

The Language of New Terrorism: Differences in Psychological Dimensions of Communication in Dabiq and Inspire

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Abstract

We investigate differences in the psychological aspects underpinning Western mobilisation of two terrorist groups by analysing their English-language propaganda. Based on a computerized analysis of the language used in two English-language online magazines circulated by ISIS and al-Qaeda (i.e., Dabiq and Inspire), we found significant differences in their language - the ISIS' language being higher in authoritarianism and its level of religiousness. In a follow-up experimental study, we found that being high in religiousness and authoritarianism predicts more positive attitudes towards the language used by ISIS, but not towards the language used by al-Qaeda. The results suggest that ISIS' propaganda may be more effective in mobilising individuals who are more authoritarian and more focused on religion than that of al-Qaeda. These findings are consistent with the behaviour observed in recent homegrown terrorist attacks in the USA and Europe.

Keywords

computerized linguistic analysis, LIWC, violent propaganda, terrorism, al-Qaeda, ISIS, ISIL, authoritarianism, homegrown, terrorist, recruitment, propaganda, Inspire, Dabiq

Social psychologists have long studied the factors thought responsible for driving the collective action and mobilisation of political groups (Simon & Klandermans, 2001; Tajfel & Turner, 1979). Some of these key factors are religiousness (Moreira-Almeida & Koenig, 2006) and political and moral values (Duncan, 2005; Duncan & Stewart, 2007; Finkel & Opp, 1991), which predict collective action participation through developing group consciousness (Duncan, 2012). For violent collective action, identity fusion (i.e., family-like bonds between the individual and the group) was found to be a powerful predictor (Whitehouse, McQuinn, Buhrmester, & Swann, 2014).

These and other related dimensions have been studied in relation to terrorist groups in theoretical work (Myers & Stohl, 2010; Orehek, 2012), historical analyses (Kaplan, 2017), and in empirical research that focused on the terrorists' language (Saucier, Akers, Shen-Miller, Knežević, & Stankov, 2009; Stankov, Saucier, Higgins, & Knežević, 2010). However, the relationships between the psychological dimensions that underpin the content of the terrorist propaganda and the target audiences have not been so far investigated. In this article, we describe research where we focus on analysing linguistic products of terrorist groups to identify psychological differences between them (Study 1); then, we test the processes identified through this initial analysis in an experimental paradigm using a sample derived from the general population (Study 2). That entails applying an integrative methodology to first identify the differences between the psychological dimensions underpinning mobilisation strategies aimed at a Western audience employed by two key contemporary terrorist groups, al-Qaeda and ISIS, and second, we examine the relationships between these dimensions and their audience.

We focus on two central dimensions relating to the identity of terrorist groups, that is, level of religiousness and authoritarianism. Previous research (see Saucier et al., 2009;

Stankov et al., 2010) found that a terrorist's mindset is consistently characterized by a perception of moral superiority - which in religious orientated terrorism is naturally derived from religion - and by violent aggression towards out-groups. We argue that those dimensions are central not only to the identity of terrorist groups, but also to the mobilisation of supporters, and therefore it is crucial to understand both the style of function and appeal of these groups in terms of the psychology used in their communication.

As a background to our studies, we conduct an exploratory archival analysis to explore whether there are any differences in the behavioural patterns of jihadist-inspired terrorists in the West that would suggest differences in the psychological dimensions of the two groups. Based on this analysis and on the relevant literature, we formulate two hypotheses that we test, using a computerized analysis of the language used in two English-language propaganda magazines, *Dabiq* and *Inspire*. Next, to test whether there is an association between the psychological underpinnings of the terrorists' language and the individual characteristics of their readership and its attitudes, we conduct an experimental study manipulating the language that belongs to each of the groups.

Analysis of Terrorist Attacks by Homegrown Western Jihadists between 2001 and 2016

We used the Global Terrorism Database (GTD, 2015) and other sources, such as media reports and academic journals [9–10], to compile a comprehensive list of terrorist attacks in the USA, Europe, and Australia perpetrated by homegrown jihadists - i.e., individuals who were born (or arrived during early childhood) and grew up in the countries where they committed the attacks (see Appendix I). We excluded attacks perpetrated by foreigners, immigrants, and refugees because they might have been mobilized in a different, and thus incomparable context. The year 2001, when the 9/11 attacks took place, is used as a starting

point for this analysis because the attacks and the response from the USA significantly changed the landscape and perceptions of jihadist terrorism.

The historical analysis of the attacks shows that there has been an increase in homegrown attacks since July 2014, when the so-called 'Islamic State' was declared; 16 attacks were conducted between 2001 and June 2014, and 20 between July 2014 and December 2016. Except for the Charlie Hebdo attack, which was related to al-Qaeda, all other attacks that took place since July 2014 were related to ISIS.

We observe three trends over time in respect of the choice of targets in the attacks. First, we see an increase of attacks against *religious outgroups* (such as Jewish and Christian targets); the first attack of this type happened in 2012, another three occurred in 2015, and one occurred in 2016. Second, we see an increase in attacks against journalists and cartoonists who were accused of offending Islam. The first such attack was against Theo Van Gogh in 2004, the second against Kurt Westergaard in 2010, the third against Charlie Hebdo's staff in 2014, and the last two in February 2015 in Denmark against a cultural centre that was hosting an afternoon event called 'Art, Blasphemy and Freedom of Expression,' and in March 2015 against the Muhammad cartoon contest in Texas, USA. Third, we see an increase in lethality of the attacks against 'soft targets' (low on security measures), specifically against nightclubs, music venues, restaurants and cafés. Between 2001 and July 2014, only three attacks of this type happened, with a total death toll of three people. Between July 2014 and December 2016, four attacks of this type happened, with a death toll of 195. Although we cannot provide a definitive interpretation of the variation in the attacks over time, our analysis suggests an overall trend towards more frequent and lethal attacks against religious and ideological out-groups.

In addition, our analysis does not tell us anything definitive about motivation for the attacks; that is, target selection could have been motivated by opportunity and chance (these targets were immediately accessible to the terrorists). Still, these trends can be seen as suggestive of a changing psychological dimension of the terrorists' mobilisation. It is plausible that the choice of targeting religious out-groups and more generally people who are seen as 'sinful' by ISIS followers (for example, people from the LGBT community and people who are at places where there is alcohol, music, and extra-familial contact between genders) is derived from ideological foundations. We understand these trends as a potential marker of *authoritarianism* and *religious intolerance* that seem particularly salient in ISIS (compared to al-Qaeda).

The idea that ISIS followers in the West may be more authoritarian and religiously intolerant than al-Qaeda's is consistent with previous research on the communicative targeting of the two groups. ISIS propaganda has been found to be strongly focused on concepts such as authority and punishment (Kfir, 2015; Winter, 2015). ISIS leaders and their predecessors have used extensively religious concepts such as *takfir* (i.e. excommunication, which refers to one Muslim declaring another Muslim as a non-believer) to justify violence against out-groups, including Muslim communities not obeying their leadership. Violence against rebellious Muslim communities is something that jihadist groups like al-Qaeda were more reluctant to do (Zelin, 2014).

Research Hypotheses

Based on the analysis of the attacks, and consistent with research on the ideologies of al-Qaeda and ISIS (Kfir, 2015; Olesen & Khosrokhavar, 2009; Roy, 2008; Winter, 2015) and contemporary models of collective action that highlight the role of individual-level factors in driving collective behaviour (Duncan, 2012), we propose that the Western followers of ISIS

are more focused on religion and more authoritarian than the Western followers of al-Qaeda.

We formulate the following hypotheses:

H1: ISIS' Western mobilisation is characterized by more authoritarianism than that of al-Qaeda;

H2: ISIS' Western mobilisation is characterized by a stronger focus on religion than that of al-Qaeda.

Study 1

Materials and Methods

We examine the psychological underpinnings of the language used by ISIS and al-Qaeda in their propaganda targeting Western followers by using the computerized text analysis program Linguistic Inquiry and Word Count (LIWC) (Pennebaker, Booth, & Francis, 2007) and RIOT Scan (Boyd, 2015). LIWC and RIOT Scan automatically calculate percentages in texts of each category present in the dictionary in the chosen unit of analysis. LIWC has 80 categories, which include language (article, personal pronouns, verbs, etc.) and psychological dimensions (affect, negative and positive emotions, social processes, cognitive mechanisms, etc.). RIOT Scan includes 37 dictionary schemes, which include the LIWC 2007 dictionary and other more specific dictionaries like the Moral Foundations Dictionary (Graham & Haidt, 2015; Graham, Haidt, & Nosek, 2009) that is used in this article. Psychometrics of word categories have been assessed, and the categories have been validated and used in numerous studies (for a review of research using LIWC, see Tausczik & Pennebaker, 2010). Both software programs have been used to examine language in a wide range of contexts, including political advertisement (Gunsch, Brownlow, Haynes, & Mabe 2010), poetry (Stirman & Pennebaker, 2001), fiction, science articles, and websites (Tausczik & Pennebaker, 2010).

We focus on the language produced by the two groups in their main official English-language publications, *Dabiq* and *Inspire*, both explicitly aiming to inspire individuals and garner support in Western countries. Extending research that analysed the language of terrorist groups by comparing it to that of non-terrorist groups (Pennebaker, 2011; Smith, 2008), we aim to produce a systematic analysis that can identify differences between psychological dimensions captured in the language used by the two key communication outlets of ISIS and al-Qaeda.

Inspire and *Dabiq* are important tools in the jihadist propaganda in English-speaking countries. They cover topics such as instructions to prepare self-made bombs, reportages from the territories where jihadist groups operate, letters from Western individuals who joined them and now fight on the frontline, interviews with jihadist leaders, commemorations of martyrs, and so on (for a detailed review of the content included in the magazines, see Lombardi, 2015). Online web publications (together with Twitter and other social media) are the cornerstones of ISIS and al-Qaeda digital propaganda, especially for homegrown terrorist cells. *Inspire* was used, for example, by the Boston Marathon bombers in 2013 to prepare the bomb that killed three people and injured 264 (Speckhard, 2013), and in other cases, physical copies of *Inspire* were found in the possession of individuals charged with terrorism-related offences in Europe and the USA (Sivek, 2013).

Inspire is an online publication produced by al-Qaeda in the Arabic Peninsula (AQAP). We analyse the language from the first issue, which was published in June 2010 up until issue number 13, which was published in Winter 2014. *Dabiq* is an online publication produced by ISIS. We analyse its content from the first issue, which was published in July 2014 to issue number 10, which was published in July 2015. The unit of analysis in our study is the articles. Our sample consists of 131 articles from *Dabiq* with, on average, 13.1 articles

per issue and 1,689 words per article, and 216 articles from *Inspire* with, on average, 16.6 articles per issue and 1,194 words per article. The data was extracted manually from the pdf files of the magazines. As some sections of the *Inspire* magazine are made of boxes that include text, we manually copied and pasted in the same txt file the text of each box appearing in a magazine section. All text included in the frame of an article was counted as one article in the analyses.

Research Ethics

The data extracted from the two publications *Inspire* and *Dabiq* is publicly available and the process of extracting these data did not involve any direct interaction with human participants. Therefore, the Ethics Committee of the institution where the research was conducted has issued an ethics review waiver.

Variables

Religiousness. To capture levels of religiousness (i.e., concern with religion), we use two measures. Firstly, we use the existing LIWC category that was introduced to assess the use of “religion” words (such as altar, church, mosque). Secondly, as the magazines use Arabic words that refer to the religious sphere that is not captured by LIWC categories, we manually coded the religious Arabic words that appeared in the 500 most used words ranked by frequency in each publication (excluding function words such as articles, pronouns, and prepositions). To ensure that the words included in the ranking are the most relevant in relation to our analysis, we excluded names of people (such as Umar, Ibn, Ibrahim, Anwar, Usama, Jawlani), geographical references (Sham, Raqqa), organisations (al-Qaeda), generic religious terms (Allah, Islam, Islamic, which were already present in LIWC religion dictionary), and magazines (*Dabiq*).

Table 1 shows the list of Arabic words included and their respective categories. In creating these categories, we sought to capture the various nuances present in the religious terminology used by the two groups. For example, as ISIS and its predecessor al-Qaeda in Iraq have been more focused on sectarian conflict than al-Qaeda central (Zelin, 2014; Turner, 2015), we distinguish between the generic religious enemy (kufr, etc.) and the sectarian enemy (nusayri), even though they could have been merged into a superordinate category as “enemies of the true faith”.

Insert Table 1 about here

Authoritarianism. We use two different dictionaries to capture authoritarianism. Firstly, we look at the indicators of integrative complexity (which indicates a black-and-white worldview) and psychological distancing, which is a pattern of thinking that can lead to dehumanizing and moral disengagement, as found by Brundidge and colleagues (Brundidge, Reid, Sujin, & Muddiman, 2013) in a study of the linguistic indicators of political ideology in political blog posts in the USA. Specifically, Brundidge and colleagues (2013) found the language of bloggers with less integrative complexity and more psychological distancing to have the following features: less exclusive words, negation words, tentative words, conjunctions, first person singular pronouns, discrepancy words, present-tense verbs, and more long words (more than 6 letters), articles, and prepositions. Examples of the words included in those categories are “maybe,” “perhaps,” “guess” (for tentative), “should,” “could,” “would” (for discrepancy), and “but,” “without,” “exclude” (for exclusive).

Secondly, we use the moral foundations dictionary developed for RIOT Scan (Graham & Haidt, 2015). The dictionary has categories related to five moral foundations, i.e., Harm, Fairness, In-group, Authority, and Purity. We look at the focus on Authority and Purity values, which are indicators of authoritarian personality (Jost, Glaser, Kruglanski, &

Sullo way, 2003). Each foundation is represented by two distinct dictionaries, one containing the “virtue” words (e.g., “caring,” “protect,” and “shelter” for Harm), which indicates the foundation’s prescriptions in positive terms, as a characteristic to be admired, and one containing the “vice” words (e.g., “abuse,” “cruel,” and “damage” for Harm), which indicates the foundation’s prescriptions in negative terms, as a set of values to be condemned.

Results

We test H1 and H2 by comparing the means of relevant linguistic categories between the two groups. The independent samples’ t-tests reveal a significant difference in the percentage of religious words (as captured by the LIWC category “religion”) used by *Dabiq* (M=3.38, SD=1.47) and *Inspire* (M=2.48, SD=1.64); $t(345) = 5.13, p = <.001$.

We used the software AntConc to extract the word frequencies in the entire corpus of *Inspire* and *Dabiq* magazines. We then calculated the raw percentages of each religious Arabic word as illustrated in Table 1, and we turned the percentage into an ordinal measure from 0 to 1. We then calculated the final score of each category by adding the scores of each word in the category. The results are shown in Figure 1 indicating that *Dabiq* uses more Arabic vocabulary that refers to the religious sphere than *Inspire*.

Insert figure 1 about here

Welch’s t-tests show that *Dabiq* uses a language that shows less integrative complexity and more psychological distancing, based on the categories identified by Brundidge and colleagues (Brundidge et al., 2013, see Table 2).

Insert Table 2 about here

Using the moral foundation dictionaries developed for RIOT Scan (Graham & Haidt, 2015), we conduct Welch’s t-tests, which also show that *Dabiq* uses more Purity and Authority

words than *Inspire* (see Table 3). We applied logarithmic transformation to the data presented in Table 3 to address skewness and outliers. After the logarithmic transformation, we tested the normality of the distribution of the four variables in the table: Authority Virtue (Skewness = -.15, SE = .13; Kurtosis = .66, SE = .25), Authority Vice (Skewness = .21, SE = .17; Kurtosis = .35, SE = .33), Purity Virtue (Skewness = .27, SE = .18; Kurtosis = -.01, SE = .35), Purity Vice (Skewness = .16, SE = .17; Kurtosis = -.33, SE = .33). We then identified four outliers using a step of 1.5xIQR, and we excluded them from the analyses. The analyses performed on the untransformed data provide very similar results.

Insert Table 3 about here

Discussion

Our analysis suggests that the ISIS' publication *Dabiq* uses a language that is underpinned by a higher authoritarian tone and a higher level of religiousness compared to al-Qaeda's publication *Inspire*. However, we do not know whether those differences correspond to differences in the psychological dimensions of the audience which represents the mobilisation target of these groups. For now we know, based on our results, that the producers of these materials (i.e., jihadists from ISIS and al-Qaeda who try to reach out to Western jihadists) have different levels of authoritarianism and religiousness, but does the same apply to the consumers of these materials or potential recruits? Answering this question can help us elucidate aspects of radicalisation in relation not only to core members of these groups (the producers of the materials who are already radicalized individuals), but also to the broader potential supporter base; that is, those being exposed to these materials (and having the potential to engage in terrorist actions). Thus, we conducted Study 2 to investigate the same research questions, but focusing on the audience's perspective of the terrorist groups' propaganda.

Study 2

Materials and Methods

In Study 2, we selected two articles from *Inspire* and *Dabiq* that were highly typical of the language they use (according to findings in Study 1). As the proportion of function words are difficult to manage in short texts, we selected two passages that have a proportion of words indicating i) the moral foundations of the terrorist groups' orientation, and ii) the concern with religion that reflects the entire corpus of articles in *Dabiq* and *Inspire*. As Table 4 shows, the differences in the proportion of words in the moral foundation and religion categories between the two articles resemble the differences between the entire corpus of *Inspire* and *Dabiq* in the categories that are under investigation in this article; that is, level of religiousness and authoritarian tone. To be able to investigate our research question, we selected articles from the two publications which reproduce the differences found in Study 1; that is, the article from *Dabiq* has significantly more religious and 'authority' words than the article from *Inspire*.

Insert Table 4 about here

We hypothesize that the differences in the language of *Dabiq* and *Inspire*; that is, the higher focus on religion and authority in *Dabiq*'s language, resonate with the psychological characteristics of the audience. In other words, we hypothesize that religious and authoritarian individuals will be more attracted by the language of *Dabiq* than the language of *Inspire*.

First, we asked participants to answer baseline questions (i.e., regarding authoritarianism, religiousness, and demographic characteristics). Next, we randomly assigned participants to either the text from *Inspire* or the text from *Dabiq*, adapted to

become unidentifiable from their sources. Subsequently, we asked them to rate their attitudes toward the texts.

Participants

The sample is composed of 146 participants from the USA: seventy women (47.9%) and seventy-six men (52.1%) recruited using Amazon's Mechanical Turk (for more information on the use of MTurk data in research see Buhrmester, Kwang, & Gosling, 2011).

Research Ethics

The study was reviewed by the ethics committee at the institution where the research was conducted and received full approval. This study involves both deception of participants in relation to the real aim of the study and exposure to content produced by radical Jihadists. To mitigate these issues, several measures were taken. First, a debrief text describing the real aims of the study was included at the end of the online questionnaire. Second, the risks of exposing participants to radical content was mitigated by removing the content from its original context and placing it in a science fiction context. Taken out of context in this way, the risk of exposure to ideological arguments that may lead to radicalisation is removed. This procedure ensures that the risks are significantly lower compared to risks of accidental exposure to the actual texts (which is possible given that the two publications are in English and publicly available to Internet users).

Variables

Demographic information. We asked participants their gender, education (i.e., “please indicate the maximum level of education that you reached: high school, university undergraduate degree, master degree, or other; please specify”), political party affiliation, religious affiliation (i.e., “what is your religion or faith?”), and their year of birth.

Attitudes towards science fiction. As we masked the texts of ISIS and al-Qaeda as science fiction tales, we asked a question about the participants' attitudes toward science fiction. Specifically, we asked: "how much would you say you like science fiction?" Participants were asked to choose one of the following options: "Like a great deal, Like somewhat, Neither like nor dislike, Dislike somewhat, or Dislike a great deal". We control for this item in all the analyses.

Authoritarianism. We acknowledge the recent criticisms of the concept of authoritarianism, especially the conflation between authoritarianism and conservatism (Feldman, 2003). Following the suggestions of Feldman (2003) and the more recent validation of a two-components measure of authoritarianism where authoritarian aggression and submission are distinguished from conservatism (Rattazzi, Bobbio, & 2007), we selected ten items that capture authoritarian aggression and submission from the classic Altemeyer's scale of right-wing authoritarianism (Altemeyer, 1994; see Table 5 for the list of items selected). Principal Component Analysis showed that the ten items load on one single factor with an eigenvalue of 6.43. The reliability of the scale is high ($\alpha = .94$).

Insert Table 5 about here

Religiosity. We asked, "Apart from weddings, funerals, and baptisms, about how often do you attend religious services?" Participants were asked to select one of the following options: "at least once a week, at least once a month, several times a year, at least once a year, or never."

Attitudes towards the text. Participants were presented with either an article adapted from *Inspire* or an article adapted from *Dabiq*. As an introduction to the task, participants were instructed as follows:

Please read the following text carefully. The text comes from a science fiction tale that describes the struggle of the inhabitants of a planet, Angos, from the Kraton warriors who have conquered Angos and oppressed the Angosians. The text is the speech made by an Angosian rebel leader in front of a group of young Angosian people to convince them to join the fight against the Kraton warriors.

The two texts that we randomly assigned to the participants are reported in the section “supporting information.”

After participants read the text, they were asked to answer a brief questionnaire with items on Likert scales from 1 to 5, where 1 = not at all and 5 = extremely. Specifically, they were asked, “How effective do you think this speech is? How much do you think the speech would be able to mobilize the Angosians? How much do you identify with the author of the speech? How much do you think you like the author of the speech? How much do you think you agree with the author of the speech?” We combine those items for the analysis ($\alpha = .92$).

We designed those questions to capture the extent to which the text would be able to induce mobilisation in the study participants.

Results

The mean age was 41.24 ($SD=11.86$), with an age range from 22 to 73. Forty-two individuals (28.8%) had a secondary-level degree, and the rest (71.2%) a tertiary degree. Within the sample, 34 individuals self-identified as Republican voters (23.3%), 56 as Democrats (38.4%), 46 as Independent (31.5%), and the remaining ten people did not specify party affiliation (6.9%). Twenty-four people self-identified as Roman Catholics (16.4%), 41 as Christian Protestants (28.1%), one as Muslim (.7%), 20 as belonging to other religions (13.7%), and 60 people identified as having no religion (41.1%).

We found no significant differences between the two experimental groups (i.e., the group presented with the text adapted from *Dabiq* and the group with the adapted text from *Inspire*) in terms of age, level of authoritarianism, party affiliation, religiosity, religious affiliation, and education (all p -values > 1). We, therefore, assume that the two groups are similar in terms of the individual characteristics that are under investigation in this article. We found a significant difference between the two groups in terms of gender, with females featuring proportionally more in one experimental condition. We, therefore, control for gender in the following analyses.

We conducted separate OLS regressions to analyse the relationships between the ratings of the two texts (which we used as dependent variables in the regression) and the individual-level variables of levels of authoritarianism and religiosity, controlling for gender and attitudes toward science fiction. Results are shown in Table 6.

Insert Table 6 about here

Table 6 shows that a positive attitude toward the language of *Dabiq* is predicted by distinctive individual characteristics, i.e., being religious and authoritarian. The same characteristics do not predict positive attitudes toward the text from *Inspire*.

Discussion

Study 2 shows that the more religious and authoritarian individuals are, the more they prefer the language of *Dabiq* rather than that of *Inspire*. More generally, this result suggests that characteristics of the language used in the mobilising texts are indeed associated with characteristics of the audience and their attitudes toward the text. Study 2 showed that individuals with particular ideological characteristics (i.e., authoritarian and religious) tend to prefer the language produced by groups consistent with those characteristics (i.e., more authoritarian and religious). We can interpret these results as suggesting that the text based on

Dabiq can be more effective in mobilising individuals who are more authoritarian and more focused on religion than the text based on *Inspire*.

General Discussion

Here we test the proposition that higher levels of authoritarianism and religiousness (i.e., focus on religion) are psychological underpinnings of ISIS' Western mobilisation, which distinguishes it from al-Qaeda's strategies. We found empirical support for this proposition in two studies: firstly, computerized linguistic analysis shows that the language used by ISIS in its English-language propaganda magazine *Dabiq* is underpinned by higher levels of authoritarianism and focus on religion than al-Qaeda's magazine *Inspire*. In our second study, we found that being more religious and more authoritarian predicts more positive attitudes toward the language of ISIS, but not toward the language of al-Qaeda.

These results are consistent with qualitative research on the ideology and mobilisation of al-Qaeda, especially al-Qaeda in Europe, which was found to share ideological elements with rebellious left-wing, anti-imperialist social movements (Olesen & Khosrokhavar, 2009; Roy, 2008; Vergani, 2014). We argue here that ISIS' followers in Western contexts are likely to be characterized by a higher degree of religiousness and authoritarianism than al-Qaeda's. This is consistent with the argument that such personality characteristics are required in members of groups that impose a high psychological cost on their followers due to the awareness of the in-group's commitment to violence. Previous research has shown that when individuals are confronted with in-group commitment to violence, a shift in the moral foundations of the group from harm/fairness to loyalty/authority can occur (Li, Leidner, & Castano, 2014). This shift represents a motivated response to a threat to the morality of the group, and it can be used as a propaganda mechanism to reduce the psychological effects on in-group members who need to be able to continue committing violence against the out-

group. In other words, it is a mechanism that helps to make *a virtue of evil* deeds (Li et al., 2014). It is known that ISIS uses more violence against Muslims than al-Qaeda and commits atrocities against local populations that were merely criticized by senior al-Qaeda members (Hashim, 2014; Turner, 2015). Therefore, it is possible that people with personality traits that are highly authoritarian are more likely to be attracted to ISIS because they are the only group that can meet the psychological needs that are demanded by providing them with well-constructed justifications of such levels of extreme violence.

Our findings also indicate that the individuals who are potentially more attracted to ISIS propaganda in the West exhibit higher levels of concern with religious affiliation compared to those who are more likely to be attracted by al-Qaeda's propaganda. The focus on religion might also indicate its use to justify the indiscriminate recourse to violence. Religion, with an exclusivist approach, is often used in ISIS' rhetoric in association with authoritarian values - to dictate how the world should be structured and to provide clearer distinctions between the ingroup and the out-groups that need to be annihilated (Djupe & Calfano, 2012). This rhetoric is consistent with the selection of the victims in the most recent terrorist acts in Western countries, who are increasingly drawn from religious and ideological out-groups. However, it is important to acknowledge that religiosity and religious understanding are not necessarily associated with an obsessive focus on religion and religious extremism; individuals who join jihadist organisations do not usually come from strong religious backgrounds, and their understanding of religion is limited (Ilardi, 2013; Rinehart, 2006). The interpretation of Islam proposed by groups like al-Qaeda and ISIS is established upon selective literal interpretations of the Qur'an, which are not shared by the Muslim majority (Lentini, 2013).

Collecting primary data through surveys and interviews from participants who are involved with terrorist groups is a nearly impossible task (unless one is speaking with imprisoned perpetrators). The closest alternative to this approach is the analysis of linguistic products of terrorist groups. We complemented this approach with experimental data from a general sample – a population that is likely to be similar to the actual audience targeted by the terrorist groups’ online English-language magazines, i.e., from an English-speaking Western country high in computer literacy. Future research can further investigate the psychological underpinnings of support for ISIS among populations that are at particularly high risk of radicalisation in Western countries, such as young and disaffected individuals from a Muslim background. In this research, we exclusively use *Dabiq* and *Inspire*, which are two of the many propaganda products targeting Western audiences that include audio and audio-visual materials. Regardless of the actual ties of the magazines to ISIS and al-Qaeda, these magazines have had a significant role in mobilising support for those terrorist organizations and in fostering terrorist-like ideals and behaviours. Future research should expand this line of research by focusing on other propaganda products beyond text and static visuals. Also, it should expand the focus on levels of authoritarianism and religiousness to other categories of the language captured by language analysis software like LIWC and include them in research on audience.

Conclusion

This article describes research that expands on a long line of studies on psychological dimensions that drive collective action mobilisation, using innovative methods to investigate an under-researched area of study, i.e., the relationship between the psychological dimensions of terrorist groups and their target audience. We found that ISIS is characterized by higher levels religiousness and authoritarianism compared to al-Qaeda, which seems to be driven by

a more liberationist ideology. We show that those dimensions are associated with the membership of a group that commits extreme violence, and by identifying these dimensions and understanding how they work in relation to mobilisation strategies, we can further identify and possibly prevent newly emerging patterns of behaviour (that are reflected, for example, in the choice of the victims of political violence).

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Table 1. Arabic Religious Words Included in Each Category.

Category	Words
Religious war	Jihad, Jihadi, Mujahidin, Mujahideen, Mujahid, Ribat
Religious formulas	Rasūlullāh (sallallāhu ‘alayhi wa sallam), Salam, Rahimahullah, Radiyallahu,
Religious state	Khilafah, Hijra, Wilayat, Sharia, Tawhid
Religious enemy	Kufr, Kuffar, Tawaghit, Taghut, Murtadd, Rafidah, Mushrikin, Murtaddin, Kafir, Takfir, Shirk, Murji
Religious leadership	Imam, Shaykh, Sheikh, Khalifah,
Religious community	Ummah, Sahwah, Jama
Religious text	Sunnah, Sahih, Hadith, Quran
Religious practices	Ramadan, Zakah, Hajj
Sectarian enemy	Nusayri

Table 2. Mean Differences, Standard Deviations, t-test Coefficients, and *p*-values (Conservative Language, Categories from LIWC).

	Dabiq	Inspire		
	Mean (SD)	Mean (SD)	Welch statistics	p-value
Exclusive	1.56 (1.00)	2.21 (1.43)	24.77	<.001
First person singular	.70 (1.33)	1.54 (2.78)	14.56	<.001
Negation	.99 (.06)	1.75 (1.72)	33.44	<.001
Tentative	1.24 (.75)	1.58 (.75)	15.96	<.001
Conjunctions	6.70 (1.83)	7.31 (2.73)	6.33	.012
Discrepancy	.88 (.63)	1.32 (.93)	28.08	<.001
Present-tense	3.93 (2.05)	5.48 (2.22)	43.75	<.001
Words > 6 letters	22.84 (4.81)	21.31 (3.81)	9.57	.002
Articles	9.71 (2.68)	8.85 (2.16)	9.57	.002
Prepositions	15.21 (2.50)	13.77 (4.17)	16.24	<.001

Table 3. Mean Differences, Standard Deviations, t-test Coefficients, , and *p*-values (Purity and Authority Moral Foundations, Categories from RIOTscan).

	Dabiq	Inspire		
	Mean (SD)	Mean (SD)	Welch statistics	p-value
Authority Virtue	-.20 (.25)	-.37 (.28)	36.72	<.001
Authority Vice	-.70 (.34)	-.86 (.38)	9.69	.002
Purity Virtue	-1.03 (.37)	-.87 (.36)	9.07	.003
Purity Vice	-.73 (.34)	-.91 (.33)	14.93	<.001

Table 4. Differences in Moral Foundation Categories and Religious Concerns Between the Two Articles and Between the Entire Corpus of *Inspire* and *Dabiq*.

	Inspire article	Dabiq article	Inspire	Dabiq
Authority virtue	.24	4.54	.46 (.36)	.67 (.55)
Authority vice	0	1.34	.09 (.18)	.16 (.29)
Purity virtue	.24	0	.09 (.15)	.07 (.17)
Purity vice	0	.53	.07 (.13)	.15 (.23)
Religion	.02	2.14	2.48 (1.64)	3.38 (1.47)

Table 5. Items Used to Measure Authoritarianism.

Item	Factor loadings
The established authorities in our country are usually smarter, better informed, and more competent than others are, and the people can rely on them.	.65
Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.	.89
The real keys to the "good life" are obedience, discipline, and sticking to the straight and narrow.	.85
It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people's minds	.82
Our country will be destroyed someday if we do not smash the perversions eating away at our moral fibre and traditional beliefs	.85
The situation in our country is getting so serious; the strongest methods would be justified if they eliminated the troublemakers and got us back to our true path	.84
What our country needs is a strong, determined leader who will crush evil, and take us back to our true path	.89
It would be best for everyone if the proper authorities censored magazines so that people could not get their hands on trashy and disgusting material	.68
Some of the best people in our country are those who are challenging our government, criticising religions and ignoring the "normal way" things are supposed to be done	.63
Once our government leaders give us the "go ahead," it will be the duty of every patriotic citizen to help stomp out the rot that is poisoning our country from within	.86

Table 6. OLS Regression Models (Standardized Coefficients). Dependent Variable: Attitudes Toward the Text Adapted From Either *Dabiq* Or Inspire, With and Without Controls.

	Dabiq					Inspire		
Authoritarianism	.25*	.25*			.09	.11		
Religiosity			.30**	.29*			-.06	-.05
Gender		.10		.14		.01		-.00
Science-fiction		.27*		.22		.06		.02
R-squared	.05	.09	.08	.11	.00	.00	.00	.00

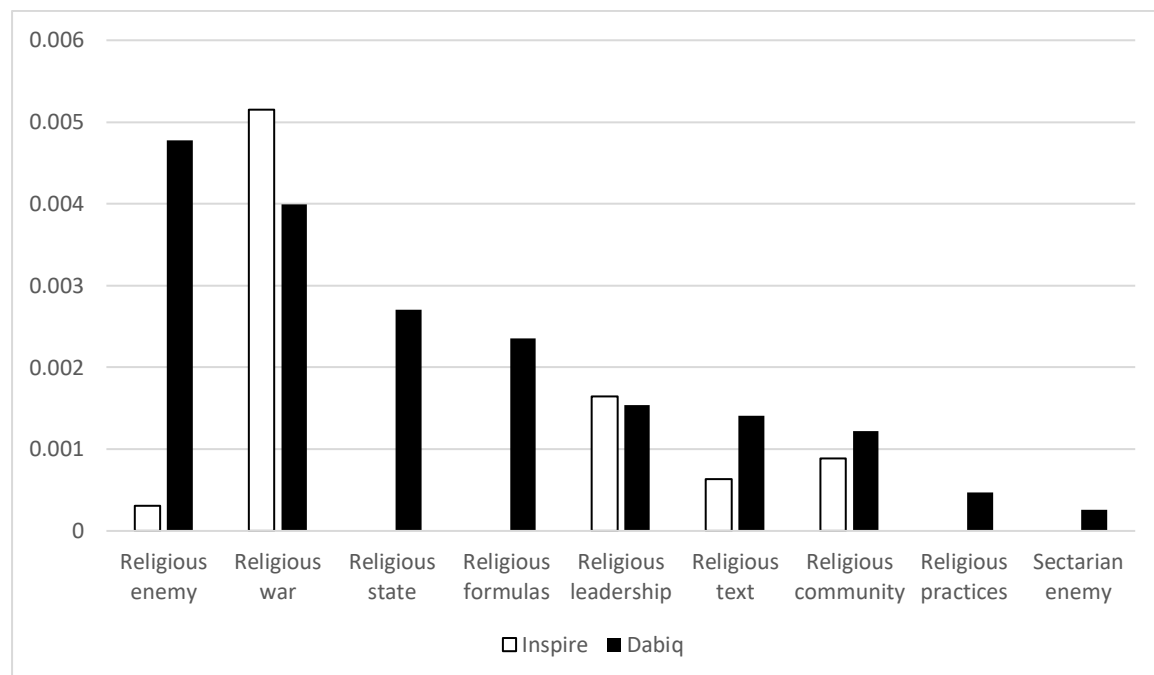


Figure 1. The presence of each category of religious Arabic words in Dabiq and Inspire.

Supplementary materials

APPENDIX I. Terrorist incidents perpetrated by homegrown jihadists in Australia, Europe, and the United States from 2001 to December 2016.

Date	Perpetrator/s	Target	Country
22/12/2001	Richard Reid	Commuters	USA
02/11/2004	Mohammed Bouyeri	Theo Van Gogh	The Netherlands
07/07/2005	Mohammad Sidique Khan	Commuters	UK
	Shehzad Tanweer		
	Germaine Lindsay		
	Hasib Hussain		
21/07/2005	Yasin Hassan Omar	Commuters	UK
	Osman Hussain		
	Muktar Said Ibrahim		
	Ramzi Mohammed		
29-30/07/2007	Bilal Abdullah	Night club area	UK
	Kafeel Ahmed	Commuters	
01/07/2009	Abdulhakim Muhammad	Military	USA
05/11/2009	Nidal Malik Hasan	Military	USA
01/01/2010	Mohammed Geele	Kurt Westergaard	Denmark
14/05/2010	Roshonara Choudhry	MP	UK
16-26/10/2010	Yonathan Melaku	Military	USA
11/12/2010	Taimour Abdulwahab al-Abdaly	Christmas shopping	Sweden
11-22/03/2012	Mohammed Merah	Military	France
		Jewish civilians	
07/01/2013	John Stuart Nuttall	Canada Day celebrations	Canada
	Amanda Korody		
22/05/2013	Michael Adebolajo	Military	UK
	Michael Adebowale		

15/04/2013	Tamerlan and Dzhokhar Tsarnaev	Boston Marathon	USA
24/05/2014	Mehdi Nemmouche	Jewish museum	Belgium
23/09/2014	Abdul Numan Haider	Police	Australia
20/10/2014	Martin Rouleau-Couture	Military	Canada
22/10/2014	Michael Zehaf-Bibeau	Parliament Hill	Canada
23/10/2014	Zale H. Thompson	Police	USA
15/12/2014	Mon Haron Monis	Lindt café	Australia
20/12/2014	Bertrand Nzohabonayo	Police	France
07/01/2015	Saïd and Chérif Kouachi	Charlie Hebdo	France
07/01/2015	Amedy Coulibaly	Jewish shop	France
14-15/02/2015	Omar Abdel Hamid El-Hussein	Cultural Centre and Synagogue	Denmark
03/05/2015	Elton Simpson and Nadir Soofi	Muhammad cartoon contest	USA
26/06/2015	Yassin Salhi	Employer (gas factory)	France
02/10/2015	Farhad Jabar Khalil Mohammad	Police	Australia
04/11/2015	Faisal Mohammad	University students	USA
13/11/2015	Abdelhamid Abaaoud Salah Abdeslam Bilal Hadfi Brahim Abdeslam Chakib Akrouh Samy Amimour Omar Ismail Mostefai Foued Mohamed-Aggad Mohamed Abrini	Stadium, cafes, restaurants, music venue	France
02/12/2015	Syed Rizwan Farook	Christmas party	USA
07/01/2016	Edward Archer	Police	USA
22/03/2016	Ibrahim El Bakraoui Khalid El Bakraoui Najim Laachraoui	Commuters	Belgium

	Mohamed Abrini		
	Osama Krayem		
12/06/2016	Omar Mateen	Gay night club	USA
13/06/2016	Larossi Abballa	Police	France
26/07/2016	Adel Kermiche	Catholic Church attendees	France
	Abdel Malik Petitjean	and priest	

APPENDIX II. The two vignettes presented to the participants of Study 2.

Text adapted from Inspire It is really unfair and quite annoying when a ten year old innocent Angosian child is stabbed in the kidney by a Kraton soldier and we do not see any media turmoil targeting this inhumane act. Again, when a 75 year old Angosian man walking with a stick from a local shop in Angos is stabbed to death by a Kraton, we do not even see it in the news. But when two zealous Angosians take vengeance on these barbaric acts by killing a Kraton soldier who has served to kill Angosians; when vengeance is taken, the whole Federation of the Galaxies stands on its toes. Let the Federation hop on its toes, but let us, you and me, sit down and listen to what Ang and Onger, who killed the Kraton soldier, said:

"We swear by God we will never stop fighting you. The only reasons we have done this is because Angosians are dying every day. Killing this Kraton soldier is an eye for an eye a tooth for a tooth. We apologise that women had to see this today, but in our lands, our women have to see the same. You people will never be safe. Remove your government. They don't care about you."

I believe the message of these young Angosians has been conveyed to the whole Federation, including every Kraton, every person of the Federation, every Kraton whose hands has Angosian blood. Right they are! The Angosian people will never stop fighting the assaulting enemy. As Ongusan - one of the leader of Angos - wrote,

"When you attack one Angosian, you attack all Angosians".

The Kraton warriors should comprehend that the type of these young men who killed the Kraton soldier, are many. They all witness your governments' invasion of Angosian lands, occupations, aggression, injustice and oppression which have not stopped yet. These young men see and witness Angosian men

behind your bars, they see women and children killed. The Kraton governments do not care about their citizens. They do not care when they oppress other nations while they surely know that the wave of vengeance and revenge will certainly flood their planets, moreover they know they cannot provide security to the citizens. Finally, as long as the Kraton governments carry out oppression, the wave of just vengeance and legitimate payback will be witnessed from Angosians. Thereupon, the Kraton nations will pay a dear price, and the media will have turmoils and turmoils. And thereupon only, the Federation of the Galaxies will constantly stand on its toes.

Text adapted
from Dabiq

Amongst the major sins that many Angosian parents order their sons with is the abandonment of the struggle against the Kraton, which is obligatory upon each and every individual. The Leaders of the Angosian rebellion have unanimously explained that such struggle is an individual obligation. Ongusan, the Supreme Leader of the rebellion, said:

“If the struggle becomes obligatory upon a young Angosian then the permission of his parents is not taken into consideration because the struggle against the Kraton has become an individual obligation and abandonment of it is a sin. There is no obedience to anyone in disobedience of God”.

Ongesyl, another Leader of the Angosians, said,

“If the Kraton warriors plan to attack the Angosians, then repelling them becomes obligatory upon all those intended for by the attack and upon those not intended for by the attack, so that they support them, just as the God of the Angosians said, and just as Ongusan, the Supreme Leader of the Angosians, ordered”.

The Angosian leaders mentioned numerous cases that make the struggle against the Kraton, including the invasion of the Angosians' lands, the imprisonment of Angosians, the imminent threat of attack against the Angosians, and the faceoff of the opposing armies. The Supreme Leader, Ongusan, has made a call for a generals, further emphasizing this obligation – so how can one ignore this clear-cut obligation now and be satisfied with submission to his lower self? How can one claim to be a true Angosian while preferring one's parents to the Supreme Leader and to the God of the Angosians in love and obedience?

Ongusan, the Supreme Leader of the Angosians, said that the great warriors of the Angosian tribe of the Angesran Gaztan and Padar – when asked by individuals for advice on performing the struggle while their parents disapproved – would merely recite:

“If your fathers, your sons, your brothers, your wives, your relatives, wealth which you have obtained, commerce wherein you fear decline, and dwellings with which you are pleased are more beloved to you than the God of the Angosians, the Supreme Leader and the struggle against the Kraton, then wait until the God of the Angosians executes His command. And God does not guide the defiantly disobedient people”.

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