A Narcissist's Jihad: Extremist Personality and Terrorist Recruitment Strategies

Abstract: *A long literature suggests that psychological factors influence terrorist mobilization. Yet, methodological limitations have prohibited rigorous theory testing. Existing psychological theories also neglect the recruitment strategies that terrorist groups use to attract the psychologically susceptible. This article proposes and tests a novel theory of the psychological mechanisms leading to terrorism. Extremists, it argues, exhibit a complex of personality traits related to narcissism—such as rage, helplessness, and a desire for revenge—that draws them to totalizing ideologies. To recruit extremists, terrorist groups rely on one facet of narcissism that can activate extremists to mobilize: revenge. Using recently developed methods in computational personality assessment, this study finds that pro-Islamic State extremists on Twitter exhibit various narcissistic traits. In its recruitment propaganda, the Islamic State concentrates on themes of revenge. Islamic State propaganda, however, shows scant emphasis on vulnerable narcissistic themes that extremists exhibit since this can counterproductively induce narcissistically-vulnerable extremists into self-protective isolation.*

Keywords: Terrorism, Recruitment, Narcissism, Psychology, Text Analysis

Word Count: 8890

One of the oldest and largest literatures on terrorist psychology stresses the importance of narcissism (Post 1984; Pearlstein 1991; Horgan 2005, 47-49). The association between narcissism and terrorism is also more relevant than ever. Robert Pape and Walker Gunning (2016) observe that the Islamic State (IS) appeals to youthful narcissism in its recruitment and remark that Omar Mateen, who murdered 49 people at an LGBT nightclub and pledged allegiance to the Islamic State, apparently had more in common with "a narcissistic teen than an ISIS operative." Despite significant scholarly attention, rigorous empirical analysis of the narcissism-terrorism relationship is curiously lacking. Existing research is almost exclusively based on expert evaluation of terrorist life histories and, less frequently, interviews with terrorists or close readings of their texts. We similarly lack theoretical accounts for how terrorists leverage narcissism for *recruitment*. This is a puzzling oversight since narcissism does not automatically translate into terrorist activity.

Narcissism, a complex trait with various constituent dispositions, is expected to correlate with extremism, rather than terrorism *per se*. Narcissists share a common psychological profile: they suffer from a fragile self, develop a self-centered perception of reality as a defense, and often respond with reflexive aggression—due to narcissistic rage—when this perception is challenged (Kernberg 1975; Kohut 1972; Krizan and Johar 2015). Narcissistic individuals, we argue, are disproportionately attracted to extremist ideologies, since these allow them to cultivate a strong identity centered around an irrefutable belief-system and to uphold grandiose self-images. However, narcissistic extremism does not straightforwardly entail terrorism absent the belief that *revenge* against outgroups is a constituent part of their identity. While extremists evince a host of narcissistic traits, terrorist groups seeking to mobilize extremists will emphasize revenge against their desired targets to activate extremists into terrorism.

We test these arguments using recently developed tools in computational personality assessment (Neuman and Cohen 2014; Neuman 2016). Vector semantics methods allow psychological

researchers to represent complex personality traits, such as narcissism or depression, as vectors of co-located words, and to use these representations to evaluate the extent to which texts match the relevant psychological profiles. Using this approach, we demonstrate that tweets from Islamic State supporters rank high on various dimensions of narcissism—such as helplessness, revengefulness, and rage—when compared with non-extremist tweets. However, Islamic State recruitment texts overwhelmingly focus on themes of revenge against Western 'crusaders.' While jihadist extremists are narcissistic in myriad regards, terrorist groups mobilize by directing their extremist readers toward vengeful aims, since a focus on the vulnerable aspects of narcissism, such as helplessness, can instead induce narcissists into introspection and isolation.

This article makes two important contributions to the literature. First, it provides a novel theory and quantitative empirical test of an important psychological relationship in the terrorism literature. Psychology experts have for decades held that narcissism is related to terrorism. Existing theory, however, seldom explains why extremist ideologies appeal to the narcissistically vulnerable or accounts for how terrorist groups rely upon narcissistic cues for mobilization and recruitment. This later point, we maintain, is an especially important contribution, since the relationship between individual psychology and organizational recruitment strategies is understudied. Revenge similarly features prominently in several theories of terrorism and political violence (Crenshaw 1981, 394; Speckhard and Ahkmedova 2006; Souleimanov and Aliyev 2015), although the use of vengeful themes as a terrorist recruitment strategy is a theoretical and empirical lacuna.

Second, it presents a novel method for personality assessment based on computational text analysis. While these approaches are gaining traction in psychology (Neuman and Cohen 2014; Neuman 2016), they are not exploited in the political psychology literature. Quantitative research in the area of narcissism and terrorist psychology in particular is nonexistent. We anticipate that the methodological tools presented here will enable researchers to test important theories regarding

political psychology. For instance, a fascinating and growing literature strives to understand political behavior through the Big Five personality traits (Mondak 2010; Mondak et al. 2010).[1] Some scholars have since used computational text analysis to explore elite personality using the Big Five traits (Ramey, Klingler, and Hollibaugh 2014). The vector semantics approach used and described here presents a novel way to examine personality via text analysis and is one that has been previously validated for the Big Five personality traits (Neuman and Cohen 2014).

Narcissism

Narcissism is a broad concern in psychology that continues to yield insight into diverse research areas ranging from political orientation (Hatemi and Fazekas 2018) to school shooting (Neuman et al. 2015).[2] However, as scholars note, there "is no single 'right' way to operationalize narcissism"(Hatemi and Fazekas 2018, 874). At the most general level, narcissism is a "cognitive-affective preoccupation with the self" (Westen 1990, 226). One important distinction is between "grandiose" and "vulnerable" narcissism.[3] Whereas the former refers to traits such as overconfidence, exhibitionism, and self-promotion, the latter refers to insecurity, resentfulness, and self-centeredness (Pincus and Lukowinsky 2010). In terms of the Big Five personality traits (see Mondak 2010), both narcissisms are associated with high neuroticism and vulnerable narcissism with low extraversion as well (Thomas et al. 2012).[4] Our focus is on vulnerable narcissism. Although vulnerable narcissism is traditionally viewed as more "pathological," a recent review article emphasizes that both types have equal pathological potential (Miller et al. 2017, 292). Theoretically, we maintain that the traits associated with vulnerable narcissism

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[1] The Big Five traits are openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability.
[2] The extensive literature on psychology and terrorism is outside the purview of this article. See Victoroff (2005), Horgan (2005), and Crenshaw (2000) for more general reviews.
[3] This maps onto to the difference between "overt" and "covert" narcissism (Wink 1991, 591).
[4] Grandiose narcissism has been theorized as having high extraversion (Paulhus 2001), although empirical evaluation only supports the conclusion that vulnerable narcissists score low on this dimension (Thomas et al. 2012).

are most relevant to extremism and terrorism. Following pioneering work that treats vulnerable characteristics as the defining narcissistic features, we hereafter refer to "vulnerable narcissism" simply as "narcissism" (Kohut 1977; Kernberg 1975).[5]

More than a compendium of traits, narcissism entails a self-centered perception of reality with unique conceptions of the self and others. Narcissists suffer from fragile self-esteem and, as a defense, construct an idealized self-image which they present to others.[6] This idealization is not necessarily grandiose in the conventional understanding that the narcissist considers himself the greatest person: the self-image may simply not accord with objective reality, such as Willy Loman's idealization of himself as a successful father and salesman (Tracy and Robins 2003).[7] Other individuals, however, are represented in the narcissistic mind as mere "shadows" whose inner lives are not appreciated and whose value is discarded when they no longer assist in maintaining one's idealized self-image (Kernberg 1975, 233-235). Another useful metaphor is cinematic: narcissists view themselves as main characters in their own movie, "appear to perform in front of an audience" to coopt others to accept their character, and treat others as merely supporting roles in their life narrative (Hesse 2009, 209).[8]

A central phenomenon to understanding narcissism is narcissistic rage, which Krizan and Johar (2015) find is unique to vulnerable narcissism. It is well-established that narcissistic individuals, having fragile self-esteem, are exceptionally sensitive to shame and humiliation (Morrison 2014; Besser

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[5] Kohut (1977) and Kernberg (1975) refer at length to the "grandiose self," although it is clear they mean an idealized self-image rather than grandiosity in the conventionally understood sense. For instance, the clinical manifestations of this grandiosity are coldness, attitudes of superiority, increased self-consciousness, and shame, which are closer to the defining attributes of vulnerable narcissism (Kohut 1977, 67). While this may invite confusion, we refer at length to grandiose self-images. An extremist, for instance, may harbor a grandiose self-image as someone on the just side of a cosmic war (see Juergensmeyer 2000) yet exhibit no outwardly grandiose behaviors.

[6] We leave aside questions about the etiology of narcissism.

[7] This example, explored in Tracy and Robins (2003), comes from Arthur Miller's (1949) *Death of a Salesman*.

[8] While the 'acting' metaphor is common in descriptions of narcissism, this wording comes in part from Kaufman's (2007, 109) screenplay for *Synecdoche, New York*. The main character, a highly narcissistic director who creates a city-sized set for a movie in which he is the main character, says in a moment of redemptive clarity, "[t]here are nearly thirteen million people in the [movie] world. None of those people is an extra. They're all the leads of their own stories." (The fictional director's first production, in line with our themes, is *Death of a Salesman*). This also contradicts the 'grandiose' conception: the main character is not necessarily the greatest person, simply the one around which others revolve.

and Zeigler-Hill 2010). More specifically, when the narcissist's carefully cultivated self-image is called into question, an experience called narcissistic injury, he in turn experiences intense shame and may respond with disproportionate aggression to the perceived offender (Ronningstam 2005). Since others are viewed as mere props upholding self-image, a threat to that self-image is viewed as an unforgivable trespass that must be corrected to maintain the self-centered worldview. As Kohut (1972, 385-386, emphasis in original) explains in his formative work on narcissistic rage, the "enemy who calls forth the archaic rage of the narcissistically vulnerable is seen by him not as an autonomous source of impulsions, but as *a flaw in a narcissistically perceived reality*" that must be rectified.

In short, low self-esteem impels the narcissistically vulnerable to craft an idealized self-image and to use others as props to support this identity. When the identity is challenged, such as by revealing it as fantasy, the subject experiences narcissistic rage and desires to eliminate the offender and restore balance to a narcissistically perceived reality. Violence, however, is not the only available response to narcissistic injury (e.g. revealing the falseness of one's identity). Many scholars emphasize retreat and isolation as possible avenues for the injured narcissist to avoid further disintegration of their self-image (Grosch 1994, 57-60; Kohut 1972, 387). While rage and resentment are unavoidable, this does not deterministically translate into overt hostility.

Narcissism and Extremism

Narcissism is frequently held to influence terrorism. Pearlstein's (1991, xi) central argument is that "narcissistic injury and disappointment led [terrorists] to narcissistic rage, defense, and aggression." Starting from Kohut's (1983) work, Post (1990, 27; Post 1986) maintains that many terrorists have fragile selves and rely upon the psychological mechanism of "splitting"—dividing themselves into "good" and "bad" selves and projects the latter onto others. Christopher Lasch (1979), who helped

popularize the concept of narcissism, connects it with radical leftist terrorists active in the United States during the 1970s.

Some scholars thoroughly reject these theories. Silke (1998) contends that, contra these authors, terrorists are psychologically normal and evidence supporting narcissistic terrorism is largely anecdotal. There are several problems with this reasoning.[9] First, there is no contradiction between the idea that terrorists are both "normal" and narcissistic. Silke (1998, 64) cites Post himself, who writes that "most terrorists . . . fit within the spectrum of normality." Narcissism as defined here is widely acknowledged as within the spectrum of normality, separate from more severe psychopathology such as borderline personality disorder, consistent with high-functioning behavior, and may afflict as much as 7 percent of the general population (Kernberg 1975; Kohut 1977; Pincus and Lucowitsky 2010, 422).[10] Second, it is clear that not all terrorists are narcissistic; the argument is that narcissistic thought-patterns "are found with extremely high frequency in the population of terrorists" (Post 1990, 27), which is consistent with the possibility that a minority of terrorists are narcissistic. Third, empirical limitations do not disconfirm the theory. Rather, the implications of the theory have not been adequately tested. The following sections describe how methodological advancements allow us to accurately test this argument.

One hitherto unacknowledged critique, however, is that narcissism does not necessarily distinguish *terrorists* from *extremists*. We maintain that extremist ideologies will disproportionately attract narcissistic individuals. Following J.M. Berger (2018, 26), an extremist ideology "is a collection of texts that describe who is part of the in-group, who is part of an out-group, and how the in-group

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[9] One critique that Silke (1998) raises is that labelling terrorists is simply pejorative. We emphasize that narcissism *is not* a value judgement. In fact, there are healthy forms of narcissism and a suitable response to narcissism is not exorcising it but directing it toward beneficent aims (Kohut 1984; Grosch 1994). Narcissism, we argue, has predictive value for determining who will become an extremist, who has the potential to become a terrorist, and how terrorists recruit.

[10] A pertinent example of narcissism's 'normality' is the longstanding connection between narcissism and academic and creative professions (Kernberg 1975, 229-230). Kohut (1977, 9) is clear that the narcissism he describes is outside the realm of the psychoses (i.e., not a universal break from reality).

should interact with the outgroup."[11] Extremist ideologies provide individuals with fragile self-esteem the opportunity to craft idealized self-images. Texts that constitute the ideology carefully delineate the in-group to which a prospective member can belong, the "all bad" out-group serves as a reference category for the in-group,[12] and how these groups relate. People with fragile selves are not only able to create an idealized self, but to link this identity to an exceptional, chosen, or special in-group that gives sustenance to the self-identity. Extremism, at least for the concept to retain face validity, entails "political beliefs . . . not widely shared even within their own societies" (Lake 2002, 18). Precisely this feature should appeal to the narcissistically vulnerable, since adherence to an 'exceptional' belief-systems and membership in a 'select' groups provides a social nexus that reaffirms the idealized self-image. Recently, this dynamic is explored in a growing literature on collective narcissism (Golec de Zavala et al. 2009; Golec de Zavala and Cichocka 2012), which is uniquely related to vulnerable rather than grandiose narcissism (Golec de Zavala 2019a).

Extremist ideologies further allow narcissistic individuals to participate in what Juergensmeyer (2000) calls "cosmic war," or what earlier writers refer to as "fantasy war" (Ferracuti 1982, 137; Sprinzak 1991, 56). In a cosmic war, the world is bifurcated into cosmic battle between the forces of good and the forces of evil and renders violence against the latter legitimate, which in the social identity theory framework correspond with ingroup and outgroup, respectively (see Tajfel and Turner 1986).[13] An idealized self-image, in other words, is formed around participating or being privy to a world-historically important battle between good and evil. "Fantasy," according to narcissism scholars, "has long been denoted as primary to the realm of narcissis[m]" (Dickinson and Pincus 2003, 190; Raskin

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[11] In an article on three contested concepts (narcissism, terrorism, and extremism), some ambiguity surrounding meaning is unavoidable. Although many religions could fall under "extremist ideology" according to Berger's (2018) definition, we leave this issue aside and later empirically examine whether extremist texts (Islamic State magazines) statistically differ from non-extremist Islamic magazines on elements of narcissism.

[12] This is related to the aforementioned splitting mechanism: narcissists projects hated aspects of themselves onto the outgroup, dividing the world into all good and all bad.

[13] This is the theory Berger (2018) uses to form his definition of extremism.

and Novacek 1991). The idealized self-image is itself a form of fantasy, and narcissistic individuals tend to find more pleasure in fantasy than real life (Kohut 1972; Kernberg 1975). We therefore maintain that such individuals will find themselves disproportionately attracted to the grandiose "fantasy war" narratives that feature prominently in extremist ideologies.

Recruiting Narcissists

People with narcissistic traits are attracted to extremist ideologies for numerous reasons: it offers them a strong identity around which to create an idealized self-image; links this identity to a group to avoid the humiliation and helplessness associated with having a fragile self that can crumble under scrutiny, since likeminded adherents will affirm the identity; and it establishes an acceptable outgroup to offload narcissistic rage and vengeance. However, not all extremists become terrorists (Berger 2018). How do terrorist organizations attract likeminded extremists, the population from which terrorists are drawn, to their cause?[14]

The inherent complexity of narcissism does not lend itself directly to terrorism in most individuals. Certainly, some who found and lead terrorist organizations are profoundly narcissistic and organize terrorist activity without need for outside persuasion or influence (Post 2007, 75-76, 136). However, narcissistic extremists can remain isolated, another defense against narcissistic injury, while still retaining an idealized self-image. Others may reinforce their identity through propagandizing, online agitation, or other relatively benign activities. At the extreme, one may sacrifice one's real self through suicide to preserve an idealized self-image that risks being exposed (Tracy and Robins 2003, 61). In attracting recruits, terrorist organizations are unlikely to emphasize some narcissistic themes, such as abandonment and hopelessness, that could activate isolation rather than participation.

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[14] We define terrorism as politically-motivated violence against civilians by non-state actors and terrorist organizations as groups that use terrorism (Phillips 2014). It goes without saying that terrorist groups only draw upon the population of extremists that adhere to the same ideology.

Yet, there is one theme related to narcissism that terrorist groups can rely upon to attract recruits: revenge. Narcissistic rage entails "the need for revenge, for righting a wrong, for undoing a hurt by whatever means, and a deeply anchored, unrelenting compulsion in the pursuit of all these aims" (Kohut 1972, 380). Directing this narcissistic rage toward revenge against desired targets is the surest means a terrorist organization has to recruit extremists for violence. Thus, while narcissism is complex and multi-faceted, organizations seeking to activate extremists for violence are likely to appeal to narcissistic vengefulness.[15] While numerous studies posit revenge as a motivation for terrorism (Crenshaw 1981, 394; Speckhard and Ahkmedova 2006),[16] the use of revenge as a terrorist organization mobilization strategy is understudied.

Extremists, as per our definition, already construct an out-group commensurate with the one ideologically-similar terrorist groups fight against. Terrorist groups only need to stress revenge against this outgroup in retaliation for perceived offenses. Why should this work? Simply put, terrorist propaganda becomes part of the ideology that defines extremist ideology, which is textually constituted. Terrorist propaganda can therefore reorient the in-group identity, which the narcissistically-susceptible desperately cleave to, such that revenge against the enemy out-group becomes a constituent part of identity. Extremists highly invested in their identity are therefore more likely to become terrorists when persistently exposed to this propaganda, since failing to live up to the vengeful components of the reconfigured identity threaten to disintegrate the idealized self-image. For instance, a prominent theme that Islamists use to justify becoming a foreign fighting in their propaganda "is that Islamic law commands it" (Hegghammer 2010, 73). An extremist highly invested in the ideology cannot not easily ignore an ostensible command from Islamic law and simultaneously

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[15] 'Activation' may be to traditional recruitment (e.g. joining the terrorist organization), or simply to carry out terrorist attacks under the organization's name (as Omar Mateen did).

[16] Souleimanov and Aliyev (2015) study blood revenge and violent mobilization, although retribution for a slayed loved one is conceptually different from disproportionate narcissistic revenge that can arise without violent provocation.

retain an idealized self-image as a jihadist, at least not without experiencing considerable cognitive dissonance.[17]

We do not claim terrorist propaganda is the only factor that can galvanize extremists to become terrorists.[18] Other factors—such as social dynamics, mentoring, and socioeconomic and educational profiles—certainly matter as well (Sageman 2004; Vidino 2007; Lee 2011; Sageman 2017). At the same time, this theory is compatible with many of these explanations for terrorist mobilization. Sageman (2017), for instance, explains turning to political violence in social identity terms and stresses the importance of ingroup and outgroup dynamics. Narcissism accounts for the individual psychology that impels some people to adopt extremist ideologies that bifurcate the world into righteous ingroups and malevolent outgroups. Unlike most theories of terrorist mobilization, we also take into consideration the strategies that terrorist organizations use to attract susceptible extremists. Several recent studies explicate the signaling and other rationalist mechanisms terrorist organizations use in recruitment (Hegghammer 2013b). However, the psychological mechanisms on which these groups rely to attract recruits remains unexamined.

Research Design

Testing these arguments requires examining extremist personality and the propaganda strategies that ideologically similar terrorist groups use to recruit these extremists. We investigate pro-Islamic State supporters and the Islamic State's (IS) published English-language magazines. These data are appropriate for several reasons. First, they are symmetrical. Pro-IS supporters are jihadist extremists that consume IS propaganda, and they are also one important population from which IS draws recruits.

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[17] Hegghammer (2010, 73) notes that a second theme in jihadist propaganda is that the "enemy [is] too wicked for any diplomatic solution to work."

[18] Although there are important distinctions between foreign fighters and domestic terrorists (Hegghammer 2010; Hegghammer 2013), we consider them subsets of the concept 'terrorist.'

Second, this is an appropriate domain to test the arguments. IS might emphasize revenge in its propaganda for Middle Eastern consumption due to the tendency for blood revenge, retribution against a murdered loved one, to mobilize (Souleimanov and Aliyev 2015). This is not the case for its English-language propaganda, which is aimed at recruiting from a Western audience (Lister 2015, 41-43). Third, foreign fighters and homegrown Islamist extremists, which IS draws from Western jihadists, are two especially pressing terrorist threats (Hegghammer 2013a; Byman 2015; Nesser 2014). While terrorism indigenous to the conflict zones is important, mobilization into civil war likely has different causes (on psychological and emotional causes of this violence, see Costalli and Ruggeri 2015).[19] Fourth, the Islamic State is a revolutionary terrorist organization that strives to transform society (Kalyvas 2015), rather than a separatist group that seeks control over its claimed homeland. One point that requires elaboration is that narcissism is expected to affect only revolutionary terrorism. Early research emphasized the role of narcissism in violent leftist and fascist movements, both of which sought to transform society (Kohut 1972; Lasch 1979). More than separatism, revolutionary extremism lends itself to the grandiose narratives of cosmic war and the formation of an idealized self-image that attracts the narcissistically vulnerable.[20] Terrorism is a broad phenomenon and thus there is truly no 'terrorist mind' characteristic of all its perpetrators. We propose that narcissists are disproportionately attracted to revolutionary extremism, which covers the contemporary jihadist wave (Rapoport 2002). The Islamic State is perhaps most exemplary of the revolutionary nature of jihadist terrorism.

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[19] Terrorism and civil war overlap geographically (Findley and Young 2012). Our theory applies only to foreign fighters who travel to warzones to fight; future research is needed to generalize to indigenous fighters. A foreign fighter is defined as "an agent who (1) has joined, operated within the confines of an insurgency, (2) lacks citizenship of the conflict state or kinship links to its warring factions, (3) lacks affiliation to an official military organization, and (4) is unpaid" (Hegghammer 2010, 57-58).

[20] For instance, Post (1990) draws a distinction between separatists (who fight on behalf of their parents) and revolutionaries (who fight against their parents' generation). A separatist identity therefore is more likely organic, as opposed to the purely self-constructed, artificial idealized self-image of the narcissist.
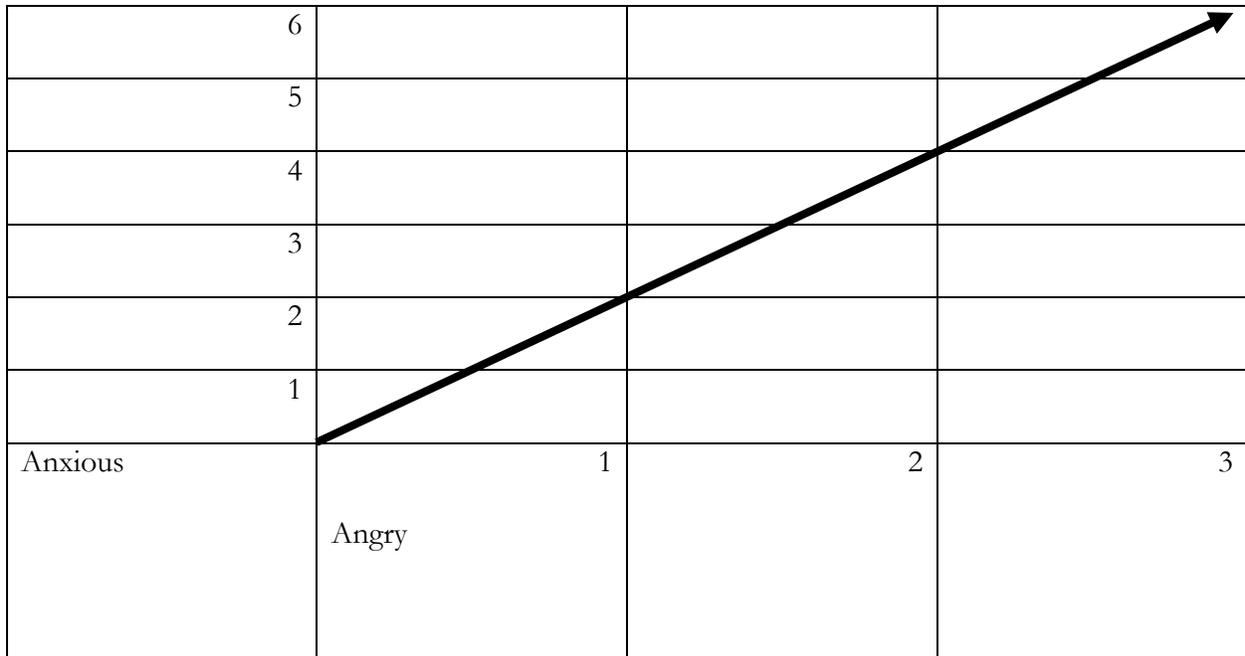
	6			
	5			
	4			
	3			
	2			
	1			
Anxious		1	2	3
	Angry			

Figure 1. *Depressed* Represented in a 2D Semantic Space (Neuman and Cohen 2014).

Methodology

Methodological limitations plague research on the psychology of terrorism, which is largely based on expert evaluation of terrorists and their writings.[21] Previous research, in other words, tends to selects on the dependent variable and lack controlled comparison. We build upon recently developed tools in computational personality analysis to better test our psychological theory (Neuman and Cohen 2014; Neuman 2016). According to vector space models of semantics, word meaning is identifiable by searching words co-located with the target word. Neuman et al. (2015) use the construct *depressed* as an example. Using a large corpus of American English, one may discover that the words *anxious* and *angry* are co-located with "depressed" and appear six and three times, respectively. *Depressed*, as shown in figure 1, can therefore be represented as a vector in two-dimensional space. We believe this vector representation of psychological constructs is an improvement upon Linguistic Inquiry and Word

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[21] This remains especially true for research on narcissism and terrorism. For recent advances, see Horgan's (2017) introduction to a special issue on terrorism research in psychology.

Count (LIWC) tools frequently used. A LIWC approach, which uses dictionaries to identify word type, might find that neurotics use more first-person singular pronouns, more negative words, and fewer positive words (Mairesse et al. 2007, 462). While LIWC is successful in measuring personality traits (Ramey et al. 2019), our vector semantics approach allows us to more directly measure personality and examine the extent to which texts convey particular aspects of complex personality types (e.g. anxious or angry).

We use this procedure and represent narcissism as a composite of various word vectors. Using this representation, we can analyze the extent to which extremists and terrorist propaganda are narcissistic through text analysis. Although the Narcissistic Personality Inventory (NPI) would appear a reasonable place to derive narcissism descriptors, this measure captures only grandiose but *not* vulnerable narcissism (Miller and Campbell 2008; Krizan and Johar 2012).[22] Since our concern is with vulnerable narcissism, the NPI is inappropriate for testing our hypotheses. We therefore rely upon Neuman's (2012) revenge theory, which offers an operationalizable alternative to Kohut's (1972; 1977) seminal work on narcissism, to represent narcissism as several vectors of its constituent parts. This framework was previously used to examine the narcissism among school shooters and has been previously validated (Neuman et al. 2015; Neuman and Cohen 2014).[23]

Table 1 presents the words vectors, which are mostly derived from Neuman et al. (2015).[24] Not only are these vectors previously validated, they are an appropriate operationalization of narcissism as conceptualized here. Narcissism indicates a fragile self, which often manifests in feelings of abandonment, helplessness, hopelessness, isolation, insecurity, and loneliness. Similarly, narcissism entails susceptibility to narcissistic rage and a strong attending desire for revenge. We can thus

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[22] It is similarly not the case that the NPI measures "subclinical" narcissism, since NPI scores correlate with NPD as assessed by DSM standards (Pincus and Lukowitsky 2010, 424).

[23] The entire process—vector generation, text cleaning, and analysis—was conducted using Python 3. Replication code will be made available online upon publication.

[24] Rage is a new contribution, given the centrality of narcissistic rage to narcissism (Kohut 1972; Krizan and Johar 2015).

represent narcissism as a ten-dimensional space with various scores attributed to its constituent parts according to the process described below. An implication of our theory is that extremists should score higher across various dimensions of narcissism, since extremist ideologies are theorized to disproportionately attract narcissistic individuals, whereas terrorist propaganda to attract these extremists should overwhelmingly focus on revenge. Concentration on themes and emotions such as humiliation are instead expected to undermine recruitment efforts.

We use a new computational tool, Empath, to generate vectors representing these narcissism components (Fast, Chen, and Bernstein 2016). Empath uses deep learning to validate new lexical categories. Each term preceding the colon in table 1 represents a lexical category, and the terms following the colon are used to generate word vectors that constitute the category. Empath's procedure is as follows: it mines over six-hundred thousand fiction stories, uses neural networks to learn associations between words and their contexts, and measures the cosine similarity between words with similar contexts to words representing the lexical category (e.g. the words following the colon), and generates a final category word list with high cosine similarity to the input vector.[25] To reiterate, the word vectors listed in table 1 are not the words used to represent narcissism; they are used to generate the word vectors. However, these word vectors, which were carefully examined, have high face validity: the word vector representing "revengeful," for instance, contains the words "revenge," "avenge," "wrath," "treachery," "injustice," "cowardly," "selfishness," "deception," "brutality," and "betrayal."[26]

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[25] Fast, Chen, and Bernstein (2016) describe the method in greater detail.

[26] Word vectors can contain no more than three-hundred words, although each vector contains (usually considerably) fewer. Empath returns fewer words when the procedure finds few words with sufficiently high contextual similarity to the inputs. Narcissism's vector representation thus contains different lengths for each constituent word vector, similar to the example for depression in figure 1.

1. Hopeless: hopeless, desperate, despair
2. Lonely: lonely, lonesome, alone, solitary
3. Helpless: helpless, defenseless, powerless
 4. Pain: pain, misery, agony
5. Revengeful: revenge, vengeful, vengeance, vindictive
6. Chaotic: chaos, chaotic, disorder, disordered
7. Unsafe: unsafe, insecure, dangerous
8. Abandoned: abandon, abandoned, desert, deserted
9. Humiliated: humiliate, humiliated, shame, shamed
10. Rage: rage, enraged, fury, furious

Table 1. Narcissism Word Vectors

The Data

Our two hypotheses require two text-based datasets: one with extremist statements and one terrorist

recruitment publication. For extremist discourse, we use Zaman's (2016) dataset of over 17,000 tweets

from Islamic State supporters on Twitter.[27] These data are appropriate for two primary reasons. First,

extremist discourse is rarely available in sufficient quantities to allow large-scale statistical analysis,

which explains why most extremist and terrorist personality analysis relies on small numbers of

interviews and written documents. Using a substantial Twitter-based dataset provides us with a much

larger sample than previously used in this research area. Second, this dataset is comprised mostly of

English-language Tweets, which distinguishes it from other pro-IS tweet datasets that focus primarily

on Middle Eastern extremists (e.g. Alfifi et al. 2018).[28] As mentioned previously, many experts assert

that the primary IS threats are from foreign fighters and Western jihadists who are primarily attracted

from Western European countries and are likely to use English-language discourse.

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[27] Zaman (2016) used keywords, iconography (e.g. IS flags), and network features (e.g. reciprocal following) to identify
pro-IS accounts and their tweets. A more detailed account of the data is available here:
http://blog.kaggle.com/2016/06/03/dataset-spotlight-how-isis-uses-twitter/.

[28] Location data is missing for many observations, although a majority of identified tweets are from individuals in the
European Union (especially Germany and Britain) and the United States. Several non-Western locations, such as the
Maldives, are also represented. Some tweets in the data contain Arabic. This should bias *against* our hypothesis, since
Arabic words will be coded 0 on all dimensions related to narcissism.

For terrorist group propaganda, we use the Islamic State's two English-language recruitment magazines: *Dabiq* and *Rumiyah*.[29] In total, this represents twenty-eight publications each with approximately forty pages. These publications, presented to a Western audience, are the primary means through which IS seeks Western recruits and agitates for violence. Accordingly, content analysis reveals that they are devised to outbid competing terrorist groups for recruits (Novenario 2016). These data thus satisfy the need for symmetry between datasets: IS's magazines represent the primary recruitment propaganda it creates for Western jihadists, who in turn are more likely to consume this media than non-extremists.

Data Processing

Each textual unit, whether tweet or magazine, is reduced to a word vector and scored according to the Empath-generated narcissism vectors. All are tokenized to strip punctuation, disregard capitalization, and to reduce the document to one-grams (single words rather than words which when combined have different meanings; see Grimmer and Stewart 2013).[30] Stopwords—common words, such as prepositions, that convey limited information—are removed from each text. However, since the magazines are lengthy compared with tweets, the Natural Language Toolkit (NLTK) parts-of-speech tagger is used to select the one-hundred most common nouns, verbs, and adjectives from each publication. Each magazine is thus reduced to a vector comprising three-hundred words.[31] Tweets are definitionally short, often a single statement or sentence, and thus do not require pruning beyond

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[29] IS changed their publication name to *Rumiyah*, presumably after they lost territorial control of *Dabiq's* namesake. Mann-Whitney U tests indicate that these two magazines do not statistically differ in narcissistic content and thus it is appropriate to aggregate them into a single measure.

[30] Words are not stemmed, since the Empath generated vectors contain words with the same stem (e.g. humiliated and humiliating). This occurs since some words with same stem, such as shamed and shameless, may not actually fit into the same lexical category. Replicating the analysis after stemming words does not appreciably alter the results.

[31] Neuman et al. (2015), which developed this approach, reduce school-shooter texts to thirty-word vectors. Since many of these manifestos (such as Seung-Hui Cho's) are approximately four pages in length, and the IS publications are about forty, increasing the word vectors by one order of magnitude seems appropriate.

stopword removal. Scores are produced for each vector according to the number of words from each Empath-generated category. For instance, the ninth issue of *Dabiq* is represented by the vector {Hopeless: 2; Lonely: 7; Helpless: 0; Pain: 6; Revengeful: 14; Chaotic: 5; Unsafe: 3 ; Abandoned: 8; Humiliated: 2; Rage: 3}.

Comparison Texts

It is insufficient to merely demonstrate high scores across different narcissism dimensions: if the theory is correct, then these components should predict extremist and terrorist texts from a large corpus of text-based observations. First, we use NLTK's Twitter corpus. These data contain 20,000 tweets that were selected for sentiment analysis. Using these data provide a harder test of the hypotheses, since they are selected to use evocative language, convey sentiment, and are generally longer than the pro-IS tweets.[32] Appendix §3 replicates the analysis using a larger dataset with over 1 million tweets and a corpus of political tweets.

Second, to compare with Islamic State magazines, a recently standardized Project Gutenberg corpus containing the text of over 55,000 books is used (Gerlach and Font-Clos 2018). This corpus covers an impressive and wide-ranging collection—fiction and nonfiction covering diverse categories such as war memoirs, historical studies, Shakespeare plays, psychology books, detective novels, and many others.[33] In addition to their large-N, these texts are selected because they are likely to be more emotionally-charged than prosaic political texts. We reduce these textual data into vectors and compute their scores on the narcissism dimension exactly as the primary data were processed. In other

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[32] Tweet vectors are not reduced in size as the magazines are, and thus longer tweets contain more opportunities to reach higher scores on the narcissism vectors.

[33] Some Project Gutenberg books are non-English. To filter these, which are not designated in readily identifiable ways, books that score zero across all narcissism dimensions are dropped from the analysis since this is likely unlikely for an English-language text. It is conceivable that some English-language books are therefore dropped, although this biases against confirming the hypothesis that Islamist texts score higher on some dimensions. Unfortunately, it is not possible to subset these data by selecting only certain book categories for further analysis.

words, they are reduced to text vectors of length three-hundred (one-hundred nouns, verbs, and adjectives) and scored on the number of words from the various narcissism vectors. Appendix §5 compares the ISIS magazines to non-Islamist terrorist writings and to non-violence Islamic magazines.

Control Variables

It is possible that extremist tweets and IS magazines score higher across various narcissism vectors because they deal with violent themes and therefore incidentally contain words that overlap with categories such as rage and revenge. Thankfully, Empath comes with preexisting lexical categories for *violence* and *terrorism*. We can thus control for the number of words each textual unit has that are related to violence and terrorism, thus alleviating concerns that higher scores on the narcissism vectors are an artifact of their infatuation with these topics.

Statistical Results

Figure 2 presents the results from the first statistical analysis.[34] Our unit of observation is an individual tweet, and the dependent variable is whether the tweet was authored by an Islamic State supporter. Since this is a binary indicator, logistic regression is an appropriate estimation strategy.[35] We include all variables in a single model; results are identical when estimating separate models for each narcissism vector along with the two controls.[36] Six of the ten narcissism vectors—revenge, abandoned, chaos, helpless, pain, and rage—are positive and statistically significant. Although confidence intervals are rendered at the 95 percent level, each of the coefficient estimates is significant at the one percent error level or higher. Pro-IS extremists therefore evince a broad range of narcissistic sentiments. Importantly, these include both aspects of vulnerability and fragile self-esteem, such as

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[34] Full regression tables are located in appendix §1.
[35] All models are estimated with Huber-White robust standard errors.
[36] Appendix §2 includes correlation matrices and other descriptive statistics.
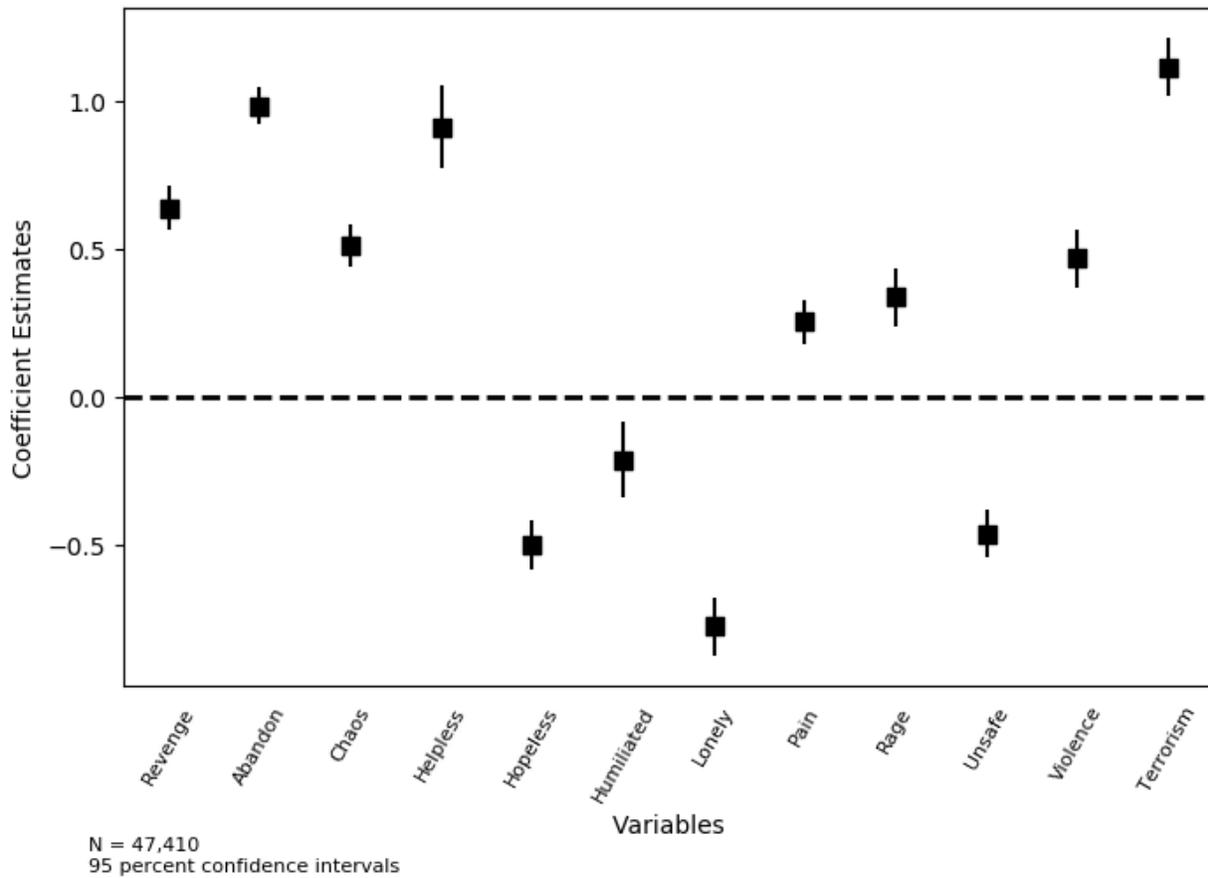
Figure 2. Islamic State Supporters on Twitter and Narcissism

abandonment and helplessness, and narcissistic rage, such as rage and a preoccupation with revenge. Appendix §3 demonstrates that these relationships hold even using a much larger corpus containing over 1 million non-extremist tweets.

Predicted Probabilities

Since it is difficult to interpret the results from nonlinear models, figure 3 presents the substantive effects of the positive narcissism variables. These simulations show how changing the value of the number of narcissistic words from each category influences the probability that a tweet was written

by a pro-IS extremist while holding other variables in the model constant at their mean values.[37] It is clear these six narcissism vectors contribute to predicting extremist tweets, and thus there is evidence that these personality traits are both statistically and substantively meaningful. However, these predicted probabilities do not demonstrate how well the model as a whole (i.e., the computational personality analysis) performs in selecting extremists. Appendix §3 therefore presents several confusion matrices, which better conveys the suitability of the model for predicting extremist texts.

Islamic State Propaganda

Does IS leverage narcissistic themes to attract recruits? Figure 4 depicts the results from another logistic regression model, where the unit of the analysis is a text and the dependent variable is an indicator for whether the text is an Islamic State magazine. Of the ten narcissism vectors, only two—revenge and helplessness—are positive and statistically significant at the five percent error level, and only the former at the one percent error level. We can therefore conclude, in line with the theory, that IS predominately relies upon themes of revenge in its recruitment propaganda. The magazines exhibit scant emphasis on the more vulnerable themes, such as abandonment and chaos,[38] which could counterproductively induce narcissistically-vulnerable extremist into self-protective isolation. Some of these dimensions like abandonment feature prominently in pro-IS tweets, indicating that IS does not simply reflect back the same narcissistic traits exhibited by its extremist followers. The one vulnerable dimension for which there is support is helplessness, although a detailed reading of the magazines

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[37] We show the range from zero to five words to keep the subgraphs on a common scale, although the range extends beyond five for some variables (minimum = 4; maximum = 7).

[38] As Neuman (2012, 6) writes, "chaos . . . threatens to annihilate the person." Social withdrawal is a more reasonable response to a disordered world that threats to disintegrate one's fragile identity.
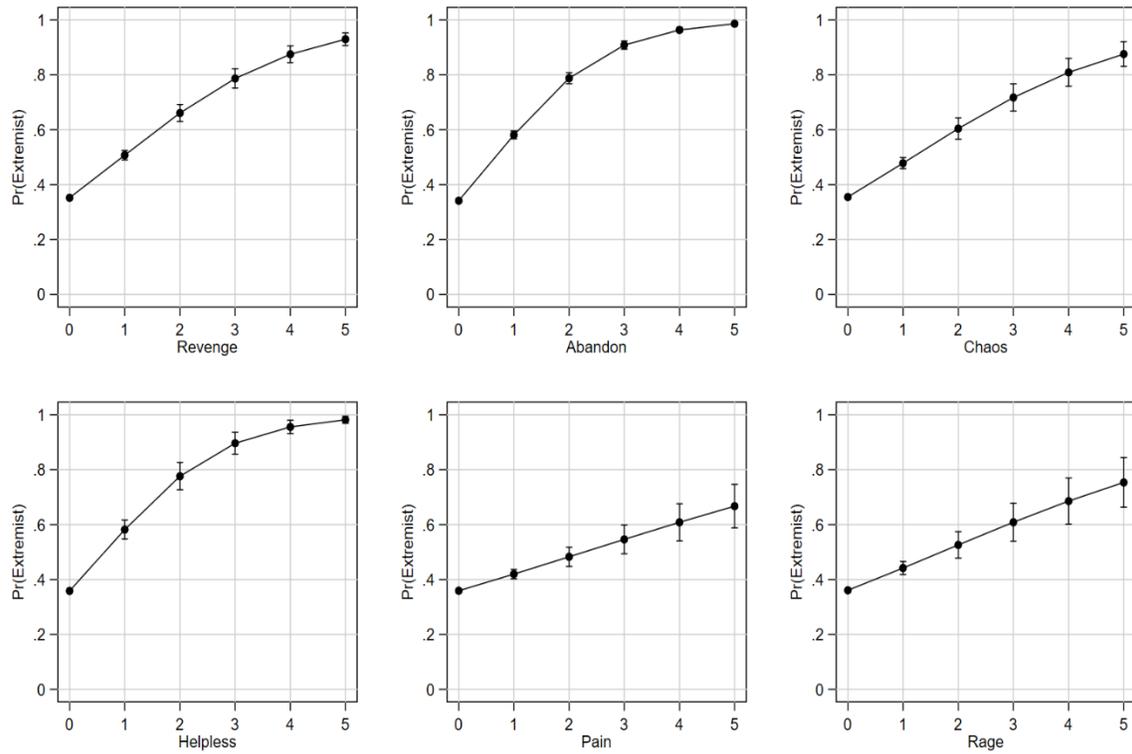
95 percent confidence intervals

Figure 3. Predicted Probabilities for Pro-Islamic State Tweets

reveals that helpless descriptors are largely in reference to 'crusader' crimes against Muslims. Appendix §4 replicates this analysis using Firth's (1993) penalized maximum likelihood logistic regression to account for the limited number of observations coded on positively on the dependent variable.[39]

Figure 5 better conveys the extent to which IS publications differ from other texts with regards to vengeful content. Since there is a small number of IS texts, we generate 3500 hundred bootstrapped

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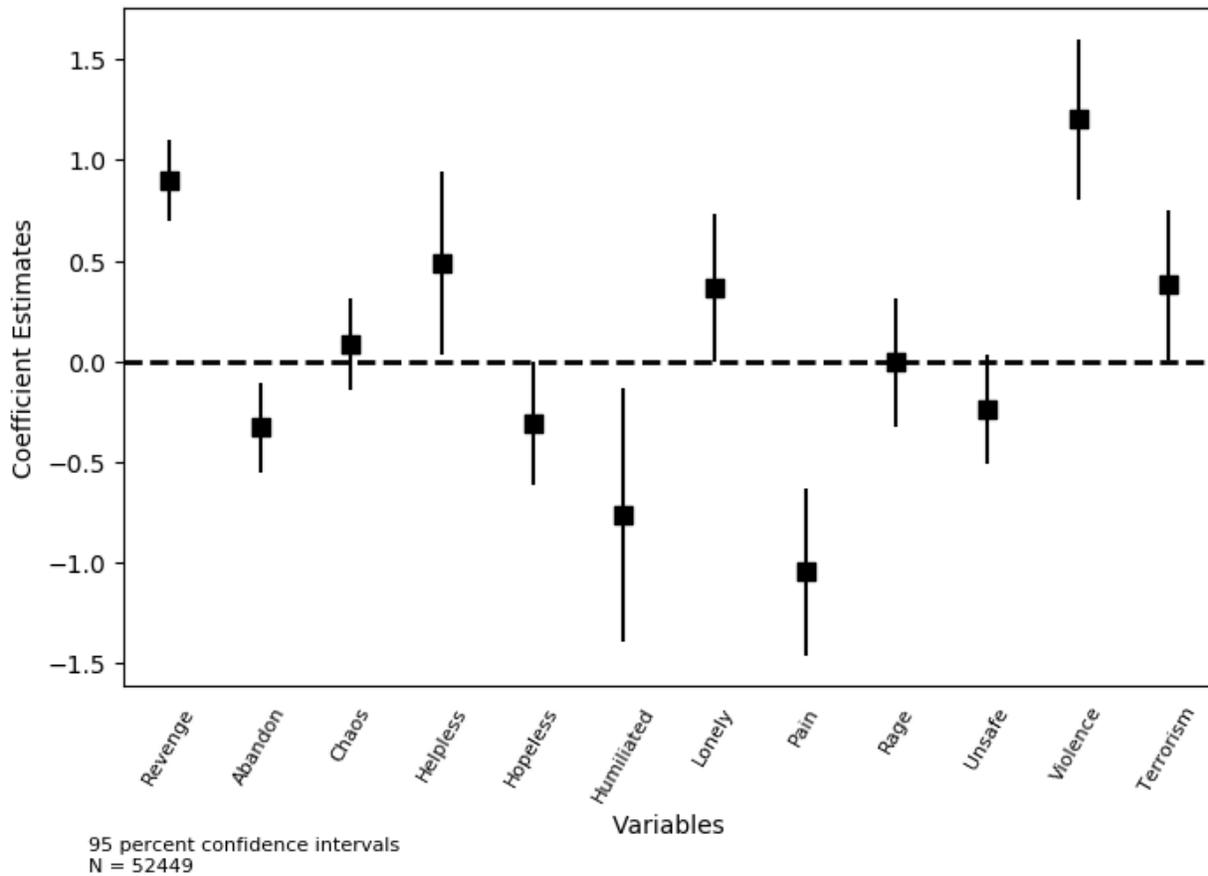[39] This section also contains predicted probabilities.

Figure 4. Results from Islamic State Magazines Analysis

samples of fifteen IS magazines to compare with the Project Gutenberg corpus.[40] The distribution of

revenge-related words are plotted for IS magazines and other books in blue and red, respectively. Most

books are concentrated around zero revengeful words and the distribution is highly right-skewed,

whereas IS propaganda is an extreme outlier in terms of revengefulness. To examine the difference

statistically, we use the nonparametric Mann-Whitney U for determining whether the two samples

were drawn from a population with the same distribution. A statistically significant result indicates

that the two sample distributions are different (i.e., there is a statistically significant difference in their
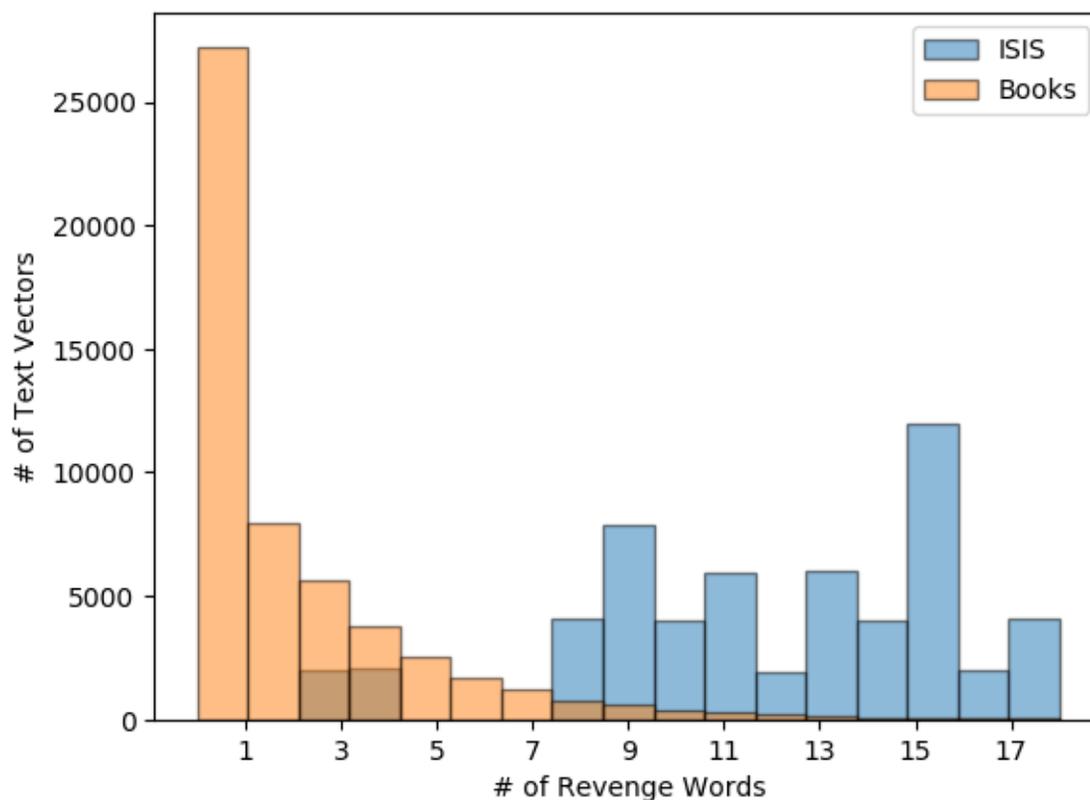
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[40] This makes the two samples comparable in size.

Figure 5. Distribution of Revengeful Words in Islamic State Texts and Project Gutenberg Books

revengefulness). The result (U = 40,499, p-value < 0.001) indicates that we can safely reject the null hypothesis that the two sample distributions are equal.

Concluding Thoughts

Evidence presented in this article indicates that extremists evince multiple narcissistic traits, and that terrorist organizations recruiting from these populations concentrate on one narcissistic theme—revenge—to mobilize extremists. Several important theoretical and policy implications follow from these findings. First, they shed light on the puzzling phenomena of foreign fighters. Jihadist foreign fighters are unpaid, lack ties to the conflict zone, and number between ten and thirty thousand in armed conflicts since 1980 (Hegghammer 2010, 53, 57-58). It is clear that ideological extremism

factors into the rise of foreign fighters (Hegghammer 2010), although there is little explanation for who becomes attracted to these ideologies and the psychological mechanisms that translates this attraction into participation (but for examples of the long literature on the psychological pathways to radicalization, see Taylor and Horgan 2006; McCauley and Moskalenko 2008; McCauley and Moskalenko 2017). It is currently impossible to test our argument directly on foreign fighters. However, this analysis of extremist personality and terrorist recruitment strategies provides a framework for understanding who is vulnerable to recruitment.[41]

Second, they provide an explanation for the well-known fact that second-generation Muslim immigrants are more likely than their first-generation counterparts to become extremists or terrorists (Leiken 2012; Vidino 2007).[42] Sometimes this trend is attributed to a vaguely defined "identity crisis" and "alienated youth" (Vidino 2007, 581), although a rigorous psychological theorization linking these concepts to extremism and recruitment has been lacking. The theory outlined here limns a more nuanced picture of the radicalization process: some second-generation Muslim immigrants maintain weak ties to both their home culture and their parents' culture, and can develop weak identities and fragile selves as a consequence; the narcissistic response is to defensively construct an idealized self-image; in turn, this makes them disproportionately attracted to extremists ideologies, which offer a readymade idealized self-image and an in-group that reaffirms the identity (e.g. a protection against narcissistic injury); lastly, terrorist organizations can strategically rely upon narcissistic tendencies to seek revenge to direct extremists toward violence. This clearer understanding of the psychological pathways and mechanisms leading to extremism can better aid counter-extremist and de-radicalization efforts.

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[41] At least without further analysis, this extends only to Western recruits.
[42] It goes without saying that even among this population the proportion of extremists is very small.

Third, the theory might provide insight into the gruesome and extravagant violence for which organizations like the Islamic State are known. Central to narcissistic rage is the "seemingly disproportionate severity of the reaction" it tends to evoke; for the vulnerable narcissist, slights that seem trivial to the outside observer are experienced as threatening to disintegrate the self and thus met with incredible hostility (Kohut 1972, 386-387). Similarly, if revenge against enemy outgroups becomes a constituent part of the idealized self-image narcissistic terrorists create, then we should expect them to resort to severe and disproportionate violence. Although this "extra-lethal violence" is examined elsewhere (Fujii 2009), it is not yet well-integrated with a theory of the psychology of political violence. Fujii's (2009) explanation, for instance, focuses on the performative aspects of extra-lethal violence, which conforms with the long-held observation that narcissists frequently behave as is performing in front of an audience (Hesse 2009, 209). Exploring this relationship should be a promising avenue for future research.

In short, while the narcissism of jihadist extremists is evident, there are many remaining questions. We lack, for instance, sufficient textual data from IS terrorists themselves for further examination, although evidence from the extremist pool from which they are generated is indicative. Another area that warrants exploration is the link between jihadism and collective narcissism, which is vulnerable narcissism attached to an ingroup and a rapidly expanding research area in psychology (Golec de Zavala et al. 2009). Researchers in this area note that Islamist terrorists hold an ideology consistent with collective narcissism (Golec de Zavala, Dyduch-Hazar, and Lantos 2019 38). Our theory readily extends to collective narcissism, since the extremist's idealized self-image is bound with an equally idealized ingroup in which he invests his identity. It is thus likely that extremists score high on both individual and collective narcissism. While our methodology can only accommodate the former, we believe that this article establishes an important foundation for further investigation of these relationships.

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