Military Power and Ideological Appeals of Religious Extremists

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Abstract

The proliferation of terrorist propaganda threatens societies worldwide. Yet, we know little about violent extremists' strategy in disseminating their ideologies. This paper studies the ideological appeals of jihadi groups, among the most prominent contemporary conflict movements, and shows how these groups navigate between religious and secular narratives in response to the fluctuations in their military power. Weaker groups must prioritize their core believers and foreground a more radical religious ideal, while stronger groups seek broader support from more moderate individuals and thus pitch themselves more secularly. I illustrate this dynamic with an original database of 81 magazines published regularly by 35 jihadi groups from 1984 to 2019. Further, I leverage approximately 6 million tweets from 21,000 ISIS-related accounts in 2015 to examine the jihadists' mobilization efforts regarding different audiences. Overall, I demonstrate that violent groups put more emphasis on their ideological brand when they are militarily weaker.

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The proliferation of terrorist propaganda presents a significant security threat to societies globally. By broadcasting their radical ideologies, non-state violent actors increasingly gain visibility and garner support (Mitts 2019; Walter 2017). However, our scholarly knowledge is scarce regarding what extremists say to their sympathizers and how their words relate to what happens on the ground. This paper fills in the gap by examining the propaganda from jihadi movements, which are the driving force of the current wave of terrorism and notorious for their radical, fundamentalist interpretation of Islamic texts.[1] Through the lens of jihadi groups, I aim to answer a pivotal question: How do extremists strategically adapt their ideological appeals in response to military wins and losses?

I theorize that weaker military power necessitates more religious messaging—jihadists' core ideological brand—while stronger military power permits more secular narratives. Groups constrained by resources or experiencing setbacks tend to adhere strictly to their theological principles to maintain core supporter loyalty, often by invoking concepts such as "afterlife" and "immortality."[2] Conversely, groups with greater resources or successes lean towards secular narratives to engage a broader, more moderate audience. Therefore, jihadists promote their extreme religious doctrine in a somewhat counterintuitive manner: they display their religious brand as a "weapon of the weak" but move away from this ideological standpoint as they gain strength and visibility.[3] This theory links groups' ideological messaging directly to real-world events, whereas existing literature typically isolates the two aspects.

I empirically test these arguments using an original database of jihadist periodicals, which covers 81 regularly released magazines from 35 jihadi groups in 11 different languages, with dates of publication spanning 1984 to 2019 (mostly after 2010). To measure groups' ideological appeals, I develop a customized dictionary of religious and secular words and scale

[1] In this paper, the term "jihadi" refers to Sunni extremists. According to Rapoport (2004), the four waves of terrorism are anarchist (1878-1919), anti-colonial (1920 to 1960), Marxist or new left (1960-1979), and religious (1979-present), respectively.

[2] While beliefs in afterlife and immortality are common among many religions, jihadi groups attach these beliefs to a set of tyrannical rules. The vast majority of Muslims reject the heterodox version of Islam they espouse.

[3] The term "weapon of the weak" was originally introduced to conceptualize terrorism (Crenshaw 1981). See Fortna (2022) for a more recent discussion.

each magazine page on a "religiosity vs. secularism" spectrum. To measure groups' military power, I first integrate group-specific violent events from the Uppsala Conflict Data Program-Georeferenced Event Dataset (UCDP-GED) and the Global Terrorism Database (GTD) as suggested by Donnay and coauthors (2018) and then derive several indicators of group power—total violent events, state-based battles, and casualties caused by the group—each validated against territorial control data. I then tie the religious appeal measure calculated from propaganda to the measures of military power. The results consistently indicate a negative relationship between a group's strength and the prevalence of religious rhetoric in their propaganda, both across groups and within individual groups over time. The coefficient magnitude from the regression models shows that when a group becomes capable of directly confronting the government one more time, it switches one religious term to a secular term on every magazine page. These findings do not hold, as expected, in the placebo tests where I use a group's *future* military power to predict its past ideological appeals. Moreover, I supplement these results with a sentiment analysis. This analysis directly measures the attitude in the propaganda materials and shows that a jihadi group's secular narrative becomes more positive as it grows stronger, implying more tolerance of secularism.

While analyses of jihadist magazines show that groups emphasize their religious nature more when they are weaker, I further analyze the groups' social media to show how different group propaganda strategies connect to their core members or more moderate potential members. Specifically, I use a database containing more than 6 million Twitter posts in 2015 from over 21,000 unique accounts associated with the Islamic State of Iraq and Syria (ISIS), arguably the most influential extant jihadi group. Using the dictionary developed above, I again calculate a "religiosity score" for each tweet. Apart from illustrating that ISIS made different ideological appeals according to its military power, I further show that ISIS more actively reached out to people outside of its existing network (measured by "@", i.e., explicit mentions) when stronger. This effort of coordinating with more moderate potential members, then, associates with more secular rhetoric.

This paper makes several contributions to the large and long-standing literature on terrorism and civil conflict (e.g., Thomas 2021), as well as the small but growing literature on violent group propaganda (e.g., Nielsen 2017). By providing quantitative insights from jihadi groups, it offers a detailed picture of how violent organizations strategically craft their ideological propaganda in relation to battlefield dynamics. These insights underscore the need for scholarly and policy focus to evolve beyond exclusively examining extremists' violent actions towards including their ideological appeals, especially through media channels. Although this study focuses on radical Islamists, its theory about ideological spectrum shifts has broad implications for researching other radical and violent movements, including Aum Shinrikyo in Japan and far-right white supremacists in the United States.

Islamism and Jihadist Movements

Jihadist movements advocate for a transnational Islamic society where Shari'a serves as the constitutional foundation. This utopian vision, deeply rooted in history, has seen escalating conflicts between Islamism and Westernization, as well as between Shi'a and Sunni factions, especially since the Iranian Revolution in 1979 (Hegghammer 2010; Nielsen 2017).[4] The religious concept of *takfir*—the excommunication of one Muslim by another—has been interpreted by some jihadists as justification for the execution of dissenters within their movements (Stern and Berger 2016). This endorsement, and in some cases encouragement, of violence signifies a shift in jihadists' religious beliefs towards ideological extremism, markedly distinguishing them from the broader Muslim community. Jihadists proactively confront not only other Muslims but also adherents of different faiths, labeling them as heretics and apostates (Gerges 2017). Their movements have rapidly expanded on a global scale, epitomizing the fourth and most recent wave of terrorism (Rapoport 2022). Post-2001, religiously oriented violent groups, particularly jihadi groups, have become not only the most prevalent

[4]Other catalysts for the surge in religiously motivated violent movements include the advent of the new Islamic century and the Soviet invasion of Afghanistan.

but also the deadliest type of violent entities (Berman 2011; Gaibulloev and Sandler 2019; Piazza 2009; Toft 2007).

Central to jihadism is the tension between religiosity and secularism (Blaydes and Linzer 2012). Jihadist movements prioritize religiosity over secularism, fundamentally opposing democracy based on their belief that human governance directly contravenes the principles of Shari'a (Rapoport 2004). Jihadism, as a radical religious ideology, gained particular momentum following Islamic theorist Sayyid Qutb's reinterpretation of *jihad* as an individual obligation (fard'ayn). According to Qutb, waging war against non-believers is a permanent and personal duty, with martyrdom promising rewards in the afterlife. This belief rationalizes various violent tactics, including suicide bombings, which, while not mentioned in the Quran, are integral to jihadist doctrine.

In practice, however, jihadi movements often incorporate secular elements alongside their strict religious tenets to achieve worldly objectives (Feldman 2012, 3). For example, they have adopted concepts of territory (a secularized interpretation of ummah) and economy (absent from traditional Islamic doctrine) to fulfill their needs for land and financial resources (Roy 1994). Al Qaeda's declaration that "America will not enjoy security until we live it in Palestine" exemplifies jihadists' territorial ambitions (AQAP 2010). Indeed, many observers have noted that jihadi leaders and rank-and-file members seldom adhere strictly to their religious doctrines (McCants 2015; Nasiri 2007).

A nuanced public statement balancing religiosity and secularism serves as an ideological hook for jihadi organizations to mobilize, recruit, and exert control over members. Consequently, jihadi leaders strategically portray their groups in propaganda to achieve this balance.[5] Such strategic ideological positioning is not exclusive to jihadists but is common across violent organizations (Carvalho 2019; Costalli and Ruggeri 2015; Tokdemir et al. 2021; Walter 2017). As Camus (2012, 14) aptly noted, "Not every value leads to rebellion, but every rebellion implicitly invokes a value." Furthermore, the ideologies of violent groups are

[5]Refer to the US Department of Defense's Harmony Database (Harmony), AFGP-2002-600178.

closely tied to their behaviors, including member selection and attack strategies (Piazza 2009; Sanín and Wood 2014; Wood and Thomas 2017). While previous studies have predominantly focused on ideological differences among violent groups, recent research has begun exploring shifts in ideology reflected in public statements of specific military organizations (Tokdemir et al. 2021). Building on this body of work, I propose that the ideological appeals of jihadi groups are strategic choices, particularly along the "religious vs. secular" spectrum, and are contingent on their military strength.

A Unified Theory of Military Power and Ideological Appeals

This paper offers a theory that unifies non-state violent actors' military power and ideological appeals, explaining their public statements in relation to their battlefield fortunes. This unified theory is in accordance with the reality that violent organizations simultaneously consider their military actions and propaganda efforts. This dual focus is underscored in a communication from Osama bin Laden to other al Qaeda leaders, stating: "We are now in a new phase of assessing Jihad activities [...] in two areas, military activity and media releases" (bin Laden 2005). I argue that weaker organizations make more religious appeals, whereas stronger organizations adopt more secular rhetoric.[6] A critical mechanism underlying this dynamic is the necessity for these groups to sustain coalitions of varying sizes: smaller groups focus on attracting the most devoted adherents, while larger groups broaden their outreach to include a more diverse audience with varied preferences.

Weak military organizations' priority is to secure their base and survive. Religious propaganda is an effective tool to achieve this goal as it serves as a spiritual service to the hardcore jihadists who are more committed to heavenly rewards than worldly benefits. Al-

[6]This paper defines a group's military power exclusively by its "hard power," or battlefield visibility, and does not consider "soft power" such as social welfare, although the latter is important in non-conflict settings.

though these religious interpretations of the Islamic texts are too extreme to be appealing to the larger Islamic world, it is the most appealing narrative to this very niche audience. Because of their religious commitments, these zealots would respond to a group's religious calls even if that group was unlikely to win in the short run (Tokdemir et al. 2021). Weak jihadi organizations are thus able to "buy" these believers with a lower "price" (Berman 2011; Sanín and Wood 2014; Weinstein 2005). While almost all groups want to recruit new members into their organizations, these core, extreme supporters are the ones that could be immediately won over by weaker groups. With the support of these core people, Smaller groups are able to maintain its organization in this way, and even expand, albeit slowly.

Weak groups often operate as a clandestine organization, and making extreme ideological appeals better serves these operation needs. Underground operations require loyal members who can keep secrets. Religious rhetoric effectively helps the organizations to screen members (Bueno de Mesquita 2005; Weinstein 2005). Almost by definition, religion requires some extent of sacrifice (e.g., giving up certain dietary options) (Iannaccone 1992; Iannaccone and Berman 2006). To stay exclusive, religious groups only need to put forward a demanding version of religion that only a few believers will adhere to (Berman 2000). These exclusive religious groups are often referred to as "sects." Violent religious organizations with deficit military capacity are prominent examples of religious sects. Their propaganda assumes a ubiquitous influence of religion and emphasizes religious regulations in every aspect of people's lives. This propaganda then becomes a screening device because it resonates only with hardcore members who tolerate arduous living conditions and are even willing to sacrifice themselves in battles.

Why don't weak violent groups further expand themselves by moderating their language to accommodate the preference of more people? Several strategic costs prevent them from moderating their position and adopting more secular narratives. Most obviously, relaxing religious restrictions risks inviting in opportunists and free-riders (Berman 2000). These groups are heavily constrained by their resources and cannot afford to feed the soldiers

who are unwilling to fight. These free-riders may further create problems to threaten the groups' chance of survival: Additional personnel largely increases transaction costs and brings principal-agent problems, in which case more people result in less effective military operations (Shapiro 2013). Because weaker groups rely more on underground operations than their stronger counterparts, keeping opportunists in the organization also risks giving away military secrets once they are captured by the enemy. Therefore, it is strategically optimal for a weak group to keep its organization at a controllable size.

Moreover, when militarily weaker groups adopt secular narratives centered on interests and governance, they often are credible to a general public. Technically, these groups can also incorporate more secular topics such as national interests, redistribution policies, or public services. However, when it comes to these topics, weaker groups easily lose to an established state government or other stronger non-state militant groups given the scarcity of resources. Considering this, moving further down to the religious extremity allows weaker groups to differentiate their brands from other stronger competitors (Conrad and Greene 2015; Walter 2017). While facing setbacks on the battlefield, groups avoid fierce competition in other spaces as a survival strategy. They trade a potentially larger audience for a loyal constituent that prevents their organization from perishing. As such, religious rhetoric in propaganda functions as a "weapon of the weak."

Militarily stronger groups shift their focus from mere survival to establishing legitimacy. To establish legitimacy, these groups must expand their support base by making more moderate and secular statements to appeal to a more heterogeneous, less religiously committed audience. Consequently, they adopt more inclusive criteria for membership (Berman 2000; Polo and Gleditsch 2016; Sanín and Wood 2014). This strategic shift is reflected in their propaganda, where the emphasis on spiritual rewards diminishes in favor of highlighting earthly objectives that resonate with a wider potential supporter base, who seek more immediate, tangible benefits than promises of an afterlife. For instance, the Syrian rebel group Hayat Tahrir al-Sham eased restrictions on secular activities like music and employment for women,

and pledged to establish more secular institutions after gaining military ground, aiming to attract local support (Fahim 2022). Similarly, following their takeover of Afghanistan in 2021, the Taliban announced more liberal policies towards women's education, a noticeable shift from their earlier stance (Osman and Gopal 2016).[7] At this stage, the risk of alienating moderate supporters outweighs the loss of a few deeply devoted members.

What differentiates these stronger groups from their weaker counterparts is their access to resources. With ample resources, they can credibly promise material in addition to spiritual benefits to potential supporters, appealing to those who might not be mobilized solely by religious doctrine (Berman 2011; Weinstein 2005). Although this strategy of expansion brings the challenge of attracting opportunistic followers, which could be problematic in the long term, it allows stronger groups to grow in ways that their weaker counterparts cannot (Shapiro 2013; Weinstein 2005).

When militant groups are powerful enough to control territory, the need to establish legitimacy with local populations becomes more pressing. As they seize areas, these groups naturally progress towards asserting their sovereignty over the local populace. This involves offering inclusive services even to those who previously did not support them, in order to legitimize their rule (Stewart 2018). In such war-torn societies, these de facto rulers often promote secular values like human rights, aiming to win the hearts and minds of the people (Roy 2004, 132). Successfully gaining local trust can facilitate their military operations, taxation, and other governance aspects (Stewart and Liou 2017; Stewart 2020; Weinstein 2006). Failure to do so may lead to revolts. As evidenced when al Shabaab recaptured territories in early 2023, they began to broadcast softer, more humanitarian messages than in the past, engaging in discussions with civilians to build trust and credibility, following public uprising against their oppressive actions in northern Somalia (Reuters 2023).[8]

Moreover, as these groups gain strength, they often find an international audience in-

[7]However, it's widely believed that these groups' core ideological positions remain extreme, with only their strategic statements changing to appear more moderate, as per BBC (2021). Their claims, even in their moderated form, were still considered extreme by the majority of the Islamic world.

[8]Also see a series of al Shabaab propaganda tracker here: `https://turnstoneanalytics.com/blog`.

creasingly relevant. Adopting a moderate, quasi-state position enables them to engage in "rebel diplomacy" and potentially gain recognition from foreign governments (Huang 2016). Many groups, initially weak, evolve with the aspiration of earning a place at the international table. For instance, the Syrian rebel group Ahrar al-Sham started as an extreme jihadist organization but rebranded itself as a more liberal and moderate group in 2015 after months of military advances, seizing the northwestern province of Idlib and pushing the front almost to the Mediterranean coast (Mroue 2015). Analysts believe that Ahrar al-Sham's reasoning behind this ideological shift was to prompt Turkey and the United States to see them as a legitimate option to replace al-Assad's government (Walter 2017).

Thus far, I have developed a theory suggesting that religious extremists use their religious identity as a strategic tool, particularly when they are militarily weaker. This theory applies both across different groups and within the same group over time: weaker groups tend to emphasize their religious identity more, whereas stronger groups exhibit a more secular facade. Additionally, as a group's power fluctuates—either increasing or decreasing—its communication strategy adapts accordingly. To empirically test how groups strategically align their verbal messaging with their military capabilities, I propose the following hypothesis:

> Hypothesis 1: A group's military power is negatively correlated with its use of religious rhetoric.

My theory suggests that as groups move towards more secular ideological positions, they begin to reference secular concepts more positively, rather than merely criticizing the secular world. In other words, a group's increase in strength is characterized not just by a shift to more negative and critical rhetoric about secular concepts, but rather by adopting a more tolerant and affirmative discourse regarding these concepts. To substantiate this aspect of the theory, I will analyze the interplay between groups' religious and secular vocabulary and the sentiment expressed in the usage of these terms:

> Hypothesis 2: As a group gains military strength, its secular rhetoric is associated with more positive expressions.

Jihadi groups' media rhetoric is closely aligned with their military situation, as these groups strategically design their propaganda to sustain a coalition size that optimally supports their military objectives. The primary aim of this propaganda is to mobilize, recruit, and maintain control over members, making the identification of the target audience a key factor (Ugarriza and Craig 2013). As previously mentioned, weaker groups predominantly communicate with their core members, while stronger groups aim to attract potential supporters on a broader scale. This can include extending their influence beyond their immediate region to captivate an international audience, as evidenced by ISIS and al Qaeda publishing magazines in English and other Western languages. Based on this understanding of groups' varying coalition maintenance needs, I propose the following hypothesis:

> Hypothesis 3: Military power is positively associated with broader coordination effort; such coordination effort is negatively associated with religious rhetoric.

In this paper, a group is considered independent if it possesses distinct command and control structures. Many jihadist groups coexist in the same region, and their operations sometimes extend internationally. A common occurrence is for smaller jihadist groups to pledge allegiance to larger ones, such as the Haqqani network aligning with the Taliban. Following established academic convention, I treat groups independently from their larger umbrella organizations, as each entity claims its own population base and forms its own coalitions.[9]

[9]For instance, this paper recognizes the Islamic State of Jammu and Kashmir as a separate entity, not merely a branch of ISIS. Consequently, those responsible for propaganda materials are generally well-informed about their group's military power, as they are not required to monitor battlefield developments in other parts of the world. Treating these jihadist groups as distinct entities aligns with existing database practices.

Empirical Analyses: Military Power and Ideological Appeals of Jihadi Groups

In this section, I empirically demonstrate the strategy of religious extremists by examining the relationship between the military power and ideological appeals of 35 jihadi groups. I begin by introducing the methods used to measure the primary dependent and explanatory variables, followed by presenting evidence supporting hypotheses 1 and 2.

Measuring Ideological Appeals from Jihadist Magazines

To investigate the propaganda efforts of jihadists, I compiled an original database of 81 magazines, spanning 11 languages and published between 1984 and 2019 by 35 jihadi groups.[10] Magazines have emerged as the predominant medium for disseminating jihadi propaganda due to their low production costs and ease of distribution through communication platforms such as `WhatsApp` and `Telegram`, which evade government surveillance and the need for direct contact. These publications are widely used by militant organizations for recruitment, mobilization, and position-taking. The magazines in this database were collected from every accessible online source at the time. The initial materials were downloaded from three primary online archives of radical publications: the TRAC database, Jihadology.net, and the Jihadi Document Repository. Where issues were incomplete or censored, I supplemented the collection with systematic searches of individual blogs and web pages, tracking historical posts through the `WayBackMachine` internet archive. Consequently, this database includes nearly every issue of each identified magazine series. This comprehensive coverage significantly alleviates concerns regarding potential selection bias: Subsequent analyses, which incorporate group, year, and language fixed effects, predominantly compare issues within the same series, which are seldom missing. While this collection may not encompass every

[10] A comprehensive list of the groups and magazines included in this study is provided in the Appendix.

piece of jihadi propaganda, it includes all known sources of jihadi magazines referenced in existing literature. I also undertook extensive internet research and conducted expert interviews, coding various covariates for each magazine issue, such as the responsible group, languages of publication, publication date, and the targeted gender audience.[11] Notably, I identified the self-stated mission of each publication and excluded any newsletters solely reporting battlefield news, as they lack ideological content. The 81 magazines chosen encompass a broad spectrum of content and represent the highest quality of jihadi groups' official statements. Figure 1 shows examples of magazine covers and inner pages included in this study. Their format, conducive to easy circulation, makes these publications the most common official propaganda tools.

Figure 1: Examples of Jihadist Magazines

(i) (ii) (iii) (iv)

Note: The *DABIQ* magazine (i and ii) published in English by Islamic State of Iraq and Syria (ISIS) and the *Ibnat al-Islam* magazine (iii and iv) published in Arabic by al Qaeda in the Arabian Peninsula.

I digitized the entire magazine archive and analyzed each magazine issue at the page level using `tesseract`, an optical character recognition (OCR) engine. This machine learning tool, powered by pre-trained neural networks, excels at recognizing characters in various languages and is highly effective at identifying words in printed materials. However, its capability to group words into articles is somewhat limited due to the diverse layouts of the magazines

[11] Some magazines specifically address issues relevant to women. For example, *Beituki (Your Home)* by al Qaeda, still active at the time of writing, is one such publication.

in question. Consequently, I adopted the page as the primary unit of analysis, similar to the approach in Karell and Freedman (2019). Typically, one page in these publications corresponds to one article. This process resulted in over 50,000 pages from 1,072 issues, each issue being a unique magazine at a distinct time of publication.[12] For further analysis, all documents were translated into English using the *Google Cloud Translation* API, which is currently a leading industry standard. Although machine translation may not match the nuance of human translation, its accuracy suffices for text analyses under the "bag-of-words" assumption. Even if translations are not perfectly ordered, this does not significantly impact the keyword-based measurement approach detailed here, as discussed by Lucas and his colleagues (2015) and validated by de Vries, Schoonvelde and Schumacher (2018).[13]

To measure the ideological appeals of jihadists on the "religious vs. secular" spectrum, I employed a custom dictionary approach. This text-as-data method scores documents using a dictionary, or a collection of keywords, specifically developed for this study. The dictionary comprises two main categories: "religiosity" and "secularism," defined by three fundamental questions:[14] (1) What is the ideal social order? Religious rhetoric frames divine power as the supreme law, advocating for a society organized around religious tenets (e.g., frequent mentions of "prophet," "ummah," "sharia"), while secular rhetoric underscores human authority, modern nation-states, and political institutions (e.g., frequent mentions of "citizenship," "democracy," "government"); (2) How should individuals behave? Religious rhetoric stresses obedience to Allah (e.g., frequent mentions of "loyalty," "pray," "fasting"), whereas secular rhetoric values individual welfare (e.g., frequent mentions of "vote," "rights," "freedom"); (3) Why should people participate in jihad? Religious rhetoric justifies participation due to benefits in the afterlife and the evilness of non-believers (e.g., frequent mentions of "paradise," "martyrdom," "apostasy"), while secular rhetoric emphasizes material benefits and strategic needs (e.g., frequent mentions of "compensation," "recruitment," "strategy").

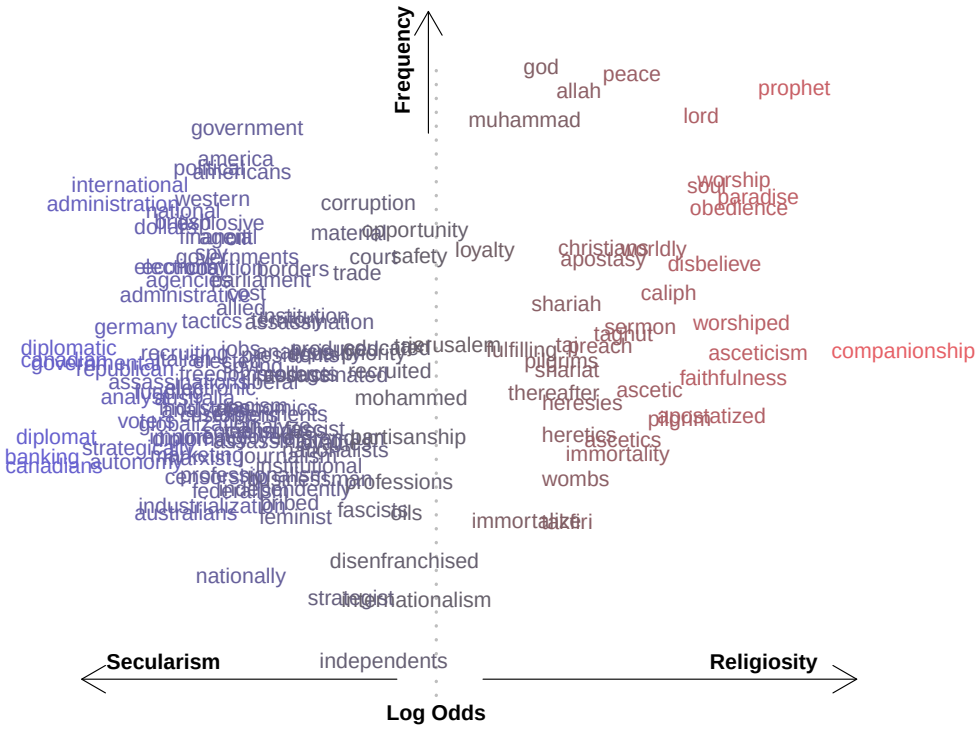
[12]The results presented below remain robust across different units of analysis.

[13]For examples of translations used in this project, refer to the Appendix.

[14]For an in-depth discussion of the tension between Islamic religion and secularism, see Roy (2007), especially pages 37-64.

Building on these questions, I compiled a detailed codebook and constructed a custom dictionary by manually categorizing each word that appears more than 30 times in the text corpus.[15] This dictionary was then used to calculate a *Religiosity Score* for each magazine page, based on the difference between the count of religious and secular keywords. Figure 2 displays a sample of 150 religious and secular keywords from the dictionary. The closer a word is to one of the spectrum's ends, the more it distinguishes the document's rhetoric. This method effectively gauges the extent to which jihadists lean on their religion in propaganda, though it is important to remember that their interpretation of religion often significantly deviates from that of the mainstream Islamic community.

Figure 2: Comparison of Religious and Secular Keywords



Note: This figure displays a random sample of 150 keywords. The x-axis represents the log odds of each word, indicating its association with religious or secular meanings. The y-axis denotes the frequency of their occurrence in the corpus.

[15]The codebook and comprehensive validation of this measure can be found in the Appendix.

Measuring Military Power

Although military power is a frequently addressed concept in conflict studies, it is a non-trivial task to measure it at a fine-grained level. Many extremist organizations operate underground, keeping details like membership confidential. Previous scholarly efforts have typically classified group power into broad categories, which do not vary much over time (Cunningham, Gleditsch and Salehyan 2013). Therefore, for more nuanced analysis, scholars typically evaluate the military power of violent groups based on their performance on the battlefield. The consensus is that militarily stronger groups can launch more attacks, cause greater casualties (Enders and Sandler 1993; Wood 2014), confront states more directly (Byman 2005; Carter 2012), and control larger territories (Sánchez-Cuenca and De la Calle 2009). These criteria align well with this paper's conceptualization of military power as the capacity to conduct violent actions. Thus, I derive three time-varying indicators of military power for each group based on battlefield performance and will later introduce a territorial control measure.

For data on jihadi groups' violent activities, I utilized two established databases: the Uppsala Conflict Data Program (UCDP-GED) and the Global Terrorism Database (GTD). UCDP-GED primarily records large-scale conflict events with significant casualties, while GTD includes a broader range of terrorist attacks. To minimize reporting biases of individual sources, I merged data from both, following the approach of Donnay and coauthors (2018). I categorized events into three major categories: state-based event,[16] non-state event,[17] and one-sided event,[18] considering two records as the same event if they occurred within a five-day and ten-kilometer window. This combined dataset, with 73,114 violent events involving the study's jihadi groups, captures the breadth of their activities. GED contributed

[16]GED coded as "type 1" violence; GTD coded as attacks on Government (General), Government (Diplomatic), Police, Military, Utilities, Maritime, Transportation, Telecommunication, or Airports & Aircraft.

[17]GED coded as "type 2" violence; GTD coded as attacks on Terrorists/Non-State Militia or Violent Political Party.

[18]GED coded as "type 3" violence; GTD coded as attacks on Private Citizens & Property, Business, NGO, Journalists & Media, Transportation, Telecommunication, Religious Figures/Institutions, Educational Institution, Tourists, Food or Water Supply.

48,874 unique events, GTD 19,205, with 5,035 overlapping events. I then linked group-specific events to their propaganda, constructing three metrics (*Total Violent Events*, *Total Deaths*, *State-based Battles*) for the two months preceding a magazine issue's publication, reflecting the group's military strength. The average time to publish a magazine issue in my database is slightly over two months.[19] This timespan likely reflects the timeframe for jihadi group leaders to create their propaganda, considering their battlefield fortune. Therefore, I have selected a two-month window. This allows a realistic timeframe for assembling the magazine, which includes gathering information, writing articles, designing layouts, and editing.[20] Because this paper considers a jihadi organization with its distinct command as an independent group, the group leaders are well informed about their group's battlefield fortunes.

To validate these measures, I compared them with another indicator of group power—territorial control—for ISIS, one of the largest groups in the dataset. The territorial control data, sourced daily from `liveuamap.com`, provides detailed information on ISIS troop locations. Figure 3 correlates territorial control with battlefield activities, showing a clear correspondence, particularly post-2016. However, as territorial control data isn't available for most of the 35 groups, this section primarily uses battlefield performance metrics.

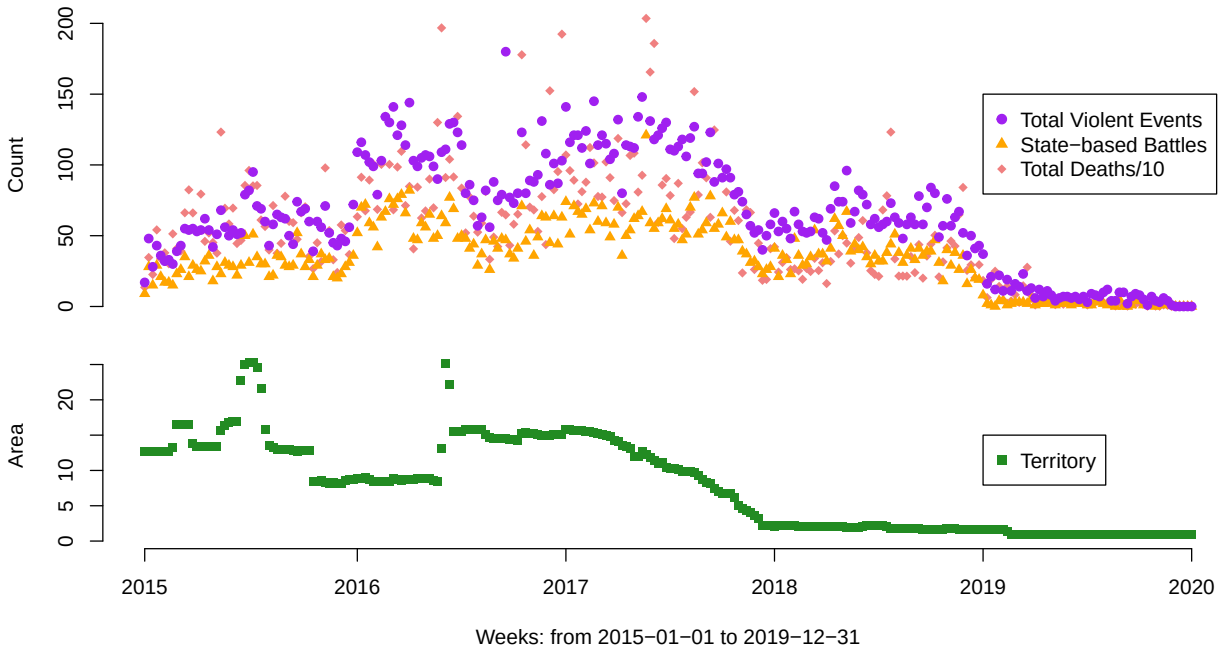
How Military Power Changes Ideological Appeals

I empirically examine the strategy of jihadi groups using ordinary least squares (OLS) models. The *Religiosity Score* is as the dependent variable, and the explanatory variables are three measures of military power: *Total Violent Events*, *State-based Battles*, and *Total Deaths*. Additionally, I include page- or issue-level covariates such as *Front Page* (indicating cover or preface pages), *Total Issue* (reflecting the magazine's longevity), and *Target Women* (denoting magazines aimed at female readers). Another variable, *Competitors*, represents the

[19]The median duration is just over three months.

[20]The Appendix demonstrates that the results remain consistent when using a three-month window for event counting.

Figure 3: Comparing ISIS Battlefield Activities and Territorial Control



Note: All indicators are aggregated at the week level.

count of rival violent groups with radical Islamist ideologies operating in the same countries and timeframe, as recorded in the Militant Group Alliances and Rivalries (MGAR) Database (Blair et al. 2022).

Importantly, I leverage three-way fixed effects for identification: *Language Fixed Effects* ensure comparisons are made between magazines published in the same language, accounting for potential linguistic differences in secular and religious expression. For example, English expressions might generally contain more secular words than Arabic expressions. The *Year Fixed Effects* absorb any temporal trends over the 36-year study period. I analyze models both with and without *Group Fixed Effects*—the former compares changes within groups over time, while the latter assesses both across and within-group relationships between military power and ideological appeals. The reported results are based on military power measured within the two months preceding magazine publication. The Appendix provides robustness checks with different model specifications.

Table 1 confirms the hypothesized negative correlation between military power and religious rhetoric. Models (1), (3), and (5) without group fixed effects, reveal that stronger groups like Tehrik-i-Taliban Pakistan typically present less religious content than smaller ones like Hay'at Tahrir al-Sham. This is further affirmed in models (2), (4), and (6) with group fixed effects, indicating that groups tend to adopt more secular rhetoric as they gain military strength and vice versa. In more intuitive terms, when a group becomes capable of directly confronting the government one more time, it switches one religious term to a secular term in every magazine page, which is suggested by the coefficient (nearly -1) in model (6). The group fixed effects help me to rule out the possibility that my results are completely driven by the difference between smaller and larger groups because, for example, some hardcore groups simply prefer small groups of known supporters, or that they are more heavily targeted by the state(s) and thus find it easier to survive as smaller units. Instead, what we learn from the empirical results is that these groups do not have a fixed preference for group size or a fixed style of communication but change according to the waxing and waning of their military power. Interestingly, religious extremist groups tend to depict an idealized view under Shari'a law and promote sacrifice for holy war when they are less active in fighting for these goals. In contrast, with increased violent actions, they adopt a more secular narrative. Recall that the data used in these regressions excludes newsletters with only battlefield reports. This pre-processing step makes the effects more telling because groups talk more secularly when they are more militarily active, *not* simply because they have more news to report on the ground. Rather, group members in charge of these media outlets intentionally adopt more moderate narratives on the "religiosity vs. secularism" spectrum to accommodate a more heterogeneous audience. Models (7) and (8) exclude ISIS as a robustness check, ensuring that the results are not skewed by this particularly prominent and radical group.[21]

The direction and significance of other covariates remains consistent across models (1)-

[21]Regressions using *Total Deaths (log)* and *State-based Battles (log)* as the main explanatory variable, excluding ISIS, are detailed in the Appendix.

(8). *Front Page* is negatively correlated with religious content, suggesting covers and prefaces are less religious than other pages. *Total Issue* also shows a negative correlation, indicating that longer-surviving magazines tend to be more secular. *Target Women* does not show a significant difference in religious content between male and female-targeted materials. *Competitors* does not significantly influence the religious rhetoric of groups.

Table 1: Military Power and Religiosity Score in Magazines

	Religiosity Score							
	(1)	(2)	(3)	(4)	(5)	(6)	(7) No ISIS	(8) No ISIS
Total Violent Events (log)	−0.91*	−0.96*					−1.35*	−1.04*
	(0.15)	(0.34)					(0.14)	(0.35)
Total Deaths (log)			−0.72*	−0.93*				
			(0.11)	(0.25)				
State-based Battles (log)					−1.01*	−0.99*		
					(0.16)	(0.34)		
Front Page	−2.10*	−2.52*	−2.10*	−2.51*	−2.11*	−2.51*	−1.61*	−1.97*
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.33)	(0.33)
Total Issue	−0.03*	−0.07*	−0.03*	−0.06*	−0.03*	−0.07*	−0.01	−0.07*
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)
Target Women	0.61	1.58	0.62	1.68	0.69	1.69	2.83	1.49
	(1.52)	(1.68)	(1.51)	(1.60)	(1.54)	(1.68)	(1.57)	(1.78)
Competitors	0.01		0.01		0.01		−0.00	
	(0.01)		(0.01)		(0.01)		(0.01)	
Group Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.09	0.12	0.09	0.12	0.09	0.12	0.09	0.11
Observations	55963	55963	55963	55963	55963	55963	52084	52084

Note: Robust standard errors clustered at the magazine issue level. $^*p < 0.05$
The variable *Competitors* is not included in the models (2), (4), (6), and (8) because its effect cannot be identified once *Group Fixed Effects* and *Year Fixed Effects* are simultaneously included.

In the above regression analyses, religious rhetoric is measured subsequent to military actions to ensure proper temporal sequencing. This approach is based on the assumption that groups tailor their ideological narratives in response to unfolding battlefield scenarios, rather

than in anticipation of future events. To reinforce this assumption, I conducted a placebo test with the same model specifications as before, but with a critical adjustment: a group's violent activities are now accounted for two months *after* the publication of its ideological stance in a magazine. The results, as depicted in Table 2, show a loss of significance in this "future predicting past" scenario. While this does not constitute definitive proof of causality, it lends additional credence to the theory I propose.

Table 2: Placebo Test: Future Military Power and Past Religiosity Score in Magazines

	Religiosity Score		
	(1)	(2)	(3)
Total Violent Events (log) (Future)	−0.52		
	(0.30)		
Total Deaths (log) (Future)		−0.39	
		(0.20)	
State-based Battles (log) (Future)			−0.54
			(0.30)
Front Page	−2.55*	−2.55*	−2.55*
	(0.32)	(0.32)	(0.32)
Total Issue	−0.07*	−0.07*	−0.07*
	(0.03)	(0.03)	(0.03)
Target Women	1.39	1.36	1.45
	(1.77)	(1.76)	(1.78)
Group Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes
R^2	0.12	0.12	0.12
Observations	56027	56027	56027

Note: Robust standard errors clustered at the magazine issue level.
*$p < 0.05$

Further Evidence from Sentiment Analyses: Tolerance of Secularism

Given that the *Religiosity Score* is derived using a dictionary-based method and does not directly reflect the tone of magazine articles, a skeptical reader might question whether stronger groups are more tolerant of secularism or if they simply criticize the secular world more. If the latter is true, it would imply that these groups don't necessarily move along a "religious vs. secular" spectrum but instead adopt a more negative campaign strategy when they are militarily stronger. To address this concern, I conduct a sentiment analysis of jihadi groups' magazine content to ascertain if stronger groups indeed demonstrate a more welcoming stance towards secularism.

The sentiment embedded in each magazine page is measured using the Linguistic Inquiry and Word Count text analysis program. The resulting *Sentiment* score, calculated as the difference between the counts of positive and negative words, indicates the overall tone of the content; a higher score indicates a more positive attitude. Subsequent regression models are then fitted with *Sentiment* as the dependent variable and *Secularity Score*—defined as the inverse of *Religiosity Score*—as the main explanatory variable. The objective is to investigate how the correlation between secularism (indicated by *Secularity Score*) and sentiment (indicated by *Sentiment*) shifts in relation to a group's military power, addressing hypothesis 2.

The analysis in Model (1) from Table 3 establishes the baseline relationship between military power and the tone of propaganda. The insignificant coefficient of *Total Violent Events (log)* indicates that there is no substantial change in a group's overall sentiment as its military power varies. Model (2), which incorporates *Secularity Score* as an additional variable, reveals that jihadist narratives are generally more negative when they are secular rather than religious. This finding aligns with the religious foundations of these movements. In model (3), I examine the relationship between secular rhetoric and sentiment conditional

Table 3: Military Power and Tolerance of Secular Values

	Sentiment (Positive - Negative)		
	(1)	(2)	(3)
Secularity Score			0.17*
× Total Violent Events (log)			(0.04)
Secularity Score		−4.15*	−4.60*
		(0.12)	(0.17)
Total Violent Events (log)	−8.89	−4.91	−4.13
	(4.77)	(4.10)	(4.09)
Front Page	49.96*	60.41*	61.30*
	(8.76)	(8.60)	(8.59)
Total Issue	−2.35*	−2.08*	−2.11*
	(0.43)	(0.31)	(0.31)
Target Women	80.51*	73.95*	74.41*
	(30.48)	(25.63)	(25.60)
Group Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes
R^2	0.21	0.27	0.27
Observations	55963	55963	55963

Note: Robust standard errors clustered at the magazine issue level.
*$p < 0.05$

on military power by interacting *Secularity Score* and *Total Violent Events (log)*. The positive and significant interaction term suggests that the negative influence of secular rhetoric on sentiment decreases as a group's military power grows. This implies that as a group becomes more powerful, it shows greater tolerance for secular values in its rhetoric. On the flip side, when a group's military strength diminishes, its tone tends to become more critical towards secular concepts.

The case of al Qaeda exemplifies this shift. In early 2014, while still engaged in conflict with the United States in Afghanistan, al Qaeda expressed a relatively high tolerance for non-Muslims, aiming to establish a "just Islamic society" inclusive of non-believers (as stated in the magazine *Resurgence*). However, as ISIS took over the leadership of the jihadist movement and al Qaeda's public presence faded, the group adopted a more stringent stance. By 2017, al Qaeda was denouncing groups fighting under the banners of democracy and secularism as apostates, labelling democracy as a system of transgression (*Al Risalah* magazine). These examples, though just snippets of jihadist propaganda, illustrate a shift in ideological positions correlated with changes in military power.

Mechanism: Evidence from ISIS Tweets

The magazine analyses establish a negative correlation between jihadi groups' military power and their religious stances, yet they don't explicitly reveal the underlying mechanism. This section explores the proposed mechanism—where weaker military power drives a group to solidify its base, and stronger power motivates broader appeals—by providing evidence supporting hypothesis 3. I utilize a substantial dataset of 6,630,731 original tweets from 21,278 unique accounts identified with ISIS, encompassing 18,040,532 tweets and retweets from 21,959 accounts in 2015, as compiled by Alfifi and colleagues (2018). This dataset identifies Twitter users as ISIS members or sympathizers based on their account being reported and subsequently suspended, a method also used in other similar research (e.g., Mitts 2019).[22] The authors collected all tweets from these users via private access to Twitter's firehose. ISIS is one of the most influential jihadi groups that is currently active, having taken the dominant place of al Qaeda around 2014. Focusing on ISIS has the additional advantage that the US intervention in 2015 exogenously brings large variance in ISIS military power.

[22]Alfifi and coauthors (2018) only retain eventually suspended accounts to exclude false reports from anonymous users. The remaining accounts cover about 88% of the original report list. Because the Twitter spam control team only suspends accounts retrospectively, many of these accounts remained active for a long time before being taken down, allowing me to examine their online activities.

For this analysis, I use the same dictionary-based approach as in the magazine analyses to calculate the religiosity score of each tweet. Most tweets were initially in Arabic and were translated into English, with the religiosity measure based on these translations. ISIS's military power is primarily quantified using territorial control, measuring the daily controlled *Territory* based on maps from `liveuamap.com`. Alternative military power measures using violent activities are presented as robustness checks in the Appendix. I also consider covariates that could affect the proposed relationship: *Followers Count* (user's popularity), *Friends Count* (number of accounts followed), *Favorites Count* (activity level on Twitter), *Statuses Count* (overall user activity), and *Account Length* (age of the account). Additional tweet-level variables include *Media* (presence of picture, audio, or video content), *Urls* (links in tweets), and *Hashtags* (involvement in larger events or movements), along with *Days to Islamic Holidays* based on tweet timestamps.[23]

To examine ISIS's coordination efforts through Twitter, I differentiate between ISIS members (eventually suspended accounts) and non-members (accounts that interacted with ISIS members but were not eventually suspended).[24] I identify tweets mentioning (`@`) non-members as indicative of efforts to coordinate beyond the ISIS network (as of December 31, 2015). The data is then structured into a user-by-date panel, with similar analyses at the tweet level shown in the Appendix.

I investigate the "military power → mobilization effort → ideological appeals" sequence using OLS models. The goal is to demonstrate the relationships between military power and ideological appeals, military power and mobilization effort, and mobilization effort and ideological appeals, respectively, after accounting for confounding factors.

Table 4, model (1), illustrates the relationship between ISIS's power and the religiosity score. This analysis is similar to those in Table 1, but it utilizes Twitter data. Notably, the

[23]The Islamic holidays concerned in this paper are Mawlid 1436, Lailat al Miraj, Laylat al Bara'at, Beginning of Ramadan, Night of Destiny (Laylat al-Qadr), End of Ramadan (Eid ul-Fitr), Festival of Sacrifice (Eid al-Adha), Islamic New Year, Ashura, and Mawlid 1437.

[24]Non-members include those mentioned by or retweeting ISIS members, but not on the anonymous blacklist.

model includes a lagged dependent variable to address potential time dependencies, as the dependent variable, *Religiosity Score*, is best predicted by the same user's rhetoric from the previous day. Territory, serving as a proxy for military power, is measured with a one-day lag compared to the dependent variables to ensure its precedence over any online content. The coefficient of *Territory (lag)* is negative and significant, indicating again that religious rhetoric is a tool of the relatively weak. In model (2), the dependent variable changes to *Mention Non-member*, and *Territory (lag)* shows positive effects on it, suggesting that the more powerful the group, the more likely its members are to reach out to non-members. In model (3), the external mobilization indicator (*Mention Non-member*) is negatively correlated with the *Religiosity Score*, indicating that ISIS tends to employ more secular rhetoric when coordinating with outsiders. This effect is substantially larger than other factors influencing religious rhetoric. For instance, tweets containing web links (*Urls*), which often introduce news or other opinions, are generally less religious. However, the impact of *Urls* is only about a quarter of that of *Mention Non-member*. Another notable observation is regarding the predictor *Days to Islamic Holidays*. Although proximity to religious events usually correlates positively with the amount of religious rhetoric, this effect is diminished by the inclusion of the lagged dependent variable. Thus, the proposed mechanism effectively links group power to its public rhetoric.

Table 4: Group Power, Mobilization, and Religiosity Score

	Religiosity Score	Mention Non-member	Religiosity Score
	(1)	(2)	(3)
Mention Non-member			−0.513**
			(0.017)
Territory (lag)	−0.503**	0.164**	−0.366**
	(0.116)	(0.020)	(0.115)
Religiosity Score (lag)	0.347**		0.337**
	(0.008)		(0.008)
Mention Non-member (lag)		0.429**	
		(0.013)	
Days to Islamic Holidays	−0.447	−0.330	−0.607
	(1.833)	(0.333)	(1.825)
Followers Count	−0.247	−0.005	−0.259
	(0.149)	(0.011)	(0.158)
Favorites Count	−0.595	0.051	−0.542
	(0.525)	(0.076)	(0.555)
Friends Count	−0.893	0.111	−0.759
	(0.762)	(0.105)	(0.772)
Statuses Count	−0.291	−0.044	−0.337
	(0.161)	(0.034)	(0.180)
Account Length	1.048**	−0.235**	0.870**
	(0.226)	(0.034)	(0.225)
Media	−0.267**	−0.034**	−0.290**
	(0.020)	(0.003)	(0.021)
Urls	−0.088**	−0.058**	−0.128**
	(0.018)	(0.004)	(0.017)
Hashtags	−0.174**	−0.065**	−0.216**
	(0.021)	(0.002)	(0.021)
Constant	0.768**	0.100**	0.854**
	(0.024)	(0.004)	(0.025)
R^2	0.150	0.224	0.162
Observations	265,241	265,241	265,241

Note: Robust standard errors in parentheses clustered by users. *$p < 0.05$; **p< 0.01

Conclusion

This paper develops and empirically assesses a new "Weapon of the Weak" theory: Violent organizations strategically propagate more extreme religious rhetoric as an ideological weapon when they are militarily weaker. This extreme rhetoric appeals to their core extreme religious adherents. Conversely, organizations with stronger military capabilities tend to moderate their public statements to attract a broader audience. This theory thus presents a unified framework for understanding violent groups' larger strategies that bind their propaganda to their military fortunes, while prior research analyzes either violent attacks or propaganda in isolation.

Overall, this in-depth study provides much needed clarity over the strategies that religious movements have used to rise to global prominence in the last several decades. It brings ideology into quantitative conflict studies, challenging the conventional view that treats ideologies as static. By examining the dynamic nature of jihadi ideologies, this research uncovers the nuanced evolution of these groups' ideologies in relation to the conflict process. This approach deepens our understanding of militant organizations' day-to-day recruitment and mobilization strategies.

Finally, the paper has important implications for understanding and combating terrorist propaganda in today's information-rich era. By closely examining changes in the propaganda of extremist groups, this paper sheds light on these groups' intentions to diversify their recruitment base—a critical aspect that is often challenging to observe directly. This understanding is key to developing effective conflict prevention and counter-extremism policies, highlighting the need for nuanced approaches to address the evolving nature of terrorist propaganda. In line with the identified ideological tactics of militant groups, counter-extremism initiatives should be audience-specific and adapt to the realities of the battlefield.

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Online Appendix

Military Power and Ideological Appeals of Religious Extremists

This supplemental appendix contains additional discussions and results that are not included in the main manuscript for reasons of space and focus. Specifically, I include the following additional sections on descriptions of the original jihadi magazine database and other textual data, measurement and validation, and additional analyses.

Contents

A1 The Jihadi Periodical Database

In my study of the propaganda strategies of jihadi groups, I have compiled a comprehensive database consisting of 81 magazines issued by 35 jihadi organizations. The publications in this database span from 1986 to 2019 and encompass a wide range of languages, including Arabic, Bengali, English, French, German, Indonesian, Malay, Russian, Swahili, Turkish, Uighur, and Urdu. In addition to these magazines, many jihadi groups also regularly publish newsletters or newspapers.[1] However, these news-oriented periodicals primarily focus on disseminating battlefield reports and generally contain less ideological content. Consequently, for the purposes of this study, I have deliberately excluded newsletters and newspapers from the analyses to concentrate on materials that are more ideologically driven.

A1.1 List of Groups and Magazines

Table A1 provides a detailed list of the magazines associated with each group included in this study. For each magazine, key information such as the span of publication, the language of the magazine, and the target audience's gender is specified in parentheses following the magazine's name.

Table A1: Summary of Magazines by Groups

Group	Periodicals
al Qaeda	Beituki (2017-2019, ar, w), Fadhakar (2016-2017, ar, m), Hitin (2007-2014, ur, m), One Ummah (2019-2019, en, m), Ummah-Wahidah (2019-2019, ar, m), al-Haqiqah (2017-2018, en, m), al-Risalah (2017-2018, ar, m)
al Qaeda in Iraq	Dhurwat al-Sanam (2005-2005, ar, m)
al Qaeda in Saudi Arabia	Mu'askar al-Battar (2003-2004, ar, m), Sawt al-Jihad (2003-2007, ar, m)
al Qaeda in the Arabian Peninsula	Hidayyah (2016-2016, ar, m), Ibnat al-Islam (2017-2019, ar, m), Inspire (2010-2017, en, m), Sada al-Malahim (2008-2011, ar, m), Al-Shamikha (2011-2013, ar, w), Al-Waqi' al-Jihadiyya (2010-2015, ar, m)
al Qaeda in the Indian Subcontinent	Hitin (2017-2017, ur, m), Nawai Afghan Jihad (2010-2019, ur, m), Resurgence (2014-2015, en, m), Al-Balagh (2016-2019, bn, m)
al Qaeda in the Islamic Maghreb	Sada al-Qital (2000-2003, ar, m), al-Huda (2016-2016, ar, m), al-Jama'a (2004-2006, ar, m)
al-Jama'a al-Islamiyya al-Musallaha	Al-Ansar (1993-1997, ar, m)
al-Muhajirun in East Africa	Al-Ghuraba (2015-2016, sw, m)
al-Shabaab	amka (2015-2015, en, m), Gaidi Mtaani (2012-2017, sw, m)

[1] For instance, *Al-Masra* by al Qaeda in the Arabian Peninsula and *Basha'ir* by the Iraq Resistance Movement are examples of jihadist newsletters.

Ansar Ghazwat ul-Hind / Foundation of New Movement of Jihad in Kashmir	The Indus (2018-2018, ur, m)
Ansar al-Islam	Hasad al-Mujahidin (2005-2010, ar, m), Al-Ansar (2010-2012, ar, m)
Ansar al-Sunna	Ansar al-Sunna (2003-2006, ar, m)
Hamas of Iraq	Ruwwad al-Ma'ali (2007-2008, ar, m)
Haqqani network	Manba' al-Jihad (1990-1992, ar, m)
Harakat Ahrar al-Sham al-Islamiyyah	Rabi' al-Sham (2015-2016, ar, m)
Hayyat Tahrir al-Sham	Sahevh aaba (2018-2018, ar, m), Al-Balagh (2019-2019, ar, m)
Islamic Army in Iraq	Al-Fursan (2004-2012, ar, m)
Islamic Emirate of Afghanistan	Shari'at (2012-2018, ur, m), Al-Somood (2006-2019, ar, m)
Islamic Front for Iraqi Resistance	Jami' (2005-2010, ar, m)
Islamic Movement of Uzbekistan	Ghazwa-e-Hind (2011-2011, ur, m)
Islamic State of Iraq and Syria	Dabiq (2016-2016, de, m), Dabiq (2014-2016, en, m), Dar al-Islam (2015-2016, fr, m), al Fatihin/Fatihin (2016-2016, ms, m), Islamic State Report (2014-2014, en, m), Istok (2015-2016, ru, m), Konstaniniyye (2015-2016, tr, m), Mediaction (2018-2018, fr, m), Rumiyah (2016- 2017, de/en/fr/id/ru/ug, m), Sawt al-Sham (2013-2013, ar, m), Uvewivai (2018-2018, ru, m), Al-Malhamah (2017-2017, ar, m), Al Mustaqba (2013-2014, ms, m), al-Waqar (2016-2016, ar, m)
Islamic State Indonesia	Baqiyyah (2017-2017, id, m), Generasi (2017-2017, id, m)
Islamic State of Jammu and Kashmir	the Voice (2019-2019, en, m), Al Risalah (2019-2019, en, m)
Jabhat Fateh al-Sham	Iyyaha'at Jihadiyyah (2016-2016, ar, m), Al-Risalah (2015-2017, en, m)
Jamiat-e-Islami	Al-Mujahidun (1986-1992, ar, m)
Jaysh al-Islam	Nida al-Masra (2018-2019, ar, m)
Kata'ib Thawrat al-'Ashirin	al-Kata'ib (2005-2015, ar, m)
Lajnat al-Difa' 'an Aqidat Ahl al-Sunna in Palestine	Al-Haqiqa (2007-2016, ar, m)
Minbar Suriya al-Islami	Risalat al-Mujahidin (2005-2005, ar, m)
Naqsbandi Army	Al-Naqshbandiyya (2007-2015, ar, m)
Sipah-e-Sahaba Pakistan	al Rashideen (2013-2013, en, m)
Tanzim Huras al-Din	Al-Falah (2019-2019, ar, m)
Tehreek-e-Taliban Islami Pakistan	Azan (2013-2014, en, m), Ihya-e-Khilafat (2011-2017, ur, m), Ihyae Khilafat (2014-2014, en, m), In Fight (2010-2014, en, m), Sunnat-e-Khaula (2017-2017, en, w), Taliban (2016-2018, ur, m)
Tora Bora Front	Tora Bora (2004-2005, ar, m)

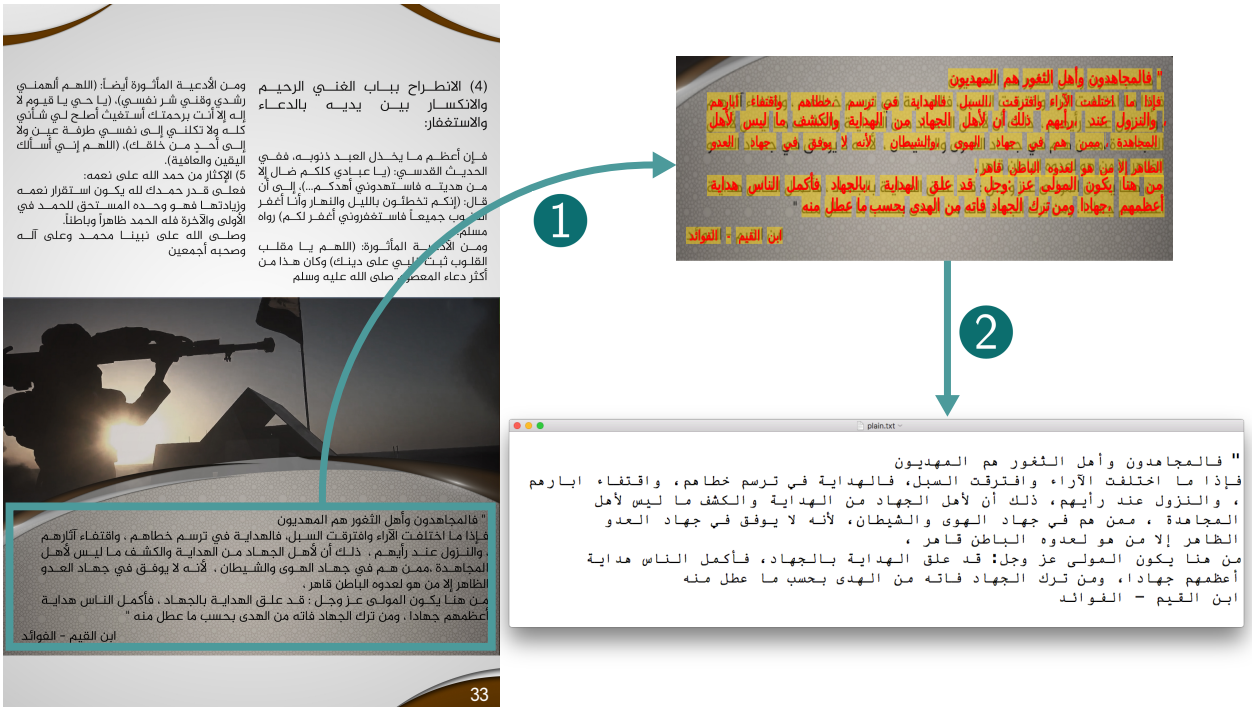
Turkistan Islamic Party	Turkistan al-Islamiyya (2008-2019, ar, m)

Note: Publishing time range, language, and the gender of the target audience are noted in the parentheses. ar=Arabic, bn=Bengali, en=English, fr=French, de=German, id=Indonesian, ms=Malay, ru=Russian, sw=Swahili, tr=Turkish, ug=Uighur, ur=Urdu; m=target men, w=target women.

A1.2 Processing Text

To prepare the magazine content for analysis, I utilized Optical Character Recognition (OCR), a machine learning technology, to digitize the entire collection of magazines. This process involves OCR software identifying and recognizing words on each page, such as the one shown in Figure A1, using pre-trained neural networks. By specifying the language of the text (e.g., Arabic), the OCR tool accurately transcribes the words into plain text. This method has proven to be highly effective, producing text that closely matches the original documents. In total, this technique was applied to approximately 60,000 pages.

Figure A1: Workflow of Optical Character Recognition (OCR)



Subsequently, all non-English content was translated into English using the *Google Cloud Translation* API. This approach to translation is widely used in cross-country and multilingual studies (e.g. Lucas et al., 2015). To provide a qualitative assessment of the performance of Google Translation, an example of translated text is included. In February 2017, al Qaeda published the seventh issue of its bulletin, *Al-Nafir*, in both Arabic and English. Figure A2 displays this bulletin in both languages, with the English version serving as an exemplary translation of the Arabic text.

Figure A2: Bulletin Published in both Arabic and English

خرجوا من البيت الأبيض قبل أن يوفوا بوعدهم رغم تمديد رئاسة بعضهم، وسيكون هذا مصيرك بلاشك، فجذوة الجهاد قد اشتعلت ووصلت لمشارق الأرض ومغاربها ﴿وَاللَّهُ مُتِمُّ نُورِهِ وَلَوْ كَرِهَ الْكَافِرُونَ (٨)﴾.

﴿وَاللَّهُ مُتِمُّ نُورِهِ وَلَوْ كَرِهَ الْكَافِرُونَ (٨)﴾.

لم تمر إلا أيام قليلة على تمديد ترمب "للإرهاب الإسلامي" في خطاب تنصيبه، إلا وأصبحنا على مجزرة أمريكية في منطقة "قيفة" في اليمن، ليتبين لنا جليا أن هذا التهديد لم يكن موجها للمجاهدين من الأمة الإسلامية وحسب، وإنما للمسلمين عامة سواء أكانوا رجالا أو نساء أو أطفالا حتى، حيث عمد الأمريكان في هذه المجزرة إلى قتل عدد من النساء والأطفال حتى أنه لم يسلم من وحشيتهم الجنين في بطن أمه، وفي هذه المناسبة: نقول للرئيس الأحمق ترمب: لقد تعاقب على رئاسة بلدك عدة رؤساء خلال عدة سنوات كلهم وعدوا شعبهم بقتال المجاهدين واستئصالهم، لكنهم كلهم

بسم الله الرحمن الرحيم

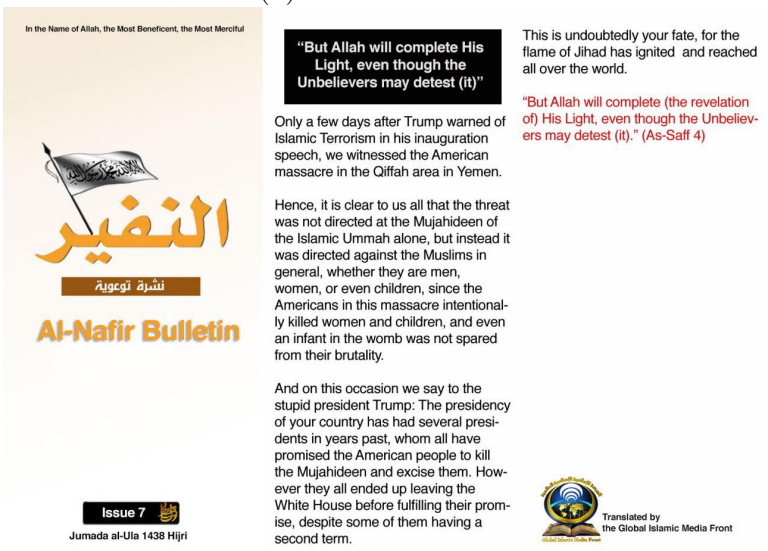
النفير

نشرة توعوية

العدد السابع

جمادى الاولى ١٤٣٨هـ

(a) Arabic Version



In the Name of Allah, the Most Beneficent, the Most Merciful

النفير

نشرة توعوية

Al-Nafir Bulletin

Issue 7

Jumada al-Ula 1438 Hijri

"But Allah will complete His Light, even though the Unbelievers may detest (it)"

Only a few days after Trump warned of Islamic Terrorism in his inauguration speech, we witnessed the American massacre in the Qiffah area in Yemen.

Hence, it is clear to us all that the threat was not directed at the Mujahideen of the Islamic Ummah alone, but instead it was directed against the Muslims in general, whether they are men, women, or even children, since the Americans in this massacre intentionally killed women and children, and even an infant in the womb was not spared from their brutality.

And on this occasion we say to the stupid president Trump: The presidency of your country has had several presidents in years past, whom all have promised the American people to kill the Mujahideen and excise them. However they all ended up leaving the White House before fulfilling their promise, despite some of them having a second term.

This is undoubtedly your fate, for the flame of Jihad has ignited and reached all over the world.

"But Allah will complete (the revelation of) His Light, even though the Unbelievers may detest (it)." (As-Saff 4)

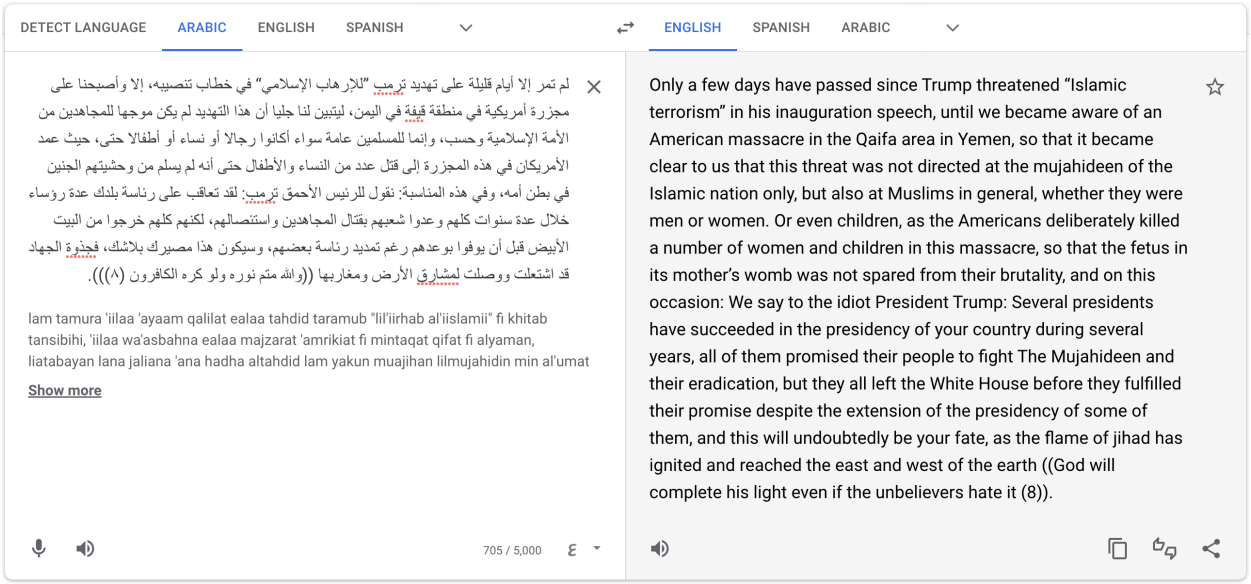
Translated by the Global Islamic Media Front

(b) English Version

Note: Al-Nafir issue 7 is published in both Arabic and English. Generally, it is uncommon for jihadi groups to release the same propaganda materials in different languages.

I directly paste the text detected by OCR from Figure A2 (a) into Google Translation. As shown in Figure A3, Google translation largely preserves the meaning of the original text. The content in Figure A3 reads very similar to that in Figure A2 (b).

Figure A3: Example of Google Translation



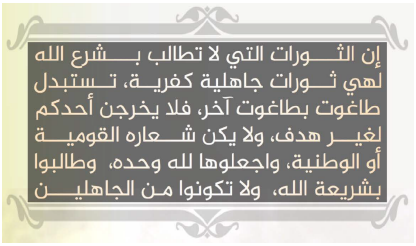
Note: The English translation generated by Google reads very similar to the English bulletin released by al Qaeda (Figure A2 (b)).

A1.3 Comparing Google Translation with Translation from Native Speakers

To evaluate the accuracy of Google's translation service, this section includes quality checks comparing Google translations with translations provided by native-speaking research assistants. For this purpose, I randomly selected texts originally written in a variety of languages—Arabic, German, Indonesian, Malay, Pashto, Russian, and Turkish—and compared Google's translations to those done by the research assistants.[2] The findings, presented in Table A2, indicate that Google's translations are generally reliable in conveying the original texts' meanings, particularly in distinguishing between religious and secular tones.

Table A2: Comparing Google Translation with Translation from Native Speakers

[2]The range of languages assessed was limited by the availability of research assistants fluent in those languages.

Original Text	Google Translation	Native Speaker Translation
Arabic		
 (excerpt from *Cubs, Issue 9*)	Revolutions that do not demand the law of God are ignorant and infidel revolutions, replacing one tyrant with another tyrant, so do not let any of you go out without a goal, and do not have nationalism or patriotism as your slogan. Leave it to God alone, and demand the law of God, and do not be among the ignorant.	Revolutions that do not demand the law of Allah are ignorant and infidel revolutions, replacing one tyrant with another. Let none of you set out except with a defined purpose. And let not your slogan be nationalism or patriotism, but dedicate it solely to Allah, and demand the law of Allah, and be not among the ignorant.
German		
Kein Muslim bestreitet, dass die Vorbereitung für den Dschihad auf dem Wege Allahs zu den notwendigen Angelegenheiten gehört. Dazu spornte Allah ﷻ in Seinem edlen Buch mit Seiner Aussage an: {Und haltet für sie bereit, was ihr an Kraft und an kampfbereiten Pferden (haben) könnt, um damit die Feinde Allahs und eure Feinde zu terrorisieren, sowie anderen außer ihnen, die ihr nicht kennt; Allah aber kennt sie! Und was immer ihr auf Allahs Weg ausgebt, wird euch in vollem Maß zukommen, und es wird euch kein Unrecht zugefügt.} [Al-Anfal: 60] Zweifellos gehört die Vorbereitung der Ausrüstung zu den Angelegenheiten, die beim Erlangen des Sieges und Triumphs über die Feinde hilfreich ist. (excerpt from *Rumiyah, Issue 7*)	No Muslim denies that preparation for jihad in the way of Allah is one of the necessary matters. Allah encouraged this in His Noble Book by saying: And prepare for them whatever strength and battle-ready horses you can, to terrorize the enemies of Allah and your enemies, as well as others other than you does not know; But Allah knows them! And whatever you spend in the way of Allah will be given to you in full, and no injustice will be done to you. [Al-Anfal: 60] Undoubtedly, the preparation of equipment is one of the matters involved in achieving victory and triumph over the enemies are helpful.	No two Muslims would disagree that preparing for jihad for the cause of Allah is an obligation. Allah urged people to this duty in His book when He said, "Prepare against them whatever you are able of power and of steeds of war by which you may terrify the enemy of Allah and your enemy and others besides them whom you do not know [but] whom Allah knows. And whatever you spend in the cause of Allah will be fully repaid to you, and you will not be wronged" (Al-Anfal 60). So there is no doubt that preparation is a factor that contributes to victory and success against the enemy.
Indonesian		
Pada saat itu, rezim Ba'ats Irak semakin melemah setelah rangkaian perang gagal yang mereka terjuni. Para muwahhid sedang menunggu-nunggu kehancurannya. (excerpt from *Generasi, Issue 1*)	At that time, the Iraqi Ba'athist regime was increasingly weakened after a series of failed wars in which they participated. The muwahhids are waiting for its destruction.	Up until then the Ba'ath regime of Iraq was weakened after a series of failed wars they have waged. The believers need only wait for their downfall.

Pashto

يرموك هغه ميدان دی چيرته چه د تاريخ يوه عظيمه جګړه شوې، کله چه د خالد بن وليد ﷺ په قيادت کښې مسلمانانو دهرقل ترمشری لاندې صليبي يرغلګروته ملا ماتونکی شکست ورکړ، او د همدې جګړې نه د روم د امپراطوری زوال شروع شو. نن اسلامي امت بيا له همداسې يوه حالت سره مخ دی، نن بيا په مسلمانانو يوه صليبي جګړه مسلطه شوې ده، البته توپير دومره دی چې د روم په مشری پرونيو صليبيانو داسلامي قلمرو په يوه وړه برخه په خپل عسکري طاقت سره يرغل کړی وو، او نن د امريکا په مشری صليبي ټولنې دمسلمانانو په قلمرو، دين، ناموس اوشتمنيو باندې هر اړخيزه صليبي يرغل پيل کړی دی. نو ياد لری چې دننۍ صليبي جګړې مقابله هم په هماغسې سرښندنو سره ممکنه ده لکه پخوا چې دصليبی جګړو مقابله شوې وه، بلکه له هغې نه هم خورا زياتې قربانی ته اړتيا لري. نو اې مسلمانانو! داسلامي امت د ژغورنې لپاره هر ډول قربانی ته تيارشی. بس همدا ديرموک پيغام دی. (excerpt from *Yarmuk, Issue 1*)	Yarmouk is the field where one of the greatest battles of history was recorded, when the Muslims under the leadership of Khalid bin Waleed (may God be pleased with him) defeated the crusaders under the leadership of Dharqal, and the fall of the Roman Empire began. become Today, the Islamic Ummah is facing a similar situation. Today, the Muslims have been imposed a crusade. Of course, the difference is that yesterday's crusaders, led by Rome, invaded a part of the Islamic territory with their military power. The US-led crusader group has launched an all-out crusade against the territory, religion, honor and property of Muslims. So, remember that internal crusader confrontation is possible with the same ends as the crusaders were confronted in the past, but it also involves a lot of sacrifice. Oh Muslims! Every country is ready to sacrifice for the salvation of the Islamic Ummah. This is just a late message.	Yarmouk is the field where a great event of history took place, where under the leadership of Khalid ibn al-Walid (May Allah be pleased with him), the Muslims gave a crushing defeat to the Byzantine Emperor Heraclius' army. It was this event that marked the beginning of the downfall of the Roman Empire. Today, the Islamic nation is faced with a similar situation; a crusade has been imposed upon the Muslims again. However, the difference is that in the past, the Crusaders under the leadership of Rome invaded a part of the Islamic territory with their military power, and now the Crusader society led by America has initiated an all-out Crusader invasion on the lands, religion, honor, and wealth of the Muslims. Remember that confronting today's Crusades also requires sacrifice and offering. So, Oh Muslims! Be prepared for every kind of sacrifice for the salvation of the Islamic nation. This is the message of Yarmouk.

Turkish

Bu sahabe sözleri bize gösteriyor ki, birisi ribat görevini yerine getirirken, dinlenmeye dönmeden önce en az kırk gün ya da daha fazla ribatta bulunması en iyisidir (vacib değil). Bu Selefin menheci üzere olan ribattır. (excerpt from *Konstaniniyye, Issue 6*)	These words of the companions show us that when someone is performing the duty of ribat, it is best (not obligatory) to spend at least forty days or more of ribat before returning to rest. This is ribat according to the Salaf's method.	These words of the companion show us that when someone is fulfilling the duty of ribat, it is best for them to spend at least forty days or more in ribat before returning to rest (not obligatory). This is ribat according to the methodology of the Salaf.

	Malay	
Keempat, Khalifah yang dibai'at harus memenuhi syarat pengangkatan Khilafah (Muslim, laki-laki, baligh, berakal, merdeka, adil dan mampu), sekalipun belum memenuhi syarat keutamaan (yakni berasal dari suku Quraisy). Sebab, yang menjadi patokan adalah syarat in'iqad (pengangkatan). (excerpt from *al-Mustaqba, Issue 3*)	Fourth, the Caliph who pledges allegiance must meet the conditions for the appointment of the Caliphate (Muslim, male, of puberty, intelligent, independent, fair and capable), even if he has not yet met the requirements of priority (i.e. from the Quraish tribe). Because, the benchmark is the condition of in'iqad (adoption).	Fourth, the Caliph who is pledged allegiance must fulfill the qualifications for the appointment of the Caliphate (being a Muslim, male, mature, rational, free, just, and capable), even if he does not meet the conditions of excellence (namely, being from the Quraysh tribe). Because what is the benchmark is the conditions of in'iqad (appointment).
	Russian	
Когда же крестоносцы прекратят организовывать войны против Ислама и мусульман? Когда они поймут, что Халифат продолжит существовать? Когда они поймут, что решение всех их кровавых страданий лежит перед их слепыми глазами? Справедливый террор, бьющий в самый центр их мертвых сердец, будет продолжаться, пока они не поймут всего этого. (excerpt from *Istok, Issue 3*)	When will the crusaders stop organizing wars against Islam and Muslims? When will they understand that the Caliphate will continue to exist? When will they realize that the solution to all their bloody suffering lies before their blind eyes? The righteous terror striking at the very center of their dead hearts will continue until they understand all this.	When will the crusaders cease organizing wars against Islam and Muslims? When will they understand that the Caliphate will continue to exist? When will they understand that the solution to all their bloody sufferings lies before their blind eyes? Just terror, striking right at the center of their dead hearts, will continue until they understand all this.

Note: Excerpts randomly selected from seven languages.

A2 Measuring Ideological Appeals and Validation

A2.1 Measuring Ideological Appeals with Customized Dictionary

A key component of this research involves quantifying the ideological appeals of jihadi groups along a "religious vs. secular" spectrum. As explained in the main manuscript, I developed a customized dictionary around three fundamental questions delineating the boundaries between "religiosity" and "secularism": (1) What is the ideal social order?; (2) How should individuals behave?; and (3) Why should people participate in jihad? In Table A3, I detail several dimensions of each of these three umbrella questions and present example words in parentheses.

Table A3: Codebook

Religiosity	**Secularism**

(1) What is the ideal social order?	
divine power (god, prophet, companions, etc.)	positive man-made law (congress, court, judiciary, etc.)
religious leaders and their titles (imam, khatib, mawlawi, etc.)	secular leadership positions (president, mayor, administrations, etc.)
in-groups or out-groups defined by religious beliefs (christian, infidel, heresy, etc.)	in-groups or out-groups defined by secular identities (foreigners, allies, diplomats, etc.)
the transnational Islamic caliphate and its constitutional base (caliphate, umayyad, sharia, etc.)	any secular political institutions (government, democracy, dictatorship, etc.)
the Muslim community not defined by territory (ummah)	territory or territorial ambition (territory, borders, autonomy, etc.)
ideology or philosophy defined by religion (monotheism, paganism, polytheism, etc.)	ideology or philosophy not defined by religion (imperialism, globalism, marxism, etc.)
different sectors of Islam (shafi, hanafi, maliki, hanbali, shia, etc.)	different components of secular nation-states, particularly Western nation-states (citizenship, election, referendum, etc.)
	icons of capitalism (bankruptcy, commercial, industry, marketing, etc.)
religious classics (quran, hadith, fatwa, etc.)	modern education (college, university, faculty, etc.)
religious taboos and punishment (apostasy, taghut, takfir, etc.)	social regulations and control over individuals (tax, censorship, surveillance, etc.)
(2) How should individuals behave?	
religious practices (asceticism, pray, fasting, etc.)	political obligations and rights of the public (vote, ballot, disenfranchised, etc.)
Islamic conventions and cultural rituals (halal, hijri, fasting, etc.)	secular activities (funding, payments, experiment, etc.)
objects conveying a strong religious meaning (taj, hijab, burqa, etc.)	objects exclusively in secular life, particularly those associated with modern technology (technology, internet, bitcoin, etc.)
fundamentalist requirements for women and regulations on family life (chastity, womb, talaq, etc.)	reference to human rights, particularly women rights (feminist, rights, humanitarian)
values showing respect to god (loyalty, obedience, taqwa, takbir, etc.)	values attached to human welfare and individual happiness (equality, freedom, liberal, independence, etc.)
(3) Why should people participate in jihad?	
benefits in the afterlife (paradise, immortal, shaheed, martyrdom, etc.)	benefits in the current life (salary, compensation, oil, cash, etc.)
individuals' spiritual pursuits (soul, blessings, fulfillment, etc.)	groups' organizational needs (mobilization, recruitment, budget, etc.)

existing violation of religious rules (adultery, forbidden, etc.)	social problems in secular societies (bribe, crisis, racism, etc.)
names of major religious sites (jerusalem, mecca, etc.)	names of major secular countries (america, britain, etc.)
ultimate religious goals (pilgrimage, caliphate, etc.)	strategic statements and reasonings (analyze, plan, spy, strategy, etc.)

Note: Different forms and alternative spellings have been taken into consideration. I manually went through each word that appears more than 30 times in the entire textual corpus and decided whether it can be used to distinguish rhetoric.

With the established codebook, I meticulously categorized each word occurring more than 30 times[3] in the textual corpus as either "religious," "secular," or "neither"—the latter being the most common category. For instance, words like "childbirth" and "breastfeeding," while relevant to discussions about women's issues, can be found in both religious and secular rhetoric, and hence are not included in the dictionary. The categories in the codebook are not mutually exclusive; for example, "paradise" might represent both "ultimate religious goals" and "benefits in the afterlife."

In categorizing keywords, I considered various forms and spellings (e.g., "political" and "politics" as secular; "hadith" and "hadeeth" as religious). However, some word forms were selectively included: "fasting" is categorized as religious, but its verb form "fast," often used adjectively for speed, is not. Crucially, to prevent bias, I excluded violence- or conflict-related terms (like "battles," "blood," "bombing," "casualties," "ceasefire") from both categories, as the primary explanatory variable of military power is measured by violent activities.

Using the identified keywords, I positioned each document along the "religious vs. secular" spectrum based on the count of keywords it contained. While the primary unit of analysis in the study is the magazine page, space limitations restrict me to only presenting select sentences as examples in Figure A4. Figure A5 conceptually demonstrates how magazine pages are arranged according to their religiosity score. The complete content of these materials will be available in the replication dataset.

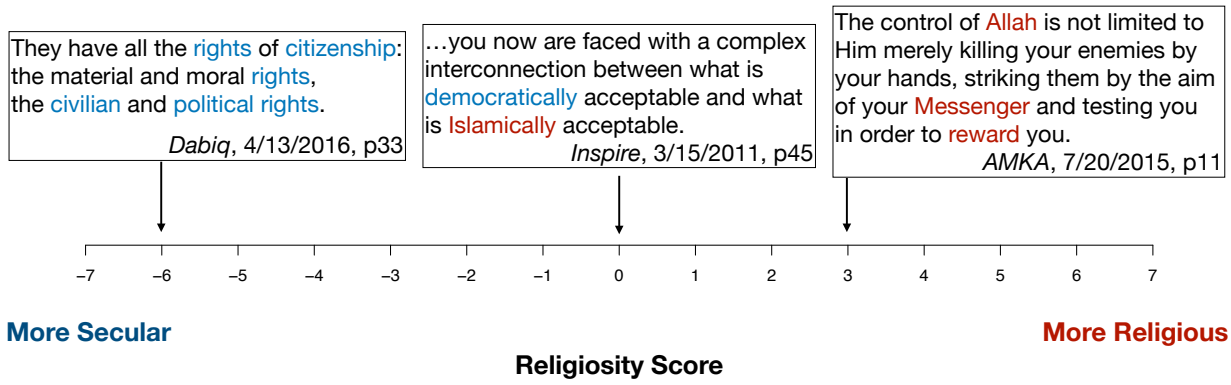
A2.2 Validation

To ensure that the *Religiosity Score* accurately reflects the ideological strategies of jihadi groups in their magazine pages, I employ various methods to validate this measure. The *Religiosity Score* for each page is calculated by subtracting the number of secular words from the number of religious keywords.

Face Validation: As an initial step in validation, known as face validation, I compare the religiosity scores between publications in Western languages (English, French, German, Russian) and those in non-Western languages (Arabic, Bengali, Indonesian, Malay, Swahili, Turkish, Uighur, Urdu). Given that non-Western languages tend to more frequently refer to

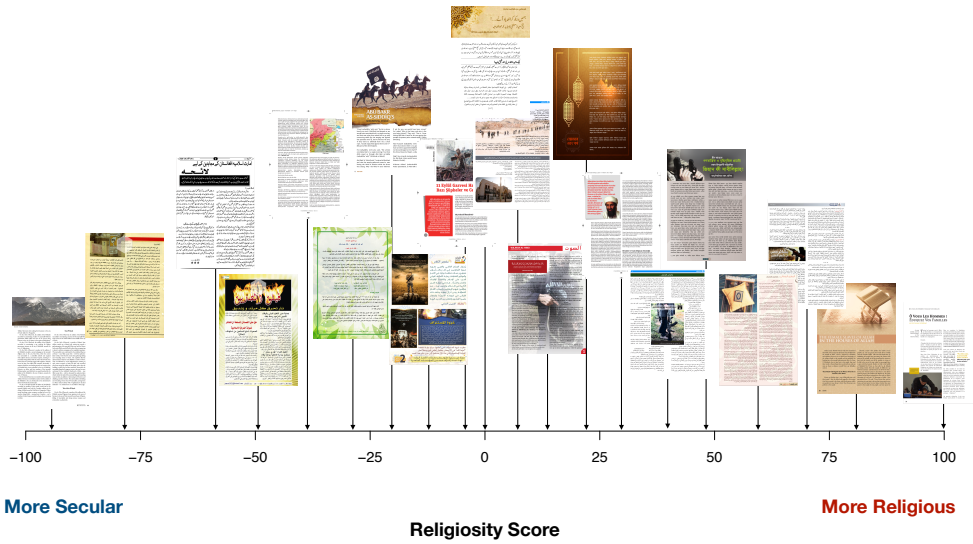
[3]This threshold results in about 26,000 words. Words appearing less frequently than 30 times are too rare to be significant for the dictionary.

Figure A4: Placing Example Documents along a "Religious vs. Secular" Spectrum



Note: The magazine pages examined in the paper are longer than these examples. Therefore, the scores of the entire page might be different from the scores of the example sentences.

Figure A5: Placing Magazine Pages along a "Religious vs. Secular" Spectrum



Note: Magazine page is the main unit of analysis in this paper.

divine power, I hypothesize that magazines in these languages will have higher average religiosity scores compared to their Western counterparts. This hypothesis is indeed supported by the results presented in Table A4, affirming the face validity of the *Religiosity Score*.

Table A4: Religiosity Score in Western and Non-Western Languages

Non-Western Languages	Western Languages
5.328356	-1.192976

Human Expert Coding: To further validate the *Religiosity Score* and ensure that the meaning of texts is accurately captured post-OCR and translation, I conducted a comparison between machine-generated scores and human judgments. For this validation, I converted the continuous *Religiosity Score* into three broad categories: more religious (score ≥ 10), more secular (score ≤ -10), and neutral/mixed ($-10 <$ score < 10). Using Qualtrics, an online survey platform, I created a validation system where a research assistant, fluent in both English and Arabic, was shown randomly selected magazine pages (one page at a time) and asked to categorize each as more religious, more secular, or neutral/mixed. Figure A6 provides screenshots of this validation process.

In total, the research assistant manually categorized a random sample of 250 magazine pages. The results showed a high level of agreement between the machine-classified categories and human judgments, with an alignment rate of 92.8% (232 out of 250). Notably, instances of inconsistency were almost exclusively related to the neutral/mixed category, where the human coder might classify a page with a score of -9 as more secular, while the machine categorization deemed it neutral/mixed due to the set threshold. In such cases, the human and machine codings were still very close. This result provides substantial confidence in the validity of the *Religiosity Score*.

Semi-supervised Machine Learning: While human judgment provides a foundational guideline for machine analysis, human coders primarily categorize rather than scale documents. The *Religiosity Score* used in this study offers a continuous and more nuanced measurement than simple categorization. However, this raises additional questions: Are the selected keywords appropriately representative? Could some keywords in the dictionary inadvertently fail to convey religious or secular connotations? To address these issues, I further validate the measure using a semi-supervised machine learning approach. The main objective is to ensure that the religious keywords in my documents consistently co-occur with other religious keywords, and the same for secular keywords.

I adapted a semi-supervised keyword-based algorithm from King, Lam and Roberts (2017) to identify relevant keywords in the corpus using a few predefined seed words. These seed words are chosen for their clarity and lack of ambiguity.[4] The algorithm then identifies

[4]The religious seed words include "afterlife," "shariah," "messenger," "messengers," "fatwas," "prophet," "praise," "prayers," "prayer," "quran," "jihad," "lord," "allah," "almighty," "muhammad," "peace," "islam," "blessed," "blessing," "blessings," "religion," and "riddah," The secular seed words include "strategy," "government," "politician," "politicians," "economy," "finance," "financial," "humanity," "humanitarian,"

Figure A6: System to Validate the Ideological Measure with Human Experts

(i) Webpage View (ii) Mobile View

Note: The research assistant can scroll up and down with the webpage view. The contact information of the jihadi group in this example has been masked.

additional associated words through an iterative process. Below are the seven steps of this process, with colored text indicating modifications made to the original approach by King, Lam and Roberts (2017).

1. Define initial religious keywords K_R and Secular keywords K_S. Calculate a religiosity score for each document i: $\text{score}_i = (|n_i \in K_R| - |n_i \in K_S|)/n_i$.

2. Define a religious set R, a secular set S, and a middle ground M, where $i \in R$ if $\text{score}_i < 0$, $i \in S$ if $\text{score}_i > 0$, and $i \in M$ if $\text{score}_i = 0$.

3. Train several classifiers (Naive Bayes, Nearest Neighbor, Logit, SVM, and LDA) using the religious set R ($i \in R$ if $\text{score}_i < 0$) and the secular set S ($i \in S$ if $\text{score}_i > 0$) where the outcome y_i is set membership.

4. Use parameters from these classifiers to partition the middle ground M ($i \in M$ if $\text{score}_i = 0$) into R' and S'.

"rights," "citizenship," "education," "policy," "democracy," "democratic," "democratically."

5. Rank keywords in $R \cup R'$ by a statistical likelihood score:

$$p(y_1, ..., y_n|k) \propto \frac{\Gamma(n_{k,R\cup R'} + 1)\Gamma(n_{k,S\cup S'} + 1)}{\Gamma(n_{k,R\cup R'} + n_{k,S\cup S'} + 2)} \times \frac{\Gamma(N_{R\cup R'} - n_{k,R\cup R'} + 1)\Gamma(N_{S\cup S'} - n_{k,S\cup S'} + 1)}{\Gamma(N_{R\cup R'} - n_{k,R\cup R'} + N_{S\cup S'} - n_{k,S\cup S'} + 2)},$$

   Do the same for $S \cup S'$. which measures how well the keywords discriminates $S \cup S'$ from $R \cup R'$.

6. Present the two ordered lists, $K_{R\cup R'}$ and $K_{S\cup S'}$, to human readers, whose job is to keep the relative keywords.

7. Update K_R and K_S. Repeat 2-6.

Following the methodology outlined in King, Lam and Roberts (2017), a researcher typically repeats steps 2-6 of the semi-supervised machine learning process until a satisfactory result is achieved. In my study, I managed to identify approximately 90% of the keywords from my original, theory-driven dictionary within just 8 iterations using this algorithm. This outcome indicates that the algorithm rapidly converges to a dictionary that closely mirrors the one I developed based on theoretical considerations.

The key implication of this finding is that the religious keywords in my dictionary are semantically cohesive, as are the secular keywords. They consistently group together within the context of the texts, reinforcing each other's thematic relevance. Consequently, I am confident that the *Religiosity Score* I have developed and employed in this project is a robust and valid measure for assessing the ideological leanings of the jihadi groups' propaganda materials.

Validation of Tweets While the same dictionary is used for both magazines and tweets in this study, it's crucial to recognize that social media is a distinct medium compared to magazines. To address this, I undertook specific validation efforts for the tweets. I selected a random sample of 1,000 tweets from the corpus and had a research assistant manually categorize each tweet as either "religious," "neutral," or "secular." To facilitate the comparison of these manual categorizations with my machine-generated data, I converted the continuous *Religiosity Score* into three analogous categories: secular, neutral, and religious.

The results of this exercise, presented in Table A5, consist of a confusion matrix that compares the human categorizations with the machine-generated ones. The matrix reveals an impressive overall accuracy rate of 96.2 percent, with 962 out of the 1,000 tweets being correctly categorized by the machine in alignment with the human judgment. This high level of agreement underscores the reliability of the *Religiosity Score* as an effective tool for analyzing the ideological content of tweets, affirming its applicability across different types of media.

Table A5: Confusion Matrix

Hand coded				
Machine Coded		Secular	Neutral	Religious
	Secular	90	8	3
	Neutral	13	398	8
	Religious	0	6	474

A3 Leaked Internal Documents as Placebos

Are the changes in jihadi groups' religious appeals indeed their strategic moves? In order to demonstrate that these groups intentionally change their ideological positions while engaging with their general audience, I compare their public statements, as reflected in magazines, with their non-public statements. If these groups strategically manipulate the content in their propaganda to control their rank and file members and appeal to prospective sympathizers, then we should not observe the same rhetorical pattern in their documents meant for more private use.

A3.1 Internal Documents: the Corpus

For insight into the non-public statements of jihadists, I accessed internal documents from 10 of the 35 groups previously analyzed, covering the period from August 1990 to March 2011. These documents are part of the Harmony Documents Archive, curated by the Combating Terrorism Center at West Point.[5] These documents, not intended for public distribution, were captured by US intelligence and include internal correspondence such as letters to leaders, communications between organizational units, and administrative papers. They address topics similar to those found in the magazines, making them suitable for a placebo-like analysis to gauge the strategic nature of public rhetoric.

As shown in Figure A7, these internal documents are in *plain* text format, lacking any design elements typical of public-facing materials. Most contain administrative details, correspondence, and directives pertinent to organizational management, mirroring the thematic scope of the magazines. The analyses here are based on English translations provided by the Harmony project. Additionally, I manually coded relevant details such as the responsible group and publication date, based on the descriptions from the Harmony project. This dataset provides a unique perspective to contrast with the public-facing ideological expressions found in jihadi magazines.

[5]The 10 groups include al Qaeda, al Qaeda in Iraq, Ansar al-Islam, Haqqani network, Islamic Army in Iraq, Islamic Emirate of Afghanistan, Islamic Movement of Uzbekistan, Islamic State of Iraq and Syria, Jaysh al-Islam, and Naqshbandi Army.

Figure A7: Examples of Internal Documents

بسم الله الرحمن الرحيم
إلى الأخ العزيز والصديق الحبيب والسيد الشهم النبيل أبي مصعب حفظه الله ورعاه وسدد خطاه، ورفع في الدارين درجته وأكرم مثواه، من أخيه المحب عطية عفا الله عنه.
الحمد لله حق حمده، والصلاة والسلام على محمد عبده ورسوله وعلى آله وصحبه وجنده.
وبعد : السلام عليكم ورحمة الله وبركاته
نسأل الله أن تكونوا بخير وعافية ممتّعين بالقوة ممدودين بالتوفيق من المولى القدير عز وجل.
ونسأله تعالى لكم النصر على الأعداء وأن يربط على قلوبكم ويثبّت أقدامكم ويمدّكم بمدد من عنده وينزل عليكم وعلى سائر إخوانكم ممن قِبلكم السكينة ويغشّيكم الرحمة ويكون لكم عونا ونصيرا، إنه نعم المولى ونعم الوكيل.
أخي العزيز// سأختصر الكلام اختصار وأتوكل على الله تعالى ثم أثق في سعة صدرك وعلوّ كعب أخلاقك، وصدق محبتك لي وحسن ظنك فيّ، وتقتي أنك تسدّ الخلل وتستر العيب والزلل، وتغضي إن بدر من أخيك ما لا يليق، وأشرع في المقصود متجاوزا العمومات والإجمالات إلى التفاصيل والجزئيات، وعلى الله قصد السبيل، ومنه أستمد العون والتسديد، وما توفيقي إلا بالله عليه توكلت وإليه أنيب.
أخي الحبيب السعيد إن شاء الله أبا مصعب الخير وفقه الله// يعلم الله كم نظن فيك الخير وكم نحن واثقون فيك وفي دينك وإخلاصك نحسبك كذلك والله حسيبك، وأنت خيرٌ منا، سبقت ووفيت وما ترددتَ ولا توانيتَ ولا ألقيت السلاح، بل واصلت في الله الجهاد والكفاح، حباك الله بصفات طيبة وأنعم عليك بخلال كريمة : من صدق التوجّه والحرقة على الدين والتأثر بمصاب أهله والنجدة لهم، والهمة العالية في القيام بما تراه الحق والصواب وإن خالفتك الدنيا كلها، قوة إرادة وعزيمة يفتقدها الكثير من الخلق حتى من أهل الصلاح والعلم منهم، وشجاعة وصدق نحسبك كذلك، وغير ذلك من محاسن الأخلاق والشيم، مع حسن الديانة، نحسبك كذلك، فهذا ظني فيك ما تبدّل وما تغير، ولقد عرفتُ الناس وبلوتهم، فلا يكاد يخفى عليّ الناتحة المستأجرة من التكلي إلا ما شاء الله، ولستُ هنا أزكيك فأنت أدرى بنفسك وبعيوبك ونقصك أيها العبد أكثر من أي أحد، ولكني أذكرك بنعم الله عليك وما وهبك مما عرفناه نحن، وأجمل ذلك توطئة لما سأقوله لك من الرأي والنصيحة والتوجيه، فإن حديثي سيكون في غالبه عن السلبيات والتحذير من المهلكات المفسدات، ولن أتعرّض للإيجابيات والحسنات فهي الأصل ولله الحمد والمنة وهي الأكثر الغالب بفضل الله، فلا تجدنّ في نفسك من ذلك، فإن المقام مقام تصحيح وتوجيه ونقد، لا مقام تقييم ولا مدح وترجمة، ولو شاء الله

(i) 'Atiyah's Letter to Zarqawi

--أساسيات :
يجب لفت النظر ونحن في مستهل تحليلنا للتاريخ والتجربة الجهادية التي مرت في الحقبة المنصرمة إلى نقاط رئيسية هامة تشكل قاعدة لوجهة نظرنا في التحليل وطريقته وهدفه:
أولا : فيما يخص الإخوان المسلمين وتجربتهم ومشاركتهم في هذه المرحلة, فيجب القول أنه باستثناء بعض الزعامات التي ساهمت سلبا في مجرى الأحداث, وتراوحت سلبيتها بين الخيانة والإجرام في حق الجهاد والمجاهدين, وبين الفشل والقدوة السيئة والتصارع على الزعامة ... وباستثناء بعض الأذيال في قيادات الوسط وربما القواعد التي كان لها أثر وموقف سلبي كالتحزب والبحث عن مصلحة شخصية, فبالإمكان القول إن معظم القاعدة تقريبا وجل قيادات الوسط وحتى بعض قيادات الدرجة الأولى, لا ت عتبر شريكة بشكل مباشر في هذا الدور السلبي الذي لعبه الإخوان المسلمون كتنظيم في تلك المرحلة الجهادية, وإنما تتعلق تلك المسؤولية المباشرة وتتحدد برقبة أشخاص معدودين بينهم, فحتى تلك الأخطاء غير المباشرة التي تورطت بها كل القاعدة وجل قيادات الوسط والكوادر الشابة كانت بنية سليمة والله أعلم, وانطلاقا من الثقة بالقيادة وبحكم التربية التي نشأت عليها تلك الجموع, وحتى تلك الإمعية وتبرير الأخطاء المتتالية كانت بنية حسنة دائما كالحفاظ على الجماعة, ووحدة الصف والإصلاح عبر القنوات التنظيمية ..
ولقد كانت معظم القواعد وكثير من قيادات الوسط لا تدري ما يدور في القيادة وما يخطط, وكانت جاهلة بكثير من الأمور وعدت في آخر من يعلم حتى جاءت مأساة حماة, فكشفت التعفنات كلها دفعة واحدة وحصل الانفجار ... ولهذا لا بد من الإشارة إلى براءة إخواننا أولئك في قواعد الإخوان إجمالا وبعض قياداتهم الوسط وربما بعض رجال الطبقة الأولى من الطيبين, لاسيما في مواقع الرباط (العراق- الأردن). بل ولا بد من الإشارة إلى أن قواعد الإخوان وقيادات الوسط والكوادر الشابة أفرزت قيادات ميدانية وكوادر مدربة شاركت في العمل الجهادي بكل أبعاده مشاركة فعالة, وتركت لنا تراثا من التجارب في الإعداد والبرامج والعمل العسكري لا يقل

(ii) Lessons Learned from the Jihad Ordeal in Syria

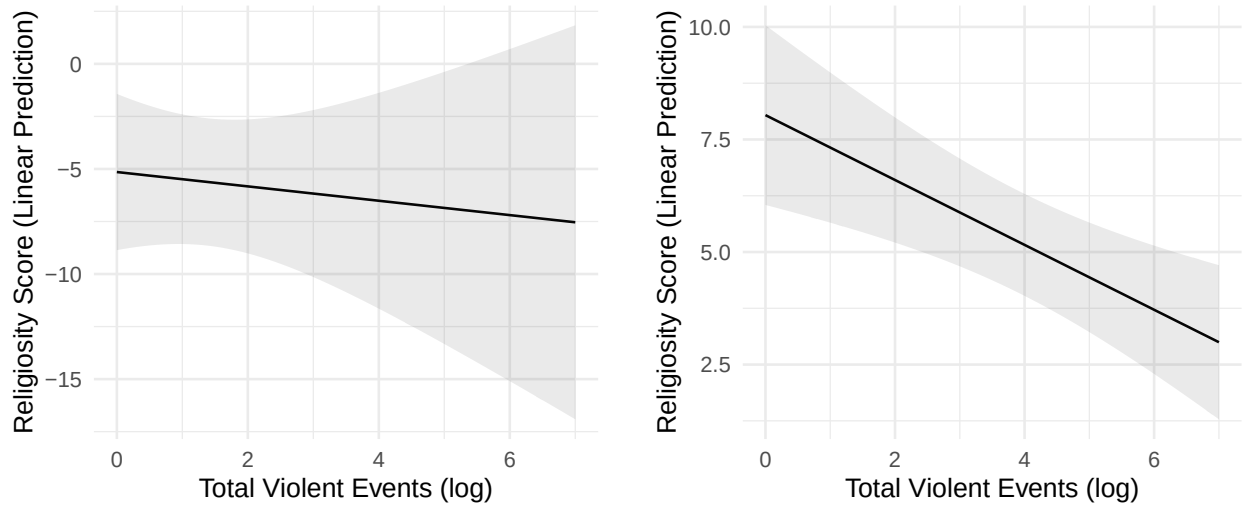
Note: Excerpts from two internal documents. These documents are plain text without any layout designs.

A3.2 Contrast between Internal Documents and Magazines

To facilitate a meaningful comparison between the public and non-public communications of jihadi groups, I matched internal documents with magazines based on group affiliation and publication dates. This method allows for a direct comparison of a group's public rhetoric at a specific time with its non-public rhetoric from a similar period. To accommodate the varying lengths of these documents, I employed weighted least squares (WLS) models and applied the regression formula Religiosity Score$i$ = Total Violent Events$i + \epsilon$ separately for both internal documents and magazines.

Figure A8 presents the marginal effects of *Total Violent Events (log)* on the *Religiosity Score* for both internal documents and public magazines. A notable finding is the significant decrease in predicted religiosity scores in magazines as the groups' military power increases, in line with results shown in the main text. In contrast, the religiosity scores in internal documents remain relatively stable, regardless of variations in military power. This discrepancy underscores the hypothesis that jihadi groups deliberately adjust their ideological stance in public communications, while their private discussions are less influenced by strategic considerations. This pattern reinforces the idea that jihadists tailor their public statements to suit their audience, and these public pronouncements may not fully reflect their actual ideological preferences or strategies.

Figure A8: Contrasting the Effects Estimated from Leaked Internal Documents and Magazines



(A) Leaked Internal documents

(B) Magazines

Note: The negative association between military power and religious rhetoric is significant in groups' public propaganda but not in their non-public documents.

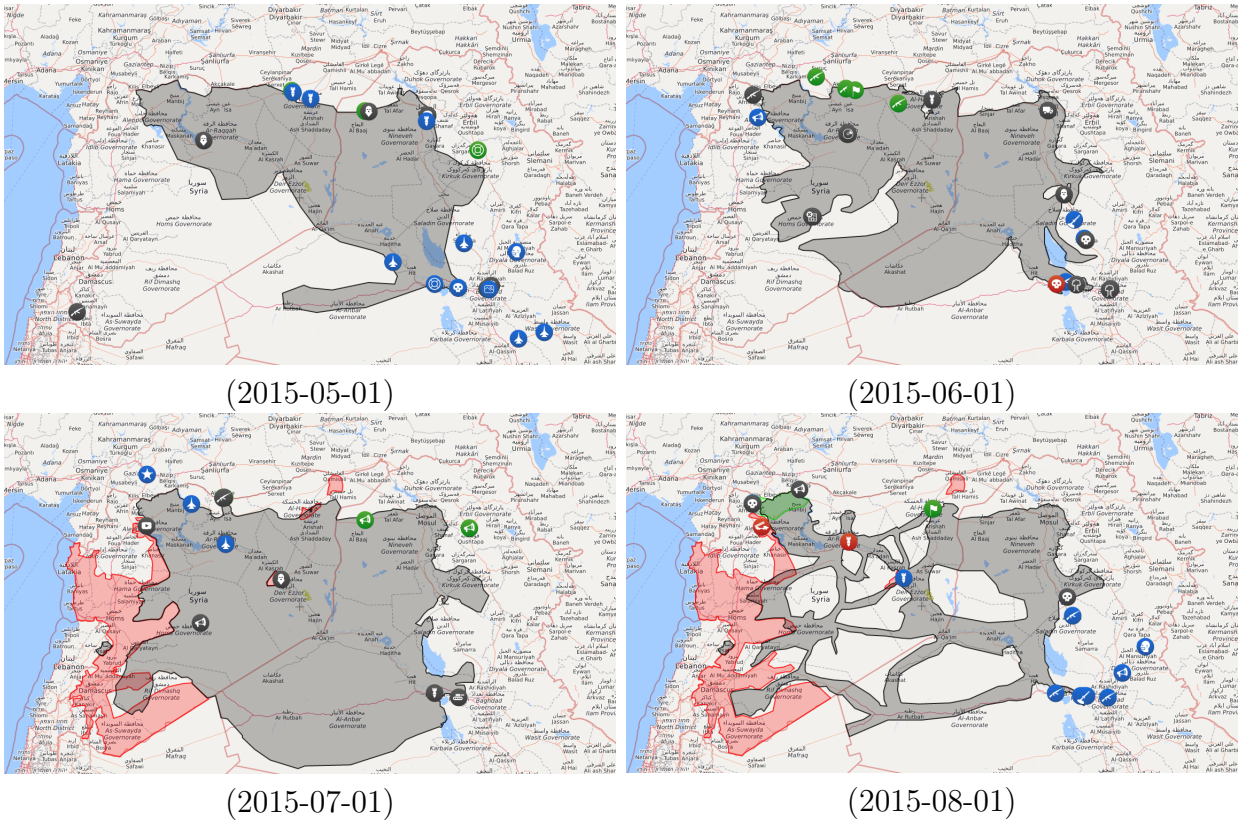
A4 Measuring Military Power

A4.1 Measuring Military Power with Battlefield Performance

In this study, the military power of jihadi groups is assessed through two primary metrics: their performance on the battlefield and their control over territory. To compile a comprehensive dataset of military activities for each group, I utilized the algorithm and software (`MELTT` package in R) developed by Donnay et al. (2018). This approach enables the integration of violent event records from various sources.

Additionally, for ISIS, I collected data on its territorial control from `liveuamap.com`, a crowdsourcing platform that provides detailed records of violent groups' territorial dominance. As shown in Figure A9, the extent of ISIS-controlled territory fluctuated over time. Utilizing Geographic Information System (GIS) technology, I calculated the area under ISIS control on a daily basis, providing a further dimension to the assessment of their military power.

Figure A9: Online Map of ISIS Territorial Control



(2015-05-01) (2015-06-01)

(2015-07-01) (2015-08-01)

Note: The ISIS territorial sizes vary over time.

A4.2 Alternative Measures for Military Power

Researchers need to be mindful of the implications and limitations inherent in the measures. While violent events are commonly used as a proxy for military power in the literature (Asal et al., 2013; Byman, 2005; Carter, Kaplan and Schultz, 2022; Enders and Sandler, 1993; Wood, 2014), I introduce three alternative metrics in this study for robustness checks:

- *Number of Publications*: This measure represents the total number of magazine issues a group has produced. It indicates the group's capacity to disseminate information and maintain a consistent presence.
- *Publication Frequency*: Calculated as the inverse of the time interval between two consecutive magazine issues (1/(time span between issues)), this metric reflects the group's efficiency in producing and releasing new material.
- *Professionalism*: This measure assesses the visual quality or "glossiness" of the magazines. While inherently subjective, I employed a computer algorithm to objectively determine how "colorful" each magazine is, with the assumption that more colors correlate with a glossier and more professional design. This metric indirectly gauges the group's resources and ability to produce high-quality publications.

These indicators collectively provide insights into a group's ability to produce a large number of magazines efficiently and with high quality, which can be indicative of its overall organizational strength and, by extension, military power.

The results, as shown in Table A6, consistently reveal a negative and significant relationship between military power (measured by these alternative metrics) and religious rhetoric. This pattern aligns with the findings based on the original measure of military power, reinforcing the robustness of the study's conclusions.

Table A6: Alternative Measures for Military Power

	Religiosity Score		
	(1)	(2)	(3)
Number of Publications	-0.04^*		
	(0.00)		
Publication Frequency		-73.90^*	
		(23.58)	
Professionalism			-4.41^*
			(1.45)
Front Page	-2.40^*	-2.96^*	-2.53^*
	(0.32)	(0.32)	(0.32)
Total Issue	0.11^*	-0.04	-0.07^*
	(0.04)	(0.04)	(0.03)
Target Women	3.15	1.24	1.27
	(1.95)	(1.59)	(1.80)
Group Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes
R^2	0.13	0.09	0.12
Observations	56027	47154	56027

Note: Robust SE clustered at the magazine issue level. $^*p < 0.05$

A5 Sensitivity Analyses and Robustness Checks (Magazines)

In this section, I conduct various sensitivity analyses and robustness checks to reinforce the findings related to jihadi magazines presented in the main manuscript. One key aspect of this analysis involves excluding ISIS from the dataset to ascertain if the patterns observed hold true even without this prominent group. Table A7 complements Table 1 from the main manuscript and displays the results of regressions where *Total Deaths (log)* and *State-based Battles (log)* are the primary explanatory variables, with ISIS omitted from the analysis.

The findings from Table A7 are consistent with those in the main manuscript, demonstrating negative and significant effects for both *Total Deaths (log)* and *State-based Battles (log)*. This consistency in results, even after removing ISIS from the analysis, provides additional robustness to the main study's conclusion that jihadi groups tend to use more religious rhetoric when their military power is weaker and more secular rhetoric as their military strength increases. This pattern persists across different jihadi groups and is not driven solely by the activities or characteristics of any single group, including ISIS.

Table A7: Military Power and Religiosity Score in Magazines (Without ISIS)

	Religiosity Score			
	(1)	(2)	(3)	(4)
Total Deaths	−1.02*	−0.97*		
(log)	(0.11)	(0.26)		
State-based Battles			−1.40*	−1.08*
(log)			(0.15)	(0.35)
Target Women	2.81	1.56	2.92	1.59
	(1.53)	(1.69)	(1.57)	(1.78)
Front Page	−1.61*	−1.96*	−1.62*	−1.96*
	(0.33)	(0.33)	(0.33)	(0.33)
Total Issue	−0.01	−0.07*	−0.01	−0.07*
	(0.01)	(0.03)	(0.01)	(0.03)
Competitors	−0.00		−0.00	
	(0.01)		(0.01)	
Group Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.09	0.12	0.09	0.11
Observations	52084	52084	52084	52084

Note: Robust standard errors clustered at the magazine issue level. $^*p < 0.05$

Table A8 details the results of robustness checks conducted by incorporating an additional set of 11 newsletters, which add 2,652 documents (equivalent to magazine pages) to the regression analyses. These newsletters make up 4.52% of the total dataset. In the main manuscript, these newsletters were excluded from the analyses due to their focus on battlefield reports rather than ideological content, leading to a potential redundancy of "battles" in both the explanatory and dependent variables.

The findings remain consistent and robust. This indicates that the core relationship identified in the main manuscript—the negative correlation between a jihadi group's military power and its use of religious rhetoric in propaganda—is not significantly altered by the inclusion of these additional documents. This consistency further strengthens the overall validity of the study's conclusions and suggests that the patterns observed are not solely contingent on the nature of the documents included in the analysis.

Table A8: Military Power and Religiosity Score in Magazines and Newsletters

	Religiosity Score							
	(1)	(2)	(3)	(4)	(5)	(6)	(7) No ISIS	(8) No ISIS
Total Violent Events (log)	−1.35*	−1.17*					−1.86*	−1.37*
	(0.17)	(0.39)					(0.16)	(0.40)
Total Deaths (log)			−1.10*	−1.12*				
			(0.12)	(0.28)				
State-based Battles (log)					−1.02*	−0.74*		
					(0.18)	(0.37)		
Pront Page	−5.18*	−4.18*	−5.14*	−4.16*	−5.29*	−4.19*	−4.75*	−3.66*
	(0.55)	(0.52)	(0.55)	(0.52)	(0.55)	(0.53)	(0.57)	(0.55)
Total Issue	−0.02*	−0.11*	−0.02*	−0.11*	−0.03*	−0.12*	0.01	−0.12*
	(0.01)	(0.04)	(0.01)	(0.04)	(0.01)	(0.04)	(0.01)	(0.04)
Target Women	4.12*	2.45	4.04*	2.57	4.87*	2.25	6.76*	2.24
	(1.77)	(1.86)	(1.77)	(1.78)	(1.65)	(1.93)	(1.80)	(1.97)
Competitors	0.04*		0.04*		0.04*		0.03*	
	(0.01)		(0.01)		(0.01)		(0.01)	
Group Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.09	0.15	0.09	0.15	0.09	0.15	0.09	0.14
Observations	57891	58622	57891	58622	57891	58622	53962	54693

Note: Robust standard errors clustered at the magazine issue level. $^*p < 0.05$

Table A9 presents the results of analyses that replicate those in Table 1 of the main manuscript, with a key variation in the timeframe considered for battlefield events. Instead of the two-month window used in the original analysis, this table explores the effects of extending the window to three months.

The findings maintain the same direction and significance of coefficients as observed in the main manuscript. This consistency across different time windows underscores that the study's results are not contingent on the specific duration chosen for analyzing battlefield events. It demonstrates that the identified relationship between a jihadi group's military power and its use of religious or secular rhetoric in propaganda is stable and not significantly influenced by the arbitrary selection of time windows. This robustness check thus reinforces the reliability and validity of the conclusions drawn in the main manuscript, indicating that they are reflective of a genuine pattern rather than an artifact of the chosen methodology.

Table A9: Military Power and Religiosity Score in Magazines (Three-month Window)

	Religiosity Score					
	(1)	(2)	(3)	(4)	(5)	(6)
Total Violent Events (log)	−0.89*	−0.99*				
	(0.15)	(0.35)				
Total Deaths (log)			−0.69*	−0.87*		
			(0.11)	(0.25)		
State-based Battles (log)					−0.97*	−1.11*
					(0.15)	(0.37)
Front Page	−2.10*	−2.52*	−2.10*	−2.51*	−2.11*	−2.51*
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Total Issue	−0.03*	−0.06*	−0.03*	−0.06*	−0.03*	−0.06
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)
Target Women	0.59	1.57	0.66	1.69	0.69	1.81
	(1.53)	(1.67)	(1.54)	(1.64)	(1.55)	(1.67)
Competitors	0.01		0.01		0.01	
	(0.01)		(0.01)		(0.01)	
Group Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.09	0.12	0.09	0.12	0.09	0.12
Observations	55963	55963	55963	55963	55963	55963

Robust standard errors clustered at the magazine issue level. $^{*}p < 0.05$

The next step in the robustness checks involves aggregating the data from the magazine page level to the magazine issue level. In this approach, the *Religiosity Score* for each magazine issue is calculated as the average of the religiosity scores of all its pages. This method of aggregation allows for a broader view of each magazine issue's overall ideological leaning, rather than analyzing it on a page-by-page basis.

The outcomes of this aggregated-level analysis are presented in Table A10. The findings here reinforce the robustness of the results obtained in the main manuscript. Despite changing the unit of analysis from individual pages to entire magazine issues, the core relationship between a jihadi group's military power and the nature of its ideological rhetoric, as measured by the *Religiosity Score*, remains consistent. This consistency across different levels of analysis further affirms the reliability and stability of the study's conclusions, indicating that the observed patterns are not an artifact of the specific level of data granularity but are reflective of a broader, more generalizable trend.

Table A10: Military Power and Religiosity Score in Magazines (Aggregated at the Issue Level)

	Religiosity Score					
	(1)	(2)	(3)	(4)	(5)	(6)
Total Violent Events (log)	−0.88*	−0.65*				
	(0.14)	(0.33)				
Total Deaths (log)			−0.68*	−0.74*		
			(0.11)	(0.24)		
State-based Battles (log)					−0.96*	−0.68*
					(0.14)	(0.33)
Total Issue	−0.04*	−0.11*	−0.04*	−0.11*	−0.04*	−0.11*
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)
Target Women	−0.75	1.65	−0.70	1.86	−0.67	1.68
	(1.51)	(1.36)	(1.50)	(1.31)	(1.52)	(1.37)
Competitors	0.02*		0.02*		0.02*	
	(0.01)		(0.01)		(0.01)	
Group Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.37	0.55	0.37	0.55	0.37	0.55
Observations	1097	1097	1097	1097	1097	1097

Robust standard errors clustered at the magazine issue level. $^{*}p < 0.05$

To address the potential concern that magazines published in Western languages (specifically English, French, German, and Russian) might disproportionately influence the study's findings, I conducted a replication of the main analyses focusing exclusively on magazines published in non-Western languages. These languages include Arabic, Bengali, Indonesian, Malay, Swahili, Turkish, Uighur, and Urdu. The objective of this analysis is to ascertain whether the results observed in the broader dataset are consistent when considering only publications in non-Western languages.

The results of this language-specific analysis are presented in Table A11. The findings are consistent with those observed in the original study. The relationship between a jihadi group's military power and its use of religious or secular rhetoric remains robust even when the analysis is limited to publications in non-Western languages. This outcome demonstrates that the trends identified in the study are not artifacts of linguistic or cultural biases associated with Western languages. Instead, they reflect a broader phenomenon within jihadi propaganda that transcends linguistic and cultural boundaries, further validating the study's overarching conclusions.

Table A11: Military Power and Religiosity Score in Magazines (Only Languages from the Non-Western World)

	Religiosity Score					
	(1)	(2)	(3)	(4)	(5)	(6)
Total Violent Events (log)	−1.32*	−1.24*				
	(0.16)	(0.41)				
Total Deaths (log)			−1.00*	−1.11*		
			(0.12)	(0.29)		
State-based Battles (log)					−1.39*	−1.32*
					(0.16)	(0.42)
Front Page	−2.32*	−2.65*	−2.30*	−2.64*	−2.33*	−2.64*
	(0.34)	(0.34)	(0.34)	(0.34)	(0.34)	(0.34)
Total Issue	−0.01	−0.07	−0.01	−0.07	−0.01	−0.07
	(0.01)	(0.05)	(0.01)	(0.05)	(0.01)	(0.05)
Target Women	0.92	0.20	0.98	0.43	1.01	0.38
	(1.66)	(2.00)	(1.65)	(1.92)	(1.68)	(2.02)
Competitors	0.00		−0.00		0.00	
	(0.01)		(0.01)		(0.01)	
Group Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Language Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.06	0.09	0.06	0.09	0.06	0.09
Observations	42264	42264	42264	42264	42264	42264

Note: Robust standard errors clustered at the magazine issue level. $^*p < 0.05$

A6 Sensitivity Analyses and Robustness Checks (Twitter)

In the main manuscript, ISIS's military power is primarily measured by its territorial control. Table A12 presents the results using an alternative measure for military power: battlefield performance as was used in the analyses with jihadi magazines. The results of this alternative measurement demonstrate that the findings are consistent and robust.

Table A12: Group Power (Alternative Measure), Mobilization, and Religiosity Score

	Dependent variable:		
	Religiosity Score	Mention Non-member	Religiosity Score
	(1)	(2)	(3)
Mention Non-member			−0.515**
			(0.017)
Total Violent Events (lag)	−0.002**	0.0001*	−0.002**
	(0.0003)	(0.00005)	(0.0003)
Religiosity Score (lag)	0.348**		0.337**
	(0.008)		(0.008)
Mention Non-member (lag)		0.430**	
		(0.013)	
Days to Islamic Holidays	−0.794	−0.504	−1.144
	(1.841)	(0.339)	(1.837)
Followers Count	−0.249	−0.004	−0.261
	(0.149)	(0.011)	(0.158)
Favorites Count	−0.607	0.053	−0.552
	(0.523)	(0.078)	(0.554)
Friends Count	−0.899	0.112	−0.762
	(0.764)	(0.106)	(0.773)
Statuses Count	−0.288	−0.045	−0.335
	(0.160)	(0.034)	(0.180)
Account Length	1.048**	−0.241**	0.864**
	(0.227)	(0.034)	(0.226)
Media	−0.267**	−0.033**	−0.289**
	(0.020)	(0.003)	(0.021)
Urls	−0.087**	−0.059**	−0.128**
	(0.018)	(0.004)	(0.017)
Hashtags	−0.174**	−0.065**	−0.215**
	(0.021)	(0.002)	(0.021)
Constant	0.728**	0.124**	0.835**
	(0.018)	(0.004)	(0.020)
R^2	0.150	0.223	0.162
Observations	265,241	265,241	265,241

Note: Robust standard errors in parentheses clustered by users. *$p < 0.05$; **p< 0.01

Table A13 revisits the analysis originally presented in Table 4 of the main manuscript, this time applying the methodology at the individual tweet level instead of using aggregated panel data. The results from this tweet-level analysis are in line with those reported in Table 4, reinforcing the robustness and reliability of the findings.

Table A13: Tweet Level Analyses

	Religiosity Score	Mention Non-member	Religiosity Score
	(1)	(2)	(3)
Mention Non-member			−0.646**
			(0.021)
Territory (lag)	−0.021**	0.002**	−0.020**
	(0.003)	(0.001)	(0.003)
Days to Islamic Holidays	10.970**	−1.481	10.013**
	(3.765)	(0.776)	(3.703)
Followers Count	−0.452	−0.003	−0.454
	(0.312)	(0.012)	(0.315)
Favorites Count	−2.627**	−0.060	−2.666**
	(0.869)	(0.168)	(0.923)
Friends Count	−1.516	0.616*	−1.118
	(1.583)	(0.286)	(1.590)
Statuses Count	0.038	−0.060	−0.001
	(0.229)	(0.078)	(0.236)
Account Length	2.588**	−0.432**	2.309**
	(0.405)	(0.048)	(0.396)
Media	−0.265**	−0.039**	−0.290**
	(0.020)	(0.005)	(0.020)
Urls	−0.096**	−0.099**	−0.160**
	(0.022)	(0.004)	(0.023)
Hashtags	−0.253**	−0.067**	−0.296**
	(0.023)	(0.003)	(0.023)
Constant	1.314**	0.155**	1.413**
	(0.057)	(0.010)	(0.057)
R^2	0.024	0.052	0.036
Observations	4,133,515	4,133,515	4,133,515

Note: Robust standard errors in parentheses clustered by users. *$p < 0.05$; **p< 0.01

A7 Observable Implication: Responses from Different Audiences

Groups tailor their rhetoric to coordinate with various audiences, as these audiences possess distinct rhetorical preferences. This logic suggests that more moderate members are likely more receptive to secular rhetoric. In this analysis, I explore this dynamic from the perspective of those engaging with these tweets, using empirical tests to confirm that core members are more inclined to retweet messages with higher religiosity scores compared to peripheral or non-members.

Within ISIS, core and peripheral members are distinguished by two criteria: *popularity* (users in the top 5% of followers are considered core members, while the remaining 95% are peripheral, as per Steinert-Threlkeld (2017)), and *geography* (users in specific time zones such as Iraq, Syria, Qatar, Saudi Arabia, and Turkey are classified as core members, while those in other regions are peripheral).[6] Popularity defines core members based on influence, while geography does so based on location. The classifications are defined as follows:

$$\text{user} \in \begin{cases} \text{members}, & \text{if } S = 1 \begin{cases} \text{core}, & \text{if } PR(f) \geq 0.95 \\ \text{peripheral}, & \text{if } PR(f) < 0.95 \end{cases} \quad \text{(popularity)} \\ & \text{alternatively,} \\ & \text{if } S = 1 \begin{cases} \text{core}, & \text{if } \textit{time zone} \in \textit{core zones} \\ \text{peripheral}, & \text{if } \textit{time zone} \notin \textit{core zones} \end{cases} \quad \text{(geography)} \\ \text{non-members}, & \text{if } S = 0, \end{cases}$$

where S denotes account suspension and PR represents percentile ranking based on follower count.

The aim is to assess how religious and secular rhetoric influences the likelihood of a tweet being retweeted by different audience types. The dependent variable is *Core - Peripheral* (the difference in retweet numbers between core and peripheral members). *Religiosity Score* serves as the main explanatory variable. Military power measured by *Territory* and the covariates introduced in the main manuscript are included in the regressions as controls.

Table A14 displays the findings. *Religiosity Score* positively correlates with *Core - Peripheral*. This indicates that tweets with higher religiosity scores are more likely to be retweeted by ISIS core members than peripheral members, regardless of whether core status is defined by popularity or geography. This outcome supports the hypothesis that more committed members prefer religious rhetoric, leading jihadi groups, particularly when weaker, to incorporate more religious narratives to consolidate support from these core believers.

[6] About half of all users disclosed their time zones. Key time zones include "Asia/Baghdad," "Asia/Riyadh," "Baghdad," "EET," "Europe/Istanbul," "Istanbul," and "Riyadh."

Table A14: Retweets by Different Types of Members

	Core - Peripheral defined by *popularity*	Core - Peripheral defined by *geography*
	(1)	(2)
Religiosity Score	0.084**	0.310**
	(0.015)	(0.059)
Territory (lag)	0.758**	3.512**
	(0.247)	(0.913)
Days to Islamic Holidays	−41.088**	−98.052**
	(9.353)	(30.859)
Followers Count	−3.456	−10.971
	(1.987)	(6.122)
Favorites Count	2.317*	7.257**
	(0.901)	(2.595)
Friends Count	−12.359	−22.464
	(15.345)	(38.977)
Statuses Count	0.180	1.234
	(0.392)	(1.163)
Account Length	3.153**	10.672**
	(0.481)	(1.635)
Media	−0.557**	−2.042**
	(0.053)	(0.218)
Urls	0.389**	1.166**
	(0.044)	(0.169)
Hashtags	−0.243**	−0.862**
	(0.061)	(0.209)
Constant	−0.703**	−2.725**
	(0.116)	(0.328)
R^2	0.045	0.034
Observations	265,241	265,241

Note: Robust standard errors in parentheses clustered by users.
*p<0.05; **p<0.01; ***p<[0.***]

A8 Examining Alternative Explanations

A8.1 Impact of Organizational Change

This section investigates if ideological shifts in jihadi groups along the "religious vs. secular" spectrum are influenced by changes in group composition, specifically with the influx of peripheral members into ISIS. The study examines the entire ISIS network, tracking daily changes in group structure. Two key variables are analyzed: *Active Members*, the daily count of active ISIS-affiliated users, and *Geographic Concentration*, gauged by the Herfindahl index of users' time zones, with higher values indicating a more concentrated network.

Table A15 presents several findings: Model (1) shows a direct correlation between *Territory* and the increase in *Active Members*, suggesting greater online presence with stronger ground control. However, Model (2) indicates that this increased online activity does not correlate with reduced religiosity in rhetoric. Furthermore, Model (3) reveals that territorial expansion does not diversify the supporter base globally; instead, it becomes more geographically concentrated. Contrary to the proposed alternative explanation, Model (4) demonstrates that geographic concentration is associated with less, not more, religious rhetoric. In conclusion, Table A15 does not support the hypothesis that internal changes in ISIS's organization led to the observed ideological shifts.

Table A15: Organizational Change Does not Explain the Change in Ideological Positions

	Core Member Proportion	Religiosity Score	Geographic Concentration	Religiosity Score
	(1)	(2)	(3)	(4)
Core Member Proportion		-8.38^{***}		
		(0.87)		
Geographic Concentration				-3.08^{***}
				(0.34)
Territory (lag)	-0.00^{*}	-0.01^{***}	0.00	-0.01^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Days to Islamic Holidays	-5.05^{***}	-21.38^{**}	-6.37^{***}	1.32
	(0.38)	(7.66)	(0.99)	(6.71)
Constant	0.10^{***}	1.90^{***}	0.13^{***}	1.49^{***}
	(0.00)	(0.09)	(0.01)	(0.06)
R^2	0.33	0.27	0.12	0.25
Observations	352	352	352	352

Note: Robust Standard Errors in parentheses. $^{*}p<0.05$; $^{**}p<0.01$

A8.2 Rationalizing Violence Through Language?

This analysis explores whether stronger jihadi groups use language to soften their image, potentially masking their involvement in violent acts. To investigate this, I employed the Linguistic Inquiry and Word Count (LIWC) dictionary to track the use of "power" and "sad" words in the groups' texts. Besides the military power metrics based on events described in the main text, I included civilian casualties as an additional variable. This approach aims to determine if groups demonstrate triumph ("power") in their violent actions or express remorse ("sad") over civilian harm. Table A16 presents the findings, which reveal that with increased violence, groups tend to portray themselves as more powerful without showing signs of sadness. There is, in fact, a negative correlation between the expression of sadness and the occurrence of conflict events and casualties.

Table A16: Groups Demonstrate Triumph in Violent Actions; Do Not Express Remorse over Civilian Harm

	Power				Sad			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Violent Events (log)	0.09*				−0.01*			
	(0.04)				(0.01)			
Total Deaths (log)		0.10*				−0.01*		
		(0.04)				(0.00)		
State-based Battles (log)			0.10*				−0.01*	
			(0.05)				(0.01)	
Civilian Deaths (log)				0.10*				−0.01
				(0.05)				(0.00)
Front Page	−1.54*	−1.54*	−1.54*	−1.54*	−0.11*	−0.11*	−0.11*	−0.11*
	(0.07)	(0.07)	(0.07)	(0.07)	(0.02)	(0.02)	(0.02)	(0.02)
Total Issue	0.02*	0.02*	0.02*	0.02*	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Target Women	−0.67*	−0.69*	−0.68*	−0.66*	0.05	0.05	0.05	0.04
	(0.31)	(0.32)	(0.32)	(0.31)	(0.04)	(0.04)	(0.04)	(0.04)
Group FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Language FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.15	0.15	0.15	0.15	0.03	0.03	0.03	0.03
Observations	55963	55963	55963	55963	55963	55963	55963	55963

Note: Robust standard errors clustered at the magazine issue level. $^*p < 0.05$

To further demonstrate that the rhetoric is not intended to divert attention from the attacks and resulting deaths, I have explicitly measured the frequency with which groups mention death, again using LIWC. Table A17 reveals two key observations: (1) When groups engage in attacks leading to many deaths, they explicitly discuss these deaths in their propaganda, rather than avoiding the topic. (2) The previously mentioned "power" measure is highly correlated with mentions of "deaths" in the propaganda at the magazine page level. This indicates that when groups use power-oriented language, it often emphasizes their involvement in the attacks. Taken together, this evidence suggests that it is improbable for groups to employ language as a means to soften their image after engaging in significant acts of violence.

Table A17: Groups' Openness in Discussing Death

	Deaths Mentioned in Propaganda	Power
	(1)	(2)
Deaths on Battlefields	0.02*	
	(0.01)	
Deaths Mentioned in Propaganda		0.50*
		(0.05)
Front Page	−0.32*	−1.38*
	(0.02)	(0.07)
Total Issue	0.01*	0.01*
	(0.00)	(0.00)
Target Women	−0.23*	−0.51
	(0.05)	(0.30)
Group FE	Yes	Yes
Year FE	Yes	Yes
Language FE	Yes	Yes
R^2	0.09	0.18
Observations	55963	56027

Note: Robust standard errors clustered at the magazine issue level. $^*p < 0.05$

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