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**NAVAL
POSTGRADUATE
SCHOOL**

MONTEREY, CALIFORNIA

THESIS

**THE CORRELATION BETWEEN MORAL LEXICON
AND VIOLENT PROTESTS**

by

William C. Reber

March 2022

Thesis Advisor:
Second Reader:

Timothy C. Warren
Shannon C. Houck

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**THE CORRELATION BETWEEN MORAL LEXICON AND VIOLENT
PROTESTS**

William C. Reber
Major, United States Army
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Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF SCIENCE IN DEFENSE ANALYSIS
(IRREGULAR WARFARE)**

from the

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ABSTRACT

Various distinct, discrete, and dispersed factors can transform a non-violent social movement into a violent social movement, making such transitions extremely challenging to predict. In this thesis, I develop an analytical approach for predicting the mobilization of violent social movements using a newly expanded multilingual Moral Foundations Dictionary to quantify references to moral categories in geo-referenced social media feeds. This is combined with event data on the timing and location of violent protests in Africa to develop an analytic framework for large-scale, high-resolution assessment and predictions of violent political protests. The evidence shows that a significant relationship exists between social media messages with moral content and the probability of violent protest, which significantly increases the chances that a social movement becomes hostile and violent.

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LIST OF ACRONYMS AND ABBREVIATIONS

DV	Dependent Variable
GPI	Global Peace Index
ICT	Information Communication Technology
IV	Independent Variable
LIWC	Linguistic Inquiry and Word Count
MFD	Moral Foundations Dictionary
MFT	Moral Foundations Theory

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I. INTRODUCTION

The frequency, scope, and size of protests worldwide has ebbed and flowed, but has generally increased throughout the twenty-first century. Mass protests between 2009 to 2019 across all regions of the world had an 11.5% increase.¹ According to analyses, the Middle East and North Africa lead the world in number of protests, while sub-Saharan Africa displays the fastest rate of growth.² Additionally, more recent protest activity from 2000s to present, have already over shadowed the historically alarming trends of increased protests from the late 1960s, 1980s, and early 1990s.³ Though governments' and institutions' are aware of this trend and states inherently work to mitigate these factors; the asymmetry and time required to improve protest drivers has led scholars to suggest that mass protest trends will increase.⁴ Additionally, the 15th edition of the Global Peace Index (GPI), which measures global peacefulness, reported that in 2020 the average level of global peacefulness deteriorated for the ninth time in twelve years; there were 14,871 violent demonstrations, protests, and riots recorded globally, and civil unrest rose globally by 10%.⁵ Evidence for increasing protest trends can be found in the reports by the Center for Strategic and International Studies reports (CSIS)⁶ and the Carnegie Endowment for International Peace, Global Protest Tracker.⁷ In the analysis that follows, I consider whether social media and moral discourse may play a role in enabling these trends due to social media's ubiquity and individuals' ability to communicate on diverse topics.

¹ Christian Haig, Katherine Schmidt, and Samuel Brannen, *The Age of Mass Protests: Understanding an Escalating Global Trend* (Washington, DC: Center for Strategic and International Studies, 2020), iv, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/200303_MassProtests_V2.pdf?uL3KRAKjoHfmcnFENNWTXdUbf0Fk0Qke.

² Haig, Schmidt, and Brannen, 1.

³ Haig, Schmidt, and Brannen, 1.

⁴ Haig, Schmidt, and Brannen, IV.

⁵ Institute for Economics and Peace, *Global Peace Index 2021* (Sydney: Institute for Economics and Peace, 2021), <https://www.visionofhumanity.org/wp-content/uploads/2021/06/GPI-2021-web-1.pdf>.

⁶ "Center For Strategic and International Studies (CSIS)," CSIS Center For Strategic & International Studies, 2022, <https://www.csis.org/>.

⁷ "Carnegie Endowment for International Peace, Global Protest Tracker," Global Protest Tracker, June 3, 2021, <https://carnegieendowment.org/publications/interactive/protest-tracker>.

A. SOCIAL AND POLITICAL GRIEVANCES

There are a wide array of causes, drivers, triggers, and grievances that propel protests to achieve political, social, and economic reforms. At a macro level, protest triggers can stem from inequalities in the political, economic, and social sectors. They can arise just as readily in developed and developing countries and be driven by those who have either flourished or regressed under globalism.⁸ In fact, political protests are becoming more abundant in Europe and North America as compared to the rest of the world.⁹ Though protests seem ubiquitous throughout the world, the causes of protest in developed and developing countries differ. Findings from existing publications reveal that developing states are more likely to demonstrate about grievances that deal with basic survival, while developed, predominantly Western states rally against the retention of government entitlements—welfare spending as an example.¹⁰ Additionally, current global challenges will also heighten the probability of mass protests. The current crisis in Ukraine highlights how protests can be triggered by international disruption caused by foreign entities entering sovereign countries’ social, political, and economic spheres. Moreover, environmental burdens and their effect on food and water supplies are just a few of the many large scale challenges countries face, which can become catalysts for mass protests.¹¹

The fact remains that grievances may differ depending on a regions or community’s economic, political, or social status, or lack thereof. In general, an increasing number of protests are occurring worldwide, and governments are largely not ready to effectively alleviate and reduce the grievances which spark these widespread and varied events. Haig, Schmidt, and Brannon, authors of the 2020 annual report for the Center for Strategic Studies and International Studies state, “Governments around the world are largely unprepared for a surging tide of citizen expectations manifesting itself in mass political protests and other, less overt forms. Responding to the growing disconnect between citizen expectations and

⁸ Richard Youngs, “What Are the Meanings behind the Worldwide Rise in Protest?,” *Open Democracy*, October 2, 2017, 3, ProQuest.

⁹ Haig, Schmidt, and Brannen, *The Age of Mass Protests*, 1.

¹⁰ Youngs, “What Are the Meanings behind the Worldwide Rise in Protest?,” 1.

¹¹ Haig, Schmidt, and Brannen, *The Age of Mass Protests*, 36.

government ability to deliver against those expectations could be the challenge of a generation.”¹² The social and political contract between citizens and their governments concerning the equal distribution of essential services and other inalienable rights was echoed in a famous 2010 Council on Foreign Relations speech, by U.S. National Security Advisor Zbigniew Brzezinski. In his statement, Brzezinski identified and coined the term “global political awakening” and offered several catalysts to the “global awakening.” He asserts personal dignity, communications technology, and the abundance of college aged youth from lower middle classes as some of the “awakening” drivers. He stated,

for the first time in human history almost all of humanity is politically activated, politically conscious and politically interactive... The resulting global political activism is generating a surge in the quest for personal dignity, cultural respect and economic opportunity in a world painfully scarred by memories of centuries-long alien colonial or imperial domination...The worldwide yearning for human dignity is the central challenge inherent in the phenomenon of global political awakening... That awakening is socially massive and politically radicalizing... The nearly universal access to radio, television and increasingly the Internet is creating a community of shared perceptions and envy that can be galvanized and channeled by demagogic political or religious passions. The youth of the Third World are particularly restless and resentful and inflamed by a sense of social outrage, they are already semi-mobilized in large congregations, connected by the Internet. Their physical energy and emotional frustration are just waiting to be triggered.¹³

The passage above is a very powerful signal to organizations and government institutions about the influential power of the internet and social media at many levels of society. Building on this argument that younger generations have increased shared perception and have become increasingly connected in large part due to the internet, a study by Hofmann et al. indicates that “people are more likely to learn about immoral acts online than in person or through traditional forms of media and that there is evidence that immoral acts encountered online incite stronger moral outrage than immoral acts encountered in person or via traditional forms of media and that digital media may promote the expression of moral outrage by

¹² Haig, Schmidt, and Brannen, 2.

¹³ Zbigniew Brzezinski, “Council on Foreign Relations, Montreal” (Speech, Council On Foreign Relations, Montreal, Canada, May 15, 2010), <https://www.youtube.com/watch?v=HEHsUojUgzk>.

magnifying its trigger.”¹⁴ Similarly, Richard Young finds that although globally, mass protests have become a trend, these global protests with similar agendas and end states, are not organized and managed globally.¹⁵ The reasons for the protest may trigger mass protest in other nations or states; however, they do not rely on other similar international movements. He notes that grievances and other social movement triggers frequently begin locally or regionally. He finds that local and community level protest are trending and that they can be just as effective as larger more popular protests, by asserting vast amounts of pressure on a small focal point to achieve their goals. At a minimum, local protests challenge local and state political leadership and disrupt governments coveted perceptions of maintaining peace and security.¹⁶

B. VIOLENT PROTEST IN AFRICA

Many examples of protest that have occurred in the past decade within Africa demonstrate drivers highlighted by existing research. However, this thesis examines the trifecta connection between social media, violent protest, and Africa. The Institute for Security Studies (ISS) published an article in 2015 indicating that the weaponization by protestors of social media communication had a relation to the intensification of violence during riots and protests. In the article ISS cites South Africa’s Gauteng and KwaZulu-Natal provinces in Tunisia, July 2021 an example of how moralized ideas were communicated via social media, which led to violent outcomes. “Institute for Security Studies research has shown how messages or tweets, images and videos that generate outrage are amplified through powerful algorithms and artificial intelligence, enabling messages to reach more people faster.”¹⁷ Moreover, the article noted that individuals who post “inflammatory” content can be subject to legal admonishment no matter the social status of the individual. In Anita Breuer et al. article she states that, “The African National Congress’s (ANC) announcement that it will

¹⁴ Wilhelm Hofmann et al., “Morality in Everyday Life,” *Science* 345, no. 6202 (2014): 769,771.

¹⁵ Youngs, “What Are the Meanings behind the Worldwide Rise in Protest?,” 3.

¹⁶ Youngs, “What Are the Meanings behind the Worldwide Rise in Protest?,” 3,4.

¹⁷ Anita Breuer, Todd Landman, and Dorothea Farquhar, “Social Media and Protest Mobilization: Evidence from the Tunisian Revolution,” *Democratization* 22, no. 4 (June 7, 2015): 6, <https://doi.org/10.1080/13510347.2014.885505>.

hold former president Jacob Zuma's daughter Duduzile Zuma-Sambudla accountable for her tweets shows that the governing party has woken up to the power of cyberspace. Her posts included embedded video and calls to 'let it burn.' Four other ANC members are being reprimanded for their online conduct."¹⁸ The events which were provoked by the perception of a violation against one's morals seem to have led to incendiary dialogue over social media, which consequently encouraged a portion of the 117 deaths, 1,400 arrested, and billions of dollars in damages to the already fragile economy.¹⁹

C. INTERNET AND SOCIAL MEDIA'S EFFECTS ON SOCIAL MOVEMENTS

Supporters of the positive effects of technologies on society and those who reject technology's ability to improve societies differ greatly over the internet and social media's role in the success of violent or non-violent movements. However, in today's interconnected world, social media is one of the many forms of high-speed communication that can rapidly diffuse information far and wide, which can be used as a powerful weapon to alter public opinion. Though the internet and social media may not be the sole driving factor for the heightened number of protests, some research indicates that they may be critical enablers. "Social media and virtual discussion boards clearly serves as concentrated hub for proliferating grievances, discussing alternatives to the status quo, broadening protest support by connecting networks of aggrieved people, and ultimately spurring mass mobilization."²⁰ First, their increasing worldwide ubiquity has allowed the global proliferation of ideas and messages. The increase in connectivity is seen when from 2009 to 2019 the number of people connected to the internet has gone from 1.5 billion to 4 billion people, an increase of just over 266% while currently Facebook has 2.4 billion users worldwide and these trends continue to rise.²¹ Second, social media serves as a concentrated communication center, larger than any other communication platform in history. On these platforms individuals can air grievances,

¹⁸ Breuer, Landman, and Farquhar, 4.

¹⁹ Breuer, Landman, and Farquhar, 2.

²⁰ Haig, Schmidt, and Brannen, *The Age of Mass Protests*, 15.

²¹ Haig, Schmidt, and Brannen, 15.

create, extend, and expand networks. Third, the internet and social media have increasingly cut into the traditional media market becoming people's primary source of information.²² Given that traditional media are generally controlled, regulated, monitored, and more easily influenced by the elite and officials, protestors are more likely to leverage social media to disseminate and diffuse their messages as an alternative to the cumbersome regulations and costs imposed by traditional media.²³ Fourth, the internet and social media provide a significant degree of perceived or actual anonymity. This sense of "safety" by users can embolden individuals to become increasingly inflammatory in their lexicon, which can infuriate, provoke, and unify the masses.²⁴ Last, as suggested by Salerno and Hagene, "people become outraged when they think a moral norm has been violated."²⁵

D. SOCIAL MEDIA AND THE GOVERNMENT

Moreover, the internet and social media enables 'leaderless' or 'organization-less' social movements, making it difficult for the government to connect and collaborate with the known representative or leader in a movement. Heavy dependence on social media allows movements to be structurally, managerially, and organizationally minimalistic. These side effects create a cumbersome dynamic for government leaders to identify and communicate with these social media driven movements. As for the government, traditional media has generally been the government's consolidated source of influential power. "Some scholars have deemed the media the fourth branch of the government because of the necessary checks the institution as a whole provides over the three constitutionally-named branches."²⁶ Though social media has disrupted traditional media and subsequently affected government influence capabilities through this medium, the government and government agencies have also used

²² Haig, Schmidt, and Brannen, 15.

²³ Freedom House, *Voices In The Streets: Mass Social Protests and the Right to Peaceful Assembly* (Washington, DC: Freedom House, 2015), 5–6, https://freedomhouse.org/sites/default/files/2020-02/03202015_updated_Voices_in_the_Street_Freedom_of_Assembly_report.pdf.

²⁴ Haig, Schmidt, and Brannen, *The Age of Mass Protests*, 15–16.

²⁵ Molly Crockett, "Moral Outrage in the Digital Age," *Nature Human Behaviour*, Springer Nature, 1, no. November 2017 (November 2017): 769, <https://doi.org/10.1038/s41562-017-0213-3>.

²⁶ Rachel Luberd, "The Fourth Branch of the Government: Evaluating the Media's Role in Overseeing the Independent Judiciary," *Notre Dame J.L. Ethics & Pub. Pol'y* 507 22, no. 2 (2008): 508, <https://scholarship.law.nd.edu/ndjlepp/vol22/iss2/11/>.

information technologies to mitigate social medias disruption to government power and influence.

For the police, military and emergency responders, platforms such as Twitter, Facebook, and WhatsApp can provide real-time intelligence of events on the ground. By using open-source investigative techniques to verify images and video placed in the public domain on social media, police and prosecutors can identify offenders. For security services, social media can inform where and how they deploy. It is a vehicle for transmitting public safety announcements.²⁷

E. VIOLENT PROTEST CONSEQUENCES

It is vital to understand peaceful and violent social movements and protests because of their possible consequences to everyone from vulnerable populations to key government, private, and social organizations. According to The Global Peace Index 2020, “there has been a sharp increase in civil unrest events since 2011, with over 96 countries experiencing at least one violent demonstration in 2019. From 2011 to 2019, the number of riots rose by 282 per cent...civil unrest in sub-Saharan Africa rose by more than 800 per cent over this period, from 32 riots and protests in 2011 to 292 in 2018.”²⁸ Additionally, the Global Database of Events Language and Tone 1.0, (GDELT) was analyzed by the Center for Strategic and International Studies to demonstrate the regional breakdown of average global protests.

There are a variety of advantages and disadvantages to these events. Advantages to protests are that they create awareness and attention to human and social suffering, which may have otherwise been invisible to others. Second, they enable voices of a minority or majority to be heard by the existing political and social powers who have been perceived as not working on the peoples’ behalf. Third, they can incite political and social change or reform on specific issues. Finally, political protests can ensure government accountability to its constituents.

Alternatively, the disadvantages of mass protests and consequences of violence present communities and governments with immense challenges. For one, there is no

²⁷ Karen Allen, “Social Media, Riots and Consequences,” *ISS Africa*, July 16, 2021, 3, <https://issafrica.org/iss-today/social-media-riots-and-consequences>.

²⁸ “Global Peace Index 2020: Measuring Peace in a Complex World” (The Institute for Economics & Peace (IEP), June 2020), 2, https://www.visionofhumanity.org/wp-content/uploads/2020/10/GPI_2020_web.pdf.

guarantee that violent or non-violent movements will lead to any political or social change. Violent or prolonged protests can cause a decline in the local economy, in turn leading to unemployment. In extreme cases, protests can lead to high property damage, injury, and even death. Whether the violent protest achieves its goals, there tends to be a great deal of loss by both the local populace and government. Violence and disruption are generally perceived by the state and society as not credible and thus undermines protesters message, while non-violent protest establish a greater amount of credibility.²⁹ Both personal and public property damages can range from hundreds of thousands to billions over extended periods of recovery time. Therefore, the economic damages effect local, corporate, and country level economies.³⁰ In short, violent social movements can cause exponential fiscal, infrastructural, and societal damage. If we can calculate the likelihood of a violent social movements and riots, then political leadership can take actions to prevent increasing the chances of such an event. Additionally, if the tipping point from non-violent to violent movements can be identified, security forces can be better prepared to mitigate the adverse side effects of the violence.³¹

F. RESEARCH QUESTION

Although many factors contribute to a non-violent protest's risk of developing into a violent protest, to what extent does moral language through social media impact the transition from non-violent to violent social movements?

G. CORE FINDINGS

Though many factors can produce a violent social movement, quantitative data analyses show that violent protests are more likely to occur in areas experiencing an increase in moral rhetoric through local social media. However, data also suggest that negative moral discourse is not reliably associated with increasing or decreasing risk of violent protests.

²⁹ Ralph H. Turner, "The Public Perception of Protest," *American Sociological Review* 34, no. 6 (1969): 819, <https://doi.org/10.2307/2095975>.

³⁰ Andrew DiPietro, "Shocking Truths About What Protests Cost You," *GOBankingRates*, March 29, 2017, <https://www.gobankingrates.com/taxes/refunds/economics-protest/>.

³¹ "Pros an Cons," *Pros and Cons of Protesting* (blog), July 17, 2018, <https://prosancons.com/politics/pros-and-cons-of-protesting/>.

Finally, the evidence shows that subcomponents of positive and negative moral discourse both increase and decrease the risk of violent protests.

H. ROAD MAP

This thesis is organized into the following chapters. Chapter II focuses on a literature review of theories behind social media and moral language impacts on protestors. Chapter II describes the “techno-optimistic” view that social media enhances social movement participation and cohesion. Conversely, it discusses, “techno-pessimism,” which describes those who believe that social media cannot create the social cohesion necessary to conduct a successful social movement. In addition, Chapter II examines the theories surrounding the significance of moral language over social media in propelling individuals to act whether through physical mobilization or violent action. Chapter III merges the social media and moral language topics of debate drawing them together and endorsing the importance of moral discourse over social media and its ability to influence individuals into action. Chapter IV, describes and justifies the data and methods. Chapter V examines the results of the statistical analysis by describing and elaborating on the models and predictions. Chapter VI summarizes the entire thesis examining the insights gained and extracted through the statistical analysis to identify the relationship between the moral lexicon used over social media, its influence on individuals, and its potential to provoke violent protests. It also reviews the general implications and applications for future identification of potential violent social movements and explains research shortcomings to inform other potential scholars as they study these research fields.

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II. LITERATURE REVIEW

The literature review divides the writing discussing social media's impact on individuals to participate in a social movement into two theoretical categories with insights on their respective methodologies. The first section describes the "techno-optimistic" view that social media enhances social movement participation and cohesion. The second section, "techno-pessimism," describes those who believe that social media cannot create the social cohesion necessary to conduct a successful social movement. The pro-social media/internet literature argues that social media and connectivity offer a "space" for individuals to mobilize before and during physical mobilization. They argue that social media acts as a conduit for ideas where individuals build collective group identities based on shared personal values and language, empowering individuals to act. Optimists contend that social media users can create the essential relationships required to encourage them to physical action. Theoretical "techno-pessimism" by contrast argues that that social media cannot make the necessary interpersonal connections between individuals to motivate them to physically engaging in collective action.

A. THEORETICAL LITERATURE: TECHNO-OPTIMISM

For this thesis, the concept of "techno-optimism" is a belief that social media promotes the ability of individuals to engage in collective actions. The following by Dustin Kidd and Keith McIntosh is a more precise definition of the term. They state, "techno-optimism refers to those approaches that emphasize the potential of social media technologies to solve social problems...they do not fail to acknowledge the challenges faced by social media but do find, in such emerging technologies, evidence for new social change and optimism."³² In general, advocates of social media's impact on contemporary social movements have confirmed several links between social media and the physical assembly of social movements, including violent social movements. Several variations on this theme follow.

³² Dustin Kidd and Keith McIntosh, "Social Media and Social Movements," *Sociology Compass* 10, no. 9 (2016): 2,3, <https://doi.org/10.1111/soc4.12399>.

Foremost among the techno-optimists is Valenzuela, who delineated social media as a news source, social media as a space for expressing political opinions, and social media as a venue to find mobilizing information for joining causes. The daily users are categorized into information, opinion expression, and activism, respectively. His research found a positive correlation between the use of social media and mobilization participation. Specifically, individuals' frequent daily use caused them to have a higher chance of participating in social mobilizations than those with little social media use.³³ Other techno-optimists include Robert Thorstad and Phillip Wolff. Both view the impacts of social media on social mobilization through the psychological lens. Their studies utilizing quantitative analysis found that messages on Twitter indicated a digital "phenotype" where communicators' actions coordinated with their communications.³⁴

Van Laer and Van Aelst took a holistic analytical approach of the extent to which social media and the internet have improved and/or impaired social movement opportunities.³⁵ They contend that although the internet has various limitations, the limitations do not outweigh the significant advantages the internet provides to social movements. Furthermore, they argue that the internet facilitates movements at a global scale, while enabling citizens to hold institutions more accountable than before. By identifying, organizing, and arranging the various "action repertoires" in a quad-chart, from high threshold to low threshold and from internet supported to internet based, the various forms of internet influenced mobilization are discernable.³⁶ These scholars are fundamentally techno-optimists who conclude that the internet does in fact facilitate pre-internet action repertoires for social movements as well as creating new internet-based avenues for activism.

³³ Valenzuela, "Unpacking the Use of Social Media for Protest Behavior," 931.

³⁴ Thorstad, "A Big Data Analysis of the Relationship between Future Thinking and Decision-Making," 1.

³⁵ Jeroen Van Laer and Peter Van Aelst, "Cyber-Protest and Civil Society: The Internet and Action Repertoires in Social Movements," in *Handbook of Internet Crime* (London: Willan, 2009), 230–38.

³⁶ Jeroen Van Laer and Peter Van Aelst, "Cyber-Protest and Civil Society: The Internet and Action Repertoires in Social Movements," in *Handbook of Internet Crime* (London: Willan, 2009), 233.

Research by Melucci contends that social media enhances collective identity's role within contemporary collective actions. He and other researchers claim that individuals must first form a sense of collective identity before they take physical action. Collective identity refers to individuals who believe in a common issue and feel a sense of unity and ability to control their actions as a collective. Emotions such as love, hate, faith, and fear are inherent in creating a collective identity.³⁷ The previously mentioned emotions are in Haidt's MFD, which will be used in the quantitative analysis presented below. Melucci defends that, social media platforms influence and amplify collective identity, emboldening social activism, by providing a visual representation of protestors collective identity, who they are and what they stand for. Researchers Gerbaudo and Trere make similar claims highlighting that the ubiquity of new communications technology carrying social media platforms has enabled mass quantities of communication throughout society. Due to these conditions and the ability to share visualizations such as icons or pictures, individuals can construct a strong group or collective identity, leading them to collective action.³⁸

B. THEORETICAL LITERATURE: TECHNO-PESSIMISM

Techno-pessimists consider social media as a tool for entertainment that cannot generate strong bonds or ties between users necessary for collective action. They argue that collective action requires increased physical connections, and that social media does the opposite—making people less apt to participate in change. Kidd and McIntosh define techno-pessimism as the belief that “the promises of social media are hyperbolic and superficial...changes may produce new relationships of power...that social media is a patina that does little to fundamentally transform the way that human beings relate to each other in the real world.”³⁹

³⁷ Paolo Gerbaudo, *Tweets and the Streets: Social Media and Contemporary Activism* (London: Pluto Press, 2012), 41.

³⁸ Paolo Gerbaudo and Emiliano Trere, “In Search of the ‘We’ of Social Media Activism: Introduction to the Special Issue on Social Media and Protest Identities,” *Information, Communication & Society* 18, no. 8 (May 18, 2015): 865, 866.

³⁹ Kidd and McIntosh, “Social Media and Social Movements,” 4,5.

Fervent techno-pessimists contend that compelling individuals to mobilize in the streets physically is a matter of strong core ties within their relationships. Pessimists contend that mobilizations that promote actual change must consist of individuals with strong ties and leadership who can make strategic-level decisions. They maintain that only by moving from the safety behind their computers and putting themselves in “higher-risk” environments (possible physical, legal consequences) can effective mobilizations occur. They maintain that ties created over social media are generally weak and view Twitter and Facebook as platforms for befriending someone you have never met or met occasionally, sporadically exchanging gossip. They argue that hierarchies are necessary for effective social movements and social media platforms do not create or enable such hierarchies rather users made decisions through consensus.⁴⁰

Furthermore, techno-pessimists use pejorative terms such as “slacktivism,” “digital captives,” and others to describe individuals who are more likely to remain safe and stationary next to their tech devices than act. The ‘connective action’ theory, by Bennett and Segerberg, asserts that social media hinders the formation of a collective identity claiming that individuals could relate to the social movement on a certain level and still not create a collective identity or even mobilize.⁴¹ Likewise, an avid techno-pessimist Morozov agrees that social media and technology allow individuals to participate without fully participating in physical, social movements. Morozov contends that social media enables minimal participation by stereotypical “activists” and thus are viewed as slackers. Techno-pessimists consider activism with zero political or social impact ‘slacktivism’, and argue that social media, in general, is created for entertainment rather than a platform for organization or mobilization.⁴² Moreover, due to social media’s useability and entertainment value, recent generations are “digital captives.” These individuals have less incentive to act and pay little attention to the current political and social events, preferring

⁴⁰ Gladwell, “Small Change,” 4.

⁴¹ W. Lance Bennett and Alexandra Segerberg, “The Logic of Connective Action,” *Information, Communication & Society* 15, no. 5 (June 1, 2012): 739–68, <https://doi.org/10.1080/1369118X.2012.670661>.

⁴² Gerbaudo, *Tweets and the Streets*, 8.

to be safely entertained over social media than exposed and taking risks through social action.⁴³ Therefore, the theories of ‘connective action,’ ‘slacktivism,’ and “digital captives” demonstrate the weaknesses inherent in collective actions founded on social media communications, groups, or networks.

These pessimistic perspectives are not new. Soren Kierkegaard, a Danish philosopher, espoused that increased mass, speed, and ubiquity of information will have adverse side effects. He stated, “it might result in a decline of social cohesion...endless and disinterested reflection, and infinite shallow intellectual curiosity...not one has an essential engagement in anything...people were getting interested in everything and nothing at the same time...nothing mattered enough to want to die for.”⁴⁴ Though the quote was taken before the advent of social media, it highlights the possible side effects of mass data and communication on today’s societies.

Similarly, pessimists contend that individuals lack a genuine commitment to social and political causes. Techno-pessimists admit that statistically, out of the millions of activists’ groups created or perpetuated by social media, some become mobilizations. However, these movements are perceived as random and not likely to lead to social, political change. Additionally, they assert that individuals join groups or comment on social media simply to show their virtual identities and therefore do not have a rooted connection to a cause. Moreover, social scientists have found a link between social media and narcissism, which they contend does not lead to feelings of empathy – a feeling that propels individuals to make sacrifice.⁴⁵

C. SOCIAL MEDIA AS “A TWO-WAY STREET”

Some existing quantitative research has found that new information and communication technologies may strengthen authoritarian governments by providing new tools for surveillance and the suppression of protests. Counter to intuition and the wide

⁴³ Evgeny Morozov, *The Net Delusion: The Dark Side of Internet Freedom* (New York: PublicAffairs, 2012), 70, 74, 75, ProQuest.

⁴⁴ Morozov, 184.

⁴⁵ Morozov, 187.

belief that internet technology increases quality of life and communication freedoms, researchers Rød and Weidmann find that the internet has not contributed toward a global shift in democracy and that information communication technology (ICT) in the hands of autocrats has been used to repress societies; therefore belonging to the category of ‘repression technology.’⁴⁶ Further support of ICTs as “repression technology,” Evgeny Morozov also contends against the widely espoused concept of ICT as ‘liberation technology’, arguing that “technologies can serve much more sinister goals in the hands of autocrats.”⁴⁷ These scholars have concluded that that autocracies concerned with their political survival by controlling the domestic information environment are more likely to expand ICTs for the following reasons. First, ICTs can reach and influence mass amounts of their populace. Second, demographic, and socio-political and economic status of ICT users unwittingly enable government surveillance.⁴⁸ These findings show that surveillance by governments could allow the government to identify violent activist more easily, especially the ones who are seemingly promoting violence.

Moreover, some existing quantitative research has found that new information and communication technologies may make it easier to promote conflict and violence. Research indicates that an increase in cellular penetration correspondingly indicates and increase in collective violence and that while generally conventional mass media has served centralized state authority and national unity, social media promotes the opposite, therefore producing extremist ideologies and even violence.⁴⁹ “Social communication technologies facilitate horizontal linkages between the members of a society...and render easier the production of divisive mobilizational appeals...function to increase the occurrence of collective violence.”⁵⁰ Furthermore, Kuah and Yee similarly determined that identified textual sentiments across social media corresponded in predicting political

⁴⁶ Espen Geelmuyden Rød and Nils B Weidmann, “Empowering Activists or Autocrats? The Internet in Authoritarian Regimes,” *Journal of Peace Research* 52, no. 3 (2015): 338.

⁴⁷ Rød and Weidmann, 338.

⁴⁸ Rød and Weidmann, 348.

⁴⁹ T Camber Warren, “Explosive Connections? Mass Media, Social Media, and the Geography of Collective Violence in African States,” *Journal of Peace Research* 52, no. 3 (2015): 297,301.

⁵⁰ Warren, 308.

violence. Their research determined a correlation between twitter-derived sentiments and violent events in the Ukraine.⁵¹ These findings suggest even further that social media plays an amplifying role in its geographical and individual penetration into society facilitating social unrest and violence.

D. MORAL FOUNDATIONS THEORY

Moral Foundations Theory (MFT) is a theory that breaks down morality into two categories — vice and virtue. Beneath these two categories there are five foundations as subcomponents of moral vices and virtues. MFT is a collection and blend of previous works by various social scientists and psychologists to define morality. In 2007 Jonathan Haidt and Joseph Craig worked to create a systematic theory of morality by expanding on previous works examining morality across cultures.⁵² For example, Haidt and Craig built upon the four models of social relationships by Fiske,⁵³ the ‘three ethics’ of autonomy, community, and divinity by Shweder et al.,⁵⁴ and the evolution-based socioanalytic theory of moral development by Hogan et al.⁵⁵ Moreover, Haidt and Craig analyzed these theories alongside scholarly findings of common moral virtues such as fairness and purity, as highlighted by Mauss⁵⁶ and Douglass.⁵⁷ Haidt and Craig examined literatures in evolutionary psychology and anthropology across cultures seeking common evolutionary

⁵¹ Weiqi Kuah and Yee Hur William Chew, “Hashtag Warriors: The Influence of Social Media on Collective Violence in Ukraine” (Master’s thesis, Naval Postgraduate School, Monterey, CA, 2018), 35, <https://calhoun.nps.edu/handle/10945/61332>.

⁵² Jonathan Haidt and Joseph Craig, “The Moral Mind: How Five Sets of Innate Intuition Guide the Development of Many Culture-Specific Virtues, and Perhaps Even Modules,” *Oxford, The Innate Mind*, 3 (2007): 367–91.

⁵³ Alan Page Fiske, “The Four Elementary Forms of Sociality: Framework for a Unified Theory of Social Relations,” *Psychological Review* 99, no. 4 (1992): 689–723, <https://doi.org/10.1037/0033-295X.99.4.689>.

⁵⁴ Allan M. Brandt and Paul Rozin, *Morality and Health* (Psychology Press, 1997), 1–430.

⁵⁵ Robert Hogan, John A. Johnson, and Nicholas P. Emler, “A Socioanalytic Theory of Moral Development,” *New Directions for Child and Adolescent Development* 1978, no. 2 (1978): 1–18, <https://doi.org/10.1002/cd.23219780203>.

⁵⁶ Peter Warshall, “The Gift: The Form and Reason For Exchange in Archaic Societies,” *Whole Earth*, no. 92 (1998): 56.

⁵⁷ Mary Douglas, *Purity and Danger: An Analysis of Concept of Pollution and Taboo* (London ; Routledge, 2003), <https://doi.org/10.4324/9781315015811>.

thinking in their layered and integrated approach to produce the MFT. Their results produced the five moral vice categories of harm, cheating, betrayal, subversion, and degradation, as well as the five moral virtue categories of morality care, fairness, loyalty, authority, and sanctity.⁵⁸

E. MORAL FOUNDATIONS DICTIONARY

The original Moral Foundations Dictionary (MFD) was proposed by Haidt and Graham (2007), “The theory was first developed from a simultaneous review of current evolutionary thinking about morality and cross-cultural research on virtues ... an extension of Richard Shweder’s theory of the three ethics commonly used around the world when people talk about morality. The ‘big three’ of morality [autonomy, community, and divinity] and the ‘big three’ explanations of suffering.” Their study succeeded in the analysis of similarities and differences of the development of morality across cultures.⁵⁹ The original dictionary was created through two developmental phases. The expansive phase (phase one) consisted of determining the synonyms, antonyms, and associations to the base foundation words to include word stems and full words. The intent of the contractive phase (phase two) was to increase the moral accuracy by distilling the identified associative words. This was accomplished by removing words that were intuitively believed to have little or no association with the five foundations. Essentially, these keywords and stems were selected based on their degree of prototypic sentiment for each moral foundation. The final selection of relevant keywords and word stems for each virtue and vice in the moral foundations totaled 295 foundation related words known as the MFD.⁶⁰

Their theoretical framework is based on a relational model suggesting morality is constructed from ten positive and negative key values or five positive values each with an

⁵⁸ Jesse Graham et al., “Mapping the Moral Domain,” *Journal of Personality and Social Psychology* 101, no. 2 (2011): 368, <https://doi.org/10.1037/a0021847>.

⁵⁹ Jonathan Haidt, “Home,” Moral Foundations, 1, accessed October 20, 2021, <https://moralfoundations.org/>.

⁶⁰ Jesse Graham et al., “Liberals and Conservatives Rely on Different Sets of Moral Foundations,” *Journal of Personality and Social Psychology* 96, no. 5 (May 2009): 1039, <http://dx.doi.org/10.1037/a0015141>.

opposing negative value. The following values are considered the moral foundations: Care/Harm, Fairness/Cheating, Loyalty/Betrayal, Authority/Subversion, and Purity/Degradation. Table 1 describes the virtues (positive orientation) of each dimension of the MFT, while their vice (negative orientation) would be phrased in the opposite description.⁶¹

Table 1. Moral Foundations⁶²

VIRTUE	VICE	DESCRIPTION
Care	Harm	Compassion for others, ability to empathize, prohibiting actions that harm
Fairness	Cheating	Fairness, justice, reciprocity, rights, equality, proportionality, prohibit cheating
Loyalty	Betrayal	Group affiliation and solidarity, virtues of patriotism, prohibiting betrayal of one's group
Authority	Subversion	Fulfilling social roles, submitting to authority, respect for social hierarchy/traditions, prohibiting rebellion
Sanctity	Degradation	Associations with the sacred and holy, religious notions which guide how to live, prohibiting violating the sacred

The MFD has been used by various scholars who have conducted large-scale psychological and sociological analyses and produced substantial findings. Scholars such as Garten et al., 2016⁶³ and Lin et al., 2017 used the MFD in their studies of tweets related to natural disasters while, Graham et al., 2009, 2012⁶⁴ used these tools to analyze the relationship between political ideology and morality. Moreover, Mooijman et al.⁶⁵ and

⁶¹ Kristen Johnson and Dan Goldwasser, "Modeling Behavioral Aspects of Social Media Discourse for Moral Classification," in *Proceedings of the Third Workshop on Natural Language Processing and Computational Social Science* (Minneapolis, Minnesota: Association for Computational Linguistics, 2019), 100,102, <https://doi.org/10.18653/v1/W19-2112>.

⁶² Johnson and Goldwasser, 102.

⁶³ Justin Garten et al., "Morality Between the Lines: Detecting Moral Sentiment In Text," *University of Southern California*, July 2016, 1–6.

⁶⁴ Graham et al., "Liberals and Conservatives Rely on Different Sets of Moral Foundations," 1029–46.

⁶⁵ Marlon Mooijman et al., "Moralization in Social Networks and the Emergence of Violence during Protests," *Nature Human Behaviour* 2, no. 6 (June 1, 2018): 389–96, <https://doi.org/10.1038/s41562-018-0353-0>.

Rezapour et al.⁶⁶ used the word count method and the MFD to examine the production of moral language over social media.⁶⁷

F. MORAL LANGUAGE DIFFUSION AND INFLUENCE

The morally and emotionally charged textual lexicons within social media platforms are also widely studied and contested. William Brady and Julian Wills suggest that the diffusion of moral ideas was the cause of naturally formed social networks and lexicon within social media messaging. Using approximately five-hundred thousand tweets from politically polarizing topics in the U.S. (gun control, same-sex marriage, and climate change), and a MFD in concert with a “meaning of words” dictionary they demonstrated the power of emotional and moral lexicon to diffuse ideas. They arrived at three key findings. First, they found that the presence of moral-emotional language in political messages substantially increases their diffusion. Second, that above nonmoral-emotional expression, moral emotions contribute to moral contagion. Last, that expression of moral emotion over social networks is vital for the spread of moral and political ideas online.⁶⁸ Because these findings parallel and correspond with social “contagion” phenomena discovered by social scientists, the authors coined the term, “moral contagion” to represent the previous explained findings.⁶⁹

Moreover, in a statistical modeling study Johnson and Goldwasser built a relational model capable of classifying the implied moral foundations through specific moral lexicon over Twitter that U.S. politicians use to stimulate recipients, influencing them to the politicians’ moral cause. Johnson and Goldwasser take a wholistic approach to the identification of language, its sentiments and from whom the tweets came from, to generate

⁶⁶ Rezvaneh Rezapour, Priscilla Ferronato, and Jana Diesner, “How Do Moral Values Differ in Tweets on Social Movements?,” in *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*, CSCW ‘19 (New York, NY, USA: Association for Computing Machinery, 2019), 347–51, <https://doi.org/10.1145/3311957.3359496>.

⁶⁷ Mooijman et al., “Moralization in Social Networks and the Emergence of Violence during Protests,” 389–95.

⁶⁸ William J. Brady et al., “Emotion Shapes the Diffusion of Moralized Content in Social Networks,” *Proceedings of the National Academy of Sciences* 114, no. 28 (July 11, 2017): 7313, <https://doi.org/10.1073/pnas.1618923114>.

⁶⁹ Brady et al., “Emotion Shapes the Diffusion of Moralized Content in Social Networks.”

their probabilistic graphical model. Again, using politically controversial topics (women's rights, gun violence, immigration, terrorism, LGBTQ rights, etc.), the MFT and MFD, researchers analyzed the tweets for moral sentiment. They found that liberals and conservatives used different moral language to converse and communicate important events and identified which Moral Foundations were used the most from each of the Liberal and Conservative Senators. Once more, this study demonstrates the utility and importance of identifying the power and influence which moral lexicon and sentiment has upon society.⁷⁰ As suggested in this study, if politicians are using morally charged texts to influence audiences and the effectiveness can be seen as to the widening political polarization then it may be that these same techniques can be found within social movements that become violent due to in part to morally charged communications.

Similarly, research conducted demonstrated the use of moral language over social media and its power to influence behavior. In one study using quantitative analysis, researchers sought to identify the extent to which politicians used MFT in their political dialogue outlining dynamic social issues on social media. The type of moral lexicon used by politicians could identify how far left or right the politician leaned, based on the moral lexicon over Twitter.⁷¹ This research reveals that a foundational morality lexicon exists in political expression that is consistently and cohesively used by both democratic and republican parties to strategically influence the morality of listeners.⁷²

More closely related to this thesis are studies by Mooijman and colleagues, using quantitative data and experiments from the 2015 Baltimore protests to link violent human behavior patterns to moral lexicon over social media. Mooijman et al. sought to discover the factors that led peaceful social mobilizations to become violent mobilizations. They theorized that two prominent factors influenced individuals to commit acts of violence within a social movement. First, if the premise of the movement and lexicon utilized were

⁷⁰ Johnson and Goldwasser, "Modeling Behavioral Aspects of Social Media Discourse for Moral Classification."

⁷¹ Johnson and Goldwasser.

⁷² Johnson and Goldwasser, 100.

moral and secondly, if protesters perceived the culmination of a greater unity or alliance, (which he coined moral convergence) this would propel individuals to act.⁷³

G. OPTIMISTS, PESSIMISTS AND MORAL LANGUAGE

This literature review has explored various yet differing theoretical arguments and concepts behind techno-optimism and techno-pessimism. They had divergent beliefs surrounding the use moral language across social media. Specifically, their opposing attitudes debated the degree to which moral language across social media influences actors to unite psychologically, physically, and mobilize against a common cause. Techno-optimists argue that social media significantly facilitates the propagation of the number, speed, and reach of social movements through its ability to reach and impact vast numbers of individuals. They argued the existence of a significant quantitative correlation between the daily use of social media and increased chances of social mobilization participation by individuals. Likewise, social media have been linked to the facilitation of social mobilizations and their ability to become global.⁷⁴ Similarly, that social media provided a source for information and a platform for opinion expression from which individuals actions could be determined by online content, therefore creating a “digital phenotype.”⁷⁵ Lastly, that social media facilitates the formation of collective identities propelling individual into collective action.⁷⁶

Conversely, techno-pessimists presented compelling evidence contrary to techno-pessimists arguing for social media’s inability to psychologically compel individuals to physical unify collectively. They argued that social media fail to provide the tools necessary for a strong successful social movement. Secondly, that social media created

⁷³ Thorstad, “A Big Data Analysis of the Relationship between Future Thinking and Decision-Making.”

⁷⁴ Kidd and McIntosh, “Social Media and Social Movements”; Laer and Aelst, “Cyber-Protest and Civil Society: The Internet and Action Repertoires in Social Movements.”

⁷⁵ Valenzuela, “Unpacking the Use of Social Media for Protest Behavior.”

⁷⁶ Alberto Melucci, “The New Social Movements: A Theoretical Approach,” *Social Science Information* 19, no. 2 (May 1, 1980): 199–226, <https://doi.org/10.1177/053901848001900201>; Gerbaudo and Trere, “In Search of the ‘We’ of Social Media Activism: Introduction to the Special Issue on Social Media and Protest Identities.”

loose relationships and no leaders. Third that it promoted decision through consensus which enabled minimal participation. Fourth that social media promotes moral grandstanding in an attempt to increase their individual standing within a group while not participating. Fifth, that actors have a significant propensity to use social media primarily as entertainment. Actors stay safely at home texting about social movements with little risk and thus minimal physical mobilization. And the result of these factors hampers mobilizations and results in reduced political impact.

Lastly, the impact of moral lexicon and its ability to motivate and influence audiences was examined in this chapter. First, correlations were drawn between politicians' use of moral rhetoric through social media and its heightened ability to influence individuals over that of nonmoral rhetoric. Second, that the diffusion rate of ideas through social media increased when moral language was utilized.⁷⁷ Third, that "moral contagion" occurred through individuals preexisting networks which increased the chances of action by receivers of moral language within text. Lastly, that the combination of moral language and the degree which individuals perceive a heightened participation of others, facilitates forms of social identity that can cause a movement to move from peaceful to violent.

H. MOVING FORWARD

We have examined the extensive debate and various methods and styles of research concerning the impact of social media and moral lexicon's role in stimulating individuals to "take to the street" and mobilize in a violent fashion. Though a substantial quantity of research and findings on moral language, social media, and their ability to motivate individuals into action exists, there are still several questions left unanswered. In the results presented below, I have developed improved methods to expand on existing research to examine the question — Does moral lexicon within social media discourse impact activists during mobilization to shift a peaceful protest into a violent protest?

⁷⁷ Brady et al., "Emotion Shapes the Diffusion of Moralized Content in Social Networks."

Typically, existing work first selects specific social movement(s) to research and then applies either word count or probabilistic graphical model⁷⁸ approaches to moral language within social media. In these cases, researchers pre-determined the micro scale units of time (weeks/months) and place (city, U.S. only) from which to extract their data using Haidt's MFD. As in Johnson and Goldwasser's research on the 2015 Baltimore protest, I measured moral language using the word count method over social media. The following are examples of virtue language—compassion, guard, peace, balance, equality, ally, community, comply, fatherly, decent, holy, pure. And some examples of vice language measured are abuse, attack, cruel, destroy, cheat, bigot, unjust, abandon, betray, enemy, imposter, agitator, defiant, disrespect, illegal, lawless, degrade, dirty, disgust, foul, repulse, wicked. However, this approach expands both the moral lexicon and the geography of the analysis, to include measurements of one-hundred and seven languages over global Twitter feeds between 2013–2014 and correlates the proximity and location of feeds to the locations of violent protests in Africa as identified in the Integrated Crisis Early Warning System (ICEWS) database. This approach allows me to improve upon the identification and location of violent protests and acts of violence, by moving beyond the analysis of specific groups in a specific area, to a more generalized analysis that spans across broad times and locations.

The theses approach aims to demonstrate more clearly that moral lexicon acts as a significant influential factor, motivating vast amounts of individuals to protest violently, across diverse societies. Moreover, to build upon the work of Johnson and Goldwasser, I developed an improved version of Haidt's Moral Foundations Dictionary which adds past, present, gerund, adverb, and noun versions of each of Haidt's words. Moreover, adapting to the multilingual global approach, I translated the expanded MFD into one-hundred and seven languages, using automated machine translation.

Also, in contrast to previous work, this thesis is not concerned with the social and political end state of the movement. Its purpose through the analysis of moral lexicon over

⁷⁸ "Probabilistic Soft Logic," Probabilistic Soft Logic, accessed September 21, 2021, <https://psl.linqs.org/>.

social media is to identify the frequency of measurable moral language to discover the culminating point when a movement transitions from non-violent to violent. In particular, I focus on the following questions: 1) How deep is the impact of morally charged lexicon over social media upon actors, in triggering them to mobilize and sparking violent social movements? 2) To what extent can early warning statistical models measuring moral language over social media communications improve the effectiveness of government efforts to maintain security?

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III. THEORY AND HYPOTHESES

A. INTRODUCTION

What role does moral rhetoric transmitted through social media play in triggering a violent social movement? While there are many reasons why movements move from non-violent to violent, several scholars believe a significant relationship exists between moral rhetoric and the production of individual and collective violent behavior. A wide array of social scientists have endorsed the view that underlying attitudes are captured through language and that these attitudes have a high likelihood of leading to action. This work provides strong evidence that supports an expected correlation of moral rhetoric in producing violent behavior.

B. MORAL CONTENT AND VIOLENT ACTION

Recent findings by Mooijman et al. support the claim that the presence of moral discourse within social media possesses the pressure necessary to influence individuals to act violently.⁷⁹ Mooijman et al. found that the moralization of rhetoric caused individuals to be less tolerant and understanding therefore, more absolutist and disciplinarian in attitude. Their research found that these sentiments led to a mindset of resentment that that can significantly contribute to individuals' advocacy and sanctioning of violence.⁸⁰ Their evidence indicated that a higher word counts of moral tweets were a predictor of the count of arrests. Unable to correlate the hourly changes in tweets versus violent protest, Mooijman et al. used the number of arrests to indicate a "level of violence." The number of arrests was the next closest indicator of possible violence to correlate with the quantity of moral tweets. They found "that moral tweet counts predicted future arrest counts above and beyond current arrest counts and that as the count of moral tweets increases, the expected future count of arrests also increases. Thus, our model indicates a relationship

⁷⁹ Mooijman et al., "Moralization in Social Networks and the Emergence of Violence during Protests," 389.

⁸⁰ Mooijman et al., 389.

between the count of moral tweets and the future count of arrests.”⁸¹ Moreover, using regression analysis their second study indicated the direct and significant correlation between the acceptability of individuals using violence and the quantity of moral lexicon on their mobilization scale.

Skitka and Morgan contend that social and political issues that people perceive to reflect moral beliefs, generate convictions that are much more deeply rooted causing individuals to act out more frequently in a positive or negative manner. They conclude, “moral conviction can also fuel backlash against the legitimacy of political systems and authorities and is associated with greater acceptance of any means-including violence-to achieve preferred ends. It is not difficult to make the leap to the conclusion that moral conviction is a contributor to many of the world’s greatest ills, including acts of terrorism, genocide, and war.”⁸² Skitka and Morgan analyze several defining characteristics in which they find a link between moral convictions and the increase of individuals dogmatism, inflexibility, and parochialism. They noted greater political and social intolerances. Another words, individuals triggered by morality were found to become increasingly fanatic. Their tolerance for risk increased causing them to willingly accept and conduct acts of vigilantism and violence retaliating against the moral aggressor.⁸³

Out of the ten categories that Skitka and Morgan analyzed in which moral convictions can play a role in an individual’s thoughts, feelings, and behaviors, six drew findings and conclusions that support an increase in intolerance and heightened possibility for violence. The categories of objectivism and universalism, violence, political engagement, authority independence, means versus ends, and peer independence suggest likely non-violent to violent behavioral changes when moral convictions arise within individuals. Objectivism and realism as they pertain to moral convictions shows that individual perceive their moral convictions and reactions to be objective, or in other words, factual, impartial, and empirical. Likewise, morally convicted individuals believe that their

⁸¹ Mooijman et al., 391.

⁸² Linda J. Skitka and G. Scott Morgan, “The Social and Political Implications of Moral Conviction,” *Political Psychology* 35 (2014): 107, <https://doi.org/10.1111/pops.12166>.

⁸³ Skitka and Morgan, 100.

morals are universally applicable and therefore, many others have and share the same point of view on morally triggering topics.

Additionally, Skitka and Morgan's findings suggest that an individual's political engagement in violent or non-violent acts is linked to the triggering of their moral convictions. They observed that heightened political engagement and activism are significantly increased when an individual's moral convictions are prompted. Individuals' authority independence was also found to intensify as negative moral convictions were propagated. That is to say that moral convictions were triggered, sparking a greater moral purpose. Their moral convictions now became their "moral purpose." These scholars contend that this moral purpose drives and energizes a sense of duty and righteousness. Subsequently, causing individuals to supplant their normal perceptions of rules, procedures, respect for authority, and dependency on the establishment, relying only on their own moral authority to guide their actions and behavior.⁸⁴ Therefore, morally triggered individuals decision-making process goes from determining "right" from "wrong" to determining "moral" from "immoral" and thus causing them to approach issues from the perspective of the way they believe things "ought" or "should" be done rather than complying with established authorities.⁸⁵

Furthering their link to morality and the likelihood of violent behavior generated and induced by moral convictions, Skitka and Morgan found that when it comes to institutions making the "right" moral decision, individuals are more concerned that the institutions produce the "right" or "morally right" decision when considering means versus ends. That is that they are not concerned with how legitimate the process of an outcome may be, just that the outcome was "morally just." That is to say that morality is vital and essential while justice is negotiable and can be bent, twisted, and shifted to arrive at a moral outcome so that morality outweighs the legitimacy of the law.⁸⁶ This finding significantly supports the link between morality and violence. It shows in that a correlation exists as

⁸⁴ Skitka and Morgan, 107.

⁸⁵ Skitka and Morgan, 100–101.

⁸⁶ Skitka and Morgan, 101.

individuals' moral convictions increase their level of care for the process of institutional justice decreases and therefore, a higher likelihood of violent behavior can arise. In short, Skitka and Morgan found that "stronger moral conviction was associated with lower conformity rates and that moral conviction not only inoculates people from pressures to accept authority dictates or the rule of law, but it also inoculates people against even the very powerful effects of majority influence."⁸⁷ Moreover, Skitka et al. goes on to support that "procedures that fail to deliver morally 'correct' outcomes suggests that people may be willing to step outside of usual normative boundaries against violence or vigilantism in the name of their moral beliefs and that nonnormative and extreme means may be justified if it achieves a morally mandated end."⁸⁸

Likewise, Skitka and Morgan determined that moral convictions amplified and expanded peer interdependence. Simply, heightened moral convictions decreased individuals need or desire to be widely accepted amongst their social groups. Morally convicted individuals were more likely to resist a majority influence and unite with individuals who shared their same moral conviction and believed they knew the "right" and morally just answer, disregarding the legal consequences their actions may cause.⁸⁹ The influential power of moral conviction demonstrates that events such as the terrorist attacks on 9/11, ethnic cleansing in Bosnia, or the assassination of abortion providers share a moral conviction theme.⁹⁰ This all to say that one's morality has as much ability to cause someone to abide by the rules as it does to diminish and reduce an individual's normative personal and legal boundaries.

Similar conclusions to that of Skitka and Morgan were also found by Zaal et al. These scholars examined how individuals decided between taking violent or non-violent action during collective action using Tory Higgins' regulatory focus theory. The self-regulatory focus theory established the prevention and promotion-oriented decision-

⁸⁷ Skitka and Morgan, 103.

⁸⁸ Skitka and Morgan, 104,105.

⁸⁹ Skitka and Morgan, 103.

⁹⁰ Skitka and Morgan, 105.

making processes toward goal-oriented or directed behavior.⁹¹ The self-regulation approach asserts that prevention focused individuals were highly concerned with the fulfillment of duties with the motivation mindset of ‘ought to’, while the promotion focused individuals were more concerned accomplishing goals instead of the duties and responsibilities sought by the prevention focused individuals. In short, Zaal et al.’s findings support that “prevention-oriented individuals strong goals mandate by moral conviction as necessity, which cause them to become insensitive to objections to the way these goals are pursued. When these individuals believe that their group is treated in an immoral way, they become highly motivated to rectify this situation, paving the way for the occurrence of hostile forms of collective action.”⁹² In other words, the prevention systems seek responsibilities and justice with little regard to the means or actions on the way to the goal, as long as the ends are morally justified. The promotion orientation seeks the pursuit of moral actions or means to achieve a moral goal. Therefore, Zaal et al.’s research demonstrates a significant correlation between one’s morals and one’s propensity to adopt violence.

In addition to the prevention systems tendencies above, Higgins provides additional details and descriptions of the prevention focus’ role in its ability to contribute to violent behavior. Higgins uncovers several interesting findings that aid in our understanding of morality and the triggering of violent behavior. First, individuals with prevention focused approaches tend to view and measure events and situations through the lens of nonloss-loss. That is to say that these individuals have a sensitivity to negative outcomes, whether the absence or presence of a negative outcome.⁹³ Second, prevention focused individuals are inclined to avoid mismatches to desired end-states. Third, they are individuals in a state of vigilance seeking to avoid errors –making an individual mistake or mistakes made by others. Lastly, Higgins found that prevention focused individuals were more inclined to

⁹¹ Maarten P. Zaal et al., “By Any Means Necessary: The Effects of Regulatory Focus and Moral Conviction on Hostile and Benevolent Forms of Collective Action,” *British Journal of Social Psychology* 50, no. 4 (December 2011): 672, <https://doi.org/10.1111/j.2044-8309.2011.02069.x>.

⁹² Zaal et al., 683.

⁹³ E. Tory Higgins, “Beyond Pleasure and Pain,” *The American Psychologist* 52, no. 12 (1997): 1282–84, <https://doi.org/10.1037/0003-066X.52.12.1280>.

use the most extreme form of simplification when categorizing individuals during the assessment.⁹⁴ Armed with this data, the beginnings of Zaal et al.'s link between the prevention system and morality begins to stand out.

Zaal et al. skillfully used statistical analysis of the regulatory focus theory (i.e., prevention focus) and moral convictions to demonstrate the influential decision-making power of prevention focus added with strong moral convictions to produce violence during collective actions. The perspective exists that acting out violently against institutions is considered an immoral act and thus a contradictory act by individuals who were protesting any type of morality triggered event or action by institutions. Zaal et al.'s findings align with the adage that the "ends justify the means" when it comes to individuals who are triggered by morality or immorality and who are prevention oriented. They demonstrate that the combination of prevention-oriented individuals with strong moral convictions caused by the persecutor, outweighs the pressure toward normative behavior (non-violence) to take hostile and violent actions during collective actions. Zaal et al. find that "prevention-oriented individuals construe strong goals (such as those mandated by moral conviction) as necessities, which cause them to become insensitive to objections to the way these goals are pursued."⁹⁵ Therefore, Zaal et. al. work supports that by activating or igniting an individual's morality structure, individuals are more likely to act in contradiction to their morals to achieve a moralistic outcome.⁹⁶ Ultimately their perspective on the ways to reach their collective goal is seen as an "ought to" and necessity rather than as a desire, opening the proverbial door into hostile means in pursuit of their goals.

C. CONCLUSION

The links and connections of the susceptibility of individuals to act violently during collective actions has been observed and documented by various scholars. Their findings suggest that individuals are vulnerable and sensitive to the exposure to moral content,

⁹⁴ Higgins, 1285.

⁹⁵ Zaal et al., "By Any Means Necessary," 683.

⁹⁶ Zaal et al., 781.

which can significantly influence them to take on hostile and violent forms of collective action. Although violence may be considered an immoral act, individuals triggered or impacted by the immorality of others, can abandon their normative (moral) intuitions morally justifying their violent actions to achieve their “moral” goals. The results and impacts of this association can be observed in the numerous violent protests throughout the world in which the ties between moral conviction and documented violent social movements have occurred. Based on these considerations, the two main hypotheses are as follows:

- Hypothesis #1: In geographic regions with greater rates of moral rhetoric in social media communications, violent protest events will occur with greater frequency.
- Hypothesis #2: In geographic regions with relatively greater rates of negative moral rhetoric in social media communications, violent protest events will occur with greater frequency.

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IV. DATA AND METHODS

A. DATA SOURCES

Two primary data sources were used to conduct the statistical modeling to test the hypotheses presented above: the Integrated Crisis Early Warning System (ICEWS) and a global Twitter corpus licensed to the Naval Postgraduate School for research purposes. ICEWS employs the BBN ACCENT event coder, which identifies and separates cooperative or hostile actions and events within news articles. The BBN ACCENT coder can identify approximately 300 types of socio-political events in text such as news articles, blogs, and Twitter feeds. Moreover, ICEWS utilizes the Conflict and Mediation Event Observations Codebook or “CAMEO Codebook” from the Center for International Political Analysis Institute for Policy and Social Research at the University of Kansas.

The CAMEO codebook contains three hundred and twelve CAMEO numeric codes that simplify the identification of event types. The CAMEO codebook utilizes a dyadic event aggregations method, providing coded interactions/events between socio-political actors over time and space. After events are calculated per country and time-period, the information is filtered through the ICEWS system code. It is then “post-filtered” based on event type, which is done in two ways. It can be “post-filtered” from A) through a range of event intensities or B) through a set of one or more categories, mapping the events into predefined geopolitical exchanges. The sender, a receiver, an action type, and a timestamp within the article are linked and events/actions are mapped and coded with a numeric CAMEO code. To code the dependent variable, *Violent Protest*, I relied on CAMEO code #145, which records violent protests and riots, including protests which proceed in a “forceful” or “potentially destructive” manner.

The second data source utilized for this work was a global Twitter corpus, licensed through the NPS CODA Lab, representing a 10% random sample of all messages sent through the Twitter network, over the period from August 2013 to July 2014. This corpus was used as the basis for counting the occurrence of moral language over space and time. Messages were georeferenced using the self-reported hometowns in public user profiles, allowing

communication patterns to be tied to approximate geographic locations. All messages within the study area were coded based on exact matches to the newly expanded MFD described below.

This year period and location of the African continent were used for study as the observation window included periods of peace and violence, which enabled the accurate extraction of moral “signals” through word-counts, enabling the examination of links between aggregated moral lexicon and frequency of violent protest. Moreover, Twitter communication was used above other forms of data as I had access to large-scale historical archives of global Twitter communications and because Twitter communications have been used in several previous examinations of the extent to which moral texts impact behavioral patterns in political and social environments

B. UPDATING THE MORAL FOUNDATIONS DICTIONARY

Although the use of the MFD has been pervasive in the textual analysis field, the original MFD also contained several shortcomings. The original MFD contained several word stems that could have produced the false identification of non-moral words, which would have skewed these results. Therefore, the MFD was expanded to improve its ability to identify the relevant language for this research. First, suffixes were added to word stems as long as they did not change the prototypic meaning of the word. Second, noun form variants were added as they generally maintain the same root sense of the word. Third, alternative verb tenses, i.e. –ed, –ing, were added and the plural forms for nouns were also added as these did not change the base word. Fourth, to increase inclusivity for variants of ‘church,’ the alternatives ‘synagogue’, ‘mosque’, ‘temple’, and ‘shrine’ were Added. Fifth, duplicate entries were removed, so that each word corresponds to a single category, to which it is most strongly and specifically aligned. For example, variants of ‘loyal’ were kept in the *loyalty* category and removed from the *authority* category. Variants of ‘betrayal’ and ‘traitor’ were kept in the *betrayal* category and removed from the *subversion* category. Variants of ‘abandon’ were kept in *betrayal* and removed from *harm*. Variants of ‘apostate’ were kept in *degradation* and removed from *subversion*. With these additions, the new MFD was expanded to 1,157 English language words.

Lastly, following this expansion, the full dictionary was translated into one-hundred and seven languages using the Google Translate website to perform machine translation of each separate term. The updated and translated MFD corpus allowed me to identify moral language more effectively within foreign language text, significantly enhancing the ability to identify the frequency and density of moral language on a cross-national basis.⁹⁷

C. VARIABLES

1. Violent Protest and Moral Foundations

Using code in R Studio and the 2013–2014 ICEWS database, I extracted all the events with CAMEO code 145 (“Protest violently”) with their accompanying time, and geolocation (latitude-longitude) data. I then paired down the data further to include only countries within the continent of Africa. Next, I produced a map of Africa with Africa broken down into square grid cells with widths of 0.5 degrees (approximately 50km). The cells cover all land locations in Africa. Then, using the georeferenced Twitter data, 213,993,649 messages were identified geo-located within the bounding box around the continent of Africa, over the period August 2013 to July 2014. Of these messages, 46,306,829 contain a reference to at least one term from the translated moral foundations dictionary. The underlying parameters that were used to conduct the counts are as follows: search patterns taken from the dictionary were limited to a minimum of three characters and a maximum of forty characters and limited to phrases of up to seven words. Additionally, both dictionary patterns and input tweet text were normalized prior to comparison. The normalization converts the text to lowercase and replaces all punctuation (including multi-lingual word separators) with single spaces, so that minor variations of the patterns will still match.

For each of the key independent variables, the rate of moral language utilization is measured by counting number of messages matching at least one of the relevant terms, and then taking this as a proportion of the total volume of observed messages. These counts and proportions, along with the protest events from ICEWS, are then aggregated into units of

⁹⁷ Word density analysis and keyword frequency indicate “the number of times a keyword appears on a given webpage or within a piece of content as a ratio or percentage of the overall word count.” See “Keyword Density: What Is Keyword Density?,” Wordstream, accessed November 3, 2021, <https://www.wordstream.com/keyword-density>.

analysis consisting of grid-cell-months, resulting in 147,522 observations. The IVs were the proportions of *Moral*, *Vice*, *Virtue*, *Harm*, *Cheating*, *Betrayal*, *Subversion*, *Degradation*, *Care*, *Harm*, *Fairness*, *Loyalty*, and *Authority* lexicon. Proportions from the independent variables were generated to diminish the likelihood the counts of lexical occurrences would reflect social media density. To create the proportions, the number of each of the IVs were divided by the value of *Total*, which records the aggregate of the number of tweets per grid-cell-month.

In order to test Hypothesis #1, the independent variable *Moral Proportion* was coded by counting all messages that referenced at least one term from the expanded moral foundations dictionary. In order to test Hypothesis #2, the independent variable *Vice Proportion* was coded by counting all messages that references at least one negatively oriented term from the expanded moral foundations dictionary, while *Virtue Proportion* was coded by counting all messages that references at least one positively oriented term from the expanded moral foundations dictionary.

2. Control Variables

The origination and development of the control variables are as follows. The *GDPPC* data was captured from the geographically based economic data (G-Econ) from Yale University. Gross domestic product (GDP) is measured in gross cell product (GCP) thru 1-degree longitude by 1-degree latitude resolution at a global scale. *GDPPC* was measured using this dataset and divided by population density at each location.⁹⁸ The *Polity2* data was captured from Polity5 Project, Political Regime Characteristics and Transitions, 1800–2018, from the Integrated Network for Societal Conflict Research (INSCR). *Polity2* (strength of democracy) measures a regime in time-series analyses with a range of -10 to +10 as values ranging from full autocracy to full democracy.⁹⁹

⁹⁸ William Nordhaus and Xi Chen, “Geographically Based Economic Data (G-Econ),” Detailed Description of Derivation of G-Econ Data, 1–21, accessed February 11, 2022, <https://gecon.yale.edu/data-and-documentation-g-econ-project>.

⁹⁹ Monty Marshall, “POLITY5: Political Regime Characteristics and Transitions, 1800–2018 Dataset Users’ Manual” (Center for Systemic Peace and Societal-Systems Research Inc, April 23, 2020), 17, <http://www.systemicpeace.org/index.html>.

By considering population density, I was able to evaluate GDP per capita across all regions in Africa to have a better understanding of the relationship between the distribution of wealth and the susceptibility of violent protests. The expectation is that regions with high GDP per capita are more peaceful as people are leading better quality lives, and thus have less motivation to manifest violent protest, while areas of low GDP per capita have insufficient resources to pacify the populations needs, thus leading to an increased desire to protest the government. Moreover, by considering Regime Type, I was able to evaluate the institutional traits of the governments across all African regions, enabling a better understanding of the impact of the autocratic and democratic institutions of each country. Comparing Figures 1 and 2, this visualization allows us to see that both autocratic and democratic leaning countries both had numerous violent social movements

Control variables, *Accuse* (accuse of crime, corruption or human right abuses), *Rally* (rally in opposition against, which suggests a mobilization against a target both verbally and physically), and *Strike* (conduct strike or boycott) event counts, were obtained from the Integrated Conflict and Early Warning System (ICEWS) and described in the Conflict and Mediation Event Observation Codebook. Control variables *Accuse*, *Rally*, and *Strike* were each coded by counting all the events that met the criteria to be aggregated in their respective categories by event date, source or target country/sector affiliation.¹⁰⁰

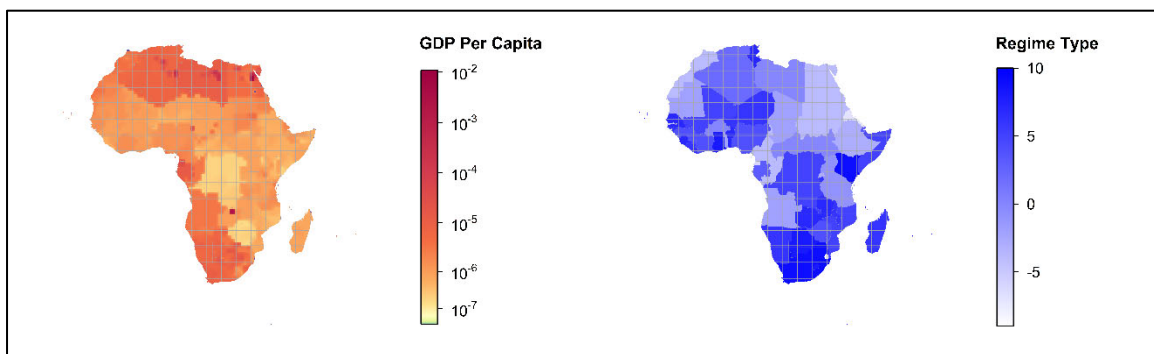


Figure 1. Key Control Variables

¹⁰⁰ Leidos, “Harvard Dataverse,” Integrated Crisis Early Warning System (ICEWS), 2021, <https://dataverse.harvard.edu/dataverse/icews>.

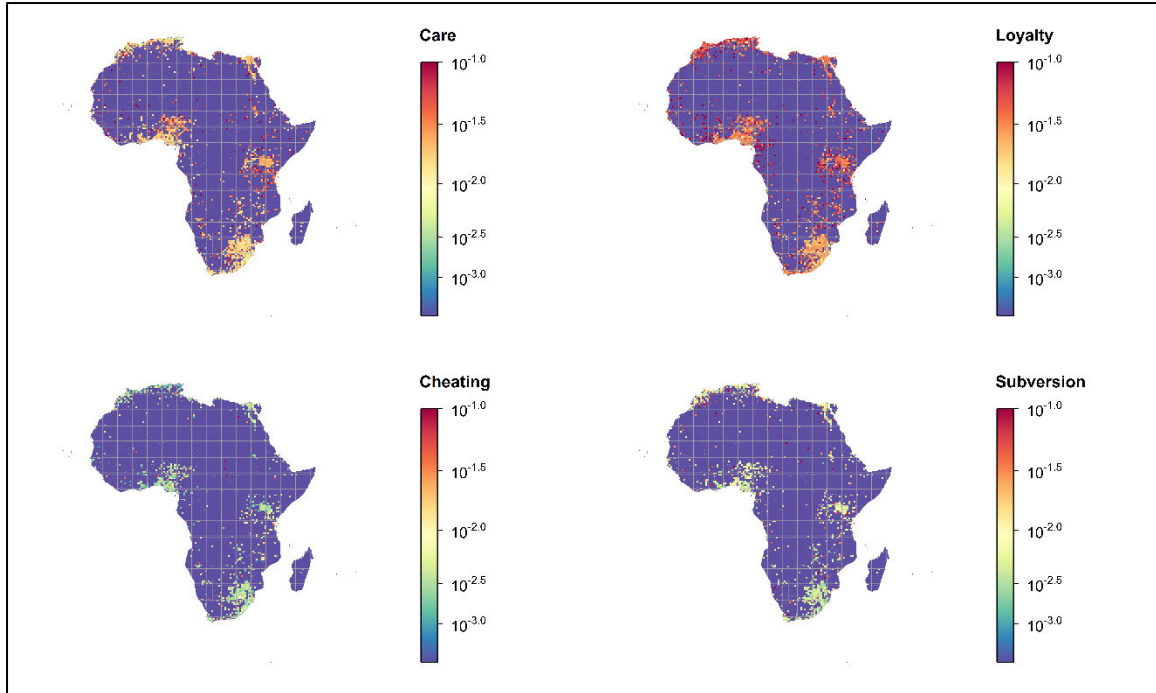


Figure 2. Statistically Significant Moral Proportions

D. REGRESSION ANALYSIS

1. Regression Model

A Poisson regression model was designated for the statistical analysis to because the dependent variable consists of non-negative counts. Specifically, the unit of analysis for the regression model was set at the grid-cell-month level, with a grid-cell width of approximately 50 kilometers. This method of analysis divides Africa’s entire territory into regular grid squares, with each side aligning to 0.5° of the earth’s longitude and latitude, equating to an approximately 31 x 31 miles for each cell. The level of resolution provided adequate fidelity in defining the locations of violent protests, while being comprehensive enough to capture sufficient observations for regression analyses, thus offering a balance statistical approach.

2. Dependent Variable

By geo-referencing violent protest events between 2013 and 2014 in Africa, I was able to generate a heat map to illustrate the violence density in each grid cell (see Figure

3). Regions of interest for this research were highlighted to identify potential areas that would impact the hypothesis testing. I observed higher rates of violence in several in areas, for instance Nigeria, Tunisia, Egypt, and Kenya. Intuitively, the figure displays increased violence in and around the capitols, and major city centers such as Ouagadougou in Burkina Faso, Algiers in Algeria, Tunis, in Tunisia Cairo in Egypt, Khartoum in Sudan and Nairobi Kenya. Nigeria of note had increased violence from its littorals, and northeast to its borders with Niger and Chad.

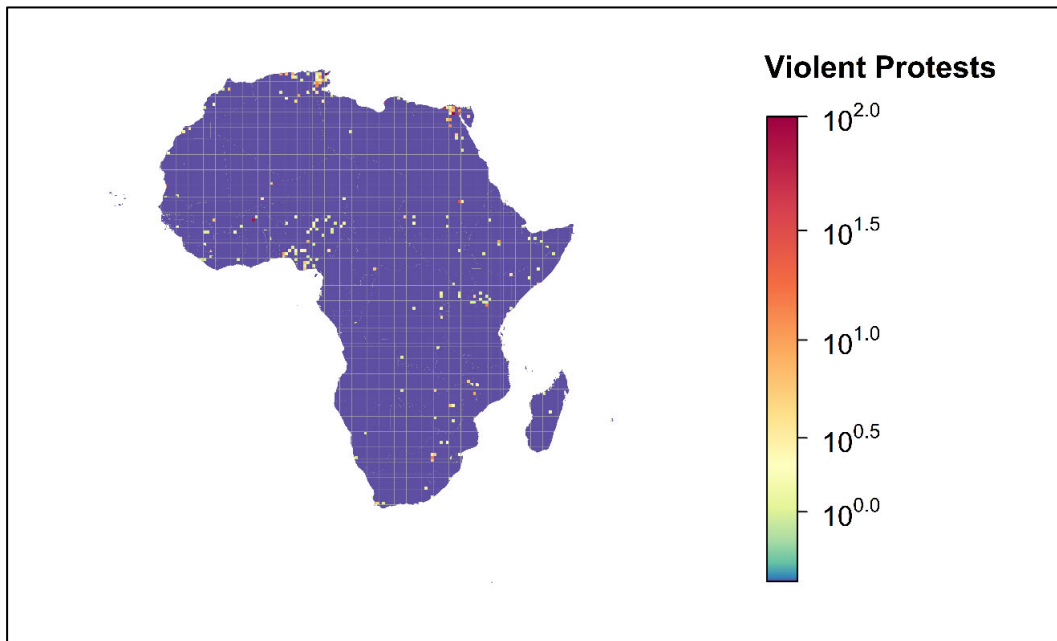


Figure 3. Violent Protest in Africa (Grid-Cell)

3. Independent Variables

Through the illustrations generated (see Figure 2), it appears that the highest concentration of *Care*, *Loyalty*, *Cheating*, and *Subversion* tweets transmitted in Africa centered around some of the same geo-locations of the higher volume of violent protests. Lastly, I observed that the distribution of Twitter volume of *Care* and *Loyalty* discourse seemed to be higher and denser than *Cheating* and *Subversion*. across municipalities around the continent.

Table 2. Regression Results: Twitter-Derived Moral Lexicon

	Count of Violent Protests			
	<i>Model</i>	<i>Model</i>	<i>Model</i>	<i>Model</i>
	(1)	(2)	(3)	(4)
GDPPC	-0.144*** (0.039)	-0.157*** (0.039)	-0.143*** (0.039)	-0.174*** (0.038)
Regime Type	-0.115*** (0.008)	-0.113*** (0.008)	-0.115*** (0.008)	-0.073*** (0.009)
Accuse	0.958*** (0.039)	0.934*** (0.039)	0.959*** (0.039)	0.920*** (0.041)
Rally	0.256*** (0.082)	0.235*** (0.083)	0.257*** (0.082)	0.170** (0.082)
Strikes	0.223*** (0.035)	0.211*** (0.036)	0.223*** (0.035)	0.193*** (0.036)
Total	0.419*** (0.020)	0.453*** (0.020)	0.417*** (0.020)	0.458*** (0.024)
Moral Proportion	0.127*** (0.034)			
Vice Proportion		0.064 (0.043)		
Virtue Proportion			0.137*** (0.035)	
Care Proportion				0.337*** (0.055)
Fairness Proportion				-0.041 (0.079)

	Count of Violent Protests			
	<i>Model</i> (1)	<i>Model</i> (2)	<i>Model</i> (3)	<i>Model</i> (4)
Loyalty Proportion				0.265*** (0.051)
Authority Proportion				0.071 (0.058)
Sanctity Proportion				-0.400*** (0.079)
Harm Proportion				-0.425*** (0.078)
Cheating Proportion				0.245*** (0.084)
Betrayal Proportion				-0.007 (0.084)
Subversion Proportion				0.378*** (0.060)
Degradation Proportion				-0.029 (0.072)
Constant	-8.141*** (0.584)	-8.627*** (0.634)	-8.058*** (0.590)	-6.706*** (0.911)
Observations	147,552	147,552	147,552	147,552
Log Likelihood	-2,399.122	-2,404.868	-2,398.822	-2,325.368
Akaike Inf. Crit.	4,814	4,826	4,814	4,685

The results of the models produced three noteworthy findings. First, the results suggest a significant relationship between morality and violent protests reflected in the strongest model indicated by the Akaike Information Criterion (AIC) score. This reinforced the belief that twitter derived moral lexicon contributes significantly to the risk of violent protest, as predicted by Hypothesis 1. Second, moral vices did not have a strong statistical relationship to the dependent variable *Violent Protest*. Negative moral expressions were not reliably associated with increased or decreased risk of violent social movements. Third, subcomponents of positive and negative moral discourse both increase and decrease the risk of violent protests.

To substantiate the thesis claims, regression prediction plots were generated (see Figures 4 -8) to reflect the substantive significance of the effect of each variable on violent social movement events in Africa. The visualizations of the regression plots reflect the substantive significance each independent variable has on the dependent variable (*Violent Protests*), while holding all other variables in the model constant at their mean values. The y-axis on each graph is the predicted outcome in terms of number of violent protest events in a grid-cell-month, while the x-axis shows the shift in each independent variable from its minimum to maximum value. Moreover, the slope of the line demonstrating either a positive or a negative relationship of the independent variables in relation to *Violent Protests* and the shaded portions around the prediction lines represent the 95% confidence interval.

E. FINDING ONE: MORAL DISCOURSE HAS A SIGNIFICANT RELATIONSHIP WITH VIOLENT PROTESTS

Twitter-derived moral lexicon significantly increased the risk of violent protest events in Africa from August 1, 2013, to July 31, 2014, strongly supporting Hypothesis 1. As seen in Table 2, Model 1 supports the finding that the total proportion of moral tweets (*Moral Proportion*) is positively related to the expected count of violent protest events, while Model 4 shows that the vices and virtues analyzed individually, establish even stronger statistical significance in predicting violent protest, with Model 4 producing an AIC score of 4,685, making it the strongest model in terms of predictive accuracy. Moreover, Figure 4 exhibits a positive relationship between *Moral Proportion* and *Violent Protest*. We can conclude with confidence that there is a strong positive correlation between number of violent protests in

Africa and Twitter-derived moral discourse due to the statistical significance ($p < 0.01$) of the coefficient capturing the relationship between the number of violent protests and Twitter-derived sentiments and the corresponding low standard error, as reported in Model 1.

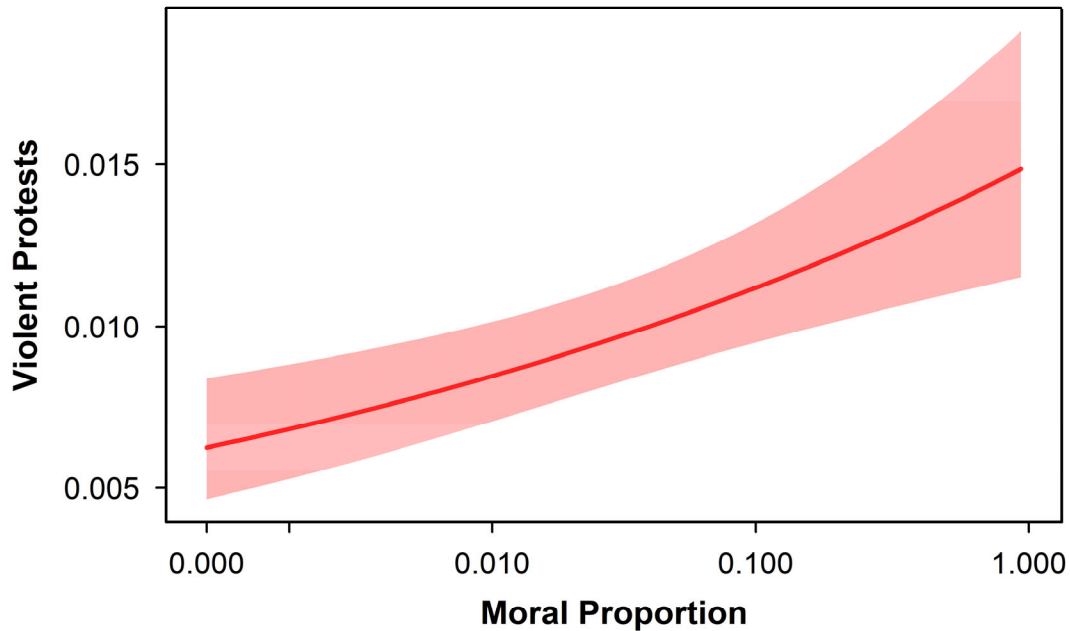


Figure 4. Regression Plot (Moral Proportion)

F. FINDING TWO: NEGATIVE MORAL DISCOURSE IS NOT RELIABLY ASSOCIATED WITH INCREASING OR DECREASING RISK OF VIOLENT PROTESTS

The results focusing on the aggregated counts from the Twitter-derived vice moral lexicon, as reported in Model 2, were inconclusive, and did not provide strong evidence of an increase in the risk of violent protest events, countering Hypothesis 2. Moreover, Model 4 reveals that independent variables measuring the negatively oriented sub-categories *Harm*, *Cheating*, *Betrayal*, *Subversion*, and *Degradation* had both increasing and decreasing impacts on the dependent variable. Two of the five vice foundations, *Betrayal* and *Degradation*, were statistically insignificant. However, *Cheating*, *Subversion*, and *Harm* were statistically significant. Even so, *Harm*, counter to intuition, had a negative relationship with the dependent variable, decreasing the risk of violent movements.

G. FINDING THREE: SUBCOMPONENTS OF POSITIVE AND NEGATIVE MORAL DISCOURSE BOTH INCREASE AND DECREASE THE RISK OF VIOLENT PROTESTS

Intuitively, one may believe messages that contain virtue moral lexicon themes such as *Care*, *Fairness*, *Loyalty*, *Authority*, and *Sanctity* would decrease the risk of violent social movements, while vice moral lexicon themes such as *Harm*, *Cheating*, *Betrayal*, *Subversion*, and *Degradation* would increase the risk of violent social movements. However, Model 4 revealed a mix of vice and virtue moral foundations that were either statistically insignificant or increased or decreased the risk of violent social movements. As displayed in Table 2, *Harm* and *Sanctity* proportions were both statistically significant ($p < 0.01$). Counter to intuition these IVs produced negative coefficients of -0.400 and -0.425 respectively, decreasing the risk of social movement violence. Conversely, “virtue” elements, *Care* and *Loyalty* were statistically significant ($p < 0.01$) and increased the risk of violence, generating coefficients of 0.337 and 0.265 respectively. These findings indicate that not all vice moral foundations contribute to violent social movements and that not all virtue moral foundation decrease the risk of violent social movements. The lexical dynamic appears to be more complex than originally hypothesized, showing that our intuitions about the world do not necessarily result in a correct interpretation of our environment. Figures 5 and 6 exhibit a negative relationship to *Violent Protest*, while Figures 7 and 8 display positive a relationship to *Violent Protest*. We can conclude with confidence that there is both a positive and negative relationships contained in the vice and virtue lexicon when compared to the number of violent protests in Africa. The IV in Figures 6 thru 8 had strong statistical significance between the number of violent protests and Twitter-derived sentiments as well as low standard errors.

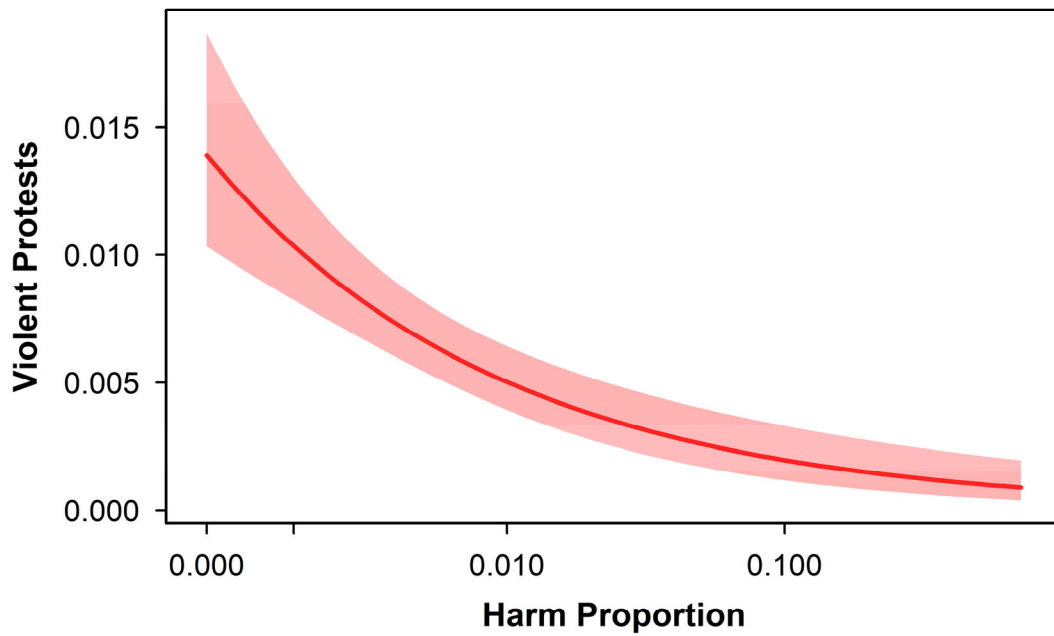


Figure 5. Regression Plot (Harm Proportion)

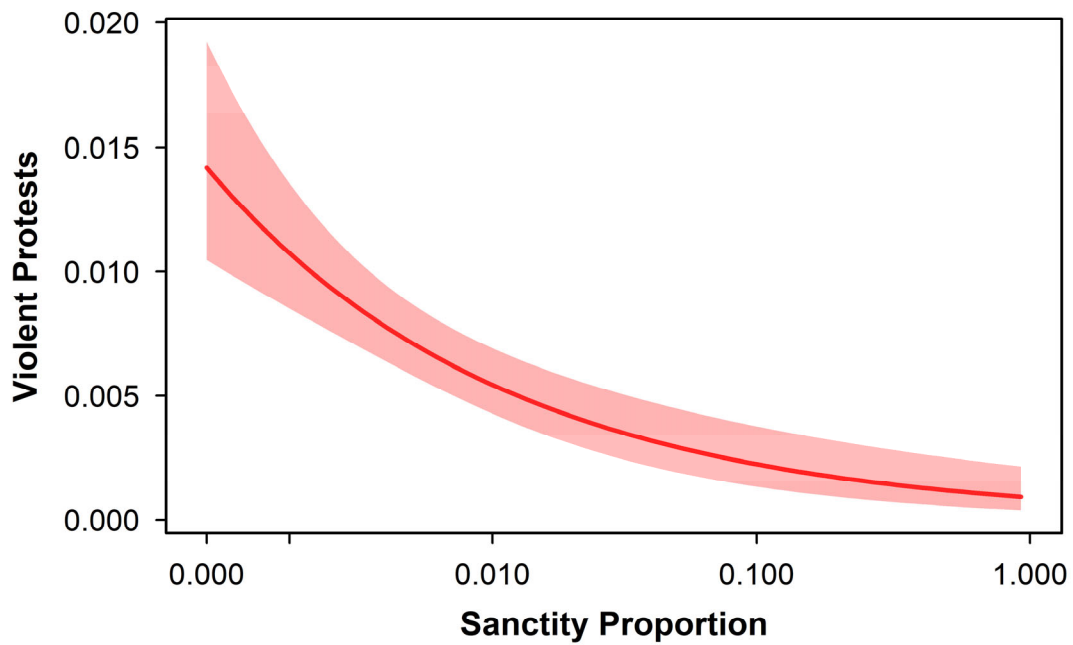


Figure 6. Regression Plot (Sanctity Proportion)

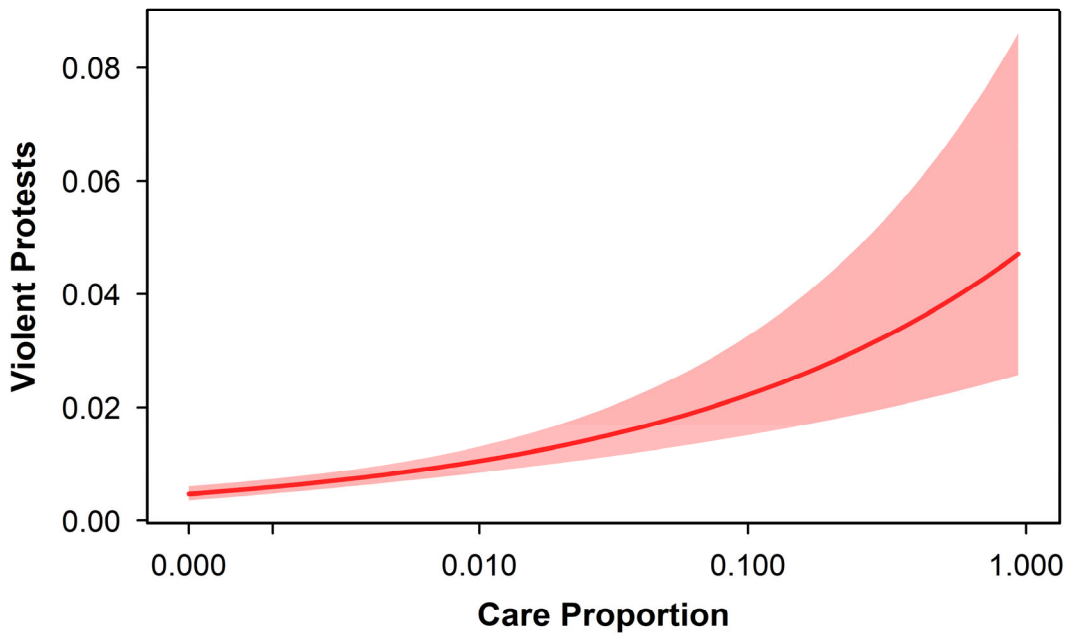


Figure 7. Regression Plot (Care Proportion)

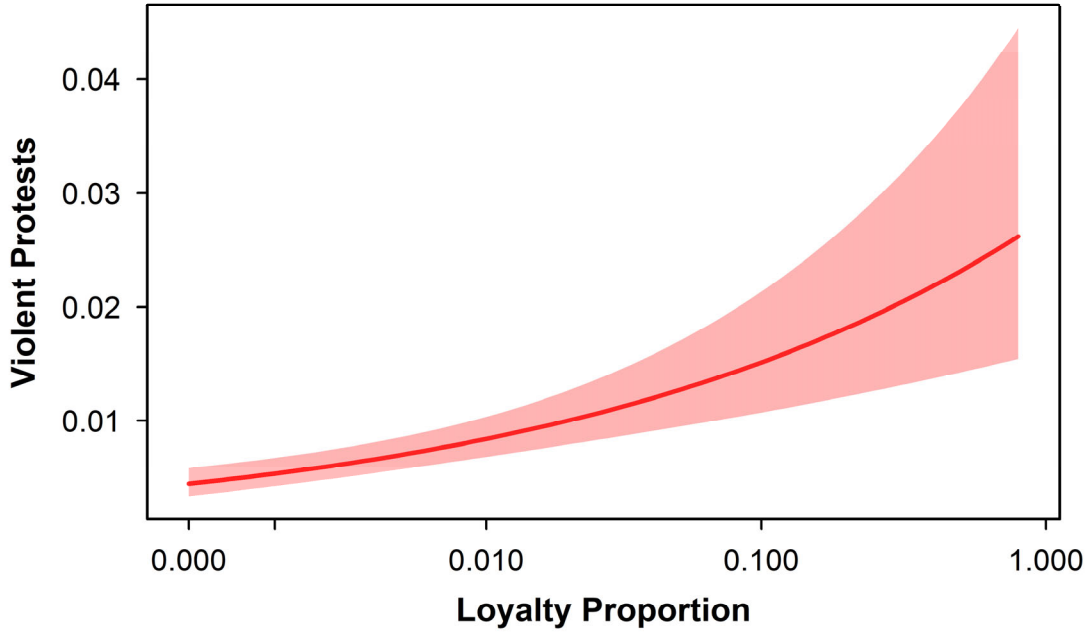


Figure 8. Regression Plot (Loyalty Proportion)

V. CONCLUSION

The thesis began with a curiosity about the use of moral language across social media and its potential influence to increase the risk of violent social movements. The analysis was pursued because this area of research is still under continuous development and had generally focused on selected violent social movements. This thesis attempts to progress beyond the boundaries of earlier studies, while taking a different approach. First, the MFD was expanded to include a wider range of grammatically similar terms. Second, the words in the expanded MFD were translated into 107 languages to capture the various languages spoken within Africa. Third, the locations of moral language use on Twitter were analyzed and compared to their frequency in locations of known violent movements. The hypotheses stated that violent social protests are more likely to increase with great rates of moral discourse over social media and that violent social protests are even more likely to increase with great rates of negative moral discourse over social media.

Through the course of this research, the data demonstrated that Twitter-derived moral lexicon increased the risk of violent movement events in Africa from August 1, 2013, to July 31, 2014. The unique challenge of the analysis was to objectively create an expanded MFD that was more inclusive than the original MFD and to geo-locate those millions of Twitter messages to 50km squares in order to create spatial-temporal metrics of moral discourse that could be systematically related to violent protest events.

To construct the statistical models, the dependent variable, occurrence of violent social protests across Africa, consolidated from the ICEWS database, was mapped out, against the independent variables capturing elements of moral discourse, harm, cheating, betrayal, subversion, and degradation (vice moral foundations) and care, fairness, loyalty, authority, and sanctity (virtue moral foundations), measured using pre-collected Twitter data licensed by NPS. To increase the robustness of the models, other social and political variables, GDP per capita, regime type, political accusations of crime, corruption, and human rights abuses, in addition to counts of non-violent rallies, strikes and boycotts were applied as controls.

In conclusion, this thesis resulted in three noteworthy findings. First, statistical evidence derived from the extended MFD demonstrates that moral language is a significant factor in increasing the risk of violent social movements. Second, the results focused on the negatively oriented vice moral lexicon showed inconsistent results, while harm-oriented discourse, counter to intuition, was found to decrease the risk of violent movements. Third, that complex differences in effects between moral sub-categories, including both increases and decreases in the predicted rates of violence, must be included in the model to generate the most accurate predictions of movement violence.

A. ADDITIONAL RESEARCH

During the research, some areas of interest were identified which future studies could explore. First, this thesis only considered violent social movements or protest events consolidated by the ICEWS database, which tracks events through automated systems and extracts the text from a variety of news stories.¹⁰¹ ACLED is another very reputable source of conflict data that could be used to replicate this same analysis. ACLED differs slightly from the ICEWS conflict analysis process in that it collects data from various sources such as news reports, publications by civil society and human right organizations, and security updates from local and international organizations.¹⁰² These differences in data collection would likely produce new and interesting results from which to compare and contrast findings to further the research on ICTs, social media and violent protests. Second, the thesis used a newly expanded and translated MFD. The translation of the dictionaries could be achieved through a different means other than automated machine translations, which could alter identification of moral content and thus the findings. Third, due to the counterintuitive findings, researching possible explanations as to why certain subcategories of moral discourse increase or decrease the risk of violent social movements and why the other subcategories played no consistent role in violent protest would be another valuable

¹⁰¹ Jennifer Lautenschlager, Steve Shellman, and Michael Ward, “ICEWS Event Aggregations” (Harvard Dataverse, May 7, 2020), 3, <https://doi.org/10.7910/DVN/28117>.

¹⁰² ACLED, “Armed Conflict Location & Event Data Project (ACLED) Guide for Media Users” (Madison, WI: ACLED, 2019), 2, https://acleddata.com/acleddatanew/wp-content/uploads/dlm_uploads/2019/04/ACLED_User-Guide-for-Media_2019FINAL.pdf.

direction for analysis. This future research could illuminate further the diversity of moral sentiments and their relationships to human behavior, specifically leading up to and during violent social movements. Lastly, the replication of this analysis using other geographic regions would be essential as to whether these results can be reproduced in other countries. Similar methods of research and data analysis would enable further comparative analysis, revealing the accuracy of the models in other regions under different cultural environments.

B. LIMITATIONS

In addition to the modifications that could be made to this study discussed above, there were several limitations to this study which likely effected the results and conclusions. First, the use of the expanded MFD created a strict baseline from which to identify moral language. Though the MFD is a highly recognized theory-driven analysis of naturally occurring moral rhetoric compiled into a dictionary and used by several scholars, words in themselves without broader context can have greatly different meanings. And accurately identifying and categorizing moral lexicon with a variety of human annotators is highly challenging. Moreover, the variety and scope of issues that become morally triggering for individuals and the language they use may vary depending on age, regions, religious groups, cultural groups, socioeconomic classes, and contexts.¹⁰³ Second, like the use of the MFD, the word count method is limited as it diminishes the context of a dialogue. Whereas articles, blogs or books have greater content and increased academic lexical correctness, tweets are generally significantly shorter containing less precise language (spelling and grammar mistakes), limiting the effectiveness of word matching and the word count method. Third, the MFD created for this study was translated through Google Translate. There are likely other translation approaches that may be able to enhance the translation process to more accurately identify lexical incongruencies.

C. RECOMMENDATIONS

The intent of this thesis is not only to illustrate that moral discourse through social media is one of the many causal factors increasing the risk of violent social movements,

¹⁰³ Garten et al., "Morality Between the Lines: Detecting Moral Sentiment In Text," 1,2.

but more importantly, to provide a framework that highlights the utility of leveraging non-violent de-escalation techniques by a government to reduce the risk of a movement turning violent. It may be beneficial for state and local authorities to track morality discourse within social media during periods of social upheavals to improve both security and government leader response times and state authority expectations of the potential for violence by examining verbal crowd behavior during a social movement. The foresight gained through leveraging the tracking of moral language over social media could potentially lead to a decrease in loss of life, infrastructure damages and economic loss caused by violent social movements and civil disorder.

In a more strategic sense, inflammatory moral language transmitted over social media, especially at a large scale and rate, could be a tool our adversaries leverage against our allies and our nation. For this reason, the ICT domain should be considered a contested space, which therefore should produce a security requirement to protect this space. The ideas of information warfare, network centric warfare, and actions and activities short of war are not new concepts. Foreign adversarial powers have been observed to use morality and social media as a means of subversion to provoke and inflame “naturally occurring” social movements to undermine popular support for governments. Therefore, the identification of incendiary messages by adversaries, whose aim is to sow discord and distrust amongst the populace against the government, must be enhanced. To mitigate the insidious use of moral language and social media, the government could also use forms of moral discourse, such as a focus on themes of sanctity, which have been found to decrease the risk of violent social movements, to mitigate adversarial subversive attacks aiming to influence the populace.

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