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Walden University

College of Social and Behavioral Sciences

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Ellen Rose Berman

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University
2019

Abstract

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By

Ellen Rose Berman

MA, American Military University, 2013

BS, University of Maryland, 2010

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Policy and Administration

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May 2019

Abstract

The U.S. Department of State disseminates counter-radicalization information through social media but has been unable to reach users due to an inability to create engaging posts due to a lack of understanding of the interests of the general population. The purpose of this quantitative study was to assess the utility of data analytics when administering counter-radicalization social media campaigns. The population for this study were social media posts published on the Quilliam Facebook page between 1 January 2018 and 31 December 2018. The nonexperimental quantitative descriptive research design sought to examine the correlation between the independent variables (topic of a post, use of visual aids in the post, and the geopolitical region the post addresses) and the dependent variables (resulting likes and shares). This study relied on the strategic choice theory which argues that individuals perform a cost and benefit analysis when deciding to join a terrorist organization and commit acts of terrorism. Specifically, individuals are often interested in participating in terrorism in an effort to gain resources and feel a sense of belonging but can be dissuaded upon realization that terrorism can actually degrade their quality of life. The research found that social media can be used as a tool to increase the perceived costs of terrorism and decrease the perceived benefits of terrorism. The study concluded that posts which involved a personal story emphasizing the ramifications of terrorism and included a video resulted in the highest number of likes and shares, respectively. The findings provide a strong argument for utilizing data analytics to improve the dissemination of counter-radicalization information which could prevent individuals from joining terrorist organizations and committing acts of terrorism.

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Chapter 1: Introduction to the Study

On 15 April 2013, Dzhokhar Tsarnaev and Tamerlan Tsarnaev, detonated two explosive devices near the finish line of the Boston Marathon (Sinai, 2017). The brothers were motivated to defend Islam and left a note stating that the bombings were retribution for U.S. military action in the Middle East (Sinai, 2017). The brothers were not connected to any terrorist organizations (Sinai, 2017). They were radicalized by listening to the thoughts and opinions of their friends and family who were sympathetic to the jihad and viewing jihadist material on the internet (Sinai, 2017). The brothers chose the Boston Marathon because it was an upcoming event in their area. Further, the brothers used instructions from Al Qaeda's *Inspire* magazine to create the explosive devices using a pressure cooker and fireworks (Sinai, 2017).

The Boston Marathon Bombing marked a substantial shift in global terrorist strategy. Attacks no longer required years of planning where known terrorists had to routinely communicate to recruit followers, plan the attack (choose target, date, time, method, personnel, etc.), and acquire sophisticated weapons. Attacks are now executed by the inspired who require no contact with known terrorists, minimal planning, and weapons comprised of household items. As a result, the historic approach to counterterrorism involving the intercept of communications to prevent attacks is quickly becoming obsolete.

Background of the Study

Over time, terrorism has evolved. From 1972-2002, terrorist organizations used directed attacks where fighters traveled to the terrorist organization's headquarters, completed extensive training, and were given specific instructions to execute an attack that was meticulously planned. From 2002-2010, terrorist organizations were forced to use enabled attacks because fighter

could no longer travel to the Middle East to receive training. Terrorist organizations feared that foreign governments would monitor fighters who return or send operatives to infiltrate their ranks (Vidino, Marone, & Entenmann, 2017). In response to these changes, recruiters began providing detailed information and instructions to fighters over the internet and occasionally deploying recruiters to meet with fighters to provide further assistance. After 2010, terrorist organizations began using inspired attacks because they believed that the communications of recruiters were being heavily surveilled by various governments (Brantly, 2017). Recruiters began posting general information and instructions about how to execute attacks to the masses through a range of websites (Baaken & Schlegel, 2017).

The internet is a source of information and a means of communication that can also enable spreading ideology and indoctrinating recruits. With the emergence of social media, a growing number of citizens from Europe, Canada, and the United States are being provided terrorist content and becoming radicalized. The majority of terrorist content on social media is generated by the Islamic State which has over 50,000 affiliated accounts that average 200,000 posts a day (Berger & Morgan, 2015). Much of the progress is the result of between 500 and 2000 accounts, many of which are bots that simply repost Islamic State content so that it trends (Berger & Morgan, 2015). The Islamic State uses many social media applications; such as Twitter, Facebook, YouTube, Instagram, Tumblr, Telegam, Kik, WhatsApp, and Surespot to reach their target audience of males between the ages of 16 and 25 (Wilner & Rigato, 2017).

Many citizens are drawn to the Islamic State for religious, ideological, and material reasons. Many fighters want to assist in the development of a caliphate for Muslims that is governed by Sharia Law as they believe is stipulated in the Quran (Stacey, 2017). Other fighters

are drawn to the Islamic State because they want to be a part of a revolution that changes the balance of power in the world. Some fighters are drawn to the Islamic State because of the promises of a luxurious lifestyle which includes cars, houses, and multiple brides. Regardless of the reason, the inspired no longer need to travel to the Middle East to learn how to plan and execute an attack. Instead, they only need an internet connection. The Islamic State administers countless social media sites which explain how to build a bomb, which gun to purchase for a mass shooting, and where to drive a truck into a crowd of people (Stacey, 2017). The evolution of terrorism from directed, to enabled, to inspired, attacks has made it impossible to detect terrorists and uncover their plans; this, in turn, leaves governments to pursue another option – counter-radicalization (Stacey, 2017).

Problem Statement

Most research on radicalization focuses on the recruitment of an individual to execute an attack and ignores the factors that caused the individual to consider becoming involved in terrorism. Researchers have not studied what is effective, or ineffective, at reaching the general population with the intention of dissuading at-risk individuals from joining terrorist organizations. What makes a person want to become involved with terrorism? What makes a person plan a terrorist attack? What makes a person execute a terrorist attack? What can prevent a person from completing each step? Questions, like these, all target the fundamental problem of developing and disseminating information that can successfully prevent radicalization.

Radicalization is a process. It typically starts when people are frustrated with their surroundings at a local or global level. The individuals then begin voicing their frustration to friends and family who agree with them (van Eerten, Doosje, Konijn, de Graaf, & de Goede,

2017). Once their perspective is validated, they begin searching for more information (usually via the internet) that further affirms their beliefs that Islam is under attack, Islam must be protected, and that it is their duty to protect Islam (van Eerten et al., 2017). The available ideological information often also explains the benefits of joining a terrorist organization, which often include things such as camaraderie, spouses, leadership who represent them and their interests, a house, and a vehicle (Faria & Arce, 2005). Finally, there is a trigger; the individual will experience a great injustice either at a community or global level resulting in a commitment to the cause and encourage them to plan and execute an attack (Rowe & Saif, 2016). This study will rely on the strategic choice approach as it focuses on the first stage of the radicalization process where individuals begin discussing their frustration with friends and family and searching for more information on the internet (van Eerten et al., 2017). The outcome of this study is based on a statistical evaluation of a nongovernmental counter-radicalization social media campaign to determine what types of information reach and engage the general user population on social media.

Purpose of the Study

This quantitative study sought to assess the utility of data analytics when administering counter-radicalization campaigns on social media. The descriptive design examined the correlational relationship between the independent variables (CATEGORY, CONTENT, and GEOPOLITICAL REGION) and the dependent variables (resulting LIKES and SHARES). The findings provide a strong argument for utilizing data analytics when administering a counter-radicalization social media campaign.

Several countries are in the process of administering counter-radicalization social media

campaigns to prevent vulnerable populations from being recruited. The United Kingdom administers *Prevent Tragedies*, Canada administers *Extreme Dialogue*, and the United States administers, *The Global Engagement Center*. With under 20,000 followers for each account, these governmental counter-radicalization social media campaigns are not reaching the general population (Mazza, Monaci, & Taddeo, 2017). However, there are currently several nongovernmental counter-radical social media campaigns that are gaining a following.

Quilliam is a Think Tank founded by Maajid Nawaz, Rashad Zaman Ali, and Ed Husain, who are all former members of Hibur-Tahrir, an organization that has been accused of supporting and participating in terrorist activity (Hamid, 2016). The absence of government involvement and the founders illicit background has fostered a sense of credibility that has undoubtedly contributed to its popularity (Hamid, 2016). After all, those with ties to terrorist activity are most equipped to discuss terrorism. Their Facebook page has over 25,000 followers who routinely like, share, and comment on the content posted (see Figure 1). The content posted emphasizes the destruction being caused by religiously motivated terrorism and promotes a moderate practice of the religion (see Figure 2).



Quilliam ✓
@QuilliamInternational

[Donate](#)

[Send Message](#)

Liked

Following

Share

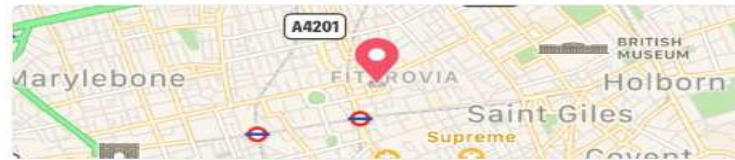
Save

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<http://www.quilliaminternational.com/>

[Send Message](#)

Nonprofit Organization

Community

[Invite your friends to Like this Page](#)

26,697 people like this

27,115 people follow this

Note. From “Quilliam,” in *Facebook* [Group page]. Retrieved December 28, 2018, from <https://www.facebook.com/QuilliamInternational/>
 Figure 1. Quilliam Facebook page



Note. From “Quilliam,” in *Facebook* [Group page]. Retrieved December 28, 2018, from <https://www.facebook.com/QuilliamInternational/>
 Figure 2. Quilliam newsfeed

Research Question and Hypotheses

The study attempted to answer the following three questions to understand if certain posts are more likely to trend on social media than others:

1. Are some categories of information posted on social media more appealing to the general user population than others? If so, which categories of information posted on social media are more appealing to the general user population than others?

2. Are some content styles on social media more appealing to the general user population than others? If so, which of the content styles on social media are more appealing to the general user population than others?
3. Are some social media posts concerning geopolitical regions more appealing to the general user population than others? If so, which geopolitical regions are more appealing to the general user population than others?

Each post in the sample was coded based upon its CATEGORY (personal story, news article, research/policy analysis, military defeats, religious doctrine), CONTENT (written status, written status with a link to a website, written status with a video, written status with a photograph), and GEOPOLITICAL REGION (West, Middle East, global, cyber). The dependent variable was the effectiveness of the social media posting measured by the number of LIKES and SHARES. The results led to the acceptance or rejections of the following null and alternate hypotheses:

H₀₁: The social media post CATEGORY of personal story will reach more social media users than other categories.

H_{a1}: The social media post CATEGORY of personal story will not reach more social media users than other categories.

H₀₂: The social media post CONTENT of written status with a link to a website will reach more social media users than other CONTENTS.

H_{a2}: The social media post CONTENT of written status with a link to a website will not reach more social media users than other CONTENTS.

H03: The social media post GEOPOLITICAL REGION of Middle East will reach more social media users than other GEOPOLITICAL REGIONS.

Ha3: The social media GEOPOLITICAL REGION of Middle East more social media users than other GEOPOLITICAL REGIONS.

Theoretical Framework

The field of terrorism is dominated by two overarching approaches. The first approach claims that terrorists are psychopaths who choose to attack others due to mental abnormalities or traumatic past experiences leading to mental challenges (Borum, 2011). This approach is insufficient because it is unable to explain the majority of attacks that have occurred over the last 2 decades. The 1995 Paris subway bombings, 2001 attacks on the World Trade Center, 2005 London subway bombings, and 2015 coordinated Paris attacks were all found to be orchestrated by terrorist organizations which, afterwards, communicated the specific goals that the attacks were intended to achieve (see Table 1).

Table 1

Terrorist attacks and motive

Attack	Year	Terrorist organization responsible	Stated goal
Paris Subway Bombing	1995	Armed Islamic Group of Algeria	To force France to end its aid to Algeria's military rulers
9/11	2001	Al Qaeda	Retribution for U.S. supporting: -attacks on Muslims in Somalia and Chechnya -Indian oppression of Muslims in Kashmir -Israeli aggression against Muslims in Lebanon -the presence of U.S. troops in Saudi Arabia

London Subway Bombing	2005	Al Qaeda	Retribution for the British supporting: -attacks on Muslims in Chechnya -oppression of Muslims in Palestine -military occupation of Afghanistan and Iraq
Coordinated Paris Attack	2015	The Islamic State	-Revenge against France's participation in the international coalition to eliminate the Islamic State -To show the world that the Islamic State's reach is not limited to the Middle East -To recruit new followers

Note. From "What Terrorists Really Want: Terrorist Motives and Counterterrorism Strategy," by M. Abrahams, 2008, *International Security*, 32(4), p. 78-105.

The second approach is the strategic choice approach, which asserts that attacks are used as an instrument to achieve religious, social, political, and/or economic goals (Borum, 2011). This approach assumes that terrorists and terrorist organizations are rational and perform a cost and benefits analysis when making decisions (Borum, 2011). The strategic choice approach also attempts to explain the dynamics within terrorist organizations as the individuals are concerned with their own power and the group's power, both of which can be a higher priority than ideological goals. The flaw in the strategic choice approach is that while terrorist organizations are largely motivated by power, there are also other factors that play a role such as values, especially when the terrorists involved are deeply religious (Borum, 2011).

Social Movement Theory

The strategic choice approach laid the foundation for the social movement theory, which has been used to explain how people become radicalized (Borum, 2011). The social movement theory suggests that people are motivated to carry out or resist social change when they feel deprived of resources. The creation of the social movement theory cannot be attributed to a single philosopher but has been developed over the years by Davies who published *Toward a Theory of Revolution* in 1962, Touraine who published *Sociologie de l'action*, in 1965, and C. Tilly who published *As Sociology Meets History* in 1981. Davies argued that revolutions were due to rising individual expectations and falling levels of perceived well-being (Davies, 1962). Touraine (1965) and Tilly (1981) further explained that individuals will unite over their disappointment with economic conditions and attempt to implement change, which results in a social movement.

With the emergence of social media and its constant accessibility, individuals have become keenly aware of their socioeconomic status. It only takes a few minutes to scroll through Facebook, Instagram, and Twitter to see the lavish life of others and compare it to one's own circumstances. Terrorist organizations exploit this vulnerability by advertising the obtainment of resources not only for themselves but for others who are like them (Boucek, 2011). These resources are often social (i.e., camaraderie and spouses), political (i.e., leaders who represent them and work towards their interests), and economic (i.e., jobs, houses, and cars). If the social movement theory is true, then it is possible to prevent radicalization by improving social, political, and economic living conditions in communities that encourage susceptible people to ignore recruiters (Boucek, 2011)

Social Identity Theory

The social identity theory builds upon the social movement theory by explaining that individuals see themselves based on their knowledge of membership to a group. This understanding is used to predict an individual's and group's behavior. The social identity theory was originally formulated by Tajfel and Turner in the 1970s and 1980s who published several papers. Tajfel independently published *Inter-individual and Intergroup Behavior* (Tajfel, 1978). Turner independently published *Social Categorization and Social Discrimination in the Minimal Group Paradigm* (Turner, 1978). Then, Tajfel and Turner jointly published *The Social Identity Theory of Intergroup Behavior* (Tajfel & Turner, 1986). Tajfel and Turner argued that if an individual wants to enhance her self-image, she will change her perspective and actions to improve the status of the in-group and degrade the status of the out-group, essentially dividing the world into "us" and "them" (Borum & Neer, 2017). Tajfel and Turner believed that this phenomenon is initiated when an individual categorizes himself as part of a group, then he adopts the identity of the group and behavior of others in the group, and finally he begins to compare his group with all other groups (Tajfel & Turner, 1986).

Applying Social Movement and Social Identity Theories to Radicalization

Terrorist organizations are often motivated to collect and maintain a large number of supporters and utilize the social movement theory and social identity theory to achieve these goals. Terrorist organizations attempt to provide their members with more benefits than costs leading to emotional attachment to the group and improving cohesion (Al Raffie, 2013). Benefits often include a mixture of social, political, and economic resources and group membership, as explained

by the social movement theory and social identity theory. When a group can offer more individual benefits and fewer costs, recruits will join (Al Raffie, 2013). When a group offers fewer individual benefits and more costs, members will defect (Al Raffie, 2013). If joining a terrorist organization and choosing to execute an attack appear to be strategic choices made after weighing the costs and benefits, then a potential strategy to prevent radicalization could be to decrease the perceived benefits of terrorism and increase the perceived costs of terrorism. This strategy assumes that individuals who choose to commit acts of terrorism are rational actors making a strategic choice. Individuals who are mentally unstable could join regardless of costs and benefits and most likely would not be dissuaded by a counter-narrative.

This study attempted to develop a preliminary understanding of what information about the cost of terrorism captures the attention of the general user population on social media. This was accomplished by measuring the reach of information about the costs of terrorism. It focused on the type of the cost (personal stories about those who are affected by terrorism and military defeats) and how the cost was communicated to the general user population. The results of this study could be used to design a follow-on study which builds on the strategic choice approach to test the validity of the social movement theory and social identity theory. The social movement theory suggests that individuals join terrorist organizations and commit attacks when they feel deprived of resources (Borum, 2011). Further research could focus on providing information about the lack of resources within the Islamic State's caliphate and measuring the resulting public perception of the Islamic State. Social identity theory suggests that individuals join terrorist organizations and commit attacks to feel like a member of a group (Borum & Neer, 2017). Fur-

ther research could focus on providing information about Islamic State fighters who were ostracized by the terrorist organization and measuring the resulting public perception of the Islamic State.

Communication Concepts

Targeted Information

In addition to the strategic choice approach, social movement theory, and social identity theory, this study also relied on several communication concepts. On social media, users are constantly bombarded with information from a variety of different platforms. Currently, terrorist organizations primarily use Twitter, Facebook, Telegram, and YouTube (Wilner & Rigato, 2017). While viewing information contributes to radicalization, an individual's social interactions also play a pivotal role. This study focused on Facebook because 22% of the world's population uses Facebook, making it the most popular social media platform (Donnelly, 2018). In addition, unlike Twitter, Telegram, and YouTube, it leverages a user's social network when disseminating information (Tremayne, 2017). When compared to Twitter, Telegram, and YouTube, Facebook is more often used as a source of information rather than a means of communication (Westerman, Spence, & Van Der Heide, 2014). Facebook exposes its users to pictures, videos, and links, which are of interest to them. This provides an opportunity for journalists, local and federal governments, nonprofit organizations, and corporations to engage their audiences about topics ranging from impending inclement weather in their town to social issues around the world (Harode-Rosario, Sáez-Martín, & del Carmen Caba-Pérez, 2018).

When Facebook was first created, most users saw their friends posts, which were displayed on their newsfeed in the order that they were posted. Over time, users became

overwhelmed by the amount of meaningless information that they were receiving. In response, Facebook created algorithms to manipulate what each user sees in their newsfeed based on their specific interests. As a result, there are three types of information that a user will see on their newsfeed: following information, trending information, and targeted information.

Following information includes statuses, pictures, videos, and links posted by friends that a user follows. A user can actively follow a friend by clicking follow. A user can also often passively follow a friend when the Facebook algorithms determine that the user has repeatedly shown interest in that particular friend. Perhaps the user has regularly searched for the friend's page, or the user regularly clicks to view their pictures, videos, and links that populate on their newsfeed. Either way, Facebook has discovered that the user is interested in this friend and will therefore show more posts made by this friend to satisfy the user's desires.

Trending information includes posts that have been liked or shared by many people. For example, a user has a friend that they are not interested in. The user has never searched for this friend and has never clicked on this friend's posts. When this friend announces an engagement or pregnancy, hundreds of people that the user is friends with like the picture, which makes it trend and show up on the user's newsfeed. Facebook knows that while the user typically is not interested in this friend, something has happened that might be of interest to the user because it is of interest to so many others in their social network.

Targeted information includes posts that Facebook algorithms have chosen to display on a user's newsfeed based on their historical web browsing, which includes prior searches and clicks. For example, if a user recently searched to see what movies are playing this weekend,

Facebook may begin showing them previews for similar movies or interviews with the actors and actresses for movies that they may have previously expressed interest in.

Together, followed information, trending information, and targeted information are consolidated and balanced to present a unique newsfeed to each user. When a user comes across a post, she has the choice to like it and share it. If a user likes a post, it is assumed that the user agreed with the information presented. If a user shares a post, it is assumed that the user wants other users to view it. Users like and share posts to appear thoughtful and knowledgeable, to inform or entertain others, to promote causes that they believe in, and to stay connected to others (Berger & Milkman, 2012). The decision to like and share content is influenced by the content of the post, what users will see the liked and/or shared post, and the desires of the user who likes and/or shares the post (Wong & Burkell, 2017). Users specifically look for content that will be relevant to themselves and to others (Wong & Burkell, 2017).

Social Media Consumption

With never-ending newsfeeds, social media users have choices when it comes to viewing information. As a result, the information presented on social media has evolved to meet the demands of social media users who want easily digestible information on topics that are of interest to them. With limitless publishing, the quality of information circulating the internet has been degraded, yet social media users still seek articles that are relevant and credible (Westerman et al., 2014). When users view information on social media, they make certain assumptions about its reliability (Westerman et al., 2014). The topic provides insight into what users believe is relevant. If a user thinks a post is relevant, then the user will like and share the post with others (Ber-

ger, 2013). The source provides insight into what users consider to be credible. Receiving information from a source with high credibility will lead to a positive acceptance, resulting in an abundance of likes and shares; receiving information from a source with low credibility will lead to rejection and an absence of likes and shares (Berger, 2013).

Information in social media posts can be presented as either a cost or benefit depending on how it is framed (Hilverda, Kuttschreuter, & Giebels, 2017). Communicators use placement (timing and platform), approach (positive or negative), and words (ethical, emotional, logical) to frame messages that influence perception (Hilverda et al., 2017). This study does not delve into message framing. Instead, it focuses on the superficial elements of a post – its topic and source. The study is limited because while likes and shares can easily be objectively counted, an individual's attitude towards a post cannot. The study is interested in discovering what posts can capture a user's attention, not a comprehensive evaluation of the persuasive techniques of the post and the effect that they have on a reader.

When a post gets a high number of likes and shares it is considered viral. For example, in 2015, a picture of a dress was posted on Tumblr went viral (Wong & Burkell, 2017). When viewers looked at the dress, some thought that it was blue and black while others thought that it was white and gold due to the differences in human color perception. The dress was discussed in homes, school, and workplaces all over the world (Wong & Burkell, 2017). The dress represents the power that one post can have on society. Viral posts are the objective of a radicalization campaign and a counter-radicalization campaign. When posts become viral, they can reach the entire general user population, which inevitably reaches those who are contemplating terrorism (Badawy & Ferrara, 2017).

Nature of the Study

The emergence of social media has changed radicalization because individuals no longer need to search for terrorist organizations. Instead, content has become popular enough to trend to the extent where content is recommended to users. Terrorist ideology cannot easily be contained because each social media user can reproduce existing content and can produce new content, which exponentially increases the amount of information circulating (Hamblet, 2017). In addition, the ability to constantly post allows individuals to provide content from social media to be adaptive and meet the needs of a changing audience (Rowe & Saif, 2016). Social media platforms are also interactive, which leads to the development of relationships between users and has a significant impact on radicalization (Gill, Corner, Conway, Thorton, Bloom & Horgan, 2017). Therefore, social media represents a threat—and an opportunity—to governments around the world to curtail terrorism.

This quantitative study sought to examine the correlation between the independent variables (CATEGORY, CONTENT, and GEOPOLITICAL REGION) and the dependent variables (number of LIKES and SHARES). Preliminary research was conducted by searching for counter-radicalization Facebook pages and viewing their posts. During the process, it was discovered that posts often fell into four categories of information, including (1) personal stories, (2) news articles, (3) research/policy analysis pieces, (4) military defeats, and (5) religious doctrine. These categories of information also varied in what GEOPOLITICAL REGION they addressed and how they were presented. Posts were often about (1) the West, (2) the Middle East, or they were (3) global, or about (4) cyber. Posts were often presented as: (1) a written status, (2) a written

status with a link to a website, (3) a written status with a video, or (4) a written status with a photograph. Therefore, it seemed indicative to choose a specific counter-radicalization Facebook page and code each Facebook post by CATEGORY, CONTENT, and GEOPOLITICAL REGION. The resulting LIKES and SHARES could then be counted, recorded, and analyzed with multivariate analysis of variance (MANOVA) tests.

After assessing several counter-radicalization Facebook pages, Quilliam was chosen. Quilliam is a United Kingdom-based think tank that focuses on counter-radicalization and promoting a moderate interpretation of Islam through community and social media outreach (Quilliam, 2018a). Quilliam was chosen because the administrator uploaded posts regularly and had over 25,000 followers (Quilliam, 2018a). The population for the study was all 2018 postings on the Quilliam Facebook page (Quilliam, 2018a). The sample for this study was all posts in the population.

Definitions

For clarity, the following terms needed to be defined and explained:

Directed terrorist: Terrorist who has received general information and instructions to execute an attack (Vidino, Marone, & Entenmann, 2017).

Echo Chamber: When a group of individuals radicalize each other by sharing their similar beliefs and values (Malthaner & Lindekilde, 2017).

Enabled terrorist: Terrorist who has received training, weapons, and specific instructions to execute an attack (Vidino et al., 2017).

Following information: A status, picture, video, or link posted by a friend who a user is actively (clicked follow) or passively (Facebook has determined that the user regularly views) following.

General user population: Individuals who regularly accesses social media.

Headquartered terrorist: Terrorist who resides within close proximity of a terrorist organization and interacts on a regular basis with terrorist organizations.

Inspired terrorist: Terrorist who has had no contact with a terrorist organization but has become inspired by jihadist material (Vidino et al., 2017).

Islamic State: A terrorist organization that follows the Salafi doctrine of Sunni Islam and is attempting to develop a caliphate. Also known as the Islamic State of Iraq and the Levant (ISIL), the Islamic State of Iraq and al-Sham, the Islamic State of Iraq and Syria (ISIS), and Daesh.

Islamic Terrorism: Using violence to invoke fear and achieve social, political, and/or economic goals which are rooted in Islamic ideology.

Lurker: Social media users who do not create or engage with posts but are still viewing them and developing opinions on the topics (Leiner, Kobilke, Rueß, & Brosius, 2018).

Newsfeed: An on-going page of information that begins when a user joins a social media platform.

Targeted Information: Information that Facebook algorithms have chosen to display on a user's newsfeed based on their historical preferences (prior searches and clicks).

Terrorist Attack: An act of violence perpetrated by a headquartered, directed, enabled, or inspired terrorist to achieve social, political, and/or economic goals.

Trending Information: Information that has received a large number of LIKES and SHARES and as a result, social media platforms show it to more users, which results in even more LIKES and SHARES.

Quilliam International: A United Kingdom-based think tank that focuses on counter-radicalization and promoting a moderate interpretation of Islam through community and social media outreach (Quilliam, 2018a).

Viral Information: Information that receives such a large number of LIKES and SHARES that it reaches beyond social media and is discussed in society.

Vulnerable population: Individuals who feel sympathetic towards the jihad and may eventually become radicalized.

Assumptions

This study relied on two critical assumptions involving both the theoretical framework and conceptual framework. The theoretical framework relied on the strategic choice theory, which argues that individuals are rational and perform cost and benefit analysis when deciding to join a terrorist organization (Borum, 2011). However, it is possible that some individuals are not rational and may decide to join a terrorist organization because they have psychological problems or are under duress. Presenting a counter-narrative to individuals who are not rational will be futile. However, this study assumed that most individuals who become involved in terrorism are rational and can be deterred if provided with information that changes their perspective. The communication concepts such as targeting information, trending information, and following information rely on the flawless interpretation of social media consumption. When user comes across a post, the user has the choice to like it and/or share it. If a user likes a post, it is assumed that they agreed with the information presented. If a user shares a post, it is assumed that they want other users to view it. However, users often make mistakes when navigating social media because they are distracted or tired while scrolling through their newsfeed (Hurst, Mankoff, &

Hudson, 2008). Researchers are currently attempting to develop mechanisms that can identify and eliminate unintentional clicks from studies but have had limited success given the uncontrollable nature of the users (Tolomei, Lalmas, Farahat, & Haines, 2018). Even if social media studies are conducted in an environment where researchers can ensure that the users could concentrate on the content, users may still mistakenly click LIKE or SHARE while scrolling due to imperfect finger control (Hurst et al., 2008). This margin of error has been accepted for the study because it is difficult to overcome.

Scope and Delimitations

When evaluating the spread of information on social media, there are clear trends. These trends need to be studied and understood to ensure that beneficial information can reach the masses. Because this study is observational, there were few threats to validity. The study was open to all social media users because the page measured was open to all social media users. However, some social media users were more likely to see the page being measured simply because they viewed similar pages. As a result, it is possible that this study provided insight only into the behavior of users who are already interested in counter-radicalization, either because they strongly support terrorism or strongly oppose terrorism. Therefore, this study may not be generalizable to the entire population of social media users. This study could have been more generalizable if it had focused on posts which were displayed on every single social media user's newsfeed, regardless of their viewing preferences. However, this feat could be accomplished only by the social media platform, which can override the algorithms that regulate what content is displayed. In the past, social media platforms, including Facebook, have experimented on their

users by pushing content and measuring the user reaction (Grimmelmann, 2015). While the experiments did not cause physical or mental harm to users, they generated outrage from users who felt that the experiments violated business ethics (Grimmelmann, 2015). Therefore, research in the field of social media is forced to rely on measuring the reach of content posted on individual pages, which will always have a specific viewership (Grimmelmann, 2015). After all, even the most popular pages featuring brands such as Coca-Cola, Samsung, and Barak Obama are only going to be seen by their target audiences.

Limitations

The data collection for this study was limited because the study was conducted without administrator privileges for Facebook. Administrators can *view insights* to track metrics, which gauge social media outreach and engagement. For example, the view insights function measures the number of times content was displayed on the newsfeed of subscribers, known as impressions, and the number of times content was liked and shared by the subscribers who were exposed to the content. These metrics would have enabled the study to demonstrate how many subscribers were seeing the content and what percentage of those subscribers were providing feedback, which would demonstrate how engaging specific content is. An administrator could also see the total number of users who choose to hide all posts from the page and the total number of users who unsubscribed from the page. Viewers hide all posts and unsubscribe from pages for a variety of reasons. Perhaps the administrators are posting too frequently and dominating the users' newsfeed or maybe the administrators are posting content that is not relevant or credible to the user. This information could have provided valuable information about user perception of

specific content and the overall performance of the page (Dolan, Conduit, Fahy, & Goodman, 2017).

Instead, this study had to rely on manually coding posts and counting the existing LIKES and SHARES. Choosing the CONTENT and GEOPOLITICAL REGION was objective and easy to code. However, choosing the CATEGORY was subjective and more difficult to code. For example, an editorial piece published by a news outlet about a woman who joined the Islamic State to become a bride but defected because of the poor living conditions could fall into the personal story, news article, research/policy analysis, military defeats, and religious doctrine categories. To ensure that coding was consistent, criteria were developed to determine the CATEGORY based on the information source as seen below in Table 2.

Table 2

<i>Criteria for coding</i>		
Category of social media post	Information source	Example
personal story	-current terrorists -defected terrorists -friends and families of terrorists -victims of terrorism -bystanders	-testimonials
news article	-news outlet	-recent attacks -thwarted attacks
research/policy Analysis	-interviews with experts -articles from reputable sources (i.e. The Independent, The Atlantic, The Economist)	-interviews -research studies
military defeats	-news outlet	-campaign updates
religious doctrine	-religious scholars	-fatwas (religious declarations)

The study also did not account for the existence of lurkers. Lurkers are social media users who are viewing posts and forming opinions but refrain from liking or sharing posts because they do not want to publicize their stance on controversial issues (Leiner, Kobilke, Rueß, & Brosius, 2018). Not only is terrorism a controversial issue, but many social media users fear that discussing it over the internet will prompt government surveillance. Therefore, lurkers may be present and have a significant impact on this type of research. Because the findings of this study are contingent on observing participant behavior in their natural environment, a public forum, there is no way to unveil the lurkers. Due to the unknown impact of lurkers on this type of research, this study is less generalizable to the global population. A follow-on study may benefit from unveiling the lurkers by assuring anonymity for all participants and soliciting feedback from all social media users who view the content.

Significance of the Study

Academic researchers are often far removed from terrorism, which degrades the validity and reliability of their findings. Headquartered terrorists live within proximity of their terrorist organization and interact on a regular basis with their terrorist organization. Headquartered terrorists are extremely difficult to study because they are often in remote regions, speak local dialects (for which there are no interpreters), can be dangerous to meet with, and are often unwilling to be interviewed. Inspired terrorists are either already imprisoned or would face imprisonment if they divulged their inclinations and intentions to researchers. As a result, the field of terrorism research has been dominated by the only people who have access to terrorists: military and intelligence agencies. Further, these same researchers with access who view terrorism as a threat, and a belief that they must be defeated, makes them inherently biased (Pipes, 2017). To make matters

worse, military and intelligence agencies often have not been trained to overcome their bias and follow a methodology for data collection and analysis that led to unreliable findings (Pipes, 2017).

Given the many challenges involved in communicating with terrorists, academic research has focused on case studies that seek out individuals who have committed an act of terrorism (Jensen, James, & Tinsley, 2015). They answer common questions, such as where they were raised, what socioeconomic class their family was from, did their biological mother and father raise them, what was their performance in school, did they attend religious services, who they were talking to online (Jensen et al., 2015). Researchers often do not have access to the terrorist to ask why the person became interested in becoming a terrorist and what information had an impact on their decision.

Significance to Theory and Practice

Further, radicalization research should focus on an area that can be empirically studied, such as understanding what information about terrorism is of interest to the general user population. When information trends within the general user population, it inevitably reaches individuals who are in the first and second phases of radicalization, and who also support the ideology, and may eventually encourage others to execute attacks or choose to execute attacks themselves. This study is being conducted because when used properly, social media has the potential to reach general user populations, which include the at risk population, and prevent radicalization. This study will be of interest to governmental and nongovernmental organizations throughout the world, which are attempting to eradicate terrorism with counter-radicalization campaigns. The findings are expected to provide insight into the potential of radicalization research to shift the

efforts from only eliminating wanted terrorists to also preventing the creation of future terrorists by leveraging data analytics on social media.

Significance to Social Change

A deeper understanding of how counter-radicalization influences social trends and terrorist acts may lead to greater safety of the global community as well as the full impact of social media. Further, research should focus on understanding what makes a counter-radicalization information trend, which will require constant study because the atmosphere of social media changes every single day. This understanding could then be utilized by governmental and non-governmental counter-radicalization efforts when uploading information to social media to ensure that messages are liked and shared to trend. Trending messages can reach the general user population, which includes those who are considering supporting or joining a terrorist organization. The outcome of this study could demonstrate that disseminating information on social media to prevent radicalization is effective. It could be used for disseminating information using other platforms, such as community programs where governments and nongovernmental organizations are currently expending resources. If governmental organizations and nongovernmental organizations are able to increase the reach of their counter-radicalization efforts, then they may be able to decrease the amount of terrorist attacks.

Summary

To prevent more attacks like the Boston Marathon Bombing, it is essential to identify the key opportunities and obstacles in disseminating counter-radicalization information. This chapter provided an overview of the problem, purpose of the study, research questions and hypotheses, and delved into the theoretical framework and conceptual framework which the study is based

upon. Executing an attack on behalf of a terrorist organization is a strategic choice. Terrorists weigh the costs and benefits based on the information that is available to them (Borum, 2011). It is critical to develop an understanding of common motivations that push individuals towards radicalization and pull individuals away from radicalization (Bertram, 2015). This chapter also addressed the assumptions, limitations, and significance of the study that aims to determine if there is a relationship between the content of a social media post and reaction to the social media post. If a relationship is found, then further research on the use of data analytics for counter-radicalization efforts may be warranted.

Chapter 2 provides an overview of the existing literature on counter-radicalization efforts made by governmental and nongovernmental organizations throughout the world and illuminates gaps in the research that will be filled by this study. Chapter 3 presents the chosen research design and methodology and addresses threats to validity. Chapter 4 delves into the statistical analysis, results, and interpretation of the results. Chapter 5 is devoted to discussion of the findings, limitations of the study, policy implications, conclusions, and recommendations for further study.

Chapter 2: Literature Review

This research addressed historical, current, and possible future efforts at the dissemination of counter-radicalization information made by governmental and nongovernmental organizations throughout the world. Counter-radicalization information is readily available but is not reaching the general user population (Khatib, Dutton, & Thelwall, 2012). As a result, the individuals who are at risk of being radicalized are viewing only jihadist propaganda and not viewing information that contradicts the jihadist propaganda. The purpose of this study was to assess the utility of data analytics when administering counter-radicalization campaigns on social media to ensure that the posts are reaching and engaging the general user population. This chapter reviews the literature by looking at the history of terrorist recruitment, the emerging use of social media in terrorist recruitment, the effectiveness of prior counter-radicalization efforts, and the potential of utilizing data analytics. Most importantly, this chapter describes the empirical research in the field of counter-radicalization efforts and sets up the study to examine the outreach of a specific counter-radicalization information operation.

Literature Search Strategy

This literature review examined the research across numerous significant topics and fields relevant to the study: (a) terrorist recruitment; (b) counter-radicalization; (c) information operations; (d) governmental and nongovernmental counter-radicalization efforts; (e) nongovernmental counter-radicalization efforts; and (f) social media. The review included aspects of the theoretical framework of the social movement and social identity theories that were both derived from the strategic choice approach to terrorism. These theories state that individuals evaluate costs and benefits when considering supporting or joining a terrorist organization (Al Raffie,

2013). The perception of costs and benefits are heavily influenced by the information that at risk individuals have access to (Al Raffie, 2013). Existing research was placed into categories to systematically examine how terrorist recruitment has evolved with the emergence of social media and the potential use of data analytics to improve outreach.

In this study, the following databases were used: Google Scholar, International Security and Counter Terrorism Reference Center, Homeland Security Digital Library, West Point's Combatting Terrorism Center, Military and Government Collection, Sage Publications, and RAND Publications. Examination of the literature was conducted between the years 2015 and 2018, using the following search terms: *terrorist recruitment, jihadist ideology, jihadist social media strategy, self-radicalization, online radicalization, counter-radicalization, information operations, trending information, and viral information*. The reference lists within the listed publications and related bibliographies of the studies were further examined for additional sources.

The resulting studies discussed how terrorist organizations are currently recruiting and how to undermine their strategies. The studies emphasized two prevalent concepts. The first concept was the need to understand the ideology and how terrorist organizations gain followers. The articles also attempted to determine the perceived costs and benefits of terrorism. The second concept was to provide information that would encourage a moderate interpretation and practice of the ideology. Some of the papers, articles, and speeches proposed ideas that could be effective in preventing people from becoming terrorists and included an evaluation of current counter-radicalization efforts. However, none of the papers, articles, or speeches discussed the use of data analytics to focus counter radicalization-efforts on social media platforms.

The History of Terrorist Recruitment

Terrorist organizations justify their existence and operations with fragments of passages from ancient religious texts. However, their recruitment strategy has changed over the years as they have been forced to repeatedly defend their lands from foreign invaders. With the emergence of the internet, terrorist organizations have taken their efforts online.

The Concept of Jihad

There are three distinct sects of Islam: Sunni's, Shi'as, and Kharijites, and each sect has its own jurisprudence schools. Under each jurisprudence school, there are even more divisions. The Sunni Muslims believe that the successors of Mohammed should be democratically elected and follow the Hanafi, Maliki, Shafi'I, and Hanibali schools of jurisprudence (Khalid, 2018). The Shi'a Muslims believe that the successors of Mohammed should be descendants of Mohammed and follow the Fivers, Seveners, and Twelvers (Khalid, 2018). The Kharijites believe that the successor of Mohammed should be chosen by God through battle and follow the Sufris, Azariqa, Najdat, Adjarites, and Ibadis (Khalid, 2018). While the many sects and schools of jurisprudence follow different laws, they all believe that it is their duty to practice the purest form of Islam.

The practices of Islam are determined by the Quran and Hadith. The Quran is the ideological text as dictated by Mohammed. The Quran explains how to live as a Muslim, how to create an Islamic Society, and how to navigate a world where there are many enemies of Islam (Khalid, 2018). The Hadith is a collection of traditions which are based on what Mohammed may have said or done (Khalid, 2018). Both the Quran and Hadith have been interpreted by religious

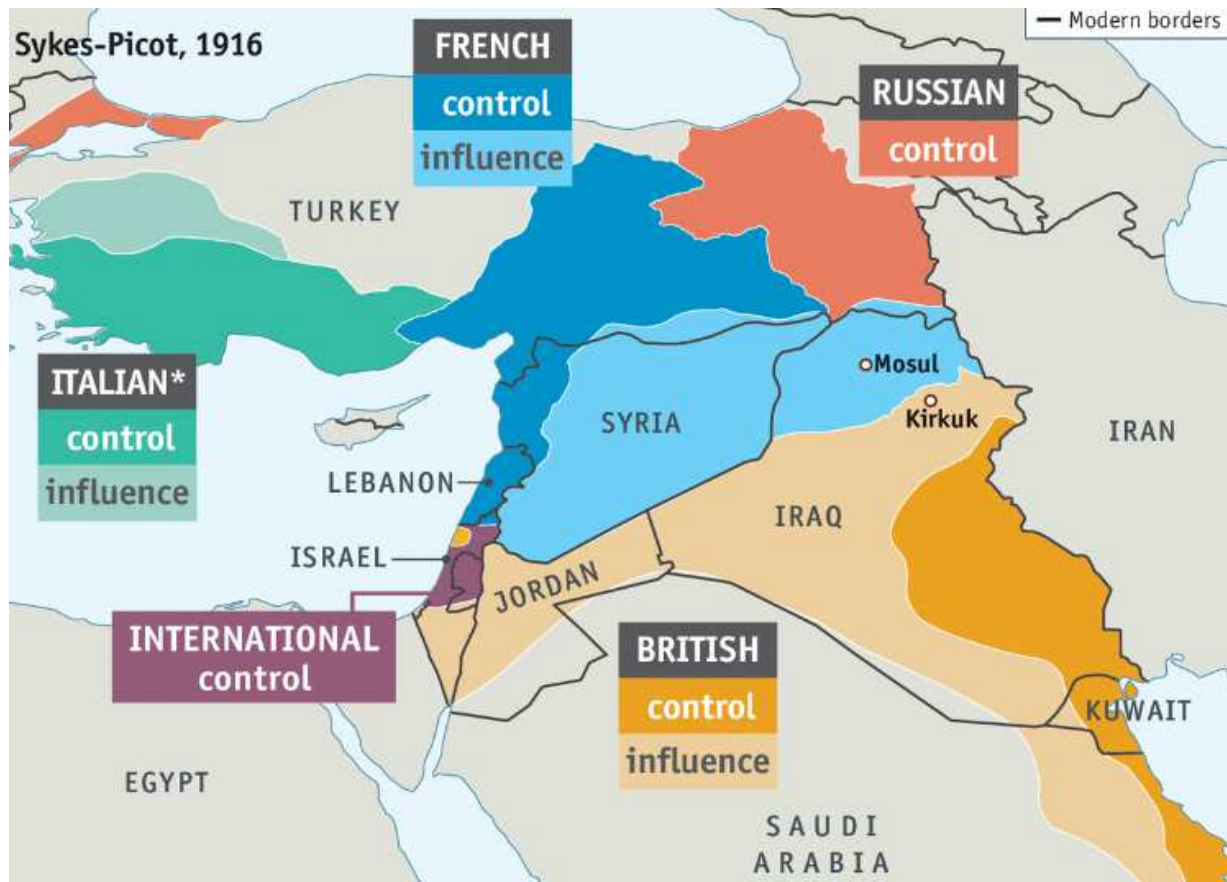
scholars and teachers which has resulted in various interpretations of Islam. Most Muslims interpret jihad as the internal struggle to be a devout Muslim who follows the five pillars of Islam; faith, prayer, charity, fasting, and pilgrimage (Boutz, Benninger, & Lancaster, 2018). A minority of Muslims interpret jihad as the struggle to rid the world of infidels (Boutz et al., 2018).

There are different types of jihad, including: verbal support, written support, physical support, and funding support. Waging jihad can be profitable for fighters. Muslims are required by the Hadith to pay zakat which is a tax that is levied annually at 2.5% – 10 % of income depending on wealth and local conditions. Zakat is disbursed for the needy, local government workers, and those fighting jihad. For jihadists, zakat can pay for their fighting expenses and personal expenses. In addition, those who become a martyr receive entry into paradise where they will be forgiven of all sins and live a life of luxury while securing admission into paradise for relatives as stated in the Quran. Between promises of payment and eternal bliss, jihadism is not only a religious duty but a lucrative career (Boutz et al., 2018).

The Return of the Caliphate

From the year 632-750 CE, Muslims experienced expansion under the Rashidun Caliphate and Umayyad Caliphate which conquered large portions of the Sassanian Empire and Byzantine Empire. During this time, jihad was viewed as a form of warfare used to gain and protect territory. Rules to guide this view of jihad were documented and included the protection of non-combatants and explained that those conquered only had to submit to the rule of the caliphate and did not have to convert. When the Abbasid Caliphate and Ottoman Caliphate were overthrown, the concept of jihad was weakened (Israeli, 2017).

It was not until the Middle East was invaded by colonial powers, that the concept of jihad was revived (Kraidy, 2018). After World War I, France and the United Kingdom decided that because of their victory they were entitled to ownership of land in the Middle East. A politician from each side, Sykes and Picot, created an agreement to divide the land and drew arbitrary lines to create the countries known today as Syria, Iraq, Lebanon, and Israel (Fawcett, 2017). For both France and the United Kingdom, colonization of the Middle East was a failure because it was expensive and unsurprisingly difficult to enforce European social, political, and economic infrastructure in regions where the natives did not welcome their presence. As a result, France and the United Kingdom eventually pulled out of the Middle East, but left their boundaries in place as seen in Figure 1. Those boundaries cut apart the religious tribes' access to sacred lands and natural resources, igniting conflicts throughout the region leading to the fundamentalist movement (Kraidy, 2018).



Note. From “The Gulf/2000 Project,” by M. Izady, 2000, Columbia University. Retrieved from <http://gulf2000.columbia.edu/>.

Figure 3. Sykes Picot agreement

The new fundamentalist movement brought a resurgence of writings on jihad. Most notably, Ibn Taymiyya, who encouraged the forced conversion or killing of all infidels and Abdullah Azzam, who made it permissible to no longer protect non-combatants when fighting (Hasan, 2018). Terrorist organizations began developing in the 1970’s as foreign invaders re-entered the region. Maktab al-Khidamat, also known as the Afghan Services Bureau, was created in the 1970’s to support the Mujahideen as they traveled to Afghanistan to fight against the Soviet invasion (Cragin, 2017). Following their victories, Maktab al-Khidamat created a wave of

publications including the magazine, al Jihad, the leaflet, Defense of Muslim Lands, and the book Birth of the Afghani Arabs, all argue why it is a religious duty to support the jihad (Cragin, 2017). Maktab al-Khidamat also provided classes on their teachings which are founded on the concept of only one God's existence and a literal interpretation of the Quran which emphasizes the rejection of what is new and different (Cragin, 2017). These teachings discussed the establishment of a society built on Sharia Law that reaches across nations and is seen as a solution to poverty and injustice and is guided by the caliph. Sympathizers of the caliphate may condemn the use of violence, but still see terrorism as at least doing something to resolve society's problems (Cragin, 2017).

The Process of Radicalization

According to Bloom (2017), terrorist recruitment is often cyclical. When a terrorist organization is conceived, its leadership is motivated to fill the ranks, known as manpower-focused (Bloom, 2017). During this time the terrorist organization will recruit whoever is available. Often, this includes average criminals who do not have specialized skills. As the terrorist organization matures, its leadership becomes more selective and searches for expertise, known as expertise-focused (Bloom, 2017). Recruitment strategy also must shift throughout the life of a terrorist organization to overcome external pressures. For example, if a terrorist organization has withstood several defeats, it may have trouble recruiting expertise and must revert back to being manpower-focused (Bloom, 2017). On the contrary, if a terrorist organization is gaining popularity, it may choose to become expertise-focused when recruiting to preserve its message (Bloom, 2017). Regardless of what stage a terrorist organization is at, this cyclical nature explains why researchers encounter average and expert terrorists in the

operational environment. Depending on what stage a terrorist organization exists, eliminating terrorists can be counter-productive because an average terrorist could be replaced by an expert terrorist (Bloom, 2017). When a terrorist organization is combatting foreign invaders, they may equally split their recruitment between manpower-focused and expertise focused (Bloom, 2017). The radicalization process for manpower-focused and expertise focused terrorist recruitment follows the same four phases but often includes different incentives.

Radicalization is achieved over time and through multiple channels of communication (Cragin, 2017). There is consensus among researchers who separate radicalization into four phrases – sensitivity, discovery, group membership, and commitment to action (Cragin, 2017). Sensitivity begins when an individual is surrounded by friends and family who are frustrated with their government or other governments domestic and foreign policies and become sympathetic to jihadism (van Eerten et al., 2017). Often, this will lead the individual to seek more information about the ideology on the internet and/or in their community, known as discovery. Indoctrination occurs when the individual begins to feel a sense of belonging from these interactions (Borum & Neer, 2017). Group membership interactions can be as cursory as reading about a terrorist organization’s vision and goals, which align with their own, and talking to others who are interested in terrorism (Borum & Neer, 2017). Interactions can also be as complex as involving years of prolonged contact with recruiters (Borum & Neer, 2017). Recruiters can make contact anywhere - on the internet, at school, during prayer, and while playing sports, to name a few (Bloom, 2017). Recruiters often adapt to different environments, adjusting the method and message to fit the individual (Bloom, 2017). The fourth phase, commitment to action, varies from individual-to-individual. Again, the trigger can be as

superficial as becoming aware of perceived injustices in their community or another community, or it can be as complex as the death of a family member or friend (Cragin, 2017). The ideological motivations of terrorists are undoubtedly tied to political and economic condition but are also heavily influenced by the availability of information and social interactions.

The authors of *Analyzing Pathways of Lone-Actor Radicalization: A Relational Approach*, Malthaner and Lindekilde (2017), analyzed relational configurations and their evolution over time to identify common patterns. The authors gathered empirical data on lone-actor radicalization by studying 30 cases in the U.S., Europe, and the Middle East. In each case, they looked for perpetrator characteristics (heritage, socioeconomic status, personality, popularity, religious devotion, and academic performance), attack types (sophisticated or unsophisticated), and social ties. They found that beliefs do not always result in action. Instead, beliefs combined with available information and social interactions, result in action (Malthaner & Lindekilde, 2017). The researchers concluded that radicalization can either be top-down, where the terrorist organization contacts the individual, or bottom-up where the individual seeks out the terrorist organization. Either way, radicalization begins with the individual already being susceptible to recruitment because they are frustrated with society and surrounded by friends and family who feel the same. In top-down radicalization, the individual is often exposed to teaching by a recruiter, asked to participate in radical activities, and creates personal ties to others in the terrorist organization – all of which commits them to the cause. To radicalize individuals, terrorist organizations often attempt to further isolate followers by encouraging them to stop associating with mainstream Muslims and only associate with likeminded Muslims. This tactic has been known to accelerate radicalization. In bottom-down radicalization, individuals are often

searching for further information either by looking online and/or reaching out to recruiters. They then become involved in the terrorist organization, participate in radical activities, and create personal ties – all of which makes the individual unwavering in their radical beliefs and commits them to the cause (Malthaner & Lindekilde, 2017).

In both top-down and bottom-up recruitment there are several points in the radicalization process that depend on social networks. Malthaner and Lindekilde (2017) found that two of the most effectual motivators are the pre-existing ties to friends and family and the group dynamics they encounter once indoctrinated to a terrorist organization. If either of these motivators are interrupted, there is a possibility that radicalization could be prevented. For example, if an individual has pre-existing ties to friends and family who condemn terrorism, they will be less likely to feel enticed by a terrorist organization (Malthaner & Lindekilde, 2017). Likewise, if a terrorist organization is filled with individuals who do not truly believe in the cause, perhaps because they are being exposed to information that conflicts with the ideology, then members will become deradicalized (Malthaner & Lindekilde, 2017). Just as an echo chamber can radicalize individuals, it can also deradicalize individuals (Malthaner & Lindekilde, 2017). The effect of pre-existing ties to friends, family, and group dynamics make it impossible to develop a profile for potential terrorists. However, relational analysis can improve an understanding of how relationships are intertwined in the process of radicalization and may explain why some individuals become radicalized while others with the same characteristics do not (Malthaner & Lindekilde, 2017).

The Evolution of Terrorism

Terrorist organizations are constantly forced to evolve in order to plan, coordinate, and execute attacks without detection. In addition, terrorist organizations have to ensure that their attacks are inspiring enough to gain followers who are willing to further the cause.

The Fall of Al-Qaeda

Al-Qaeda developed in the 1970s while fighting to expel the Soviet Union from Afghanistan. When the Soviet Union withdrew from Afghanistan, Al-Qaeda turned their attention to overthrowing what they believed to be corrupt regimes throughout the world (Ibrahimi, 2017). They specifically intervened in Saudi Arabia, Yemen, and Israel, and reached out to other regional terrorist groups to indoctrinate them in their cause (Siebert & Keeny, 2017). By using a localized strategy that focused on pursuing short-term political goals for various local communities, they were able to create a sophisticated network of affiliated terrorist organizations that loosely followed their guidance (Siebert & Keeny, 2017).

Operationally, Al-Qaeda has never had enough manpower and funding to wage a conventional war. Instead they have sought to undermine their opponents through desecration of honor (Jones & Libicki, 2008). Attacks are meant to challenge their opponents' ability to protect themselves which makes the opponent appear weak to its own people, allies, and enemies (Jones & Libicki, 2008). If the opponents' response to an attack is unpopular, then their reputation may be further tarnished (Jones & Libicki, 2008). For example, the 9/11 attacks on the World Trade Center, Pentagon, and Pennsylvania, demonstrated Al-Qaeda's desecration of honor. The attack was a symbolic strike on U.S. financial and economic might, military headquarters, and U.S. civilians/citizens. Therefore, the attack demonstrated that the United States was unable to protect its

own infrastructure and people. The 9/11 attacks also succeeded in provoking an unpopular response, the war in Iraq and Afghanistan, which caused the public to lose even more faith in the United States. The choice of targets chosen by Al-Qaeda provides further insight into their strategy. Al-Qaeda did not have broad religious goals of ridding the world of infidels and developing a caliphate. Instead, they were driven by narrow political goals that focused on eliminating immediate threats to Muslim sovereignty (Klein, 2016).

In addition to planning and executing unconventional attacks, Al-Qaeda also intended to be a source of expertise that could enable other terrorist organizations (Ibrahimi, 2017). Affiliates were invited to travel to their camps to receive spiritual, basic military, and survival training (Ibrahimi, 2017). The jihad experience created cohesive bonds between affiliates who were then sent throughout the world to complete their duties (Ibrahimi, 2017). However, in the 1990s, Al-Qaeda was forced to stop bringing affiliates to training camps because travel was being closely monitored and there was a fear of infiltration (Ibrahimi, 2017). Instead, Al-Qaeda attempted to continue recruiting and indoctrinating affiliates through the internet. Al-Qaeda created several websites to articulate their ideas. In keeping with their localized strategy, thinkers such as Abu Musab al-Suri, Abu Bakr Naji, Yusuf al-Ayyiri, Saif al-Adl and Louis Atiyatallah provided input on the issues of local Islamic practices and local politics to win over the ‘hearts and minds’ of local communities (Ibrahimi, 2017). Al-Qaeda used the internet to create repositories for ideological information rather than as an interactive platform where interested individuals could develop relationships (Rudner, 2017). While they were able to recruit some followers, the focus on the local level severely limited their outreach. To make matters worse for them, Al-Qaeda was unable to properly indoctrinate these limited followers without training camps and subsequently

lost control of their planning and execution of attacks (Torres-Soriano, 2016). As a result, followers often executed attacks that also killed Muslims and undermined the credibility of Al-Qaeda (Torres-Soriano, 2016). Al-Qaeda also attempted to recruit from Madrasahs where the focus is on teaching extremist religion and not on useful skills. These unskilled terrorists often made lethal mistakes when attempting to plan and execute attacks which further undermined the credibility of Al-Qaeda (Torres-Soriano, 2016).

The rise and fall of A-Qaeda proves that all terrorist organizations do not last forever. Like a business, they are highly susceptible to failure and cycles. The median duration of a terrorist group is one year (Jones & Libiki, 2008). Jones and Libiki (2008) studied 648 cases and concluded that terrorist organizations dismantle due to a variety of reasons, including policing, military intervention, splintering, and politics. Al-Qaeda failed due to a combination of policing, military intervention, splintering, and politics, but only because it was severely weakened by its own localized strategy. By focusing only on highly politicized local issues, the leadership lost touch with the religious base for the ideology. This made it difficult to recruit and indoctrinate terrorists who were willing to follow orders at all costs. A terrorist organization's ability to develop a structure, delegate responsibilities, adapt to counterterrorism efforts, and implement changes also impact its success in recruitment and indoctrination. It also impacts a terrorist organization's viability in recruitment and indoctrination (Byman, 2017).

The Rise of the Islamic State

Unlike Al-Qaeda, and its affiliate terrorist organizations, the Islamic State has a vision. During the 800th Century, a Sunni scholar, Ahmad bin Mujammad bin Hanbal Abu Abd Allah al-Shaybani, developed an orthodoxy of literal interpretation of Islam (Haykel, 2016). During the

13th century, Taqi ad-Din Ahmad ibn Taymiyyah, also a Sunni scholar, made that orthodoxy stricter (Haykel, 2016). During the 17th century, Muhammad ibn Abd al-Wahhab another Sunni scholar, turned the orthodoxy into a movement, known as Wahhabism, and began spreading his teachings throughout the Middle East (Haykel, 2016). The end goal of Wahhabism is to establish a caliphate where everyone follows Sharia Law and is ruled by a caliph who is a descendent from the Prophet's Tribe. The Islamic State is highly influenced by Wahhabism, but they have also added social and political elements. As a result, they have created not just a religion, but a utopian way of life. In their attempt to establish a caliphate, they are building an infrastructure of law and order and providing clean water, food, clothing, and shelter to their followers. Rather than attempting to win over 'hearts and minds' by fighting for one community at a time, the Islamic State has broadcasted a message throughout the world about the re-establishment of a caliphate (Hamblet, 2017). The caliphate appeals to followers because it promises desirable amenities and has been interpreted to have a deeply religious meaning (Al-Ghazzi, 2018). Yet, in the Quran and Hadith, there are mentions of a caliph, but there is no mention of a caliphate that is governed by a single legislative, executive, and judicial system (Al-Ghazzi, 2018). However, many Muslims who feel discriminated against and marginalized by their countries are willing to overlook this detail when deciding to support the Islamic State (Al-Ghazzi, 2018).

The Islamic State operates by gaining territory by force and establishing infrastructure once the territory is claimed (Phillips, 2017). They recruit the unskilled followers for fighting and professionals (such as doctors, nurses, engineers, and computer scientists) to provide services to their constituents (Phillips, 2017). To accomplish these goals, the Islamic State uses a targeted manpower-focused and expertise-focused recruitment strategy and a general religious-

based and caliphate-based messaging strategy to develop a resilient brand (Bloom, 2017). The Islamic State has been successful in radicalizing followers because they understand their audience and are willing to use a variety of approaches to reach them.

The manpower-focused marketing strategy involves capturing attention, feeding on individual and society frustrations, and offering benefits. The Islamic State posts graphic and violent images and videos on social media to capture attention (Gill et al., 2017). These uploads are specifically created to appeal to youth and often include rap songs and memes. In order to recruit manpower, the Islamic State promises two very sought-after concepts to Muslims who feel rejected by society and without a future— identity and power (Haykel, 2016). In the U.S., Europe, and Canada, Muslims are often first-, second-, or third-generation citizens who immigrated to a new country and had to completely re-build a career and life (Haykel, 2016). As a result, many Muslims communities in these countries live in poverty (Haykel, 2016). To make matters worse, many of these Muslim communities are often discouraged from using outside assistance such as job training, job searching, and job guidance programs (Haykel, 2016). In order to find a job, they must use a network, if they cannot find a job, they cannot afford an apartment, if they cannot afford an apartment than they will not be married and have children (Haykel, 2016). The Islamic State feeds on these frustrations using social media to emphasize the hopelessness of their current lives and the promises of identity and power that the Islamic State will provide them (Haykel, 2016). The Islamic State highlights the sophisticated weapons that fighters will be able to use which include explosives, machine guns, and rocket-propelled grenades, and emphasize the admittance to paradise if they are chosen to be a martyr (Schmid, 2017). In addition, the Islamic State also provides material luxuries such as homes and cars

which are often extremely enticing to Muslims who have only known poverty (Schmid, 2017). The Islamic State also offers camaraderie and companionship which is often appealing to Muslims who have felt isolated and seek a sense of belonging (Schmid, 2017). The unskilled followers independently view the content from the Islamic State and become inspired enough to travel to Iraq and Syria to fight, or execute lone-wolf attacks, in their country without requiring direct communication (Gill et al., 2017).

The expertise-focused strategy requires more resources. The Islamic State actively searches for potential candidates at universities and workplaces (Bloom, 2017). Recruiters then craft a tailored message which includes altruistic messages aimed at the educated (Bloom, 2017). The benefits presented with the expertise-focused strategy include being a part of something bigger than themselves (Bloom, 2017). The recruiters will often show potential candidates images and videos of women and children who need medical treatment and access to shelter, clean water, and food (Bloom, 2017). Similarly, to the manpower-focused strategy, the expertise-focused strategy also emphasizes the economic benefits of homes and cars and social benefits of camaraderie and companionship that are provided by the Islamic State (Schmid, 2017).

In addition to their manpower-focused and expertise-focused recruitment strategies, the Islamic State also uses a general religious-based and caliphate messaging strategy to ensure that the entire world understands the necessity of the caliphate and acknowledges their sovereignty. The religious-based messaging strategy explains that their interpretation of Islam is under attack (Robinson, 2017). The Islamic State uses social media to cultivate widespread fear of an approaching apocalypse and the urgent need for a caliphate (Schmid, 2017). Historically, this tactic has been effective in promoting action and justifying the use of violence (Schmid, 2017).

With frequent references to verse in the Quran they gain credibility from the religion. Then they describe how they are going to overcome these threats and urge their followers need to participate (Robinson, 2017). Their caliphate messaging strategy is executed by using social media platforms to broadcast information about what the caliphate can offer for those who choose to live and work within its boundaries. In addition, the Islamic State uses billboards, radio stations, posters, food packaging, and public events to demonstrate the services they provide which include housing, medical care, schooling, and disaster relief, among other things (Ingram, 2015). While the Islamic State never sought to develop a network of affiliate terrorist organizations, the religious-based and caliphate messaging has helped the Islamic State to develop affiliate terrorist organizations throughout the world who also provide funding, weapons, and additional manpower (Jihad 2.0: Social Media in the Next Evolution of Terrorist Recruitment, 2015). Various terrorist organizations, including Boko Haram in Nigeria, have pledged their allegiance to the Islamic State (Jihad 2.0: Social Media in the Next Evolution of Terrorist Recruitment, 2015). As the Islamic State loses territory, they have become increasingly reliant on this unintended source of assistance. However, affiliate terrorist organizations easily and often withdraw their support when they become displeased with the Islamic States practices (Jihad 2.0: Social Media in the Next Evolution of Terrorist Recruitment, 2015).

Both Al-Qaeda and the Islamic State capitalized on the first stage of radicalization, sensitivity, when individuals feel frustrated with society, are desperately seeking community, and begin to explore the concept of jihad. Where Al Qaeda and the Islamic State differed in their recruitment strategy is where they derive their legitimacy and their use of the internet. The Islamic State has a global strategy that derives its legitimacy from religion, and utilizes various

social media platforms, to recruit and indoctrinate committed followers. Al-Qaeda uses a local strategy which derives its legitimacy from making local political gains (Hamblet, 2017). In the early 2000's, their outreach was limited to a small number of websites and corresponding chatrooms (Hamblet, 2017). As a result, their varying messages only reached local audiences and those who were actively seeking guidance (Hamblet, 2017). Al Qaeda supporters were typically middle-class males under the age of 35 descending from the Middle East, North Africa, and South Asian cultures who were already followers of Islam (Hamblet, 2017). The Islamic State, however, understands the potential of the internet and its ability to develop a brand to entice those who are vulnerable to radicalization (Hamblet, 2017). The Islamic State expanded their use of the internet by creating an ecosystem of radicalization using almost every available platform for constantly broadcasting their message and tailored individual and group correspondence. While the Islamic State is active on Facebook, Tumblr, Telegam, Kik, WhatsApp, and Surespot, their success has been mostly attributed to Twitter (Berger & Morgan, 2015).

Several social media platforms have developed programs to detect terrorist rhetoric and close accounts. The Islamic State attempts to evade detection by using encrypted applications when possible; and when accounts are inevitably closed they are poised to immediately create new accounts that pick off exactly where the last left off to ensure continuity (McDowell-Smith, Speckhard, & Yayla, 2017). The Islamic State also creates an echo chamber with nodes, amplifiers, and shout-outs to spread their message (Hamblet, 2017). The nodes post the initial content, the amplifiers share the content, and the shout-outs promote nodes and amplifiers so that users will follow their online activity (Hamblet, 2017). By casting a wider net, the Islamic State expanded past Al Qaeda's demographic to capture a larger number of supporters. Islamic State

supporters are typically males under the age of 26, who tend to be heavy users of social media, and are also from a wide range of social and ethnic backgrounds (McDowell-Smith et al., 2017).

Interestingly, Islamic State was able to not only recruit those already practicing Islam for radicalization, but also convert individuals to Islam for the same purpose (Hamblet, 2017).

During 2014 and 2015, it was common for social media users to stumble across content posted by the Islamic State without looking for it because there were so many nodes, amplifiers, and shout-outs which that were being posted throughout the day and night (Hamblet, 2017).

Hamblet's (2017) article, *The Islamic State's Virtual Caliphate*, observed that due to the Islamic State's aggressive online marketing during 2014 and 2015, they averaged 4.1 recruits per month, but those numbers have significantly fallen as the Islamic State continues to lose credibility as a terrorist organization that can maintain its territory and provide for its citizens. While Islamic State content varies, there are several recurring themes. For those who are radicalized, nodes encourage individuals to leave their home countries and immigrate to the Islamic State, and if this travel is not possible, to plan and execute attacks in their home countries (Hamblet, 2017).

According to Phillips (2017), Bloom (2017), and Hamblet (2017), eradicating terrorism requires an emphasis on preventing recruitment. Some scholars such as Haykel (2016) feel that policies focusing on reducing repression and increasing economic opportunity for Muslims are effective at abating recruitment. After all, if there are less individuals experiencing sensitivity to radicalization, then less individuals are available to be radicalized. However, policies that reduce repression and increase economic opportunity are expensive for governments to finance and difficult to implement. Scholars, such as Robinson (2017) and (Schmid, 2017), have studied the recruitment and messaging strategy of the Islamic State believe that another way to counter the

rhetoric is to use the same tactics. For example, in order to detract from the Islamic State's narrative that the caliphate can provide houses and cars, there should be a counter-narrative that shows a dozen fighters living in a two-bedroom house and sharing one car. Exposure to an alternative truth can cause vulnerable individuals to question the rhetoric of the Islamic State and prevent their future radicalization (Schmid, 2017).

Rejecting Extremism

Radicalization is extremely difficult to study because most individuals who consider joining a terrorist organization, or who have joined a terrorist organization, are reluctant to admit their inclinations and involvement for fear of retribution. However, a group of researchers from RAND Corporation managed to conduct two empirical studies in Palestine and Yemen. Interestingly, both studies found that demographics such as education, economic status, religion, gender, and age were associated with radicalization, but not significantly (Cragin, Bradley, Robinson, & Steinberg, 2015). In addition, both studies found that providing alternatives to political violence does not diminish propensity toward violent extremism (Robinson, Frier, Cragin, Bradley, Egel, & Steinberg, 2017). Instead, developing a sense of apathy diminishes propensity toward violent extremism (Robinson et al., 2017).

In, *What Factors Cause Youth to Reject Violent Extremism*, Cragin et al. (2015) separate the factors contributing to radicalization into two distinct groups - structural and individual. Structural factors include poverty and a lack of opportunities. Individual factors include personal experiences of discrimination and absent parents. The researchers interviewed ten elected and appointed officials, national political leaders, and local mayors in the West Bank because they could easily choose to become involved in violent extremism and were also accessible for

interviews. In addition, the researchers surveyed 600 Palestinian youth living in the West Bank with a wide range of backgrounds and beliefs. The interviews and surveys measured attitudes toward suicide attacks against civilians and willingness to engage in violent protests. Like much of the other existing research on radicalization, this study posits that radicalization is a multiple stage process with sensitivity, discovery, indoctrination, and commitment to action. The researchers for this article conclude that during this process, the influence of family and friends have a stronger influence on the decision to join a terrorist organization than structural and individual factors. When evaluating the influence of family members and friends, family members had a more significant influence than friends. Specifically, a feeling of obligation to their family members who had been arrested and detained outweighed their own fears of retaliation. Therefore, subjects who had family members who were arrested and detained by the opposition were more likely to engage in violent extremism. Other contributing factors were revolutionary objectives, personal grievances (i.e., death of a loved one), benefits, and sacred meaning. Also, the closer associated a person was to Hamas, the more likely they were to support violent extremism. Most surprisingly, the researchers found that opportunities to participate in non-violent political activism does not prevent radicalization. If anything, apathy, thinking that nothing will work, is most effective at preventing radicalization. These findings contradict held beliefs about counter-radicalization and may help focus further counter-radicalization research. When considering the impact of friends and family, interactions have to be physical or can they be virtual. For example, if a friend or family posts a link on social media condemning jihadism, it could dissuade an individual from joining. The outcome of this study left the researchers interested in determining if perhaps some benefits more alluring than others or if the absence of a

specific benefit could influence the decision to join a terrorist organization. Given the results, the researchers were also interested in determining if social media posts can help individuals to develop a sense of apathy (Cragin et al., 2015).

A follow-on research study, *Rejecting Extremism in Yemen*, was conducted by Robinson, Frier, Cragin, Bradley, Egel, & Steinberg (2017) with the same basic analysis construct as *What Factors Cause Youth to Reject Violent Extremism? Results of an Exploratory Analysis in the West Bank* by Cragin et al (2015). The researchers conducted six focus groups with ten participants each in Yemen's capital and then distributed a national survey to each of Yemen's regions to 1,200 individuals. The authors determined that there are two types of radicalized individuals – individuals who support violent extremism and individuals who engage in violent extremism. The questions assessed the individuals' level of opposition toward political violence by asking if they would support a friend who traveled overseas to fight in the jihad or if they were willing to engage in street demonstrations. The questions also gaged the individuals' level of political activism, level of hope for the future, level of influence of friends and family, and level of religious devotion to discover patterns among the responses. Unsurprisingly, individuals who exhibited a high level of political activism were more likely to support violent extremism and individuals with a high level of hope for the future were less likely to support violent extremism. Findings suggest that constructs such as political activism and hope for the future should be viewed on a spectrum with violent extremism requiring the most commitment to political activism and the least hope for the future. The study also found that individuals living in urban environments were more likely to support violent extremism and engage in violent extremism but less likely to travel abroad to do so. This research suggests that counter-radicalization efforts

in urban environments should focus on local participation in violent extremism while counter-radicalization efforts in rural environment should focus on foreign participation in violent extremism. Like the study on individuals in Palestine, this study found that the concept of promoting alternatives to political violence did not diminish propensity toward violent extremism. In contrast to the prior study in Palestine, the study did not address the peer-to-peer relationship but found that individuals in Yemen are not influenced by parents and religious leaders because they have a general distrust of authority. In addition, religious devotion did not influence individual attitudes towards violent extremism though it did have some effect in Palestine (Robinson et al., 2017).

While both studies relied heavily on the openness and honesty of participants with little incentive to cooperate, the results are still notable. Several federal and local governments, including those in the United States, Europe, and Canada are currently investing a significant amount of resources to improve the individual and structural factors that are believed to contribute to extremism and provide alternatives to political violence. Yet, this study shows that investing in efforts that cultivate a sense of apathy could be more effective. In addition, the differences between the two studies in Palestine and Yemen further demonstrate that counter-radicalization efforts must be tailored to specific audiences. This study suggests that while focusing efforts on familial relationships and religious devotion may be effective in Yemen, they could be ineffective in Palestine. It is critical that researchers develop an understanding of what an audience values before attempting to engage them (Robinson et al., 2017).

The Emergence of Social Media

Social media provides terrorist organizations with a platform to broadcast their message throughout the world and deliver enabling support to followers. The Islamic State is particularly savvy with social media and use various tactics to make their movement appear larger, stronger, and more exhilarating than it actually may be. While a robust social media presence can impact recruitment, it could also contribute to attrition if the Islamic State cannot provide more benefits than costs.

The Internet as a Gateway to Radicalization

Gill et al (2017) studied the police interviews, trial records, and computer records of 223 convicted terrorists in the United Kingdom. Gill's et al., work attempted to determine if and how terrorists the internet to become radicalized, prepare for an attack, and execute an attack. The researchers found that 61% of the convicted terrorists utilized the internet to view content including beheadings and executions, crimes against Muslims, interviews with various notable radical fighters and preachers, jihadist texts, and attack preparation and training videos. They found that many of the terrorists went online not to have their beliefs changed, but to have their beliefs reinforced and to develop an understanding of how to commit attacks. The study concluded that the convicted terrorists who had completed significant online research were more likely to choose hard targets (i.e., government facilities) and conduct sophisticated attacks. As a result, the researchers recommended that governmental and nongovernmental organization efforts focus less on changing ideology and more on eliminating online content that inspires and instructs terrorists on how to commit attacks. The sample included lone-actors and groups who were convicted of planning an attack or facilitating terrorism (i.e., financing operations and

distributing propaganda). The researchers concluded that lone-actors were 2.64 times more likely to use the internet to plan and execute an attack because they lacked the variety of expertise that is often found in groups (Gill et al., 2017).

In a similar study, Koehler (2017) conducted interviews with former extremists to ask questions about how the internet changed and shaped their individual radicalization, and found that the majority credited the internet as their gateway to radicalization. Individuals who seek extremist information on the internet have already completed the sensitivity phase. In the discovery phase, an unfiltered ideology is presented to the recruit. In the group membership phase, the recruit can virtually meet and network with like-minded individuals and adapt a radical world view. In the commitment to action phase, the recruit can find instructions about targets and attack methods. Koehler (2017) found that the anonymity that the internet provides made individuals more likely to speak or act radically and the amount of user accounts also made the movement seem larger than it was which contributed to the belief that the movement could realistically achieve their short-term and long-term goals. In addition, by communicating with others online, individuals were able to easily build a reputation and network which enabled them to contribute to the existing ideology which not only gave them a sense of belonging but also made them feel empowered. The authors concluded that the internet is the most important element driving radicalization and could also make it the most effective platform for intervention (Koehler, 2017).

The studies conducted by both Koehler (2017) and Gill et al (2017) provide strong evidence of the dangers of self-radicalization which can be achieved without the influence of recruiters. While the sensitivity phase may be unavoidable, what occurs during the discovery

phase, group membership phase, and commitment to action phase should be researched to determine if there are opportunities for intervention. For example, both Koehler (2017) and Gill et al (2017) agree that the virtual and/or physical interaction with like-minded individuals play a pivotal role in radicalization, attack planning, and execution (Gill et al., 2017). Perhaps by stopping social media users from moving past the discovery phase or by stopping communication during the group membership phase, radicalization could be prevented. However, while Koehler (2017) believes that intervention should be solely focused on the virtual environment, Gill et al (2017) believes that intervention should be focused on both the physical and virtual environment because both have historically played a role in radicalization. Regardless, their studies convincingly argue that the internet influences the occurrence of radicalization and possibly the severity of attacks.

The Islamic State's Messaging Tactics

Several researchers including Torok (2015), Badaway and Ferrara (2017), and Ingram (2015), have studied the specific messaging tactics used by terrorist organizations to gain a following on social media. As previously mentioned, Al-Qaeda attempted to cater to the needs of local populations to gain support. In contrast, the Islamic State rules with fear by offering only two options to the territories they conquer – conversion or death (Torok, 2015). They broadcast their brutality in theater productions that normalize radical attitudes and makes their tactics seem acceptable (Torok, 2015). Continued exposure to indiscriminate torture and killing may cause vulnerable individuals to define their perception of Islamic Rule. However, Torok (2015) and Ingram (2015), agree that graphic images alone do not radicalize individuals.

Badawy and Ferrara (2017) focused on Arabic content posted by the Islamic State as they traced the connection between terrorist rhetoric and global events. The authors used a dataset of 25,000 Islamic State promotional accounts on Twitter and studied their tweets made between January 2014 and June 2015. During this time period, the Islamic State conducted crucifixions in Raqqa and invaded Mosul, Tikrit, and Sinjar – all causing spikes in online conversations. The authors separated Islamic State content into three categories: violence-driven, theological, and sectarian. They found that the violence-driven content is used to draw viewers and the theological and sectarian content is used to justify action.

Torok (2015) found that once an individual is actively following the Islamic State on social media, they often are exposed to content that encourages them to isolate themselves from their prior personal relationships and encourages them to develop virtual networks, bolstering radicalization (Torok, 2015). The Islamic State facilitates the group membership phase by communicating a consistent narrative that focuses on the grievances Muslims have had to endure due to oppressive foreign powers and their duty to create an Islamic State (Torok, 2015). Interestingly, they do not downplay the risk of joining the Islamic State. Instead, they frame martyrdom as a challenge and reward for those courageous enough to participate (Torok, 2015). Torok (2015) concludes that the Islamic State messaging derives its legitimacy from passages in the Quran and Hadith, fatwas, and statements by prominent radical scholars. However, Ingram (2015), credits the Islamic State's impressive following to their presentation of information that shapes perceptions of security, stability, livelihood, and develops an in-group versus out-group mentality.

The Islamic State portrays its governance as all-encompassing, sophisticated, and organized to create a vision of what life could be like for their supporters. They accomplish this task by regularly disseminating information about successful military operations, security posture, law and order, economy, social welfare programs, education, infrastructure, and positive relationships with various tribes in the region. At the same time, they craft messages that magnify crisis and position the caliphate as the only solution while reminding Muslims that it is their divine duty to participate in their efforts. The Islamic State also uses baiting to reinforce their message and polarize viewers. For example, in the video “Healing the Believers Chest,” the Islamic State had a captured Jordanian Air Force pilot walk through the rubble in Syria, past the dead bodies of women and children, before being burned alive. The purpose was to increase the perception of crisis and provoke a disproportionate response from Jordan which they could then further capitalize. The video sparked global backlash that enabled the Islamic State to further propagate their message (Ingram, 2015).

The Islamic State’s utilization of message framing argues that their efforts are meticulously planned and deliberate. Torok (2015) and Ingram (2015) agree that a feasible strategy to limit the influence of the Islamic State’s campaign is to dispute their core principles at every level, specifically challenging the depiction of crisis and control of the caliphate. A strong barrier to this approach is the Islamic State directly confronting the counter-narratives as false and misleading (Ingram, 2015). Therefore, the information provided by the counter-narrative would have to be constant, substantiated, and highly adaptive to criticism (Torok, 2015).

Attempted Solutions

Several governments have attempted to reduce terrorism by administering immersive deradicalization programs, intervening militarily, implementing restrictive immigration policies, monitoring internet activities, and executing information operations. This section of the literature review discusses the limited success of these programs and the potential impact of studying and improving certain strategies.

Immersive Deradicalization Programs

Several countries administer immersive deradicalization programs. The author of, *“How Could a Terrorist be Deradicalized,”* was interested in determining what approaches are successful in eliminating radical beliefs and radical intent to act (Bertram, 2015). Bertram (2015) studied immersive deradicalization programs administered in Yemen, Saudi Arabia, and Pakistan by conducting interviews with terrorists and intervention personnel. The only unsuccessful program that the researcher studied was in Yemen, which focused on terrorists who have been captured. In contrast, the Saudi Arabian and Pakistani immersive deradicalization programs were focused on terrorists who chose to defect willingly. Bertram (2015) concluded that the most critical aspect of an immersive deradicalization program is the relationship between intervention personnel and the terrorist; working within a process that is flexible and adaptive. Bertram (2015) also noted that when studying deradicalization programs, social media often plays a role in the individual’s initial radicalization and therefore may also be a tool for countering the Islamic State’s narrative (Bertram, 2015).

The Saudi Arabian immersive deradicalization program approaches deradicalization by providing educational support to assist individuals in understanding the ideology and emotional

support to address apprehensions about reintegrating into society. To accomplish this, they present defectors with religious authorities for educational support, trusted family, and fully deradicalized former terrorists for emotional support. Interestingly, the Saudi Arabian immersive deradicalization program also treated the terrorists as victims which eliminates fear of retribution and may contribute to their success. The Pakistani immersive deradicalization program focused on providing education and vocational training to ensure that individuals were able to support themselves when released. This approach is used because several terrorist organizations in Pakistan target financially vulnerable families. Like the Saudi-Arabian immersive deradicalization program, the Pakistani immersive deradicalization program also provided religious guidance. By targeting individuals' religious beliefs, psychological states, socioeconomic status, and even family life, these immersive deradicalization programs attempt to completely re-shape the terrorist's lives and allowed them to break free from jihadism.

Immersive deradicalization programs are not used by most governments because their effectiveness has not been empirically tested. Webber, Chernikova, Kruglanski, Gelfand, Hettiarachchi, Gunaratna, and Belanger (2018) attempted to gauge effectiveness when studying an immersive deradicalization program in Sri Lanka for former members of the Liberation Tigers of Tamil Eelam. The immersive deradicalization program was aimed at providing terrorists with sustained mechanisms for earning personal significance (Webber et al., 2018). Sustained mechanisms for earning personal significance include training on how to build a new social network, find a job, and even start a family. By surveying terrorists throughout the deradicalization program, researchers found that extremist thoughts and intentions were significantly reduced (Webber et al., 2018). The researchers also found that upon release,

beneficiaries expressed lower levels of extremism than their counterparts in the community (Webber et al., 2018). While these results appear to be promising, they are difficult to validate because it is challenging to assess whether a terrorist has been deradicalized or if they just want to appear compliant to avoid imprisonment. In addition, it is difficult for researchers to determine if a terrorist who has completed an immersive deradicalization program has re-entered their previous terrorist organization, or joined a new terrorist organization. The study also ignores the effect of other variables that could have had a more significant effect on deradicalization such as disappointment in the resources or group membership provided by the terrorist organization or a desire to return home and start a family.

Other researchers such as Ferguson (2016) and Barelle (2015) claim that while immersive deradicalization programs are beneficial, they often do not cause deradicalization. Ferguson (2016) drew his conclusions studying defectors of the Irish Republican Army in Northern Ireland while Barelle (2015) developed her conclusions studying various Islamic-based terrorist organizations in the Middle East. Individuals often chose to defect from terrorist organizations due to the same structural and individual factors that caused them to join in the first place (Cragin et al., 2015). Perhaps they were seeking a way to make a difference, or feel less isolated, but the terrorist organization was unable to satisfy those needs and may have even made their lives even more stressful (Barelle, 2015). Changes in perspective often contribute to what Barelle (2015) calls natural deradicalization that occurs as a terrorist gets older and their priorities change. Ferguson (2016) and Barelle (2015) both found that the terrorist organizations' inability to meet expectations has a much more significant impact on deradicalization than an immersive

deradicalization program which provides educational, emotional, and sometimes even financial support.

Military Intervention

After 9/11, the United States embarked on the War on Terror, which involved the use of targeted killings aimed at eliminating senior leadership of various terrorist organizations. The purpose of targeted killings was to disrupt and degrade terrorist operations and deter future attacks. Targeted killings also discredit terrorist organizations by making it look incapable of protecting its own leadership which could make it more difficult to retain current followers and recruit new followers. The strategy was largely based off one notable success. In 2007, a terrorist organization headquartered in the Philippines, Abu Sayyaf, split into factions and became more focused on petty crime after its leaders were killed (Cronin, 2013). However, Abu Sayyaf was unique because it was hierarchically structured and lacked a clear succession plan (Cronin, 2013). Over time, the War on Terror strategy expanded to include not only the targeted killing of leadership but also targeted killing of followers (Cronin, 2013). This expansion inevitably led to the accidental death of civilians (Cronin, 2013). Many critics of the War on Terror feel that eliminating leadership and followers does not necessarily solve problems and may prolong conflict because there is often an endless stream of replacements; or worse, more competent replacements (Bloom, 2017). In addition, terrorist organizations often use targeted killings to legitimize their cause, invigorate current followers, and recruit more followers – all of which increases a terrorist organization's chance of survival. Al-Qaeda and the Islamic State both regularly broadcast footage of drone strikes, portraying them as indiscriminate violence against Muslims.

Researchers have attempted to study the effectiveness of targeted killings by measuring the frequency and severity of attacks following strikes against key leaders. However, due to the reality that it can take a terrorist organization months, or years, to develop a plan to retaliate against a specific strike, the results have been largely inconclusive and even contradictory. For example, Carson (2017) examined the effects of 10 targeted killings on the average monthly number of attacks and number of days until the next attack and found that there was no significant effect on attack frequency. However, Carson's (2017) study does not examine the effects of the targeted killings on the severity of attacks or attempt to attribute attacks to the terrorist organizations that were directly affected by the targeted killing. In another study, Johnston & Sarbahi (2016), found that drone strikes in Pakistan conducted from 2007-2011 were associated in decreases in the frequency and severity of attacks. This study is flawed because it does not attempt to attribute attacks to the terrorist organizations that were directly affected by the targeted killing (Johnston & Sarbahi, 2016). An increase, decrease, or stagnation in frequency and severity of attacks could be attributed to a multitude of reasons, including: seasonal fighting patterns, world events, and fluctuations in financing, among others.

Researchers have also attempted to study the rate of recruitment following targeted killings. A study conducted by Shah (2018) examined the local and global impact of drone strikes in Pakistan on terrorist recruitment. To complete his study, Shah (2018) interviewed citizens living in the most heavily targeted districts in Pakistan's Federally Administered Tribal Areas (FATA) and examined the surveys of 500 detained terrorists. In addition, Shah (2018) examined the trial testimonies and accounts of terrorists convicted in the U.S. Based on the responses, the researcher concluded that there was not a significant impact on terrorist recruitment at the local

or global levels (Shah, 2018). Instead, he found that other factors such as identity crises, political, and economic grievances have more effect on terrorist recruitment (Shah, 2018). Shah (2018) also noted that online exposure to jihadist ideologies and influence of peers and social networks have a more significant impact on radicalization than military intervention. While the interviews conducted in the FATA were focused on assessing the effect of drone strikes on terrorist recruitment, the surveys, trial testimonies, and accounts of terrorists were more general.

Shah (2018) utilized thematic content analysis to identify key themes, highlighting text that appeared to describe an opinion, and then recording the incidence/variance and direction of responses which were reported as percentages for the whole sample. This method is highly subjective due to its dependence upon the researcher's interpretation of incidence/variance and direction. In addition, interviews, surveys, and trial testimonies are often unreliable sources of data because they are dependent on the participant's honesty. Many of the participants in this study feared reprisals from the governments that developed the questions and the terrorist organizations who often threaten participants for cooperating with researchers. However, Shah's (2018) research is the only systematic study of the effect of drone strikes on terrorist recruitment.

The lack of substantiated research on the effectiveness of military intervention and the many obstacles to developing substantiated research on the effectiveness of intervention make it a controversial solution to terrorism. Cronin (2013) encourages governments to research alternatives. Cronin (2013) concludes that a more effective way to defeat terrorist organizations may be to discredit its message and divide followers. Terrorist organizations already have disagreements about short-term and long-term goals, mission, and vision (Cronin, 2013). Cronin

(2013) argues that these disagreements should be exploited to make potential followers doubt the messages they are hearing and viewing.

The Muslim Ban

On 27 January 2018, the President of the United States, Donald J. Trump, signed an Executive Order called “Protecting the Nation from Foreign Terrorist Entry into the United States,” also named “the Muslim Ban.” The purpose of this Executive Order was to prevent radicalized terrorists from entering the country by the following: (1) lowering the number of refugees to be admitted into the U.S. by 50,000, (2) halt the U.S. Refugee Admissions Program for 120 days while a new system was put in place to increase vetting, (3) ban entry of foreign nationals for 90 days from Iran, Iraq, Libya, Somalia, Sudan, Syria, and Yemen with exceptions to be granted on a case-by-case basis, and (4) ban the entry of foreign nationals from Syria indefinitely. While the Muslim Ban was blocked by various courts and only upheld for 50 days, more than 700 travelers were detained and up to 60,000 visas were provisionally revoked during this time (Patel & Levinson-Waldman, 2017).

In the distinguished study, “Fear Thy Neighbor: Radicalization and Jihadist Attacks in the West” the authors researched 51 successful attacks throughout the U.S., Europe, and Canada between 2014 and 2017 to determine the legal status and motivations for the attackers. The researchers found that 73% were citizens (Vindino et al., 2017). Of the citizens, the majority were second generation citizens. The researchers concluded that while the first-generation citizens still feel connected to their native country, the second-generation citizens often feel little connection to their native country and marginalized by their new country leading them to find new ways to define their identity. As a result, second generation citizens pose the greatest terrorist threat to the

U.S., Europe, and Canada, not legal residents, refugees, or illegal immigrants (Vindino et al., 2017).

In addition to being unenforceable and ineffective, the Muslim Ban also led to widespread islamophobia. While terrorist attacks are salient in the minds of many Americans, they represent a relatively small actual threat to livelihood compared to heart disease, cancer, gun violence, car accidents, and diabetes, among others (Mosher & Gould, 2017). Since 9/11, foreign-born terrorists have killed an average of one American per year and home-grown terrorists have killed an average of six Americans per year (Mosher & Gould, 2017). In addition, of the 1.5 billion Muslims in the world, roughly 25% of Muslims believe in the Islamic State, and roughly 1% of that 25% of Muslims believe that violence should be used to develop the Islamic State (Beydoun, 2017). These statistics translate to only a few thousand, and of that few thousand, only a few hundred are focusing their efforts on global terrorism (Beydoun, 2017).

Monitoring Social Media

When considering terrorism there are typically three types of terrorists. There are enabled terrorists who receive training, weapons, and instructions to commit attacks that are planned by terrorist organizations. There are directed terrorists who only receive instructions to commit attacks that are chosen by terrorist organizations. And finally, there are inspired terrorists who often have minimal, if any, contact with terrorist organizations and instead have to plan and execute their attacks with general information (Vindino et al., 2017).

Of the different types of inspired terrorists, Maltene and Lasse (2017) categorize two types – the peripheral drifter and the failed joiner. The peripheral drifter has difficulty maintaining personal relationships with family and friends, mental health issues which cause them to

withdraw further, and only feel acceptance once they discover a terrorist group. The failed joiner attempted to connect to a terrorist group but fails and decides to act alone (Malthaner & Lindkilde, 2017). The peripheral drifter and failed joiner make an enticing case for developing a profile for terrorists and monitoring social media to discover their presence and intentions.

Most social media data mining efforts focus on attempting to develop a profile of users who are at risk of being radicalized and then monitoring their activity. Lara-Cabrera, Pardo, Benouaret, Faci, Benslimane and Camacho (2017) used various algorithms to evaluate risk of radicalization for a sample of social media users. The researchers began by using the Alter-Ego Network Model where they labeled specific users as Ego and the users that they interacted with as Alters. Lara-Cabrera et al (2017) then applied multiple bottom-up and top-down algorithms to map different communities and understand how they connected. Once the social communities were mapped, the researchers worked to identify users within them who have a high risk of being radicalized and then they analyzed the social communities that they interacted with. The researchers used five indicators to assess vulnerability to radicalization, including frustration, introversion, and perception of discrimination for being Muslim, negative views of the West, and positive views of jihadism. The researchers measured frustration with word usage, capitalization, and introversion with sentence length, and the use of ellipses. The researchers also measured perception of discrimination for being Muslim, negative views of the West, and positive views of jihadism by analyzing the content of posts and specifically looking for the presence of double keywords/phrases. For example, “hate and U.S.” or “divine duty and jihad.” While the researchers investigated 112 users, they noted that some of them may have been duplicate accounts owned by the same person. They found that most users posted less than 300 tweets since creating

their account and had approximately 1,000 followers but there were a few users who fell outside of that range with much more tweets and followers. Unsurprisingly, Lara-Cabrera et al (2017) researchers found strong correlations between perception of discrimination for being Muslim and expressing negative views of the West and positive views of jihadism. The researchers thought that once these individuals have been identified, actions can be taken to prevent their radicalization (Lara-Cabrera et al., 2017).

While researchers agree that social media can be used to radicalize at risk individuals, few studies have focused on how exactly radicalization is accomplished through social media. Rowe and Saif (2016) were interested in discovering how to detect when a user has adopted a pro-Islamic State stance and behavior. They identified specific social media users who became activated, which they defined as sharing radicalized content, and examined how their language and social interactions changed before, during, and after activation. Rowe and Saif (2016) measured the lexical terms used by a user, the content that was shared, and the references to other users. The researchers found that in addition to sharing specific word choices, many of the activated users also followed the same accounts. The authors concluded that activated users adopted their radicalized language and social interactions from users that were sharing radicalized content with them, and whom they also shared commonalities. This demonstrates that it is not only the content but the perception of belonging that radicalizes individuals (Rowe & Saif, 2016). In addition, in the days leading up to activation, the researchers saw a significant increase in radicalized language as if the users were rejecting their old way of thinking and communicating and immersing themselves in a new way of thinking and communicating (Rowe & Saif, 2016).

Of the many activated users that Rowe and Saif (2016) studied, very few planned and executed attacks because radicalization occurs on a spectrum. Once an individual is radicalized, their level of commitment can increase, decrease, or stay the same (van Eerten et al., 2017). On one side of the spectrum is passive terrorism, where individuals may simply encourage others to fight in the jihad either in person or virtually (Malthaner & Lindekilde, 2017). On the other side of the spectrum is active terrorism, where individuals are planning and executing attacks (Malthaner & Lindekilde, 2017). Monitoring social media will inevitably lead to the discovery of a mixture of passive and active terrorists. There is currently no validated method that can help data miners distinguish between the two. In addition, developing a profile of what an at risk individual may look like, and then scouring social media for their presence, violates the civil liberties that most developed nations promise to protect in defend.

A Failed Information Operation

After 9/11 the U.S. Government decided to address online radicalization. Researchers examined several counter-narrative programs executed by the U.S. Department of State during the Bush and Obama Administrations. During the Bush Administration, the Digital Outreach Team (DOT) was tasked with debunking propaganda about U.S. foreign policy, but faced many challenges considering the United States' long history of injustices. The campaign was quickly discredited by critics who pointed out the hypocrisy of the U.S. Government condemning violence while simultaneously us advanced interrogation tactics and killing civilians via drone strokes. The program was further undermined by the unauthorized disclosure of U.S. Central Command's OPERATION Earnest Voice which involved using machine learning software to administer hundreds of online personas that promoted counter-radicalization content over the

internet without attributing itself to an employer – the U.S. Government. During the Obama Administration, the DOT shifted its strategy from promoting the U.S. and U.S. foreign policy to discrediting key disseminators and undermining the image of terrorism for social justice, false information about religion, claims of military success, deaths of innocent Muslims, mistreatment of women, and testimony of former foreign fighters. The DOT began using social media platforms to create a conversation with individuals in support of jihad and to develop a mutual understanding rather than impose a set of values on another culture. They engaged directly in English, Arabic, Persian, Urdu, and Farsi. Unlike other countries such as France, Israel, China, and Russia, who pose as ordinary users, the DOT identified themselves as the U.S. Department of State. Still, the campaign was criticized for being out of touch with the general user population. Posts and replies to commentary were long and well-written while terrorist recruiters were more relatable using wit and cultural references. Like the Bush's campaign, it was seen as counterproductive because it drew attention to jihadists and also frequently prompted the discussion of the most shameful discretions of the U.S. Government (Khatib, Dutton, & Thelwall, 2012).

Khatib et al. (2012) analyzed 181 posts from the DOT and 459 posts from other non-state counter-radicalization users and found that the DOT posts generated more negativity and were largely seen as counterproductive. In this study, only 4.8% of the comments expressed a positive view of the U.S. The authors also concluded that state sponsored counter-radicalization campaigns face many limitations, whereas partnering with community groups and nongovernmental organizations to develop capacity, but not drive the message, may be a better option. The researchers specifically focused on reactions to a speech made by President Barack Obama's on

June 4, 2009, in Cairo, Egypt, calling for a new beginning with the Muslim World. The DOT began 30 threads by either posting a video or transcription of the speech which prompted 459 comments by other users and 181 replies by the DOT. Khatib et al (2012) studied the reaction to the DOTs initial post and subsequent posts to measure stance (positive, negative, or natural), type of rhetoric (emotional, logical, religious), and tone (dismissive, refuting, engaging, accepting, condescending, or ridiculing.) They concluded that 80% of other posts were of a negative stance, 92% were of other posts emotional rhetoric, and 56% of other posts were refuting in tone. In addition, the researchers noted that most of the other posts brought up U.S. imperialism, suffering in the Middle East caused by the U.S., downfall of the U.S., and U.S. support for Israel. Overall, the DOTs efforts appeared to be counter-productive as it exacerbated tension. However, the DOT argued that the study did not take into consideration the effect of silent observers, known as ‘lurkers,’ who form views based on posts but not commenting. It is possible that the DOT was able to change the hearts and minds of lurkers who chose to remain silent because their opinion was in the minority (Khatib et al., 2012).

The DOT faced many challenges while executing their campaign. They took an average of 2.77 days to respond because the group had to choose which posts to respond to, research the topic, develop a response, and then receive approval to post (Khatib et al., 2012). This is an issue in an environment where the administrators are already outnumbered by users who can spend all day and night freely posting. This imbalance in the amount of post inevitably makes the DOT and their arguments appear weak. In addition, the other users occasionally made posts that were impossible to respond to, such as the images of dead women and children. Despite the failures of the DOT, the researchers argue that foreign policy cannot be left up to the public’s interpretation.

Governments need to invest time and resources to ensure that their messages are heard in the way that they were intended. The researchers also propose that if a counter-narrative is unsuccessful, perhaps a parallel narrative that preaches multiculturalism and inclusiveness could be more promising (Khatib et al., 2012).

Competing Narratives and Counter-Narratives

Governments have a window when they can successfully dissuade an individual from joining a terrorist organization. During this time, governments can provide a counter-narrative which emphasizes the costs of joining a terrorist organization, a competing-narrative which emphasizes the benefits of not joining a terrorist organization, or elements of both counter-narratives and competing-narratives. Current research emphasizes the importance of tailoring these narratives to local populations.

Phases of Radicalization to Focus On

The researchers who published, *Fear Thy Neighbor: Radicalization and Jihadist Attacks in the West*, were particularly interested in why some European countries such as France, Germany, and Belgium have experienced a high number of attacks while other European countries such as Spain and Italy have experienced a low number of attacks (Vidino et al., 2017). After all, France, Germany, Belgium, Spain, and Italy all have similarly sized Muslim populations (between 5% and 7%) and are not inclusive of Muslims from a political and social perspective (Vidino et al., 2017). Vidino, Marone, and Entenmann (2017) found that Spain and Italy, Muslims do not live in closed communities where they can easily discuss sympathetic attitudes towards terrorism. As a result, it very difficult for radicalized mosques to develop and spread their ideology. Once again, this research emphasizes the importance of the first two

phases of radicalization – sensitivity and discovery. In addition, Vidino et al (2017) states that to complete the radicalization process, an individual often needs to be influenced by either virtual or physical social networks which emphasizes the impact of the group membership phase. Rowe and Saif (2016) found that highly publicized world events involving the Islamic State, such as territorial gains by the Islamic State, attacks conducted by the Islamic State, and the execution of enemy hostages by the Islamic State appear to have significantly accelerated radicalization for many individuals. This provides a strong argument for the validity of the fourth stage of radicalization which involves a trigger event. These trigger events may not directly affect the individual but nonetheless solidifies their commitment to action (Rowe & Saif, 2016). There is very little a government can do to prevent an individual from experiencing the sensitivity and commitment to action phases of radicalization. However, a government may be able to intervene during the discovery and group membership phases of radicalization.

Cronin (2013) stated that if terrorist organizations continue to perpetuate their message, they will not be defeated. The problem is not the terrorists, it is the ideology behind their actions. Therefore, terrorism cannot be solved by destroying domestic and transnational terrorist organizations. Terrorism can be solved by learning about the ideology, searching for vulnerabilities, and then communicating a new ideology (Cronin, 2013). The existing literature seems to distinguish by two types of narratives; competing-narratives and counter-narratives. Competing-narratives demonstrate the benefits of avoiding terrorism whereas counter-narratives demonstrate the costs of participating in terrorism. However, there is very little research on which approach is more effective in reaching the general user population, or how effectiveness should be measured.

An example of a competing-narrative is Minhaj-ul-Quran International which is run by the Islamic scholar Dr. Tahir-ul-Qadri. Dr. Tahir-ul-Qadri is a respected religious thinker who has authored books and given lectures addressing how terrorist organizations have misinterpreted the Quran and Hadith. He is known for releasing several fatwas denouncing extremism. In 2010, he released a fatwa which demonstrated each contradiction that the terrorists use to justify killing innocent women and children and to gain followers. He explained that Islam only justifies killing in self-defense (Shorer-Zeltser & Ben-Israel, 2016). He also emphasized that “tawhid” means belief in one God and it does not mean that God must be obeyed in every way and that those who do not follow God’s laws should be persecuted (Shorer-Zeltser & Ben-Israel, 2016). These are commonly held ideas by the jihadists that could easily be dispelled if all Muslims could read the Arabic text within the Quran and Hadith. In addition to exposing contradictions between terrorist ideology and Islamic texts, Dr. Tahir-ul-Qadri routinely criticizes the U.S. Government for encouraging the terrorist ideology by making Muslims feel threatened. Dr. Tahir-ul-Qadri founded an institution, Minhaj-ul-Qur’an International, that uses several communication channels including the internet to discuss the promotion of tolerance and urge Muslims to take advantage of the opportunities offered to them in the U.S., Europe, and Canada and to embrace the culture where they can live and practice freely. He emphasizes the opportunities available outside of the Islamic State such as public education, jobs, and even recreational sports. Minhaj-ul-Quran International also provides religious literature for those interested in Islam and organizes daily events throughout the world which encourage Muslims to learn more about their religion and become involved with their local and global communities (Shorer-Zeltser & Ben-Israel, 2016).

Betram (2015) argues that challenging the religious doctrine spread by the terrorist organization will be ineffective because most individuals viewing the information will not have the scholarly background required to be convinced by rational critique. Bertram (2015) believes that counter-narratives should expose the contradictions that exist within the ideology and discredit the goals. Betram (2015) suggests accomplishing this task by highlighting the poor living conditions that terrorists endure and the atrocities that they witness. Betram (2015) specifically cited the case study of Mohammed Mahbub Husain who was a member of Jamat-e-Islami and Hizb ut-Tahrir. It was not until there was a murder of an innocent man orchestrated by his terrorist organization that he began considering their goals and searching for more information. Through online research, Mohamed Mahbub Husain deradicalized and defected. The case study proves that a counter-narrative can be effective (Betram, 2015).

The International Center for the Study of Violent Extremism interviewed 43 Islamic State defectors and produced video clips where they denounced the group (McDowell-Smith et al., 2017). In the video clips, each of the Islamic State defectors told stories about the corruption and brutality of the Islamic State and closed with a final warning to others to refrain from joining (McDowell-Smith et al., 2017). This is an emotional approach to providing a counter-narrative which contrasts with the logical approach used by most counter-narratives. This approach focuses on providing factual religious, political, and social information that exposes the hypocrisy of the Islamic State. The video clips were focus-tested on a small normative sample of 75 college students who then filled out a survey with closed-ended and open-ended questions (McDowell-Smith et al., 2017). Overall, the college students found the content to be authentic and disturbing which ultimately made radicalization seem unappealing. 95% of respondents

considered the Islamic State to be a terrorist organization and 90% of respondents also thought that if others watched the videos, they would be convinced not to join the Islamic State (McDowell-Smith et al., 2017). The authors note that this strategy does not address the underlying individual vulnerabilities that often lead to radicalization and that many of the college students already held a negative view of the Islamic State prior to completing the study, making it inherently bias. Since conducting their study, McDowell-Smith et al (2017) have begun experimenting with placing the videos on social media accounts of those endorsing the Islamic State and have even subtitled the videos in various other languages in an attempt to capture the attention of at risk individuals who may be inclined to support the Islamic State (McDowell-Smith et al., 2017).

A Localized Approach

The previous research studies on radicalization in Palestine and Yemen prove that motivations differ from one country to the next and even from urban to rural environments. This reality calls for a localized approach to counter-radicalization. Mirahmadi (2016) recommends using community-based organizations to develop and communicate a counter-narrative. If the government builds partnerships with community-led initiatives by moderate Muslims, then it could deter individuals from radicalizing in the first place. Mirahmadi (2016) argues that moderate Muslims are best positioned to lead a counter-narrative, however, their networks in the U.S.— mosques, cultural associations, community centers, and college student groups— need help to develop their institutional capacity and improve their messaging capabilities. Partners should support religious freedom, non-violent conflict resolution, and the preservation of the constitution as the rule of law. Partners should also provide community centers that foster a sense

of belonging and provide access to mentors who preach socially responsible definitions of what it means to be a “good Muslim” based on shared American and Islamic values. Partners could even provide counseling that is authentic and therefore palatable to at-risk Muslims. While Mirahmadi (2016) only addresses intervention in physical communities, there are also opportunities to intervene in virtual communities (Gill et al., 2017). Communities can provide online forums where moderate Muslims issue statements against radical ideologies that breed violence and hatred; and post content that highlights Islamic values of religious tolerance, pluralism, gender equality, and social cohesion. Online forums reach even further than at risk individuals by providing the public with information that is geared toward preventing islamophobia and making Muslims feel welcome in all communities.

Graduate students at Carleton University in Ottawa developed a fact-based counter-narrative platform to prevent individuals who were just beginning to research terrorism from becoming fully radicalized (Wilner & Rigato, 2017). The administrators chose to use Facebook for its wide user base that included their target demographic of 16-25-year old and decided to focus on trustworthy messaging, engaging content, and accessible delivery. Their goals were to post and share accurate and timely information that undermined the extremist ideology, provided information about warning signs of radicalization, reduced feelings of social isolation, and disseminated credible voices (local and national community leaders, academia, and former extremists). Given these highly sensitive political subjects, they were also motivated to dismantle stereotypes to prevent islamophobia. The graduate students chartered two focus groups to develop their brand by providing feedback on content, material, style, and strategy. The focus groups showed a preference for pastel colors, visually simple designs, short sentences, and links

to reputable news articles. Over a period of three months in 2017, graduate students made 140 posts. During this time, their most popular posts were testimonials from former terrorists and information about a recent terrorist attack that occurred in the United Kingdom. The researchers determined popularity by studying reach, clicks, and engagement. The number of newsfeeds that the posts appeared on measured reach. The number of times the link was accessed from their posts measured clicks. The number of comments made on each post measured engagement. Wilner & Rigato (2017) were surprised to find that while their campaign focused on Canadians and was specifically geared towards students attending University of Ottawa, it also reached U.S., India, Saudi Arabia, and Australia, demonstrating the potential of the campaign. While these metrics are telling, they do not measure the effect that a post had on the viewer. The study was also limited because they only posted in English which limited the reach; however, the information still appealed to local and global audiences (Wilner & Rigato, 2017).

Saudi Arabia has also attempted to develop an online counter-narrative through a Nongovernmental Organization with support from the Ministry of Islamic Affairs known as the Sakinah Campaign (Casptack, 2015). The Sakinah Campaign uses scholars of Islam who complete four tasks to limit extremism. First, the scholars collect and catalog jihadist material which is used to understand the thinking. Second, the scholars open a dialogue with Muslims who are seeking information on the internet about their religion and encourage them to avoid militancy. These dialogues last from a few hours to a few months and are posted online for others to see. Third, the scholars infiltrate extremist websites with forums to create dissent by exposing the contradictions in the extremist's interpretation of the religion. The government of Saudi Arabia also penalizes the owners of websites that promote Islamic Militancy which include a

maximum of 10 years in prison and/or fines reaching the equivalent of \$1.3M. Fourth, the scholars maintain a website for the Sakinah Campaign that serves as a repository of factual religious information for those studying Islam and includes fatwa's issued by clerics that denounce violence. The Sakinah Campaign has announced that it has persuaded several hundred individuals from Saudi Arabia and elsewhere to change their views on jihadism. The government of Saudi Arabia runs this counter-narrative in addition to an extensive immersive deradicalization program for prisoners. Experts involved in the immersive deradicalization program for prisoners believe that they have a 90% success rate due to the reality that an estimated 10% of jihadists are "hard-core" and refuse to cooperate with the rehabilitation process. Therefore, both immersive and online counter-radicalization efforts are focused on jihadist sympathizers and supporters who may already be somewhat disillusioned by terrorism (Casptack, 2015).

Messaging Theories

Current research suggests that quantity and quality are both important aspects to conducting a campaign on social media. Governments may want to focus on increasing the amount of posts while focusing on the audience, communicator, and content of posts.

Creating the Illusion of Consensus with Constant Posting

In addition to communicating a new message, social media can also be used to change an existing narrative. During the Second Lebanon War in 2006, Hezbollah manipulated and controlled information within the operational environment to its advantage. Hezbollah used staged and altered photographs and videos and limited where journalists went and what they saw (Matusitz, 2018). Hezbollah also timed releases of information for maximum strategic effect (Matusitz, 2018). These tactics made it appear as if Israel was disproportionately using force in

response the kidnapping of only two soldiers. Hezbollah used self-justifying posts to affect perceptions of blame and used self-congratulatory posts information to affect public perceptions of victory (Matusitz, 2018). Hezbollah's efforts focused on gaining trust and sympathy for its cause and because Israel provided no counter view - Hezbollah's perceptions were accepted regionally and worldwide (Matusitz, 2018). After the Second Lebanon War in 2006, Israel created a governmental department to study and execute information operations. They determined that while Lebanon incurred more losses, they were able to create a perception of failure for Israel (Matusitz, 2018). As a result, the world saw a win for Lebanon and a loss for Israel. For the Gaza War, Israel created a YouTube channel where they posted videos and received millions of views. The videos depicted precision airstrikes and made allegations that Hamas was deliberately drawing fire to schools and hospitals (Matusitz, 2018).

The U.S. suffered a similar blunder in 2006 with OPERATION Valhalla. Special Forces killed a number of jihadist and destroyed a weapons cache but by the time they returned to the base, a terrorist organization known as Jaish al-Mahdi had repositioned the bodies and removed the weapons of the jihadists, so it looked like they were murdered during prayer (Waltzman, 2017). Jaish al-Mahdi then photographed the bodies in these poses and uploaded the images to a website with a press release asserting that they were killed in a mosque (Waltzman, 2017). The U.S. Special Forces had evidence to disprove the claims but because the process for releasing information involved many approvals from higher-ups it did not reach the media for three days and by that time, the damage had been done (Mayfield III, 2011). Mayfield III (2011) argued that this situation could have been avoided if the U.S. understood how social media can be used in an

information operation. The authors conclude that information operations need to be studied for the U.S. to benefit from the use of social media.

While the Islamic State is losing territory in the Middle East, they continue to radicalize and inspire attacks all over the world with their robust online presence. In *The War of Ideas on the Internet: An Asymmetric Conflict on which the Strong Become Weak*, McCauley (2015) credits the online success of the Islamic State to the existence of meta-opinions. He explains that people like to feel and look as if their way of thinking lies within the majority and will attempt to minimize their own deviation from what they believe is the norm (McCauley, 2015). For example, if a person thinks that everyone supports the Islamic State, then they will often outwardly express support of the Islamic State even if they have reservations. The Islamic State uses social media to make it appear that the public is in support of their ideology and operations by constantly uploading posts on a multitude of platforms from multiple sources (McCauley, 2015). The very nature of social media compounds this effect by surrounding users with posts that are targeted to their interests and inevitably confirms their beliefs. For example, if a user clicks on a post about brides who are available for marriage in the Islamic State, then they will begin seeing more and more related posts until their entire newsfeed shows unanimous support for the Islamic State and its benefits. While the quality of Islamic State posts varies, the quantity is most impactful. If social media users were to encounter a counter narrative it may make the Islamic State seem less supported. McCauley (2015) posits that there is often a difference between actual public opinion and perceived public opinion and an event that reveals the true distribution of opinion can cause sudden political change. To disrupt the Islamic State, the appearance of consensus must be destroyed. McCauley (2015) notes that the counter narrative

should be communicated similarly to the Islamic State - informally, high quantity, distributed across platforms, and individualized to users. The challenge with administering a counter-narrative is keeping messages consistent; but McCauley (2015) argues that if the quantity is vigorous, the counter-narrative should be successful in detracting from the Islamic State's appearance of a majority.

Waltzman (2017) and Mayfield III (2011) both acknowledge that terrorist organizations have an undisputed advantage on social media due to their decentralized structures. Local commanders are often empowered to make decisions that allows them to be agile and flexible. In contrast, the governments that they seek to destroy are often unable to respond in an efficient manner because of the many layers of approvals required. Mayfield III (2011) argues that the U.S. Department of Defense needs to implement processes to guide the expeditious release of information at lower levels which know how to best communicate with local populations. However, neither Waltzman (2017) or Mayfield III (2011) explain who should be publicly seen as responsible for executing the campaign or what specific channels should be used.

The Audience, Communicator, and Content

There is consensus among terrorism researchers that the only way to defeat terrorist organizations is to use their same tactics. The Islamic State focuses on three aspects of communication: the audience, the communicator, and the content. Therefore, a competing-narrative or counter-narrative should theoretically focus on the same elements. McCauley (2015) stresses that no terrorist rhetoric should exist on the internet without a response. When terrorist rhetoric is all that is available to a vulnerable individual, it increases their chance of acceptance (MaCauley, 2015). The mere presence of a dissenting opinion can prevent radicalization (MaCauley, 2015).

The Islamic State understands the complexity of identity and power and utilizes in-group and out-group dynamics to persuade followers to join. An audience's attitudes are developed from individual values, and values of the groups that they belong to (Dubois, Rucker, & Galinsky, 2016). It is easier to change the attitude of a person if they *do not* value their group and more difficult if they *do* value their group (Dubois et al., 2016). The Islamic State repeatedly reminds the audience that they do not belong in their current group (i.e., the U.S., Europe, or Canada) because their current group treats them like second class citizens. However, they are welcome to join a new group, the Islamic State, which will welcome them with open arms and provide them with all the opportunities that their previous group withheld. An example of a competing-narrative under this approach would be Minhaj-ul-Qur'an International's messaging. Minhaj-ul-Qur'an International reminds their audience that not only are they free to live and practice however they want in the United States, Europe, and Canada, but there are also many communities in these regions that provide social and even economic support for people of all religions. A counter-narrative would argue that the Islamic State is not as welcoming as it may appear. It would include testimonies of deradicalized terrorists who traveled to Iraq or Syria but were unable to find the sense of belonging that they were seeking. An understanding of the audience is crucial when deciding who the communicator should be, and what content should be posted. The internet is full of noise and for a narrative to break through the noise, it must be seen as relevant to users.

The communicator should be credible to the audience due to their level of trustworthiness and expertise (Dubois et al., 2016). The communicators for the Islamic State often derive their level of trustworthiness and expertise from being perceived as religious scholars. However, many

of the communicators for the Islamic State have no formal schooling in religion and often do not even speak Arabic which is the language of the Quran and Hadith (Schmid, 2015). Instead, the communicators are simply able to claim that they are religious scholars and due to their substantial following on social media - they are believed (Schmid, 2015). In addition, many of the religious scholars also claim to have fighting experience having participated in the efforts to expel foreign invaders from Afghanistan and overthrow what they deem to be corrupt regimes in Iraq and Syria (Jihad 2.0: Social Media in the Next Evolution of Terrorist Recruitment, 2015). Fighting experience is not easily substantiated but is often confirmed by other jihadists which makes it possible for users to blindly accept. This concept of fighting experience also contributes to the communicator's credibility. Therefore, communicators of competing-narratives and counter-narratives have been mostly religious scholars but with credentials that prove their level of trustworthiness and expertise. In addition, there have been several communicators who are deradicalized terrorists who can make similar claims of fighting experience. However, these claims of fighting experience are often not widely confirmed and without many followers may be more difficult for users to accept.

When it comes to content, the Islamic State focuses on images, videos, and statements that demonstrate their power, sense of belonging, the chance to become a part of something bigger than themselves, material luxuries, and an approaching apocalypse combined with a need to protect their religion. The tactics used are dependent on whether the Islamic State is attempting to recruit manpower, expertise, or gain general support. Existing research on persuasiveness suggests the effectiveness of the content of the communication is dependent on the vividness of the threat presented (Blondé & Girandola, 2016). This theory has gained

popularity with salient examples such as the viral picture of a stunned child sitting in the back of an ambulance after the bombings of Aleppo, Syria. The theory may also be deduced to suggest that counter-narratives are more effective than competing-narratives because of the mere presentation of a threat. However, there has been no research to validate such a claim. Given the lack of research on the topic, content of communication for competing-narratives and counter-narratives has focused on capturing the attention of viewers and providing information that challenges their current views.

The Islamic State is attempting to promote an image of a successful caliphate where the basic needs and desires of followers are met. They are losing territory and many of their followers are being forced to live in poor conditions. Haykel (2016) traveled to Yemen, Iraq, Syria, and Saudi Arabia where he interviewed Sunni and Shia Muslims to learn about their thoughts and feelings towards Sharia Law and the caliphate as interpreted by the Islamic State. He found that those living under the control of the Islamic State in the caliphate feel inconvenienced by Sharia Law but are willing to withstand those inconveniences because the Islamic State provides them with necessities such as jobs (Haykel, 2016). He found that sympathizers living outside of the control of the Islamic State and the caliphate support the overall strategy and goals but do not want to live under Sharia Law (Haykel, 2016). This evidence suggests that Sharia Law is largely seen as a deterrent that can be emphasized with a competing-narrative or counter-narrative. Haykel (2016) closes by explaining that the Islamic State has emerged from an unstable economic, political, and social environment but it's foundation and ideas are not new as they have been discussed and practiced since the 7th century (Haykel, 2016). The Islamic State is concerned with gaining territory and influence in the Middle

East. Therefore, Haykel (2016); argues that there is no need to for the U.S. to intervene militarily. The population which is currently under control of Islamic State will eventually revolt because while they are seeing improvement in stability they will not see the promised utopia and once the true conditions are revealed to the world they will stop gaining followers (Haykel, 2016).

Where many researchers vehemently disagree is about creating a dialogue with general users. Casptack (2015) and Bertram (2015) believe that competing-narratives and counter-narratives should incorporate feedback mechanisms to help administrators determine whether information is appealing to the masses, and if necessary, make adjustments. This is due to the marginal success of immersive deradicalization programs in the Middle East that both researchers studied. However, feedback mechanisms such as a comment functionality may invite dissent that can distort the information the competing-narratives and counter-narrative are trying to relay as it did with Bush and Obama's online counter-narrative programs. Therefore, feedback such as LIKES, and SHARES, may be a safest and most accurate option for measuring outreach.

The article, *Online Engagement Factors on Facebook Brand Pages*, assessed the relationship between the content of social media posts and customer engagement measured by number of LIKES and SHARES, comments, and interaction duration for a page. The study found that certain types of content can increase the LIKES ratio, SHARES ratio, comments, ratio, and interaction duration ratio, while other types of content had no effect (Cvijikj & Michahelles, 2013). In a related study, *Do Social Media Marketing Activities Enhance Customer Equity? An Empirical Study of Luxury Fashion Brand*, the researchers found that increases in engagement showed a correlation to a change in attitudes and behavior for retail companies (Kim & Ko, 2012). Social media marketing increased value equity ($\beta = .47$, $t = 3.47$) and brand equity ($\beta =$

.66, $t = 7.73$) which increased purchase intention at a significant level of $p < .001$ (Kim & Ko, 2012). Both studies demonstrate the validity of using LIKES and SHARES to determine the perception of relevance and credibility when viewing social media content.

Summary and Conclusions

The Islamic State has found itself repeatedly fighting against other regional terrorist organizations such as Al Shabab and Jabhat al-Nusra which rule with shared power and governance and oppose the Islamic State's quest for complete control over forcibly conquered territory. Conflicts with other regional terrorist organizations drain the Islamic State's already limited resources and distracts them from fulfilling their mission of establishing a caliphate (Jihad 2.0: Social Media in the Next Evolution of Terrorist Recruitment, 2015). In addition to regional conflicts, the Islamic State is also losing territory due to the military strikes made by foreign powers including the U.S., France, Russia, Turkey, Lebanon, Australia, Great Britain, Canada, The Netherlands, Jordan, and Morocco (Haykel, 2016). Yet, the Islamic State continues to inspire attacks throughout the world due to their robust online presence that promotes a powerful image of growth and prosperity. As living conditions within the Islamic State deteriorate, foreign governments have an opportunity to reveal a different view of the caliphate that could potentially prevent individuals from radicalizing (Haykel, 2016).

As addressed in this chapter, terrorist organizations are actively recruiting followers on social media and their efforts could be undermined by providing information about costs and benefits that a vulnerable individual may not be aware (McCauley, 2015). This chapter traced the evolution of the Islamic State and examined the issues revolving around previous and current counter-radicalization efforts. It specifically focused on the potential of social media, but the

challenges involved with uploading information that is relevant and credible enough to trend. While progress has been made with counter-radicalization efforts, there are many issues that still need to be studied and analyzed for improvement and validation. The existing research emphasized two overarching concepts. The first overarching concept is the need to understand the ideology behind terrorism (Cragin et al., 2015). While researchers may know what information entices a vulnerable individual to join a terrorist organization, there is very little insight into what information may dissuade a vulnerable individual from joining a terrorist organization. The second overarching concept is the need to provide information to the public that competes with the Islamic State's narrative, or counters, the Islamic State's narrative (McCauley, 2015). While much has been written about terrorist recruitment and counter-radicalization, no studies have empirically researched what information is effective or ineffective at reaching the general population.

Chapter 3 will discuss the quantitative research design. It will delve into methodology and include a discussion of the population, sampling and sampling procedures, data collection, and data analysis plan. In addition, Chapter 3 will address threats to validity and outline the ethical procedures that will be followed.

Chapter 3: Research Method

This chapter outlines the parameters of the methodological approach used in this study. It includes an overview of the research design and explains why the design was chosen. It also covers on the population and sampling procedures, and then discusses the data collection procedures and statistical analyses techniques that will be used to conduct the analysis. The chapter ends with a discussion of the validity, reliability, and ethical considerations inherent in this study.

Research Design and Rationale

The nonexperimental, quantitative research descriptive design was appropriate for this study because counter-radicalization social media campaigns are already being administered and followed. Therefore, there was no need to create an environment to measure the outreach of social media posts; it already exists and was waiting to be observed and understood. Measuring if there was a relationship between CATEGORY, CONTENT, and GEOPOLITICAL REGION of posts and their level of engagement on social media was intended to determine if utilizing data analytics when administering counter-radicalization campaign on social media can ensure that the posts are reaching the general user population. This study used a nonexperimental descriptive design to observe relationships between variables without manipulation. Due to the lack of testing and treatment, the study was unable able to determine a cause-and-effect relationship but was able to determine correlation (Frankfort-Nachmias, Nachmais, & DeWaard, 2015). In addition, the nonexperimental descriptive design had few threats to internal and external validity.

Social media research is a relatively new field of study. As a result, there are few established scales to provide a foundation for discerning reliability. However, many private companies use a variety of the vectors to measure and focus their outreach and engagement efforts (Stelzner, 2010). For example, DigitasLBI, a company that assists retailers in understanding their social media metrics, studies the number of impressions, day of the week, time, post type, number of SHARES, number of LIKES, number of comments, number of pages tagged in post, and number of hashtags used by social media platforms, over a period of time, to draw attention to which posts are effective and ineffective (Berger, 2013). Their outcome is called the “Contagious Index” because it provides a score of between 0 and 100 to the retailer. DigitasLBI is given administrator privileges to complete their studies because this authority has access to much more information on posts. I did not have administrator privileges for the Quilliam Facebook page. Due to this limitation, I created a modified version of the Contagious Index by measuring only the LIKES and SHARES of Facebook posts. According to the DigitasLBI, a share means that a user found the information to be so important that they are willing to take personal responsibility to further its dissemination and a like means that a user wants the poster to know that they agree with them and support their view (Berger, 2013).

Methodology

This study utilized a quantitative method to measure the trending of posts on social media. Facebook was chosen as the social media platform for this study because it is the most popular social media platform; and unlike Twitter, YouTube, and Instagram, its users often share published content that aims to spread ideas and teach others (Bene, 2017). There are several radicalization counter-narratives on Facebook that are currently being administered by

governmental and nongovernmental organizations. Of the governmental radicalization counter-narratives, The United Kingdom's *Prevent Tragedies*, Canada's *Extreme Dialogue*, the United States' *The Global Engagement Center*, have relatively low outreach and engagement as previously mentioned. Therefore, they were not chosen for analysis. However, there were several radicalization counter-narratives that were being administered by nongovernmental organizations that have an adequate following, including Minhaj-ul-Quran International, The Israel Project, and Quilliam.

Minhaj-ul-Quran International, The Israel Project, and Quilliam were all created and administered with the purpose of dissuading individuals from joining terrorist organizations but utilize varying strategies. Minhaj-ul-Quran International was eliminated because the posts often are not informational. Instead, Minhaj-ul-Quran International often posts to promote upcoming events where religious leaders and scholars would discuss counter-radicalization. The Israel Project was eliminated because it was focused only on Hamas and Hezbollah and did not address terrorism as a global issue but as only a threat to Israel. In contrast to both Minhaj-ul-Quran International and The Israel Project, Quilliam, presented a balanced feed with a variety of CATEGORY, CONTENT, and GEOPOLITICAL REGION making it the obvious choice for the study.

Once the counter narrative, Quilliam, was chosen, it was evaluated to see what types of posts were typically made. This helped to define the CATEGORY, CONTENT and GEOPOLITICAL REGION as seen below in Table 3. After completing a preliminary evaluation of the data, it appears that the personal story has the most reach as measured by LIKES and SHARES. However, this conclusion needs to be verified by statistical analysis of the data

collected. The Multivariate Analysis of Variance (MANOVA) test was used to analyze the data and test the hypotheses. The results of the MANOVA verify if the CATEGORY, CONTENT, and GEOPOLITICAL REGION have an impact on the dependent variable constructs, LIKES and SHARES as seen below in Table 4.

Table 3

Independent variable data coding

Independent variables	Data entry code
CATEGORY	<ol style="list-style-type: none"> 1. personal story 2. news article 3. research/policy analysis 4. military defeats 5. religious doctrine
CONTENT	<ol style="list-style-type: none"> 1. written status 2. written status with link to website 3. written status with video 4. written status with photograph
GEOPOLITICAL REGION	<ol style="list-style-type: none"> 1. West 2. Middle East 3. global 4. cyber

Table 4

Dependent variable constructs

Dependent variables	Construct
LIKES	User agrees with information presented
SHARES	User wants others to view information presented

The strategic choice theory argues that individuals weigh the costs and benefits of joining a terrorist organization before choosing to join (Borum, 2011). According to the social movement theory and social identity theory, information about the resources and group membership offered by a terrorist organization should be of interest to an individual who is contemplating terrorism. When applied to terrorism, the social movement theory and social identity theory can be used to encourage or dissuade an individual who is considering joining a terrorist organization.

The Islamic State recruits by offering resources and group membership. In reality, they are struggling financially and as a result have been unable to provide the cars, houses, and weaponry that they have promised and this lack of resources has led to defections (Schmid, 2015). If the social movement theory and social identity theory are true, then information about the current condition of the Islamic State could interest an individual who is contemplating joining. The application of the social movement theory and social identity theory to terrorism led to the initial research question posed by this study; are some categories of information posted on social media more appealing to the general user population than others? If accepted, the hypothesis that personal story reaches more social media users than other categories would mean that the absence of resources and group membership is of interest to those contemplating terrorism and could potentially dissuade individuals from joining a terrorist organization.

Considering what individuals who are contemplating terrorism may want to view on social media led to two additional research questions; are some contents on social media more appealing to the general user population than others and are some GEOPOLITICAL REGIONS on social media more appealing to the general user population than others? Individuals in the discovery phase of radicalization often seek information that is reputable. A post with a status,

picture, or video posted by a single source (a Facebook page) is often not enough to sway opinions. However, a post with a link to secondary source (website) is often seen as credible (Westerman et al., 2014). This belief led to the hypothesis that social media post CONTENT of written status with a link to a website will reach more social media users than the other CONTENT.” Individuals in the discovery phase may also be more interested in CONTENT that discusses the Middle East. After all, individuals who have passed the sensitivity phase of radicalization often have begun mentally disassociating themselves with their homes in the West and have begun identifying with their homeland in the Middle East (Robinson et al., 2017). This belief led to the hypothesis that the social media post GEOPOLITICAL REGION of Middle East will reach more social media users than the other GEOPOLITICAL REGIONS.

Population

The population for this study were posts published on the Quilliam Facebook page between 1 January 2018 and 31 December 2018. These posts were LIKED and SHARED by the general user population. There are very few barriers to creating a Facebook account. All an individual need to provide is a first name, last name, phone number or email address, password, date of birth, and gender. This information can easily be fabricated which has led to an abundance of duplicate accounts. While a user may have more than one account, they typically only use one. As a result, Facebook delineates between active users who have logged-on within the past day and in-active who have not logged in within the past day when determining their total users and categorizes users based on how recently they last logged into an account. As of 2018, Facebook had 2.01 billion active daily users (Donnelly, 2018).

The demographics of users on Facebook have significantly changed since its inception. When the social media platform was first launched in 2004, only college students could join. Users had to either be invited by another student to join or request that another student verify their academic enrollment to join. In 2005, registration was extended to U.S. high school students and users still had to either be invited to join or their student status had to be verified by another user who attended the same school. This registration strategy severely limited the demographics of users to white middle and upper-class Americans between the age of 14 and 22. In 2006 the social media platform expanded to include users who were not students. Many parents who were interested in what their children were doing online also joined. However, this expansion deterred many young users from using the social media platform and encouraged them to move onto other popular social media platforms such as Instagram, Snapchat, and Pinterest, which were less frequented by parents. By 2018, only 88% of 18-29 year olds were using Facebook as seen in Table 5. While this exodus effected Facebook, it was offset by the massive number of users in their forties and fifties joining the social media platform. With even more users clicking on advertisements and generating revenue, Facebook once again was able to expand and begin providing their services to other countries such as India, Brazil, Indonesia, and Mexico as seen in Table 8 with 79% of all Facebook Users logging on at least once a day as seen in Table 7 and reaching both men and women as seen in Table 6.

Table 5
Facebook Age Demographics

Age Group	Percent of Age Group Using Facebook
18-29 year olds	88%

30-49 year olds	84%
50-64 year olds	72%
65 and older	62%

Note. From “75 Super-Useful Facebook Statistics for 2018,” by G. Donnelly, 2018, September 7. Retrieved from <https://www.wordstream.com/blog/ws/2017/11/07/facebook-statistics>

Table 6
Countries with Most Facebook Usage

Nationality	Percent of Total Facebook User Population
U.S.A.	12%
India	10%
Brazil	7%
Indonesia	5%
Mexico	4%

Note. From “75 Super-Useful Facebook Statistics for 2018,” by G. Donnelly, 2018, September 7. Retrieved from <https://www.wordstream.com/blog/ws/2017/11/07/facebook-statistics>

Table 7
Usage of Facebook

Log Ons	Percent of Total Facebook User Population
Once a Day	79%
Multiple Times a Day	53%

Note. From “75 Super-Useful Facebook Statistics for 2018,” by G. Donnelly, 2018, September 7. Retrieved from <https://www.wordstream.com/blog/ws/2017/11/07/facebook-statistics>

Table 8
Facebook Gender Demographics

Gender	Percent of Total Facebook User Population
Men	56%
Women	44%

Note. From “75 Super-Useful Facebook Statistics for 2018,” by G. Donnelly, 2018, September 7. Retrieved from <https://www.wordstream.com/blog/ws/2017/11/07/facebook-statistics>

Quilliam posts do reach every demographic. The exposure of the Quilliam posts to the general user population is limited because they are in English and discuss counter-radicalization. Therefore, Quilliam posts will only reach users who are most likely to have a potential interest in counter-radicalization. Quilliam posts will populate on a Facebook Users newsfeed if a) a user is following the Quilliam Facebook page, b) a user has friends who are interested in counter-radicalization and several of those friends have interacted with (liked, shared, or commented on) a trending post, or c) a user has clicked on previous posts about counter-radicalization prompting the Facebook algorithm to populate a targeted post. Due to this constraint, the generalizability of this study is severely limited.

Sampling and Sampling Procedures

To ensure that the study is perceived as timely, the sample included posts made by Quilliam during the most recent full calendar year of postings starting 1 January 2018 and ending 31 December 2018. During this time, the administrators uploaded a total of 426 posts. Each post was recorded in Microsoft Excel 2016 and coded for CATEGORY, CONTENT, and GEOPOLITICAL REGION as seen below. The amount of LIKES and SHARES was also recorded to measure engagement.

The entire population was studied. There were nine terrorist attacks in 2018 as seen in Figure 1. In the immediate aftermath of these attacks, there was a significant amount of attention focused on the news reporting and the overall global issue of terrorism. As a result, the LIKES and SHARES may not be related to the content that could potentially skew the results. For example, if I had chosen a cluster of posts from 1 May to 31 May, the results would be highly influenced by the Surabaya Suicide Bombing, Paris Stabbing, and Liege Shooting. To preserve the integrity of the study, it is important that posts about terrorist attacks are included, but do not dominate the results. By studying the entire population, posts were more representative of all posts ever made by Quilliam.



Note. From “Terrorism Timeline,” by Since 9/11, 2018, Retrieved from <https://since911.com/explore-911/terrorism-timeline>

Figure 4. 2017 Terrorist attacks

To calculate the sample size, I determined the statistical power, alpha, and effect size. Statistical power is the probability that a test will detect a correlational relationship. The

generally accepted value for statistical power is .80 (Walden University, 2009). High statistical power improves the chances that findings are not due to chance (Walden University r, 2009). The alpha is the probability of a Type I error (rejection of a true null hypothesis) or Type II (failing to reject a null hypothesis) error (Walden University, 2009). The generally accepted value for alpha is .05 (Walden University, 2009). The effect size is the indication of how strong the correlation is (Walden University, 2009). The stronger a relationship is, the smaller the sample is needed to detect an effect (Walden University, 2009). The weaker a relationship, the larger the sample will be needed to detect an effect (Berman, 2016).

Table 9

Effect size

Effect size	w^2
Small	$w^2 < .06$
Medium	.06 - .14
Large	$w^2 > .14$

An Assessment of Quantitative Research in Mass Communication was used to determine the appropriate effect size for this study (Chase & Baran, 1976). The authors of this article analyzed 48 studies published in mass communication journals for their methods in choosing sample sizes for research that used several tests including Pearson's product-moment correlation coefficient (Chase & Baran, 1976). The researchers relied on investigators from several different research fields including; Cohen (Psychology), Brewer (Education), Chase/Tucker (Communication), Kroll/Chase (Speech Pathology), and Chase/Baran (Mass Communication) (Chase & Baran, 1976). Choices for the effect size of w^2 are in the table below (see Table 3). The authors of "*An Assessment of Quantitative Research in Mass Communication*" found that a small

effect size of for w^2 of .025 is appropriate for studies in mass communication (Chase & Baran, 1976).

There were 426 posts made between 1 January 2018 and 31 December 2018. I determined the CATEGORY, CONTENT, and GEOPOLITICAL REGION of each Facebook post for these posts and manually record the respective coded values in Microsoft Excel 2016. Then I manually recorded the corresponding number of LIKES and SHARES for each post in Microsoft Excel 2016. Given the statistical power of .80, an alpha of .05, and the effect size of .025, the minimum sample size was calculated to be 375 posts as seen in Figure 5: G*Power Sample Size Calculation and Figure 6: G*Power Sample Size and Power Plot. However, in order

to decrease the margin of error, the statistical analysis for this study included the entire population of 426 posts.

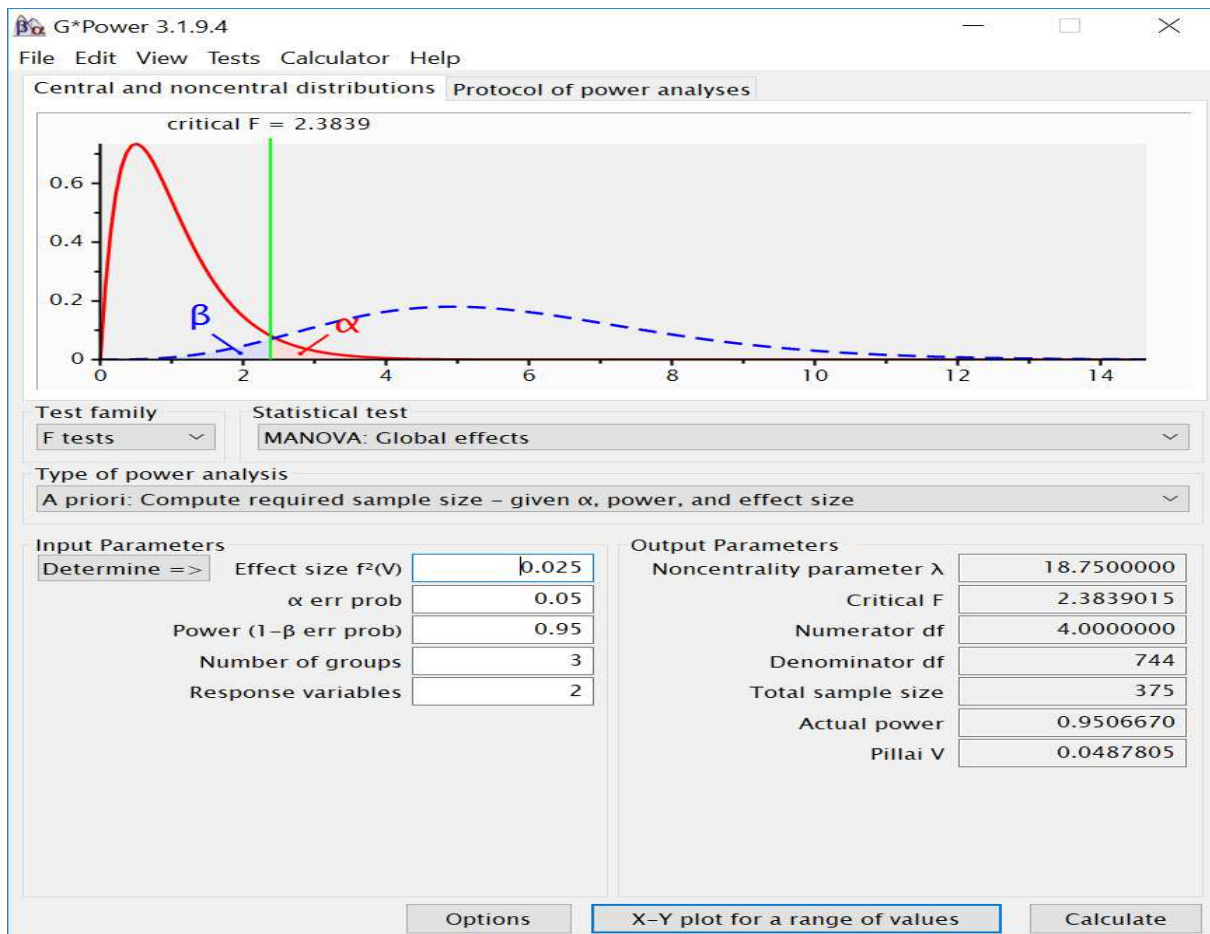


Figure 5. G*Power sample size calculation

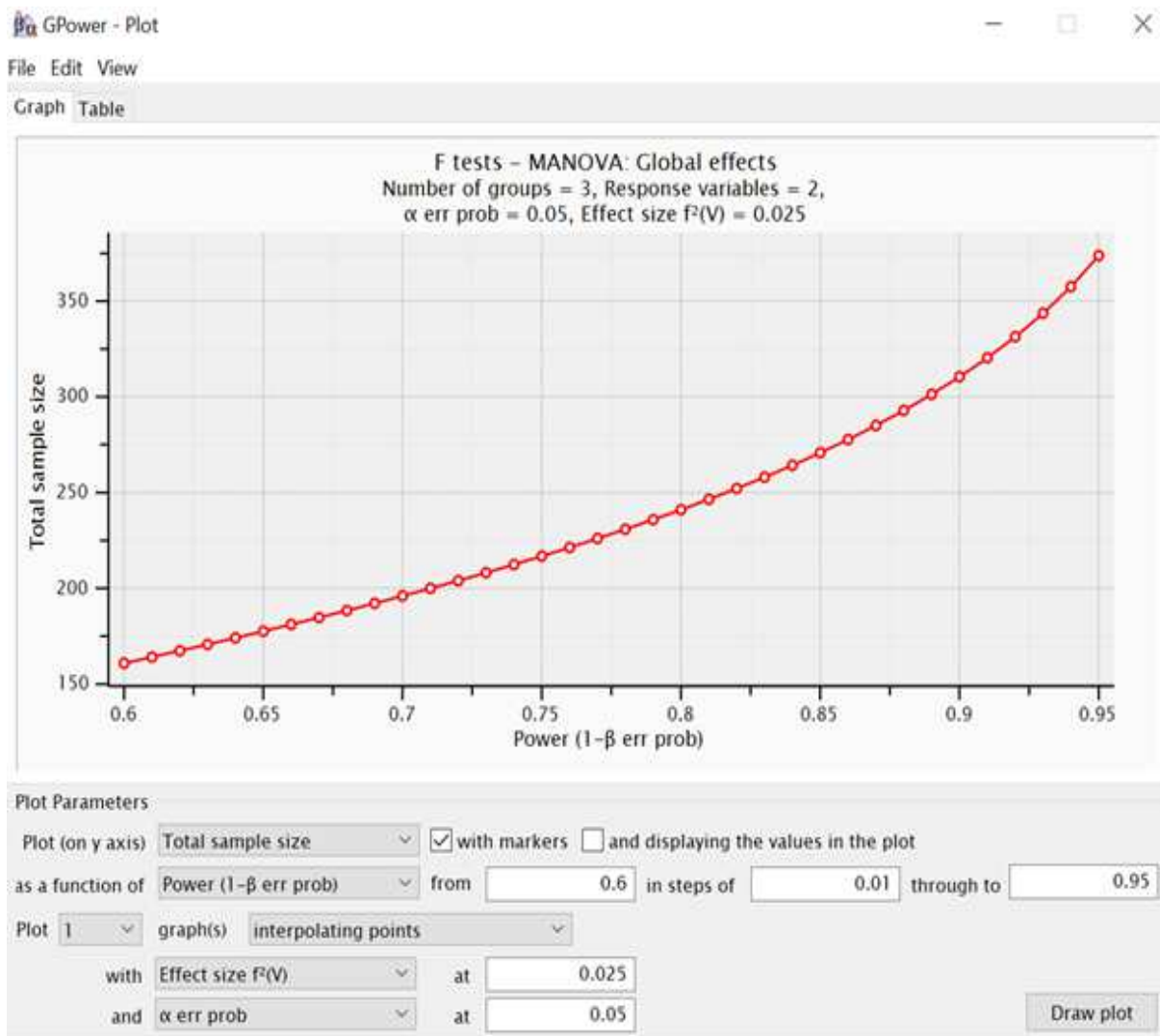


Figure 5. G*Power sample size and power plot

Procedures for Participation and Data Collection

Facebook has a comprehensive data policy that was updated on 19 April 2018 to reduce public scrutiny following the disclosure that third parties were harvesting user information to influence behavior. In the updated data policy, which can be viewed in Appendix A, Facebook (2018) states that users are responsible for understanding what is public and private with regards

to general usage (see Figure 6). Public information can be mined and manipulated by users, Facebook, and third parties (Facebook, 2018). Facebook encourages users who are concerned about privacy to update their settings and have an awareness of what can be seen when interacting with public pages (Facebook, 2018). Facebook also stated that they expect and encourage academic institutions to use public information to conduct research that advances scholarship and innovation on topics of general social welfare (Facebook, 2018).

Public information can be seen by anyone, on or off our Products, including if they don't have an account. This includes your Instagram username; any information you share with a public audience; information in your public profile on Facebook; and content you share on a Facebook Page, public Instagram account or any other public forum, such as Facebook Marketplace. You, other people using Facebook and Instagram, and we can provide access to or send public information to anyone on or off our Products, including in other Facebook Company Products, in search results, or through tools and APIs. Public information can also be seen, accessed, reshared or downloaded through third-party services such as search engines, APIs, and offline media such as TV, and by apps, websites and other services that integrate with our Products.

Figure 6. Facebook data usage policy

The Quilliam Facebook page is public. Therefore, all Quilliam posts are public information and when users like and share Quilliam posts that interaction also becomes public information. According to Facebook's data policy, this public information can be collected and used for research. Data collection involved recording the date and a general synopsis for each post made. Each post was categorized based on the criteria in Table 1 for CATEGORY, CONTENT,

and GEOPOLITICAL REGION. For CATEGORY, posts were coded as (1) if they were a personal story, (2) if they were a news article, (3) if they were a research/policy analysis, (4) if they concern military defeats, and (5) if they include religious doctrine. For CONTENT, posts were coded as (1) if they were a written status, (2) if they were a written status with a link to a website, (3) if they were a written status with a video, and (4) if they were a written status with a photograph. For GEOPOLITICAL REGION, posts were coded as (1) if they discussed a location in the West, (2) if they discussed a location in the Middle East, (3) if they discussed global topics, and (4) if they discussed cyber topics. A comprehensive example of how coding was completed can be understood by evaluating the figure below (see Figure 7).

 **Quilliam** June 7 at 4:22 AM · 🌐

Daughter of dad-of-six killed in Finsbury Park attack pays tribute in memorial service a year on
<https://www.thesun.co.uk/.../daughter-of-dad-of-six-killed-i.../>
 Join us: www.quilliaminternational.com/circle



Daughter of dad-of-six killed in Finsbury Park attack pays tribute in memorial service a year on

THE daughter of a man killed in the Finsbury Park terror attack has paid tribute to her dad at a memorial service. Ruzina Akhtar, whose father Makram Ali was killed,...

THESUN.CO.UK | BY THE SUN

👍 Like 💬 Comment ➦ Share

👍 🙄 10 Oldest ▾

1 Share

 **Shaun Grimsley** Thoughts out to the family.
 Like · Reply · 2w

Note. From “Quilliam,” in *Facebook* [Group page]. Retrieved December 28, 2018, from <https://www.facebook.com/QuilliamInternational/>

Figure 7. Post example

The CATEGORY for this post was personal story (coded as 1) because it is about an individual whose father was killed in a terrorist attack. The CONTENT for this post was written

status with a link to a website (coded as 2) because it includes a brief synopsis of the article and the link to the article. The GEOPOLITICAL REGION for this post was West (coded as 1) because it was about a family living in the United Kingdom. In addition to the posting date, CATEGORY, CONTENT, and GEOPOLITICAL REGION, the corresponding number of LIKES (10) and SHARES (1) was also recorded in Microsoft Excel 2016 as seen in the table below (see Table 10).

Table 10

Coding in Microsoft Excel 2016 example

Posting date	CATE-GORY	CONTENT	GEOPOLITICAL REGION	# of LIKES	# of SHARES
6/7/2018	1	2	1	10	1

This process was followed for each of the 426 posts which were uploaded between 1 January 2018 and 31 December 2018. Then, the entire table was copied and pasted into IBM SPSS. I then ran the various statistical tests to determine if the assumptions were satisfied and if the differing categories of information, CONTENT, and GEOPOLITICAL REGIONs had a statistically significant effect on the amount of LIKES and SHARES. Then I copied and pasted the output into Microsoft Word to evaluate and draw conclusions.

Data Analysis Plan

The study utilized a Multivariate Analysis of Variance (MANOVA) because it is norm-referenced and measures whether there are any significant differences between two or more vectors of means. This test is appropriate because the study was interested in determining whether the CATEGORY, CONTENT, and GEOPOLITICAL REGION influences the posts number of LIKES and SHARES. The MANOVA assumes that the dependent variable is

measured on a continuous scale and the independent variable consists of categorical independent groups and that the dependent variables are normally distributed within each group of categorical independent variables (Green & Salkind, 2014). The MANOVA also assumes that observations are randomly and independently sampled from the population. Lastly, the MANOVA assumes that there are no outliers and the population covariance matrices of each group, and (what) are equal. Microsoft SPSS was used to check for each of these assumptions (Green & Salkind, 2014).

Multivariate tests were run to demonstrate the effect of CATEGORY, CONTENT, and REGION individually on the combination of LIKES and SHARES. Univariate tests were run to demonstrate the effects of CATEGORY, CONTENT, and REGION individually on LIKES and SHARES individually. The partial eta square (η^2) was used to show how much variance is explained by the independent variable which will demonstrate which independent variables have the largest effects on the combination of LIKES and SHARES and LIKES and SHARES individually (Green & Salkind, 2014). Post hoc tests were also performed to determine where the significant differences lie and ensure that a Type I error has not been made (Green & Salkind, 2014).

Threats to Validity

Due to the non-experimental nature of this study, there were minimal threats to external and internal validity. However, the measurement of LIKES and SHARES was based on the assumption that users purposely LIKE and SHARE posts because they agree with the message communicated.

External Validity

This was not threatened by the effects of testing or selection of participants (Frankfort-Nachmias et al., 2015). However, external validity could be threatened by bias. As the rater, I determined the CATEGORY of each post and may have been more likely to choose categories which confirm my hypotheses (Frankfort-Nachmias et al., 2015). This threat to external validity was overcome by adhering to the coding criterion outlined in Table 2.

Internal Validity

The internal validity could be threatened by historical events (Frankfort-Nachmias et al., 2015). For example, a terrorist attack could have a significant effect on the LIKES and SHARES of posts that may not be attributed the varying independent variables (CATEGORY, CONTENT, and GEOPOLITICAL REGION). Several studies were conducted after 9/11 to develop an understanding of how people felt about their safety and how it changed the way that they went about their daily lives (Huddy & Feldman, 2011). By analyzing the results of interviews and surveys, researchers concluded that terrorist attacks had a significant effect on the behavior of Americans which decreased as time passed (Huddy & Feldman, 2011).

Content Validity, Empirical Validity, and Construct Validity

Content validity involves checking the operationalization against the content domain for the construct (Frankfort-Nachmias et al., 2015). This study compared the number of LIKES and SHARES on specific social media posts that have been coded based on CATEGORY, CONTENT, and GEOPOLITICAL REGION. The main threat to content validity with this measurement is that users sometimes accidentally click when scrolling through a newsfeed. It is unlikely that a user will accidentally share a post because the interaction would require two targeted

clicks. Therefore, the measurement of SHARES has high content validity. It is however, possible that a user will accidentally like a post while scrolling through a newsfeed or wall and not even realize their mistake. As a result, the measurement of LIKES has low content validity (Berman, 2016).

Empirical validity describes how closely scores correlate with behavior as measured in other contexts (Frankfort-Nachmias et al., 2015). The methodology for data collection was chosen for its strong validity across cultures and different types of organizations. A variety of studies have shown the measurement of Facebook LIKES and SHARES to be an effective measurement of a post's appeal. For example, the measurement of Facebook LIKES and SHARES has been applied to studies of anti-cyberbullying campaigns (Alhabash, McAlister, Hagerstrom, Quilliam, Rifon, & Richards, 2013), anti-underage alcohol consumption campaigns (Glider, Midyett, Mills-Novoa, Johannessen, & Collins, 2001), and anti-obesity campaigns (de la Peña, 2015). All three studies have shown that high LIKES and high SHARES correspond with favorable attitudes which can lead to favorable behaviors. In addition to public health campaigns, the measurement of LIKES and SHARES are also commonly used for companies which are attempting to sell products. It is one of the most common ways to determine the effectiveness of a brand. As a result, the measurement of LIKES and SHARES have high empirical validity.

Construct validity determines the degree in which inferences can be made from the operationalizations in the study to the theoretical constructs on which those operationalizations were based on (Frankfort-Nachmias et al., 2015). The participants in this study are registered Facebook users who use social media to view information about terrorism. The operationalization is the impact that posts have on these Facebook users. Does some information

provided in a post entice a user to LIKE or SHARE a post more than other information provided in other posts? It is assumed that if a person LIKES or SHARES a post, then they thought it was relevant and credible (Berger, 2013). These assumptions may not always hold true. A person may LIKE or SHARE a post without even agreeing with it because they want to appear informed, or because they find the post to be entertaining. The assumptions that the study is based could make the results less generalizable to the field of counter-radicalization efforts on social media.

Ethical Procedures

The participants in this study were followers and registered Facebook users who LIKED and SHARED content which was posted on the Quilliam Facebook page. Naturalistic observation is critical to ensuring the integrity of this study. If participants were to know that their LIKES and SHARES were being monitored for research, then it could influence their behavior. Due to a reliance on naturalistic observation, the study did not involve gaining the consent of participants. It is assumed that the participants realize that the Quilliam Facebook page is public and that anyone can view the page and see if a participant has shared or liked a post. The study also did not gain consent of the administrators of the Quilliam Facebook page because the page is public, and the study should not have an effect on the page's popularity.

Data collected was only be used to make inferences about the relationship between the content of social media posts and the level of appeal. Data collected was not be used outside of this study. Data collection involved counting the total number of LIKES and SHARES on specific posts. Data collection did not involve clicking to view the users that liked or shared posts. Therefore, there was no exposure to user names or personal information that is listed on accounts

such as place of work, place of education, location, names, or any other personal identifiable information. There was also no exposure to user's friends lists, posted and tagged pictures, or posted and tagged posts. Research involving the analysis of publicly available information, where the data can be collected such that individual subjects cannot be identified in any way is exempt from Institutional Review Board (IRB) oversight (Marshall, 2003). The Institutional Review Board for Walden University confirmed that the study met ethical standards on 11 April 2019 with approval number 04-11-19-0541364. The study adhered to the exact procedures described in the approved IRB materials.

Summary

This chapter outlined the parameters of the methodological approach used in this study. It included an overview of the research design and then provides specific information on data collection procedures and statistical analysis techniques. The chapter ended with a discussion of the validity, reliability, and ethical considerations inherent in this study. Using a non-experimental descriptive quantitative approach, this study assessed the relationship between the content of social media posts and the level of appeal to the general user population as well as the differing approaches of counter-narratives. Given the nature and the scope of the research questions under scrutiny, the current research design provided both the informational depth and breadth necessary to evaluate the independent and dependent variables across the varied demographics of social media users. The following chapter will address the data collection, analysis, and results of the study.

Chapter 4: Results

This chapter outlines the results of the study. It includes an overview of the challenges encountered during data collection and while completing the statistical analysis. Three MANOVAs were conducted to test each hypothesis. The chapter delves into the results of each MANOVA and the results of the post hoc tests.

Introduction

The purpose of this quantitative study was to assess the utility of data analytics when administering counter-radicalization campaigns on social media, and to ensure that the posts are reaching and engaging the general user population. This chapter discusses the challenges encountered during data collection, how the data was prepared for statistical analysis, and the results of the research. The three independent variables for this study are CATEGORY, CONTENT, and GEOPOLITICAL REGION. The two dependent variables were LIKES and SHARES. The first research question examined whether categories of information posted on social media were more appealing to the general user population than others. The second research question examined whether some content on social media was more appealing to the general user population than others. The third research question examined whether some geopolitical regions on social media were more appealing to the general user population than others. A MANOVA analysis was used to answer the three research questions.

Data Collection

Facebook data is dynamic. Posts can be deleted by the administrators at any time. LIKES and SHARES can increase or decrease as users view and re-view posts. For example, a user who has just discovered the Quilliam Facebook page may take a few moments to peruse the last

month of posts and decide to like a few posts. Similarly, a follower of the Quilliam Facebook page who occasionally views their posts may notice that they accidentally liked a post yesterday and choose to un-like the post to correct their mistake. As time passes, the changes made to data become less frequent. When viewing any newsfeed or Facebook page, the latest posts appear at the top and as the Facebook user scrolls down to read older posts, it takes time to load. Facebook users not only are often not interested in older posts but they are often impatient and do not want to wait for older posts to load (Bik & Goldstein, 2013). Initial data collection was conducted on 11 April 2019. Secondary data collection was conducted on 12 April 2019. There were no differences found in coding of CATEGORY, CONTENT, or GEOPOLITICAL REGION. There were no differences found in resulting LIKES and SHARES. By conducting data several months after the period of posts being studied (1 January 2018 to 31 December 2018) the study minimized its exposure to dynamic data. All data will be held on a USB drive and stored in a locked safe for a total of 7 years after CAO approval.

Exclusion of Self-Promotional Posts

During data collection, it was discovered that there was an additional CATEGORY. Quilliam page not only posted information that fell into categories such as personal story, news article, research/policy analysis, military defeats, and religious doctrine, but they also uploaded posts that were Self-Promotional. Self-Promotional posts are intended to improve the image of Quilliam or the image of the founders of Quilliam. Self-Promotional posts were excluded because they do not provide information to the general public with the intent to dissuade individuals from joining terrorist organizations. Self-Promotional posts include:

1. Advertisements for upcoming Quilliam events (lectures and radio/television interviews)
2. Holiday greetings from Quilliam
3. Articles defending the founders of Quilliam who are frequently criticized for their controversial past and outspoken beliefs
4. Solicitations for financial support for Quilliam
5. Recruitment of talent to join Quilliam
6. Selling merchandise
7. Awards received by the founders of Quilliam

Challenges Encountered When Coding Posts

Posts in the study were coded based on CATEGORY, CONTENT, and GEOPOLITICAL REGION. While determining the CONTENT was clear, there were several posts that had an unclear CATEGORY and GEOPOLITICAL REGION. There were several posts where the subject was about a person's ideas and experiences but they were written by a third party. The applicable categories of information to choose from were personal story, news article, research/policy analysis, military defeats, and religious doctrine. While these posts represented a personal story they were coded as a news article or research/policy analysis (depending on the source) because they were not written from the person's perspective. Instead, they were written from the perspective of a journalist or policy writer. There were also several posts about U.S. Troops striking targets in the Middle East and British terrorists and victims in the Middle East. The applicable GEOPOLITICAL REGIONS to choose from were West, Middle East, global, and cyber. These posts

were coded as global. This strategy for coding posts remained consistent throughout data collection to ensure that the results were not compromised.

Statistical Analysis

Three MANOVAs were conducted to compare the effect of three independent variables; CATEGORY, CONTENT, and GEOPOLITICAL REGION of a post on the dependent variables; LIKES and SHARES. The objective of the MANOVA was to discover if the dependent variables are influenced by the independent variables and to determine the strength of the effect (Green & Salkind, 2014). I determined that the relationship between two of the independent variables, CONTENT and GEOPOLITICAL REGION, did not have a statistically significant influence on the dependent variables, LIKES and SHARES. From this result, I inferred that Facebook Users do not prefer a written status, written status with a link to a website, written status with a video, or written status with a photograph. I can also infer that Facebook Users do not prefer posts that discuss the West, Middle East, global, or cyber GEOPOLITICAL REGIONS. Thus, I will accept the alternative hypothesis for my second and third hypotheses focus further research on the CATEGORY of social media information which did have a statistically significant effect on the dependent variables, LIKES and SHARES.

Satisfying the Assumptions

A MANOVA tests to see if there is a relationship across the levels of the independent variable on the linear composite of the dependent variables, or on the dependent variables separately (Green & Salkind, 2014). The MANOVA demonstrates the main effect of CATEGORY, CONTENT, and REGION alone on LIKES and SHARES and also the interaction effect of the combination of CATEGORY, CONTENT, and REGION combined on LIKES and SHARES. To be

confident in the results of a MANOVA, several assumptions should be satisfied: (a) a MANOVA assumes that the independent variables are measured on the interval scale, (b) the dependent variables are measured on a continuous scale, (c) the observations are independent, and (d) the sample size is sufficient. All the conditions were satisfied in this study's data collection method (Green & Salkind, 2014).

A MANOVA also assumes multivariate normality because the test is sensitive to outliers (Green & Salkind, 2014). To test for outliers, a linear regression for each independent variable was conducted. Graphs were created to evaluate the distribution for each independent variable. The scatter plots in Appendix B: Data Dispersion show a linear relationship for the three independent variables, CATEGORY, CONTENT, and REGION, as seen in Figures 8, 9, and 10, respectively. The histograms in Appendix B show that the data are positively skewed for the dependent variables, LIKES and SHARES, in Figure 11 and 12. The box plots in Appendix B: Data Dispersion also show that there are significant outliers for LIKES and SHARES in Figure 13 and 14. The Q-Q plots in Appendix B: Data Dispersion also show that the data does not follow a normal distribution for LIKES and SHARES, as seen in Figure 15 and 16. Therefore, statistical tests were run to determine multivariate normality and determine the impact of outliers (Green & Salkind, 2014).

The Shapiro-Wilks test was run to ensure multivariate normality. Significant values, where the p-value is greater than the α level, as seen below in Table 11: Tests of Normality indicate multivariate non-normality for both dependent variables (p= .000 for LIKES and SHARES).

Table 11

Tests of normality

Kolmogorov-Smirnov^a

Shapiro-Wilk

	Statistic	df	Sig.	Statistic	df	Sig.
LIKES	.280	426	.000	.531	426	.000
SHARES	.431	426	.000	.124	426	.000

A linear regression was also run to determine the mahalanobis distance (Green & Salkind, 2014). As seen in the Residual Statistics for CATEGORY, CONTENT, and GEOPOLITICAL REGION (Tables 12, 13, and 14), the maximum value for the mahalanobis distance, 279.997, was greater than the maximum allowable critical value for mahalanobis distance, 16.27 (Green & Salkind, 2014). The mahalanobis distance demonstrates that there are significant outliers in the data (Green & Salkind, 2014). Because there are significant outliers and the assumption of non-normality was not met, this study will rely on Pillai's Trace when determining significance for this study (Green & Salkind, 2014).

Table 12

CATEGORY residuals statistics

	Minimum	Maximum	Mean	Std. deviation	N
Predicted Value	1.3289	2.7017	2.5094	.13634	426
Std. Predicted Value	-8.658	1.411	.000	1.000	426
Standard Error of Predicted Value	.037	.626	.049	.042	426
Adjusted Predicted Value	1.4049	4.0710	2.5114	.16085	426
Residual	-1.59509	2.48635	.00000	.76783	426
Std. Residual	-2.073	3.231	.000	.998	426
Stud. Residual	-2.076	3.234	-.001	1.003	426
Deleted Residual	-2.07099	2.49226	-.00202	.77889	426
Stud. Deleted Residual	-2.084	3.271	.000	1.007	426
Mahal. Distance	.002	279.997	1.995	15.816	426
Cook's Distance	.000	1.596	.006	.080	426
Centered Leverage Value	.000	.659	.005	.037	426

Table 13

<i>CONTENT residuals statistics</i>					
	Minimum	Maximum	Mean	Std. deviation	N
Predicted Value	.7952	2.0297	1.9178	.06714	426
Std. Predicted Value	-16.720	1.666	.000	1.000	426
Standard Error of Predicted Value	.013	.217	.017	.015	426
Adjusted Predicted Value	.3956	2.0323	1.9170	.08200	426
Residual	-.94389	.23149	.00000	.26661	426
Std. Residual	-3.532	.866	.000	.998	426
Stud. Residual	-3.565	1.316	.001	1.001	426
Deleted Residual	-.96136	.60439	.00080	.26931	426
Stud. Deleted Residual	-3.615	1.318	-.003	1.013	426
Mahal. Distance	.002	279.997	1.995	15.816	426
Cook's Distance	.000	1.127	.004	.055	426
Centered Leverage Value	.000	.659	.005	.037	426

Table 14

<i>GEOPOLITICAL REGION residuals statistics</i>					
	Minimum	Maximum	Mean	Std. deviation	N
Predicted Value	.9495	2.0005	1.9366	.11389	426
Std. Predicted Value	-8.667	.561	.000	1.000	426
Standard Error of Predicted Value	.050	.842	.066	.057	426
Adjusted Predicted Value	.4865	2.0036	1.9363	.12219	426
Residual	-1.00025	2.24057	.00000	1.03330	426
Std. Residual	-.966	2.163	.000	.998	426
Stud. Residual	-.967	2.187	.000	1.001	426
Deleted Residual	-1.00358	2.51354	.00031	1.04028	426
Stud. Deleted Residual	-.967	2.197	.001	1.002	426
Mahal. Distance	.002	279.997	1.995	15.816	426
Cook's Distance	.000	.368	.002	.018	426
Centered Leverage Value	.000	.659	.005	.037	426

Lastly, a MANOVA relies on the assumption that there is no multi-collinearity and homogeneity of covariance matrices (Green & Salkind, 2014). Pearson's Correlation Co-efficient is

.615, as seen in Table 15: Correlation. Pearson's Correlation Co-efficient is greater than .2 means there is multi-collinearity and less than .8 is a positive relationship between the dependent variables, LIKES and SHARES. Several statistical tests were used to ensure homogeneity of covariance. Significance for these tests were determined at the $\alpha = .001$. Box's Test-of-Equality of Covariances was used to determine that the observed covariance matrices of the dependent variables, LIKES and SHARES, are equal across groups. Non-significant values, where the p-value is less than the α level, as seen in Table 16: Box's Test-of-Equality of Covariances, indicate equal covariances between groups. Levene's Test-of-Equality of Variance was used to examine whether or not the variance between independent variables are equal. Non-significant values, where the p-value is less than the α level, as seen in Table 17: Levene's Test of Equality of Variance, indicate equality of variance.

Table 15

Correlation

		LIKES	SHARES
LIKES	Pearson Cor-	1	.615**
	relation		
	Sig. (2-tailed)		.000
	N	426	426
SHARES	Pearson Cor-	.615**	1
	relation		
	Sig. (2-tailed)	.000	
	N	426	426

Table 16

Box's test of equality of covariance matrices

Statistic	Value
Box's M	1526.966
F	30.297
df1	45
df2	3538.342
Sig.	.000

Table 17

Levene's test of equality of error variances

		Levene statistic	df1	df2	Sig.
LIKES	Based on Mean	5.851	16	403	.000
	Based on Median	2.316	16	403	.003
	Based on Median and with adjusted df	2.316	16	91.441	.007
	Based on trimmed mean	4.013	16	403	.000
SHARES	Based on Mean	28.809	16	403	.000
	Based on Median	20.058	16	403	.000
	Based on Median and with adjusted df	20.058	16	27.152	.000
	Based on trimmed mean	21.708	16	403	.000

Descriptive Statistics

Prior to formally testing the hypotheses, a descriptive analysis of the dependent and independent variables were conducted to document the distribution of each variable and discuss implications to the analysis. Descriptive statistics provided information on the sample size, mean, and standard deviation.

Looking at Table 18: the Between-Subjects Factors, the samples are not normally distributed. For CATEGORY, the majority of posts were a News Article (49%) or Policy Article (40%). For CONTENT, the majority of posts were a written status with a link to a website (91%). For REGION, the plurality of posts were about the West (50%) or global (29%). This uneven distribution impacts the quality of analysis and increases the chance of error.

Table 18

Between-Subjects Factors

Independent variable		N
CATEGORY	1.00	21
	2.00	207
	3.00	173
	4.00	10
	5.00	15
CONTENT	1.00	35
	2.00	391
GEOPOLITICAL REGION	1.00	213
	2.00	58
	3.00	124
	4.00	31

Looking at Table 19 Descriptive Statistics: The combination of CATEGORY, CONTENT and REGION performed with regards to the resulting mean for LIKES and SHARES. The best

performing combination for LIKES was news article, video, west (with an average 99.5 LIKES). The second best performing combination for LIKES was personal story, video, west (with an average of 95 LIKES). However, the combination of news article, video, west only occurred one time and the combination of personal story, video, west only occurred two times. The best performing combination for SHARES was news article, video, west with an average of 357.5 SHARES and personal story, video, west an average of 91 SHARES. Once again, the combination news article, video, west only occurred two times and the combination of personal story, video, west only occurred one time. The lack of occurrences makes these findings less reliable. While the results for CATEGORY appear to be strongly influenced by outliers; the CONTENT of Video and REGION of West consistently received a high number of LIKES and SHARES.

Table 19

Descriptive statistics

	CATE- GORY	CON- TENT	RE- GION	Mean	Std. devia- tion	N		
<i>LIKES</i>	1.00	1.00	1.00	95.0000	.	1		
			3.00	26.0000	.	1		
			Total	60.5000	48.79037	2		
	2.00		2.00	1.00	65.7500	63.94985	4	
				2.00	40.8333	71.42945	6	
				3.00	43.1111	107.06942	9	
				Total	47.1579	85.39468	19	
				Total	1.00	71.6000	56.90606	5
				Total	2.00	40.8333	71.42945	6
	2.00		1.00	1.00	41.4000	101.09094	10	
				Total	48.4286	81.84227	21	
				1.00	99.5000	137.88582	2	
				2.00	2.0000	.	1	
				3.00	4.3333	2.51661	3	
				Total	35.6667	79.06116	6	

	2.00	1.00	23.3697	27.46180	119
		2.00	18.4667	18.71701	30
		3.00	21.2258	33.37036	31
		4.00	17.6190	21.66443	21
		Total	21.7065	26.73440	201
	Total	1.00	24.6281	31.54392	121
		2.00	17.9355	18.63855	31
		3.00	19.7353	32.19289	34
		4.00	17.6190	21.66443	21
		Total	22.1111	29.17427	207
3.00	1.00	1.00	29.6316	69.47278	19
		3.00	19.4286	20.22257	7
		Total	26.8846	59.95420	26
	2.00	1.00	17.2985	27.05831	67
		2.00	21.0833	40.92001	12
		3.00	8.9831	13.40418	59
		4.00	5.3333	8.04674	9
		Total	13.5374	23.57450	147
	Total	1.00	20.0233	40.21266	86
		2.00	21.0833	40.92001	12
		3.00	10.0909	14.44217	66
		4.00	5.3333	8.04674	9
		Total	15.5434	31.89180	173
4.00	2.00	2.00	25.1111	28.78995	9
		4.00	77.0000	.	1
		Total	30.3000	31.71768	10
	Total	2.00	25.1111	28.78995	9
		4.00	77.0000	.	1
		Total	30.3000	31.71768	10
5.00	1.00	3.00	18.0000	.	1
		Total	18.0000	.	1
	2.00	1.00	3.0000	.	1
		3.00	5.3077	2.52932	13
		Total	5.1429	2.50713	14
	Total	1.00	3.0000	.	1
		3.00	6.2143	4.17278	14
		Total	6.0000	4.10575	15

	Total	1.00	1.00	38.9545	74.96442	22
			2.00	2.0000	.	1
			3.00	16.0833	16.68128	12
			Total	30.0571	60.86288	35
		2.00	1.00	22.0209	28.95568	191
			2.00	22.4211	33.62341	57
			3.00	14.6875	36.42542	112
			4.00	15.9677	22.13968	31
			Total	19.4987	31.59332	391
	Total		1.00	23.7700	36.53454	213
			2.00	22.0690	33.43486	58
			3.00	14.8226	34.96317	124
			4.00	15.9677	22.13968	31
			Total	20.3662	34.93863	426
<i>SHARES</i>	1.00	1.00	1.00	91.0000	.	1
			3.00	6.0000	.	1
			Total	48.5000	60.10408	2
		2.00	1.00	18.7500	12.52664	4
			2.00	9.3333	19.47990	6
			3.00	23.1111	65.23505	9
			Total	17.8421	45.39978	19
	Total		1.00	33.2000	34.08372	5
			2.00	9.3333	19.47990	6
			3.00	21.4000	61.74176	10
			Total	20.7619	46.05096	21
	2.00	1.00	1.00	357.5000	505.58135	2
			2.00	.0000	.	1
			3.00	2.3333	3.21455	3
			Total	120.3333	291.33532	6
			3			
		2.00	1.00	4.7899	6.32707	119
			2.00	2.8333	3.96609	30
			3.00	3.2258	4.25605	31
			4.00	2.7143	3.40797	21
			Total	4.0398	5.53339	201
	Total		1.00	10.6198	64.87376	121

		2.00	2.7419	3.93249	31
		3.00	3.1471	4.14241	34
		4.00	2.7143	3.40797	21
		Total	7.4106	49.72244	207
3.00	1.00	1.00	32.2105	121.71897	19
		3.00	8.8571	10.49490	7
		Total	25.9231	103.94803	26
	2.00	1.00	5.2836	18.01078	67
		2.00	7.1667	18.27981	12
		3.00	2.7458	4.55841	59
		4.00	1.6667	2.29129	9
		Total	4.1973	13.52301	147
	Total	1.00	11.2326	59.29203	86
		2.00	7.1667	18.27981	12
		3.00	3.3939	5.68366	66
		4.00	1.6667	2.29129	9
		Total	7.4624	42.26556	173
4.00	2.00	2.00	3.8889	6.35304	9
		4.00	10.0000	.	1
		Total	4.5000	6.29374	10
	Total	2.00	3.8889	6.35304	9
		4.00	10.0000	.	1
		Total	4.5000	6.29374	10
5.00	1.00	3.00	3.0000	.	1
		Total	3.0000	.	1
	2.00	1.00	.0000	.	1
		3.00	1.0000	.70711	13
		Total	.9286	.73005	14
	Total	1.00	.0000	.	1
		3.00	1.1429	.86444	14
		Total	1.0667	.88372	15
Total	1.00	1.00	64.4545	184.45563	22
		2.00	.0000	.	1
		3.00	6.5000	8.44770	12
		Total	42.7429	147.85194	35
	2.00	1.00	5.2304	12.00567	191
		2.00	4.5965	10.90848	57

	3.00	4.3125	18.81730	112
	4.00	2.6452	3.35210	31
	Total	4.6701	13.76473	391
Total	1.00	11.3474	61.85354	213
	2.00	4.5172	10.82920	58
	3.00	4.5242	18.06513	124
	4.00	2.6452	3.35210	31
	Total	7.7981	45.08044	426

Testing the Hypotheses

Table 20, Multivariate Tests, demonstrates the significant effect of CATEGORY, CONTENT, and REGION individually on the combination of LIKES and SHARES with a $p < .05$ for each independent variable. The partial eta square (η^2) shows how much variance is explained by the independent variable (Green & Salkind, 2014). This measurement is important because a post often will not trend with a high quantity of LIKES *or* SHARES. However, a post often will trend with a high quantity of both LIKES *and* SHARES. For CATEGORY, $\eta^2 = 78.9$. For CONTENT, $\eta^2 = 9.95$. For REGION, $\eta^2 = 46.5$. From these results, one can infer that CATEGORY and REGION have the largest effect on the combination of LIKES and SHARES. The level of significance for the combination of CATEGORY*CONTENT*REGION is 0 which informs us that there is a statistically significant effect on LIKES and SHARES as a combination with a η^2 of 77.457. Therefore, CATEGORY and REGION should be the focus when attempting to increase the quantity of LIKES *and* SHARES of a post to improve a posts potential to trend.

In addition, CATEGORY*CONTENT ($\eta^2 = 82.018$), CATEGORY*REGION ($\eta^2 = 84.051$), and CONTENT*REGION ($\eta^2 = 62.098$) also have a statistically significant effect on LIKES and SHARES. From these results, inferring that the independent variables are combined,

they have an even larger effect on LIKES and SHARES. This finding is important because it informs us that not only does CATEGORY, CONTENT, and REGION are important, but also the *combination* of CATEGORY, CONTENT, and REGION are also important.

Table 20

Multivariate tests

Intercept		Value	F	Hypothesis df	Error df	Sig.	Partial eta squared	Non-cent. parameter	Observed power ^d
	Pillai's Trace	0.055	11.666 ^b	2	402	0	0.055	23.332	0.994
	Wilks' Lambda	0.945	11.666 ^b	2	402	0	0.055	23.332	0.994
	Hottelling's Trace	0.058	11.666 ^b	2	402	0	0.055	23.332	0.994
	Roy's Largest Root	0.058	11.666 ^b	2	402	0	0.055	23.332	0.994
	Pillai's Trace	0.178	9.862	8	806	0	0.089	78.9	1
	Wilks' Lambda	0.826	10.089 ^b	8	804	0	0.091	80.713	1
CATE-GORY	Hottelling's Trace	0.206	10.315	8	802	0	0.093	82.522	1
	Roy's Largest Root	0.177	17.852 ^c	4	403	0	0.151	71.408	1
	Pillai's Trace	0.024	4.977 ^b	2	402	0.007	0.024	9.955	0.81
CON-TENT	Wilks' Lambda	0.976	4.977 ^b	2	402	0.007	0.024	9.955	0.81
	Hottelling's Trace	0.025	4.977 ^b	2	402	0.007	0.024	9.955	0.81

GEO-POLITICAL REGION	Roy's Largest Root	0.025	4.977 ^b	2	402	0.07	0.024	9.955	0.81
	Pillai's Trace	0.109	7.756	6	806	0	0.055	46.535	1
	Wilks' Lambda	0.891	7.956 ^b	6	804	0	0.056	47.734	1
	Hottelling's Trace	0.122	8.155	6	802	0	0.058	48.929	1
	Roy's Largest Root	0.12	16.112 ^c	3	403	0	0.107	48.335	1
CATEGORY * CONTENT	Pillai's Trace	0.185	13.67	6	806	0	0.092	82.018	1
	Wilks' Lambda	0.815	14.392 ^b	6	804	0	0.097	86.35	1
	Hottelling's Trace	0.226	15.114	6	802	0	0.102	90.683	1
	Roy's Largest Root	0.225	30.262 ^c	3	403	0	0.184	90.787	1
	Pillai's Trace	0.189	6.004	14	806	0	0.094	84.051	1
CATEGORY * GEO-POLITICAL REGION	Wilks' Lambda	0.814	6.232 ^b	14	804	0	0.098	87.254	1
	Hottelling's Trace	0.226	6.461	14	802	0	0.101	90.452	1
	Roy's Largest Root	0.21	12.093 ^c	7	403	0	0.174	84.648	1
	Pillai's Trace	0.143	15.525	4	806	0	0.072	62.098	1
	Wilks' Lambda	0.857	16.129 ^b	4	804	0	0.074	64.517	1
CONTENT * GEO-POLITICAL REGION	Hottelling's Trace	0.167	16.732	4	802	0	0.077	66.93	1
	Roy's Largest Root	0.167	33.606 ^c	2	403	0	0.143	67.212	1

CATE- GORY * CON- TENT * GEO- POLIT- ICAL RE- GION	Pillai's Trace	0.168	18.497	4	806	0	0.084	73.989	1
	Wilks' Lambda	0.832	19.364 ^b	4	804	0	0.088	77.457	1
	Ho- telling's Trace	0.202	20.231	4	802	0	0.092	80.922	1
	Roy's Largest Root	0.201	40.502 ^c	2	403	0	0.167	81.004	1

Table 21, Tests of Between-Subjects Effects, shows us the univariate tests for the effects of CATEGORY, CONTENT, and REGION on LIKES and SHARES. Individually, there is a statistically significant difference for CATEGORY on LIKES and SHARES, CONTENT on SHARES and REIGION on LIKES and SHARES. However, there is not a significant effect of CONTENT on LIKES. In addition, the partial eta-squared for the significant effects is very small which means that it does not explain much of the variance.

When combining independent variables, there is a statistically significant difference for CATEGORY*CONTENT on SHARES, CATEGORY*REGION on SHARES, CATE- GORY*CONTENT on LIKES and SHARES, and CATEGORY*CONTENT*REGION on LIKES and SHARES. However, there is not a significant effect of CATEGORY*CONTENT on LIKES or CATEGORY*REGION on LIKES. In addition, the partial eta squared for the significant effects is very small which means that it does not explain much of the variance. From these results, inferring that the effect of CATEGORY, CONTENT, and REGION is much stronger on LIKES and SHARES as a combination than individually on LIKES and SHARES.

Table 21

Tests of between-subjects effects

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared	Non-cent. parameter	Observed power ^c
Corrected Model	LIKES	54623.942 ^a	22	2482.906	2.16	0.002	0.105	47.43	0.995
	SHARES	271701.511 ^b	22	12350.07	8.41	0	0.315	184.96	1
Intercept	LIKES	26840.23	1	26840.23	23.30	0	0.055	23.30	0.998
	SHARES	16076.03	1	16076.03	10.94	0.001	0.026	10.94	0.91
CATEGORY	LIKES	14234.29	4	3558.571	3.09	0.016	0.03	12.36	0.81
	SHARES	78966.39	4	19741.6	13.44	0	0.118	53.76	1
CONTENT	LIKES	648.008	1	648.008	0.56	0.454	0.001	0.56	0.116
	SHARES	11858.67	1	11858.67	8.07	0.005	0.02	8.07	0.809
GEOPOLITICAL REGION	LIKES	11052.88	3	3684.294	3.20	0.023	0.023	9.60	0.737
	SHARES	66790.35	3	22263.45	15.16	0	0.101	45.47	1
CATEGORY *	LIKES	1686.794	3	562.265	0.49	0.691	0.004	1.46	0.149
CONTENT	SHARES	93368.37	3	31122.79	21.19	0	0.136	63.56	1
CATEGORY *	LIKES	11434.3	7	1633.471	1.42	0.196	0.024	9.93	0.601
GEOPOLITICAL REGION	SHARES	100358.3	7	14336.9	9.76	0	0.145	68.32	1
CONTENT *	LIKES	7254.619	2	3627.309	3.15	0.044	0.015	6.30	0.603
GEOPOLITICAL REGION	SHARES	85011.04	2	42505.52	28.94	0	0.126	57.87	1
CATEGORY *	LIKES	7800.317	2	3900.159	3.39	0.035	0.017	6.77	0.637

CON- TENT *	SHARES	100555.1	2	50277.5 6	34.23	0	0.145	68.45	1
GEOPO- LITICAL REGION									

Hypothesis 1

To review, the first hypothesis for Part I:

Part I, Ho1: The social media post CATEGORY of personal story will reach more social media users than other categories.

Part I, Ha1: The social media post CATEGORY of personal story will not reach more social media users than other categories.

I ran a Simple Contrast test in SPSS on each level of the independent variable, CATEGORY, to see how each performs when compared to personal story. Personal story was coded as (1), news story was coded as (2), research/policy analysis was coded as (3), military defeats was coded as (4), and religious doctrine was coded as (5). Looking at the contrast results for CATEGORY in Table 22, there is not a statistically significant difference between personal story and news article, personal story and military defeats, or personal story and religious doctrine for LIKES or SHARES. However, there is a statistically significant difference between personal story and research/policy analysis on LIKES (but not SHARES) with $p = .035$. The confidence interval was wide with (-57.278, -2.156). The multivariate and univariate results (as seen in Table 23 and 24) were not statistically significant. From this result, inferring that the independent variable, CATEGORY information, does have a statistically significant effect on the dependent variables, LIKES and SHARES but the interaction effect is not consistent across the

different levels. Specifically, the social media post CATEGORY of personal story is preferred to research/policy analysis. As a result, this study fails to reject the null hypothesis.

Table 22

CATEGORY contrast results (k matrix)

CATEGORY simple contrast		LIKES	SHARES
Level 2 vs. Level 1	Contrast Estimate	-28.644	-12.504
	Hypothesized Value	0	0
	Difference (Estimate - Hypothesized)	-28.644	-12.504
	Std. Error	14.902	16.829
	Sig.	.055	.458
	95% Confidence Interval Lower Bound for Difference	-57.939	-45.587
	Upper Bound	.650	20.579
Level 3 vs. Level 1	Contrast Estimate	-29.717	-10.325
	Hypothesized Value	0	0
	Difference (Estimate - Hypothesized)	-29.717	-10.325
	Std. Error	14.020	15.833
	Sig.	.035	.515
	95% Confidence Interval Lower Bound for Difference	-57.278	-41.450
	Upper Bound	-2.156	20.801
Level 4 vs. Level 1	Contrast Estimate	39.158	-4.541
	Hypothesized Value	0	0
	Difference (Estimate - Hypothesized)	39.158	-4.541
	Std. Error	42.057	47.497
	Sig.	.352	.924
	95% Confidence Interval Lower Bound for Difference	-43.522	-97.914
	Upper Bound	121.837	88.831
Level 5 vs. Level 1	Contrast Estimate	-36.184	-14.620
	Hypothesized Value	0	0
	Difference (Estimate - Hypothesized)	-36.184	-14.620
	Std. Error	20.976	23.689
	Sig.	.085	.537
	95% Confidence Interval Lower Bound for Difference	-77.421	-61.189
	Upper Bound	5.052	31.949

Table 23

CATEGORY multivariate test results

	Value	F	Hy- pothe- sis df	Error df	Sig.	Partial Eta Squared	Noncent. Parame- ter	Observed Power ^c
Pillai's trace	0.028	1.448	8	806	0.173	0.014	11.584	0.661
Wilks' lambda	0.972	1.454 ^a	8	804	0.17	0.014	11.633	0.663
Ho- telling's trace	0.029	1.46	8	802	0.168	0.014	11.681	0.665
Roy's largest root	0.029	2.875 ^b	4	403	0.023	0.028	11.499	0.778

Table 24

CATEGORY univariate test results

Source	Depend- ent vari- able	Sum of squares	df	Mean square	F	Sig .	Partial eta square d	Non- cent. param- eter	Ob- served power ^a
Con- trast	LIKES	10299.47	4	2574.867	2.236	0.065	0.022	8.942	0.654
	SHARE S	975.707	4	243.927	0.166	0.956	0.002	0.664	0.085
Error	LIKES	464176.9	403	1151.804					
	SHARE S	592003.1	403	1468.99					

Hypothesis 2

To review, the second hypothesis for Part I:

Part I, Ho2: The social media post CONTENT of written status with video will reach more social media users than other CONTENTs.

Part I, Ha2: The social media post CONTENT of written status with video will not reach more social media users than other CONTENTs.

I ran a Simple Contrast test in SPSS on each level of the independent variable, CONTENT, to see how each performs when compared to written status with a video. Video was coded as (1) and written Status with a link was coded as (2). Looking at the contrast results for CATEGORY in Table 25, there is not a statistically significant difference between written status with a video and written status with a link to a website on LIKES. However, there is a statistically significant difference between written status with a video and written status with a link to a website on SHARES with $p = .000$. The confidence interval was wide with (-77.129, -32.662). Multivariate tests were statistically significant for LIKES and SHARES meaning that the interaction effect is consistent across the different levels. With a partial eta squared of .070, I can infer that only 7% of the variance in the combination of LIKES and SHARES is explained by the level of CONTENT which is a small effect. However, univariate tests were only statistically significant for SHARES. From this result, I can infer that the independent variable, CONTENT, does have a statistically significant effect on the dependent variable, SHARES. Specifically, the CONTENT of written status with a video is preferred to written status with link to a website. The null hypothesis should be rejected, with the alternative hypothesis having validity.

Table 25

CONTENT contrast results (K Matrix)

CONTENT simple contrast ^a		LIKES	SHARES
Level 2 vs. Level 1	Contrast Estimate	-11.298	-54.895
	Hypothesized Value	0	0
	Difference (Estimate - Hypothesized)	-11.298	-54.895
	Std. Error	10.015	11.310
	Sig.	.260	.000
	95% Confidence Interval		
	for Difference	Lower Bound	-30.985
		Upper Bound	-77.129
			8.390
			-32.662

Table 26

CONTENT multivariate results

	Value	F	Hypothesis df	Error df	Sig.	Partial eta squared	Non-cent. parameter	Observed power ^b
Pillai's trace	.070	15.014 ^a	2.000	402.000	.000	.070	30.028	.999
Wilks' lambda	.930	15.014 ^a	2.000	402.000	.000	.070	30.028	.999
Hotelling's trace	.075	15.014 ^a	2.000	402.000	.000	.070	30.028	.999
Roy's largest root	.075	15.014 ^a	2.000	402.000	.000	.070	30.028	.999

Table 27

CONTENT univariate test results

Source	Dependent variable	Sum of squares	df	Mean square	F	Sig.	Partial eta squared	Non-cent. parameter	Observed power ^a
Contrast	LIKES	1465.837	1	1465.837	1.273	0.26	0.003	1.273	0.203
	SHARES	34608.35	1	34608.35	23.559	0	0.055	23.559	0.998
Error	LIKES	464176.9	403	1151.804					
	SHARES	592003.1	403	1468.99					

Hypothesis 3

Part I, Ho3: The social media posts concerning the GEOPOLITICAL REGION of West will reach more social media users than other GEOPOLITICAL REGIONS.

Part I, Ha3: The social media posts concerning the GEOPOLITICAL REGION of West will not reach more social media users than other GEOPOLITICAL REGIONS.

I ran a Simple Contrast^a test in SPSS on each level of the independent variable, REGION, to see how each performs when compared to West. West was coded as (1), Middle East was

coded as (2), global was coded as (3), and cyber was coded as (4). Looking at the contrast results for GEOPOLITICAL REGION in Table 28, there is not a statistically significant difference between GEOPOLITICAL REGION on LIKES or SHARES. Multivariate tests were statistically significant meaning that the interaction effect is consistent across the different levels. With a partial eta squared of .070, inferring that only 6% of the variance in the combination of LIKES and SHARES is explained by the level of CONTENT with is a very small effect. In addition, univariate tests were not statistically significant as seen in Table 29 and 30. From this result, I can infer that the independent variable, GEOPOLITICAL REGION, does have a statistically significant effect on the dependent variables, LIKES and SHARES, rejecting the null hypothesis is acceptable and accepting the alternative hypothesis, as a result.

Table 28

Region contrast results (k matrix)

REGION simple contrast ^a		LIKES	SHARES	
Level 2 vs. Level 1	Contrast Estimate	-20.622	-3.010	
	Hypothesized Value	0	0	
	Difference (Estimate - Hypothesized)	-20.622	-3.010	
	Std. Error	12.997	14.678	
	Sig.	.113	.838	
	95% Confidence Interval for Difference	Lower Bound	-46.172	-31.865
		Upper Bound	4.929	25.845
Level 3 vs. Level 1	Contrast Estimate	-5.230	-2.051	
	Hypothesized Value	0	0	
	Difference (Estimate - Hypothesized)	-5.230	-2.051	
	Std. Error	4.570	5.161	
	Sig.	.253	.691	
	95% Confidence Interval for Difference	Lower Bound	-14.214	-12.197
		Upper Bound	3.755	8.095
Level 4 vs. Level 1	Contrast Estimate	-8.858	-2.846	
	Hypothesized Value	0	0	

Difference (Estimate - Hypothesized)	-8.858	-2.846
Std. Error	7.240	8.177
Sig.	.222	.728
95% Confidence Interval for Difference	Lower Bound Upper Bound	-23.092 13.228

Table 29

REGION multivariate test results

	Value	F	Hypothesis df	Error df	Sig.	Partial eta squared	Noncent. pa- rameter	Observed power ^c
Pillai's trace	0.013	0.868	6	806	0.518	0.006	5.21	0.347
Wilks' lambda	0.987	.869 ^a	6	804	0.517	0.006	5.213	0.348
Ho- telling's trace	0.013	0.869	6	802	0.517	0.006	5.216	0.348
Roy's largest root	0.013	1.723 ^b	3	403	0.162	0.013	5.17	0.45

Table 30

REGION univariate test results

Source	Dependent variable	Sum of squares	df	Mean square	F	Sig.	Partial eta squared	Non-cent. parameter	Observed power ^a
Con- trast	LIKES	4569.568	3	1523.189	1.322	0.267	0.01	3.967	0.353
	SHARES	357.611	3	119.204	0.081	0.97	0.001	0.243	0.065
Error	LIKES	464176.9	403	1151.804					
	SHARES	592003.1	403	1468.99					

Post Hoc Tests

When there is a significant difference between groups, post hoc tests are performed to determine where the significant differences lie and ensure that a Type I error has not been made

(Green & Salkind, 2014). Post hoc tests were not performed for CONTENT because it only had two levels (written status with video and written status with link to a website). Post hoc tests were also not performed for GEOPOLITICAL REGION because they did not show a statistically significant difference. The post hoc test for CATEGORY showed that there is a statistically significant difference between the means for personal story, news article, research/policy analysis, military defeats, and religious doctrine on LIKES as seen in Table 31: CATEGORY Multiple Comparisons. However, there was no statistically significant difference between the levels of CATEGORY and SHARES.

Table 31

CATEGORY multiple comparisons

Dependent variable	(I) CAT-EGOR Y	(J) CAT-EGOR Y	Mean difference (I-J)	Std. error	Sig.	95% Confidence interval	
						Lower bound	Upper bound
LIKES	1	2	26.3175*	7.77252	0.007	5.0194	47.6155
		3	32.8852*	7.84255	0	11.3953	54.3751
		4	18.1286	13.03949	0.634	-17.6018	53.859
		5	42.4286*	11.47322	0.002	10.99	73.8671
	2	1	-26.3175*	7.77252	0.007	-47.6155	-5.0194
		3	6.5678	3.49601	0.331	-3.0119	16.1474
		4	-8.1889	10.98839	0.946	-38.2989	21.9211
		5	16.1111	9.07476	0.389	-8.7553	40.9775
	3	1	-32.8852*	7.84255	0	-54.3751	-11.3953
		2	-6.5678	3.49601	0.331	-16.1474	3.0119
		4	-14.7566	11.03803	0.668	-45.0027	15.4894
		5	9.5434	9.13481	0.834	-15.4876	34.5743
	4	1	-18.1286	13.03949	0.634	-53.859	17.6018
		2	8.1889	10.98839	0.946	-21.9211	38.2989
		3	14.7566	11.03803	0.668	-15.4894	45.0027
		5	24.3	13.85523	0.402	-13.6657	62.2657

		1	-						
			42.4286*	11.47322	0.002	-73.8671	-10.99		
	5	2	-16.1111	9.07476	0.389	-40.9775	8.7553		
		3	-9.5434	9.13481	0.834	-34.5743	15.4876		
		4	-24.3	13.85523	0.402	-62.2657	13.6657		
		2	13.3513	8.77773	0.549	-10.7012	37.4037		
	1	3	13.2995	8.85682	0.562	-10.9697	37.5686		
		4	16.2619	14.72586	0.804	-24.0894	56.6132		
		5	19.6952	12.95703	0.55	-15.8092	55.1997		
		1	-13.3513	8.77773	0.549	-37.4037	10.7012		
	2	3	-0.0518	3.94814	1	-10.8704	10.7668		
		4	2.9106	12.4095	0.999	-31.0935	36.9147		
		5	6.344	10.24838	0.972	-21.7383	34.4262		
		1	-13.2995	8.85682	0.562	-37.5686	10.9697		
SHARES	3	2	0.0518	3.94814	1	-10.7668	10.8704		
		4	2.9624	12.46557	0.999	-31.1953	37.1202		
		5	6.3958	10.3162	0.972	-21.8724	34.6639		
		1	-16.2619	14.72586	0.804	-56.6132	24.0894		
	4	2	-2.9106	12.4095	0.999	-36.9147	31.0935		
		3	-2.9624	12.46557	0.999	-37.1202	31.1953		
		5	3.4333	15.6471	0.999	-39.4424	46.309		
		1	-19.6952	12.95703	0.55	-55.1997	15.8092		
	5	2	-6.344	10.24838	0.972	-34.4262	21.7383		
		3	-6.3958	10.3162	0.972	-34.6639	21.8724		
		4	-3.4333	15.6471	0.999	-46.309	39.4424		

Table 32

CATEGORY LIKES

CATEGORY	N	Subset	
		1	2
5.00	15	6.0000	
3.00	173	15.5434	
2.00	207	22.1111	22.1111
4.00	10	30.3000	30.3000
1.00	21		48.4286
Sig.		.121	.075

Table 33

CATEGORY SHARES

CATEGORY	N	Subset	
		1	
5.00	15	1.0667	
4.00	10	4.5000	
2.00	207	7.4106	
3.00	173	7.4624	
1.00	21	20.7619	
Sig.		.427	

Table 34

GEOPOLITICAL REGION multiple comparisons

Dependent variable	(I)GE-OPO-LITIC-AL-RE-GION	(J)GE-OPO-LITIC-AL-RE-GION	Mean difference (I-J)	Std. error	Sig.	95% Confidence interval		
						Lower bound	Upper bound	
LIKES	1	2	1.701	5.02655	0.987	-11.2664	14.6684	
		3	8.9474	3.83357	0.092	-0.9424	18.8372	
		4	7.8022	6.52399	0.63	-9.0283	24.6327	
	2	1	-1.701	5.02655	0.987	-14.6684	11.2664	
		3	7.2464	5.39884	0.537	-6.6814	21.1742	
		4	6.1012	7.55074	0.851	-13.378	25.5805	
	3	1	-	8.9474	3.83357	0.092	-18.8372	0.9424
		2	-	7.2464	5.39884	0.537	-21.1742	6.6814
		4	-	1.1452	6.81496	0.998	-18.7263	16.436
	4	1	-	7.8022	6.52399	0.63	-24.6327	9.0283
		2	-	6.1012	7.55074	0.851	-25.5805	13.378
		3	-	1.1452	6.81496	0.998	-16.436	18.7263
SHARES	1	2	6.8302	5.67663	0.625	-7.8143	21.4746	
		3	6.8232	4.32936	0.393	-4.3456	17.992	

	4	8.7023	7.36773	0.639	-10.3049	27.7094
	1	-	5.67663	0.625	-21.4746	7.8143
2	3	6.8302	6.09706	1	-15.736	15.7221
	4	-0.007	8.52726	0.996	-20.1264	23.8706
	1	-	4.32936	0.393	-17.992	4.3456
3	2	6.8232	6.09706	1	-15.7221	15.736
	4	0.007	7.69633	0.995	-17.9758	21.7339
	1	-	7.36773	0.639	-27.7094	10.3049
4	2	8.7023	8.52726	0.996	-23.8706	20.1264
	3	-	7.69633	0.995	-21.7339	17.9758

Summary

This chapter provided an overview of the challenges encountered during data collection and statistical analysis. It also presented the results from the three MANOVAs which included multivariate tests, univariate tests, and post hoc tests. The MANOVAs showed that posts coded with the CATEGORY of personal story resulted in a higher number of LIKES than research/policy analysis and posts coded with the CONTENT of written status with a video resulted in a higher number of SHARES than written status with a link. There was no relationship between the independent variable; GEOPOLITICAL REGION; and the dependent variables to LIKES and SHARES.

Chapter 5 will interpret the results and provide conclusions and recommendations.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Individuals are often radicalized over social media (Gill et al., 2017). Therefore, it seems intuitive to attempt to counter-radicalize using social media. The purpose of this quantitative study was to assess the utility of data analytics when administering a counter-radicalization campaign on social media to ensure that the posts are reaching and engaging the general user population. The independent variables in this study are attributes of social media posts that may contribute to a post's virality, which is measured by the resulting LIKES and SHARES. By searching for patterns in posts that have a high number of LIKES and SHARES, resulting data analytics could improve the outreach of a counter-radicalization social media efforts. The purpose of this chapter is to discuss and the results, limitations of the study, and implications.

The literature in the field of counter-radicalization and social media have not addressed what strategies and tactics have been successful in reaching the general population. The United States, United Kingdom, and Canada administered counter-radicalization campaigns on multiple social media platforms but have been unable to develop an adequate following. This research used data from a popular counter-radicalization campaign's Facebook Page, Quilliam, to determine whether the CATEGORY, CONTENT, and GEOPOLITICAL REGION of a post had an effect on outreach. I then ran a MANOVA to determine which of the categories of information, CONTENT, and GEOPOLITICAL REGION had the strongest effect and should therefore become the focus of counter-radicalization social media efforts and provide a basis for further studies.

Discussion of Findings

By measuring the effect of CATEGORY, CONTENT, and GEOPOLITICAL REGION on LIKES and SHARES, this study aimed to determine which independent variables have the greatest effect on the two dependent variables. The study shows that there is a relationship between the CATEGORY and the resulting LIKES and CONTENT of a post and resulting SHARES. Specifically, it shows that when evaluating posts made between 1 January 2018 and 31 December 2018, posts that were categorized as a personal story resulted in a higher number of LIKES than research/policy analysis. Posts that were a written status with a video resulted in a higher number of SHARES than written status with a link. Also, the study shows that there is no relationship between the independent variable, GEOPOLITICAL REGION, and the dependent variables LIKES and SHARES. This finding indicates that expending resources attempting to post only about the West, Middle East, global, or cyber topics to improve outreach will not meet with success.

The results of the MANOVA also proved that CATEGORY and CONTENT individually and combined (CATEGORY*CONTENT) had a significant effect on resulting LIKES and SHARES. This finding should indicate to administrators the need to focus on posting personal story as a written status with a video to maximize both LIKES and SHARES. It is possible that people are more likely to like a post with a CATEGORY that resonates with them, such as a personal story, and more likely to share a post with an engaging CONTENT, such as a video. This finding is important because for a post to trend it needs to be both liked and shared in high volume. Therefore, the combination of personal story for CATEGORY and written status with a video for CONTENT could have the strongest effect on resulting LIKES and SHARES and may be a useful combination to study when attempting to create viral posts.

The Most Liked and Shared Posts

In addition to running a MANOVA to determine if the independent variables had a significant effect on the dependent variables, I also compiled a list of the 10 most liked and shared posts in order to gain more insight into what attributes contribute to the virality of a post. During this exercise, I found that an overwhelming majority of the posts, listed in Table 34 and Table 35, involve genuine public figures and local messaging. These are two areas that further research should investigate.

Table 35

Top 10 liked posts

Date (2018)	Public figure	CATEGORY	CONTENT	Region	LIKES	SHARES	Subject
11/14	yes	personal story	link	global	326	197	Asia Bibi requests asylum from U.K.
3/18	yes	research/policy analysis	video (24K views)	West	299	534	Maajid Nawaz talks about grooming gangs Manchester Didsbury Mosque's extremist Imam has links to bombing terrorist
8/17	no	news article	video (26K views)	West Middle East	197	715	Yazdi victims share their story
12/6	yes	personal story	link	East	186	49	Maajid Nawaz finds the man who saved him from being stabbed
9/18	yes	news article	Link	West	183	14	Mosul University recovering
11/21	no	news article	Link	global	173	14	Skateboarder who attacked
10/11	yes	personal story	link	West	156	30	

5/15	no	research/policy analysis	link	Middle East	145	64	London Bridge terrorists Israeli/Palestinian conflict policy Maajid Nawaz talking about being labeled anti-muslim extremist
6/19	yes	news article	link	West	126	16	Maajid Nawaz talking about being labeled anti-muslim extremist
4/19	yes	research/policy analysis	link	West	134	12	Maajid Nawaz talking about being labeled anti-muslim extremist

Table 36

Top 10 shared posts

Date (2018)	Public figure	CATEGORY	CONTENT	Region	LIKES	SHARES	Subject
8/17	no	news article	video (26K views)	West	197	715	Extremist Imam has links to Manchester Bomber Maajid Nawaz discusses grooming gangs
3/18	yes	research/policy analysis	video (24K views)	West	299	534	Asia Bibi requests asylum from U.K. Labour party supports anti-semitism
11/14	yes	personal story	link	global	326	197	Interview with
9/17	no	research/policy analysis	link	West	110	130	
7/20	no	research/policy analysis	video (12K views)	West	95	91	

4/25	no	research/policy analysis	link	West	112	70	Maajid Nawaz New member of Labour Party praised terrorist
5/15	no	research/policy analysis	link	Middle East	145	64	Israeli/Palestinian Conflict Policy
12/6	yes	personal story	link	Middle East	186	49	Yazdi Victims Hero who attacked London Bridge terrorists
10/11	yes	personal story	link	West	156	30	Interview with Maajid Nawaz
12/12	no	news article	link	West	88	30	

Genuine Public Figures

During the period of data collection (1 January 2018 to 31 December 2018) there were several significant events that received attention. There were attacks in Carcasonne and Trebes, Toronto, Surabaya, Paris, Liege, Mastung, Sweida, Danghara, and Pittsburgh (Terrorism Timeline, 2018). Yet none of these news articles even made it into the Top Ten Liked Post or Top Ten Shared Posts. In addition, posts that discussed thwarted attacks and arrests of those charged with planning the thwarted attacks also did not make it into the Top Ten Liked Post or Top Ten Shared Posts. It is possible that over time, social media users have become desensitized to news

articles about prior terrorist attacks or thwarted terrorist attacks. It is also possible that social media users were being bombarded by these stories through other channels such as radio, television, newspapers, etc. and did not feel the need to engage with social media posts about the terrorist attacks. Either way, this is an occurrence that counter-radicalization administrators may want to investigate.

In addition to terrorist attacks, there was another event that received significant press coverage during the period of data collection. Aasiya Noreen, a Christian woman from Pakistan who had been convicted of blasphemy in 2010 following a dispute with neighbors was acquitted based on insufficient evidence by the Supreme Court of Pakistan. The trial sparked international outrage over the initial conviction. As a result, a post discussing her request for asylum in the U.K., presented in Figure 19, was the most liked post in the study and one of the most shared posts in the study (Quilliam, 2018c). This finding led me to develop a theory that stories about women who have been victims of terrorism would have a high amount of LIKES and SHARES. However, I noticed that posts about the girls kidnapped from their school and held hostage by Boko Haram were some of the least popular posts with a surprising average of only 4.5 LIKES. This may be due to the fact that it is more difficult to empathize with a group than an individual (Turner, 1956).



Note. From “Quilliam,” in *Facebook* [Group page]. Retrieved December 28, 2018, from <https://www.facebook.com/QuilliamInternational/>

Figure 9. Asia Bibi post

The top posts discuss a variety of subjects including brutality, injustice, and resilience. The top posts have one attribute in common – a relatable public figure. After coming to this realization, I went back through the year of posts and coded each post as a 1 if it had a public figure behind the message, and 2 if it did not have a public figure behind the message. The results were demonstrative – posts that had a public figure behind the message were more popular than posts that did not have a public figure behind the message. The results of this study prove that it is not

only the story that trends, but the person behind it. This theory could also explain why videos were so popular. Videos reveal the person behind the post which makes the story more palpable to a viewer. When reviewing all of the videos included in the year of posts, the videos where the person is unscripted were more popular than the highly edited documentaries. Videos where a person is speaking freely about their experiences and ideas may also seem more genuine whereas a published piece may seem like an attempt to manipulate viewers.

Local Messaging

Seventy percent of the most liked posts and 80% of the most shared posts were about events and policies that specifically effected the United Kingdom. The majority of users following Quilliam are assumed to be individuals living in the United Kingdom. This assumption is based on the knowledge that Quilliam is headquartered in the United Kingdom. In addition, the founder of Quilliam is a local celebrity in the United Kingdom, Maajid Nawaz. This specific audience may explain why posts about the United Kingdom tended to receive a higher number of LIKES and SHARES. People are often more concerned about information that directly effects them – especially when it comes to terrorist attacks and resulting governmental policies. This finding provides a strong argument for tailoring counter-radicalization campaigns to local populations which will be discussed as a recommendation for further study.

Limitations of the Study

The participants in this study are Facebook Users who share and like content which is posted on the Quilliam Facebook Page. In order to see posts made by Quilliam a Facebook User has to either be following the Facebook Page, friends with other Facebook Users who engage

with the Facebook Page, or following similar Facebook Pages. Therefore, it is likely that the Facebook Users who liked or shared the posts being studied already have an interest in terrorism and may already condemn terrorism. Therefore, the posts studied probably did not reach individuals who are at risk of joining a terrorist organization. While it may not seem productive to measure the impact of counter-radicalization posts on individuals who are not considering radicalization it is a crucial step in developing information that trends. In order for information to trend it has to be liked and shared by a massive amount of users. For example, the previously mentioned dress that trended in 2015 due to the differences in human color perception had 4.4 million tweets in 24 hours (Warzel, 2015). Once information is trending it will be seen by individuals who are at risk of joining a terrorist organization. Therefore, users who may already condemn terrorism are an integral part of the process to get posts to trend even if they are not the intended audience for the posts.

Other Factors Effecting Outreach

While the study found a statistically significant correlational relationship between the CATEGORY and the resulting amount of LIKES and CONTENT and the resulting amount of SHARES, there are many other variables that impact the popularity of a post. There are several research studies that argue that the day of the week and time that a post is uploaded has an effect on LIKES and SHARES. While the specific recommendations vary, there is consensus among researchers that posts uploaded during business hours on weekdays have the most potential to trend (Berger, 2013). When looking at the data collected, the majority of posts were uploaded on weekdays during business hours in Greenwich Mean Time (GMT) because that is when and where Quilliam is staffed and headquartered. However, many Facebook Users live in other time

zones. For example, if a post was uploaded at 1600 in GMT it may not have been viewed by Facebook Users in Australia and New Zealand because that would be the middle of the night and by the time they awaken their newsfeed could be populated by more recent postings. In addition, the language of a post could also have an effect on LIKES and SHARES. Quilliam posts are all in English. As a result, they may not be read and understood by Facebook Users who speak other languages. Therefore, the amount of LIKES and SHARES on posts in this study may have been a result of variables other than the CATEGORY and CONTENT. Timing and language are two variables that should be considered when administering a counter-radicalization campaign. These obstacles can be overcome by posting during weekdays and business hours in multiple time zones and in multiple languages.

Lurkers

Lurkers are unavoidable when conducting observational social media research (Leiner, Kobilke, Rueß, & Brosius, 2018). Not every Facebook User wants to interact with posts. After all, liking and sharing a post is public information. It is possible that a Facebook User may not want their Facebook Friends to see that they liked or shared a controversial post or maybe they simply do not agree with the post and therefore do not want to like or share it (Leiner, Kobilke, Rueß, & Brosius, 2018). It is difficult to measure how many social media users are exposed to a post because of the existence of lurkers. However, the number of social media users who clicked to view a video is counted and displayed. This provided some insight into the impact of lurkers on this study. For example, the video posted on 8/17/2018 about the Manchester Didsbury Mosque's extremist Imam who called for armed Jihad in his sermon in Manchester had links to the Salman Abedi only receive 197 LIKES and 715 SHARES but had over 26,000 views. Due to

the apparent presence of lurkers, further research should attempt to measure how many views a post receives in addition to the level of engagement.

Re-posts

Quilliam administrators routinely re-posted policy pieces, occasionally multiple times in one day. This may have increased the exposure of these posts but may have also decreased the amount of collective LIKES and SHARES. For example, the Quilliam administrators re-posted a personal story about an individual who was a terrorist in Al Qaeda but who defected and began spying with MI-6 on 10/31/2018, 10/30/2018, 10/25/2018, 10/24/2018, and twice on 10/23/2019 (Quilliam, 2018a). Each post had 2.7 LIKES and 1 SHARE on average. However, collectively the posts had a total of 16 LIKES and 6 SHARES. It is impossible to know how the post would have performed if it was only uploaded once. I could have overcome this challenge by consistently consolidating posts which had the same topic and were uploaded on the same day, or two days, or three days. However, I felt that this would add more subjectivity to the study.

Policy and Social Change Implications

The Quilliam Facebook Page has 26,697 followers who receive notification of new posts and can choose to like and share any posts (Quilliam, 2018a). In addition, any registered Facebook User can view the page and like or share any of the posts. When followers or registered Facebook Users like and share posts, it increases the likelihood that those posts will appear in the newsfeed of their Facebook Friends. By using data analytics to discover what past posts result in the highest number of LIKES and SHARES an administrator can potentially increase the number of LIKES and SHARES that they receive for future posts.

Intervention

Social media has the potential to make a movement feel larger than it is. Terrorist organizations use bots who share content to make it seem that there are more supporters (Berger & Morgan, 2015). When an individual feels that they are one of many with the same beliefs it may make them feel re-affirmed in their beliefs and provide them with the courage to act (Malthaner & Lindekilde, 2017). Just as an echo chamber can radicalize individuals, it can also deradicalize individuals (Malthaner & Lindekilde, 2017). A robust counter-radicalization campaign can make an individual who is considering joining a terrorist organization and committing terrorist attacks realize that they are actually in the minority (Malthaner & Lindekilde, 2017).

As previously mentioned, the sensitivity and discovery phases provide the most promising opportunities to prevent radicalization (Cragin, 2017). An individual completes the sensitivity phase when they find that they are not alone in their beliefs (Cragin, 2017). An individual completes the discovery phase when they search for more information online and are enticed by the promises of resources and identity offered by terrorist organizations (Cragin, 2017). Malthaner & Linekilde (2017) found that two of the most effectual motivators are the influence of friends and family and the individuals experience indoctrinated to a terrorist organization. If either of these motivators are interrupted, there is a possibility that radicalization could be prevented (Malthaner & Linekilde, 2017). By ensuring that counter-radicalization trends, individuals who are interested in becoming a terrorist will realize that their friends and family may not support terrorism and that joining a terrorist organization may not be as lucrative as it seems.

Counter-radicalization efforts also have the potential to mobilize communities. It is an individuals parents, relative, friends, and teachers who are the first to recognize that an individual

is becoming radicalized and the last than an individual will remain in contact with once they become isolated (Malthaner & Lindekilde, 2017). Communities need resources to them to help with prevention and intervention. Social media can be used to disseminate counter-radicalization resources that are specifically tailored to help parents, relatives, friends, and teachers to start a dialogue about radicalization and discuss the ramifications of terrorism.

Prevention

Counter-radicalization efforts have the potential to not only convince individuals to refrain from joining terrorist organizations and committing attacks but to also change the attitude toward Muslims. When researching social media users who voiced radical opinions, Lara-Cabrera et al (2017) found a strong correlation between perception of discrimination for being Muslim and expressing negative views of the West and positive views of jihadism individuals who became radicalized online. In addition, Cragin et al (2015) found that individuals who were considering becoming involved with terrorism were often motivated to feel accepted by others. Counter-radicalization efforts could potentially change the culture of religious discrimination which could prevent radicalization.

Muslims need to feel supported. Counter-radicalization social media efforts could combat the misperception that all Muslims are radical. In addition to posting information that dismantles radical ideologies, counter radicalization social media efforts could post stories that emphasize Islamic values of religious tolerance and social cohesion. Counter-radicalization social media efforts can provide a platform for local community leaders and religious scholars to serve as an example for others to emulate. These efforts could foster a sense of acceptance for Muslims so that

they will not feel tempted to seek social movement and social identity from a terrorist organization.

Recommendations for Further Study

This study found that some categories of counter-radicalization information are more compelling than other categories of counter-radicalization information on social media. The focus for this study was on trending information to reach the general population. This study did not involve measuring what information is most effective in dissuading individuals from joining terrorist organizations. Three concepts that warrant further study are focused content, source power, and message framing of counter-radicalization information. Most importantly, further research should focus not only on what content trends but also on what content can deradicalize individuals.

Focused Content

The CATEGORY, personal story, received more LIKES and SHARES than other categories of information. Further research should focus on what kind of personal stories have the most potential to trend due to the public figure behind them and the topic they discuss. In addition, it is also possible that further research into the localization of messages could reveal additional insight into trend patterns.

There are many different types of public figures in counter-radicalization. This dataset specifically featured victims of terrorism, heroes of terrorism, and defectors of terrorist organizations. It is possible that some types of public figures may be more popular than other types of public figures. Further study should determine if specific attributes about a public figure increases their ability to trend. For example, comparing the education level, ethnicity, gender,

and age of various public figures who are the subject of counter-radicalization information to determine if there are significant differences between these variables and the level of engagement. These findings could help counter-radicalization campaigns determine who should be the face of their brand.

Different topics appeal to different audiences. For example, counter-radicalization campaigns such as “Families against Terrorism and Extremism” focuses on children in the Muslim community and “She Is Here” focuses on women in the Muslim community. It may be useful to compare the performance of posts about children to posts about women to posts about women and children. If a statistically significant differences is found, it could potentially uncover additional attributes that contribute to trending posts. For example, Personal Stories may be more appealing when they are about women and children.

The coding for West and Middle East in this study may have been too broad. If this study had coded for specific countries it could have potentially uncovered a pattern that Facebook Users seem to care more about subjects that impact their specific country. People are often more concerned about information that directly affects them – especially when it comes to terrorist attacks and resulting governmental policies (Wilner & Rigato, 2017). While it is effective to target an entire country – it may be even more beneficial to target specific towns and cities (Wilner & Rigato, 2017). Further research should investigate if counter-radicalization campaigns focused on a specific region such as New York City, London, or Toronto can reach a large percentage of each cities population. Administrators can also upload posts which are about topics that directly effects their audience and upload posts about broader topics that do not directly effect their audience and compare the level of engagement.

Source Power

As previously discussed, the counter-radicalization social media efforts made by the U.S., United Kingdom, and Canada have consistently low levels of engagement. It is possible that this is not a result of their posts but a result of the source. Source credibility contributes to persuasion. Receiving information from a source with high credibility will lead to a positive acceptance and receiving information from a source with low credibility will lead to rejection (Berger, 2013). It's possible that social media users are less likely to trust or be interested in information coming from their government. There are several counter-radicalization social media efforts being made by nongovernmental organizations such as Quilliam. It may be useful to compare the level of engagement of posts made by Governmental Organizations and nongovernmental organizations to determine if there is a statistically significant difference. If it is found that posts made by nongovernmental organizations consistently receive more LIKES and SHARES, then governmental organizations may have to consider partnering with Nongovernmental Organizations rather than administering their own counter-radicalization campaigns.

Message Framing

This study did not delve into the content of specific counter-radicalization information but it is possible that certain topics, such as risk, could influence how a user perceives terrorism. Messages can either be framed in a positive or negative way to influence behavior (Rothman & Salovey, 1997). Information about risk, when presented in different ways, will likely modify an individual's perspective and actions (Rothman & Salovey, 1997). For example, communicating the life expectancy of a member of the Islamic State could dissuade individuals from joining

even when paired with information about the houses, cars, and brides that they could receive if they join.

A follow-on study could measure the effect of risk information on the perception of terrorist organizations. The risks of joining a terrorist organization can include: death, being required to take innocent lives, isolation from friends and family, being shunned by friends and family, and poor living conditions. Researchers should investigate if certain risks are particularly discouraging to individuals and if the amount of risk information available has an effect on a person's desire to join a terrorist organization. These questions could help counter-radicalization researchers to develop more effective messages.

In addition to framing risk, the simple wording of a post has an effect on how many LIKES and SHARES it receives. For example, during the period of data collection the Quilliam administrators posted links to the same article with two different statuses. The first status uploaded on 6/3/2018 read, "He was a teenage terrorist. Now he's fighting extremism" and received 34 LIKES and 24 SHARES. The second status uploaded on 7/6/2018 read, "Quilliam launches new report on the deradicalization of the youngest person to be indicted on terror charges in the US." and received 4 LIKES and 0 SHARES. It is possible that by providing sensationalized headlines, the administrators were able to draw the interest of more Facebook Users and increase the level of engagement. The concept of sensationalized headlines should be studied in order to determine what makes a story clickable.

Information that Can Trend and Deradicalize

Posting information that can trend and information that can deradicalize are equally important. This study argues that posts which involve a personal story and are displayed as a written status with a video may be more likely to trend. However, studies published by Cragin et al (2015) argue that posts that promote feelings of apathy are what actually deradicalizes individual. This can be accomplished by posting about defectors from the Islamic State who were disappointed by the lack of resources and camaraderie that terrorist organization provided (McDowell-Smith et al., 2017). Administrators need to find a balance between what can trend and what can actually deradicalize. This will require expanding data collection to not only measure LIKES and SHARES but to also ask individuals what their thoughts are on the content. Thoughts on content can be measured in the comments section of posts but it may be more beneficial to have participants view content and then provide their reactions (McDowell-Smith et al., 2017).

Conclusions

Governments in the U.S., Europe, and Canada have centered their current domestic counterterrorism strategies around law enforcement. Law enforcement relies on the public to report individuals who exhibit suspicious behavior and monitor those individuals. However, law enforcement is only able to intervene once the intent and the means to commit an attack have been established. Intent and means to commit an attack are not only difficult to determine but often too late. This strategy has been unsuccessful in preventing attacks such as the San Bernardino shooting where the terrorists were completely radicalized by viewing information on the internet and did not communicate with any known terrorist affiliates (Foster & Hader, 2016).

Planning and executing an attack is as simple as buying a gun and firing it in a public place. In this operational environment, counter-radicalization may be one of the only solutions to inspired terrorism. Social media is the primary source of radicalization which makes it a powerful tool that if properly used could disseminate counter-radicalization information to the general population (Gill et al., 2017). If a counter-radicalization campaign can create viral posts, then they could reach individuals who are considering planning and executing an attack or individuals who know of others who are considering planning and executing an attack and potentially thwart an impending attack. To be successful, counter-radicalization efforts should encourage individuals to practice a moderate interpretation of Islam, promote religious tolerance, and condemn Islamic terrorism.

By measuring the effect of CATEGORY, CONTENT, and GEOPOLITICAL REGION on LIKES and SHARES this study determined that there is a relationship between the CATEGORY and the resulting LIKES and CONTENT of a post and resulting SHARES. Specifically, it shows that when evaluating posts made between 1 January 2018 and 31 December 2018, posts which were categorized as a personal story resulted in a higher number of LIKES than “research/policy analysis and posts which were a written status with a video resulted in a higher number of SHARES than written status with a link. In addition, the results of the MANOVA proved that CATEGORY and CONTENT individually and combined (CATEGORY*CONTENT) had a significant effect on resulting LIKES and SHARES. Therefore, the combination of personal story for CATEGORY and video for CONTENT could have the strongest effect on resulting LIKES and SHARES and may be a useful combination to study when attempting to create viral posts.

While this study was intended to reveal what engages users, it also provides insight into what does not engage them. For example, research/policy analysis pieces are needed to contribute to the existing literature on counter-radicalization, but sharing them on social media does not seem to improve a campaigns outreach. In addition, the study also showed that there is no relationship between the independent variable; GEOPOLITICAL REGION; and the dependent variables; LIKES and SHARES. This finding should indicate to the administrators that they should not expend resources on creating research/policy analysis pieces or only posting about a specific GEOPOLITICAL REGION to improve outreach. This study also emphasized specific areas that further research should investigate. For example; focused CONTENT, source power, and message framing should all be investigated to gain a better understanding of what makes a counter-radicalization post trend.

Data analytics should be utilized when uploading information to social media to ensure that a post is liked and shared to ensure that it reaches the general population which includes the at risk population. Data analytics could improve intervention efforts by providing counter-radicalization information to individuals in the sensitivity and discovery phases of radicalization. Data analytics could also potentially improve prevention efforts by promoting religious tolerance which will make Muslims less likely to seek social movement and social identity from a terrorist organization.

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Appendix A: Facebook Data Policy

Data Policy

This policy describes the information we process to support Facebook, Instagram, Messenger and other products and features offered by Facebook ([Facebook Products](#) or Products). You can find additional tools and information in the [Facebook Settings](#) and [Instagram Settings](#).

I. What kinds of information do we collect?

To provide the Facebook Products, we must process information about you. The types of information we collect depend on how you use our Products. You can learn how to access and delete information we collect by visiting the [Facebook Settings](#) and [Instagram Settings](#).

Things you and others do and provide.

- **Information and content you provide.** We collect the **content**, communications and other information you provide when you use our Products, including when you sign up for an account, create or share **content**, and message or communicate with others. This can include information in or about the **content** you provide (like metadata), such as the location of a photo or the date a file was created. It can also include what you see through features we provide, such as our [camera](#), so we can do things like suggest masks and filters that you might like, or give you tips on using camera formats. Our systems automatically process **content** and communications you and others provide to analyze context and what's in them for the purposes described [below](#). Learn more about how you can control who can see the things you [share](#).
- **Data with special protections:** You can choose to provide information in your Facebook [profile fields](#) or Life Events about your religious views, political views, who you are "interested in," or your health. This and other information (such as racial or ethnic origin, philosophical beliefs or trade union membership) could be subject to special protections under the laws of your country.
- **Networks and connections.** We collect information about the people, [Pages](#), accounts, [hashtags](#) and groups you are connected to and how you interact with them across our Products, such as people you communicate with the most or groups you are part of. We also collect contact information if you [choose to upload, sync or import it from a device](#) (such as an address book or call log or SMS log history), which we use for things like helping you and others find people you may know and for the other purposes listed [below](#).
- **Your usage.** We collect information about how you use our Products, such as the types of **content** you view or engage with; the features you use; the actions you take; the people or accounts you interact with; and the time, frequency and duration of your activities. For example, we log when you're using and have last used our Products, and what posts, videos and other **content** you view on our Products. We also collect information about how you use features like our camera.
- **Information about transactions made on our Products.** If you use our Products for [purchases](#) or other financial transactions (such as when you make a purchase in a game or make a [donation](#)), we collect information about the purchase or transaction. This includes payment information, such as your credit or debit card number and other card information; other account and authentication information; and billing, shipping and contact details.
- **Things others do and information they provide about you.** We also receive and analyze **content**, communications and information that other people provide when they use our Products. This can include information about you, such as when others share or comment on a photo of you, send a message to you, or upload, sync or import your contact information.

Device Information

As described below, we collect information from and about the computers, phones, connected TVs and other web-connected devices you use that integrate with our Products, and we combine this information across different devices you use. For example, we use information collected about your use of our Products on your phone to better personalize the CONTENT (including [ads](#)) or features you see when you use our Products on another device, such as your laptop or tablet, or to measure whether you took an action in response to an ad we showed you on your phone on a different device.

Information we obtain from these devices includes:

- **Device attributes:** information such as the operating system, hardware and software versions, battery level, signal strength, available storage space, browser type, app and file names and types, and plugins.
- **Device operations:** information about operations and behaviors performed on the device, such as whether a window is foregrounded or backgrounded, or mouse movements (which can help distinguish humans from bots).
- **Identifiers:** unique identifiers, device IDs, and other identifiers, such as from games, apps or accounts you use, and Family Device IDs (or other identifiers unique to [Facebook Company Products](#) associated with the same device or account).
- **Device signals:** Bluetooth signals, and information about nearby Wi-Fi access points, beacons, and cell towers.
- **Data from device settings:** information you allow us to receive through device settings you turn on, such as access to your GPS location, camera or photos.
- **Network and connections:** information such as the name of your mobile operator or ISP, language, time zone, mobile phone number, IP address, connection speed and, in some cases, information about other devices that are nearby or on your network, so we can do things like help you [stream a video from your phone to your TV](#).
- **Cookie data:** data from cookies stored on your device, including cookie IDs and settings. Learn more about how we use cookies in the [Facebook Cookies Policy](#) and [Instagram Cookies Policy](#).

Information from partners.

Advertisers, [app](#) developers, and publishers can send us information through [Facebook Business Tools](#) they use, including our social plug-ins (such as the Like button), Facebook Login, our [APIs and SDKs](#), or the Facebook [pixel](#). These partners provide information about your activities off Facebook—including information about your device, websites you visit, purchases you make, the ads you see, and how you use their services—whether or not you have a Facebook account or are logged into Facebook. For example, a game developer could use our API to tell us what games you play, or a business could tell us about a purchase you made in its store. We also receive information about your online and offline actions and purchases from third-party data providers who have the rights to provide us with your information.

Partners receive your data when you visit or use their services or through third parties they work with. We require each of these partners to have lawful rights to collect, use and share your data before providing any data to us. [Learn more](#) about the types of partners we receive data from.

To learn more about how we use cookies in connection with Facebook Business Tools, review the [Facebook Cookies Policy](#) and [Instagram Cookies Policy](#).

II. How do we use this information?

We use the information we have (subject to choices you make) as described below and to provide and support the Facebook Products and related services described in the [Facebook Terms](#) and [Instagram Terms](#). Here's how:

Provide, personalize and improve our Products.

We use the information we have to deliver our Products, including to personalize features and content (including your [News Feed](#), [Instagram Feed](#), Instagram Stories and ads) and make suggestions for you (such as groups or [events](#) you may be interested in or topics you may want to follow) on and off our Products. To create personalized Products that are unique and relevant to you, we use your connections, preferences, interests and activities based on the data we collect and learn from you and others (including any [data with special protections](#) you choose to provide); how you use and interact with our Products; and the people, places, or things you're connected to and interested in on and off our Products. Learn more about how we use information about you to personalize your Facebook and Instagram experience, including features, CONTENT and recommendations in Facebook Products; you can also learn more about how we choose the [ads](#) that you see.

- **Information across Facebook Products and devices:** We connect information about your activities on different Facebook Products and devices to provide a more tailored and consistent experience on all Facebook Products you use, wherever you use them. For example, we can suggest that you join a group on Facebook that includes people you follow on Instagram or communicate with using Messenger. We can also make your experience more seamless, for example, by automatically filling in your registration information (such as your phone number) from one Facebook Product when you sign up for an account on a different Product.
- **Location-related information:** We use [location-related information](#)-such as your current location, where you live, the places you like to go, and the businesses and people you're near-to provide, personalize and improve our Products, [including ads](#), for you and others. Location-related information can be based on things like precise device location (if you've allowed us to collect it), IP addresses, and information from your and others' use of Facebook Products (such as check-ins or events you attend).
- **Product research and development:** We use the information we have to develop, test and improve our Products, including by conducting surveys and research, and testing and troubleshooting new products and features.
- **Face recognition:** If you have it turned on, we use face recognition technology to recognize you in photos, videos and camera experiences. The face-recognition templates we create may constitute [data with special protections](#) under the laws of your country. Learn more about [how we use face recognition technology](#), or control our use of this technology in [Facebook Settings](#). If we introduce face-recognition technology to your Instagram experience, we will let you know first, and you will have control over whether we use this technology for you.
- **Ads and other sponsored content:** We use the information we have about you-including information about your interests, actions and connections-to select and personalize ads, offers and other sponsored content that we show you. Learn more about how we [select and personalize ads](#), and your choices over the data we use to select ads and other sponsored content for you in the [Facebook Settings](#) and [Instagram Settings](#).

Provide measurement, analytics, and other business services.

We use the information we have (including your activity off our Products, such as the websites you visit and ads you see) to help advertisers and other partners measure the effectiveness and distribution of their ads and services, and understand the types of people who use their services and how people interact with their websites, apps, and services. [Learn how we share information](#) with these partners.

Promote safety, integrity and security.

We use the information we have to verify accounts and activity, combat harmful conduct, detect and prevent spam and other bad experiences, maintain the integrity of our Products, and promote safety and security on

and off of Facebook Products. For example, we use data we have to investigate suspicious activity or violations of our terms or policies, or to [detect when someone needs help](#). To learn more, visit the [Facebook Security Help Center](#) and [Instagram Security Tips](#).

Communicate with you.

We use the information we have to send you marketing communications, communicate with you about our Products, and let you know about our policies and terms. We also use your information to respond to you when you contact us.

Research and innovate for social good.

We use the information we have (including from research partners we collaborate with) to conduct and support [research](#) and innovation on topics of general social welfare, technological advancement, public interest, health and well-being. For example, [we analyze information we have about migration patterns during crises](#) to aid relief efforts. [Learn more](#) about our research programs.

III. How is this information shared?

Your information is shared with others in the following ways:

Sharing on Facebook Products

People and accounts you share and communicate with

When you share and communicate using our Products, [you choose the audience for what you share](#). For example, when you post on Facebook, you select the audience for the post, such as a group, all of your friends, the public, or a customized list of people. Similarly, when you use Messenger or Instagram to communicate with people or businesses, those people and businesses can see the content you send. Your network can also see actions you have taken on our Products, including engagement with ads and sponsored content. We also let other accounts see who has viewed their Facebook or Instagram Stories.

[Public information](#) can be seen by anyone, on or off our Products, including if they don't have an account. This includes your Instagram username; any information you share with a public audience; information in your [public profile on Facebook](#); and content you share on a Facebook Page, [public Instagram account](#) or any other public forum, such as [Facebook Marketplace](#). You, other people using Facebook and Instagram, and we can provide access to or send public information to anyone on or off our Products, including in other Facebook Company Products, in search results, or through tools and APIs. Public information can also be seen, accessed, reshared or downloaded through third-party services such as search engines, APIs, and offline media such as TV, and by apps, websites and other services that integrate with our Products.

Learn more about what information is public and how to control your visibility on [Facebook](#) and [Instagram](#).

Content others share or reshare about you

You should consider who you choose to share with, because people who can see your activity on our Products can choose to share it with others on and off our Products, including people and businesses outside the audience you shared with. For example, when you share a post or send a message to specific friends or accounts, they can download, screenshot, or reshare that content to others across or off our Products, in person or in virtual reality experiences such as [Facebook Spaces](#). Also, when you comment on someone else's post or react to their content, your comment or reaction is visible to anyone who can see the other person's content, and that person can change the audience later.

People can also use our Products to create and share content about you with the audience they choose. For example, people can share a photo of you in a Story, mention or tag you at a location in a post, or share information about you in their posts or messages. If you are uncomfortable with what others have shared about you on our Products, you can learn how to [report the content](#).

Information about your active status or presence on our Products.

People in your networks can see signals telling them whether you are active on our Products, including whether you are currently active on [Instagram](#), [Messenger](#) or Facebook, or when you last used our Products.

Apps, websites, and third-party integrations on or using our Products.

When you choose to use third-party apps, websites, or other services that use, or are integrated with, our Products, they can receive information about what you post or share. For example, when you play a game with your Facebook friends or use a Facebook Comment or Share button on a website, the game developer or website can receive information about your activities in the game or receive a comment or link that you share from the website on Facebook. Also, when you download or use such third-party services, they can access your public profile on Facebook, and any information that you share with them. Apps and websites you use may receive your list of Facebook friends if you choose to share it with them. But apps and websites you use will not be able to receive any other information about your Facebook friends from you, or information about any of your Instagram followers (although your friends and followers may, of course, choose to share this information themselves). Information collected by these third-party services is subject to their own terms and policies, not this one.

Devices and operating systems providing native versions of Facebook and Instagram (i.e. where we have not developed our own first-party apps) will have access to all information you choose to share with them, including information your friends share with you, so they can provide our core functionality to you.

Note: We are in the process of restricting developers' data access even further to help prevent abuse. For example, we will remove developers' access to your Facebook and Instagram data if you haven't used their app in 3 months, and we are changing Login, so that in the next version, we will reduce the data that an app can request without app review to include only name, Instagram username and bio, profile photo and email address. Requesting any other data will require our approval.

New owner.

If the ownership or control of all or part of our Products or their assets changes, we may transfer your information to the new owner.

Sharing with Third-Party Partners

We work with third-party partners who help us provide and improve our Products or who use Facebook Business Tools to grow their businesses, which makes it possible to operate our companies and provide free services to people around the world. We don't sell any of your information to anyone, and we never will. We also impose strict restrictions on how our partners can use and disclose the data we provide. Here are the types of third parties we share information with:

Partners who use our analytics services.

We provide aggregated statistics and insights that help people and businesses understand how people are engaging with their posts, listings, Pages, videos and other CONTENT on and off the Facebook Products. For example, Page admins and Instagram business profiles receive information about the number of people or accounts who viewed, reacted to, or commented on their posts, as well as aggregate demographic and other information that helps them understand interactions with their Page or account.

Advertisers.

We provide advertisers with reports about the kinds of people seeing their ads and how their ads are performing, but we don't share information that personally identifies you (information such as your name or email address that by itself can be used to contact you or identifies who you are) unless you give us permission. For example, we provide general demographic and interest information to advertisers (for example, that an ad was seen by a woman between the ages of 25 and 34 who lives in Madrid and LIKES software engineering) to help them better understand their audience. We also confirm which Facebook ads led you to make a purchase or take an action with an advertiser.

Measurement partners.

We share information about you with companies that aggregate it to provide analytics and measurement reports to our partners.

Partners offering goods and services in our Products.

When you subscribe to receive premium content, or buy something from a seller in our Products, the content creator or seller can receive your public information and other information you share with them, as well as the information needed to complete the transaction, including shipping and contact details.

Vendors and service providers.

We provide information and content to vendors and service providers who support our business, such as by providing technical infrastructure services, analyzing how our Products are used, providing customer service, facilitating payments or conducting surveys.

Researchers and academics.

We also provide information and content to research partners and [academics](#) to conduct research that advances scholarship and innovation that support our business or mission, and enhances discovery and innovation on topics of general social welfare, technological advancement, public interest, health and well-being.

Law enforcement or legal requests.

We share information with law enforcement or in response to legal requests in the circumstances outlined below.

Learn more about how you can control the information about you that you or others share with third-party partners in the [Facebook Settings](#) and [Instagram Settings](#).

IV. How do the Facebook Companies work together?

Facebook and Instagram share infrastructure, systems and technology with other [Facebook Companies](#) (which include WhatsApp and Oculus) to provide an innovative, relevant, consistent and safe experience across all [Facebook Company Products](#) you use. We also process information about you across the Facebook Companies for these purposes, as permitted by applicable law and in accordance with their terms and policies. For example, we process information from WhatsApp about accounts sending spam on its service so we can take appropriate action against those accounts on Facebook, Instagram or Messenger. We also work to understand how people use and interact with Facebook Company Products, such as understanding the number of unique users on different Facebook Company Products.

V. How can I manage or delete information about me?

We provide you with the ability to access, rectify, port and erase your data. Learn more in your [Facebook Settings](#) and [Instagram Settings](#).

We store data until it is no longer necessary to provide our services and Facebook Products, or until your account is deleted - whichever comes first. This is a case-by-case determination that depends on things like the nature of the data, why it is collected and processed, and relevant legal or operational retention needs. For example, when you search for something on Facebook, you can access and delete that query from within your search history at any time, but the log of that search is deleted after 6 months. If you submit a copy of your government-issued ID for account verification purposes, we delete that copy 30 days after submission. Learn more about deletion of [content you have shared](#) and [cookie data obtained through social plugins](#).

When you delete your account, we [delete things](#) you have posted, such as your photos and status updates, and you won't be able to recover that information later. Information that others have shared about you isn't

part of your account and won't be deleted. If you don't want to delete your account but want to temporarily stop using the Products, you can deactivate your account instead. To delete your account at any time, please visit the [Facebook Settings](#) and [Instagram Settings](#).

VI. How do we respond to legal requests or prevent harm?

We access, preserve and share your information with regulators, law enforcement or others:

- In response to a legal request (like a search warrant, court order or subpoena) if we have a good faith belief that the law requires us to do so. This may include responding to legal requests from jurisdictions outside of the United States when we have a good-faith belief that the response is required by law in that jurisdiction, affects users in that jurisdiction, and is consistent with internationally recognized standards.
- When we have a good-faith belief it is necessary to: detect, prevent and address fraud, unauthorized use of the Products, violations of our terms or policies, or other harmful or illegal activity; to protect ourselves (including our rights, property or Products), you or others, including as part of investigations or regulatory inquiries; or to prevent death or imminent bodily harm. For example, if relevant, we provide information to and receive information from third-party partners about the reliability of your account to prevent fraud, abuse and other harmful activity on and off our Products.

Information we receive about you (including financial transaction data related to purchases made with Facebook) can be accessed and preserved for an extended period when it is the subject of a legal request or obligation, governmental investigation, or investigations of possible violations of our terms or policies, or otherwise to prevent harm. We also retain information from accounts disabled for terms violations for at least a year to prevent repeat abuse or other term violations.

VII. How do we operate and transfer data as part of our global services?

We share information globally, both internally within the Facebook Companies, and externally with our partners and with those you connect and share with around the world in accordance with this policy. Your information may, for example, be transferred or transmitted to, or stored and processed in the United States or other countries outside of where you live for the purposes as described in this policy. These data transfers are necessary to provide the services set forth in the [Facebook Terms](#) and [Instagram Terms](#) and to globally operate and provide our Products to you. We utilize [standard contract clauses](#), rely on the European Commission's [adequacy decisions](#) about certain countries, as applicable, and obtain your consent for these data transfers to the United States and other countries.

VIII. How will we notify you of changes to this policy?

We'll notify you before we make changes to this policy and give you the opportunity to review the revised policy before you choose to continue using our Products.

IX. How to contact Facebook with questions

You can learn more about how privacy works [on Facebook](#) and on [Instagram](#). If you have questions about this policy, you can contact us as described below. We may resolve disputes you have with us in connection with our privacy policies and practices through TrustArc. You can contact TrustArc through its [website](#). You can contact us [online](#) or by mail at:

Facebook, Inc.
ATTN: Privacy Operations
1601 Willow Road
Menlo Park, CA 94025
Date of Last Revision: April 19, 2018

Appendix B: Data Dispersion

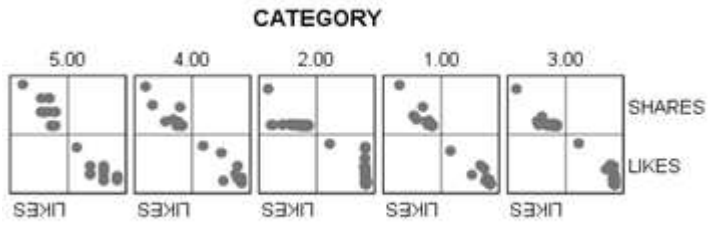


Figure B-1. CATEGORY scatter plot

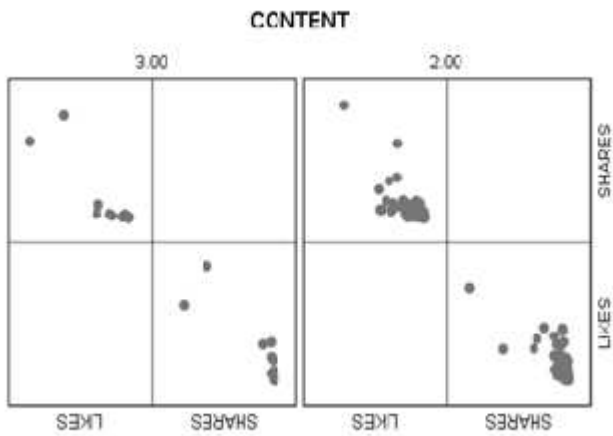


Figure B-2. CONTENT scatter plot

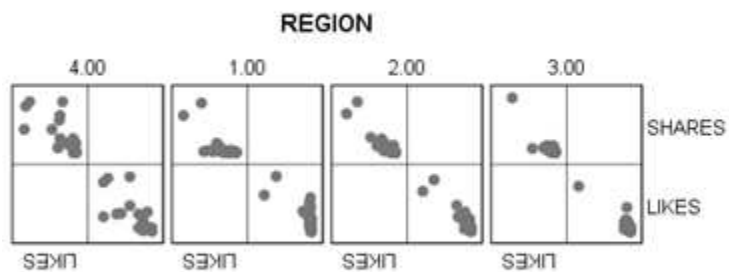


Figure B-3. REGION scatter plot

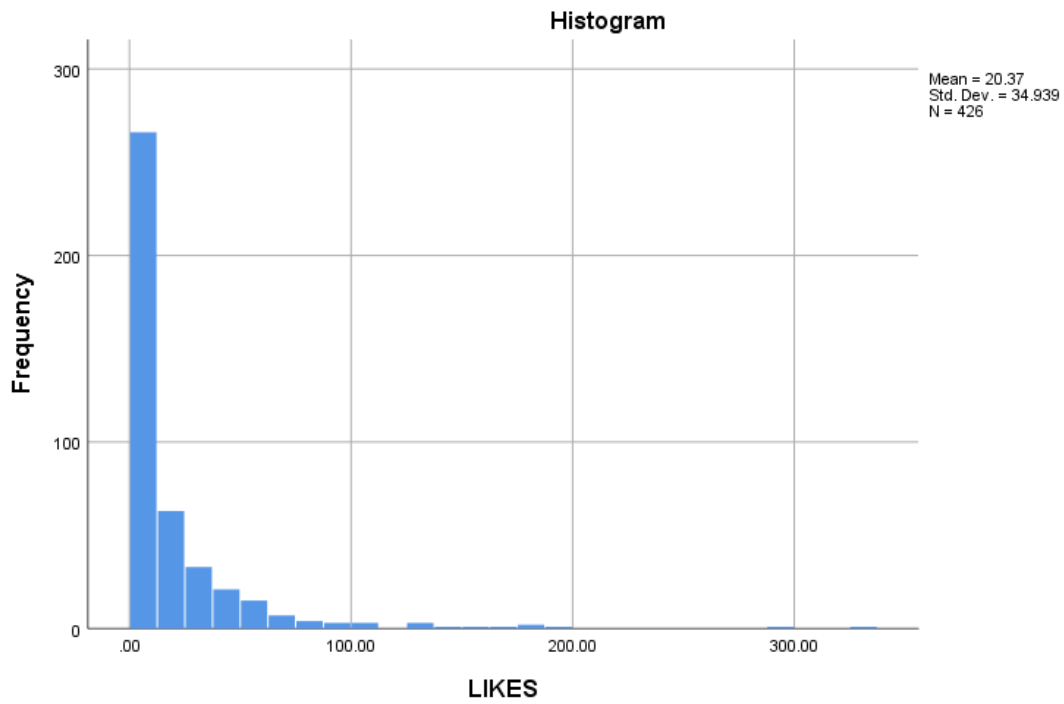


Figure B-4. Histogram for LIKES

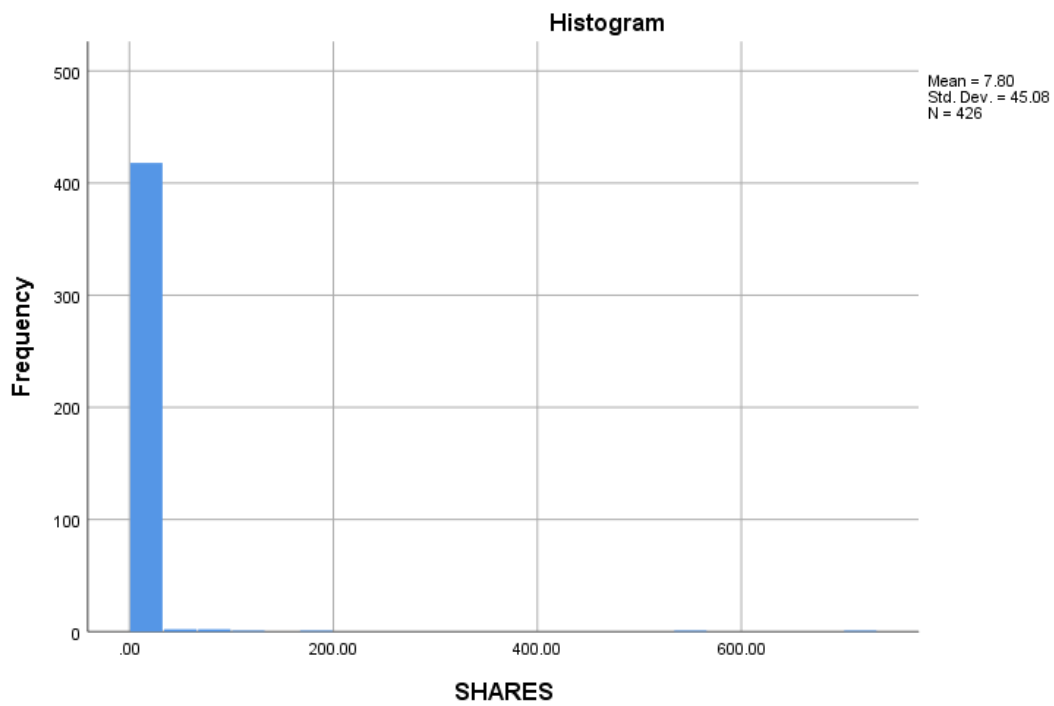


Figure B-5. Histogram for SHARES

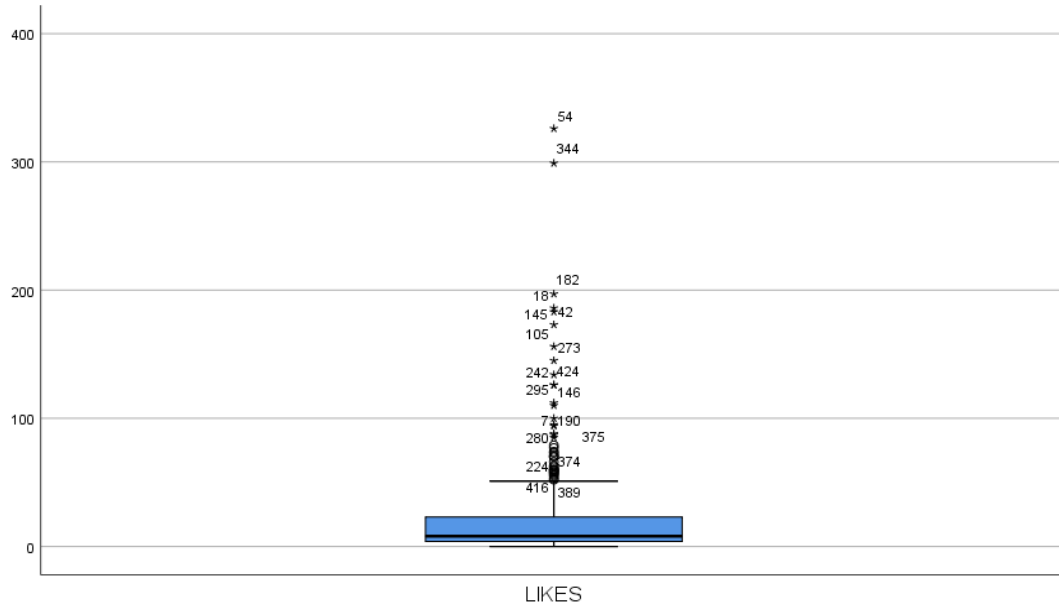


Figure B-6. Box Plot for LIKES

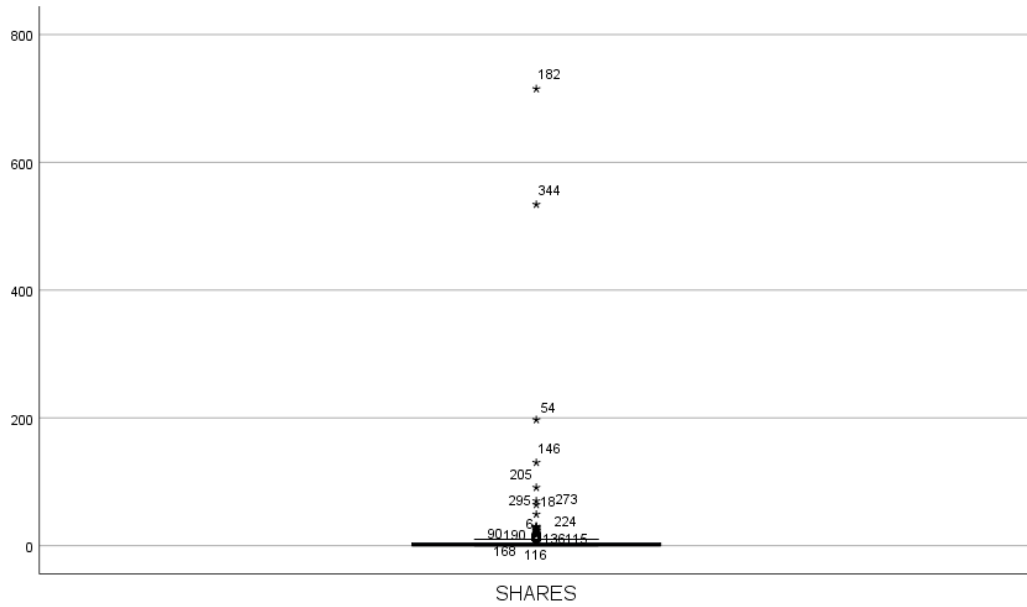


Figure B-7. Box Plot for SHARES

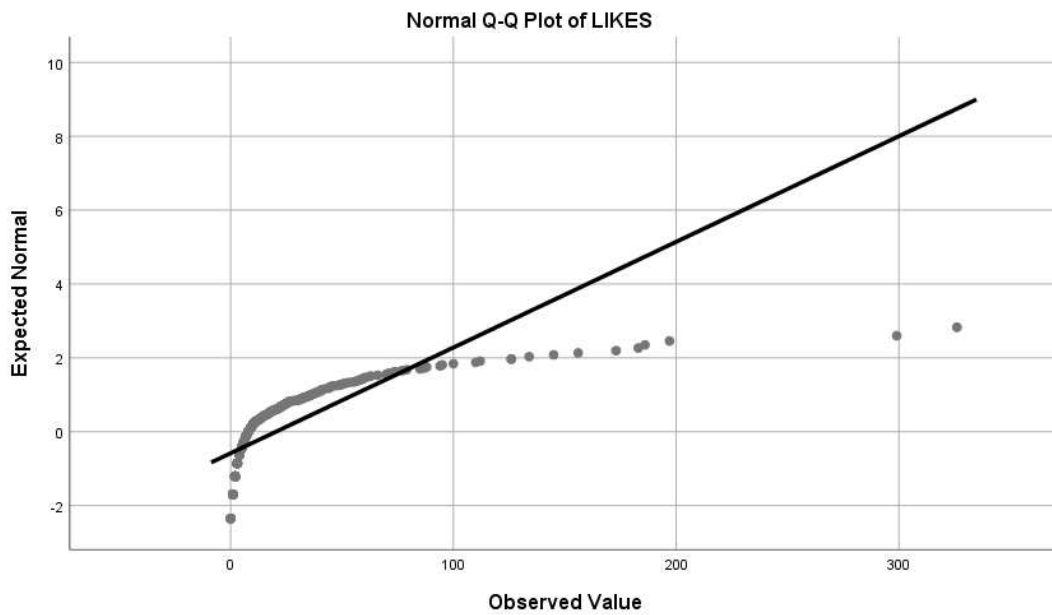


Figure B-8. Q-Q Plot for LIKES

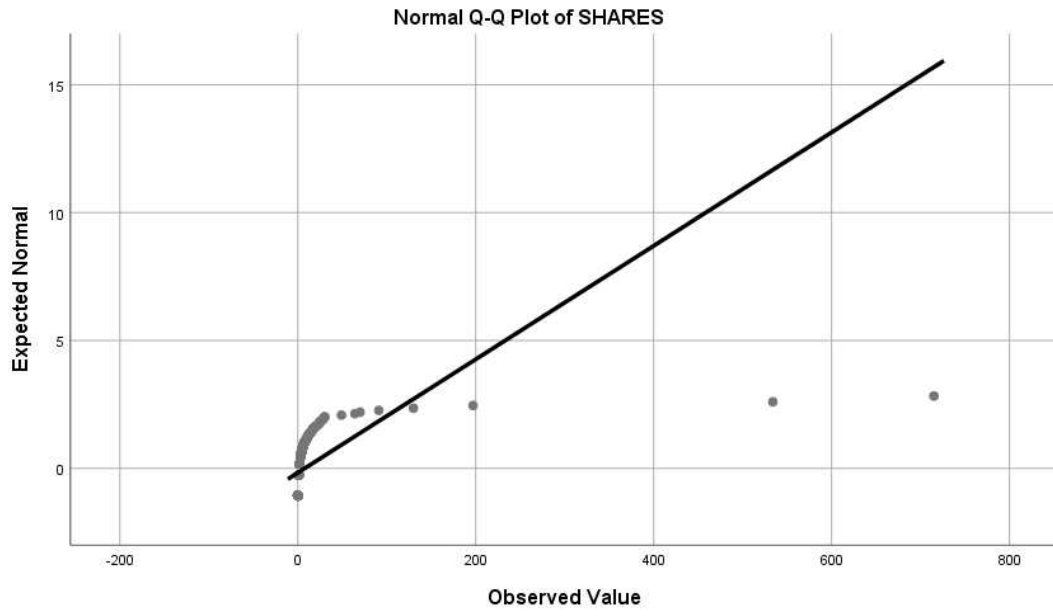


Figure B-9. Q-Q Plot for SHARES