectiveness of leadership targeting tend to focus on one of the two following perspectives: (1) the capabilities of militant organizations; and (2) the motivation of militant members.¹

For the past decade, scholars of terrorism studies have argued over the role of leadership as

¹ For a review of the literature on leadership targeting, see Carvin (2012).
a key factor affecting militant organizations’ operational capabilities. Leadership requires unique skill sets for organizing and managing militant operations (Wilner 2010; Price 2012). As Byman (2006, 103–104) argues, “Contrary to popular myth, the numbers of skilled terrorists is quite limited. Bomb makers, terrorism trainers, forgers, recruiters, and terrorist leaders are scarce; they need many months (...) to gain enough expertise to be effective.” Finding successors with these requisite skill sets is quite difficult and “the selective removal of central players does restrict the terrorism process and degrades an organization’s overall capability to plan, coordinate, [and] carryout acts of violence” (Wilner 2010, 312). For example, in Malta in 1995, the targeted killing of Fathi Shikaki, head of Palestinian Islamic Jihad (PIJ), left PIJ in significant disarray as no competent successor could be found (David 2003, 116). Similarly, in September 1992, the targeted capture of Manuel Ruben Abimael Guzmán, the charismatic leader of the Shining Path in Peru, caused operational deficits and successfully curtailed the group’s operations (D’Alessio et al. 2014).

Removal of an effective leader, however, does not necessarily lead to an immediate disruption of militant organizations. Replacement by ineffective leaders tends to force them to change their modus operandi. The findings of Abrahms and Potter (2015) and Abrahms and Mierau (2015) concerning Afghanistan and Pakistan cases indicate that militant groups degraded through drone strikes become far less discriminating between military and civilian targets. This is confirmed by the findings concerning Iraq of Johnston and Sarbahi (2016), evidencing decreases in the selective targeting of tribal elders following drone strikes. In other cases, the loss of charismatic leadership changes the nature of the militant group itself.² For example, in the case of Abu Sayyaf Group (ASG), a militant group operating in the Philippines, after the first charismatic leader, Abdurajak Janjalani, was killed by the Philippine police in 1998, his brother, Khaddafi Janjalani, took control of the organization. Unlike the first leader, who aspired to make ASG a highly organized and disciplined organization, ASG under Khaddafi Janjalani began to engage in criminal activity and their operations are more “profit-driven rather than politically motivated.”³ In sum, scholars who argue the irreplaceability of such leaders believe that leadership targeting disrupts or at least degrades the capability of militant organizations.

A second line of arguments focuses on the motivation of militant members. Scholars argue that the loss of charismatic leaders, in particular, forced removal by the authorities, actually motivates militants and new recruits, which is called the “martyrdom effect”: “going after the leader may strengthen a terrorist group's resolve, result in retaliatory attacks, increase public sympathy for the organization, or produce more lethal attacks” (Jordan 2009, 755). David (2003, 11) also contends that selective killing of Palestinian militants encourages new recruits for suicide bombings: “Each time the Israelis kill a would-be suicide bomber or Palestinian official, a ‘martyr’ is created.” For example, after Yahya Ayyash, the chief bomb-maker of Hamas, was killed by explosives planted in

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² Carvin (2012, 537) also argued that the replacement leaders may, in fact, be worse.

a mobile phone by the Israel Security Agency, “Arafat publicly proclaimed him a martyr and a hero; streets in Palestinian cities were named after him; and a wave of suicide bombings resulted in fifty-nine dead and 250 wounded Israelis” (Luft 2003). Kaplan et al. (2005) also empirically found that countermeasures by the Israeli government, including targeted killings and preventive arrests, spark estimated recruitment to the terror stock, leading to an increase in suicide bombings rather than their decline. In short, scholars who focus on the motivational perspective of militant members believe that leadership targeting actually causes a backlash effect.

Repeated Interventions and Problems

Focusing on capabilities and motivation helps to explain the impact of leadership targeting on militant operations and their resilience. However, less apparent in the previous discussion is “the profound cumulative effect of targeting killing on terrorist organizations” (Luft 2003, 3). As previously shown in Figure 1, numerous militant groups and their leaders have been repeatedly targeted over the years in Pakistan, Yemen, and Somalia. This tendency is also found in the Palestinian vs. Israeli conflict since the Israeli government officially adopted targeted killing as the national policy (D’Alessio et al. 2014; Kaplan et al. 2005). As Figure 2 shows, senior level militants and their lieutenants of Hamas, Fatah, Islamic Jihad, PFLP (Popular Front for the Liberation of Palestine), and DFLP (Democratic Front for the Liberation of Palestine) endured heavy military incursions and were repeatedly removed from their organizations, in particular between 2000 and 2004 after the Second Intifada.

Constant removal is the reality and “[i]t is the repeated nature of their use that provides a cumulative effect on the capability and motivation of violent, non-state organizations” (Wilner 2010, 310). A single leadership targeting intervention can spark anger and motivate followers to perpetrate further attacks, as scholars have previously argued. However, consideration of repeated interventions can provide richer explanations of the effect of targeting interventions. With repeated interventions, leaders are forced to hide themselves and keep their distance from other followers, raising the difficulty of leaders motivating their followers. For instance, after the targeted killings of Hamas leaders Yassin and Rantisi in two interventions separated by around one month, Hamas would not publicly name a new leader. Byman (2006, 104) argues that it is “a necessary step for his survival perhaps but hardly a way to inspire the group’s followers or win new converts with a show of bravery.” Luft (2003) also contends that a series of assassinations makes commanders extremely suspicious and cautious: “They leave few traces of their whereabouts. (...) Trust is the bedrock of any human activity, including terrorism. Without it, the organization becomes disjoined; information cannot be disseminated; people do not feel part of a team.” On the contrary, the potential opposing scenario should be contemplated; repetition urges militant organizations to learn and adapt to leadership targeting policies. For example, Palestinian militant groups have decentralized their organizations to adapt to
Israel’s targeting policies, giving more initiative to local operatives (Byman 2006). “In a decentralized organization the leadership has less control over the strategic and operational details. It is assumed that adopting a decapitation strategy here would prove relatively ineffective” (Rowlands and Kilberg 2011, 2).

A dynamic perspective on leadership targeting is vital not just in predicting the reactions of militant organizations but also in evaluating its impact. The difficulty in assessing the policy’s effectiveness is that each leadership targeting is executed in different conditions. More precisely, one leadership targeting intervention changes the conditions for the next such intervention. It is known that Israel reacts to mounting waves of militant operations by Palestinian groups by deploying a targeting policy in retaliation (Bloom 2005, 37; Jaeger et al. 2009). The frequency and the form of operations potentially changes as a result of militant leaders’ forced removal, and the next interventions may be conducted in the context of those changed situations. Without taking into account such post-intervention changes and assessing their impact on the assumption that each targeting policy is exogenous, findings are likely to be misleading. Methodologically, this is called post-treatment bias.

Post-treatment bias occurs when an estimation involves time-varying confounders. For example, suppose that a particular militant group frequently attacks military targets. Its intensity may urge the
authorities to conduct leadership targeting, which successfully degrades the militant group’s capacity in conducting attacks against the military. However, because of now-low capability, the new leadership changes their target to civilians and starts using suicide operations. Given the heavy civilian casualties incurred, the authorities are now required to repeat targeting against the new leadership. Through repeated interventions and the increasing difficulty of finding leadership successors, the militant group may ultimately decide to end their operations. In this example, the intensity, target type, and attack type are all pre-treatment variables that affect the authorities’ decision to execute the targeting policy, but they are also post-treatment variables in that those factors changed after the first leadership targeting and became the context for the next. Conditioning on those post-treatment variables causes two serious issues in evaluating the policy impacts: first, conditioning on the post-treatment variables “blocks” the impact of leadership targeting on the durability of militant groups. Changes in the attack and target types are the results of the first leadership targeting, but they are also associated with the durability of militant groups. Controlling for those variables, thus, understates the impact of leadership targeting (Blackwell 2013, 506). Second, controlling for them induces selection bias. For instance, conditioning on post-treatment forms of attacks attempts to estimate the impact of leadership targeting among militant groups with unaffected forms of attack (Blackwell 2013, 506). Clearly, militant groups affected and those unaffected by leadership targeting are very different and, thus, comparison leads to a misleading estimate.

The issue of post-treatment bias is particularly serious in the research of leadership targeting. Jordan (2009) was probably the first empirical research to systematically investigate the effectiveness of leadership targeting. In measuring decapitation, she treated each case of targeting as a separate observation, while admitting that there can be multiple decapitations within a single group (Jordan 2009, 733). The following research by Price (2012) measured targeting policies as a binary variable indicating whether a militant group has experienced targeting policies during its life span. The approach to measurement in those studies is equivalent to forcing a “dynamic situation into a single-shot framework” (Blackwell 2013, 506). Doing so, however, induces biases whether, both including pre-treatment variables and excluding post-treatment variables. Conditioning on confounders that could change as a result of leadership targeting blocks the impact and induces selection bias, as argued above. On the contrary, exclusion of those variables induces omitted variable bias. Thus, “[t]hese problems with time-varying confounders cannot be solved by single-shot methods even if we

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assume, (...), no omitted variables in each time period. They are fundamental to situations where actions unfold over time” (Blackwell 2013, 507).

Leadership targeting is affected by and affects militant operations. Israel resorted to a targeting policy in response to a violent escalation by Palestinian militant groups. Elsewhere, the United States reacted to mounting waves of terrorist attacks by Al-Qaeda and its affiliated groups through drone strikes. Due to leadership targeting, militant groups’ capability and professionalism can be degraded. For instance, D’Alessio et al. (2014) found that the targeted capturing of Abimael Guzmán caused a significant reduction of his group’s militant operations. The findings of Johnston and Sarbahi (2016) also indicate that drone strikes are associated with a reduction in the rate of militant attacks. Moreover, Byman (2006, 103)’s finding also suggests that while targeted removal of Hamas members increased their attacks, the lethality of each attack clearly dropped. Degradation of militant capabilities actually leads to a change in their target choice. Abrahms and Potter (2015), Abrahms and Mierau (2015), and Johnston and Sarbahi (2016) all found that successful leadership targeting reduced militants’ capabilities in that their target choice changed from the well-protected military to civilians. The forced removal of militant leaders may also nurture anger among militants. In fact, Bloom (2005, 37) argues that violence between Israel and militant groups falls into a cycle: the killing of militants by Israel causes a significant rise in suicide operations by Palestinian militant groups, to which Israel responds by killing more militants.

As argued above, leadership targeting is affected by and affects the numbers of militant attacks, the intensity of those attacks, target choice, and attack forms. This suggests that those variables are time-varying confounders. Inclusion or exclusion of those variables in a single-shot method can, thus, lead to misleading causal inferences. The relations can be represented by the causal directed acyclic graph (DAG) in Figure 3. A DAG is a causal graph “in which the vertices (nodes) of the graph represent variables, the directed edges (arrows) represent direct causal relations between variables, and there are no directed cycles, since no variable can cause itself” (Robins et al. 2004, 2197). Subscripts of each variable represent periods, from period 1 to period 3. Figure 3 shows that the numbers of attacks, intensity of attacks, target type, and attack forms are pre-treatment variables in that they affect the decision to deploy leadership targeting, but they are also post-treatment variables given that they are affected by leadership targeting conducted in period 1. Inclusion of time-varying confounders in period 2 blocks the impact of leadership targeting on militant group durability and suffers from selection bias, leading to the treatment effect among militant groups that post-treatment variables are unaffected by targeting policies.

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6 LaFree et al. (2009) rather found mixed results as anti-terrorist operations in Northern Ireland both decreased and increased the numbers of attacks. Regarding Iraq, Eastin and Gade (2016, 1) found that “while violence against insurgents increases the incidence of future insurgent attacks, the intensity of this violence can significantly influence the outcome.”

7 There should be no the opposite relations or Leadership Targeting → Numbers of Attacks1 since there would not be any targeting without a militant attack in period 1.

8 The detailed explanation of this rationale can be found on the website of Matthew Blackwell. http://www.
change their forms of attack and target choice, for example, are likely to be robust to leadership targeting compared to other groups since they can probably successfully replace their leadership and maintain their pace of operations. Thus, the estimated treatment effect does not provide the impact in representing population. Exclusion of those post-treatment variables, however, induces omitted variable bias given the association with the outcome variable. As Hoffman and McCormick (2004) argues, terrorist attacks, in particular suicide attacks, can be considered a signaling strategy for recruiting new members and empowering their organizations. Given this effect, an increase in militant operations and changes in their form may be the driving force for the longer durability of groups, suggesting that exclusion of those factors clearly biases the result.

Arguments

Focusing on capability and motivation from a dynamic intervention perspective enriches the explanation of how leadership targeting can affect the durability of militant organizations. Capability and motivation are interrelated: the loss of capability may reduce motivation, but an increase in motivation may strengthen capability. Explanations of the impact of repeated leadership targeting focus on the following two perspectives: (1) those that consider militant groups to be formed for the purpose of pursuing a specific political objective; and (2) those that consider militant groups a collection of socially alienated individuals and view groups as being formed to construct affective ties with fellow militants.

A clear benefit of repeated successful targeting is to remove the suspicion that a government...
fortuitously removed a militant leader. This reveals that governments have enough capability and determination to decapitate militant groups whenever necessary, which could affect militant leaders' psychology. As Melman (2004) notes, “the mystery that surrounded previous assassinations cast fear into the hearts of the enemy by their very rarity and sophistication. That mystery dissipates the moment the act becomes a usual one.” Reputation for resolve and toughness of governments derives from the repeated use of particular countermeasures (Walter 2009; Tingley and Walter 2011; Wilner 2010). This could deter militant groups from conducting further operations and prevent them from regrouping. For instance, the frequent use of drone strikes drove militant members out of the FATA region to the urban areas in Pakistan, preventing them from using electronic devices such as cell phones (Group 2013, 22). This undermines communication among members by reducing the flow of information within the organization, also inhibiting the efficiency of command and control structures (Byman 2006, 104).

A critical issue deriving from repeated leadership targeting, however, is the difficulty of sustaining and recruiting followers. “(T)he death of a hero ‘demoralizes followers’ ” (Wilner 2010, 322). The rationale behind this can be explained by the collective action argument. The political objectives that militant groups seek to obtain are typically collective goods (Popkin 1979; Taylor 1988; Weinstein 2006), the attainment of which is beneficial to all civilians regardless of their participation in militant operations. Rational individuals would likely avoid joining militant activities if they could enjoy the benefits without paying any costs to achieve them, which reduces the likelihood of recruiting group members. To resolve this problem, militant leaders need to provide selective incentives for participants. Weinstein (2006) argues that one strategy for militant leaders is to promise participants that material benefits may accrue to them in the future after a victory. To make this promise credible, militant leaders emphasize the shared beliefs or norms that may exist in certain ethnic, religious, and ideological groups (Weinstein 2006, Chap.3). With shared identities, militant leaders activate and develop norms of reciprocity that cooperation today will bring cooperation in the future, thus making those future commitments credible. In such value-based organizations, the role of leadership is critical as leaders are required to possess unique skill sets for inspiring followers through such means as political education to create “a shared sense of mission, purpose, and duty,” which is “an important source of sustained cooperation” (Weinstein 2006, 136–137).

The importance of leadership to such organizations, however, reveals their vulnerability. Repeated removal of militant leaders urges followers to re-calculate the cost of participation and the likelihood that future commitments will be delivered. As Weinstein (2006, 262) notes, “Shocks change the calculus of rebel groups and civilians in distinct ways. Mounting losses reduces the probability of a rebel victory and the likelihood that individuals will receive benefits that they have been promised in the future. (...) In this context, current members and supporters have cause to reevaluate whether
the group will live up to commitment made to its earliest backers.” Repeated removal of those groups’ leaders, thus, “raise[s] the cost to participation in the rebel group, forcing individuals to reevaluate their participation” (Weinstein 2006, 262). Wilner (2010, 316) also argues, through analysis of leadership targeting of the Taliban and associated groups, that constant elimination of leadership affects individual behaviors accordingly by raising the cost of participating in violence. In sum, in value-based organizations that attempt to obtain a political objective, militant leaders must appeal to shared identity for the promise of providing selective future incentives to be credible, but because of the critical importance of leadership in those organizations, repeated government interventions reduce followers’ motivation to participate in violence. As Gates (2002, 112) mentions, “a rebel army’s ability to succeed depends on its ability to recruit and motivate its soldiers to fight and kill.” In this sense, the hardship in sustaining and motivating followers caused by repeated leadership targeting can lead to the demise of militant organizations.

As argued above, reputation for resolve and toughness is built on repeated successful targeting, which could negatively affect the psychology of militant leaders. However, there is also the possibility that repeated removals of militant leaders actually increases solidarity and motivation among militant members. The preceding discussion assumes that militant groups are formed to obtain a specific political objective and each individual works toward that mission. However, there is also an alternative scenario in which each individual participates in those organizations for other reasons. The well-cited article by Abrahms (2008, 96) argues that “individuals participate in terrorist organizations not to achieve their political platforms, but to develop strong affective ties with fellow terrorists” (emphasis added by the author).

Scholars in terrorism studies have accumulated biographical evidence of people who have participated in violence (Hudson and Majeska 1999; Felter and Brachman 2007; Post et al. 2003). The empirical findings suggest that individuals who join militant groups are “socially alienated.” Hudson and Majeska (1999, 24) argue that participants are often unemployed and those who have dropped out of society. The findings of Abrahms (2008, 97) corroborate this argument, showing that 80 percent of al-Qaida members are “culturally outcasts living at the margins of society as unassimilated first- or second-generation immigrants in non-Muslim countries.” Mansour (2015) illustrated how young people are motivated to join and recruited into extremist groups in Germany. He argues that those who participate in extremist groups have never found their place in the community to construct their own identity or nurture their personal values because of a tough environment at home, in society, and/or at school, and immigrants in non-Muslim countries particularly tend to have those characteristics. Those young people are fragile and seek someone to recognize them. When an extremist group member comes to assume this role, the young can be easily absorbed into extremist ideas and groups as these are the only groups that admit them and resolve their struggle to realize
an identity.

In this context, fervent political commitment is less likely to motivate participants. Rather, a sense of belonging to the group and developing social relations with other militant members are key for motivation. In this context, militant members and organizations have three characteristics. First, repeated targeting policies build the government’s reputation as the enemy and nurture feelings among militant members that they are under attack. Through repeated targeting, militant members become confident that a previous assassination was not the result of a random attack against militant groups and they are clearly being targeted by government. The existence of those common enemies increases group cohesion. For instance, the interviews of 30 members of Sinn Fein, an Irish republican group, revealed that love for fellow militants in the group is likely to increase as common threats increase (McCauley and Moskalenko 2008, 421). In a small militant group, each member’s life in fighting the enemy depends on their fellow militants. Extreme interdependence strengthens group solidarity and “(t)his is a cohesion that can make group members closer than brothers” (McCauley and Moskalenko 2008, 423). Within highly cohesive groups, experiencing defeats produces hatred of and bitterness against the common enemy, further strengthening group solidarity (Bjorgo et al. 2008, 34). Consequently, countermeasures by security forces are simply utilized to provoke more violent attacks and construct more cohesive groups (Shaw 1986, 365).

Second, participants who seek to develop affective ties with fellow militants struggle for approval in the group, which could lead to more violent attacks and resilience. This is because aggressive styles of behavior are often effective for winning approval and status rewards in a militant group (Bandura 1983, 22). Bandura (1983, 22) argues that gang members attempt to gain approval and achieve social status within the gang through their skills in fighting. This rationale seems equally applicable to militant members. For example, prior to his death in 2013, Mullar Omar was one of the highest leaders among the founders of the Taliban in Afghanistan. Omar, at first, gained reputation and wide respect among militants through leading the localized uprising against former Mujahideen warlords in the Kandahhar area in 1994. It is said that this experience became the catalyst for the Taliban movement and he became one of the West’s most wanted terrorists through his direction of the Taliban rebellion against NATO-led military forces. Arguably, the more extreme way to win approval and construct ties with fellow militants is to become a martyr through suicide operations. The LTTE (the Liberation Tigers of Tamil Eelam) established Black Tigers’ Day to celebrate and show respect to the members of Black Tigers. On Black Tigers’ Day, pictures of Black Tigers’ members are displayed and they play an important role in boosting Tamil resolve and morale (Hopgood 2005, 65). In Palestine, suicide bombers became symbols of resistance: martyrs became heroes and their posters are displayed around towns, making them the main topic of everyday conversation (Bloom 2004, 9). See details at http://www.bbc.com/news/world-south-asia-13501233. Accessed January 6, 2017. Black Tigers is a suicide attack command in the LTTE.
74). Though suicide bombers will definitely die if their operation succeeds, they will be admired and respected even after their deaths. This suggests that, in some sense, they construct strong affective ties with fellow militants through becoming martyrs.

Third, because militant members join a group to develop and sustain affective ties with fellow militants, it is hardly an option for members to exit these groups. As Hudson and Majeska (1999, 36) observes, “[p]eer pressure, group solidarity, and the psychology of group dynamics help to pressure an individual member to remain in the terrorist group. (...) terrorists tend to submerge their own identities into the group, resulting in a kind of ‘group mind’ and group moral code that requires unquestioned obedience to the group.” When participants subordinate their individual identity to the group identity, remaining in and sustaining the group is of primary importance (Post 2007, 8).

In sum, for those who are socially alienated and find their place in militant groups, their supreme objective is to sustain their group to maintaining affective ties with fellow members. For them, the governments that repeatedly target them provide opportunities to strengthen the group's cohesiveness and solidarity. Given that their individual identity becomes submerged into the group mind, leaving the group is hardly an option and repeated intervention may actually heighten the durability of such militant groups.

**Research Design**

This paper's goal is to present and test a theory on the effect of repeated leadership targeting. We provide explanations of the importance of repetition through empirical evidence showing the biases that occur when ignoring repeated interventions. Where governments target militant leaders repeatedly over time, inclusion of time-varying confounders in the single-shot approach causes post-treatment bias, but their exclusion causes omitted variable bias. We also provide theoretical explanations of how repeated interventions affect militant group durability. Given the critical importance of leadership in achieving political objectives, from recruiting and inspiring members to sustaining operations, the repeated removal of leadership increases the cost of participation to existing members and supporters. Conversely, where a militant group’s members are motivated by forming and maintaining affective ties with fellow militants, targeting policies actually increase solidarity, urge more violent attacks to win approval from other militants, and force members to stay in existing groups. In testing the theory, we employ an empirical analysis primarily based on two types of dataset: (1) repeated leadership targeting data compiled by Price (2012),\(^{11}\) and (2) the characteristics of militant violence using the Global Terrorism Database (GTD).

\(^{11}\) The dataset can be accessed at http://bryancprice.com/.
Price (2012) compiled data denoting a series of leadership targeting interventions against 207 militant groups active during the period from 1970 to 2008. The militant organizations in the dataset comprise those that conducted at least four deadly attacks (i.e., each resulting in one or more fatalities) during the sample period (Price 2012). The dataset only codes the targeting of top leaders, excluding incidents of high-rank officials in organizations being killed or captured (Price 2012). In this research, we primarily explore two types of effect given repeated leadership targeting: (1) an average intervention effect conditioning on intervention history and time-varying confounders; and (2) a cumulative targeting effect. For the first measurement, we simply code the intervention status for each group in each year. For instance, for a militant group that survives for five years and was subject to targeting policies in the second and fourth years, the variable takes the values of 0, 1, 0, 1, and 0. For the second measurement, we are interested in the extent of the impact of additional leadership targeting on militant group durability. Thus, the total numbers of leadership targeting interventions are measured for each group. In the above example, 2 is assigned to the militant group as an observed value. In Price (2012)'s dataset, the militant organizations have been targeted between zero times and four times.

As noted above, for the time-varying confounders, we considered the numbers of attacks, the intensity of attacks, attack forms, and target type. For all measurements, we utilized the GTD. The first two variables were measured with the total numbers of violent attacks conducted by each militant group and the total numbers of casualties caused by each group respectively. The attack forms and target types variables were measured, respectively, with the numbers of suicide attacks and the numbers of violent attacks specifically targeted against authorities. As Seifert and McCauley (2014, 809) observes, suicide bombing is assumed to be distinctive in quality from the other types of militant attacks. It is a particularly provocative strategy that triggers countermeasures. For instance, on January 12, 2016, an Islamic State (IS) fighter blew himself up in Istanbul's historic heart, killing at least ten people (CITE). Soon after the incident, the Turkish government bombarded IS's controlled territory for more than 48 hours, inflicting more than 200 casualties upon IS (CITE). On the contrary, each time the authorities kill a would-be suicide bomber, a new martyr is created that could lead to more suicide attacks (David 2003, 11). In short, suicide operations can be the cause or result of countermeasures. Either excluding or including it without taking into account its time-varying characteristics can cause bias. In the same way, attacking the authorities projects a strong message demonstrating government impotence (McCartan et al. 2008, 62). Successful destruction of government targets indicates the capability of the perpetrating militant group and fragility of the affected government. To prevent this, the authorities could rush to execute countering strategies. The findings of Abrahms and Potter (2015), Abrahms and Mierau (2015), and Johnston and Sarbahi (2016) indicated that leadership targeting forces militant groups to attack civilian targets rather than the authorities. Thus,
as with attack forms, target type is both a pre-treatment variable and post-treatment variable. We coded the targeting of authorities based on observed attacks on government (general), government (diplomatic), military, and police in the GTD.

For additional organization-level and country-level variables that could affect militants group durability, we included the size and ideology of militant groups, military capability, and the democratic level of the target country. The ideology of each militant groups is sourced from Jones and Libicki (2008), who classify ideology into religious, left-wing, nationalist, and right-wing. Group size is based on the Terrorist Organization Profiles (TOPs) database, which specifies four categories: from 10, 100, 1,000, to 10,000 militant members. These variables are included to identify whether groups following a specific ideology and groups of a particular size are more resilient to repeated leadership targeting policies as Jordan (2009) and Price (2012) previously found. The ability to project military force against militant groups, military capability from Hendrix and Young (2014), and the Center for Systemic Peace’s political systems or polity\textsuperscript{12} were included to evaluate if authorities’ employment of military force and the extent of democratic systems are related to the duration of militant campaigns.

Finally, the duration of a militant campaign was measured from the year in which each group conducted its first attack to the year of its last attack. The final year of our dataset is 2008; thus, for organizations that remained active in 2008 and beyond, the observations are censored. The descriptive statistics of the above variables are shown in Table 1.

\textsuperscript{12} See http://www.systemicpeace.org/.

\begin{table}[h]
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\begin{tabular}{|l|c|c|c|c|c|}
\hline
Variable & Num. Obs. & Mean & Standard Deviation & Min. & Max. \\
\hline
Leadership Targeting\textsuperscript{(1)} & 3,193 & 0.053 & 0.223 & 0 & 1 \\
Cumulative Targeting\textsuperscript{(1)} & 3,193 & 0.811 & 0.859 & 0 & 4 \\
Numbers of Attacks\textsuperscript{(2)} & 3,193 & 9.638 & 35.94 & 0 & 590 \\
Intensity of Attacks\textsuperscript{(2)} & 3,193 & 51.11 & 232.4 & 0 & 5517 \\
Numbers of Suicide Attacks\textsuperscript{(2)} & 3,193 & 0.165 & 1.474 & 0 & 39 \\
Numbers of Authority Targets\textsuperscript{(2)} & 3,193 & 4.127 & 16.71 & 0 & 265 \\
Ideology\textsuperscript{(3)} & & & & & \\
Left Wing & 3,193 & 0.346 & 0.475 & 0 & 1 \\
Nationalist & 3,193 & 0.385 & 0.486 & 0 & 1 \\
Right Wing & 3,193 & 0.010 & 0.101 & 0 & 1 \\
Religious & 3,193 & 0.258 & 0.437 & 0 & 1 \\
Size\textsuperscript{(3)} & & & & & \\
10 & 3,193 & 0.173 & 0.378 & 0 & 1 \\
100 & 3,193 & 0.401 & 0.490 & 0 & 1 \\
1000 & 3,193 & 0.297 & 0.457 & 0 & 1 \\
10000 & 3,193 & 0.127 & 0.333 & 0 & 1 \\
Polity2\textsuperscript{(4)} & 3,064 & 4.685 & 6.287 & −10 & 10 \\
Military Capability\textsuperscript{(5)} & 2,980 & 0.823 & 0.837 & −5.243 & 2.978 \\
\hline
\end{tabular}
\caption{Descriptive Statistics}
\end{table}

Notes: \textsuperscript{(1)} Price (2013), \textsuperscript{(2)} Global Terrorism Database, \textsuperscript{(3)} Jones and Libicki (2008), \textsuperscript{(4)} Center for Systemic Peace, \textsuperscript{(5)} Hendrix and Young (2014).
Research Method

As previously argued, the standard approach in estimating intervention effects is biased when: (1) there exist time-dependent confounders that also predict subsequent interventions; and/or (2) intervention history predicts subsequent confounders (Robins et al. 2004, 2196). As Figure 3 shows, numbers of militant attacks, severity of attacks, target type, and attack forms all predict subsequent leadership targeting. Targeting policies, conversely, also predict the subsequent characteristics of violence. Thus, in estimating the targeting effect, failing to take into account targeting repetition gives a biased estimate. In this paper, we employ marginal structural models (hereafter MSMs) to ascertain the unbiased effect of repeated leadership targeting.

Marginal structural models (MSMs) are causal models for estimating the causal impact of time-varying interventions from observational data when there are time-dependent confounders (Robins et al. 2000, 550). In a single-shot approach, there are only two potential outcomes: treated or not treated. However, if the study length ranges to $K$ time periods, there will be $2^K$ different potential outcomes. With $2^K$ potential outcomes, it seems meaningless to estimate intervention effects non-parametrically, which simply takes the sample mean between treated and non-treated. MSMs utilize a semiparametric approach to overcome this curse of dimensionality. In other words, by using a semiparametric model, we will assume that “similar action sequences should have ‘similar’ potential outcomes” (Blackwell 2013, 509). To do so, MSMs are fitted in the following two-stage approach: (1) each subject’s probability of taking own treatment sequences is estimated typically with the logit model and the estimated probability is utilized to derive the inverse probability of treatment weights (IPTWs); and (2) the relationship between the intervention and outcome is estimated in a regression model by weighting the data with the derived IPTWs (Fewell et al. 2004, 408).

Empirically, the IPTWs in the first-stage of MSMs are computed as

$$SW(t) = \prod_{k=0}^{t} \frac{f[A(k)|\bar{A}(k-1), V]}{f[A(k)|\bar{A}(k-1), L(k)]}$$

where $t$ denotes the time-periods, $A(k)$ denotes the treatment of each subject at time $t$, $L(k)$ represents the values of the confounders at time $t$, $V$ is the baseline of confounders or $L(0)$, and $f[\ldots]$ is the

---

13 As Blackwell (2013, 510–511) states, MSMs are semiparametric models in that they do not restrict the relationship between the outcome and the confounders, but they restrict the relationship between the actions and the confounders.

14 For further details on IPTWs, see Glynn and Quinn (2010) and Curtis et al. (2007).
conditional probability mass function. In the equation, \( \bar{A}(k) \) and \( \bar{L}(k) \) means the history of treatment and confounders up until \( t \). Given standard notations that specify random variables as capital letters and realized values as lower case letters, \( \bar{a} = \{ a_1, a_2, \ldots, a_t \} \) is a possible realized intervention history. The same rule is applied to \( \bar{L} \). The weights in equation (1) are a modified version of IPTWs, adjusted so that the weights can be approximately normally distributed: these are called stabilized weights (SWs). In the context of militant groups, the denominator of \( SW(t) \) is the probability that each militant group was subject to leadership targeting at time \( t \), provided each group’s targeting history and the measured history of the characteristics of each group’s violence. The numerator is the same probability only without further adjusting the probability by each group’s history of violence (Robins et al. 2004, 2202; Fewell et al. 2004, 409). For both the denominator and the numerator, the probability that each group is subject to leadership targeting can be estimated separately from a pooled logistic regression and SWs can be compiled for each subject by equation (1) (Blackwell 2013, 511). Now that the SWs are calculated, an intervention at time \( t \) is exogenous to the history of interventions and time-varying confounders and the causal impact is simply estimated by a weighted generalized linear model. For the estimation, we extend MSMs to the failure time outcome model that estimates the impact of leadership targeting, or the hazard, on the group’s time to end if each group has some history of being subjected to leadership targeting. Typically, the hazard model assumes that once a subject is targeted by intervention, it is coded as being targeted until the end of the observation periods. However, since we observe the leadership targeting status for each militant group for each year or panel dataset, we can specify the hazard rate of the militant group’s end at time \( t \) depending on the intervention status each year and the cumulative numbers of targeting interventions, rather than the duration of treatment (Robins et al. 2004, 2207 and Fewell et al. 2004, 410). Here, the hazard rate represents the risk of organizations being terminated in a given time after exposure to leadership targeting. We, thereby, employ parametric survival analysis. As Jordan (2009) argues, the resilience of militant organizations is often a function of their age. Stated differently, as they grow older, these organizations tend to be more resilient. This denotes a non-constant baseline hazard rate as a function of years. To reflect this assumption, we used the Weibull regression,

\[
SW(t) = \prod_{k=0}^{t} pr[C(k) = 0 | C(k-1) = 0, A(k-1), L(k)]
\]

where \( SW(t) \) represents the IPCWs. The final weights that are used in the estimation are calculated as \( SW(t) \times SW_1 \). For further details, see Robins et al. (2004, 2208) and Fewell et al. (2004, 412–413).}
Assessing the Balance of Confounders

Conditional on intervention history and the covariates, the decision to deploy leadership targeting is expected to be unassociated with the potential outcome under the assumption of IPTWs. If the SWs work, the observed leadership targeting should, thus, be independent of time-varying confounders. To assess this, we check the associations between the decision to deploy leadership targeting and time-varying confounders, intensity of attacks, frequency of attacks, attack forms and target forms, conditioning on intervention history (Blackwell 2013, 515). If these variables are still predictive of leadership targeting after weighting the data, there is still confounding of the relation.

Figure 4 depicts the history-adjusted imbalance, which shows the change in the confounders’ imbalance from the unweighted to the weighted data (Blackwell 2013, 515). As shown, before weighting the data, all the time-varying confounders are predictive of the action decision of leadership targeting. Specifically, the intensity of militant attacks, as measured by the numbers of killed and wounded, is highly predictive of leadership targeting. After weighting the data, however, the standardized difference significantly dropped and there is less difference between those that received treatment and those that did not. The differences also dropped in the frequency of attacks and target type. One note of caution, however, is that attack form, particularly measured by suicide operations, is still highly predictive of leadership targeting even after weighting the data by SWs. This suggests a significant difference between those subjected to targeting interventions and those that did not in terms of suicide operations. Specifically, it indicates that, even after weighting the data, the leader of a militant group that conducts suicide operations tends to be targeted. This can be explained by the data issue used in this research. In constructing the SWs, we control the baseline of time-varying confounders ($L(0)$ or $V$). The problem is that only one militant group conducted suicide operations in the baseline year; therefore, in estimating the probability of leadership targeting in the denominator and the nominator in equation (1), the baseline value of suicide operations contributes little to constructing the weights. Therefore, the standardized difference in Figure 4 shows little change between the unweighted and the weighted data. This imbalance suggests that we need to be cautious when interpreting the estimates.

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20 For details, see Note in Figure 4.
21 As explained above, to estimate the denominator and the nominator in equation (1), we used a pooled logistic regression. In estimating the nominator that only controls the baseline covariates and intervention history, the baseline suicide variable is omitted because few observations exceeded one operation.
Empirical Findings

What is the impact of leadership targeting on militant organizations’ durability? How does the cumulative practice of leadership targeting impact their survivability? A series of regression analyses in Tables 2 and 3 show several perspectives on targeting policies. The models in these tables show the results of the Weibull regression and the main effects are the hazard rate on militant organizations’ durability.

Three conclusions can be drawn from the analysis. First, the impact of leadership targeting without conditioning on both the history of interventions and time-varying confounders tends to overestimate the average impact of targeting policies. Model 1 represents the average effect of targeting measured by the binary indicator. The hazard rate without weighting the data indicates that removing a militant leader forcefully from a group increases the hazard of that group’s ending to 1.95 times higher than that of a non-targeted group. However, on the weighted data, the size of the hazard rate reduces to 82% in Table 2. Between the weighted and the unweighted data, there is a 13% hazard rate difference; thus, a conclusion regarding the effectiveness of targeting policies based on the unweighted data could be more optimistic on the result of an intervention than is likely in reality. The 13% difference between each data type may seem only a slight change, but given the amount of both human and material costs spent on countermeasures, greater accuracy in the impact assessment
TABLE 2: Estimated Effects of Leadership Targeting by Weibull Regression.

<table>
<thead>
<tr>
<th>Hazard Rate</th>
<th>Model 1 Average Targeting Effect</th>
<th>Model 2 Cumulative Targeting Effect</th>
<th>Model 3 Cumulative Targeting Effect</th>
<th>Model 3 Cumulative Targeting Effect Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unweighted</td>
<td>1.948 (1.522, 2.494)</td>
<td>0.986 (0.921, 1.056)</td>
<td>0.641 (0.554, 0.741)</td>
<td>1.166 (1.121, 1.213)</td>
</tr>
<tr>
<td>Weighted</td>
<td>1.827 (1.445, 2.428)</td>
<td>0.946 (0.874, 1.013)</td>
<td>0.596 (0.514, 0.693)</td>
<td>1.177 (1.129, 1.223)</td>
</tr>
</tbody>
</table>

Note: Bootstrapped 95% bias-corrected confidence intervals with 500 times resampling are in parentheses. Because the estimated coefficients are the hazard rate, a confidence interval greater than 1 means failure to pass the test. All the models include the baseline of all control variables listed in Table 1.

of targeting policies will be beneficial. Despite the difference in accuracy regarding the impact of a targeting intervention, we can still say that targeting and forcefully removing militant leaders works to reduce their groups’ operating years. The left chart in Figure 5 graphically shows the survival rate, denoting the resilience of organizations after exposure to targeting policies on the weighted data. Compared to the cases in which a militant leader is not targeted, group resilience significantly reduces if a group is targeted. This result mirrors the findings of Price (2012), Johnston (2012), and Tominaga (2017).

The second conclusion is that the relationship between the impact of cumulative leadership targeting and militant organizations’ durability is quadratic. Model 2 represents the results of the cumulative effect of targeting policies as a linear model: for both the unweighted and weighted data, leadership targeting does not have a significant effect on ending militant organizations even as the numbers of targeting against a specific group increase. On the contrary, the regression results in Model 3 reveal a significant quadratic relation between the two. Focusing on the weighted data results, the single term of targeting policies represents 0.596, suggesting that with no leadership targeting, the hazard rate of ending groups is almost 40%. However, the hazard rate over 1 in the quadratic term indicates that as the number of targeting interventions increases, the relation reverses. Essentially, as the number of leadership targeting interventions increases, the durability of militant organizations reduces. More specifically, as the left chart in Figure 6 shows, from no targeting to two interventions, the predicted survival years of a militant group increases (in effect, the group becomes more resilient). However, with a third and fourth targeting intervention, the predicted survival years of the group drop sharply. In the same way, the right chart in Figure 6 shows that in terms of survival rate, as the number of leadership targeting interventions increases (specifically from two to four), militant organizations’ survival rate significantly reduces. The above results show that repeated targeting policies do work to eliminate militant organizations, but success requires repetition and patience.

However, this relation reflects results averaged over the whole life span of militant groups. The effect of targeting interventions is unlikely to be constant over the years: young groups could be
FIGURE 5: The Cumulative Effect of Leadership Targeting.

Note: The shaded region in the figure is the 95% confidence interval. All the other variables are held at mean values.

more vulnerable to repeated targeting because of their organizations are not yet firmly established, whereas, based on the same reasoning, aged groups are more resilient. In other words, the above model cannot specify when those numbers of targeting interventions were carried out. To assess this, we break up the effect into early interventions and late interventions by the quadratic relations (Blackwell 2013, 514). We calculated the life span for each group and the mean life span. We then counted the total number of leadership targeting interventions before the midpoint and after the midpoint. These two measurements represent two different cumulative effects: when organizations are still young and when they are aged. We call the former the effect in the first half years and the latter the effect in the latter half years. Model 4 in Table 3 represents the results of the two quadratic relations. Interestingly, the relation reverses between the first half years and the latter half years. Based on the weighted data results, in the first half years, cumulative leadership targeting can hasten ending militant organizations. Compared to the results of Model 3, the tipping point of the cumulative effect comes earlier. As the left chart in Figure 6 shows, a single decapitation increases groups’ survivability, but successive targeting policies significantly shorten their predicted survival years. However, the relation reverses when the group survives at least half the years of its duration period. After it survives for this period, leadership targeting of militant groups can actually have an
<table>
<thead>
<tr>
<th>Hazard Rate</th>
<th>Cumulative Targeting Effect First half years</th>
<th>Cumulative Targeting Effect squared First half years</th>
<th>Model 4 Cumulative Targeting Effect Last half years</th>
<th>Cumulative Targeting Effect Squared Last half years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unweighted</td>
<td>0.627</td>
<td>1.279</td>
<td>1.669</td>
<td>0.638</td>
</tr>
<tr>
<td></td>
<td>$(0.507, 0.775)$</td>
<td>$(1.186, 1.380)$</td>
<td>$(1.118, 2.493)$</td>
<td>$(0.459, 0.886)$</td>
</tr>
<tr>
<td>Weighted</td>
<td>0.563</td>
<td>1.320</td>
<td>1.562</td>
<td>0.639</td>
</tr>
<tr>
<td></td>
<td>$(0.444, 0.717)$</td>
<td>$(1.216, 1.434)$</td>
<td>$(1.089, 2.373)$</td>
<td>$(0.449, 0.846)$</td>
</tr>
</tbody>
</table>

*Note:* Bootstrapped 95% bias-corrected confidence intervals with 500 times resampling are in parentheses. Because the estimated coefficients are the hazard rate, a confidence interval greater than 1 means failure to pass the test. The mean value of the duration of each militant group is calculated for each group. Thus, *First half years* means the cumulative effect of leadership targeting before the midpoint and *Last half years* means the cumulative effect of leadership targeting after the midpoint. All the models include the baseline of all the control variables listed in Table 1.

**TABLE 3: Estimated Effects of Leadership Targeting by Weibull Regression.**

adverse effect. Given the wide confidence interval shown in the right chart in Figure 6, the evidence is inconclusive on whether successive targeting policies in this period significantly increases groups’ predicted survival years. However, it seems valid to argue that executing additional decapitations against firmly established militant organizations does not hasten their elimination. A clear policy suggestion derived from the analysis is that, to disrupt militant organizations, successive targeting policies are required soon after a group’s inception; “wait and see” is not a good strategy and may even have an adverse effect in countering militant groups.

The third conclusion is that the results mostly support this paper’s first argument: that repeated leadership targeting works to reduce the resilience of militant organizations. However, the paper also yields new findings. First, successive targeting policies builds a reputation that the authorities have enough capability and motivation to disrupt militant groups, and repeated targeting both urges militant leaders to hide and increases the cost of participation for new recruits. An increase in the predicted survival years following the first leadership targeting may reflect suspicions or the perception among militant members that a successful decapitation was fortuitous, and the loss of militant leaders may anger and motivate members to perpetrate further attacks. However, targeting repetition causes those suspicions to dissipate, and the successive removal of leaders causes existing members and potential new recruits to believe that the promised benefits supposedly to be provided after victory are unlikely to be delivered. With greater difficulty in communicating with leaders due to tightened security and the lack of benefits specifically given to participants, it is hard for organizations to sustain their pursuit of collective goods and maintain their operations. Second, our finding that repeated targeting is effective in the early years following a militant organization’s inception and not during the later years suggests that these organizations can learn and adapt to new environments. Repeated interventions in the initial stages of their development gives groups no time to regroup, but if a group is able to survive those early incursions or if it does not suffer countermeasures during this period, a group adapts to its environment so that the later removal of a leader cannot affect its operations.
Jordan (2014, 15) argues that the bureaucratic form of authority that facilitates leadership succession and charisma can often be routinized. Hafez and Hatfield (2006) found that targeted assassinations do not impact on the rates of Palestinian attacks, but many militant organizations operating in Palestine are aged groups with established organizational structures. Furthermore, Tominaga (2017a) and Tominaga (2017b) found that militant organizations often learn from and are affected by the operations or situations of nearby militant groups. Observing repeated military incursions against other groups, a militant group may adopt a strategy to structure and routinize their organization, such that its operations can function without the deep instruction of leaders. Third, while the findings of the previous study that targeting the leadership of militant groups is, on average, effective in shortening their survivability are not necessarily wrong, this is also not necessarily a valid assessment. These previous findings did not take into account the cumulative nature of leadership targeting and averaged over the effects regardless of how many times each group was decapitated. However, as we have shown, the cumulative effect of leadership targeting has a quadratic relation with militant group mortality. The first leadership targeting intervention does not typically disrupt the leaders’ organizations, an outcome that needs successive practice. This suggests that policy makers and practitioners need to understand that multiple attempts are required for leadership targeting to be effective; it is

Note: The shaded region in the figure is the 95% confidence interval. All the other variables are held at mean values.

FIGURE 6: The Cumulative Effect of Leadership Targeting.
erroneous to conclude the strategy’s effectiveness from a single targeting intervention.

**Conclusion**

This paper explores the impact of repeated leadership targeting. It offers empirical evidence of the reality that militant groups are often targeted repeatedly throughout their life. The findings of the previous study fail to consider the repetition of those interventions and average over the effect regardless of how many times each organization is targeted. This research provides two opposing explanations regarding the possible effect of repetition that each focus on militants’ motivation for joining organizations. In militant groups that pursue a specific political objective, participants are motivated to join operations by the collective goods, expecting to receive future material benefits after victory. For those militants, repeated removal of leaders reduces the likelihood that their future benefits will be obtained and the reduced communication with their leaders due to tightened security is likely to increase this doubt. From this perspective, the repeated removal of their leaders would contribute to reducing these groups’ survivability. On the contrary, for those militants who participate in militant groups to construct affective ties with fellow members, repeated interventions build the perception that their groups are under attack and the existence of a common enemy actually increases members' solidarity. Individual efforts to win approval from fellow militants generates more violence. From this perspective, therefore, repeated interventions actually increase groups’ resilience.

This study's empirical findings support the idea that repeated targeting can hasten the end of militant groups, but provide more nuanced results. Repeated interventions can clearly reduce the survivability of militant groups, but the relation is quadratic. The first few targeting interventions actually increase their predicted survival years, but further attacks significantly reduce their survivability. This relation becomes more significant when we focus on the first half years of the militant groups' life span. During this period, more than one leadership targeting can significantly reduce an organization's predicted life span. This result implies that averaging the effects of targeting policies, ignoring its repeated nature, can lead to an erroneous conclusion. The average effect of targeting policies, without considering its cumulative nature, is certainly negative, meaning that it reduces the predicted survival years. However, this does not mean that the first (single-shot) intervention will be effective. As our findings show, for leadership targeting to be most effective, it needs multiple interventions. Specifically, if the timing of the intervention is within the first half years of a group’s lifetime, more interventions would be more effective. In this sense, it is erroneous to assess the strategy's effectiveness based only on the first intervention. Of course, we cannot know in advance how long a given militant organization is likely to survive, and, therefore, cannot be sure when they have reached half years of their lifetime. Thus, the key for repeated interventions to be effective is
to execute successive interventions as soon as a group emerges. Repeated interventions during the initial stage of a group's development removes its members' opportunity for regrouping and increases the participation cost by reducing the likelihood of future material benefits promised by their leaders being obtained.

Although our analysis is novel in quantitatively demonstrating the cumulative effect of leadership targeting for the first time, there is considerable scope to build on our findings. First, our data is censored from the end of 2008 and, therefore, excludes the recent dynamics of militant operations represented by Islamic State. Second, our data only focus on the top leaders and exclude targeting policies against other high-rank officials. The emergence of Islamic State changes the state of militant operations since the time of Al-Qaeda's eminence. Contrary to Al-Qaeda, which franchised their operations and expanded their network globally, Islamic State localized their operations and recruited participants from other countries into the region. This new phenomenon is not included in our dataset, which indicates the limitations of the current study's analysis for inferring the effects of countermeasures on those new militant operations. Moreover, as shown by the trend of recent drone attacks in Pakistan, Yemen, and Somalia, targeted militants are not restricted to top leaders. Targeting operational leaders in charge of instruction and training in the field can be more productive for curtailing militant groups' operations. Research of these matters will need further data collection. This article is an initial attempt to find the cumulative effect of repeated targeting policies and its applicable implications.
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