Comparing crime types

A linguistic analysis of communiqués associated with the animal and earth liberation movement

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ABSTRACT

The content and style of language reveal significant insight into psychological, cognitive, and emotional processes. A growing number of studies have also been devoted to linking language to psychological and social processes underlying violent extremism. Building on this body of literature, the current study examines the type of language used in communiqués associated with the earth and animal liberation movement between 2013 and 2017. We pay specific attention to differences in communiqués associated with different criminal events including arson, animal liberation, sabotage, and vandalism. We also compare the communiqué data to a collection of lone-actor terrorist's writings. The results suggest that communiqués linked to arson and animal liberation were highest on the indicators of affect and cognitive complexity compared to the other crime types. As a whole, the earth and animal liberation movement communiqués were similar to the lone-actor texts in negative emotions. Finding from this study support the influence of negative emotions, and anger in particular, in motivating and justifying violent extremism.

KEYWORDS

Earth and animal liberation movement; communiqués; LIWC; arson; text analysis

The content and style of language reveal significant insight into psychological, cognitive, and emotional processes. Researchers since Freud have linked the use of words to subtle cues regarding personality, deception, power, depression, and psychopathy (Chung & Pennebaker, 2007; Hancock, Woodworth, & Porter, 2013; Junghaenel, Smyth, & Santner, 2008; Le, Woodworth, Gillman, Hutton, & Hare, 2017; Pennebaker, Mehl, & Niederhoffer, 2003). More recently, several studies have been devoted to linking language to psychological and social processes underlying deviant behaviours. For instance, scholars have examined the features of language in relation to the grooming strategies of online sex offenders (Black, Wollis, Woodworth, & Hancock, 2015) and narratives of homicide perpetrators (Hancock et al., 2013). Previous studies have also examined the relationship between patterns of language and violent extremism (VE).[1] For example, VE researchers have examined the linguistic mechanisms underlying extremist propaganda (Vergani & Bliuc, 2017), lone-actor terrorism (Baele, 2017), and the language of extremist groups in the months preceding a crime (Pennebaker, 2011).

Building on this body of literature, the current study examines the type of language used in communiqués written by self-proclaimed members of the animal and earth liberation movement (AELM). AELM refers to individuals whose ideological focus and criminal activities stem from their belief in protecting the environment and animal liberation, and biocentrism or biodiversity equality. They also believe that the earth and animals are in imminent danger, placing most of the responsibility on the government and corporations (Chermak & Gruenewald, 2015). We pay specific attention to differences in communiqués associated with different criminal events including

[1] Violent extremism refers to violence committed by an individual and/or group in support of a specific political or religious ideology (Borum, 2011).

arson, animal liberation, sabotage, and vandalism. Thus, one novel contribution of this study is the focus on language differences across events as opposed to individuals. We also compare the communiqué data to a collection of lone-actor terrorist writings (see Baele, 2017) to gain an understanding of how AELM texts compare to a general sample of extremist writing. Data were collected from 454 communiqués posted on directaction.info between 2013 and 2017. Linguistic Inquiry and Word Count (LIWC) was used to identify psychologically relevant patterns of language use – with a focus on affect and emotions, cognitive function, and pronoun usage (Pennebaker et al., 2003). The results suggest that communiqués associated with the AELM were relatively high on indicators of affect and emotions as well as cognitive functioning relative to the other crime types. Furthermore, the AELM texts were relatively similar on indicators of affect and emotions compared to the lone-actor writing sample. There were, however, several differences in cognitive functioning and pronoun usage between the AELM communiqués and lone-actor writing sample. Overall, this study contributes to the understanding of the AELM and violent extremism, more broadly, by defining the style and content of language surrounding criminal events.

The psychology of language and violence extremism

In recent years, several researchers have applied quantitative text analysis to the domain of VE (Baele, 2017; Cohen, Kruglanski, Gelfand, Webber, & Gunaratna, 2018; Conway III & Conway, 2011; Fernández, Páez, & Pennebaker, 2009; Hancock et al., 2010; Pennebaker, 2011; Prentice, Taylor, Rayson, Hoskins, & O'Loughlin, 2011; Qin, Zhou, Reid, Lai, & Chen, 2007). Of those studies, LIWC is arguably the most used and robust quantitative text analysis toolkits to examine VE. LIWC is a word count strategy based on the assumption that "the words people use convey psychological information over and above their literal meaning and independent of their semantic context (Pennebaker et al., 2003, p. 550)." Put another way, LIWC is based on the notion that words reflect how we feel and how we organize our worlds (Tausczik & Pennebaker, 2010). For example, standard linguistic dimensions, such as pronouns, have been linked to attentional allocation (Rude, Gortner, & Pennebaker, 2004) or group identity (Simmons, Gordon, & Chambless, 2005). Broader psychological concepts, such as emotion and causal words, have also been connected to the degree of immersion in a traumatic event (Boals & Klein, 2005; Holmes et al., 2007). Still, other authors have concentrated on the detection of deception in written samples, finding LIWC to be more accurate than human judges (Newman, Pennebaker, Berry, & Richards, 2003; Ott, Choi, Cardie, & Hancock, 2011).

In research on VE, LIWC has been used to examine the language of extremist groups, lone offenders, and the language surrounding events. Pennebaker (2011) utilized LIWC to examine differences between texted produced by VE groups (i.e., al Qa'ida Central) compared to nonviolent control groups (i.e., Hizb ut-Tahrir). The author found that

documents associated with VE groups were greater in negative emotions than those of nonviolent groups. Likewise, VE groups were lower in complex thinking (versus simple) and categorical thinking (versus dynamic) relative to their nonviolent counterparts. Using a similar design, Conway III and Conway (2011) found that VE groups were low in cognitive complexity, but high in social processes compared to the text published by nonviolent groups. Also, VE groups had lower achievement-based rhetoric relative to their nonviolent counterparts. Last, Baele (2017) examined differences between a compilation of writings produced by lone-actor terrorists (i.e., Theodore Kaczynski, Timothy McVeigh) to those from a "peacemen" sample (i.e., Martin Luther King Jr., Mahatma Gandhi). Baele (2017) found that lone-actor terrorist's writings had significantly greater negative emotionality compared to the peacemen sample. However, this effect was largely driven by the level of anger expressed by lone-actor terrorists – not any of the other discrete emotions accounted for by LIWC (i.e., anxiety, resentment, or sadness). Baele's (2017) findings also indicated that there were no significant differences in cognitive processes nor pronouns use between text produced by lone-actor terrorists and those penned by nonviolent actors. However, lone-actor terrorists did score higher on the cognitive processes indicator relative to a control writing sample.[2]

In a recent study, Loadenthal (2016) examined linguistic patterns in communiqués associated with the insurrectionary anarchist movement. More specifically, Loadenthal (2016) used a two-pronged methodological approach to study why insurrectionary anarchists employ certain words. First, a quantitative corpus linguistics package (i.e., AntConc) was utilized to identify patterns in Mexican communiqués. Second, a form of qualitative text sorting was employed to describe language patterns in U.S. communiqués. Findings suggest that the most common pronouns in the Mexican communiqués were "we," "our," and "they," while some of the most common words included "against," "system," "anarchist," "state," and "crime." These findings support the idea that the use of first-and third-person pronouns and oppositional terms (e.g., "against") are universal in insurrectionary discourse and not influenced by country. However, further analysis showed that the word "against" was often paired with terms such as "civilization" or "technology" in the Mexican communiqués suggesting a propensity to crime primitivist, technology-focused targets among Mexican cells.

Next, Loadenthal (2016) used qualitative text sorting to examine analytical categories in the U.S. communiqués, such as group name, tactic, and target. The results suggest that of the 133 communiqués, 73 had no group and 27 were claimed through self-identifying as "anarchists." In 11 communiqués, some variation of "Anonymous" or "Antisec" network was used to claim a cyber-crime. In terms of tactics, 57 communiqués described crimes damaging the windows of their target. The term "smash(ed)" was commonly used to describe crimes on windows and often paired with a description of the weapon used, such as "smashed with rocks" or "smashed with bricks." Last, the

[2] The control writing sample refers to a compilation of thousands of texts built by LIWC developers to serve as a baseline.

most common targets were associated with corporations, banking, government, and law enforcement. Loadenthal (2016) suggests that these targets fit the insurrectionaries' opposition to capital (i.e., corporations, banks) and the state (i.e., government, law enforcement).

In the current study, we examine the style and content of language in communiqués associated with the AELM. Our study extends Loadenthal's (2016) findings in three ways. First, we employed the quantitative text analysis package LWIC to understand linguistic patterns in the communiqué data. By using a different analytical tool, we can assess the applicability of LWIC to communiqué data. Second, our data were collected from directaction.info, a website associated with the animal liberation movement, while Loadenthal's (2016) data come from insurrectionary anarchist-affiliated websites. While there are commonalities between the two movements, such as a lack formal leadership and preference for direct action, there are also key differences (Borum & Tilby, 2005; Carson, LaFree, & Dugan, 2012; Loadenthal, 2017a). For example, insurrectionary anarchist networks such as the Informal Anarchist Federation and Conspiracy Cells of Fire are more likely to permit or endorse interpersonal violence, whereas the AELM view crimes on human targets as counterproductive and favour economic destruction (Loadenthal, 2017a). Finally, Loadenthal's (2016) work showed that tactical characteristics could be extracted and used to categorize the communiqué data. Building on this, we organized the communiqués in this study around criminal events (e.g., arson, sabotage, vandalism). This approach permits an analysis of the external and internal aspects of events as opposed to individuals (Fivush, Edwards, & Mennuti-Washburn, 2003; Frattaroli, 2006).

Overview of the animal and earth liberation movement

The AELM is based on two primary ideological frameworks. First, the deep ecology framework, pioneered by Arne Naess (1973), promotes strong support for protecting the environment and the belief that everything in nature is of equal value. Second, the animal liberation framework put forth by Peter Singer (1975) and expanded by Tom Regan (1983), holds that animals have inherent value and deserve moral equality on par with humans (Carson et al., 2012; Liddick, 2006; Loadenthal, 2017b). While the majority of people who view themselves as part of the AELM do not view criminal acts as reasonable, there is a small percentage in the movement who do. The most prominent groups responsible for AELM crimes include the Animal Liberation Front (ALF) and Earth Liberation Front (ELF) (Ackerman, 2003; Carson et al., 2012; Leader & Probst, 2003; Liddick, 2006). Established in 1976, the ALF advocates for the equality animals and encourages direct action through rescuing animals and/or damaging the property of individuals and companies who exploit animals. Founded in 1992, the ELF

encourages direct action against property perceived to be threatening the environment (Carson et al., 2012). Both groups lack a hierarchical structure and operate through autonomous individuals or cells to avoid detection or infiltration.

Research has shown that the majority of crime perpetrated by the self-proclaimed members of the AELM aims at causing property destruction or economic loss. Common tactics include arson, vandalism, economic sabotage (e.g., "monkey-wrenching", tree spiking), and theft (e.g., removing animals from laboratories), while common targets include private homes, food processing plants, automobile dealerships, universities, and fur/leather companies (Carson et al., 2012; Chermak, Freilich, Duran, & Parkin, 2013; Loadenthal, 2014, 2017b).[3] In relation to this study, the most important feature of the AELM is the use of communiqués. Communiqués refer to written texts penned by anonymous, clandestine cells and/or individuals employing illegal direct action for sociopolitical purposes (Brown, 2017; Liddick, 2006; Loadenthal, 2016, 2017a). Since the AELM lacks formal leadership, communiqués serve as a "leadership substitute" (see Mishal & Aharoni, 1994) and replace responsibilities normally reserved for leaders such as reducing the uncertainty of how to execute crimes, providing feedback to members, and creating a somewhat unified strategy for the movement. Communiqués are written after a criminal event and typically include two basic types of information: (1) pragmatic information (e.g., the target of the crime, the type of weapons used) and (2) ideological information (e.g., why the crime was committed). Prior studies have used communiqués associated with the AELM to classify crime types (Loadenthal, 2017b), examine the justifications for crimes (Liddick, 2013), and explore their functional role in the larger movement (Brown, 2017).

Methodology

Data collection and corpus

Data for this study come from "diary of actions" page on directaction.info, an ALF-affiliated website, posted between January 2013 and April 2017. The data were collected using a custom automated webpage collection program to harvest webpages linked to the seed URL (Chen, Chung, Xu, Wang, Qin, & Chau, 2004; see also Derrick, Sporer, Church, & Ligon, 2016). This yielded a sample of 773 text documents.[4] After collection, the text data were stored in a standard Excel file in which each document included a unique identifier, the title (as seen on the website), the date posted, and the country of origin. To classify crime types, each document was coded by three raters (all

[3] Monkey-wrenching refers to "such activities as spraypainting slogans on buildings and vehicles, applying super glue to locks, breaking windows, destroying equipment and records, and other forms of property destruction" (Leader & Probst, 2003, p. 42).

[4] We use the term "documents" here because not every post on the diary of actions page is a communiqué.

three were graduate students working in an interdisciplinary lab) using Loadenthal's (2017c) coding schema. This coding schema included 36 different crime types found in a large sample of AELM communiqués. To ensure a shared mental model, raters first individually coded a random sample of 20 communiqués and then met to discuss their ratings. A Cohen's Kappa inter-rater agreement test was also run to assess the degree to which raters were consistent in their classification of crime type for each communiqué. An average inter-rater agreement of .67 indicates that the raters were adequately consistent in their coding (Shrout & Fleiss, 1979).

To reach our final sample, the documents were sorted based on two criteria. First, of the 773 documents collected, 204 (26%) were removed because the event was described by someone other than the actual offender. For example, "The owner of the Animal House pet store in Okotoks, Alberta said it will close following vandalism during the night of January 19. The store has been the target of protests, and there have been numerous reports of the store selling sick puppies." We were only interested in communiqués which include first-hand accounts of the criminal act. The remaining 559 communiqués were coded for crime type.[5] Of the 559 communiqués, 454 (81%) were related to one of the following crime types: arson, animal liberation, sabotage, vandalism (multiple), and vandalism (single). Vandalism (multiple) refers to incidents in which the offender used more than one of the following: graffiti, breaking or damaging windows, slashing tires, or glueing locks. Vandalism (single) refers to incidents in which the offender used only one of the types of vandalism listed above. Since it was necessary to have ample text data for our analysis, we only examined communiqués associated with these five crime types.

In summary, the final sample for this study included *454 communiqués linked to one of these five crime types posted on directaction.info between January 2013 and April 2017.*[6] Of the 454 communiqués collected, Table 1 shows that animal liberations (39%) and single acts of vandalism (24%) were described in the majority of communiqués followed by sabotage (15%), combined acts of vandalism (13%), and arson (9%), respec-

[5] In some cases, a communiqué included more than one of the five crime types. For instance, if an offender set fire to a slaughterhouse after removing each of the animals inside, the incident would be coded as both an arson and animal liberation event. While the larger database contains multiple crime type entries, it was necessary to classify. Each communiqué under one crime type for this study. Communiqués were categorized under the most severe crime type when more than one crime type was described. The most severe crime was arson followed by animal liberation, sabotage, vandalism (multiple), and vandalism (single). Arson and animal liberation (i.e., theft) are considered the most severe since they are felony crimes and, if caught, offenders face the heaviest punishment of the five crime types. Sabotage is rated third most severe since it encompasses a broad range of property destruction, some of which are felonious, and others are misdemeanours depending on the target. Finally, vandalism is considered the least severe since most acts of vandalism (e.g., spray painting, tire slash) are misdemeanours.

[6] The collection of animal liberation communiqués included 26,760 words, the arson communiqués had 10,388 words, the sabotage communiqués had 8,035 words, the vandalism (multiple) communiqués had 7,137 words, and the vandalism (single) communiqués had 11,525 words.

tively. It is important to point out that the tactical trends reported here are comparable with previous research on the AELM. For instance, Loadenthal (2017b) examined the tactics of the AELM using communiqués collected from movement-sympathetic sources, such as directaction. info and the North American Animal Liberation Press Office. The author found that vandalism followed by sabotage, animal liberation, and arson was the most frequent crime types associated with the AELM, both globally and nation-specific. Furthermore, three of the five most active counties identified by Loadenthal (2017b) for AELM crimes (i.e., the United Kingdom, United States, and Italy) were also present in our findings (see Table 1). Thus, we believe our data is a reliable subset of the larger corpus of AELM communiqués.

Table 1. Descriptive Statistics for AELM Communiqués ($n = 454$).

Variable	f	%
Year		
2013	143	32%
2014	131	29%
2015	70	15%
2016	83	18%
2017	27	6%
Country		
United Kingdom	59	13%
United States	56	12%
Germany	39	9%
Italy	36	8%
France	29	6%
Attack type		
Arson	42	9%
Animal liberation	178	39%
Sabotage	66	15%
Vandalism multiple	61	13%
Vandalism single	107	24%
Group affiliation		
Animal liberation front	207	46%
Earth liberation front	23	5%
Unknown	141	31%

Methodological considerations

Before moving forward, two important methodological considerations should be discussed. First, it is difficult to assess the authenticity of communiqués since determining authorship is nearly impossible. However, this problem of reliability is not unique to

communiqués, and there is little reason to doubt the authenticity of the present data (see Loadenthal, 2017a for review). Second, critics might argue that the emotions and cognition experienced during a criminal event cannot be captured in communiqués since they are written after the crime was committed. However, there is a large basis of literature on the stability of word usage as a psychometric predictor across time and space (Mehl & Pennebaker, 2003; Mehl, Pennebaker, Crow, Dabbs, & Price, 2001; Pennebaker & King, 1999; Pennebaker et al., 2003).

Linguistic inquiry and word count (LWIC)

We used the quantitative text analysis package LIWC to assess the primary structure of the content and meaning of the corpus (Pennebaker, Booth, & Francis, 2007). LIWC's central premise is that the words people use reveal their psychological or emotional state and may provide insight into their perceptions and intentions. LIWC is a limitedly content-sensitive sentiment analysis package (Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007). This approach enables us to look at not only usage or context, but also the meaning of the corpus as implied while being written (Pennebaker et al., 2003). This approach is tantamount to measuring the climate rather than the weather. While drawbacks exist (see Beasley & Mason, 2015), LIWC has been found to cope admirably well with similar relatively sparse social media data (Lindner, Hall, Niemeyer, & Caton, 2015), has been successfully applied to both suicide ideation scenarios (Handelman & Lester, 2007) and analyses of terrorist discourse (Chung & Pennebaker, 2011; Hall, Logan, Church, Ligon, & Derrick, in press; Pennebaker, 2011; Pennebaker & Chung, 2008). LIWC is the strongest benchmark sentiment analysis package to date.

LIWC is organized into a set of dozens of categories that contain words and word stems. These may be grammatical categories, such as prepositions or pronouns, or they may be more psychologically informed categories, such as "anger" (crime, battle, angry, enemy, violent, etc.). LIWC calculates the relative percentage of words in a document that belongs in each of its categories. In this study, we are interested in three broad categories: affect and emotions, cognitive functioning, and pronoun usage.

Beginning with indicators of affect and emotions, LIWC measures both the general tone of the sample, affective processes (e.g., happy, cried), and partitions these general scores in two parts: positive emotions (e.g., love, nice, sweet) and negative emotions (e.g., hurt, ugly, nasty). LIWC breaks down the measure of negative emotions into three specific emotions: anxiety (e.g., worried, fearful), anger (e.g., hate, kill, annoyed), and sadness (e.g., crying, grief, sadness). We chose to examine these measures given the general relationship between emotions and VE (e.g., Agnew, 2010; McCauley & Moskalenko, 2008; Rice, 2009), as well as the animal liberation extremists focus on positive emotions, such as compassion (Braddock, 2015). Next, we analysed indicators of cognitive functioning across crime types. Cognitive complexity, or depth of think-

ing, was accounted for by three indicators including cognitive processes (e.g., cause, know, ought), large words (greater than six letters), and causation (e.g., because, effect) (Tausczik & Pennebaker, 2010). High scores on these measures represent greater intensity and complexity of thought. Next, cognitive (in)flexibility is measured by high use of tentative language (e.g., maybe, perhaps) and language reflecting certainty (e.g., always, never) (Cohen, 2012; Tausczik & Pennebaker, 2010).

We also accounted for the degree to which the communiqués reflect categorical as opposed to dynamic language through the categorical-dynamic index (CDI).[7] More specifically, CDI scores are expressed on a bipolar continuum in which higher scores represent "heightened abstract thinking (associated with greater article use) and cognitive complexity (associated with greater use of prepositions)" (Pennebaker, Chung, Frazee, Lavergne, & Beaver, 2014, p. 6). In contrast, lower CDI scores involve "greater use of auxiliary verbs, adverbs, conjunctions, impersonal pronouns, negations, and personal pronouns. . .associated with more time-based stories and reflect a dynamic or narrative language style" (Pennebaker et al., 2014, p. 6). Finally, we examined four types of pronoun usage across communiqués. Pronoun usage serves as a marker of self-versus -group identity (Pennebaker et al., 2003) and commitment to extremist thought (Baele, 2017). In particular, members of extremist groups are more likely to use a high rate of the first-person plural (e.g., we, us, our) and third-person plural (e.g., they, their) pronouns, and a lower rate of first-person singular (e.g., I, me, mine) and second-person (e.g., you, your, thou) pronouns.

Descriptive and comparative analysis

We present the results in two main sections. First, we compare the indicators of affect and emotions, cognitive processes, and pronouns across the five crime types. Second, we compare our findings across the AELM crime types to results from lone-actor terrorist's writings. More specifically, we draw from Baele's (2017) analysis of the language processes of 11 lone offender extremists including Paul J. Hill, Theodore Kaczynski, Ali Hassan Abu Kamal, James Lee, Timothy McVeigh, Eric Rudolph, Mohammed Reza Taheri-Azar, John Stack, James Von Brunn, Lucas Helder, and Paul Ross. The lone actor terrorists' writing sample was selected as a baseline to compare our findings for two reasons. First, Baele's (2017) analysis used LIWC, which makes for comparable findings with this study. Second, the lone offender writing sample is similar to the AELM texts examined in that both were written by extremists who were anonymous (at the time of writing) and free from political or organizational incentives and restrictions.

[7] CDI scores are computed using the following formula: (CDI = 30 + articles + prepositions – personal pronouns – impersonal pronouns – auxiliary verb – conjunctions – adverbs – negations) (Pennebaker et al., 2014).

Results and discussion

Beginning with Table 2, the results suggest that communiqués associated with arson ($m = 5.42$) and animal liberation ($m = 5.27$) score highest on affect processes across the five crime types. Communiqués associated with animal liberation had the highest degree of positive emotions ($m = 2.63$), anxiety ($m = 0.47$), and sadness ($m = 0.64$) and the lowest degree of negative emotions ($m = 2.62$) across the crime types. Vandalismmultiple communiqués had the highest degree of negative emotions ($m = 3.42$) and anger ($m = 2.20$) compared to other crime types. Communiqués associated with arson also had a relatively high level of negative emotions ($m = 3.34$), anger ($m = 1.80$), anxiety ($m = 0.43$) and sadness ($m = 0.44$) relative to the other crimes. Of the five crime types, communiqués associated with vandalism-single included the second highest degree of anger ($m = 1.90$), whereas communiqués associated with sabotage were consistently low on each measure of affect and emotions.

Table 2. Percentage of Communiqué Words in Affect Categories by Crime Type.

	Animal liberation	Arson	Sabotage	Vandalism multiple	Vandalism single	Overall average	Lone offenders
Affect	5.27	5.42	4.82	5.06	4.79	5.07	5.32
Positive emotions	2.63	2.01	1.73	1.63	1.69	1.94	2.22
Negative emotions	2.62	3.34	3.07	3.42	3.06	3.10	3.03
Anxiety	0.47	0.43	0.26	0.25	0.29	0.34	0.39
Anger	0.91	1.80	1.75	2.20	1.90	1.71	1.74
Sadness	0.64	0.44	0.25	0.27	0.36	0.39	0.38

All language variables are expressed as relative percentage of total words. Positive emotions and negative emotions are subcategories of the general affect score. Anxiety, anger, and sadness are subcategories of the negative emotions score.

When compared to Baele's (2017) findings, it appears that the AELM communiqués are similar to the writings of lone-actor extremists on affect and emotions. The lone-actor writing sample was seconded only to arson on affective processes ($m = 5.32$) and animal liberation on positive emotions ($m = 2.22$). However, the lone-actor writing sample scored higher on both affective processes and positive emotions relative to the overall average across the five crime types. Of the five AELM crime types, only

communiqués associated with animal liberation had lower scores than the lone-actor writing sample on negative emotions ($m = 3.03$) and anger ($m = 1.74$). The average across the five crime types was higher on negative emotions ($m = 3.10$) compared to the lone-actor sample. Last, the lone-actor writing sample had the third highest anxiety ($m = 0.39$) and sadness scores ($m = 0.38$) related to the AELM crime types. The lone-actor writing sample also included a slightly lower degree of sadness relative to the overall average across communiqués ($m = 0.39$). However, this finding appears to be largely driven by the high degree of sadness associated with animal liberation.

In sum, the findings on affect and emotions suggest that communiqués associated with animal liberation were characterized by high levels of general affect, positive emotions, anxiety, and sadness. This is in line with Braddock's (2015) analysis of ALF narratives and the notion that "positive emotions can be equally effective in influencing beliefs and attitudes... some themes within the ALF narratives may evoke one such emotion, compassion" (p. 52). It is likely that the emotion of compassion manifests in writings about animal liberation, as individuals come in direct contact with the animals they are attempting to save. Second, communiqués associated with arson were characterized by high levels of general affect, negative emotions, and anger. This finding is consistent with the notion that arson is a way for individuals to express feelings of anger and distress (Fineman, 1995) or as a tool to express some grievance (Gannon, Ciardha, Doley, & Alleyne, 2012). Third, the AELM communiqués were remarkably similar in affect and emotions to the comparative sample of lone offenders. We believe this finding supports the role of emotions, especially negative emotions, as a contributing factor to crime and VE (e.g., Agnew, 2010; Crenshaw, 1981; McCauley, 2017; Rice, 2009; Simi, Sporer, & Bubolz, 2016; Taylor & Horgan, 2006; Victoroff, 2005).

Next, Table 3 highlights indicators of cognitive functioning across crime types and compared to lone-actors. Of the five crime types, the results suggest that cognitive processing was highest among communiqués associated with arson ($m = 8.29$) and animal liberation ($m = 8.16$). Arson had the highest cause ($m = 1.43$) and tentative ($m = 1.72$) scores, and the second highest certainty score ($m = 1.45$), while communiqués associated with animal liberation had the highest certainty score ($m = 1.49$) and second highest tentative ($m = 1.69$) score relative to the other crime types. Communiqués related to single acts of vandalism were the most likely to use long (6+ letter) words ($m = 24.06$), whereas animal liberations were least likely ($m = 19.98$) of the crime types. Last, sabotage had the highest CDI score ($m = 34.00$) compare to the other crime types, while animal liberation had the lowest CDI score ($m = 27.56$).

There were several noticeable differences between the AELM communiqués and the comparative sample of lone-actor texts concerning cognitive functioning. For example, Table 3 indicates that the lone-actor sample had more than double the cognitive processes score ($m = 16.77$) compared to any one of the crime types or relative to the overall average. Likewise, the lone-actor writing sample had higher scores on causal ($m = 2.46$), tentative ($m = 2.16$), and certainty ($m = 1.84$) language compared to the

five crime types. In contrast, the lone-actor writings had lower CDI scores ($m = 23.58$) than each of the crime types. This suggests that, on average, the AELM communiqués included a higher degree of categorical thinking and a lower degree of dynamic thinking relative to the lone offender sample (Pennebaker et al., 2014).

Table 3. Percentage of Communiqué Words in Cognitive Processing Categories by Crime Type.

	Animal liberation	Arson	Sabotage	Vandalism multiple	Vandalism single	Overall average	Lone offenders
Cognitive processes	8.16	8.29	6.27	6.29	6.33	7.07	16.77
Cause	1.19	1.43	1.13	1.26	1.02	1.21	2.46
Tentative	1.69	1.72	1.34	1.02	1.05	1.36	2.16
Certainty	1.49	1.45	1.10	1.43	1.35	1.36	1.84
Large words	19.98	22.72	22.29	23.54	24.06	22.52	23.23
CDI score	27.56	29.33	34.00	31.54	31.72	30.83	23.58

All language variables are expressed as relative percentage of total words. Cause, tentative, and certainty are subcategories of cognitive processes. CDI scores are computed using the following formula: (CDI = 30 + articles + prepositions − personal pronouns − impersonal pronouns − auxiliary verb − conjunctions − adverbs − negations) (Pennebaker et al., 2014).

The results suggest that the AELM communiqués, as a whole, were characterized by a lower degree of cognitive functioning relative to the lone-actor texts. The lone-actors had more complex cognition and blame-attributing worldviews as opposed to the AELM writings. This suggests that the lone offenders had complex cognitive schemas of blame and causality and "a consistent and unusual will to theorize and offer an explanation" (Baele, 2017, p. 464) relative to their AELM counterparts. The AELM communiqués were, however, more likely to include a high level of categorical thinking relative to the lone offender texts. This indicates that the AELM offenders attempt to rationalize their actions by dichotomizing their world view and causal attribution as opposed to a general sample of lone-actor extremists.

An analysis of the separate crime types suggests that communiqués associated with animal liberation and arson had the highest degree of cognitive complexity. We believe that this shows that AELM offenders with complex ideological schemas of causality

are more likely to engage in the most ideologically congruent (i.e., animal liberation) and/or destructive (i.e., arson) crimes as opposed to simple acts. Perhaps, this is because the risk and potential punishment associated with these crimes require a strong component of otherblaming (Baele, 2017). In contrast, communiqués related to sabotage and vandalism had higher levels of categorical thinking compared to arson and animal liberation. This finding may reflect the notion that individuals writing about lower level crimes (e.g., vandalism) engage in a heightened level of abstract thinking to justify their actions to themselves and their peers. In contrast, extremists who engage in arson or animal liberation know their actions are justified and ideologically congruent. They can write in a dynamic or narrative language style without fear of criticism from others in the AELM.

Finally, Table 4 presents the use of pronouns across the AELM crime types and compared to lone-actor texts. The results indicate that, of the five crime types, the use of first-person singular pronouns was most pronounced among animal liberation communiqués ($m = 0.42$) and least pronounced among texts associated with single acts of vandalism ($m = 0.00$), multiple acts of vandalism ($m = 0.04$), and arson ($m = 0.04$). In comparison, first-person plural pronouns appeared most frequently in arson texts ($m = 3.03$) and least frequently in sabotage texts ($m = 1.64$). Second-person pronouns appeared more frequently in arson-related communiqués ($m = 0.77$) and were least likely to be used in sabotage ($m = 0.29$) and animal liberation communiqués ($m = 0.31$).

Table 4. Percentage of Communiqué Words in Pronoun Categories by Crime Type.

	Animal liberation	Arson	Sabotage	Vandalism multiple	Vandalism single	Overall average	Lone offenders
First-person singular	0.42	0.04	0.10	0.04	0.00	0.12	2.58
First-person plural	2.39	3.03	1.64	2.82	2.59	2.49	0.69
Second-person	0.31	0.77	0.29	0.36	0.42	0.43	0.93
Third-person plural	2.06	1.33	0.90	1.30	1.23	1.36	1.38

All language variables are expressed as relative percentage of total words.

Last, across the five crime types, the use of third-person plural pronouns was most likely to appear in animal liberation texts ($m = 2.06$) and least likely to appear in communiqués associated with sabotage ($m = 0.90$).

There were sizeable differences between the comparative sample of lone-actor and the AELM communiqués concerning pronoun usage. Specifically, texts from the lone-actors were more likely to use first-person singular pronouns ($m = 2.58$) and less likely to use first-person plural pronouns ($m = 0.69$) compared to any one or the overall average of the AELM crime types. Lone-actors were also more likely to use second-person pronouns ($m = 0.93$) compared to the AELM crime types ($m = 0.43$). Finally, the loneactor writing sample was relatively similar to the different crime types when it comes to third-person plural pronouns ($m = 1.38$). Lone-actors were only less likely to use thirdperson plural pronouns when compared to communiqués associated with animal liberation. However, lone-actors were slightly more likely to use third-person plural pronouns compared to the overall average across crime types ($m = 1.36$).

Pronouns reveal useful information on individuals' psyche as well as how they reference others inside and outside of an interaction (Tausczik & Pennebaker, 2010). In this study, we found that AELM communiqués, regardless of crime type, were more likely to emphasize the collective "we" when compared to the lone-actor comparison sample. Their use of "we" suggest that, across crime types, AELM offenders have a strong in-group identity and collectivistic orientations. These findings are also consistent with Loadenthal's (2016) results concerning the use of "we" among insurrectionary anarchists. We suspect that this shows an overlap between the two movements as well as the importance of group-based dynamics in crime commission process (Warr, 2002). The results also indicated that the lone offenders were more likely to use the first-person singular pronouns as opposed to the AELM offenders. The heavy usage of "I" pronouns suggests that lone offenders are more self-centred relative to the AELM extremists. Second-person pronouns were higher among the lone-actor texts suggestive that they are more socially aware but involved in lower-quality relationships than the AELM offenders (Pennebaker et al., 2003; Tausczik & Pennebaker, 2010). Finally, the AELM communiqués and lone-actor texts were similar on third-person plural pronouns. This finding is in line with the idea that extremists, regardless of type, write extensively about the outgroup allegedly responsible for their problems and why they fight (Baele, 2017).

Conclusions

We had three goals in this article. The first goal was to examine differences in affect and emotions across the AELM crime types and compared to the lone-actor texts. While researchers have linked negative emotions to violence and criminal offending (e.g., Agnew, 1992; Giordano, Schroeder, & Cernkovich, 2007; Katz, 1988; Sherman, 1993) and VE (e.g., Agnew, 2010; Crenshaw, 1981; McCauley, 2017; Rice, 2009; Simi

et al., 2016), few scholars have examined differences in emotionality across crime types. Our findings suggest that affect processes were highest in communiqués linked to more severe AELM crime types (i.e., arson, animal liberation), as opposed to less severe ones (i.e., vandalism-single). In particular, we found that animal liberation communiqués were characterized by a high degree of positive emotions relative to the other crime types. One interpretation of this finding is that animal liberation focuses on helping victims whereas the other crimes focus on punishing perpetrators. Evidence has also shown that positive emotions broaden people's momentary thought-action repertoire by creating the urge "to play, to explore, to savorand integrate, or to envision future achievement" (Fredrickson, 2001, p. 4). Positive emotionality may provide AELM offenders with the momentary thought-action repertoire to overcome the heightened risk and security threats associated with committed animal liberation. From this perspective, AELM offenders engaging in animal liberation are thoughtful reflective decision-makers who are "deliberate, careful, and mindful in how they go about collecting and using information about a problem they are confronted with" (Paternoster & Pogarsky, 2009, p. 105).

As a whole, the AELM communiqués were remarkably similar in measures of negative emotions to the lone-actor texts. This is interesting given that the AELM communiqués were organized around events whereas Baele's (2017) sample was around individuals. We believe this result supports the influence of negative emotions, and anger in particular, in motivating and justifying political violence (e.g., McCauley, 2017; Rice & Agnew, 2013; Stern, 2003; Victoroff, 2005). Negative emotions create pressure for corrective action, often a strong desire for revenge, while lower inhibitions and one's concern for the consequences of their actions (Agnew, 2010). For AELM offenders, engaging in crime is a means to "right" the wrong against exploiting animals and the environment.

The second goal was to examine cognitive functioning across the AELM crime types and compared to the lone-actor texts. Across crime types, we found that AELM communiqués associated with animal liberation and arson had the highest degree of cognitive complexity. We suspect that this is because more severe crime types require more elaborate theories to attribute blame and causality compared to simple crimes. This finding may also support the idea that, as individuals are further ingrained in the AELM, they develop the moral and legal neutralizations to engage in crime that support ideological goals (Bandura, 1986; Nivette, Eisner, & Ribeaud, 2017). That said, the AELM communiqués were far lower on the indicators of cognitive complexity compared to the lone-actor texts. On the one hand, this finding supports the link between lone-actor extremism and conspiratorial thinking as well as Baele's (2017) assertion that lone-actor extremists are characterized as having complex worldviews. On the other hand, this finding suggests that AELM extremists are characterized by a simplistic cognitive style and rigid world view.

The third goal of this study was to examine pronoun usage across the AELM crime types and compared to the lone-actor texts. Across crime types, one unanticipated

finding was the use of first-person singular pronouns within communiqués linked to animal liberation. This finding may suggest that AELM offenders are more willing to act alone when engaging in an animal liberation as opposed to other crime types. This would not be surprising considering that animal liberations require a high degree of stealth and speed, which may be easier to secure acting alone rather than with a group. Next, our findings suggest that the AELM communiqués were similar in their usage of first-person plural pronouns to texts written by insurrectionary anarchists (Loadenthal, 2016). This indicates that individuals associated with both movements have a strong in-group identity, and while ideological and tactical differences should not be minimized, this finding provides evidence of another commonality between the AELM and insurrectionary anarchists. Last, we found that the AELM communiqués were similar in their use of third-person plural pronouns. In other words, both sets of extremists appear to write about the external groups responsible for their problem. This finding is consistent with the long-standing notion that clearly defining the boundaries between "us" and "them" is a critical ideological component of VE (Asal & Rethemeyer, 2008; Crenshaw, 1987; Hoffman, 1999).

Limitations and directions for future research

Despite the contributions of this study, there are several limitations to bear in mind. First, we only examined communiqués from one outlet – directaction.info – and only through the period of January 2013 to April 2017. Thus, our findings are limited to psycholinguistic processes within communiqués posted on one extremist website between 2013 and 2017. Next, we only examined psycholinguistic indicators for five crime types. We selected these crimes given that they were the most pronounced in our dataset and provided enough text to draw conclusions. While other crime types existed, such as communiqués describing the use of improvised explosive devices or computer hacking, these events were rare and did not include the amount of text necessary for LIWC.

The third limitation is that several of the communiqués in this study included more than one crime type. In these cases, we categorized the communiqué according to the most severe crime type. While this strategy allows for a simple way of classifying crimes, it does not account for the linguistic processes in communiqués with multiple crime types. Fourth, we only presented descriptive statistics and did not utilize higher-order analytical techniques (e.g., analysis of variance) to examine whether the differences across crime types were statistically significant. Our intent, however, was to describe the nature of the communiqués across crime types and to a comparison sample of lone-actor extremists' writings. A final limitation is that we do not include measures of dispersion such as the standard deviation or range since all of the communiqués were clustered by crime type and entered into LIWC as one document. Thus, there is only one value produced per category. This approach ensured that there was enough text data to draw reasonable conclusions. The drawback of this approach is that one

communiqué could be driving the results. However, we believe that this is unlikely since we used a sizeable number of communiqués per crime type.

Future studies should explore how these findings compare to other extremist texts. For instance, researchers could examine how AELM communiqués compare to texts written by far-right or jihadi extremists on different psycholinguistic indicators. In the future, scholars should also consider the utility of examining event-level texts like the ones presented in the study. For example, scholars could compare textual data written by extremists who engaged in a bombing event versus an armed assault. Finally, future research should continue to unpack differences in language among extremists from different geographical areas. For example, researchers could examine whether language patterns are different in communiqués associated with collectivistic as opposed to individualistic cultures.

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