NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

CONNECTIONS AMONG COMMUNITIES: PREVENTING RADICALIZATION AND VIOLENT EXTREMISM THROUGH SOCIAL NETWORK ANALYSIS IN THE THREAT AND HAZARD IDENTIFICATION AND RISK ASSESSMENT (THIRA) FRAMEWORK

by

Katrina Marie Woodhams

December 2016

Thesis Co-Advisors: Wayne Porter
Glen Woodbury

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** December 2016	**3. REPORT TYPE AND DATES COVERED** Master's thesis	
4. TITLE AND SUBTITLE CONNECTIONS AMONG COMMUNITIES: PREVENTING RADICALIZATION AND VIOLENT EXTREMISM THROUGH SOCIAL NETWORK ANALYSIS IN THE THREAT AND HAZARD IDENTIFICATION AND RISK ASSESSMENT (THIRA) FRAMEWORK			**5. FUNDING NUMBERS**
6. AUTHOR(S) Katrina Marie Woodhams			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			**10. SPONSORING / MONITORING AGENCY REPORT NUMBER**
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB number ____N/A____.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release. Distribution is unlimited.			**12b. DISTRIBUTION CODE**

13. ABSTRACT (maximum 200 words)

The evolution of socially connected networks of influence has created new ideological dimensions that motivate an individual to radicalize and to commit acts of violent extremism and terrorism. This thesis explored the viability of using social network analysis (SNA) as a tool in the nation's Threat and Hazard Identification Risk Assessment (THIRA) framework to determine whether factors (such as relationships and motivations) can be used to reduce the vulnerability of a community at risk of radicalization and violent extremism and to build resilience. Using literature that described core SNA principles and related fields of study, a theoretical framework was developed to illustrate how extremist ideologies and motivations are socialized within a particular network. This theoretical framework is assessed through a multi-case study analysis, examining an individual's radicalization process and programs to counter violent extremism in Australia and Scotland. This analysis ultimately suggested that incorporating the SNA methodology could be beneficial if included in the THIRA process. This thesis illustrates how a community could be provided the opportunity to mitigate against the process of radicalization by developing and targeting core capabilities that may help them build social capital and trust and to increase efficiency and availability of information sharing and social support intended to improve individual and community resilience.

14. SUBJECT TERMS social network analysis, radicalization, violent extremism, terrorism, threat and hazard identification and risk assessment, countering violent extremism, prevention, social capital, resilience			**15. NUMBER OF PAGES** 145
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UU

NSN 7540-01-280-5500 Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release. Distribution is unlimited.

CONNECTIONS AMONG COMMUNITIES: PREVENTING RADICALIZATION AND VIOLENT EXTREMISM THROUGH SOCIAL NETWORK ANALYSIS IN THE THREAT AND HAZARD IDENTIFICATION AND RISK ASSESSMENT (THIRA) FRAMEWORK

Katrina Marie Woodhams
Deputy Director, Protection and National Preparedness/Office of Preparedness Integration and Coordination, Department of Homeland Security/Federal Emergency Management Agency, Washington, DC
B.A., Hood College, 2004
M.S., University of Maryland University College, 2007

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)**

from the

**NAVAL POSTGRADUATE SCHOOL
December 2016**

Approved by: Wayne Porter
Thesis Co-Advisor

Glen Woodbury
Thesis Co-Advisor

Erik Dahl
Associate Chair for Instruction
Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

The evolution of socially connected networks of influence has created new ideological dimensions that motivate an individual to radicalize and to commit acts of violent extremism and terrorism. This thesis explored the viability of using social network analysis (SNA) as a tool in the nation's Threat and Hazard Identification Risk Assessment (THIRA) framework to determine whether factors (such as relationships and motivations) can be used to reduce the vulnerability of a community at risk of radicalization and violent extremism and to build resilience. Using literature that described core SNA principles and related fields of study, a theoretical framework was developed to illustrate how extremist ideologies and motivations are socialized within a particular network. This theoretical framework is assessed through a multi-case study analysis, examining an individual's radicalization process and programs to counter violent extremism in Australia and Scotland. This analysis ultimately suggested that incorporating the SNA methodology could be beneficial if included in the THIRA process. This thesis illustrates how a community could be provided the opportunity to mitigate against the process of radicalization by developing and targeting core capabilities that may help them build social capital and trust and to increase efficiency and availability of information sharing and social support intended to improve individual and community resilience.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

ABS	Australia's Bureau of Statistics
CFR	Code of Federal Regulations
CHIP	Children's Health Insurance Program
CICC	Criminal Intelligence Coordinating Council
CORE	Common Operational Research Environment
CUI	controlled unclassified information
CVE	countering violent extremism
DOD	Department of Defense
DOJ	Department of Justice
DTAS	Development Trust Association Scotland
DTRA	Defense Threat Reduction Agency
ESL	English as a Second Language
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
MFTC	Multidimensional Treatment Foster Care
NCISP	National Criminal Intelligence Sharing Plan
NGO	nongovernmental organization
PII	personally identifiable information
RDS	respondent-driven sampling
SAR	suspicious activity reporting
SNA	Social Network Analysis
START	Study for Terrorism and Responses to Terrorism
STRIVE	Strengthening Resilience to Violent Extremism
THIRA	Threat and Hazard Identification and Risk Assessment
USAID	United States Agency for International Development

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

Since the September 11 attacks, the United States alone has experienced a significant increase in violent extremist attacks motivated through social networks. In this environment of social complexity, we see differences in communities at risk to this threat.

This thesis takes a new approach and examines the concept of Social Network Analysis (SNA) to determine whether a community's vulnerability can be reduced through incorporating the SNA methodology into the Federal Emergency Management Agency's Threat and Hazard Identification and Risk Assessment (THIRA) process. The assertion is that 1) there is a gap in counter radicalization and violent extremism studies and policies with regard to assessing a community's vulnerability through an analysis of their social networks; 2) there should be a way to qualitatively and quantitatively measure the interpersonal relationships of violent extremists and at-risk communities by incorporating SNA in the THIRA process; and 3) that SNA can be used or acknowledged in homeland security organizations' prevention assessment tools and methods for pre-empting radicalization and violence. Therefore, these questions are studied.

This research uses a multiple case study approach to answer these questions. Using literature that describes core SNA principles and related fields of study, a theoretical framework was developed to illustrate how extremist ideologies and motivations are socialized within a particular network.

Using multi-case analysis, a theoretical framework is refined to include social network factors affecting a community's vulnerability of radicalization and violent extremism. The findings of the case studies allowed for the development of a theoretical framework illustrating how the SNA methodology can be incorporated into the THIRA process to not only mitigate against the process of radicalization, but to also build stronger social networks and a community's resilience in preventing violent extremism and terrorism.

The goal of the new assessment framework is threefold: to identify communities lacking relevant social network information that would contribute to social outreach; to enhance trust between government and communities to foster cooperation and partnerships; and to link the right expertise, skills, and resources to help at-risk communities increase the number of proficient stakeholders and fora in which community members can work safely with their government to develop targeted support strategies. This framework is intended to support a new homeland security strategy to identify and assess the vulnerability of communities through an analysis of their social networks. In doing so, a determination can be made of which actors and relationships best lend themselves to opportunities for the government to develop, deliver, and sustain efforts for preventing the root causes of extremist ideologies.

To realize the new THIRA model, support would be needed to create a unified, national countering violent extremism (CVE) framework that looks at the spread of ideology and its impacts, which is distinct from imminent threats of terrorism and its intersection with law enforcement. Because communications from violent extremists are more ubiquitous than ever before, every state and community must be prepared to address the challenge of radicalization and violent extremism. While the cases studied in this thesis provide some examples of effective programs, at least one U.S. community would need to take the lead as a pilot program in testing SNA in the THIRA process. Successful implementation of an experimental case, particularly with a state or community with prior experience in conducting a THIRA, could make the case for national expansion, and ultimately initiate an addendum to the Comprehensive Preparedness Guide 201 that outlines the four-step process for accountability of the threat and risk assessment framework. Such findings would address the need to align federal government efforts with individual cities and towns to establish a nationwide approach to CVE.

The United States has already seen that predicting radicalization is difficult, and efforts to disrupt the process are not always successful. While tactical approaches have thus far been largely effective, they usually rely on identifying a threat just before it is carried out. Because the knowledge of someone who may have already been radicalized to commit violence is inherently limited, this approach may not always be successful.

However, by developing a strategy that prevents an individual's trajectory toward radicalization while it is still in early stages of development, homeland security and intelligence officials may be more effective in reducing a community's overall vulnerability and increasing its resilience. A focus on social networks brings to light areas previously unexplored that may improve our fundamental understanding of the radicalization process and offer a road map for successful interventions in the future.

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

I have many people to thank for their support throughout the CHDS program and in the development of my thesis. I would like to first thank my gracious boss John Allen with the Federal Emergency Management Agency's Headquarters Office of Preparedness Integration and Coordination for supporting my educational goals and allowing me to feel less guilty about taking time away from work. That time away allowed me to complete the requirements of the program, but mainly, the mental sanity necessary to complete my thesis!

Hands down, this thesis would not have been possible without the support I received from my advisors, Captain Wayne Porter, and Glen Woodbury. Wayne, I will be forever grateful for your willingness to provide me with the dummies guide for SNA but, most importantly, your timely support, remarkable patience (and scrutiny!) throughout all phases of this journey. Glen, thank you for your very insightful guidance and leadership that further complemented my thesis development and your advice that kept me grounded when I needed it.

I would also like to thank my family and friends. There were so many that checked in on me throughout my time in the program. Many times they were there for me to talk me down off a ledge when I was frustrated and to cheer me on by reminding me of the remarkable opportunity I was given. Thank you to all of you. You know who you are.

Lastly, but most certainly not least, I would like to thank my cohort who continued to amaze me with their intelligence and professionalism throughout the program. I could not think of a better group to have gone through this experience with. I will never forget your challenging me to think more broadly about homeland security issues but also reminding me to make the most out of life and enjoy every moment I can. You all are truly the best classmates and now forever friends. I specifically want to thank my thesis reading group, Jeff Siems, Reed Little, and Melanie Burnham, as well as additional outside classmate expertise provided from Pat Hensley. Without your encouragement, support, and time spent providing comments throughout my own thesis

development, I would have never made it to this point of completion and quality of content. Thank you for taking the time away from your own thesis writing to help achieve my own success.

I. INTRODUCTION

One of the most notable challenges of the 21st century is the increasing rise in the threat from violent extremism. Since 2009, the United States has experienced a remarkable upsurge in the number of attacks as a result of this threat.[1] Researchers carrying out systematic studies among violent extremists have shown a shift in focus from the ideologies associated with why an individual becomes radicalized to the factors that enable how they may radicalize.[2] Specifically, an individual's social network, that is, ties to family, friends, and acquaintances, has been found to be one of the most influential factors impacting the trajectory of an individual's path to radicalization.[3]

Based on how the threat of radicalization has evolved, it is imperative that new approaches analyzing and assessing the potential threat of violent extremism evolve as well. In congressional testimony, University of Michigan professor Scott Atran stated that the United States continues to focus on the technological aspect of countering violent extremism (CVE) with "no sustained or systematic approach to field-based social understanding of our adversaries' motivation, intent, will, and dreams that drive their strategic vision, however strange those dreams and vision may seem to us."[4] This

---

[1] Lorenzo Vidino and Seamus Hughes, *Countering Violent Extremism in America* (Washington, DC: Center for Cyber & Homeland Security The George Washington University, 2015), 1.

[2] Randy Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," *Journal of Strategic Security* 4, no. 4 (2011): 14, doi: http://dx.doi.org/10.5038/1944-0472.4.4.1; John Horgan, "From Profiles to Pathways and Roots to Routes: Perspectives from Psychology on Radicalization into Terrorism, "*Annals of the American Academy of Political and Social Science* 618, no. 1 (2007): 80–94, doi: 10.1177/0002716208317539; Mohammed Hafez and Creighton Mullins, *The Radicalization Puzzle: A Theoretical Synthesis of Empirical Approaches to Homegrown Extremism* (Monterey, CA: Naval Postgraduate School, 2015), 959.

[3] Paul K. Davis and Kim Cragin, ed., *Social Science for Counterterrorism: Putting the Pieces Together* (Santa Monica, CA: RAND, 2009), 311; Scott Atran, *Pathways to and from Violent Extremism The Case for Science-based Field Research: Hearing before the Senate Armed Services Subcommittee on Emerging Threats & Capabilities* (March 10, 2010) (statement of Scott Atran, Director of Research, ARTIS Research and Risk Modeling), 3; Sean F. Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences* (Cambridge: Cambridge University Press, 2012), 27; Randy Borum, "Assessing Risk for Terrorism Involvement," *American Psychological Association* 2, no. 2 (2015): 63–87, doi: http://dx.doi.org/10.1037/tam0000043; Martin Bouchard, *Social Networks, Terrorism, and Counterterrorism* (New York: Routledge, Taylor and Francis Group, 2015), 78.

[4] Atran, *Pathways to and from Violent Extremism The Case for Science-Based Field Research: Hearing before the Senate Armed Services Subcommittee on Emerging Threats & Capabilities,* 4.

statement provides the opening for exploring Social Network Analysis (SNA) to assess and identify communities at risk and to enhance their resiliency that this thesis offers.

In this thesis, I explored whether SNA can help homeland security professionals prevent or counter violent extremism by better understanding the impact of social networks on an individual's or a community's path to radicalization. Unlike traditional measures, SNA extends beyond assessing personal attributes to evaluating and measuring" the behavior of actors (whether individuals, groups, or organizations) affected by their ties to others and the networks in which they are embedded."[5] By recasting radicalization as a susceptibility or vulnerability primarily enabled by those in a person's social network, I sought to determine whether any signals or warning signs preceding radicalization may be used by policymakers in homeland security to anticipate and mitigate violent extremism across communities in America.

A. PROBLEM STATEMENT

Researchers who have examined cases of those who "join the jihad" have found that 90% of those individuals who do so are primarily influenced by their ties with friends and kin.[6] In the evaluation of domestic counter violent extremism strategies, metrics to determine cause and effect beyond correlation of social ties to radicalization and violence have yet to be clearly determined.[7] Meanwhile, the United States and nations abroad have experienced a rise in terrorist attacks over the last few years, compounding the dangers people face from individuals who resort to violence based upon ideologies socialized within a particular network. After the attacks on September 11, 2001, Gallup and Pew surveys indicated that likely 7% of the world's Muslim communities, nearly 100 million people, sympathized with jihadi aspirations.[8] This

[5] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 5.

[6] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

[7] National Consortium for the Study of Terrorism and Responses to Terrorism (START), *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs: Report to the Office of University Programs, Science and Technology Directorate, U.S. Department of Homeland Security* (College Park, MD: A Department of Homeland Security Science and Technology Center of Excellence, 2015), 2.

[8] Atran, *Pathways to and from Violent Extremism the Case for Science-Based Field Research: Hearing before the Senate Armed Services Subcommittee on Emerging Threats & Capabilities*, 3.

surprising number of sympathizers has created a much higher probability of terrorist activity because of increasing numbers of those susceptible to recruitment to jihadi movements by those seeking to influence them through ties with family and close friends.[9]

The purpose of narratives for recruitment to violent Islamist movements has been to exploit a multitude of factors. Socioeconomic deprivation, political grievances, and religious beliefs have been identified as motivators influencing individuals on the pathway to radicalization.[10] Anti-Western Salafist interpretations of Islam and calls for jihad, anti-Semitism, religious extremism, and anti-Western rhetoric have been common themes in narratives that resonate within some populations of Muslims.[11] Conditions in areas of marginalized communities, such as lack of trust in social networks, weak social support, and the social structure of Diaspora populations have also created vulnerabilities.[12] Consequently, an environment conducive to radicalization can be facilitated and promulgated through connections in an individual's own social networks, whether through face-to-face or virtual contact.

Unlike many countries in the developing world, where people are familiar with the ongoing threat of terrorism, those involved in programs for countering domestic violent extremism in America have struggled to develop a framework that can adequately assess the risk of violent extremist activity.[13] In *Leaderless Jihad*, terrorism expert Marc Sageman argued that an optimal approach to understanding terrorism and violent extremism is to focus on the dynamics of social networks and how these networks

---

[9] Atran, *Pathways to and from Violent Extremism The Case for Science-Based Field Research: Hearing before the Senate Armed Services Subcommittee on Emerging Threats & Capabilities*, 3.

[10] Anna Simons, *21st Century Cultures of War: Advantage Them* (Washington, DC: Foreign Policy Research Institute, 2013), 11–15.

[11] Azeem Ibrahim, *Tackling Muslim Radicalization: Lessons from Scotland* (Washington, DC: Institute for Social Policy & Understanding, 2010), 1, http://www.ispu.org/pdfs/ispu%20-%20radicalization%20report.pdf.

[12] University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism, *Community-Level Indicators of Radicalization: A Data and Methods Task Force, Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security* (College Park, MD: University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism, 2010), 7.

[13] Vidino and Hughes, *Countering Violent Extremism in America*, 10.

influence the behavior of people who become terrorists.[14] Martin Bouchard's *Social Networks, Terrorism, and Counterterrorism* also asserted that an understanding of a person's social ties are most important when at key moments changes in relationships may lead to reversing their decision to support violent extremist beliefs.[15] To achieve such understanding, it is necessary to research, analyze, and draw conclusions as to how the theory of social networks affects the critical pathways to radicalization and the challenges faced by the relationship connections within an individual's and community's social and terrorism prevention support network.

The study of social networks, much like many general concepts that describe the sociopsychology of human behavior, has developed and evolved over time into the computational social science field of social network analysis. SNA studies how humans organize through social influences and provides a methodology to measure such organization.[16] Based on the research in this thesis, however, a gap exists in the study of SNA applications to anticipating and radicalization and violent extremism.

The development of a method to recognize and address early signs of radicalization warrants further research into the application of SNA and how it can be used to reduce an individual's and a community's vulnerability to violent extremist ideologies and to explore support systems that offset the threat they pose. By taking this approach, it may be possible to better anticipate and mitigate recruitment and radicalization that propagates through the ties of extremist networks.[17] In this thesis, I have addressed the gap by examining the potential to integrate SNA methodology into the nation's Threat and Hazard Identification and Risk Assessment (THIRA) framework for assessing a community's vulnerability to violent extremism.

---

[14] Marc Sageman, *Leaderless Jihad: Terror Networks in the 21st Century* (Philadelphia: University of Pennsylvania Press, 2008), 137.

[15] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 78.

[16] Stanley Wasserman and Katherine Faust, *Social Network Analysis: Methods and Applications* (New York: Cambridge University Press, 1999), 4; John Scott and Peter J. Carrington, *The SAGE Handbook of Social Network Analysis* (London: SAGE, 2011), 3.

[17] Ashley Aran et al., "Defining a Strategic Campaign for Working with Partners to Counter and Delegitimize Violent Extremism Workshop: A Strategic Multilayer Assessment Project," paper presented at workshop for the U.S. Department of State RAND Corporation JS/J-3/DDGO STRATCOM/GISC OSD/DDRE/RRTO, Washington, DC, May 19–20, 2010.

B. RESEARCH QUESTION

The primary question I will seek to answer in this thesis is as follows: How can SNA reduce the vulnerability of a community at risk from radicalization and violent extremism if used within the Federal Emergency Management Agency's (FEMA) THIRA process?

Other questions include the following:

- How can SNA be incorporated into the THIRA process to help prevent radicalization and violent extremism?
- In what ways do current homeland security organizations acknowledge or use SNA in their prevention assessment tools and methods?

In this thesis, a theoretical framework was developed to illustrate how the relational characteristics of violent extremists in social networks can be used in the framework of the THIRA process when analyzing radicalization. The key question in this research focused on determining whether the factors (such as relationships and motivations) that contribute to the radicalization of an individual, as revealed by analyzing their social networks, can be used to determine an individual or a community's vulnerability for preempting radicalization and violence.

C. SIGNIFICANCE OF THE RESEARCH

An emerging problem in the United States is the threat posed by individuals either inspired or directed by terrorists at home and abroad to commit acts of violence, often accomplished through the strong and weak ties of an individual's social network. Such was the case, for instance, in the ideological development and radicalization of Omar Hammami, whose trajectory of recruitment and radicalization led him from the small Alabama city of Daphne to the battlefields of Somalia, where he joined the ranks of al-Shabab.[18] Analyzing social networks, whether evident or conceptual, can play an integral role in efforts to prevent, deradicalize, or disengage persons from acts of jihad or general

[18] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 65.

violence.[19] Although an increase has occurred in the use of social network theory and methods as an application for implementing counterterrorism measures,[20] methods to assess the risk of radicalization by leveraging SNA appear to be lacking.[21]

Predicting radicalization is difficult because of the absence of clear behavioral patterns or pathways, resulting in violent extremism.[22] The presence of extremist beliefs alone may or may not be evidence enough to warrant an intervention. In some cases, an individual may not choose a path to violence until the last days or even hours of an impending attack, thereby requiring additional resources to disrupt or foil terrorist plans already in place.[23] Preemptively incorporating an assessment of social networks of interest in a community may help determine characteristics of both vulnerability and resilience to radicalization to address susceptible individuals in that community before they radicalize.

SNA techniques and tools are useful to identify the actors and relationships best positioned to counter or prevent the spread of violent extremist ideologies.[24] This thesis was intended to demonstrate that SNA can help policymakers in homeland security develop and sustain targeted interventions and engagement strategies that will dramatically reduce the risk for individuals and communities vulnerable to violent extremism. Finally, in this thesis I propose a SNA framework that could be incorporated into FEMA's THIRA process to enhance the resilience of individuals and communities at risk of radicalization and violent extremism.

---

[19] Daniel Aldrich, "First Steps towards Hearts and Minds? USAID's Countering Violent Extremism Policies in Africa," *Global Policy Research Institute* (June 2012): 8, doi: http://docs.lib.purdue.edu/gpri docs/8; Davis and Cragin, *Social Science for Counterterrorism*, 307.

[20] Vladis E. Krebs, "Uncloaking Terrorist Networks," *First Monday* 7, no. 4 (April 1, 2002), http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/941/; Marc Sageman, *Understanding Terror Networks* (Philadelphia: University of Pennsylvania Press, 2004), 138; Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences.*

[21] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 65.

[22] Hafez and Mullins, *The Radicalization Puzzle: A Theoretical Synthesis of Empirical Approaches to Homegrown Extremism*, 959.

[23] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 65.

[24] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 33.

II. LITERATURE REVIEW

The evolving focus on the social ties and dynamics that lead individuals to become terrorists warrants a thorough evaluation of current literature on the process of radicalization. Researchers have attributed radicalization to the emergence of relationships within social networks influencing marginalized youth and others who reside in communities potentially vulnerable to the ideologies of violent extremists.[25] To answer the questions posed in this thesis, examining and synthesizing concepts and data from several distinct areas of research are necessary.

This literature review is divided into the following categories: SNA, radicalization and violent extremism, assessing risk factors, countering violent extremism, a social network approach to preventing violent extremism. The literature on SNA explores its origins; from the time it was created to its modern use in several distinct fields, and reviews some of the common tenets and concepts that network analysts often use. The literature on radicalization and violent extremism discusses the various descriptions of radicalization and violent extremism and reasons why the evolving phenomena are yet to be consistently understood. Assessing risk factors explores the individual, community, and social network risk factors that have been recognized as indicators of individuals and communities at risk of radicalization and violent extremism, and how those indicators can be used to inform assessments of radicalized violence. The literature in countering violent extremism reviews some of the policies, programming, and processes in efforts abroad and in the United States for countering violent extremism; discusses the impact those efforts can have on communities; and, addresses the gaps in U.S. federal CVE policies and programs. Lastly, to make the connection between the literature on SNA and radicalization and violent extremism prevention, the last section discusses the important role of social networks in preventing an individual from radicalizing and how that can be facilitated through the development of strategies that empower bottom-up decision making and by strengthening social networks in communities to build resilience.

[25] Atran, *Pathways to and from Violent Extremism The Case for Science-Based Field Research: Hearing before the Senate Armed Services Subcommittee on Emerging Threats & Capabilities*, 3.

A. SOCIAL NETWORK ANALYSIS

The notion that people are ensconced in dense webs of social connections is one of the most compelling ideas asserted by social scientists.[26] This theoretical assertion dates back to the early 1900s, when social scientists investigated the phenomena surrounding social order. The idea of integrating formal network theory and the study of human relationships emerged into what is known today as social network analysis.

1. Origins of Social Network Analysis

The basic theoretical concepts of SNA and its application have evolved through several stages of development. Georg Simmel is considered one of the intellectual forebearers of SNA for his work in examining the gathering of secret societies. The social organization of the societies led to his discovery of patterns inhuman interactions that were used in some of his later studies in which he observed social complexity and behavior, particularly the rise in individualism.[27] His thinking led to the study of networks in social systems, which later influenced the development of sociometry in the 1930s.[28] See Figure 1.

[26] Stephen Borgatti et al., "Network Analysis in the Social Sciences," *Science* 323, no. 5916 (February 2009): 892–95, doi: 10.1126/science.1165821.

[27] Georg Simmel, "The Sociology of Secrecy and of Secret Societies," *American Journal of Sociology* 11 (1906): 441–498.

[28] With the exploration of social network theory, the early formal development of SNA traces back to sociometric theorists, notably Jacob Moreno, known as one of the godfathers of SNA. As a result of many experiments, Moreno discovered organized patterns in human relationships responsible for shaping social influences and ideas, resulting in the way people see and interpret the world. His work led to the development of the sociogram, a tool to map and depict the interpersonal structure of small groups; it is used universally in much of the contemporary literature studied by social scientists. Jacob Moreno, *Who Shall Survive? A New Approach to the Problem of Human Interrelations* (Washington, DC: Nervous and Mental Disease Publishing Co., 1934).

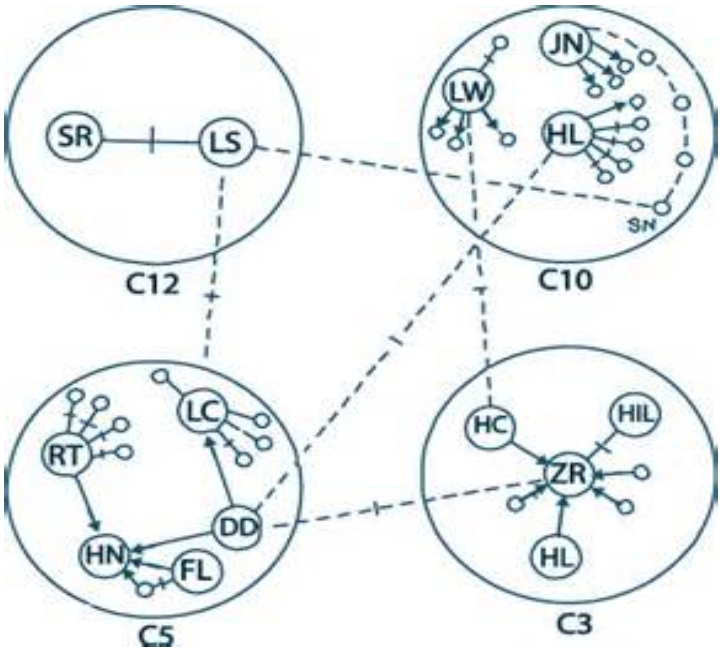

Figure 1. The Beginning of Sociometry: Jacob Moreno's First Sociogram, Mapping the Social Networks of Runaway Girls.[29]

Building on early social network theories, social psychologists experimented with the design of communication structures to study group processes. They based their studies on the idea that an organization's structure influenced problem-solving decisions for groups, as well as the performance of individuals.[30] Many social anthropologists employed network theory in research studying the phenomena of social interactions.[31] In 1957, John Barnes configured a network from the social structures of communities in a Norwegian Island parish.[32] The experiment differed from previous studies in that the members of a particular society referenced personal relationships, such as those based on class.[33] Barnes discovered that sharing similar cultural community norms resulted in interactions among parish members in an organized manner. As a result, Barnes coined

[29] Source: Moreno, *Who Shall Survive? A New Approach to the Problem of Human Interrelations.*

[30] Linton Freeman, D. Roeder, and R. Mulholland, "Centrality in Social Networks: II. Experimental Results," *Social Networks*, 2 (1980): 119–141.

[31] Wasserman and Faust, *Social Network Analysis: Methods and Applications*, 56.

[32] John A. Barnes, "Class and Committees in a Norwegian Island Parish," *Human Relations* 7, no. 1 (February 1954): 39–58, doi: 10.1177/001872675400700102.

[33] Ibid.

the term *social network*, defining it as "a system of ties between pairs of persons who regard each other as approximate social equals."[34]

Sociological analysis from the 1960 to 1970s involved approaches focusing on the attributes of an individual (e.g., gender, race, education) often aided by statistical analysis of survey data.[35] Sociologist Harrison White believed the focus on individual attributes was a mistake, pioneering numerous case studies that led to a focus on the wide-ranging *patterns* of social interaction and the underlying contexts in which they were embedded (e.g., residence, place of employment, and community organization).[36]

Modern use of SNA serves as a methodology for empirically studying how and why humans form networks of relationships and for measuring the structures of such networks and their behavior.[37] "Designed to explore and empirically capture the patterns of ties between people, groups of people, organizations and countries,"[38] SNA provides the capability to detect and analyze enduring patterns of social ties between actors; it differs from other analytical methods, for example, link analysis, which focuses on analyzing relational patterns of diverse objects. The basic difference is that SNA offers an analyst the means to quantify and measure relationships among like-actors in a network, whereas link analysis allows only a comparison of the ties between different types of objects.[39]

The focus of SNA on social relations and the patterns that emerge from them has resonated in a variety of social science and behavioral science disciplines. Its applications have been the topic of a number of professional conferences, as well as academic and professional journals in fields, such as management consulting, homeland security, and

---

[34] Barnes, "Class and Committees in a Norwegian Island Parish," 39–58.

[35] Christina Prell, *Social Network Analysis: History, Theory & Methodology* (London: SAGE Publications Ltd., 2011), 8.

[36] Harrison C. White, "Preface: "Catnets" Forty Years Later," *Sociologica* (May 2008): 0–0, doi: 10.2383/26575.

[37] Prell, *Social Network Analysis: History, Theory & Methodology*, 8.

[38] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 27.

[39] Ibid., 16.

public health.[40] In addition, the Internet and social media sites have led to increasing recognition among commercial interests and social scientists of the importance and influence of virtual social networks.[41] Modern theorists have described complex social networks as interactions among individuals or groups, social or religious gatherings, events, online communities, and other connections.[42] Interactions within and between networks can be motivated by social status, employment position, friendship, love, money, power, ideas, even disease.[43] Religious groups, community coalitions, tribal and familial units, and criminal organizations are all examples of social networks.[44]

Violent extremist are members of diverse social networks. They come together through ties of ideologies, kinship, friendship, disenfranchisement, personal grievances, religious views and other motivations.[45] SNA provides a methodology for the systemic analysis of the social ties that develop between violent extremists and those susceptible to recruitment.

2. Social Network Analysis Building-Block Concepts

Principles associated with SNA are based on commonly accepted concepts of SNA identified in several studies. Although applications of SNA differ, they are generally described by the social context in which actors and ties are organized in network structures.[46] Further, social networks function differently depending on their configuration, so it is important to identify and understand common SNA measures and

---

[40] Borgatti et al., "Network Analysis in the Social Sciences."

[41] Charles Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings* (New York: Oxford University Press, 2012). 3.

[42] Humera Khan, "Why Countering Extremism Fails: Washington's Top-Down Approach to Prevention Is Flawed," *Foreign Affairs*, modified February 18, 2015, https://www.foreignaffairs.com/articles/united-states/2015-02-18/why-countering-extremism-fails.

[43] Kadushin, *Understanding Social Networks; Theories, Concepts, and Findings*, 4.

[44] Steve Ressler, "Social Network Analysis as an Approach to Combat Terrorism: Past, Present, and Future Research, *Homeland Security Affairs II*, no. 2 (July 2, 2006): 2, https://www.hsaj.org/articles/171.

[45] Randy Borum, "Radicalization into Violent Extremism Part II: A Review of Conceptual Models and Empirical Research," *Journal of Strategic Security* 4, no. 4 (2011): 38, doi: http://dx.doi.org/10.5038/1944-0472.4.4.2.

[46] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 8.

metrics.[47] By examining the interaction between nodes and social ranking, specific metrics can be used to enhance an understanding through network analysis.

a. Actors or Nodes

The term *actors*, or *node*s, refers to distinct individuals, groups, organizations, events, and activities involved in social relations.[48] The type of node to node transmission is perhaps the most common means for interpreting the effects of social networks.[49] Thus, within a social network, actors (nodes) are linked together either directly or indirectly through a connection shared with another actor resulting in the behavior of a network. Conceptually, the purpose of SNA is to identify the positions of an actor (or node) in a network, ties (or links) between actors, and the manner in which an actor's behavior is influenced by the larger social network and vice versa.[50] See Figure 2.

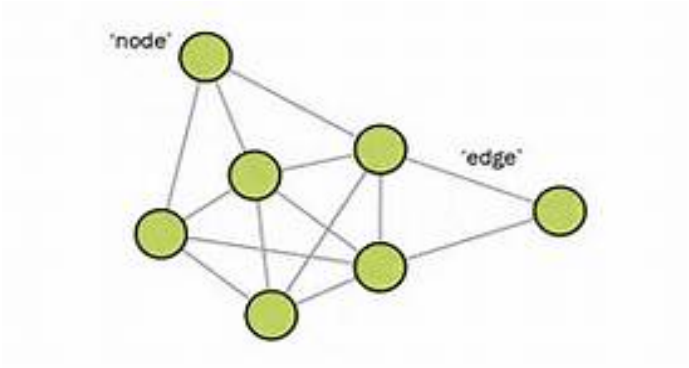

Figure 2. A Network Representation of an Actor (Node).[51]

[47] Ela Oxkan-Canbolat and Aydin Beraha, "Configuration and innovation related network topology," *Journal of Innovation & Knowledge* 2, no. 1 (2016): 91–98, doi: http://dx.doi.org/10.1016/j.jik.2016.01.013.

[48] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 8.

[49] Ronald Burt, "The Network Structure of Social Capital," *Organizational Behavior* 22 (2000): 350.

[50] Johnson, "Social Network Analysis: A Systematic Approach for Investigating."

[51] Source: "What is Network Analysis," accessed October 30, 2016, http://social-physics.net/what-is-network-analysis/.

b. Ties

As described above, actors are connected within a network by ties. Wasserman and Faust offered the following examples of ties:

- ties of sentiment (friendship, liking, respect),
- resource ties (business transactions, financial flows),
- ties of association or affiliation (members of the same church or club),
- behavioral ties (communication ties),
- ties based on geographic movement (migration, physical mobility),
- ties based on status movement (social mobility),
- formal ties (organizational hierarchy), and
- biological ties (kinship).[52]

The type of tie is critical to understanding how social networks are affected. See Figure 3. Mark Granovetter's 1973 groundbreaking study entitled, "The Strength of Weak Ties" identified both strong and weak ties.[53] He explained the difference between strong and weak ties as follows:

> Our acquaintances ("weak ties") are less likely to be socially involved with one another than are our close friends ("strong ties"). Thus the set of people made up of any individual and his or her acquaintances will constitute a low-density network (one in which many of the possible ties are absent), whereas the set consisting of the same individual and his or her close friends will be densely knit (many of the possible lines present).[54]

[52] Wasserman and Faust, *Social Network Analysis: Methods and Application*, 8.

[53] Mark Granovetter, "The Strength of Weak Ties," *American Journal of Sociology* 78, no. 6 (1973): 1360–1380.

[54] Mark Granovetter, "The Strength of Weak Ties: A Network Theory Revisited," *Sociological Theory* 1 (1983): 201–233.

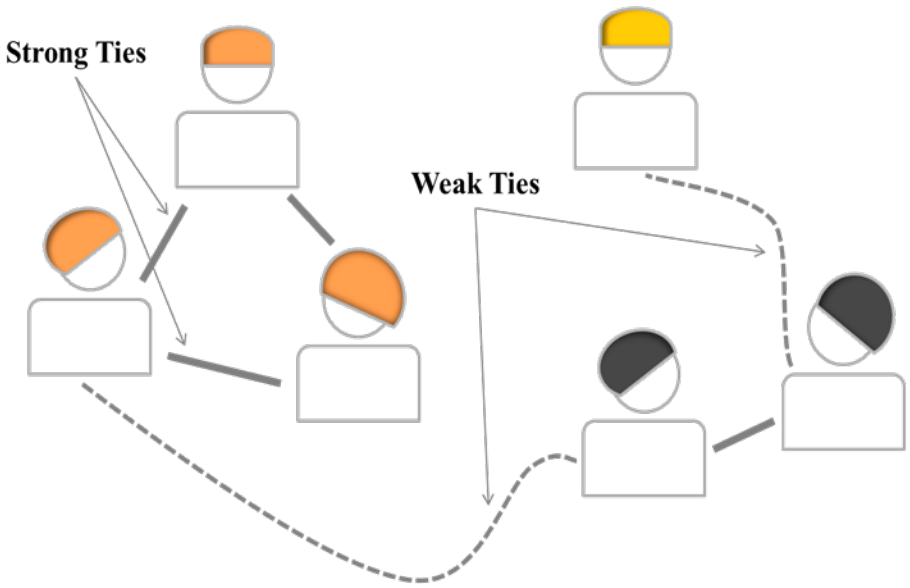

Figure 3. Strong Ties and Weak Ties within a Group.

Granovetter emphasized the power of weak ties, making the argument that weak ties are "indispensable to individuals' opportunities and to their integration into communities; strong ties, breeding local cohesion, lead to overall fragmentation."[55] He furthermore stated, "The importance of weak ties is asserted to be that they are disproportionately likely to be bridges as compared to strong ties. . . . This does not preclude the possibility that most weak ties have no such function."[56]

c. SNA Measures and Metrics

SNA employs specific relational measures and metrics for the study of the structures of networks.[57] Thus, SNA helps determine the level of an individual's or an organization's connectedness within, and the cohesive of, defined networks.[58] Cohesion

[55] Granovetter, "The Strength of Weak Ties," 1360–1380.

[56] Granovetter, "The Strength of Weak Ties: A Network Theory Revisited," 201–233.

[57] Ibid.

[58] Alireza Abbasi and Jörn Altmann, "A Social Network System for Analyzing Publication Activities of Researchers," in *On Collective Intelligence*, ed. Theo J. Bastiaens, Ulrike Baumöl, and Bernd J. Krämer, vol. 76 (Berlin, Heidelberg: Springer Berlin Heidelberg, 2010), 49–61, http://link.springer.com/10.1007/978-3-642-14481-3_5.

is a property of network connectedness that helps to determine the strength of relationships among actors and the resulting formation of clusters, cohesive subgroups, connected by strong ties in a network.[59]

SNA involves both qualitative and quantitative methodologies. Using those methodologies, it first determines network membership and the nature of relationships that connect members, and then measures structural and behavioral aspects of the network. Some common SNA measurements and metrics were referenced in this research to construct an SNA framework for analyzing the vulnerability and susceptibility of violent extremism in at-risk communities; they are noted below.

d. Density

Density is a structural element of social networks. Density is based upon "the number of *actual* direct connections [of individual members] divided by the number of *possible* direct connections in a network"[60] and is used to determine the interconnectedness of a network.[61] Density is a critical measure used in SNA to evaluate the sense of trust in a society, conditions of cohesive communities, social support, and high visibility, and the social capital network members share.[62] Through measuring density, the analyst can evaluate the presence or absence of ties in an effort to understand the level of diffusion of information, ideas, influence, and other materials and resources throughout a network.[63] The density of a network typically grows over time and can reveal the cohesiveness of a group or community, through either the existence of highly connected actors or areas that are disparately linked, as interactions between actors or clusters of actors increase.[64]

---

[59] Peter Carrington, John Scott, and Stanley Wasserman, *Models and Methods in Social Network Analysis* (New York: Cambridge University Press).

[60] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 27–32.

[61] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 11.

[62] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 29.

[63] Ibid.

[64] Mark Granovetter, "Economic Action and Social Structure: The Problem of Embeddedness," *The American Journal of Sociology* 91, no. 3 (1985): 481–510.

When comparing density within or to other networks, it is important to take into account the overall size of the network. Given the human limitation on the number of ties available for connection, the level of density decreases as the number of the actors within a network grows.[65] Understanding whether relationships are tied directly or indirectly and the number of actors between connections can help to establish the level of network connectivity between actors.[66]

e. Path (and Path Distance)

Examining the direct and indirect connections between two nodes in a network helps to determine the *path*, or walk (i.e., a sequence of ties or links) between two connected vertices or nodes of a network.[67] The path measurement is used to trace the route an actor has traveled to reach another member of the network.[68] In terms of diffusion, the links of a path might also expose redundant or inefficient flows of information or resources based on whether or not two actors have reciprocal relationships.[69] Actors that can "reach their counterparts following paths of a particular direction"[70] characterize strongly structured networks as opposed to weak networks from which "actors can be reached through established paths without the consideration of direction."[71] Understanding the directional nature of ties is important because it can impact the distance between connections. The path distance is defined as the number of steps needed to connect one node to another.[72] The smallest number of steps between two nodes is referred to as the geodesic distance between them.[73] A network commonly

---

65 Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 29.

66 Tetiana Kostiuchenko, "Paths/Walks/Cycles," in *Encyclopedia of Social Networks*, ed. George A. Barnet (London: SAGE, 2011), 695.

67 Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 11.

68 Kostiuchenko, "Paths/Walks/Cycles," 695.

69 Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 32.

70 Kostiuchenko, "Paths/Walks/Cycles," 695.

71 Michael Baker, "Social Networks and High Healthcare Utilization: Building Resilience through Analysis" (master's thesis, Naval Postgraduate School, 2016), 31.

72 Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 11.

73 Ibid.

comprises numerous paths of varying lengths, with some shorter or longer than others;[74] however, the path may be geodesic based on whether relationships are reciprocated or not (directed or undirected networks). Thus, measuring the longest geodesic distance can reveal the overall size of the network, as well as provide a way to effectively analyze the network as a whole.

f. Structural Holes

The characteristic known as a structural hole represents a *lack* of connections.[75] Ronald Burt explains, "The holes in social structure or, more simply, structural holes, are disconnections or non-equivalencies between players in the arena."[76] Network members that only link to one another through a single node or "ego" indicate a structural hole is present.[77] Depending on the ego's ability to manipulate/navigate structural holes depends in part on her/his base of support.[78] If the ego node has only established a limited number of connections, it may have limited support to maximize the quantity and quality of resources it is able to obtain from the network.[79] The presence of structural holes in a network constrains a person's ability to gain access to or exchange information and resources thereby limiting their ability to strengthen his or her social capital across the network.[80] As such, structural holes prevent an individual or group of individuals from gaining opportunities to exchange information and inhibit those opportunities from reaching disconnected network clusters. See Figure 4.

---

[74] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 11.

[75] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 29.

[76] Ronald Burt, *Structural Holes: The Social Structure of Competition* (Cambridge, MA: Harvard University Press, 1992), 2.

[77] Ibid.

[78] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 58.

[79] Stephen P. Borgatti and Virginie Lopez-Kidwell, "Network Theory," in *The SAGE Handbook of Social Network Analysis*, ed. John Scott and Peter J. Carrington (London: SAGE, 2011), 42.

[80] Burt, *Structural Holes: The Social Structure of Competition*, 5.

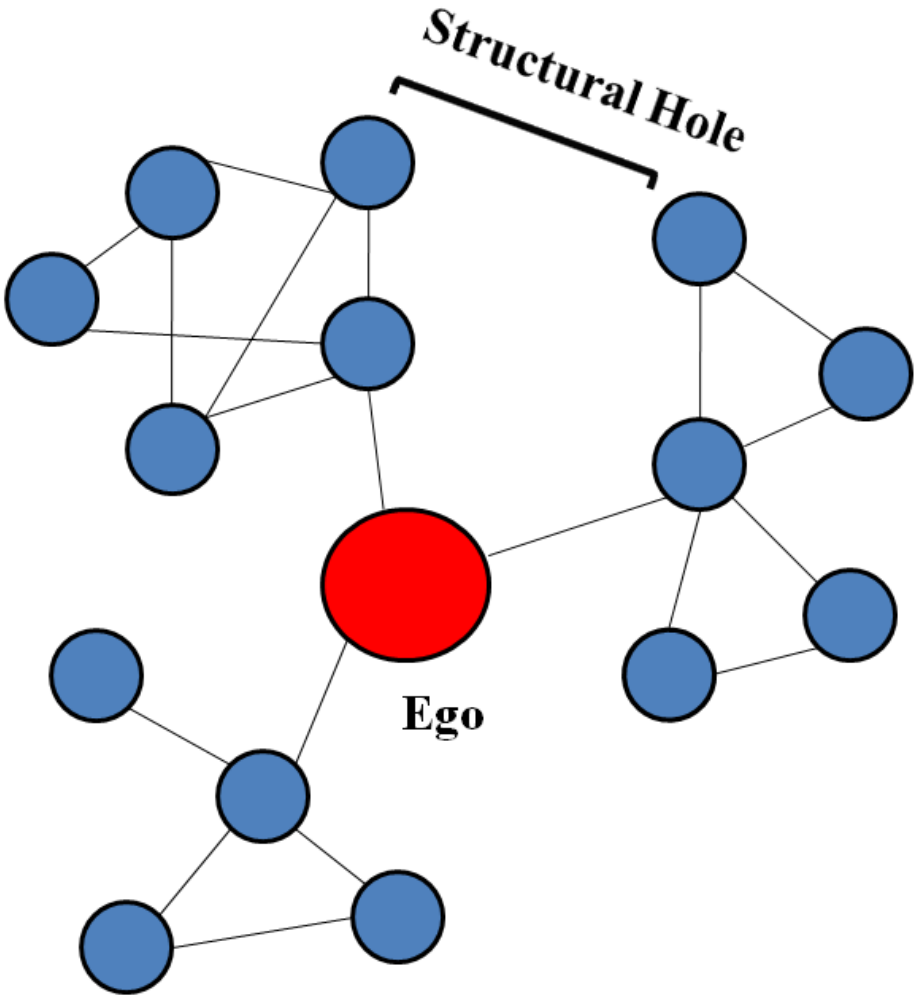

Figure 4. Example of a Structural Hole.

g. Centrality or "Popularity"

Centrality, or "popularity," is a measure of network topology used to determine which nodes are most connected or central to the network.[81] Because of their position, nodes more central in social networks benefit from easier access to resources and an increased efficiency to disseminate information to other nodes.[82] Hence, the greater centrality, the greater influence anode or actor has among groups, serving as a powerful

[81] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 31.

[82] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 12.

relay point of information to extend an actor's influence beyond his or her original network.

Everton provides the examples of commonly used measures of centrality below and seen in Figure 5.

- *Degree centrality* [denotes] the count of the number of actor's ties.
- *Closeness centrality* measures (based on path distance) how close, on average, each actor is to all other actors in a network; some limitations [may affect] traditional closeness measure, but alternative measures are available.
- *Betweenness centrality* measures the extent to which each actor lies on the shortest path to all other actors in a network.
- *Eigenvector centrality* [denotes the assumption] that ties to highly central actors are more important than ties to peripheral actors, so it weights an actor's summed ties to other actors by their centrality scores.[83]

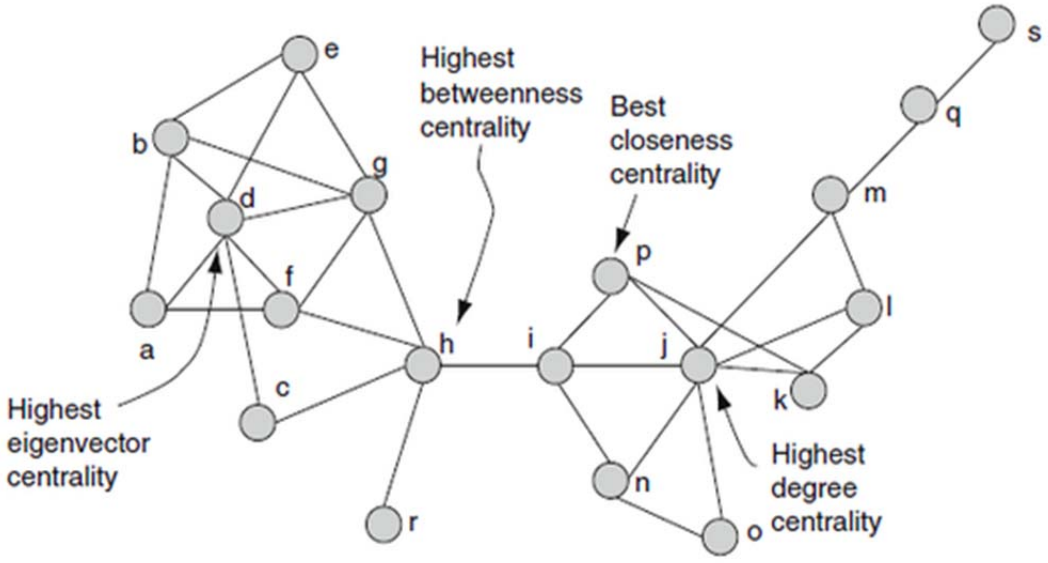

Figure 5. Example of Centrality Measures in SNA.[84]

[83] Ibid., 12–13.

[84] Alberto Manuel, "Social Network Analysis: Part Two," End to End BPM, March 25, 2013, https://ultrabpm.wordpress.com/2013/03/25/social-network-analysis-part-two/.

h. Multiplexity

Multiplexity contributes to the identification of actors with high centrality for members of the same group with more than one kind of relationship connecting them.[85] Related to the concept of homophily in which people with like characteristics are connected and tend to have an effect on one another, multiplexity is exemplified by situations where two actors have an organizational relationship based upon employment roles (e.g., a supervisor and the supervisor's assistant) but who are also friends.[86] Merton described role sets as, "the set of relationships that ensue because one occupies a given role," what he called status.[87] For example, a school teacher frequently engages with students, parents, school administrators, and the Board of Education. The relationships of this role vary based upon the status of a teacher.[88]

Content multiplexity is a term that refers to the various flows that can occur between two pairs of nodes,[89] for example, giving advice, making friends, or exchanging tasks for work. Content multiplexity allows for a number of types of ideas to flow through a network that present options for resolving a problem.[90] By examining multiplexity and the actors with high centrality, network analysts can observe the consequences of multiple flows of information content and determine how nodes connect or interact in a variety of contexts.[91]

---

[85] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 35.

[86] Jeanne Hurlbert, John J. Beggs, and Valerie Haines, "Social Networks and Social Capital in Extreme Environments," in *Social Capital Theory and Research*, ed. N. Lin, K. S. Cook, and R. S. Burt (New York: Aldine de Gruyter, 2000), 209–232.

[87] Robert Merton, "The Matthew Effect in Science," *Social Theory and Social Structure* (Glencoe, IL: Free Press, 1968), 56–63.

[88] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 36.

[89] Hurlbert, Beggs, and Haines, "Social Networks and Social Capital in Extreme Environments," 209–232

[90] Rob Cross, Stephen P. Borgatti, and Andrew Parker, "Beyond Answers: Dimensions of the Advice Network," *Social Networks* 23, no. 3 (2001): 215–235.

[91] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 36.

i. Cohesive Subgroups or Clustering

The identification of dense clusters of actors is a key function of SNA. Wasserman and Faust described a cluster as consisting of actors "among whom there are relatively strong, direct, intense, and/or positive ties."[92] Researchers studying social networks have often referred to clusters of actors as *cohesive subgroups* or *subnetworks*, generally congregating around social interaction of actors sharing similar norms, identities, and collective behavior.[93] Social network analysts examine patterns of ties to identify cohesive subgroups within social networks.[94]

j. Roles and Positions

The term *role* or *position* is used to identify the types of relationships that connect nodes in the wider network.[95] Whether tied directly or indirectly, the roles actors play in a network explain the related behavior or social processes that result.[96] For example, father, mother, aunt, or uncle are typical kinship names associated with specific roles in the social system and indicate expected relations with other roles. Understanding an actor's role is important in other social network measures, including centrality, clustering, and betweenness of a network.[97] Social network analysts often study connections among particular actors to detect structurally equivalent positions.[98]

k. SNA in Government

In recent years, law enforcement agencies and the U.S. military have increased their use of SNA to identify and measure connections among illicit organizations to

---

[92] Wasserman and Faust, *Social Network Analysis: Methods and Applications*, 19.

[93] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 12.

[94] Scott and Carrington, *The SAGE Handbook of Social Network Analysis*, 3.

[95] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 37.

[96] Mustafa Emirbayer and Jeff Goodwin, "Network Analysis, Culture, and the Problem of Agency," *American Journal of Sociology* 99, no. 6 (May 1994): 1411–1454.

[97] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 12.

[98] Ibid., 14.

combat crime and terrorism.[99] Terrorism experts John Arquilla and David Ronfeldt argued that it takes "strong networks to fight networks."[100] SNA has been used to illuminate the dark (clandestine or covert) networks among insurgent and criminal organizations.[101]

By applying a network perspective, law enforcement officials have embraced SNA to better understand and counter or preempt gang violence and terrorism. To disrupt criminal and gang networks, crime-fighting organizations created topologies showing links among" persons of interest."[102] In addition, the Federal Bureau of Investigation (FBI) developed law enforcement strategies and interdiction techniques leveraging the tools and methodologies of SNA.[103] The Common Operational Research Environment (CORE) lab at the Naval Postgraduate School recently partnered with law enforcement agencies, creating a macro level codebook based on the theoretical underpinnings of SNA.[104] At the time of this writing, select police agencies in counter violence initiatives were in the process of field-testing the codebook.

Since September 11, 2001, the Department of Defense (DOD) and intelligence communities have attempted to enhance traditional methods of link analysis by using SNA to topologically map and measure the networks of insurgent and terrorist organizations.[105] In 2009, the Defense Threat Reduction Agency (DTRA) organized an

---

[99] Kenneth Stewart, "CORE Lab Helps Law Enforcement Explore Social Network Analysis," Naval Postgraduate School, accessed May 5, 2015, http://www.nps.edu/About/News/CORE-Lab-Helps-Law-Enforcement-Explore-Social-Network-Analysis.html; Antione C. Fernandes and Travis J. Taylor, "DIM Networks: The Utility of Social Network Analysis for Illuminating Partner Security Force Networks" (master's thesis, Naval Postgraduate School, 2015); Jason Brown, "Improving Nonlethal Targeting: A Social Network Analysis Method for Military Planners" (master's thesis, Naval Postgraduate School, 2012).

[100] John Arquilla and David Ronfeldt, *Advent of Netwars* (Washington, DC: RAND, 1996), 119.

[101] John Arquilla and David Ronfeldt, ed. *Networks and Netwars: The Future of Terror, Crime, and Militancy* (Washington, DC: RAND, 2001).

[102] Ressler, "Social Network Analysis as an Approach to Combat Terrorism: Past, Present, and Future Research," 7.

[103] Jennifer Johnson, "Social Network Analysis: A Systematic Approach for Investigating," Federal Bureau of Investigations (FBI), March 3, 2013, https://leb.fbi.gov/2013/march/social-network-analysis-a-systematic-approach-for-investigating.

[104] "CORE Lab Helps Law Enforcement Explore Social Network Analysis."

[105] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 18.

exchange among academics and government personnel to examine the implications of using SNA for information security policymaking.[106] Furthermore, many military case studies on SNA have been conducted to determine the appropriate structure and influence to apply in overseas operations involving friendly or malicious networks.[107] In most instances, SNA has proven to be a useful methodology for enhancing traditional methods of analysis.

In the realm of national and regional security, terrorism experts have long viewed terrorist groups as networks. For homeland security practitioners, this perspective has powerful implications for fueling research on the disruption of functioning networks; furthermore, SNA may reveal the relationships among actors necessary to increase resilience among vulnerable communities at risk from violent extremism. Because much work in this area still needs to be done, I have sought to fill a gap by illustrating how an understanding of social networks can assist in assessing the risk of violent extremism and by suggesting policies and programming aimed at preventing or diminishing the effects of radicalization.

B. RADICALIZATION AND VIOLENT EXTREMISM

A fundamental question in the study of the radicalization process seems to be: "How do people come to adopt violent extremist ideologies (radicalize), convert them—or not—into justifications or imperatives to use terrorist violence, and choose—or not—to engage in violent and dissident activity in support of those ideologies?"[108] Successfully answering this question requires a general understanding of the phenomenon of violent extremism and the various purveyors and targets of radicalization.

---

[106] Nancy K. Hayden et al., *Dynamic Social Network Analysis: Present Roots and Future Fruits* (Ft. Belvoir: Defense Threat Reduction Agency, 2009), https://info.publicintelligence.net/DTRA-SocialNetworkAnalysis.pdf.

[107] Fernandes and Taylor, "DIM Networks: The Utility of Social Network Analysis for Illuminating Partner Security Force Networks;" Brown, "Improving Nonlethal Targeting: A Social Network Analysis Method for Military Planners."

[108] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

1. Defining Violent Extremism

The White House has defined violent extremists as "individuals who support or commit ideologically-motivated violence to further political goals."[109] The Administration's definition of violent extremism, however, requires a deeper understanding of what motivates people to commit terrorist violence;[110] moreover, when confronting ideologies of radical extremism, it is important to distinguish between violent versus nonviolent outcomes.[111] Observing a person's nonviolent nature may be useful when assessing whether that individual is at risk of eventually resorting to violence regardless of whether or not she or he has yet engaged in violent extremist behavior.[112]

Because violent extremism is a global security concern, government agencies need clear and precise terminology to share information with one another internally, as well as to share information externally with other governments. A common frame of reference would enable countries to support one another's strategies and coordinate their plans to better address the threat posed by violent extremism.[113] Since developing the first "Strategy for Empowering Local Communities to Prevent Violent Extremism," the homeland security and intelligence communities have struggled to establish a lexicon for the various factors involved in violent extremism. In working with the Brookings Institution, the author of a 2016 LawFare article attempted to address this problem by proposing a common lexicon related to violent extremism. The following terms were offered in the article.

- ***Violent extremist organization***: An organization that takes action to further a violent extremist ideology

---

[109] Office of the President of the United States, *Strategic Implementation Plan for Empowering Local Partners to Prevent Violent Extremism in the United States* (Washington, DC: Office of the President of the United States, 2016).

[110] Borum, "Radicalization into Violent Extremism Part II: A Review of Conceptual Models and Empirical Research," 38.

[111] Task Force on Confronting the Ideology of Radical Extremism, *Rewriting the Narrative: An Integrated Strategy for Counterradicalization* (Washington, DC: Washington Institute for Near East Policy, 2009).

[112] Ibid.

[113] Phil Walter, "Toward a Common Lexicon of Violent Extremism," LawFare Institute, July 22, 2016, https://www.lawfareblog.com/toward-common-lexicon-violent-extremism.

- ***Violent extremist***: An individual who take action to further a violent extremist ideology

- ***Resident violent extremist***: A violent extremist who takes actions to further a violent extremist ideology in the same state in which he or she is considered a national under the operation of its law

- ***Nonresident violent extremist:*** A violent extremist who takes actions to further a violent extremist ideology in a different state than that in which he or she is considered a national under the operation of its law

- ***Supported violent extremist***: A violent extremist who receives support for his or her actions from another violent extremist or a violent extremist organization

- ***Unsupported violent extremist***: A violent extremist who does not receive support for his or her actions from another violent extremist or a violent extremist organization

- ***Inspired action***: When a violent extremist takes action that is inspired by a violent extremist ideology

- ***Directed action***: When a violent extremist takes action based upon direction he or she received from another violent extremist or a violent extremist organization

- ***Spontaneous action***: When an individual with no known previous plausible ties to a violent extremist ideology, violent extremists, or a violent extremist organization, suddenly takes action, with little planning or preparation, to further a violent extremist ideology

- ***Opportunistic claim***: When an individual with no known previous plausible ties to a violent extremist ideology, violent extremists, or a violent extremist organization engages in violence, and a violent extremist or violent extremist organization claims responsibility without providing proof that they inspired or directed the action[114]

An established lexicon would allow those handling issues related to violent extremism to use agreed upon terminology to ensure they operate within a shared contextual understanding.

[114] Walter, "Toward a Common Lexicon of Violent Extremism."

2. Defining Radicalization

To date, there has been no agreement in the literature with regard to a universal definition of the radicalization process.[115] Terrorism expert, John Horgan defined *radicalization* as "the social and psychological process of incrementally experienced commitment to extremist political or religious ideology."[116] Louis Porter and Mark Kebbell offered a broader definition, defining *radicalization* as "the process by which individuals (or groups) change their beliefs, adopt an extremist viewpoint, and advocate (or practice) violence to achieve their goals."[117] Conversely, researchers have stated that many terrorists—even those who openly ascribe to a particular "cause"—are not profoundly ideological, and the traditional process to radicalization may not occur.[118] Clearly, the pathway to radicalization varies considerably from person to person and is a matter of individual choice.

No single theory or discipline or "one size fits all" framework can be used to explain the process of radicalization that results in violent extremism, generally, or in militant Islamism, specifically.[119] Until 2011, most conceptual models focused on a defining terrorist mindset or personality, based on the assumption that the unpredictable behavior leading to acts of terrorism was the result of some mental or personality abnormality.[120] Increasingly, researchers of terrorism no longer view radicalization as a condition isolated in one person but more as a dynamic and gradual process influenced by a multitude of factors along the way.[121] Debate still occurs as to whether the trajectory of radicalization is a linear or nonlinear sequence that involves multiple interactions and

---

[115] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

[116] John Horgan, *Walking Away from Terrorism: Accounts of Disengagement from Radical and Extremist Movements* (New York: Routledge, 2009).

[117] Louis E. Porter and Mark R. Kebbell, "Radicalization in Australia: Examining Australia's Convicted Terrorists," *Psychiatry, Psychology and Law* 18, no. 2 (2011): 213.

[118] Borum, "Radicalization into Violent Extremism Part II: A Review of Conceptual Models and Empirical Research," 38.

[119] Borum, "Radicalization into Violent Extremism Part II: A Review of Conceptual Models and Empirical Research," 38.

[120] M. Taylor and John Horgan, "A Conceptual Framework for Understanding Psychological Process in the Development of the Terrorist," *Terrorism and Political Violence* 18, no. 5 (2006): 585–601.

[121] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

diverse motivations.[122] Thus, the process in which radicalization occurs continues to be poorly understood.

Research has thus far failed to provide clear determining factors to characterize sufficient conditions for engaging in terrorist activity;[123] furthermore, ascribing to extremist ideologies does not inevitably predict someone will engage in violence. Many who share an extremist view do not in fact support violence.[124] Understanding the definitions of violent extremism and radicalization is important if we are to develop a framework for assessing risk factors and attempting to address them through counter radicalization strategies.

C. ASSESSING RISK FACTORS

1. Individual-Level Factors

Ideologically motivated violence is a prevalent theme in studies offering an assessment of the process of radicalization and violent extremism,[125] specifically ideologies that build upon individual or group grievances, religious views, social deprivation, or other political and cultural beliefs.[126] Following an analysis of over 500 profiles of radicalized Muslims, former CIA Operations Officer Marc Sageman identified potential root causes of radicalization and traced the development of individual Islamist radicalization through the following four stages:

- Islamist radicalization is sparked when the individual reacts with moral outrage to stories of Muslims suffering around the world.
- For some, that spark is inflamed by an interpretation that explains such suffering in the context of consistent policies in Western countries that are viewed as hostile to Muslims around the world.

---

[122] Hafez and Mullins, *The Radicalization Puzzle: A Theoretical Synthesis of Empirical Approaches to Homegrown Extremism*, 956.

[123] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

[124] Ibid.

[125] Borum, "Radicalization into Violent Extremism Part II: A Review of Conceptual Models and Empirical Research," 4.

[126] Hafez and Mullins, *The Radicalization Puzzle: A Theoretical Synthesis of Empirical Approaches to Homegrown Extremism*, 959.

- The ensuing resentment is fueled by negative personal experiences in Western countries (e.g., discrimination, inequality, or merely an inability to flourish despite good qualifications).
- The individual joins a terrorist network that becomes like a second family, albeit one closed to the outside world, stoking the radical worldview and preparing the initiate for action and, in some cases, martyrdom.[127]

In each of these stages specific ideological motivations characterize the reasons individuals would involve themselves in Islamist-inspired violence. For some, socializing a collective view was also associated with the likelihood that a person would radicalize.

In exploring the processes of terrorist recruitment and radicalization, understanding the factors that may cause someone to adopt extremist ideas is important. Many studies include terms, such as *push* and *pull* to characterize these factors. Based on the guide produced by the United States Agency for International Development (USAID) to identify drivers of violent extremism, the European Union-funded initiative Strengthening Resilience to Violent Extremism (STRIVE) developed specific push and pull factors relating to radicalization and recruitment cases located near the Horn of Africa.[128] In a study from STRIVE, push factors were "socioeconomic factors that make individuals look for alternatives," and pull factors were "those that attract people to violent groups."[129] Table 1 lists factors in the STRIVE case study of violent extremism in Nairobi, Kenya.

[127] Sageman, *Understanding Terror Networks*, 99.

[128] José Luengo-Cabrera and Annelies Pauwels,"Countering Violent Extremism: The Horn of Africa," *European Union Institute for Security Studies (EUISS)*, no. 14 (2016): 1–4, doi: 10.2815/98226.

[129] Sara Zeiger and Anne Aly, *Countering Violent Extremism: Developing an Evidence-base for Policy and Practice* (Australia: Hedaya and Curtin University, 2015), 32.

Table 1. Examples of "Push" and "Pull" Factors in STRIVE's Study Found to Influence Radicalization Cases in Nairobi, Kenya.[130]

Push Factors	Pull factors
Unemployment and poverty	Access to material resources
Clan marginalization	Access to weaponry and protection
Social and political marginalization	Sense of belonging
Poor (or no) governance	Order of strong governance
Human-rights violations and violence	Revenge-seeking
Endemic corruption and impunity of certain groups	Self-esteem/personal empowerment (being a hero for defending one's country and religion)
Youth frustration	Religious justification (victory or paradise)

Results of the study showed that "recruitment constitutes an individual choice often made as part of a desire to challenge the clan system and its elders; [whereas] radicalization and a desire to contribute to international jihad are at the heart of such recruitment."[131] Identifying the variables that differentiate reasons individuals join a terrorist movement provides substantial insight for strategies intended to counter those reasons.

The synthesis of social–psychological separation among values, feelings, and behaviors is frequently used in studies of the radicalization process.[132] A distinction can be drawn between the concepts of cognitive and behavioral radicalization. James Khalil characterized cognitive radicalization as "the possession of extremist beliefs and

[130] Martine Zeuthen, "From Policy to Practice: Findings and Lessons Learned from a Research-based Pilot Countering Violent Extremism Programme in the Horn of Africa," in *Countering Violent Extremism: Developing an Evidence-base for policy and Practice*, ed. Sara Zeiger and Anne Aly (Australia: Hedaya and Curtin University, 2015), 33.

[131] Ibid.

[132] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

feelings,"[133] and behavioral radicalization as "manifesting a determination to commit violence in the furtherance of extremist beliefs and feelings."[134] Observing an individual's nonviolent (cognitive) state may help to identify patterns for predicting a particular time when a person is prone to committing themselves to violence (behavioral).

In addition, researchers have explored social–behavioral relevance to enhance the understanding of underlying causes of radicalization. Social movements, social psychology, and conversion are the most promising of many of the theoretical–analytic frameworks that might support further terrorism studies.[135] Each theory offers a basis for systematic inquiry into methods to assess the conditions surrounding the susceptibility and vulnerability to radicalization leading to extremist violence.[136] Some terrorism researchers, however, believe factors at the community level are more important for examining the local context of recruitment to violent groups and radicalization in certain areas.

2. Community-Level Factors

Many researchers have attributed the motivations behind radicalization to an ideology; others have argued that specific conditions create vulnerabilities in areas of marginalized communities. In countries characterized by injustice, corruption, and marginalization of targeted groups, as well as social, political, and economic exclusion, radicals are more likely to succeed in recruitment efforts.[137] Factors at the community level are, therefore, important when exploring research methodologies, considerations, and challenges in the overall frameworks supporting programs designed to assess the risk of violent extremism.

---

[133] James Khalil, "Radical Beliefs and Violent Actions Are Not Synonymous: How to Place the Key Disjuncture Between Attitudes and Behaviors at the Heart of Our Research Into Political Violence," *Studies in Conflict and Terrorism*, 37, no. 2 (2014): 198–211.

[134] Ibid.

[135] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

[136] Ibid.

[137] Hamed El Said, "Foreign Terrorist Fighters: Terrorists or Freedom Fighters?" in *Countering Violent Extremism: Developing an Evidence-base for Policy and Practice*, ed. Sara Zeiger and Anne Aly (Australia: Hedaya and Curtin University, 2015), 26.

According to Hamed al Said, "Muslim communities are among the most disadvantaged in terms of economic opportunities, levels of education, political representation, wage differentiation, and job opportunities."[138] Such communities are located in Africa, the Middle East, and South Asia. Lieutenant General (Ret.) Russel L. Honoré asserted that the stability of populations are dependent upon security, political, and economic freedoms provided in culturally appropriate ways; however, populations unable to achieve this stability are more likely to be vulnerable to terrorist recruitment.[139]

Researchers have described and measured the particular conditions under which the marginalization of communities might occur and "the extent to which a subgroup, including Diaspora communities, felt included in, or excluded from, a larger community."[140] Indicators that heightened the possibility and/or rates of radicalization were noted in communities that experienced the deprivation of resources, as well as significant social disruption.[141] In addition, psychologists have asserted that people have a fundamental need to maintain healthy and constructive exchanges with others.[142] Thus, a small, cohesive organization like a terrorist group provides fertile ground to satisfy an individual's desire for inclusion and sense of belonging as a result of social alienation from their community.

Researchers at the University of Maryland's Study for Terrorism and Responses to Terrorism (START) identified the following community-level factors as underlying causes of radicalization among marginalized communities.

- Economic measures: The extent of economic distress felt by a community, including variables, such as unemployment rates, median household

---

138 El Said, "Foreign Terrorist Fighters: Terrorists or Freedom Fighters?," 26

139 Laurie Fenstermacher, Kuznar T. Rieger, and A. Speckhard, *Protecting the Homeland from International and Domestic Terrorism Threats: Current Multi-Disciplinary Perspectives on Root Causes, the Role of Ideology, and Programs for Counter-radicalization and Disengagement* (Washington, DC: Topical Strategic Multi-Layer Assessment (SMA) Multi-Agency and Air Force Research Laboratory Multi-Disciplinary White Papers in Support of Counter Terrorism and Counter-WMD, 2010), 9.

140 Shira Fishman, *Community-Level Indicators of Radicalization: A Data and Methods Task Force," Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security* (College Park, MD: University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism, 2010), 7.

141 Ibid.

142 Ibid.

income, income inequality, and participation in government assistance programs

- Social capital: The extent to which members of a community feel connected to or trusting of neighbors and government, with lower levels of social capital being indicative of marginalization. Variables included here are family structure (divorce rates, single-parent families), the number (or density) of social service organizations, civic organizations or arts/sports organizations, and voter turnout rates.

- Political inclusion or exclusion: The extent to which members of a community feel included in local politics and political institutions. These variables include participation rates in local elections, active involvement in political campaigns, and the extent to which members of a subgroup are elected or appointed to local offices.

- Social support: The greater the amount of services available, the less vulnerable a community may be to radicalization. Measures of support include Head Start programs, number of children enrolled in Children's Health Insurance Program (CHIP) or Medicaid, and, for Diaspora communities, the number of organizations or individuals receiving money from state Offices of Refugee Resettlement.

- Demographics of Diaspora community: The social structure of an immigrant community is vital to a community's success. Factors that may impact the prevalence of radicalization include the age at which immigrants arrive in the United States, the number of foreign language speakers or students of English as a Second Language (ESL) classes, and the extent to which the community establishes its own institutions such as banks and local media.[143]

Institutional data used to examine community-level indicators in the process of radicalization may be too broad to provide sufficient guidance on the location, timing, and reasons for individual radicalization;[144] however, such data may be useful in law enforcement outreach efforts to counter or prevent the emergence of violent extremism in communities.

[143] Fishman, *Community-Level Indicators of Radicalization: A Data and Methods Task Force," Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security*, 7.

[144] Ibid.

3. Social Network Factors

Researchers conducting studies of radicalization have argued that the relational ties to family, close friends, or kin in an individual's social network serve as the most likely factor influencing a person's decision to commit acts of extremist violence.[145] Obtaining a general understanding of the influence social networks may have in a person's path to radicalization is, therefore, important. This section provides a review of literature that characterizes the social networks of individuals as drivers of violent extremism.

As noted above, social scientists and terrorism experts have recognized that preexisting kinship and friendship ties to extremists in a person's social network can increase that individual's propensity to radicalize. Clark McCauley and Sophia Moskalenko outlined a series of mechanisms, described as the "slippery slope," that promotes individual and group radicalization. One mechanism identified in the individual's radicalization was an increase in identification with "in-group" relationships, such as ties with family or a loved one who is radical.[146] Researchers examining political participation, social activism, gangs, cult membership, right-wing and left-wing terrorism, and religious extremism have identified key intermediaries aiding in recruitment mostly through preexisting friendship and kinship ties.[147] In an individual's search for meaningful relationships and self-validity, radical associations were viewed as psychologically and materially beneficial.[148]

---

[145] Atran, *Pathways to and From Violent Extremism The Case for Science-Based Field Research: Hearing before the Senate Armed Services Subcommittee on Emerging Threats & Capabilities*, 3; Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 27; Borum, "Assessing Risk for Terrorism Involvement," 63–87; Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 61.

[146] Fenstermacher, Rieger, and Speckhard, "*Protecting the Homeland from International and Domestic Terrorism Threats: Current Multi-Disciplinary Perspectives on Root Causes, the Role of Ideology, and Programs for Counter-radicalization and Disengagement*, 10.

[147] David E. Campbell, "Social Networks and Political Participation," *Annual Review of Political Science* 16 (2013): 33–48, doi: 10.1146/annurev-polisci-033011-201728; Andrew V. Papachristos, David M. Hureau, and Anthony A. Braga, "The Corner and the Crew: The Influence of Geography and Social Networks on Gang Violence," *American Sociological Review* 78, no. 3 (2013): 417–447, doi: 10.1177/0 003122413486800; Sageman, *Understanding Terror Networks*, 99.

[148] Hafez and Mullins, *The Radicalization Puzzle: A Theoretical Synthesis of Empirical Approaches to Homegrown Extremism*, 964.

When recruiting individuals who reveal the potential to commit violence, radicals look to create interpersonal ties, social bonds, and trust, often facilitated through highly personal, local contact.[149] Terrorism expert Nadav Morag described such a situation in the recruitment of young Western Muslims into terrorist cells loyal to the jihadist movements. Morag discovered that establishing a type of "brotherhood in Islam" formed a sense of camaraderie and made recruiting easier for radicals.[150] Moreover, "jihadist cells attached to a particular sheikh will attempt to create strong social bonds between members while isolating them from the broader society."[151] Terrorists who are more central among social groups of a network often gain a greater ability to organize and lead terrorist activities and therefore create the ideal conditions to collectively promote and socialize their grievances and ideologies.

In a 2004 study, Sageman collected data on over 400 terrorists, finding that social structures were instrumental in the recruitment of young men who later committed acts of terrorism.[152] He discovered that systematically investing time to understand an individual's interests, morals, and beliefs or social class allowed members of the radical group to create a growing sense of collective identity, convincing the young men to endorse violence on behalf of jihad.[153] In social network analysis, this type of motivation to join others with similar backgrounds or interests is referred to as homophily, "people who share common attributes with others are more likely to engage in connection, friendship, or association."[154] Identifying the relationships that tie violent extremists together in social networks can assist in assessing risk factors and relationship patterns associated with the radicalization of individuals.

---

[149] Ibid.

[150] Nadav Morag, *Comparative Homeland Security: Global Lessons* (Hoboken: John Wiley & Sons, 2011), Loc 4177, Kindle edition.

[151] Ibid.

[152] Sageman, *Understanding Terror Networks*, 36.

[153] Ibid.

[154] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 5.

Social groups created through preexisting networks play a critical role in the radicalization process.[155] Radicals rely on preexisting networks, such as community centers, sports teams, educational and faith-based organizations, social movements, and prisons when searching for prospective candidates regarded as susceptible to the militant jihadist cause.[156] The clustering of actors in these networks creates cohesive groups that can benefit terrorist organizations. Clustering also increases the density of the existing network of violent extremists; therefore, using measures of density, clustering and relational ties can be instrumental in developing plans to counter or prevent the flow of communications, access to resources, and sources of social support necessary to the success of violent extremist networks.

Terrorist groups have proven adept in establishing an overwhelming presence online. Many of them rely on social media sites, such as Facebook and Twitter, to influence individuals sympathetic to their cause. By virtually leveraging "friend of a friend" relationships, existing members or sympathizers are able to bridge the gap between potential recruits and radical leaders or influencers.[157] On one hand, bridging the structural holes of a network is beneficial for spreading extremist beliefs that can enhance recruitment and radicalization efforts. On the other hand, the use of social media can increase the ability of intelligence analysts to uncover and map terrorist social networks, using social media as a tool to identify certain roles and positions most central in organizations of violent extremists. By studying connections among actors, Homeland Security professionals can identify the key players in violent extremist organizations.

Understanding the underlying relationships connecting terrorists to one another has become prevalent in SNA research. In *Disrupting Dark Networks,* Sean Everton explained his application of SNA to examine a terrorist organization by using specific metrics to determine the most influential nodes and relationships in the network.[158]

---

[155] Davis and Cragin, *Social Science for Counterterrorism*, 36.

[156] Hafez and Mullins, *The Radicalization Puzzle: A Theoretical Synthesis of Empirical Approaches to Homegrown Extremism*, 964.

[157] Todd Waskiewicz, *Friend of a Friend Influence in Terrorist Social Networks* (New York: Air Force Research Laboratory, AFRL/RIEA, 2012), 1.

[158] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences,* 5.

Everton stated that recruiting people with a shared sense of identities and norms is easier than seeking to convert outsiders through unfamiliar connections.[159] In applying SNA to the phenomenon of radicalization, understanding that the context of radicalization varies based on human nature is a necessity.[160] Knowing an individual's social network, to include the specific events and cultures that come into play, helps to correlate factors of human behavior with reasons individuals radicalize.[161]

Daniel Aldrich found that the ties amid family, peers, and kin were the most difficult to counter when attempting to deradicalize or disengage people who participated in terrorist activities.[162] Individuals often felt trapped by peer pressure, groupthink, and ideological commitment and were subsequently less able to exit their social network.[163] Such hesitation was attributed to the constant in-group and out-group dynamics of radical networks. To this point, focus must be placed on the relational ties most influential in a person's life if one is to be successful in countering the ideologies that led a person to radicalize in the first place. By targeting those same ties, homeland security practitioners can identify the actors or nodes of a person's social network most likely to be effective in reversing that person's decision to support or engage in violence.

Many social scientists have claimed their research can help focus and prioritize interventions among potential violent extremists with the goal of preventing or transferring the initial stages of radicalization, disrupting ongoing terrorist activity, or encouraging disengagement and supporting deradicalization.[164] Although progress has been made in these areas, much work remains, particularly in disengagement and risk assessment frameworks. For that reason, future researchers should seek to close the gap

---

[159] Ibid.

[160] Aran et al., "Defining a Strategic Campaign for Working with Partners to Counter and Delegitimize Violent Extremism Workshop: A Strategic Multilayer Assessment Project."

[161] Davis and Cragin, *Social Science for Counterterrorism*, 36; Borum, "Assessing Risk for Terrorism Involvement," 63–87.

[162] Daniel P. Aldrich, *Mightier than the Sword: Social Science and Development in Countering Violent Extremism* (Washington, DC: United States Agency for International Development, 2014), 49.

[163] Davis and Cragin, *Social Science for Counterterrorism*, 74.

[164] Aran et al., "Defining a Strategic Campaign for Working with Partners to Counter and Delegitimize Violent Extremism Workshop: A Strategic Multilayer Assessment Project."

between theoretical constructs and the implementation of prevention and to counter violent radicalization with policies and programming across government. In this research a framework has been proposed in which SNA is used systematically and methodically to identify vulnerabilities of individuals and communities at risk of violent extremism.

D. COUNTERING VIOLENT EXTREMISM

In recent years, CVE has become a top global security concern. In numerous government strategies, CVE generally includes approaches constructed from a wide range of policies and programs aimed to dissuade individuals from radicalizing to violence.[165] Thus, prevention is characterized broadly in approaches of CVE.

The White House has outlined key components for countering radicalization in the national CVE strategy entitled *Empowering Local Partners to Prevent Violent Extremism in the United States* by "engaging and empowering individuals and groups at the local level to build resilience against violent extremism."[166] A companion document entitled *The Strategic Implementation Plan* builds upon the *2010 National Security Strategy* and the *2011 National Strategy for Counterterrorism*, and the 2011 Plan, specifically describing activities by departments and agencies and the focus of the government on three core areas for"(1) enhancing engagement with and support to local communities; (2) building government and law enforcement expertise for preventing violent extremism; and (3) countering violent extremist propaganda while promoting our ideals."[167]

In accordance with the Strategic Implementation Plan, as directed under the *Presidential Policy Directive-8 (PPD-8): National Preparedness, the National Prevention Framework* establishes federal agencies roles and responsibilities "necessary

---

[165] Caitlin Mastroe and Susan Szmania, *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs, Report to the Office of University Programs, Science and Technology Directorate, U.S. Department of Homeland Security* (College Park, MD: University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism (START), 2016), 2.

[166] Office of the President of the United States, *Strategic Implementation Plan for Empowering Local Partners to Prevent Violent Extremism in the United States*, 2016.

[167] Office of the President of the United States, *Strategic Implementation Plan for Empowering Local Partners to Prevent Violent Extremism in the United States*, 2016.

to avoid, prevent, or stop a threatened or actual act of terrorism."[168] Under PPD-8, The Framework prescribes a threat and risk assessment known as the Threat and Hazard Identification and Risk Assessment (THIRA) to determine a community's vulnerability to terrorism and violent extremism by assessing their capabilities to prevent "to avoid, prevent or stop a threatened or actual act of terrorism."[169] The four steps prescribed in the THIRA process are typically conducted by officials in states and urban areas in a linear fashion to (1) identify the types of threats and hazards of concern; (2) to provide factors to consider, describing the context under which the threats and hazards were identified; (3) to establish the impacts and desired outcome, referred to as capability targets, to address the threats and hazards of concern; and, (4) to apply the assessment results, which estimate the gaps in capabilities, thus identifying specific resources that will close those gaps. The assessment of prevention capabilities includes planning; public information and warning, and operational coordination; intelligence and information sharing; interdiction and disruption; screening, search, and detection; and forensics and attribution.[170]

Although designated "prevention," the definition in the framework serves primarily to stop or deter a known or imminent threat. Addressing an imminent or known threat, however, fails to assess an individual's and community's vulnerability for violent extremism at the beginning of the radicalization process, inhibiting the ability of communities to anticipate and mitigate the underlying causes of radicalization, resulting from persistent and ongoing vulnerabilities. This type of approach does little to prevent or counter radicalization if an individual is considering or has already committed to the militancy supported by a violent extremist organization.

In the past, designers of counterterrorism programs have favored the use of "hard power," such as military force, drone strikes, and covert operations, as effective strategies

---

[168] U.S. Department of Homeland Security, *National Prevention Framework* (Washington, DC: U.S. Department of Homeland Security, 2016).

[169] Ibid.

[170] U.S. Department of Homeland Security, *Threat and Hazard Identification and Risk Assessment Guide: Comprehensive Preparedness Guide (CPG) 201*, 2nd ed. (Washington, DC: U.S. Department of Homeland Security, 2013.

for handling extremist groups because the results are clear and immediate.[171] Unlike counterterrorism programs focused on disrupting or mitigating damage from active terrorist operations, the purpose of CVE is primarily to prevent violence before it occurs. Humera Khan defined CVE as the "use of non-coercive means to dissuade individuals or groups from mobilizing towards violence and to mitigate recruitment, support, facilitation or engagement in ideologically motivated terrorism by non-state actors in furtherance of political objectives."[172] Quite frequently the term *soft power* is referenced in approaches to CVE and is becoming heavily used by the US to shape and influence efforts at home and abroad.[173]

The literature on CVE includes descriptions of various strategies. Focused on the "root causes" of violent extremism, prevention work or engagement processes have been increasingly used in methods of CVE.[174] Moreover, support centered on social–psychological or behavioral factors, often led by law enforcement or civil society organizations,[175] have mainly focused on factors known to increase the vulnerability of individuals who may be at risk for violence, assisting in targeted interventions that can interdict radicalization or violent extremism.[176]

From a socioeconomic perspective, violent extremism has been regularly viewed as a labor–supply problem, generating CVE efforts to reduce the allure of radicalization by building institutions of partner governments, integrating oppressed individuals and groups into society, and providing social services.[177] In marginalized communities, the rise of radicalization is less likely to occur in those with higher levels of cohesion and

---

171 Aldrich, *Mightier than the Sword: Social Science and Development in Countering Violent Extremism*, 49.

172 Khan, "Why Countering Extremism Fails: Washington's Top-Down Approach to Prevention Is Flawed."

173 Simons, *21st Century Cultures of War: Advantage Them*, 11–15.

174 Mastroe and Szmania, *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs*, 2.

175 Borum, "Assessing Risk for Terrorism Involvement," 63–87.

176 Mastroe and Szmania, *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs*, 2.

177 Alice Hunt et al., ed., *Beyond Bullets: Strategies for Countering Violent Extremism* (Washington, DC: Center for a New American Security, 2009).

inclusiveness.[178] Most rehabilitation programs have been designed specifically to disengage or deradicalize those motivated by disenfranchisement in these communities.

An evaluation of existing CVE programs provided three broad program types:

- Prevention programs designed to prevent the radicalization process from taking hold in the first place and generally [intended to] target a segment of society rather than a specific individual;
- Disengagement programs designed to convince an individual to abandon involvement in a terrorist group; and
- Deradicalization programs designed to alter extremist beliefs that an individual holds.[179]

Generally, programs for prevention have typically targeted entire groups, but programs for disengagement and deradicalization have focused on strategies tailored toward individuals. Prior to 2006, concepts of disengagement and deradicalization were less likely to appear in discussions surrounding counterterrorism strategies. In 2005, a conference hosted by the RAND Corporation was one of the first efforts to address deradicalization specifically in relation to modern-day Islamist radicalization and recruitment.[180] In many studies, disengagement and deradicalization were noted as markedly different, in that someone can disengage from terrorism but not necessarily deradicalize from their beliefs.[181]

As noted above, relevant push and pull factors have been incorporated as variables influencing the causes of radicalization. The same factors have also been used in deradicalization and disengagement work to address the ideologies that have led

---

[178] Fishman, *Community-Level Indicators of Radicalization: A Data and Methods Task Force," Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security*, 7.

[179] Mastroe and Szmania, *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs*, 2.

[180] Cheryl Benard, *A Future for the Young: Positive Options for Helping Middle Easter Youth Escape the Trap of Radicalization, RAND's Initiative for Middle East Youth (IMEY)* (Santa Monica, CA: RAND, 2005).

[181] Robyn Broadbent, "Using Grassroots Community Programs as an Anti-Extremism Strategy," *Australian Journal of Adult Learning* 53, no. 2 (July 2013): 187–210.

individuals to adopt extremist violence. Table 2 provides various examples of the factors identified throughout the review.

Table 2. Examples of Push and Pull Factors Used in Deradicalization and Disengagement Programs.[182]

Class of Factor	Examples
Push Factors	• Criminal prosecution • Parental or social disapproval • Counter violence from oppositional groups • Loss of faith in ideology or politics of group • Discomfort with group's violent activities • Disillusionment with group's leadership • Loss of confidence, status or position in group • Ejection from the group • Exhaustion from tension and uncertainty as a member of a targeted group • Increased activity in a "competing role," for example, political activity that displaces the violent role
Pull Factors	• Desire for a normal life • Desire to establish a family and take on parental and spousal roles • Other changing priorities • New employment or educational opportunities that could be undermined if group membership were known • New role model or social group • New, more compelling ideology or belief structure

[182] Source: Davis and Cragin, *Social Science for Counterterrorism*, 303.

The factor examples above suggest the manner in which an individual may be drawn away from the potential to commit violence.[183] These are often used in strategies targeting individuals who are on the fence with supporting violence or are prospective candidates for deradicalization or disengagement efforts. For example, in many CVE studies the critical role of a gatekeeper has been identified as, those "best positioned to notice, and refer, individuals deemed at-risk of engaging in a given undesirable behavior (in this case, an act of violent extremism) to resources that might help divert those individuals from engaging in such behavior."[184] These studies also noted the importance of determining the constraints that prevent those gatekeepers from cooperating with CVE-related networks.[185] Representatives of USAID and the Department of State in Pakistan and Afghanistan recently acknowledged a "need to increase local, extended studies of the change in attitudes and behaviors from the beginning of an intervention to the end."[186]

Although those in the CVE field have experienced a significant increase in requests by policymakers for engagement and research, this work is still in incipient stages of development.[187] Only in the past few years have government-supported CVE programs come into prominence. In 2009, the United Kingdom developed and implemented the CONTEST strategy to counter Islamist radicalization,[188] only to conduct its first evaluation in 2011, repurposing its PREVENT section to focus on building trust between local law enforcement and their respective communities.[189] The immaturity of the field has resulted in a paucity of measurement and evaluation data for

---

183 Borum, "Assessing Risk for Terrorism Involvement," 63–87.

184 Michael Williams, John Horgan and William Evans, "Research Summary: Lessons from a U.S. Study Revealing the Critical Role of 'Gatekeepers' in Public Safety Networks for Countering Violent Extremism," in *Countering Violent Extremism: Developing an Evidence-base for Policy and Practice*, ed. Sara Zeiger and Anne Aly (Australia: Hedaya and Curtin University, 2015), 139.

185 Ibid.

186 Peter Romaniuk, "Does CVE Work? Lessons Learned from the Global Effort to Counter Violent Extremism," *Global Center on Cooperative Security*, 2015, 7.

187 Mastroe and Szmania, *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs*, 2.

188 Her Majesty's Stationery Office, *CONTEST: The United Kingdom's Strategy for Countering Terrorism—July 2011* (London: Her Majesty's Stationery Office, 2011), 2.

189 Ibid.

examining the impact and outcomes of specific programs. In the United States, the *Strategic Implementation Plan* represents only the beginning of efforts to assess the advancement and effectiveness of America's CVE programs, such as pilot programs in the cities of Minneapolis, Los Angeles, and Boston.[190]

When assessing the risk of violent extremism, policymakers must look outside the existing scope of assessment and analysis if they are to counter or prevent the threat of violent extremism prior to the onset of an impending threat. Specifically, CVE policies and programs lack an appropriate framework to systematically examine radicalization factors in the context of the social structure of a community. This thesis incorporates a conceptual theory of the manner in which SNA can close the gap in CVE prevention programming, providing a more strategic and social understanding of the motivations behind the nation's adversaries. Thus, a method is offered to map and measure social networks, assessing the vulnerabilities of at-risk communities and integrating it into the federally established THIRA process.

E. A SOCIAL NETWORK APPROACH TO PREVENTION

As noted above, many terrorism researchers have agreed that social networks play an integral role in both the recruitment and radicalization of individuals into networks of violent extremism. These networks, in turn, influence the behavior of people who become radicalized. An optimal approach to understanding terrorism and violent extremism would benefit from a focus on the dynamics of social networks.[191]

This literature review suggests that the use of SNA may increase the ability of law enforcement agencies to deter and reduce crime and could contribute to other agencies' efforts to combat and disrupt terrorist activities.[192] John Horgan's research, which introduced the "routes over roots" paradigm of network analysis, explained that causal

---

[190] Office of the President of the United States, *Strategic Implementation Plan for Empowering Local partners to Prevent Violent Extremism in the United States* (Washington, DC: Office of the President of the United States, 2011).

[191] Sageman, *Understanding Terror Networks*, 137.

[192] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 221.

roots are less important than mapping the radicalization pathways of terrorists.[193] SNA offers a methodology to interpret social and natural phenomena related to the exchanges among violent extremists and has increasingly been proven to be a valuable tool in countering terrorism.

In the reduction and prevention of radicalization and resulting violent extremism, SNA offers a mechanism to locate key players and events, providing useful information in the development of counterterrorism strategies.[194] For instance, strategists might seek to use SNA to identify key actors to be removed or discredited and to countervail influences, thereby disrupting the flow of information and destabilizing the network, to isolate a person from their existing extremist network.[195] Morselli stated that egocentric network data drawn from such sources provides a:

> chronology of a participant's evolution from his initial entry into a given illegal activity, gradual rise and establishment of a reputation, and eventual fall, . . .taking place via a contact to contact narrative pattern. . . . The aim should be toward identifying various transitions, events, or outcomes.[196]

Thus, the tools and methodology of SNA provide for analysis of personal (ego) networks to uncover actors (or clusters of actors) who are highly central in influencing an individual's behavior.[197] A consensus among emerging research is that an understanding of social networks can play a key role in policies and programs to address violent extremism.[198]

---

193 Horgan, "From Profiles to Pathways and Roots to Routes: Perspectives from Psychology on Radicalization into Terrorism," 80–94.

194 Davis and Cragin, *Social Science for Counterterrorism*, 217; Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 33.

195 Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 5.

196 Carlo Morselli, "Structuring Mr. Nice: Entrepreneurial Opportunities and Brokerage Positioning in the Cannabis Trade," *Crime, Law and Social Change* 35, no. 3 (2001): 203–244.

197 Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 221.

198 Scott Atran, "Here's What the Social Science Says about Countering Violent Extremism," *The Huffington Post*, April 25, 2015, http://www.huffingtonpost.com/scott-atran/violent-extremism-social-science_b_7142604.html; Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 78; Davis and Cragin, *Social Science for Counterterrorism*, 36.

U.S. programs in other countries have capitalized on the use of social networks to assist in reducing or diminishing the vulnerabilities of potentially marginalized communities at risk of violent extremism. Social networks among members of a community were used to rapidly disseminate ideas or innovation for activities, such as resolving conflicts using mediation rather than violence.[199] Moreover, CVE programs led by USAID in Africa introduced a large percentage of Timbuktu residents "to new norms directly through participation in U.S. government programs and indirectly through their social networks."[200] Ultimately, the connections with friends, acquaintances, and family facilitated the engagement in CVE activities or promoted it, influencing new behaviors and attitudes through social influence and learning between individuals in a certain network.

Increasingly, researchers have come to understand that the nurturing of strong, positive social networks was largely responsible for the building of healthy, dynamic, and inclusive societies.[201] A number of state deradicalization efforts to reeducate and reintegrate individuals into society have focused on their identity, values, and beliefs, as well as their extracurricular activities, leveraged primarily through their social and familial ties.[202] "Maintaining good physical and mental health and being an active participant in civic life resulted in the greater social connectedness of individuals to friendship groups, career paths, community organizations and social and cultural resources."[203]

By employing SNA, policymakers may better identify and predict segments of the population most susceptible to radicalization and use the findings to identify how best to engage in a CVE-related provider network. Unfortunately, this literature review yielded little evidence that SNA has been used in the CVE field to assess the susceptibility to violent extremism within communities here in the United States or abroad. The aim of

---

[199] Aldrich, "First Steps towards Hearts and Minds? USAID's Countering Violent Extremism Policies in Africa," 8.

[200] Ibid.

[201] Broadbent, "Using Grassroots Community Programs as an Anti-Extremism Strategy," 197.

[202] Davis and Cragin, *Social Science for Counterterrorism*, 311.

[203] Broadbent, "Using Grassroots Community Programs as an Anti-Extremism Strategy," 197.

this thesis was to close the gap in available studies to improve current policies and programming for preventing and countering violent extremism.

F. CONCLUSION

With the evolution of socially connected networks of influence across the globe, recognizing a paradigm shift of terrorism in the 21st century is essential. The crucial stage in the radicalization process occurs when a person begins to believe that, whatever his or her ideology or grievance may be, vigilante justice and violence are justified.[204] To prevent such a situation, the social networks facilitating the spread of radical ideologies must be understood, and their influence discredited and disrupted. In this thesis, I have synthesized the literature and research from several distinct fields and used case studies to search for signals that might be useful to homeland security professionals in CVE-relevant fields. I have introduced the application of SNA for assessing the risk of violent extremism as a means of developing and incorporating measures that will anticipate and mitigate the threat of radicalization and violent extremism before it begins.

Constructing a theoretical framework by incorporating these findings into the THIRA process will lead policymakers to develop strategies premised on the connections among relationships at the individual and community levels to scope programs, policies, and processes of prevention that build the capacity and resilience of a community. Incorporating this type of methodology may offer greater insight into the growing threat from violent extremism in U.S. communities.

[204] Borum, "Radicalization into Violent Extremism I: A Review of Social Science Theories," 7–36.

III. METHOD AND RESEARCH DESIGN

In this research, I sought to determine whether SNA can reduce the vulnerability of a community if used within the THIRA process and what the implications would be for reducing the risk of radicalization into violent extremism. The second research question was designed to examine how to incorporate SNA in the THIRA process to anticipate and mitigate radicalization and in what ways current homeland security organizations acknowledge or use SNA in their prevention assessment tools and methods.

A qualitative, explorative approach was used to analyze the social networks of both radicalized violent extremists and communities desiring to prevent or preempt individuals from radicalization. Primary and secondary sources, including a variety of articles, reports, books, and research studies, were used to collect data and information regarding the phenomenon of radicalization and recruitment into violent extremism to determine whether social networks were previously measured and to what extent. The textual data was transcribed and categorized into the social network relational categories identified in the literature review. From that point, a theoretical framework was proposed, that would use the measures and metrics of SNA to help illuminate how and why individuals radicalize, deradicalize, and disengage from malign social networks to assess the risk of, and to help counter radicalization and violent extremism. Thus, the primary goal of this research was to reveal whether SNA can significantly contribute to predicting when individuals in a given social network are more at risk than others to becoming radicalized.

A. MULTIPLE CASE STUDY ANALYSIS

The study design for this thesis pursues a multiple case study approach to qualitatively analyze the data available on radicalization from the literature review. According to Robert Yin, “The case study method is best applied when research addresses descriptive or explanatory questions and aims to produce a first-hand

understanding of people and events."[205] Larry Dooley stated that case study methodology "emphasizes detailed contextual analysis of a limited number of events or conditions and their relationships,"[206] which can contribute to all levels of theory development. The primary benefit of this type of analysis is that it provides the researcher an ability to examine a phenomenon or event in context using multiple sources. In the case of terrorism research, case studies have been used to determine the general logic behind hostile decisions in the planning process and formulate common solutions that can be used to exploit that process.[207]

I have used case studies to elucidate the role of the policymaker in anticipating and mitigating the threat of violent extremism. These case studies examined how radicalization and violent extremism in marginalized communities compares with radicalization in places other than marginalized communities; how in-depth studies of non-marginalized community-based prevention programs compare with social-networked based community services; and how social networks in marginalized communities contribute to, or counter, radicalization. Three case studies were selected based on the following criteria: 1) each dealt with confirmed cases of radicalization, 2) each occurred in the last ten years, and 3) each was conducted in an area where ongoing government programs were in place to counter violent extremism. The objective of my analysis was to examine the potential applications of SNA in the context of each case study to determine whether SNA would be worth considering for inclusion in the THIRA process.

The first case study, that of Omar Hammami, the English-speaking, Western face of the Somali insurgent–jihadist movement al-Shabab was used to demonstrate the theoretical application of SNA concepts to identify and locate key actors and target them for the exploitation, or diminution of violent extremist networks. The second case, which took place in Victoria, Australia, where emerging efforts to promote a tolerant, safe, and

---

[205] Robert K. Yin, *Applications of Case Study Research*, 3rd ed. (Thousand Oaks, CA: SAGE, 2011), 3.

[206] Larry M. Dooley, "Advances in Developing Human Resources, Case Study Research and Theory Building," *SAGE Journal* 4, no. 3 (August 1, 2002): 336.

[207] "Terrorism Case Studies," July 5, 2013, https://protectioncircle.org/2013/07/05/terrorism-case-studies/.

inclusive society—in the face of growing multiculturalism in Australia—was used to evaluate grass-roots community programs for counter radicalization. The final case study involved the CVE program directed towards Islamic education and deradicalization efforts in Glasgow Scotland, providing insight into whether or not SNA could have significantly contributed to the outcomes.

B. CONCLUSION

Each section in this thesis builds upon the literature and findings before it to create a comprehensive picture. Previous research is used to develop a concept regarding the application of SNA for assessing risk factors of radicalization and violent extremism, and a theoretical framework is developed from literature. By using the multi-case study analysis, this framework is refined to include factors affecting the vulnerability of communities within the field of terrorism and violent extremism prevention. The findings of this analysis are incorporated into the four-step process of FEMA's THIRA framework demonstrating the use of SNA concepts for anticipating and mitigating the threat of radicalization and violent extremism in at risk communities.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. MULTIPLE CASE STUDY ANALYSIS

The case studies presented in this section include the successful radicalization of American Omar Shafik Hammami; Victoria, Australia's grass-roots community programs to promote anti-extremism; and Glasgow, Scotland's prevention program for countering violent extremism through exposure to recognized Islamic scholarship. First, each case study is presented by describing the history and background of the area or situation. Next, an analysis is provided that explores the theoretical concepts and principles in SNA, the relevant factors from the radicalization and counter radicalization processes, and suggests how employing SNA's methodology could have contributed to outcomes. The case study findings provide a summation of the analysis, ultimately illustrating the value of integrating SNA into a process focused on assessing a community's risk of violent extremism.

A. CASE STUDY 1: OMAR SHAFIK HAMMAMI

> I think I was the most popular guy in school. I used to be a social butterfly. I would hop from circle to circle and associate with all of the different types of people. . . . I didn't just do what everyone else was doing.
>
> —Omar Hammami

1. Synopsis of Hammami Case Study

From 2007 through 2013, Omar Shafik Hammami was known as the most prominent foreign fighter to join Al-Shabab, the Somali insurgent–jihadist movement.[208] In Hammami's eyes, he had finally embarked upon his journey to personal jihad. Of those who knew Hamammi, most referred to him as Abu Mansoor Al-Amriki, which translates to "the American," acknowledging his Western, English-speaking roots.[209] A first of its kind, Hammami's autobiography, *The Story of an American Jihaadi: Part One*, depicts his time prior to joining Al-Shabab, followed by the days leading up to his

[208] Andrea Elliott, "The Jihadist Next Door," *New York Times*, January 27, 2010, http://www.nytimes.com/2010/01/31/magazine/31Jihadist-t.html?pagewanted=all.

[209] Federal Bureau of Investigation (FBI), *Omar Shafik Hammami Added to the FBI's Most Wanted Terrorist List* (Washington, DC: FBI Mobile Division, 2012).

decision to join the jihad. The work has provided an insider's perspective on the reasons individuals like him resort to violent extremism. Researchers who have studied Hammami's radicalization have argued that his social networks were highly influential in his trajectory from radicalization to violent extremism.[210] Because my research was intended to determine whether using SNA can reduce the vulnerability of radicalization and violent extremism, the following case study applies concepts from the literature on SNA to identify and locate the actors (or nodes) and the specific turning points crucial to Hammami's transformation into a jihadist. I have incorporated the findings from this analysis into FEMA's process of THIRA, proposing a new method for assessing a community's susceptibility to radicalization and risk of violent extremism to prevent or diminish the effects of radicalization.

2. Background: Omar Hammami's Radicalization Process

Born in 1987, Omar Shafik Hammami spent most of his childhood and adult years in the small town of Daphne, Alabama. Like his mother, Hammami was an Alabaman despite the name given to him by his father, a Syrian immigrant.[211] Growing up a Southern American Protestant, Hammami's mother Debra held deeply Christian beliefs. Hammami's father, Shafik, was not very religious, dedicating most of his time to business but remaining true to his Arab cultural traditions and Muslim faith. Thus, Hammami's blend of ethnic and religious experiences was unique in the Daphne community.

Both of Hammami's parents were adamant he learn each of their ancestors' cultural and religious traditions. He was raised a Baptist and attended church with his mother, but he was asked by her to keep his Baptist affiliation a secret from his father. At an early age, Hammami was introduced to Islam, learning how to pray in the Muslim tradition and read from the Qur'an while on a trip with his father to visit relatives in Damascus, Syria. This appears to be the beginning of a deep internal conflict for Hammami about his views of Christianity. At age 12, he wrote in his diary, "Sometimes I

[210] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 63.

[211] Elliott, "The Jihadist Next Door."

get confused because the Bible says one thing and our textbooks and Darwin say another."[212] This appears to be a critical time in Hammami's life, when he felt compelled to decide whether he should remain Christian or Muslim.

By the time Hammami reached high school, he was one of the most popular students at Daphne High School. Hammami possessed a charismatic personality, providing him the ability to make friends easily. His high school sweetheart was Lauren Stevenson, who was recognized as one of the most beautiful girls in school. She later recalled, "He could just command people with his energy."[213] Unbeknownst to many of his classmates, however, Hammami was experiencing internal conflicts. Following the trip to Syria, he later recalled the comfort he derived from his Muslim faith and Islam.[214] Hammami was especially fond of his male cousins, characterizing their relationship as a "cohesiveness of brotherhood."[215] His high school years appeared to have been a critical turning point when he admitted, "Slowly I started to incline toward Islam."[216]

Hammami's father eventually learned that his son also practiced Christianity with his mother and thus decided to introduce him to a shaykh living in Daphne to advance his understanding of Islam and the Muslim faith.[217] The shaykh instructed him to change his habits, including his wardrobe and his prayers, as well as his thoughts regarding the persecution of Muslims around the world.[218] Hammami subsequently formed a Muslim Club with other students sharing similar views and to practice their Muslim faith. During this time, he met Bernie Culveyhouse, who would later become his best friend and convert to Islam.[219]

---

[212] Abu Mansuur al-Amriiki, "The Story of an American Jihaadi Part One," Scribd, May 2012, www.scribd.com/doc/93732117/The-Story-of-an-American-Jihadi.

[213] Elliott, "The Jihadist Next Door."

[214] al-Amriiki, "The Story of an American Jihaadi Part One."

[215] Ibid.

[216] Ibid.

[217] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 63.

[218] Ibid.

[219] Ibid., 64.

During his high school years, Hammami's commitment to the Muslim faith intensified. His impatience with his classmates who were not Muslim increased, and their relationships deteriorated. This included his relationship with his girlfriend Stevenson, who recalled that Hammami's deeply held Muslim beliefs were too much for her. Ultimately, her refusal to convert to Islam led him to terminate their relationship. Hammami also experienced conflicts with his classmates, and Kathleen Hirsch, a teacher he most respected. At one point, he chastised Hirsch regarding her Jewish faith, and as a result, was temporarily suspended during his junior year.[220] Nonetheless, Hammami was intellectually gifted, achieving high grades and test scores, which resulted in bypassing his senior year of high school and immediately enrolling at the University of South Alabama, where he frequented a mosque on campus. This led to friendships with other like-minded students, and shortly thereafter, he became president of the Muslim Student Association.[221]

Following the attacks on 9/11, local reporters in Daphne called Hammami to request interviews because of his role in the Muslim Student Association. Unable to answer many of the questions asked of him regarding the specifics of Islamic faith, he felt insufficiently knowledgeable about Islam.[222] He decided he needed a deeper understanding of his faith and set out to expand his understanding, reaching out to Tony Salavatore Sylvester, a 35-year-old Islamic teacher at the local university, who was recognized as an expert in the American Salafi movement.[223] Hammami later described Sylvester as a key influence in helping him master Salafism and a more profound sense of discipline regarding Islam.[224]

Hammami dropped out of college in 2002 to further his objective of becoming a true scholar of Islam. Over the next several years, he traveled around the country, sharpening his Arabic speaking skills and sharing his Islamic faith with others. He

[220] Elliot, "The Jihadist Next Door."

[221] Ibid.

[222] al-Amriiki, "The Story of an American Jihaadi Part One."

[223] Elliott, "The Jihadist Next Door."

[224] al-Amriiki, "The Story of an American Jihaadi Part One."

attended several Islamic conferences and eventually landed in Mobile, Alabama,[225] where he opened a Muslim bookstore with his friend and mentor Sylvester.[226] This was a challenging time for Muslims in the United States with a great deal of suspicion, distrust, and intolerance toward the Muslim population. Hammami and his friends were no longer accepted in the community, and the feeling of oppression was overwhelming and intolerable for them.[227] Hammami and Sylvester decided to leave Alabama and seek a more profound understanding of Islam and jihad. They relocated to Toronto, Canada, well aware that a significant and active community of Muslims lived there.[228]

Hammami felt immediately at home in Toronto. The intermingling of mosques, Islamic bookstores, and community practice of Islam enthralled him.[229] Shortly after arriving in Toronto, he rented an apartment with his friend Culveyhouse and found work through local Somali ties delivering milk to housewives.[230] Hammami soon met and married his first wife Sadiyo Mohamed Abdille.[231] After living in Toronto for some time, he hardened his perspective about his country of birth and developed a profound disdain for the United States. Acquaintances he met around Toronto shared their anger about the U.S.-led invasion in Iraq. At this time, Hammami befriended an Egyptian citizen at work, who exposed him to the perceived persecution of Muslims in Somalia by Christians in the West.[232] As the United States continued operations in Iraq and Afghanistan, his resentment toward Western ideology increased. A turning point in his radicalization, Hammami pursued conspiracy theories for months that centered on the oppression of Muslims by the West, reconsidering his nonmilitant stance.[233] Following his short stay in Toronto, he decided to explore a life committed to the jihadist movement. As a result,

[225] Elliott, "The Jihadist Next Door."

[226] al-Amriiki, "The Story of an American Jihaadi Part One."

[227] Ibid.

[228] Ibid.

[229] Ibid.

[230] Elliott, "The Jihadist Next Door."

[231] al-Amriiki, "The Story of an American Jihaadi Part One."

[232] Ibid.

[233] Ibid.

Hammami, his wife, Culveyhouse, and an Egyptian friend all moved to Alexandria, Egypt.[234]

Hammami and his group arrived in Alexandria and were disappointed by what they found. They realized Muslims who lived in Alexandria were not concerned with the religious or spiritual matters of Islam. In addition, Culveyhouse's plans to attend Al-Azhar University, a recognized Sunni Islam university fell through, and he realized his journey to jihad was not consistent with Hammami's. He later recalled, "I didn't want to continue down this fool's [Hammami's] path."[235] When Culveyhouse and his family departed from Egypt, Hammami felt betrayed; he and Culveyhouse soon drifted apart.

In April 2006, Hammami accessed online sources to seek a deeper understanding of Islamic ideology. That research led him to Daniel Maldonado.[236] Maldonado, 27, also an American-born Muslim convert, was a Salafist and teacher of the Qur'an, who had resided in Egypt since he and his family left New Hampshire the previous year. Soon after their exchanges online, Hammami and Maldonado met in person. Their friendship grew stronger over time as Maldonado educated Hammami in proper Islamic practices and how to live as a Salafist Muslim.[237] They often travelled together while visiting underserved Egyptian communities and secretive mosques.[238] Hammami was unaware that Maldonado was an active jihadist who had fought in Somalia some years earlier. Upon hearing of Maldonado's militant experience, he realized this was an opportunity to learn about the jihadists and to possibly participate in the movement. In 2006, he and his newfound jihadist brother traveled to Mogadishu, Somalia, to join the guerilla army known as Al-Shabab.[239] Hammami later wrote in an email, "I made it my goal to find those guys should I make it to Somalia," adding that he "signed up for training."[240]

---

[234] al-Amriiki, "The Story of an American Jihaadi Part One."

[235] Elliott, "The Jihadist Next Door."

[236] al-Amriiki, "The Story of an American Jihaadi Part One."

[237] Ibid.

[238] "Salafi" is the Islamic term for a modern follower of Sunni Islam in which a literal and strict adherence to the Qur'an is called for; the Salafi movement is often considered to be extremist.

[239] al-Amriiki, "The Story of an American Jihaadi Part One."

[240] Ibid.

Upon arrival in Mogadishu, Hammami and his friend immediately connected with a network consisting entirely of jihadist brothers and leaders.[241] Maldonado's prior engagement with Al-Shabab easily afforded Hammami acceptance into the network. He found himself surrounded by fellow jihadists, and his network of contacts increased substantially.[242] With Al-Shabab's acceptance, Hammami's ties with jihadists continued to strengthen. He was allowed to travel with them and was introduced to many of the most influential leaders of Al-Shabab. Their influence over Hammami inspired a renewed commitment to participate actively in the jihadist movement.[243] During Hammami's indoctrination into Al-Shabab, his new friend Maldonado fell ill and was forced to depart from the jihadist network. Hamammi's autobiography mentions nothing of Maldanado after his trip to Chiamboni, Somalia.[244]

Hammami quickly ascended the ranks of Al-Shabab, serving as a commander, a recruiter, and a propagandist for the organization.[245] As one of the most prominent members of the jihadist organization, he continued to expand his ties to other Muslim jihadists to include influential Islamic fundamentalist leaders in Al-Shabab, as well as members of Al-Qaeda.[246] Because of infighting among the leaders of Al-Shabab, the group eventually split into two factions: the Asmara group and the Xarakah ash-shabaab al-Mujaahidiin. Hammami chose to follow the latter, considered the more violent of the

[241] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 73.

[242] Ibid.

[243] al-Amriiki, "The Story of an American Jihaadi Part One."

[244] Ibid.

[245] Ted Dagne, *Somalia: Current Conditions and Prospects for a Lasting Peace* (CRS Report No. RL33911) (Washington, DC: Congressional Research Service, 2011), 7, https://www.fas.org/sgp/crs/row/RL33911.pdf.

[246] Ibid.

two groups,[247] sharing an ideology more similar to Al-Qaeda.[248] According to the *BBC*, Hammami was eventually killed by members of Al-Shabab on September 12, 2013.[249]

3. An SNA Approach to Omar Hammami's Radicalization

Analysis of social networks can be used to reveal actors (or clusters of actors) who are centralized in the network of radicalization and thus best placed to influence an individual's behavior.[250] An analysis of Omar Hammami's social network resulted in uncovering influential actors who played a significant role in his radicalization. Based on what is known from his own writing, such analysis identified Hammami's ties to those who provided him with his view of Islam and who influenced his decision to espouse extremist beliefs about the West. Sufficient data might have made possible the pre-emptive identification of the person or persons who provided Hammami with instruction regarding weapon-making skills and access to military and guerilla fighting tactics, as well as those who connected him with violent extremists on the Internet.[251]

Even a cursory consideration of Hammami's social networks, based on his autobiography and secondary sources of information, suggests two observations: Hammami's social networks needed to be evaluated over a prolonged period of time as opposed to analyzing a snapshot at any single point in his life; and such analysis could reveal relevant actors and specific events essential to Hammami's radicalization that ultimately led him to Al-Shabab. With sufficient data, rigorous SNA could contribute to strategies intended to prevent radicalization and violent extremism in at-risk communities.

---

[247] al-Amriiki, "The Story of an American Jihaadi Part One."

[248] Mahmoud Mohamed, "Hizbul Islam's Split from al-Shabab further Isolates Militant Group," *Sabahi*, September 28, 2012, http://hiiraan.com/news4/2012/Sept/26155/hizbul_islam_s_split_from_al_shabaab_further_isolates_militant_group.aspx.

[249] British Broadcasting Corporation (BBC), "Al-Amriki and al-Britani: Militants Killed in Somalia," *British Broadcasting Corporation (BBC)*, September 12, 2013, http://www.bbc.com/news/world-africa-24060558.

[250] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 64.

[251] Ibid.

Martin Bouchard's analysis of Hammami's social network identified 71 individuals who served as relevant actors in his journey to radicalization.[252] This includes the network of his family and friends prior to his adoption of an extremist narrative, as well as his network in Egypt and Somalia that led to his pursuit of violent extremism. Each actor (or node) in the network was identified by a tie to Hammami. These actors included family, friends, jihadi brothers, jihadi leaders, and clergy or teachers. SNA was used to determine Hammami's relationship to each actor (or cluster of actors) and how that relationship was used to influence Hammami's behavior.

Before Hammami became radicalized, his social network consisted primarily of his family and friends. Actors identified in this network included immediate family members, such as his father, first wife, and extended family in Syria, but also included his best friend, Culveyhouse, with whom he began his journey to radicalization. The kinship ties among these actors were most influential for Hammami in that some of them led to his understanding of the Muslim faith and connection with individuals who shared similar beliefs. Hammami's friendship with Culveyhouse was an important factor in reinforcing his increased interest in Islamic beliefs, the first such influence that occurred from outside his family largely responsible for his decision to travel to gain a deeper understanding of Islam. This travel, in turn, resulted in an expansion of Hammami's social network to actors overseas. The diffusion of ideas, influence, and information about the Muslim faith and Islam through this expanded social network, intensified his understanding of, and yearning to join, the jihadist movement. In Hammami's geographically dispersed social network, actors (nodes) with high degrees of centrality were identified; they formed a strong bond with Hammami that resulted in highly dense clusters that would have been difficult to penetrate at the height of his radicalization.

Social networks can also be bounded by location as illustrated by Hammami's subnetwork (or cluster) in Mogadishu. When initially visiting the Somali city after leaving Egypt, Hammami connected with at least 15 contacts, 13 of whom he identified as jihadist brothers.[253] One of these ties was to his friend from Egypt, who connected him

[252] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 68.

[253] Ibid., 69.

to an additional dense social network consisting primarily of jihadists from Somalia.[254] Hammami's social network at this time included influential actors who were instrumental in his decision to radicalize and then recruit for Al-Shabab.

Identifying the ties Hammami obtained through the Chiamboni network in Somalia, revealed those actors most likely responsible for his radicalization.[255] This network of jihadist brothers included the leader of Al-Shababas, as well as one of his jihadist friends responsible for recruiting additional radicalized Muslims and facilitating their attendance at training camps where they would learn guerilla fighting-tactics.[256] The leader of Al-Shabab later introduced Hammami to his second wife, who gave birth to Hammami's first son.

When Hammami's friend Maldonado departed Egypt after falling ill, the only link in Hammami's social network to his former life was severed, leaving him vulnerable to the powerful influence of his new jihadist brothers in Chiamboni, Somalia. Hammami was now surrounded by, and in contact with, only violent members of Al-Shabab, who then accepted him into the organization unconditionally. Hammami was able to ascend the ranks of Al-Shabab and strengthen his influence within the network. Specifically, as his ties strengthened with the leader of Al-Shabab, he was given a commander's position in the terrorist network. Hammami's position as a commander allowed him to recruit for the organization, as well as the ability to direct acts of violence against innocent civilians. Following his arrival in Somalia, Hammami became increasingly isolated from his wife and son, as well as with his family in the United States.[257]

The infighting in Al-Shababthat resulted in the establishment of two separate factions forced Hammami to choose with which one he would associate. When faced with that decision, he had only his localized social network of Al-Shabab brothers and leaders with whom to consult.[258] The result of that influence was his decision to pursue

---

[254] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 69.

[255] Ibid.

[256] Dagne, *Somalia: Current Conditions and Prospects for a Lasting Peace*, 7.

[257] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 74.

[258] Mohamed, "Hizbul Islam's split from al-Shabab further Isolates Militant Group."

the more violent jihadist path. Continuing on his path to personal jihad by joining the more militant branch of Al-Shabab, Hammami left Mogadishu and traveled to Baraawe, Somalia. He described the new network in Baraawe as a much smaller group than the previous Al-Shabab network, composed of only six other jihadist brothers who exclusively shared Islamic extremist views, sociopolitical ideologies, and the future vision of a violent Al-Shabab.[259]

Bouchard's research and literature review have shown that individuals are more susceptible to radicalization if they are isolated from moderating actors within a wider supporting social network.[260] In Hammami's case, he transitioned from the larger, dispersed Mogadishu and Chiamboni networks to the smaller, trusted, cohesive network of Baraawe. He severed social ties with those in the United States and with members of the less violent Al-Shabab group. In so doing, he sealed his fate. Hammami would later be killed by jihadists from the Al Shabab network of which he had originally been a member.

Using the measures of SNA, one can discern that those individuals who were most influential in connecting Hammami to new social networks and were instrumental in his radicalization possessed high betweenness centrality, suggesting they served as brokers or bridges in connecting social networks that facilitated his journey from radicalization to recruitment, and eventually his membership in a smaller, more cohesive network inside Al-Shabab.[261] The 10 actors who facilitated the shortest path between Hammami and all other actors in the network are listed in Table 3.[262] Listed at the top of the table is the actor with the highest betweenness centrality followed by those with lesser centrality. Identifying these actors and their locations yields a representation of their position in Hammami's network, revealing their importance in his overseas journey.

---

[259] al-Amriiki, "The Story of an American Jihaadi Part One."

[260] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 64; Sageman, *Understanding Terror Networks*, 137; Borum, "Radicalization into Violent Extremism Part II: A Review of Conceptual Models and Empirical Research," 4; Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 5.

[261] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 69.

[262] Ibid, 70.

Table 3. Top 10 Brokers in Hammami's Social Network.[263]

Relation to Hammami	**Actors' Active Location**
Family (father)	Daphne and Toronto
Jihadi leader 1	Mogadishu and Chiamboni, Somalia
Jihadi leader 2	Chiamboni and Baraawe, Somalia
Jihadi brother 1	Chiamboni and Baraawe, Somalia
Family (sister)	Daphne and Toronto
Best friend (high school)	Daphne, Toronto, and Alexandria
Family (first wife)	Daphne, Toronto, Alexandria, and Mogadishu
Jihadi leader 3	Mogadishu and Chiamboni
Jihadi brother 2	Mogadishu and Chiamboni
Best Friend (Egypt)	Alexandria and Mogadishu

Longitudinally, actors with high betweenness centrality provided Hammami connections to clusters over time that spanned geographic distances. His father shared ties to Hammami's Syrian family and Hammami's friends in high school. The time period Hammami was in contact with his father (the late 1980s to approximately 2004 to 2005 when he moved to Alexandria, Egypt) was also the period of his radicalization process, during which he met many new contacts that were influential in his journey to jihad.[264]

Ten actors served as brokers in facilitating Hammami's transition from one cohesive social network to another that spanned the following geographic locations.[265]

- From Daphne to Toronto (father, sister, best friend–high school, first wife)
- From Toronto to Alexandria (best friend–high school, first wife)
- From Alexandria to Mogadishu (first wife, best friend–Egypt)
- From Mogadishu to Chiamboni (Jihadist leader 1, Jihadist leader 2, Jihadist brother 1)

[263] Source: Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 70.

[264] Ibid.

[265] Ibid.

- From Chiamboni to Baraawe (Jihadist leader 3, Jihadist brother 2)[266]

Analysis of Hammami's social network also revealed that beyond just the central actors who provided links into new social networks or cliques, peripheral actors had the significant influence over Hammami's personal perspectives on his Muslim faith and his decision to participate in the jihadist movement. Among those who intensified his sociopolitical ideologies and what it meant to be a Muslim were Salafi Qu'ran teacher Daniel Maldonado and the shaykh Abu Muxammad al-Maqdasi, whom he followed online while in Alexandria. Hammami relied on Maldonado and the al-Maqdasi to legitimize his path to becoming a "pure" Muslim. In his autobiography, Hammami stated:

> I remember when I finally decided to read 'MillatuIbraahiim,' by Abu Muxammad al-Maqdasi. . . . I was so surprised to see how well the Shaykh was supporting his ideas with proofs. . . . Any remaining doubts in my head that were instilled by my early days as a'Salafi' (i.e., neo-Salafi) had been removed. Jihaad is truly an individual obligation upon all of us.[267]

Another influential actor in Hammami's social network, whom he credited with his ability to "think outside the box," was his high school teacher, Kathleen Hirsch.[268] In his autobiography Hammami noted, "She gave me a passion for learning, or at least she increased that passion. And she had us study other religions and ideologies as well."[269]

4. Summary Analysis of Omar Hammami's Radicalization

The SNA conducted by Martin Bouchard illustrates how Omar Shafik Hammami's changing social networks were instrumental in his radicalization process and eventual commitment to violent extremism. That analysis revealed specific and identifiable turning points when various actors in Hammami's social network were in a position to exercise maximum influence over him, leading to a life of violent extremism. This research has further validated other terrorism analysts who have argued for analyzing a person's social networks to reveal important factors in the process of

---

[266] Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 70.

[267] al-Amriiki, "The Story of an American Jihaadi Part One."

[268] Ibid.

[269] Ibid.

radicalization,[270] suggesting that homeland security professionals and the U.S. intelligence community would benefit from applying SNA to assess an individual's susceptibility to violent extremism.

B. CASE STUDY 2: VICTORIA, AUSTRALIA'S ANTI EXTREMISM STRATEGY

> It is programs such as the Leadership program [that are] seen to be strengthening community bonds by acting as a community facilitator and connecting young people to community networks.
>
> —Victoria, Australia, Youth Services

1. Synopsis of Victoria, Australia, Case Study

The state of Victoria is one of Australia's largest with a population around 5.6 million people.[271] With a surge in population pushing the state to the top of the national ladder, Victoria, has become one of the fastest growing and largest municipalities across the country.[272] The increase in population is mainly attributed to internal migration and is consistent with the tendency for people to seek areas with relatively affordable housing, available education, and good job prospects. According to Australia's Bureau of Statistics (ABS), young people searching for the same opportunities have been found to make up the larger majority of individuals migrating to Victoria. Young people living there range from 10–24 years old and represent 17.5% of the total population;[273] however, they face significant disadvantages when compared to the rest of the state.[274] Overall, ABS data

---

[270] Atran, "Here's What the Social Science Says about Countering Violent Extremism;"Sageman, *Understanding Terror Networks*, 137; Bouchard, *Social Networks, Terrorism, and Counterterrorism*, 77; Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 5.

[271] "Melbourne and Regional Victoria," November 20, 2016, http://www.liveinvictoria.vic.gov.au/living-in-victoria/melbourne-and-regional-victoria.

[272] Peter Martin, "ABS Population Statistics: Victoria Becomes Australia's Fastest Growing State," *The Sydney Morning Herald*, September 27, 2015, http://www.smh.com.au/business/the-economy/abs-population-statistics-victoria-becomes-australias-fastest-growing-state-20150924-gjudy9.html.

[273] Australian Bureau of Statistics (ABS), "Victoria: Population by Age and Sex, Regions of Australia," 2015, http://www.abs.gov.au/ausstats/abs.

[274] Ibid.

shows that one in six Australians aged 15–24 live in poverty as result of unemployment or a lack of education.[275]

A mix of over 140 nationalities is present in Victoria, and 125 languages other than English are spoken there.[276] Across Victoria's state capital of Melbourne, alone, three in 10 people speak a language other than English at home, and diversity continues to grow as refugee migration transforms the city and its people.[277] More cohesive and socially inclusive communities typically have high rates of diversity generated by individuals interacting with and learning from one another;[278] however, national security and social concerns continue to be reported by Australians as among the most important issues facing the country.[279]

Researchers examining violent extremism have suggested that a disadvantaged socioeconomic upbringing is a predictor of possible engagement in extremist crime.[280] Although no major terrorist attack has occurred in Australia since 2000, largely because of efforts that have disrupted such attacks, Australians continue to be concerned with their security.[281] These concerns are related to a potential breakdown in socially cohesive communities, as well as the emergence of urban enclaves that concentrate poverty and disadvantage in the Australian Muslim population.[282] The Australian Security Intelligence Organization (ASIO) has reported that several hundred Australians support

---

[275] "Homelessness and Young People," January 2016, http://www.homelessnessaustralia.org.au/images/publications/Fact_Sheets/Young%20People.pdf.

[276] "Aboriginal Languages in Victoria Today," 2016, http://www.vaclang.org.au/.

[277] Craig Butt and Allison Worrall, "Melbourne Language Study Reveals a Cacophony of Diversity," *The Age*, July 11, 2014, http://www.theage.com.au/victoria/melbourne-language-study-reveals-a-cacophony-of-diversity-20140711-zt4b4.html.

[278] Andrew Markus, *Mapping Social Cohesion* (Monash University: Victoria, Australia, 2015), 1.

[279] Ibid.

[280] Shahram Akbarzadeh, "Investing in Mentoring and Educational Initiatives: The Limits of De-Radicalisation Programmes in Australia," *Journal of Muslim Minority Affairs* 33, no. 4 (January 2014): 451–463, doi: 10.1080/13602004.2013.866347.

[281] "The Threat to Australia," last modified November 20, 2016, http://www.livingsafetogether.gov.au/aboutus/Pages/the-threat-to-australia.aspx.

[282] Shandon Harris-Hogan, Kate Barrelle, and Andrew Zammit, "What Is Countering Violent Extremism? Exploring CVE Policy and Practice in Australia," *Behavioral Sciences of Terrorism and Political Aggression* 8, no. 1 (January 2, 2016): 6–24, doi: 10.1080/19434472.2015.1104710.

violent Islamist ideologies.[283] To address the concern among its citizens, the Australian government has developed programs specifically intended "to assist young people to disengage from intolerant and radical ideologies and encourage positive and constructive participation in the community."[284]

2. Background: Victoria's Anti-Extremism Program for Youth

The anti-extremism project for youth in Victoria was established as a part of Australia's youth mentoring program that supports the Australian government's goal of administering effective community engagement to facilitate stronger and more resilient communities capable of resisting violent extremism.[285] The program was designed for young people aged 12–17, referred by the Victoria Police, the education sector, and welfare agencies as individuals who have displayed signs of fostering hate or prejudice. Young people experiencing feelings of intolerance or hate have been inspired by messaging from individuals or groups in the community or media.[286] To prevent violent extremists from taking advantage of vulnerable youth, program leaders seek to provide experiential learning and group-work to build a community's capacity and scaffolds of support that ensure the inclusion of young people instead of their marginalization.[287]

The program incorporates youth-work practice based on experiential adult learning principles as the primary method to engage at-risk individuals in Melbourne and greater Victoria. To foster the necessary elements for conducting youth-work, the program is framed by youth mentoring experts Mckee, Oldfield, and Poultney's following three principles:

- Purpose: Work is predominantly focused on achieving outcomes related to young people's personal and social development (as distinct from academic or vocational learning).

---

283 "The Threat to Australia."

284 Harris-Hogan, Barrelle, and Zammit, "What Is Countering Violent Extremism?" 6–24.

285 R. McClelland, "Countering Violent Extremism: Youth Mentoring Grants Program," Australian Government, Attorney-General's Department, 2011, http://www.ag.gov.au/Publications/Budgets/Budget 201011/Pages/CounteringViolentExtremisminourCommunity.aspx.

286 Broadbent, "Using Grassroots Community Programs as an Anti-Extremism Strategy," 190.

287 Ibid.

- Methods: The extensive use of experiential learning and group work (as distinct from a prescribed curriculum and classroom teaching or individual casework).
- Values: The voluntary engagement of young people with skilled adults transforms what is possible for young people.[288]

The purpose of youth-work is to equip individuals with a range of directed personal and social skills.[289] Peer mentors "can empower young people to use information and their judgment to make informed decisions."[290] Developing effective youth practitioners is important because they understand the structural barriers faced by their peers, such as policy issues surrounding their participation in civil society.[291] A network of skilled youth practitioners can influence other young people who may also have a sense of inadequacy or lack of social belonging.

The program ensures unified collaboration by engagement with communities.[292] It is guided by a socioecological framework focused on the social and physical environment and the resources necessary to foster personal growth,[293] facilitating partnerships with appropriate stakeholders, and securing the resources necessary for success. In doing so, the program encourages "the aspirations of young people to be a part of the whole, a part of their community, and to make a difference."[294]

The purpose of my research was to determine whether employing SNA can reduce a person's susceptibility to radicalization and violent extremism. In this case study, core SNA concepts were used to identify the actors (or nodes) and social ties

---

[288] Viv Mckee, Carolyn Oldfield, and Jo Poultney, "Benefits of Youth Work," Unite the Union UK, 2010, http://www.cywu.org.uk/assets/content_pages/187799973_Benefits_Of_Youth_Work.pdf.

[289] Ibid.

[290] Ibid.

[291] Ofsted, *Engaging Young People, Local Authority Youth Work 2005–08," Office for Standards in Education, Children's Services and Skills* (London, UK: The Office for Standards in Education, Children's Services and Skills, 2009), 8.

[292] Broadbent, "Using Grassroots Community Programs as an Anti-Extremism Strategy," 192.

[293] Michael Ungar, *The Social Ecology of Resilience: A Handbook of Theory and Practice* (New York: Springer, 2012).

[294] Broadbent, "Using Grassroots Community Programs as an Anti-Extremism Strategy," 198.

essential to the design and delivery of a specific youth intervention program. Based on the core principles of the program, the analysis covers social cohesion during and following youth mentoring that may improve collaboration, information seeking, and social support among group members and the community.

3. An SNA Approach to Anti-Extremism Interventions

Analysis of Victoria's youth intervention program revealed a number of social networks necessary for the implementation and sustainment of the program, including partnerships among organizations, such as the police, schools and universities, and community-based and nongovernmental organizations (NGOs). These social networks include person-to-person ties among youth, adult practitioners, and community and religious leaders based upon shared affiliations, kinships, friendships, and interests. SNA could have been used to determine the roles of individual actors or clusters of actors and the manner in which their relationships could be exploited to improve information sharing and social support throughout the community.

Before youth services leaders begin the intervention process, collaboration occurs in social networks, consisting of agencies and organizations within the community. Actors identified in this network include the Victoria police, as well as members of the education sector and welfare agencies who want to prevent at-risk youth from radicalizing. Organizational connections among actors are important in the development of the strong and weak ties needed to establish sufficient means to support the flow of information required for the program's targeted interventions. Other case studies have shown that family members, friends, or close acquaintances are likely to observe activities or behaviors that suggest an individual is being radicalized or has violent intent.[295] Furthermore, the stigma surrounding actors tied to efforts to combat violent extremism and terrorism has often reduced the motivation and trust of individuals seeking

[295] Atran, "Here's What the Social Science Says about Countering Violent Extremism;" Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 27; Aran et al., "Defining a Strategic Campaign for Working with Partners to Counter and Delegitimize Violent Extremism Workshop: A Strategic Multilayer Assessment Project"; Atran, *Pathways to and From Violent Extremism The Case for Science-Based Field Research: Hearing before the Senate Armed Services Subcommittee on Emerging Threats & Capabilities*, 3.

advice from such actors.[296] For those reasons alone, youth services leaders should consider changing the current focus on organizational ties by including influential actors who might be trusted by at-risk youth to offer advice or to explain the intervention process.

In this context, SNA can be used to identify influential actors who have demonstrated strong trust relationships with youth. In the past, interventions facilitated by community-identified actors have been more effective in accelerating behavioral change than those facilitated by actors outside the community because they know the community and engender trust and social capital.[297] Because they come from within the community, they can suggest means for better addressing the needs of at-risk youth residing in the community. Finally, because they are embedded in the community's social structure, such interventions can be sustainable, thereby increasing Victoria's capacity to reach at-risk youth through social mentoring provided by highly central actors.

To locate influential leaders or champions of youth-work intervention, program leaders can use SNA to measure the network in-degree of an actor. That is, the number of times in a directed graph of a network or cluster that an actor has questions directed to him or her.[298] Previous studies have shown that high-performance networks have resulted from high reciprocity, as well as in-degree relationships, among members in a network with high density.[299] For example, research conducted using social network data to scope evidence-based strategies for the Multidimensional Treatment Foster Care (MFTC) in a group of California and Ohio counties showed that counties with designated leaders as sources of information and advice yielded greater performance in delivering foster care

---

[296] Romaniuk, "Does CVE Work? Lessons Learned from the Global Effort to Counter Violent Extremism," 17; Homeland Security Advisory Council, *Countering Violent Extremism (CVE) Subcommittee: Interim Report and Recommendations* (Washington, DC: Department of Homeland Security, 2016), 4, https://www.dhs.gov/sites/default/files/publications/HSAC/HSAC%20CVE%20Final%20Interim%20Report%20June%209%202016%20508%20compliant.pdf.

[297] Thomas W. Valente et al., "Social Network Analysis for Program Implementation," *PLoS ONE 10*, no. 6 (June 2015), doi: 10.1371/journal.pone.0131712.

[298] Louis Freeman, "Centrality in Social Networks: Conceptual Clarifications," *Social Networks*, 1 (1979): 215–239.

[299] L. Zenk et al., "The Networks of High Performing Teams: A Dynamic Network Approach to Explain High and Low Performing Teams," in *Networking Networks, Origins, Applications, Experiments* (Vienna: Turia, 2013), 64–79.

than counties absent such leaders.[300] Moreover, a type of collaborative learning environment in highly dense groups (with strong ties), facilitated through Community Development teams, could be strategically positioned between counties as a way to address challenges across geographically dispersed areas. As a result, the overall networked effort was strengthened, and the quality and quantity of implementation were improved.[301] By following suit, the Victoria youth program can possibly reduce the time between interventions by relying on influential actors and the guidance they provide in identifying young people in the community who show signs of questionable behavior.

The Victoria youth program highlights the importance of capacity-building in communities through youth-work that ensures the inclusion of young people to mitigate their marginalization. Capacity strengthening is accomplished through social networks that promote "the social development of young people and facilitate their ability to learn through experience from others and their environment."[302] These networks are intended to foster close personal relationships through bonding intentionally facilitated by face-to-face interactions in support groups. Similar to the composition of peer networks, members of the youth intervention network are "people who share similar identities, circumstances, and contexts [that] can provide each other with trusted and relevant information, advice, and support when it is needed most."[303] In essence, youth services leaders aim to develop a social network of youth practitioners trained to facilitate and empower their peers and reinforce positive behavior based on the mentoring they receive.

Dense connections are the result of trust relationships. A network with high density is "positively related to the likelihood that actors within the network will follow accepted norms and behavior."[304] Dense networks, furthermore, allow people to monitor

---

[300] Valente et al., "Social Network Analysis for Program Implementation."

[301] Ibid.

[302] Tim Corney, "Youth Work: The Problem of Values," *Youth Studies Australia*, 23, no. 4 (2004): 11–19.

[303] Karl Umble et al., "Developing Leaders, Building Networks: An Evaluation of the National Public Health Leadership Institute 1991–2006," Public Health Leadership Institute, 2007, http://www.phli.org/eval reports/index.htm.

[304] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences*, 10.

others', which can in turn prevent them from deviant behavior.[305] When people run the risk of losing their trusted relationships, they are more likely to resort to social norms to avoid losing those relationships if they do not.[306] Thus, Victoria's youth-work intervention program is based on creating highly dense clusters that connect previously isolated youth to enhance the flow of information, resources, and social ties needed for a healthy and positive lifestyle.

Youth program leaders can use SNA to foster expanded network linkages by taking "before and after" snapshots of network connectivity. A "before" snapshot identifies structural holes and individuals less connected to the original peer network. A snapshot "after" more dense connections have been created indicates that bonding has exposed new clusters and identified important nodes that represent cohesive subgroups in the network. Measuring the ego-networks of marginal youth before and after an intervention can indicate whether or not their connectedness has improved in cohesive, positive clusters. If not, further intervention is necessary. A public health example of SNA-based interventions to reach individuals at risk is respondent-driven sampling (RDS). The RDS approach studied drug-injection users who had received a public health behavioral intervention. Following the intervention, users were given coupons to distribute in their social networks so their peers could also be made aware of the program.[307] Leveraging social networks to impose a wider range of influence was found to be effective in incentivizing both the initial actor and peers to participate.[308] This example demonstrates how incorporating SNA might also be applied during the implementation stage of the Victoria youth intervention program to increase support for those at risk of radicalization.

---

[305] Mark Granovetter, "Problems of Explanation of Economic Sociology," in *Networks and Organizations: Structure, Form and Action*, ed. Nitin Nohria and Robert G. Eccles (Boston: Harvard Business School Press, 1992), 29–56.

[306] Roger Finke and Rodney Stark, *The Churching of America, 1776–2005: Winners and Losers in Our Religious Economy*, 2nd ed. (New Brunswick, NJ: Rutgers University Press, 2005), 35.

[307] Valente et al., "Social Network Analysis for Program Implementation."

[308] Ibid.

Statistics on extremist violence have shown that the absence of community connections and personal development opportunities for young people increase the likelihood of their committing crimes of violent extremism.[309] Victoria's youth project aimed to "strengthen community bonds by acting as a community facilitator and connecting young people to community networks."[310] This reflects social capital as an essential component to a meaningful life; that is, social networks, which "facilitate communication and coordination, increase individual identities and power and help to create a space for collective resolutions to challenges."[311] Supporting social networks that encourage young people to reject intolerant and radical ideologies and to participate in positive community activity is a potential game changer for Victoria's youth intervention program. SNA can provide intervention strategies a useful method to identify the means to better disseminate positive messages that empower young people through engagement and participation in their own community. Such strategies are especially crucial at times when the rapid online spread of influence by violent extremists has exacerbated the susceptibility of those living in socially isolated and marginalized environments.

4. Summary Analysis of Victoria's Anti-Extremism Program

This case study provided a cursory analysis of the relevance of SNA as a tool to enhance an anti-extremist youth intervention program in Victoria, Australia. Previous researchers of interventions have suggested the importance of strengthening social networks by closing the structural holes that prevent marginalized or isolated individuals from connecting to supportive clusters or communities.[312] The Hammami case study demonstrated the power that *malign* social networks had on the radicalization of an individual, and Victoria case study provided an example of the potential contributions

---

[309] Atran, "Here's What the Social Science Says about Countering Violent Extremism."

[310] Broadbent, "Using Grassroots Community Programs as an Anti-Extremism Strategy," 197.

[311] Robert Putnam, *Bowling Alone: The Collapse and Revival of American Community* (New York: Simon & Schuster, 2001), 20.

[312] Harris-Hogan, Barrelle, and Zammit, "What Is Countering Violent Extremism?"; V. Ramalingam, *Impact of Counter-terrorism on Communities: Sweden Background Report* (London: Institute for Strategic Dialogue, 2012.)

SNA can make to *benign* networks to facilitate intervention with youth at risk of radicalization and recruitment to commit acts of terror.

C. CASE STUDY 3: SCOTLAND TACKLING MUSLIM RADICALIZATION

> We aim to develop avenues through which all individuals are able to harness their particular skills for the benefit of wider society. In this way we actively engage with other interested collectives and organizations to make this vision a reality.
>
> —The Solas Foundation

1. Synopsis of Glasgow, Scotland, Case Study

Scotland has a population of over five million people, 17% of whom are under 16 years of age and 65% aged 16–64. Approximately 77,000 Scots are Muslim.[313] Scottish Muslims share a particular sense of cohesion that has at least partially directed communities away from grievance-based jihadi propaganda, yet questions linger as to whether radicalization is truly less appealing for Scottish Muslims or simply hidden within closely tied communities.[314] Indeed, the people of Scotland are familiar with the danger of violent extremism.[315] Since the 2005 London transit attacks and the 2007 attempted bombing at Glasgow Airport, Scotland has disrupted over 40 terrorist plots motivated by Islamist extremism, while also focusing on preventing future strikes.[316] Although the government's approach to counterterrorism has succeeded thus far in protecting its citizens, the emergence and complexity of radicalization and violent extremism have driven Scotland to develop a new strategy focusing on long-term objectives for anticipating and mitigating Islamist radicalization.

Earlier studies have shown that most Islamist terrorists had little formal religious Islamic training and very few of them have knowledge of what the Koran actually

313 Summary: Demographics," September 10, 2016, http://www.gov.scot/Topics/People/Equality/Equalities/PopulationMigration.

314 Stefano Bonino, "The Jihadi Threat to Scotland: Caledonian Exceptionalism and Its Limits," Combating Terrorism Center at West Point, April 22, 2016, https://www.ctc.usma.edu/posts/the-jihadi-threat-to-scotland-caledonian-exceptionalism-and-its-limits.

315 "Terrorism," September 10, 2016, http://www.readyscotland.org/are-you-ready/terrorism/.

316 Her Majesty's Stationery Office, *Counter-Extremism Strategy* (London: Her Majesty's Stationery Office, 2015), 10.

states.[317] In fact, almost 90% of violent Islamists had not received any kind of formal religious education.[318] That was true of all the 9/11 terrorists, as well as those responsible for the 7/7 London attack.[319] Osama Bin Laden's academic background, for instance, was in engineering and business, not Islam.[320] Recognizing this, Scotland launched its own unique counter ideology program by providing authentic and authoritative Islamic teaching through the Solas Foundation.

The Solas Foundation has attempted to counter radicalization by providing education in Islamic scholarship based on a model of engagement and focused on delegitimizing the narratives of extremists who often misconstrue Islam.[321] The principles of SNA have been applied to the following case study to illustrate how the Solas Foundation program outcomes can be enhanced in Scotland and to provide homeland security professionals in the United States a framework that undermines the domestic radicalization process and limits the influence and credibility of those attempting to incite violence.

2. Background: The Solas Foundation's Prevention Program

The Solas Foundation was founded in 2009 by two Muslim scholars, Shaykh Ruzwan Mohammed and Shaykh Amer.[322] Mohammed is a Sunni theologian who graduated with degrees in Geopolitics and Arabic studies from the University of Glasgow. Amer, heralded as one of Scotland's most prominent and respected Muslim thinkers, holds a law degree from Strathclyde University and a bachelor's degree in Islamic studies from the University of Wales.[323] In the past, when Scottish Muslims

---

317 Azeem Ibrahim, "Reclaiming Islam," *Sunday Herald*, August 9, 2009, http://belfercenter.ksg.harvard.edu/publication/19504/reclaiming_islam.html.

318 Ibid.

319 Ibid.

320 Glenn Kessler, "Was Osama bin Laden 'not a Muslim leader?'" *The Washington Post*, May 3, 2011, https://www.washingtonpost.com/blogs/fact-checker/post/was-osama-bin-laden-not-a-muslim-leader/2011/05/03/AFdVDUjF_blog.html.

321 "What's in a Name?" last modified November 26, 2016, http://solasfoundation.org/?go=about.

322 Ibid.

323 "What's in a Name?"

searched for information regarding mainstream Islamic law and scripture, no local organization was qualified to provide it.[324] As a result, people in the Islamic community were increasingly confused about the core principles and underlying tenets of Islam. Thus, the Solas Foundation developed a plan to connect Scottish and British Muslim communities to qualified Islamic scholars with the credibility to teach and influence mainstream Islam.[325]

The Foundation is committed "to promoting authoritative scholarship and learning and harnessing religious ethics to promote a better civic and social experience, through targeted research and learning."[326] Primarily achieved through its theological and social education program, Solas pioneered what it calls "authentic Islamic education from a Muslim scholarly perspective."[327] The program was specifically designed to clarify Islam through, for example, the i-Syllabus and the University Initiative, to meet the educational needs of various groups. The i-Syllabus is a foundational course designed to reach a broad range of individuals, and the University Initiative is focused specifically on the academic community.[328]

Solas's educators are chosen for their unique combination of both scholarship and personal experience, similar to the backgrounds of the Muslim scholars who founded Solas.[329] To obtain the appropriate level of expertise, Solas requires that educators be "credible to young people, teach Islamic scholarship authoritatively, and explain its context in modern life."[330] Solas's recruitment of educators with such expertise not only ensures that formal Islamic education is provided through accepted scholarship but also provides mentors for developing homegrown scholars. People in local communities are encouraged to seek advice from these vetted scholars instead of listening to outsiders

---

[324] Ibrahim, "Reclaiming Islam."

[325] Ibid.

[326] "What's in a Name?"

[327] Ibid.

[328] Ibrahim, *Tackling Muslim Radicalization: Lessons from Scotland*, 1.

[329] Ibrahim, "Reclaiming Islam."

[330] Ibid.

attempting to exert influence. Solas is thus geared toward providing credible role models and building leadership capacity to strengthen individuals' knowledge base in Scottish and British populations.[331]

Solas also works closely with multiple organizations and agencies. This includes partnering with Islamic and non-Islamic organizations seeking to enrich social capital by offering advice on how best to apply Islamic ethics in the proper context so that businesses can better provide services to Muslims.[332] Solasalso promotes itself at institutions of higher learning, local mosques, and faith-based organizations (see Figure 6), drawing attention to credible thought leaders who openly renounce violence while bolstering mainstream Islam. This encourages engagement with individuals who can then properly discuss and debate the issues most frequently exploited by ideologically motivated extremists.[333]

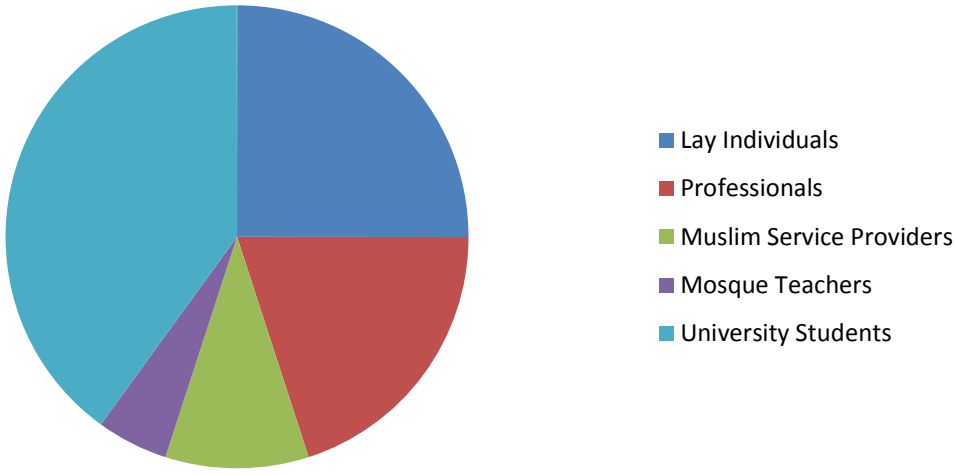

Figure 6. Breakdown of Solas Intake.[334]

[331] Ibrahim, *Tackling Muslim Radicalization: Lessons from Scotland,* 4.

[332] Ibrahim, "Reclaiming Islam."

[333] Ibrahim, *Tackling Muslim Radicalization: Lessons from Scotland,* 5.

[334] Source: Ibid., 7.

Because the goal of the program is prevention, not deradicalization, in terms of national security, program outcomes produced to date have been difficult to measure. Solas measures success by the "quiet changing of minds; the gradual dwindling of traffic to radical websites; and, ultimately, the decrease of homegrown attacks being attempted."[335] The program also relies on more visible and tangible measures of performance, such as the number of student participants, to gauge its overall effectiveness. After participating in Solas's initiatives and studies, recipients reported a deeper appreciation of the importance of training in proper Islamic scholarship, which has helped to sustain them on a truly ethical path.[336]

Since the creation of Solas, several communities have developed their own customized strategies premised on the program's core principles to build and sustain ongoing support for at-risk individuals.[337] These strategies have included the creation of networks to deal with young delinquents; establishment of a Muslim radio program to inform listeners about the importance of "true" Islam, engagement with mentors and teachers to encourage modern Islamic teaching; and, connections with individuals, businesses, and charities to provide advice for correcting misinterpretations of Islamic law throughout their communities.[338] While Scotland has benefited from this program dedicated to providing formal mainstream Islamic education among its communities, the increase of Islamist movements with an ambiguous stance towards violence and the global appeal of Islamist terrorist groups continue to present challenges. The religious messaging used by these groups has amplified the need for extending proper Islamic scholarship throughout a wider network to better counter the narrative of radicals who seek to attract vulnerable, ill-informed individuals.

The Solas Foundation disseminates word of its Islamic teachings through social networks that offer institutional reach to a wide range of communities in Britain. This reach facilitates brokered access to various academic and community institutions and

---

[335] Ibrahim, *Tackling Muslim Radicalization: Lessons from Scotland,* 7.

[336] Ibid.

[337] Ibid.

[338] Ibrahim, "Reclaiming Islam."

provides recruiting opportunities for formal educators and community leaders in a collaborative and culturally sensitive manner. Program leaders hope to build a cadre of credible role models who can provide Scotland's Muslim communities the means to recognize distortions in religious teachings and to engage with individuals holding such views. Creating resources that allow access to scholars throughout local communities can build leadership capacity and provide opportunities to discuss peaceful traditions of Islam openly and collaboratively.

A number of researchers have applied SNA to evaluate the effectiveness of organizational and leadership development networks.[339] This has proven useful in helping organizations understand how information and resources flow through its social networks to influence desired outcomes. SNA could certainly be applied to the Solas Foundation and its community outreach to better determine and improve its effectiveness over time. The broad concepts of SNA have been applied in the following section to illuminate how key relationships and actors in local communities could contribute to Solas's programs intended to reduce susceptibility to radicalization and violent extremism.

3. An SNA Approach to Religious Education

Solas offers programs and outreach intended to eliminate radical distortions of Islam. The Foundation's initiatives have been designed to create sustainable community–scholarship partnerships, build community-based knowledge in areas lacking formal Islamic education for outreach, increase individuals' participation in educational programs, and facilitate the development of junior Islamic scholars. To evaluate and increase its effectiveness in connecting individuals with mentors, recognized theological academic institutions, nongovernmental organizations, and positive influences in the

[339] Ricardo Wilson-Grau and Martha Nunez, "Toward a Conceptual Framework for Evaluating International Social Change Networks," *Development in Practice*, 2003, 1, http://www.people.bath.ac.uk/edsajw/madpdf/app3.htm; Madeline Church et al., *Participation, Relationships, and Dynamic Change: New Thinking on Evaluating the Work of International Network* (The United Kingdom Department for International Development (DFID) (London: University College of London, 2002), 5. http://www.ucl.ac.uk/DPU/publications/working%20papers%20pdf/WP121%20final; Umble et al., "Developing Leaders, Building Networks: An Evaluation of the National Public Health Leadership Institute 1991–2006," 1.

Muslim communities, the Solas Foundation could benefit from the concepts and tools of social network analysis.

Even a cursory consideration of the Solas Foundation's multifaceted educational and community outreach campaign suggests a number of social networks essential for successful collaboration among various individuals and organizations. At the individual level, this includes ties with scholars and teachers, religious and community leaders, and others active in the community. The Foundation has ties with Muslim communities that span mosques, academic institutions, nonprofit organizations, businesses, service providers, and local social groups. These relationships can self-organize (or be deliberately organized) through strong and weak ties into clusters and networks that provide cultural support by sharing information and resources. Although many of these clusters and networks have already formed organically, they have not been analyzed using the tools of social network analysis. The Solas Foundation might benefit by employing this sort of analysis to determine which actors and relevant ties could be most effective in connecting wider networks of outreach and support among Scottish and British Muslim communities.

To create sustainable community–scholarship partnerships, Solas personnel seek to connect social networks of organizations and individuals. Organizational nodes include institutions of higher education, mosques and religious institutions, community groups, and businesses. Individual nodes include imams, Solas-identified mentors and educators, Muslim youth, family and friends, business associates, and university faculty and students. Both formal organizational and informal social ties help to facilitate and extend the dissemination of Solas initiatives. Understanding the strength and nature of these ties is also important. To counter the ideological narratives of extremists that distort Islamic teachings, recent efforts have emphasized the need to enhance trust, as well as to foster cooperation and partnerships in programs delivering community outreach and engagement.[340]

[340] Office of the President of the United States, *Strategic Implementation Plan for Empowering Local Partners to Prevent Violent Extremism in the United States,* 2011.

A 2016 investigation by a Scottish Non-governmental organization revealed that leaders from the Glasgow Central Mosque, Scotland's largest mosque, had funded Islamic extremist groups in 2011,[341] resulting in tense relationships between the new but younger leadership and older Muslims in the community who no longer believed the mosque was offering traditional Islamic teaching.[342] Trust is a fundamental aspect of strong social ties that can contribute to both a sense of security and effectance in a social network.[343] SNA can help identify the strength of ties, as well as the existence of structural holes that represent gaps between clusters. By leveraging weak ties, clusters could be connected through nodes with high betweenness centrality, thereby increasing the size and cohesiveness of supporting social networks.

SNA can be used to determine which actors possess the right attributes and are best placed to have the most influence in promoting connectedness and cohesion in a network. In previous studies, such actors have often emerged from the informal networks or clusters that underpin formal networks and are often not easily identifiable.[344] Informal networks are frequently formed through homophily centered on shared attributes, such as social norms, values, and backgrounds.[345] A case study in which SNA was applied to better understand how to engage Australian communities in climate policy advocacy showed that network entry (into both formal and informal networks) "speaks to the socially inclusive or exclusive nature of a group."[346] Although the Solas Foundation has facilitated outreach and engagement through formal institutions and networks in the community, an opportunity may exist to better leverage informal networks to close

---

[341] David Leask, "Charity Watchdog Slams Glasgow Central Mosque Elders amid Concerns of Funding for Ultra-Orthodox Group," *Herald Scotland*, January 19, 2016, http://www.heraldscotland.com/news/14213225.Charity_watchdog_slams_Glasgow_Central_Mosque_elders_amid_concerns_of_funding_for_ultra_orthodox_group/.

[342] Bonino, "The Jihadi Threat to Scotland: Caledonian Exceptionalism and Its Limits."

[343] Kadushin, *Understanding Social Networks; Theories, Concepts, and Findings*, 63.

[344] Ralph Stacey, *Complexity and Creativity in Organizations* (San Francisco: Berrett-Koehler Publishing, 1996), 25.

[345] Christopher Cvitanovic et al., "An Introduction to Social Networks for Engaging the Community in Climate Policy," *Node for Adaptive Communities Unpublished Report to New South Wales Office of Environment and Heritage* (2014), 3.

[346] Ibid.

structural holes that limit overall network growth and the effectiveness of the stated goals of the program.

Programs similar in intent to those of the Solas Foundation, also founded by Muslim scholars, have shown that integrating with informal networks, such as trust networks, is useful in countering extremist narratives meant to influence the thinking of individuals living in vulnerable environments.[347] Trust networks have been defined as "ramified interpersonal connections, consisting mainly of strong ties, within which people set valued, consequential long-term resources and enterprises at risk to the malfeasance, mistakes, or failures of others."[348] In other words, trust networks are highly dense networks formed through bonding, which denotes tightly knit groups or clusters.[349] Networks with high density can decrease the perceived risks and costs associated with collaboration, an important factor for collective action.[350] Network density can help explain why "when like-minded people deliberate as an organized group, the general opinion shifts toward extreme versions of their common beliefs."[351]

In a 2004 study of global Salafi jihad (GSJ), a small cluster of young men, who regularly met at a mosque and subsequently lived together in an apartment, eventually radicalized after months of excessive social interaction with its most extreme members.[352] Such cluster formation and bonding can just as readily promote positive behavior and outcomes. Solas Foundation leaders could benefit from evaluating dense networks and highly central actors to broker or bridge collaboration between groups or clusters; moreover, additional groups can be influenced from this brokering capability. Accessing cohesive subgroups, or dense clusters brokered by central actors in the

---

[347] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences,* 13.

[348] Charles Tilly, "Trust and Rule," in *Theory and Society* (New York: Cambridge University Press: 2005), 33.

[349] Ronald Burt, *Brokerage and Closure*: *An Introduction to Social Capital* (Oxford, New York: Oxford University Press, 2005), 279.

[350] Ronald Burt, "The Social Capital of Structural Holes," in *The New Economic Sociology: Developments in an Emerging Field*, ed. M. F. Guillen et al. (New York: Russell Sage Foundation, 2003), 234.

[351] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences,* 13.

[352] Sageman, *Understanding Terror Networks,* 26.

network, can help to increase collaboration and increase the flow of information throughout the Solas network, providing a platform for discussion of diverse opinions in geographically dispersed locations. The end result could be a stronger knowledge base and growing capacity in the community for resisting radicalization to Islamist extremism.

An opportunity for the Solas Foundation to extend its influence through social networks is exemplified by efforts to forge closer ties with the Scotland Government's Development trusts, which are community-run agencies, formed to develop social cohesion and to meet the economic, social, environmental, and cultural needs of Scottish communities.[353] A report released by Education Scotland in partnership with the Development Trust Association Scotland (DTAS) concluded that the work of Development Trusts strongly contributed to local economies, as well as supporting the development of priorities for the Scottish government. Convenor of Mull and Iona Community Trust and Chair of DTAS, Sandy Brunton, stated:

> The outcomes from this study reflect the hard work and commitment of the trusts involved, but has a wider significance for the community-led regeneration network as a whole. . . . We are delighted that our community engagement and involvement has been highlighted as a key strength of the organisation as two of our key aims are to build community cohesion and reduce social isolation.[354]

By forging closer ties with actors, such as the Development Trusts, Solas can provide an opportunity to increase individuals' participation in program initiatives and build community-based knowledge in areas lacking formal Islamic education for outreach.

The Solas Foundation emphasizes the importance of capacity building in communities through vetted scholars who make certain that issues relating to Islam and Muslims are approached from "an authoritative theological and social policy frame of reference."[355] This capacity is developed through social networks "to educate a new

---

[353] "What Are Development Trusts," last modified June 30, 2009, http://www.gov.scot/Topics/Built-Environment/regeneration/engage/learning/learningresourcepack.

[354] Susan Smith, "Development Trust are transforming Scottish communities," *Third Force News*, July 2016, http://thirdforcenews.org.uk/tfn-news/development-trusts-are-transforming-scottish-communities.

[355] Ibrahim, "Reclaiming Islam."

generation of community leaders, teachers and advocates who will then be able to strengthen the British Muslim community."[356] These networks are intended to develop leaders and form dense groups or clusters around them so that young Muslims who become knowledgeable in mainstream Islamic scholarship can persuade others who are not properly educated and trained.

One way SNA can help track the development of junior scholars is by measuring their in-degree, a simple influence measure that counts how many directed relationships indicate whether or not an actor is highly sought for advice.[357] SNA studies evaluating leadership networks showed that advice networks are important when the barriers to change are technical.[358] That is to say, when someone discloses they do not understand the behavior, then advice or expertise is needed to influence leadership. For Solas, increasing the widespread acceptance of Islamic learning is dependent on developing a network of individuals having the necessary scholarship credentials to provide advice that can offset distorted radical Islamist narratives. For instance, one student in the program asked Solas educators to clear up the topic of suicide bombing. The student said, "I am confused about this topic for I have heard prominent individuals speak in favor of it even though I know most scholars do not allow it."[359] SNA could help the Solas Foundation identify which actors exhibit the most influence based on their in-degree centrality in a specific network to increase the impact of educational engagement.

Solas can also monitor and measure the progress of aspiring educators' development and their in-degree influence, determining which actors are becoming more or less central in their social networks. Other metrics for analyzing in-degree relationships also provide for the measurement of how influential particular advice-seekers are.[360] A person whose advice is sought by many other highly influential people

---

[356] Ibrahim, "Reclaiming Islam."

[357] Freeman, "Centrality in social networks: Conceptual clarifications," 215–239.

[358] Valente et al., "Social Network Analysis for Program Implementation."

[359] Ibrahim, *Tackling Muslim Radicalization: Lessons from Scotland*, 5.

[360] Bruce Hoppe and Claire Reinelt, "Social Network Analysis and the Evaluation of Leadership Networks: SNA and Leadership Networks," *The Leadership Quarterly* 21 (2010): 603, doi: 10.1016/j.leaqua.2010.06.004.

can have a higher score of in-degree centrality in the network.[361] By evaluating these metrics, Solas may be able to improve methods to strengthen the capacity of British and Scottish Muslim communities, explicitly tracking changes in perceptions and attitudes across the network as a result of a scholar's influence.

4. Summary Analysis of Glasgow's Prevention Program

The consideration of SNA in this case study illustrates the role social networks play in affecting program outcomes for the Solas Foundation. SNA might help Solas enhance the design, implementation, and sustainment of its community education and outreach processes. Bearing this in mind, homeland security experts in the United States may be able to advance community-based programs to counter the narratives of violent extremism and terrorism with the goal of reducing a community's vulnerability to religion-based extremism.

D. CASE STUDY ANALYSIS CONCLUSION

This section has focused on the role SNA can play in a person's trajectory towards radicalization and the development of strategies for undercutting an individual's and community's potential susceptibility to radical narratives that could lead them to violence or terrorism. It began with a general overview of an individual and various communities at risk, and then moved onto an exploratory analysis and interpretation of whether the application of the SNA methodology may have prevented the process of radicalization, or was useful for crafting and enhancing strategies in community engagement and intervention programs. The case studies allowed this research to refine the theoretical framework from the literature, offering a strong foundation for developing theoretical assumptions, based on the framing of relationships within bounded social networks in vulnerable communities. As such, a community is given the means to identify the social networks that can potentially increase or decrease a community's susceptibility to the changing ideological narratives that promote radicalization and recruitment to violent groups. By developing a THIRA strategy based on SNA principles,

[361] Hoppe and Reinelt, "Social Network Analysis and the Evaluation of Leadership Networks: SNA and Leadership Networks," 603.

homeland security and intelligence officials may be more effective in reducing a community's overall vulnerability and increasing its resilience to anticipate and mitigate the threat of violence and terrorism.

THIS PAGE INTENTIONALLY LEFT BLANK

V. APPLICATION: INCORPORATING SOCIAL NETWORK ANALYSIS IN THIRA

The previous chapter contained an analysis of the role social networks play in the radicalization process of an individual, as well as in community outreach and engagement programs intended to counter violent extremism. The purpose of this chapter is to incorporate the lessons learned in the case studies cited into FEMA's existing THIRA process for assessing the vulnerability of a community threatened by radicalization and violent extremism.

Although the interpersonal relationships of violent extremists have not been extensively studied, insights derived from the few studies that have explored the social networks of specific radicalized individuals have proven helpful in suggesting methods to reduce the vulnerability of communities at risk from radicalization and violent extremism. Without understanding the strength and pattern of ties within the community, pinpointing the information and resources necessary to prevent someone from radicalizing is difficult. Further, investigators struggle to identify relevant actors, both those at risk and those seeking to radicalize them. Therefore, the case study analyses in the previous chapter suggests that SNA may prove to be a valuable tool and suggests how it might be incorporated into the nation's Threat and Hazard Identification and Risk Assessment process.

All three case studies dealt with the process of radicalization and revealed how social networks play a role in the susceptibility of an individual and community to violent extremism. The Omar Hammami case study lies at one end of the spectrum in which an individual was successfully radicalized. The case studies in Scotland and Australia lie at the other end of the spectrum with intervention and educational services successfully used as tools for building a community's capacity to disrupt the radicalization process. The analyses of all three case studies provided a new perspective on relationships in bounded social networks of at-risk communities that could be incorporated into FEMA's threat and risk assessment framework as the means of identifying and mitigating against relationships that place susceptible individuals at risk.

A. THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S THIRA PROCESS

Incorporating the concepts of SNA into the THIRA framework first requires a description of the current process. Established through Presidential Policy Directive-8: National Preparedness System, the THIRA process is the DHS/FEMA policy that guides communities through a capabilities assessment to identify and assess their vulnerabilities. FEMA's *Comprehensive Preparedness Guide (CPG) 201* describes THIRA's four-step process for communities to identify and prioritize the threats and hazards they face.[362] The latter steps of the framework outline a strategic process for risk managers to identify and target capability gaps, estimate capabilities and resources, and then apply the results to address and close capability gaps effectively.[363] According to the *CPG 201 Guide*, the four-step process is as follows:

- **Identify the Threats and Hazards of Concern.** Based on a combination of past experience, forecasting, expert judgment, and other available resources, communities identify a list of the threats and hazards of primary concern to the community.
- **Give the Threats and Hazards Context.** Communities describe the threats and hazards of concern, showing how they may affect the community.
- **Establish Capability Targets.** Communities assess each threat and hazard in context to develop a specific capability target for each relevant core capability. The capability target defines success for that capability. Prevention core capabilities include Planning; Public Information and Warning; and Operational Coordination; Intelligence and Information Sharing; Interdiction and Disruption; Screening, Search, and Detection; and Forensics and Attribution.[364]
- **Apply the Results.** Communities estimate the required resources per core capability to meet the capability targets.

THIRA policy also emphasizes the need to use a whole-of-community approach to facilitate the process. The whole community, which includes a network of all levels of

[362] U.S. Department of Homeland Security, *Threat and Hazard Identification and Risk Assessment Guide: Comprehensive Preparedness Guide (CPG) 201*.

[363] Ibid.

[364] U.S. Department of Homeland Security, *National Prevention Framework*, 2016.

government, private sector, nonprofit and faith-based organizations, and the public,[365] is the underlying principle in DHS and FEMA policies that aims to strengthen the means by which homeland security professionals capture societal capacities for building relationships and learning more about the complexities of their community.[366] As cited in this research, however, no method currently exists to adequately instruct a community in capturing and building such capacities. As part of a new assessment framework, SNA may significantly contribute to this effort as part of FEMA's Threat and Hazard Identification and Risk Assessment process.

B. A NATIONAL SOCIAL NETWORK APPROACH

The goal of the new assessment framework is threefold: to identify communities lacking relevant social network information that would contribute to social outreach; to enhance trust between government and communities to foster cooperation and partnerships; and to link the right expertise, skills, and resources to help at-risk communities increase the number of proficient stakeholders and fora in which community members can work safely with their government to develop targeted support strategies. This framework is intended to support a new homeland security strategy to identify and assess the vulnerability of communities through an analysis of their social networks. In doing so, a determination can be made of which actors and relationships best lend themselves to opportunities for the government to develop, deliver, and sustain efforts for preventing the root causes of extremist ideologies.

The proposed THIRA SNA process begins with the identification of communities that present as high-risk areas for radicalization based on the analysis of their social networks. Geography plays a central role in the definition of each community, but determining which are "at-risk" means identifying the social networks that may have the potential to foster radical ideologies. As cited in the literature review and all three case

---

[365] Federal Emergency Management Agency (FEMA), *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action* (Washington, DC: Department of Homeland Security, 2011), http://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf.

[366] Ibid.

studies, a critical first step to understanding the health and well-being of communities is assessing social capital and the extent to which members of a community feel connected through trust relationships to leaders, neighbors, and local government or display signs of marginalization. Although Scotland and Australia are characterized by highly cohesive communities, their citizens continue to question their security in the face of a perceived breakdown in social capital and cohesion as promulgated through radical narratives. Analyzing a social network's density, structure, and characteristics, as well as structural holes that represent gaps between clusters in a community network, can help enhance an understanding of community resilience. By taking a network approach when assessing a community's vulnerability to radicalization and recognizing the critical link between social connectivity and individual perceptions of safety and well-being, the THIRA process can be used to determine areas at greatest risk.

All three case studies demonstrate that dramatic changes in the behavior of individuals can often be traced to the social networks to which they belong. A hidden pattern of relationships intent on marginalizing susceptible individuals can potentially limit the development of social capital and result in radicalization, a claim supported by the Australia case study. As recommended earlier, efforts, such as Australia's Youth Mentoring Program might benefit from interventions designed to facilitate the formation of highly dense clusters and bonding in youth worker social networks to promote social capital and positive behavioral outcomes. As discussed in the literature review, establishing social ties in a population lacking density is difficult.[367] Moreover, the less cohesive a community, the less access an individual has to the strong ties needed to provide a sense of safety in social networks.[368] Integrating a formal visualization process—social network analysis—into the initial steps of THIRA, could enable a community to determine the structure and characteristics of specific social networks by measuring density -the ratio of actual ties to possible ties - and various other metrics. As was shown in the Scotland and Australia case studies, communities lacking strong social

[367] Everton, *Disrupting Dark Networks: Structural Analysis in the Social Sciences,* 35.

[368] Kadushin. *Understanding Social Networks; Theories, Concepts, and Findings,* 61.

support systems are subject to higher levels of marginalization and isolation among their populations that can increase the community's vulnerability to radicalization.

Once an at-risk community is identified, the next step is to assess the context of the threat and to determine how it may affect community resilience. As this thesis has shown, the emergence of strong and weak ties across the social network of an individual over time (and geographic location) can reveal clusters of radicalization or indications of trust relationships with known radical elements. As was the case in Omar Hammami's trajectory to radicalization, his informal ties to family, friends, and classmates were most influential in shaping his initial perceptions of Islamic and Muslim beliefs, but his social and religious alienation drew him closer to a jihadi network, whose members also shared experiences of social, economic, and political discrimination. In Victoria, Australia evaluating the effect of creating dense clusters through bonding, facilitated by interventions with isolated youth, might be accomplished by measuring network connectedness before and after an intervention.

Using visual mapping tools to identify where structural holes between clusters exist in community social networks can potentially reduce vulnerability by providing ties to connect networks and enhance social capital among community members. Given the evolving threat from radicalization, inserting SNA methodology into the THIRA process at the onset can allow analysts to measure and graphically depict inter-relationships and gaps between clusters to anticipate the likelihood at-risk individuals may be radicalized or recruited. In this way, a community is provided the opportunity to mitigate the process of radicalization by creating a strategy of intervention and support.

After a community identifies internal areas of vulnerability, a capability target can be developed (such as mentoring and counseling services) to address the vulnerabilities and to assess the capacity for delivering each capability by determining gaps in support and resources that may inhibit achievement of desired outcomes. In many cases, no formal or informal network may be in place to provide essential social services, protect a population from intimidation, and to evaluate whether terrorist organizations and their actors are gaining legitimacy. As in the Australia case study, formal organizational ties with mosques and informal ties formed through homophily may have provided the most

direct means to counter extremist narratives meant to manipulate individuals at risk. Assessing the intersection between formal and informal networks helps to identify opportunities to establish strong bridging or brokering capabilities that enable a community to provide adequate support or advice on topics related to the prevention of violent extremism. These opportunities also include leveraging powerful actors or supportive clusters to advance counter radicalization efforts. This approach might enhance the success of the THIRA process and possibly decrease or eliminate the flow of recruits to violent extremist organizations while increasing community resilience.

SNA offers the potential to assess the collaborative and cooperative nature of individuals, groups, or organizations engaged in counter radicalization strategies at the community level. Drawing on interviews and surveys, a community can apply SNA to identify areas of weakness that prevent effective communication and the flow of resources through collaborative partnership. An objective assessment can provide the means to better understand the collaboration network as a whole, enabling communities to improve prevention capabilities, as well as to achieve their identified capability targets by recognizing which actors are best positioned to close structural holes and thus improve overall network effectiveness.

In the case studies from Scotland and Australia, many potential advantages of SNA emerged. Among these was the ability to recognize individuals or groups best suited to help identify the desires and needs of a community, obstacles to change, and favorable motivators for transformation. Each case study demonstrated the importance of developing strategies that forged closer ties with actors who engendered trust and social capital within the community network. Identified actors, both those central to, and peripheral in, social networks of interest, were used to promote the socially inclusive nature of their communities. In the case of Omar Hammami, peripheral but trusted actors beyond those most central to his original social network had the most influence in his radicalization process.

Measuring the strength of ties within social networks requires asking vulnerable individuals, “With whom do you discuss problems?” The answer identifies actors or nodes perceived by the subject as being trustworthy, credible, and communicative, often

indicating high in-degree centrality. By asking such questions, a community can increase its ability to nurture relationships and build trust within the THIRA network by defining shared objectives with community gatekeepers who are graphically mapped as having high in-degree centrality. This type of analysis may also address the concerns of civil-society actors, who have often felt alienated by the prevention measures that were imposed, regardless of whether existing relationships with government or the community are good, poor, or barely existent.[369]

In addition, a community that develops an engagement strategy by targeting actors with in-degree centrality can help contrast conflicting narratives and trust relationships between law enforcement and healthy cultural fora on the one hand and extremists on the other. Strong ties with influential actors in local communities can build trust within isolated clusters that may encourage individuals to volunteer sensitive information because they feel safe enough to do so.[370] This assertion was illustrated in the Hammami case study when his sister declared, "The fact that my brother is a terrorist—it's not something you can talk to anyone about."[371] Even though she abhorred violence, the sister chose not to disclose Hammami's behavior for fear of retribution. Through the latter steps of the THIRA process, capabilities, such as intelligence and public information sharing can be strengthened by forging closer ties with community-identified actors to help refine the means by which messages are conveyed. Targeted engagement will also allow residents in vulnerable communities to more easily access help and find ways to seek appropriate counsel for themselves or those close to them.

The THIRA process provides the means for communities to estimate their capabilities and to determine resources required to close capability gaps. This assessment involves determining whether constraints exist in delivering capabilities, such as public information, to make decisions about the allocation of limited resources. According to the literature, networks among CVE-related partners have often faced barriers, including

---

[369] Romaniuk, "Does CVE Work? Lessons Learned from the Global Effort to Counter Violent Extremism," 12.

[370] Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, 31.

[371] Elliott, "The Jihadist Next Door."

resource constraints, knowledge gaps, and underdeveloped peer-to-peer contacts.[372] The examination of Scotland's program to prevent individuals from engaging in misconceived Islamist-based violence revealed how identifying the existence of structural holes was critical to understanding knowledge gaps and behavioral constraints in the network. This was also evident in the analysis of Australia's community engagement activities, administered through its youth prevention program, where the identification of cohesive subgroups was essential for establishing efficient communication channels and closing structural holes by embedding highly centralized nodes in the network.

This same type of evaluation can be applied to the THIRA process for extending resources to disconnected clusters. Communities can map isolated networks that limit overall network growth and effectiveness and then leverage groups or nodes (actors) with high betweenness centrality to create or strengthen brokering or bridging capabilities to close structural holes. Moreover, these same actors can serve as essential linksto strengthen trust between individuals or groups, increasing the speed and flow of information and influence. Because of the diverse nature of communities and threats across the US, highly centralized actors with access to cohesive subgroups, or dense clusters, are in a stronger position to determine which criteria will be most useful in a resource allocation strategy. As a result, communities can customize prevention capabilities and apply resources that define them, increase the size and cohesiveness of supporting social networks, and promote and extend positive behavior throughout marginalized networks, thereby reducing vulnerability to radicalized violence.

C. A PRACTITIONER'S APPLICATION

The analysis presented above attempted to justify the utility of incorporating SNA in the THIRA process through the framework discussed. Commercially available software applications provide the tools for conducting social network analysis, however, practitioners require an understanding of the process wherein analysts and policy makers generate strategies for selecting the appropriate capabilities to address their assessment of

[372] Romaniuk, "Does CVE Work? Lessons Learned from the Global Effort to Counter Violent Extremism," 27; Homeland Security Advisory Council, *Countering Violent Extremism (CVE) Subcommittee: Interim Report and Recommendations*, 3.

the threats and opportunities. The following section provides a brief overview of this process.

Prior to implementing specific capabilities, the analyst conducts an assessment of the community's needs, influences, and opportunities for reducing the risk of radicalization. This includes mapping the network boundaries of a community and the population of interest, and the social networks of individuals and organizations present. Social networks identified to implement capabilities ideally include like-minded actors with common relationships to establish, strengthen, and maintain a coordinated and collaborative THIRA network.

SNA is used to assess the social capital available in a community, to identify isolated or marginalized individuals or groups, to mobilize specific resources and information, and then to apply the capabilities necessary to address vulnerable communities through community engagement and interventions. This analysis leverages face-to-face interviews, publicly available information (including social media scraping), and surveys to inform target capabilities. The outcome of this effort is a stronger understanding of the threat environment and the social networks needed to offset it. The THIRA team uses this analysis to identify at risk communities, to understand barriers to the implementation of counter radicalization strategy, to identify community leaders, partners, and gatekeepers who can help develop and/or implement relevant core capabilities, and to gather any data needed to anticipate and preempt an individual's radicalization, thereby strengthening a community's overall resilience to violent extremism.

To illustrate how SNA can be integrated into the THIRA assessment process, I will explore the application of my proposed framework to the community of Lewiston, Maine's *hypothetical* assessment of the Information and Intelligence Sharing core capability. As prescribed in the National Prevention Framework, the Information and Intelligence Sharing core capability is intended to:

- identify, develop, and provide timely, accurate, and actionable information resulting from the planning, direction, collection, exploitation, processing, analysis, production, dissemination, evaluation, and feedback of available

information concerning physical and cyber-threats to the United States, its people, property, or interests; and

- involves the effective implementation of the intelligence cycle and information integration process by local, state, tribal, territorial, and Federal intelligence entities, the private sector, the public, and international partners, as appropriate, to develop situational awareness on the actor(s), method(s), means, weapon(s), or target(s) related to preventing terrorist threats within the United States.[373]

The description above guides Lewiston's application of social network principles to assess its Information and Intelligence Sharing capabilities, which translates into the development of the specific capability actors, methods, means, weapons, or targets, as well as the identification of potential impacts from the threat of radicalization and violent extremism. In my notional scenario, following a SNA assessment, Lewiston can then develop customized capability targets to achieve desired outcomes. Notional examples of capability targets are provided below.

- Share all relevant actionable information and intelligence across all levels of government and other stakeholders to anticipate and identify emerging and or imminent threats through the intelligence cycle. Within hours of receipt of actionable intelligence, share actionable information, develop and disseminate appropriate classified or unclassified products, and submit terrorism-related information and/or suspicious activity reports to all appropriate authorities.

- Ensure federal, state, local, and private sector partners possess or have access to a mechanism to submit terrorism-related information and suspicious activity reports to law enforcement for a statewide event.[374]

Through the application of social network analysis, Lewiston can aggregate social network data to provide an initial understanding of the relevant social networks in the community (both malign networks and those benign networks that might build positive social capital for community members). The network data collected and analyzed determines relevant groupings of actors or clusters of actors (or distinct subgroups) and the relationships that are critical for implementing the capability targets identified. The aggregation process can provide Lewiston with structural information about the network

[373] U.S. Department of Homeland Security, *National Prevention Framework*, 2016.

[374] Ibid.

and known disaggregation of the network through the presence of structural holes. Furthermore, the analysis would provide information on individual and subgroup relationships including individual and subgroup relative positional importance within social networks of interest. Unfortunately, risks accompany using SNA when obtaining information from social networks, such as the collection of personally identifiable information (PII), which I will address later in this section.

To define the structure of the network and locate the appropriate actors or clustering and relationships, the analyst assigns weights to nodes (or actors) and ties (or edges). Once the structure of the network is graphically depicted, Lewiston can determine the appropriate measures for implementation. Based on the capability targets above, Lewiston would apply the following weights to target-specific nodes and relationships to achieve the identified capability targets through appropriate means. Examples of potential aggregated weights to nodes and ties are provided in Table 4.

Table 4. Proposed SNA Capabilities Assessment for Practitioner.[375]

	Aggregate Weighted Nodes	**Aggregate Weighted Ties**
Appropriate for Information/Intelligence Sharing	• Positional or relational data • Additional data on attributes • Nodes representing speed or distance • Actors or subgroups communicating through egos spanned across structural holes • Interest in cohesive nodes inside and outside the intelligence and information sharing network	• Relational data • Ties' (edge) weights representing distance • Actors who have memberships in multiple subgroups • Interest in clustered relationships

[375] Source: Sara E. Sterling, *Aggregation Techniques to Characterize Social Networks* (Wright-Patterson Air Force Base, OH: Department of the Air Force Air University, 2004), 51.

	Aggregate Weighted Nodes	**Aggregate Weighted Ties**
Examples	Examples Positional data • Influential power of an actor or cluster towards all other nodes in the network • Timed rate of sharing or exchange of information or intelligence to other actors, such as law enforcement, Fusion Centers, community members, to every other actor in the network (i.e. determining the speed of communications in relation to path length). • Numeric sum of meetings and/or events an actor attends • Numeric sum an actor initiates or directs contact (emails, phone calls, etc.)	• Timing of communication (email, etc.) exchanged between actors • Expenditures for relaying intelligence or information between more than one location • Number of contact shared between two actors • Length of time communicated between actors
Node measures Assigned	• Degree Centrality • Closeness Centrality • Betweenness Centrality • Eigenvector Centrality	• Individual ties • Organizational ties
Example Outputs	• Node measures indicating actor's position with regard to the data defined • Data on actor positions indicating subgroups or nodes positions and degree of activity among and between actors.	• Aggregated data on relationships indicating minimum or maximum communication among actors • Data on actor or subgroup positions specifying minimal or maximum rate of interactions between actors or clustered subgroups

A modified example based on Sara Sterling's model.

As illustrated in Table 4, by assessing the nature of the actors and relationships and assigning social network measures, Lewiston can be provided an opportunity to

evaluate and improve the effectiveness and efficiency of Information and Intelligence Sharing capabilities. In this case, Lewiston may use SNA to identify whether the network is fragmented by revealing the links between clusters or subgroups, and whether clusters have emerged or are being by connected by specific actors with ties to several groups. In addition, Lewiston could measure network density to identify cohesive subgroups in the network, suggesting which nodes sets may be easily leveraged or otherwise exploited to facilitate the information integration process. Actors mapped with high centrality may be targets for the Information and Intelligence Sharing capabilities. They may include former trusted members of sub-groups of interest who know a great deal about these subgroups, but who no longer have a role in them or a position of direct authority. Finally, the evaluation of flow of communication or information would determine which nodes or actors in the network are not suitable for receiving classified or sensitive information. In the future, Lewiston would have the social network tools in place to conduct an ongoing assessment and measure of effectiveness of its counter radicalization efforts over time.

D. SNA RISKS TO INFORMATION PRIVACY

The use of SNA is not, however, without risks. Obtaining PII and using this data to populate social network matrices (using named actors' attributes and characteristics) and topologies can create issues related to privacy, ethics, and civil liberties.[376] The adoption of mobile and electronic technologies and the investigation of crimes and extremist messaging propagated through Internet-based applications have added complexity and risk to the management of a person's information privacy.[377] More broadly, the surveillance of social media and how it affects First and Fourth Amendment

[376] Pennsylvania State University, "Social Network Analysis Privacy Tackled," *Science Daily*, February 14, 2015, https://www.sciencedaily.com/releases/2015/02/150214184519.htm.

[377] Tony Romm, "Tech Slams Homeland Security on Social Media Screening," Politico, August 22, 2016, http://www.politico.com/story/2016/08/social-media-screening-privacy-227287.

rights have increased scrutiny of government agencies with duties of public safety and homeland security.[378]

The *National Criminal Intelligence Sharing Plan* (NCISP) established 28 Code of Federal Regulations (CFR) Part 23 as the national standard to ensure that intelligence and law enforcement agencies' "submission, access, storage, and dissemination of criminal intelligence information conform to the privacy and constitutional rights of individuals, including the group and organization to which they may belong."[379] To assist federal, local, state, and tribal intelligence and security agencies in determining whether they are in compliance with these standards, and to implement applicable privacy, civil rights, and civil liberties protections in their policies and procedures, the U.S. Department of Justice's (DOJ's) Global Justice Information Sharing Initiative (Global) Criminal Intelligence Coordinating Council (CICC), in partnership with DHS/DOJ's Fusion Process Technical Assistance Program, developed the Privacy, Civil Rights, and Civil Liberties Compliance Verification for the Intelligence Enterprise.[380] The document prescribes a suggested methodology for agencies to conduct adequate records review, including the opportunity to identify weaknesses and gaps that should be included when performing their review.[381] The guidance also includes "an awareness of processes and procedures that could affect the intelligence and information sharing environment, such as the handling of controlled unclassified information (CUI) among various federal agencies."[382] Thus, to implement the use of SNA as a tool for addressing the prevention

---

[378] Alexandra Mateescu et al., "Social Media Surveillance and Law Enforcement," Data Civil Rights, October 27, 2015, http://www.datacivilrights.org/pubs/2015-1027/Social_Media_Surveillance_and_Law_Enforcement.pdf; Andrea Stone, "DHS Monitoring of Social Media under Scrutiny by Lawmakers," *The Huffington Post*, February 16, 2013, http://www.huffingtonpost.com/2012/02/16/dhs-monitoring-of-social-media_n_1282494.html.

[379] Global Advisory Committee, *National Criminal Intelligence Sharing Plan: Building a National Capability for Effective Criminal Intelligence Development and the Nationwide Sharing of Intelligence and Information, Global Information Sharing Toolkit (GIST)* (Washington, DC: Global Advisory Committee, 2013), http://www.it.ojp.gov/documents/NCISP_Plan.pdf.

[380] U.S. Department of Justice, *Privacy, Civil Liberties Compliance Verification for the Intelligence Enterprise* (Washington, DC: U.S. Department of Justice, 2010), 1, https://it.ojp.gov/documents/d/privacy%20civil%20rights%20and%20civil%20liberties%20compliance%20verification%20for%20the%20intelligence%20enterprise.pdf.

[381] Ibid.

[382] Ibid.

of radicalization and violence, and to encourage a community's participation, the THIRA program should ensure its use is established in accordance with homeland security and intelligence agency policies that comply with national standards and existing guidance as a normal course of business.

E. CONCLUSION

The analysis of the common characteristics of social network analysis, using a multiple case study method, provided the necessary information to determine how these characteristics may play a role in the new THIRA approach for assessing a community's vulnerability to radicalized violence. Mostly, this research has shown this to be a complex undertaking, analyzing hidden yet influential social relationships within a community that can ensure the successful prevention of radicalization before the process even begins. Each community is unique, and each will have its own set of needs, barriers, and challenges, but incorporating SNA into the process of THIRA may fill critical gaps in our understanding of radicalization and violent extremism that enhance our ability to improve individual and community resilience.

THIS PAGE INTENTIONALLY LEFT BLANK

VI. CONCLUSION

The multiple case study approach used in this research has yielded findings that ultimately answer the question: *How can Social Network Analysis (SNA) reduce the vulnerability of a community at risk of radicalization and violent extremism if used within the Federal Emergency Management Agency's (FEMA) THIRA process?*

The assertions made at the beginning of this paper were that 1) a gap exists in counter radicalization and violent extremism studies and policies with regard to assessing a community's vulnerability through an analysis of their social networks; 2) a means is needed to qualitatively and quantitatively measure the interpersonal relationships of violent extremists and at-risk communities by incorporating SNA in the THIRA process; and 3) SNA can be used or acknowledged in homeland security organizations' prevention assessment tools and methods for pre-empting radicalization and violence. To determine how this may be accomplished, the following two sub-questions were answered to provide recommendations derived from this research followed by suggestions for future research and next steps in the field of countering or preventing violent extremism.

A. RECOMMENDATIONS

1. How Can SNA Be Incorporated in the THIRA Process to Help Prevent Radicalization and Violent Extremism?

The case studies in Chapter IV provided an analysis of an individual's radicalization process, as well as intervention and engagement programs based on core SNA principles illustrated in the existing literature. The research shows that for a variety of reasons, incorporating SNA at the onset can help determine an individual's and community's vulnerability to radicalization and violent extremism, as well as a community's ability to prevent or counter such threats. As described in Chapter V, communities that lack a high degree of social capital and social support systems were subject to higher levels of marginalization and isolation among their populations that can increase their vulnerability to radicalization. Moreover, the emergence of strong and weak ties across the social network over time (and geographic location) can reveal

clusters of radicalization or indications of trust relationships with known radical elements, as well as actors who are best positioned for influencing those clusters or relationships. From those findings, an assessment framework was proposed outlining how communities can integrate SNA methodology into the THIRA process. A community's ability to measure social network density, centrality, structure, and characteristics was determined to be beneficial if included in the four-step process of THIRA. It was then suggested how a community could mitigate the threat of radicalization by developing and targeting core capabilities that may build social capital and trust, increase efficiency and availability of information sharing, and provide social support to improve resilience.

2. In What Ways Do Current Homeland Security Organizations Acknowledge or Use SNA in their Prevention Assessment Tools and Methods?

Research discussed in the literature review focused on determining the effectiveness of SNA as a tool for homeland security professionals to better understand and disrupt criminal, gang, and terrorist networks. In addition to this research, a number of initiatives have been undertaken by homeland security professionals that can illuminate the incorporation of SNA into existing prevention assessment tools and methods. The FBI, for example, currently uses SNA as a technique to aid in conspiracy investigations[383] and to solve the most prevalent crimes in communities.[384] Using social networking techniques, police identify the connections among group members of local gang, criminal, or terrorist cells and focus on actors who would potentially be most knowledgeable about, or influential in, the activity in question. By analyzing areas, such as "the social distance between individuals and groups, the direction in which exchanges flow between people, the relative influence of various group members, the suspect's centrality to the group, and the degree of cohesiveness of the group,"[385] the investigator

[383] Roger H. Davis, "Social Network Analysis: An Aid in Conspiracy Investigations," *Law Enforcement Bulletin* 50, no. 12 (December 1981): 11–19, https://www.ncjrs.gov/App/Publications/abstract.aspx?ID=81001.

[384] Johnson, "Social Network Analysis: A Systematic Approach for Investigating."

[385] "Social Network Analysis: An Aid in Conspiracy Investigations."

might diminish the extent to which actors may initiate conspiratorial involvement in supporting either criminal or terrorist activity.

As analytic hubs, intelligence fusion centers also use information from social networks for countering violent extremism and protecting local communities from violent crime. Through the use of technologies and community reporting vehicles, such as social media, suspicious activity reporting (SAR), license plate readers, and facial recognition technologies,[386] intelligence fusion centers conduct association analyses of critical investigative or assessment variables to examine the relationships among individuals suspected of involvement in criminal or terrorist activity and patterns that emerge as the variables are linked in the analyses.[387] Qualitative and quantitative research methods are also incorporated to draw conclusions described in either a narrative or scale of measurement form.[388] As a result, intelligence fusion centers are able to support state and local partners' ability to detect behaviors and indicators of potential terrorist and criminal threats they could encounter in the field by systematically analyzing connections and characteristics derived from malicious social networks.[389] This research has shown that SNA is a useful methodology for enhancing existing homeland security organizations' prevention assessment methods and tools.

B. FUTURE RESEARCH

This thesis used case studies to explore the ways in which SNA could serve as a valid tool for programs intended to prevent or diminish radicalization and violent extremism. The thesis provided several characteristics of susceptible communities' social networks, as well as examples of how those characteristics could be used in the analysis

386 National Network of Fusion Centers, *2015 National Network of Fusion Centers Final Report* (Washington, DC: National Network of Fusion Centers, 2016), 15, https://www.hsdl.org/?view&did=796365.

387 United States Department of Justice, *Baseline Capabilities for State and Major Urban Area Fusion Centers: A Supplement to the Fusion Center Guidelines* (Washington, DC: United States Department of Justice, 2008), 42–43, https://it.ojp.gov/documents/d/baseline%20capabilities%20for%20state%20and%20major%20urban%20area%20fusion%20centers.pdf.

388 Ibid.

389 U.S. Department of Homeland Security, *The Role of Fusion Centers: Countering Violent Extremism* (Washington, DC: U.S. Department of Homeland Security, 2012), https://it.ojp.gov/documents/roleoffusioncentersincounteringviolentextremism_compliant.pdf.

of an individual's radicalization process and engagement and interventions facilitated through counter-radicalization programs. The analysis also suggests several pathways for future research on using SNA in the THIRA framework and other government efforts for countering terrorism and violent extremism.

First, further research is needed to determine the level to which a community's vulnerability and capability gaps, as revealed through the THIRA process, makes them of particular interest to the security community at the national level. Because the recent decrease in federal funding has been understood to have diminished the ability to facilitate and support a large number of interventions and engagement, targeting capabilities would need to be concentrated in specific areas. Each of the cases studied applied similar criteria to determine the focus of their outreach and support, and the federal government would need to determine criteria as well. The proposed THIRA process outlines several criteria that could help the targeting of capabilities for communities throughout America. Ultimately, states and localities should use their THIRA results to inform grant spending for strategically closing their capability gaps. The development of such criteria would require further research exploration regarding the use of SNA when assessing threats from, and prevention of, radicalized violence and whether this type of assessment supports a more cost-effective strategy.

Second, further research has the potential to determine whether the utilization of SNA in the THIRA process will have positive effects in preventing an individual from radicalizing and adopting violent intentions. For example, would capabilities in the community to increase social capital decrease the likelihood of radicalization similar to of what occurred with Omar Hammami or isolated communities experiencing high rates of extremist violence, such as the Somali Diaspora communities in Minnesota.[390] The case studies suggest that linkages exist between central actors, cohesive communities, and social support systems and the various factors that contribute to radicalization and increased or decreased vulnerability. If the use of SNA in the THIRA framework

[390] *Violent Extremism: Al-Shabaab Recruitment in America: Hearing before the Senate Homeland Security and Governmental Affairs Committee*, 4 (2009) (statement of Andrew Leipman, Deputy Director of Intelligence National Counterterrorism Center (NCTC) Directorate of Intelligence).

indicates positive effects longitudinally from intervention activities, further research is needed to measure how that information can lead to improving prevention efforts nationally and drive a change in policy direction to permit for a broader scope in mitigating the process of radicalization.

Finally, although the SNA methodology in the THIRA process was designed to enhance a community's assessment of vulnerabilities and capabilities, several aspects of the national assessment framework suggested in the literature and case studies that warrant additional review. Using SNA as a primary tool for assessment and strategy development is the basic recommendation emerging from this research; however, specific areas of academic research should also explore the use of simulations, such as system dynamics and agent-based modeling that could also inform effective solutions.

C. NEXT STEPS

The central points of this thesis are as follows: applying SNA for assessing threats of radicalization and violent extremism can be effective in making communities safer, and that the U.S. federal government can improve its national threat and risk assessment strategy by working with actors who are trusted and provide the most influence in a community. These points form the basis for a new THIRA process, a mechanism for federal and local agencies that can work to build trust and stronger support systems among the whole-of-community.

To realize the new THIRA model, support is needed to create a unified, national CVE framework that focuses on the spread of ideology and its impacts, which is distinct from imminent threats of terrorism and its intersection with law enforcement. Because the communications from violent extremists are more ubiquitous than ever before, every state and community must be prepared to address the challenge of radicalization and violent extremism. While the cases studied in this thesis provide some examples of effective programs, at least one U.S. community would need to take the lead as a pilot program in testing SNA in the THIRA process. Successful implementation of an experimental case, particularly with a state or community with prior experience in conducting a THIRA, could make the case for national expansion, and ultimately initiate

an addendum to the Comprehensive Preparedness Guide 201 that outlines the four-step process for accountability of the threat and risk assessment framework. Such findings can address the need to align federal government efforts with individual cities and towns to establish a nationwide approach to CVE.

The United States has already seen that predicting radicalization is difficult and efforts to disrupt the process are not always successful. The tactical approaches have thus far been largely effective, but they usually rely on identifying a threat just before it is carried out. Because the knowledge of someone who may have already been radicalized to commit violence is inherently limited, this approach may not always be successful. By developing a strategy that prevents an individual's trajectory toward radicalization while it is still in early stages of development, however, homeland security and intelligence officials may be more effective in reducing a community's overall vulnerability and increasing its resilience. A focus on social networks brings to light areas previously unexplored that may improve our fundamental understanding of the radicalization process and offer a road map for successful interventions in the future.

LIST OF REFERENCES

Abbasi, Alireza, and Jörn Altmann. "A Social Network System for Analyzing Publication Activities of Researchers." In *On Collective Intelligence*, edited by Theo J. Bastiaens, Ulrike Baumöl, and Bernd J. Krämer, vol. 76, 49–61. Berlin, Heidelberg: Springer Berlin Heidelberg, 2010. http://link.springer.com/10.1007/978-3-642-14481-3_5.

Akbarzadeh, Shahram. "Investing in Mentoring and Educational Initiatives: The Limits of De-Radicalisation Programmes in Australia." *Journal of Muslim Minority Affairs* 33, no. 4 (January 2014): 451–463. doi: 10.1080/13602004.2013.866347.

al-Amriiki, Abu Mansuur. "The Story of an American Jihaadi Part One." Scribd, May 2012, www.scribd.com/doc/93732117/The-Story-of-an-American-Jihadi.

Aldrich, Daniel P. *Mightier than the Sword: Social Science and Development in Countering Violent Extremism.* Washington, DC: United States Agency for International Development, 2014.

Aldrich, Daniel. "First Steps towards Hearts and Minds? USAID's Countering Violent Extremism Policies in Africa." *Global Policy Research Institute* (June 2012): 1–36. doi: http://docs.lib.purdue.edu/gpridocs/8.

Aran, Ashley et al. "Defining a Strategic Campaign for Working with Partners to Counter and Delegitimize Violent Extremism Workshop: A Strategic Multilayer Assessment Project." Paper presented at workshop for the U.S. Department of State RAND Corporation JS/J-3/DDGO STRATCOM/GISC OSD/DDRE/RRTO, Washington, DC, May 19–20, 2010.

Arquilla, John, and David Ronfeldt. *Advent of Netwars.* Washington, DC: RAND, 1996.

Arquilla, John, and David Ronfeldt, ed. *Networks and Netwars: The Future of Terror, Crime, and Militancy*. Washington, DC: RAND, 2001.

Atran, Scott. "Here's What the Social Science Says about Countering Violent Extremism." *The Huffington Post*, April 25, 2015. http://www.huffingtonpost.com/scott-atran/violent-extremism-social-science_b_7142604.html.

Australian Bureau of Statistics (ABS). "Victoria: Population by Age and Sex, Regions of Australia." 2015. http://www.abs.gov.au/ausstats/abs.

Australian Government. "The Threat to Australia." Last modified November 20, 2016. http://www.livingsafetogether.gov.au/aboutus/Pages/the-threat-to-australia.aspx.

Baker, Michael. "Social Networks and High Healthcare Utilization: Building Resilience through Analysis." Master's thesis, Naval Postgraduate School, 2016.

Barnes, John A. “Class and Committees in a Norwegian Island Parish.” *Human Relations* 7, no. 1 (February 1954): 39–58. doi: 10.1177/001872675400700102.

Benard, Cheryl. *A Future for the Young: Positive Options for Helping Middle Easter Youth Escape the Trap of Radicalization, RAND’s Initiative for Middle East Youth (IMEY)*. Santa Monica, CA: RAND, 2005.

Bonino, Stefano. “The Jihadi Threat to Scotland: Caledonian Exceptionalism and Its Limits.” Combating Terrorism Center at West Point, April 22, 2016. https://www.ctc.usma.edu/posts/the-jihadi-threat-to-scotland-caledonian-exceptionalism-and-its-limits.

Borgatti, Stephen P., Ajay Mehra, Daniel J. Brass, Giuseppe Labianca. “Network Analysis in the Social Sciences.” *Science* 323, no. 5916 (February 2009): 892–95. doi: 10.1126/science.1165821.

Borgatti, Stephen P., and Virginie Lopez-Kidwell. “Network Theory.” In *The SAGE Handbook of Social Network Analysis*, edited by John Scott and Peter J. Carrington, 40–54. London: SAGE, 2011.

Borum, Randy. “Assessing Risk for Terrorism Involvement.” *American Psychological Association* 2, no. 2 (2015): 63–87. doi: http://dx.doi.org/10.1037/tam0000043.

———. “Radicalization into Violent Extremism I: A Review of Social Science Theories.” *Journal of Strategic Security* 4, no. 4 (2011): 7–36. doi: http://dx.doi.org/10.5038/1944-0472.4.4.1.

———. “Radicalization into Violent Extremism Part II: A Review of Conceptual Models and Empirical Research.” *Journal of Strategic Security* 4, no. 4 (2011): 37–62. doi: http://dx.doi.org/10.5038/1944-0472.4.4.2.

Bouchard, Martin. *Social Networks, Terrorism, and Counterterrorism.* New York: Routledge, Taylor and Francis Group, 2015.

British Broadcasting Corporation (BBC). “Al-Amriki and al-Britani: Militants Killed in Somalia.” *British Broadcasting Corporation (BBC),* September 12, 2013, http://www.bbc.com/news/world-africa-24060558.

Broadbent, Robyn. “Using Grassroots Community Programs as an Anti-Extremism Strategy.” *Australian Journal of Adult Learning* 53, no. 2 (July 2013): 187–210.

Brown, Jason. “Improving Nonlethal Targeting: A Social Network Analysis Method for Military Planners.” Master’s thesis, Naval Postgraduate School, 2012.

Burt, Ronald. *Brokerage and Closure*: *An Introduction to Social Capital*. Oxford, New York: Oxford University Press, 2005.

———.*Structural Holes: The Social Structure of Competition.* Cambridge, MA: Harvard University Press, 1992.

———. "The Network Structure of Social Capital." *Organizational Behavior* 22 (2000): 345–423.

———. "The Social Capital of Structural Holes." In *The New Economic Sociology: Developments in an Emerging Field*, edited by M. F. Guillen et al. New York: Russell Sage Foundation, 2003.

Butt, Craig, and Allison Worrall. "Melbourne Language Study Reveals a Cacophony of Diversity." *The Age*, July 11, 2014. http://www.theage.com.au/victoria/mel bourne-language-study-reveals-a-cacophony-of-diversity-20140711-zt4b4.html.

Campbell, David E. "Social Networks and Political Participation." *Annual Review of Political Science* 16 (2013): 33–48. doi: 10.1146/annurev-polisci-033011-201728.

Carrington, Peter, John Scott, and Stanley Wasserman. *Models and Methods in Social Network Analysis*. New York: Cambridge University Press.

Church, Madeline, Bitel, Mark, Kathleen Armstrong, Priyanthi Fernando, Helen Gould, Sally Joss, Manisha Marwaha-Diedrich, Ana Laura de la Torre, and Claudy Vouhé. *Participation, Relationships, and Dynamic Change: New Thinking on Evaluating the Work of International Network.* The United Kingdom Department for International Development (DFID). London: University College of London, 2002. http://www.ucl.ac.uk/DPU/publications/working%20papers%20pdf/WP121 %20final.pdf .

Corney, Tim. "Youth Work: The Problem of Values." *Youth Studies Australia*, 23, no. 4 (2004): 11–19.

Cross, Rob, Stephen P. Borgatti, and Andrew Parker. "Beyond Answers: Dimensions of the Advice Network." *Social Networks* 23, no. 3 (2001): 215–235.

Cvitanovic, Christopher, Rebecca Clunn, Cody Williams, and Thomas Measham. "An Introduction to Social Networks for Engaging the Community in Climate Policy." *Node for Adaptive Communities Unpublished Report to New South Wales Office of Environment and Heritage* (2014).

Dagne, Ted. *Somalia: Current Conditions and Prospects for a Lasting Peace*. (CRS Report No. RL33911). Washington, DC: Congressional Research Service, 2011. https://www.fas.org/sgp/crs/row/RL33911.pdf.

Davis, Paul K. and Kim Cragin, ed. *Social Science for Counterterrorism: Putting the Pieces Together*. Santa Monica, CA: RAND, 2009.

Davis, Roger H. “Social Network Analysis: An Aid in Conspiracy Investigations.” *Law Enforcement Bulletin* 50, no. 12 (December 1981): 11–19. https://www.ncjrs.gov/App/Publications/abstract.aspx?ID=81001.

Department of Economic Development. “Melbourne and Regional Victoria.” November 20, 2016. http://www.liveinvictoria.vic.gov.au/living-in-victoria/melbourne-and-regional-victoria.

Dooley, Larry M. “Advances in Developing Human Resources, Case Study Research and Theory Building.” *SAGE Journal* 4, no. 3 (August 1, 2002): 335–354.

El Said, Hamed. “Foreign Terrorist Fighters: Terrorists or Freedom Fighters?” In *Countering Violent Extremism: Developing an Evidence-base for Policy and Practice*, edited by Sara Zeiger and Anne Aly. Australia: Hedaya and Curtin University, 2015.

Elliott, Andrea. “The Jihadist Next Door.” *New York Times*, January 27, 2010. http://www.nytimes.com/2010/01/31/magazine/31Jihadist-t.html?pagewanted=all.

Emirbayer, Mustafa, and Jeff Goodwin. “Network Analysis, Culture, and the Problem of Agency.” *American Journal of Sociology* 99, no. 6 (May 1994): 1411–1454.

Everton, Sean F. *Disrupting Dark Networks: Structural Analysis in the Social Sciences*. Cambridge: Cambridge University Press, 2012.

Federal Bureau of Investigation (FBI). *Omar Shafik Hammami Added to the FBI’s Most Wanted Terrorist List*. Washington, DC: FBI Mobile Division, 2012.

Federal Emergency Management Agency (FEMA). *Management: Principles, Themes, and Pathways for Action.* Washington, DC: Department of Homeland Security, 2011. http://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf.

Fenstermacher, Laurie, Kuznar T. Rieger, and A. Speckhard. *Protecting the Homeland from International and Domestic Terrorism Threats: Current Multi-Disciplinary Perspectives on Root Causes, the Role of Ideology, and Programs for Counter-radicalization and Disengagement.* Washington, DC: Topical Strategic Multi-Layer Assessment (SMA) Multi-Agency and Air Force Research Laboratory Multi-Disciplinary White Papers in Support of Counter Terrorism and Counter-WMD, 2010.

Fernandes, Antione C., and Travis J. Taylor. “DIM Networks: The Utility of Social Network Analysis for Illuminating Partner Security Force Networks.” Master’s thesis, Naval Postgraduate School, 2015.

Finke, Roger, and Rodney Stark. *The Churching of America, 1776–2005: Winners and Losers in Our Religious Economy*, 2nd ed. New Brunswick, NJ: Rutgers University Press, 2005.

Fishman, Shira. *Community-Level Indicators of Radicalization: A Data and Methods Task Force." Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security*. College Park, MD: University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism, 2010.

Freeman, Linton, D. Roeder, and R. Mulholland. "Centrality in Social Networks: II. Experimental Results." *Social Networks*, 2 (1980): 119–141.

Freeman, Louis. "Centrality in Social Networks: Conceptual Clarifications." *Social Networks*, 1 (1979): 215–239.

Global Advisory Committee. *National Criminal Intelligence Sharing Plan: Building a National Capability for Effective Criminal Intelligence Development and the Nationwide Sharing of Intelligence and Information, Global Information Sharing Toolkit (GIST)*. Washington, DC: Global Advisory Committee, 2013. http://www.it.ojp.gov/documents/NCISP_Plan.pdf.

Granovetter, Mark. "Economic Action and Social Structure: The Problem of Embeddedness." *The American Journal of Sociology* 91, no. 3 (1985): 481–510.

———. "Problems of Explanation of Economic Sociology." In *Networks and Organizations: Structure, Form and Action*, edited by Nitin Nohria and Robert G. Eccles, 29–56. Boston: Harvard Business School Press, 1992.

———. "The Strength of Weak Ties." *American Journal of Sociology* 78, no. 6 (1973): 1360–1380.

———. "The Strength of Weak Ties: A Network Theory Revisited." *Sociological Theory* 1 (1983): 201–233.

Hafez, Mohammed, and Creighton Mullins. *The Radicalization Puzzle: A Theoretical Synthesis of Empirical Approaches to Homegrown Extremism*. Monterey, CA: Naval Postgraduate School, 2015.

Harris-Hogan, Shandon, Kate Barrelle, and Andrew Zammit. "What Is Countering Violent Extremism? Exploring CVE Policy and Practice in Australia." *Behavioral Sciences of Terrorism and Political Aggression* 8, no. 1 (January 2, 2016): 6–24. doi: 10.1080/19434472.2015.1104710.

Hayden, Nancy K., Stephen P. Borgatti, Ronald L. Breiger, Peter Brooks, George B. Davis, David S. Dornisch, Jeffrey Johnson, Mark Mizruchi, and Elizabeth Warner. *Dynamic Social Network Analysis: Present Roots and Future Fruits*. Ft. Belvoir: Defense Threat Reduction Agency, 2009. https://info.publicintelligence.net/DTRA-SocialNetworkAnalysis.pdf.

Her Majesty's Stationery Office. *CONTEST: The United Kingdom's Strategy for Countering Terrorism—July 2011.* London: Her Majesty's Stationery Office, 2011.

———. *Counter-Extremism Strategy.* London: Her Majesty's Stationery Office, 2015.

Homeland Security Advisory Council. *Countering Violent Extremism (CVE) Subcommittee: Interim Report and Recommendations.* Washington, DC: Department of Homeland Security, 2016. https://www.dhs.gov/sites/default/files/publications/HSAC/HSAC%20CVE%20Final%20Interim%20Report%20June%209%202016%20508%20compliant.pdf.

Homelessness Australia. "Homelessness and Young People." January 2016. http://www.homelessnessaustralia.org.au/images/publications/Fact_Sheets/Young%20People.pdf.

Hoppe, Bruce, and Claire Reinelt. "Social Network Analysis and the Evaluation of Leadership Networks: SNA and Leadership Networks." *The Leadership Quarterly* 21 (2010): 600–619. doi: 10.1016/j.leaqua.2010.06.004.

Horgan, John. "From Profiles to Pathways and Roots to Routes: Perspectives from Psychology on Radicalization into terrorism." *Annals of the American Academy of Political and Social Science* 618, no. 1 (2007): 80–94. doi: 10.1177/0002716208317539.

———. *Walking Away from Terrorism: Accounts of Disengagement from Radical and Extremist Movements*. New York: Routledge, 2009.

Hunt, Alice, Kristin Lord, John Nagl, and Seth Rosen, ed. *Beyond Bullets: Strategies for Countering Violent Extremism*. Washington, DC: Center for a New American Security, 2009.

Hurlbert, Jeanne, John J. Beggs, and Valerie Haines. "Social Networks and Social Capital in Extreme Environments." In *Social Capital Theory and Research*, edited by N. Lin, K. S. Cook, and R. S. Burt, 209–232. New York: Aldine de Gruyter, 2000.

Ibrahim, Azeem. "Reclaiming Islam." *Sunday Herald*, August 9, 2009. http://belfercenter.ksg.harvard.edu/publication/19504/reclaiming_islam.html.

———. *Tackling Muslim Radicalization: Lessons from Scotland*. Washington, DC: Institute for Social Policy & Understanding, 2010. http://www.ispu.org/pdfs/ispu%20-%20radicalization%20report.pdf.

Johnson, Jennifer. "Social Network Analysis: A Systematic Approach for Investigating." Federal Bureau of Investigations (FBI), March 3, 2013. https://leb.fbi.gov/2013/march/social-network-analysis-a-systematic-approach-for-investigating.

Kadushin, Charles, *Understanding Social Networks: Theories, Concepts, and Findings*. New York: Oxford University Press, 2012.

Kessler, Glenn. "Was Osama bin Laden 'not a Muslim leader?'" *The Washington Post*, May 3, 2011. https://www.washingtonpost.com/blogs/fact-checker/post/was-osama-bin-laden-not-a-muslim-leader/2011/05/03/AFdVDUjF_blog.html.

Khalil, James. "Radical Beliefs and Violent Actions Are Not Synonymous: How to Place the Key Disjuncture Between Attitudes and Behaviors at the Heart of Our Research Into Political Violence." *Studies in Conflict and Terrorism*, 37, no. 2 (2014): 198–211.

Khan, Humera. "Why Countering Extremism Fails: Washington's Top-Down Approach to Prevention Is Flawed." *Foreign Affairs*, modified February 18, 2015. https://www.foreignaffairs.com/articles/united-states/2015-02-18/why-countering-extremism-fails.

Kostiuchenko, Tetiana. "Paths/Walks/Cycles." In *Encyclopedia of Social Networks*, edited by George A. Barnet. London: SAGE, 2011.

Krebs, Vladis E. "Uncloaking Terrorist Networks." *First Monday* 7, no. 4 (April 1, 2002). http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/941/.

Leask, David. "Charity Watchdog Slams Glasgow Central Mosque Elders amid Concerns of Funding for Ultra-Orthodox Group." *Herald Scotland*, January 19, 2016. http://www.heraldscotland.com/news/14213225.Charity_watchdog_slams_Glasgow_Central_Mosque_elders_amid_concerns_of_funding_for_ultra_orthodox_group/.

Luengo-Cabrera, José, and Annelies Pauwels." Countering Violent Extremism: The Horn of Africa." *European Union Institute for Security Studies (EUISS)*, no. 14 (2016): 1–4. doi: 10.2815/98226.

Manuel, Alberto. "Social Network Analysis: Part Two." End to End BPM, March 25, 2013. https://ultrabpm.wordpress.com/2013/03/25/social-network-analysis-part-two/.

Markus, Andrew. *Mapping Social Cohesion*. Monash University: Victoria, Australia, 2015.

Martin, Peter. “ABS Population Statistics: Victoria Becomes Australia’s Fastest Growing State.” *The Sydney Morning Herald*, September 27, 2015. http://www.smh.com.au/business/the-economy/abs-population-statistics-victoria-becomes-australias-fastest-growing-state-20150924-gjudy9.html.

Mastroe, Caitlin, and Susan Szmania. *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs, Report to the Office of University Programs, Science and Technology Directorate, U.S. Department of Homeland Security*. College Park, MD: University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism (START), 2016.

Mateescu, Alexandra, Douglas Brunton, Alex Rosenblat, Desmond Patton, Zachary Gold, and Danah Boyd. “Social Media Surveillance and Law Enforcement.” Data Civil Rights, October 27, 2015. http://www.datacivilrights.org/pubs/2015-1027/Social_Media_Surveillance_and_Law_Enforcement.pdf.

McClelland, R. “Countering Violent Extremism: Youth Mentoring Grants Program.” Australian Government, Attorney-General’s Department, 2011. http://www.ag.gov.au/Publications/Budgets/Budget201011/Pages/CounteringViolentExtremisminourCommunity.aspx.

Mckee, Viv, Carolyn Oldfield, and Jo Poultney. “Benefits of Youth Work.” Unite the Union UK, 2010. http://www.cywu.org.uk/assets/content_pages/187799973_Benefits_Of_Youth_Work.pdf.

Merton, Robert. “The Matthew Effect in Science.” *Social Theory and Social Structure.* Glencoe, IL: Free Press, 1968.

Mohamed, Mahmoud. “Hizbul Islam’s Split from al-Shabab further Isolates Militant Group.” *Sabahi*, September 28, 2012. http://hiiraan.com/news4/2012/Sept/26155/hizbul_islam_s_split_from_al_shabaab_further_isolates_militant_group.aspx.

Morag, Nadav. *Comparative Homeland Security: Global Lessons.* Hoboken: John Wiley & Sons, 2011. Kindle edition.

Moreno, Jacob. *Who Shall Survive? A New Approach to the Problem of Human Interrelations*. Washington, DC: Nervous and Mental Disease Publishing Co., 1934.

Morselli, Carlo. “Structuring Mr. Nice: Entrepreneurial Opportunities and Brokerage Positioning in the Cannabis Trade.” *Crime, Law and Social Change* 35, no. 3 (2001): 203–244.

National Consortium for the Study of Terrorism and Responses to Terrorism (START). *Surveying CVE Metrics in Prevention, Disengagement and Deradicalization Programs: Report to the Office of University Programs, Science and Technology Directorate, U.S. Department of Homeland Security*. College Park, MD: A Department of Homeland Security Science and Technology Center of Excellence, 2015.

National Network of Fusion Centers. *2015 National Network of Fusion Centers Final Report*. Washington, DC: National Network of Fusion Centers, 2016. https://www.hsdl.org/?view&did=796365.

Office of the President of the United States. *Empowering Local Partners to Prevent Violent Extremism in the United States.* Washington, DC: Office of the President of the United States, 2011.

———. *Strategic Implementation Plan for Empowering Local Partners to Prevent Violent Extremism in the United States*. Washington, DC: Office of the President of the United States, 2011.

———. *Strategic Implementation Plan for Empowering Local Partners to Prevent Violent Extremism in the United States*. Washington, DC: Office of the President of the United States, 2016.

Ofsted. *Engaging Young People, Local Authority Youth Work 2005–08." Office for Standards in Education, Children's Services and Skills*. London, UK: The Office for Standards in Education, Children's Services and Skills, 2009.

Oxkan-Canbolat, Ela and Aydin Beraha. "Configuration and innovation related network topology." *Journal of Innovation & Knowledge* 2, no. 1 (2016): 91–98. doi: http://dx.doi.org/10.1016/j.jik.2016.01.013.

Papachristos, Andrew V., David M. Hureau, and Anthony A. Braga. "The Corner and the Crew: The Influence of Geography and Social Networks on Gang Violence." *American Sociological Review* 78, no. 3 (2013): 417–447. doi: 10.1177/000312 2413486800.

Pennsylvania State University. "Social Network Analysis Privacy Tackled." *Science Daily*, February 14, 2015. https://www.sciencedaily.com/releases/2015/02/15021 4184519.htm.

Porter, Louis E., and Mark R. Kebbell. "Radicalization in Australia: Examining Australia's Convicted Terrorists." *Psychiatry, Psychology and Law* 18, no. 2 (2011): 212–231.

Prell, Christina. *Social Network Analysis: History, Theory & Methodology*. London: SAGE Publications Ltd., 2011.

Protection Circle. “Terrorism Case Studies.” July 5, 2013. https://protectioncircle.org/2013/07/05/terrorism-case-studies/.

Putnam, Robert. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster, 2001.

Ramalingam, V. *Impact of Counter-terrorism on Communities: Sweden Background Report*. London: Institute for Strategic Dialogue, 2012.

Ready Scotland. “Terrorism.” September 10, 2016. http://www.readyscotland.org/are-you-ready/terrorism/.

Ressler, Steve. “Social Network Analysis as an Approach to Combat Terrorism: Past, Present, and Future Research. *Homeland Security Affairs II*, no. 2 (July 2, 2006): 1–10. https://www.hsaj.org/articles/171.

Romaniuk, Peter. “Does CVE Work? Lessons Learned from the Global Effort to Counter Violent Extremism.” *Global Center on Cooperative Security*, 2015.

Romm, Tony. “Tech Slams Homeland Security on Social Media Screening.” Politico, August 22, 2016. http://www.politico.com/story/2016/08/social-media-screening-privacy-227287.

Sageman, Marc. *Leaderless Jihad: Terror Networks in the 21st Century*. Philadelphia: University of Pennsylvania Press, 2008.

———. *Understanding Terror Networks*. Philadelphia: University of Pennsylvania Press, 2004.

Scott, John, and Peter J. Carrington. *The SAGE Handbook of Social Network Analysis*. Los Angeles and London: SAGE, 2011.

Scottish Government, The. “Summary: Demographics.” September 10, 2016. http://www.gov.scot/Topics/People/Equality/Equalities/PopulationMigration.

———. “What Are Development Trusts.” Last modified June 30, 2009. http://www.gov.scot/Topics/Built-Environment/regeneration/engage/learning/learning resourcepack.

Simmel, Georg. “The Sociology of Secrecy and of Secret Societies.” *American Journal of Sociology* 11 (1906): 441–498.

Simons, Anna. *21st Century Cultures of War: Advantage Them*. Washington, DC: Foreign Policy Research Institute, 2013.

Smith, Susan. “Development Trust are transforming Scottish communities.” *Third Force News*, July 2016. http://thirdforcenews.org.uk/tfn-news/development-trusts-are-transforming-scottish-communities.

Social Physics. “What is Network Analysis.” Accessed October 30, 2016. http://social-physics.net/what-is-network-analysis/

Solas Foundation. “What’s in a Name?” Last modified November 26, 2016. http://solas foundation.org/?go=about.

Stacey, Ralph. *Complexity and Creativity in Organizations*. San Francisco: Berrett-Koehler Publishing, 1996.

Sterling, Sara E. *Aggregation Techniques to Characterize Social Networks*. Wright-Patterson Air Force Base, OH: Department of the Air Force Air University, 2004.

Stewart, Kenneth. “CORE Lab Helps Law Enforcement Explore Social Network Analysis.” Naval Postgraduate School. Accessed May 5, 2015. http://www. nps.edu/About/News/CORE-Lab-Helps-Law-Enforcement-Explore-Social-Network-Analysis.html.

Stone, Andrea. “DHS Monitoring of Social Media under Scrutiny by Lawmakers.” *The Huffington Post*, February 16, 2013. http://www.huffingtonpost.com/2012/02/16/dhs-monitoring-of-social-media_n_1282494.html.

Task Force on Confronting the Ideology of Radical Extremism. *Rewriting the Narrative: An Integrated Strategy for Counterradicalization*. Washington, DC: Washington Institute for Near East Policy, 2009.

Taylor, M., and John Horgan. “A Conceptual Framework for Understanding Psychological Process in the Development of the Terrorist.” *Terrorism and Political Violence* 18, no. 5 (2006): 585–601.

Tilly, Charles. “Trust and Rule.” In *Theory and Society.* New York: Cambridge University Press: 2005.

U.S. Department of Homeland Security. *National Prevention Framework*. Washington, DC: U.S. Department of Homeland Security, 2016.

———. *The Role of Fusion Centers: Countering Violent Extremism*. Washington, DC: U.S. Department of Homeland Security, 2012. https://it.ojp.gov/documents/roleoffusioncentersincounteringviolentextremism_compliant.pdf.

———. *Threat and Hazard Identification and Risk Assessment Guide: Comprehensive Preparedness Guide (CPG) 201*, 2nd ed. Washington, DC: U.S. Department of Homeland Security, 2013.

U.S. Department of Justice. *Privacy, Civil Liberties Compliance Verification for the Intelligence Enterprise*. Washington, DC: U.S. Department of Justice, 2010. https://it.ojp.gov/documents/d/privacy%20civil%20rights%20and%20civil%20liberties%20compliance%20verification%20for%20the%20intelligence%20enterprise.pdf.

Umble, Karl E., S. J. Diehl, A. Gunn, and S. Haws. "Developing Leaders, Building Networks: An Evaluation of the National Public Health Leadership Institute 1991–2006." Public Health Leadership Institute, 2007. http://www.phli.org/evalreports/index.htm.

Ungar. Michael. *The Social Ecology of Resilience: A Handbook of Theory and Practice*. New York: Springer, 2012.

United States Department of Justice. *Baseline Capabilities for State and Major Urban Area Fusion Centers: A Supplement to the Fusion Center Guidelines*. Washington, DC: United States Department of Justice, 2008. https://it.ojp.gov/documents/d/baseline%20capabilities%20for%20state%20and%20major%20urban%20area%20fusion%20centers.pdf.

University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism. *Community-Level Indicators of Radicalization: A Data and Methods Task Force, Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security*. College Park, MD: University of Maryland National Consortium for the Study of Terrorism and Responses to Terrorism, 2010.

Valente, Thomas W., Lawrence A. Palinkas, Sara Czaja, Kar-Hai Chu, and C. Hendricks Brown. "Social Network Analysis for Program Implementation." *PLoS ONE 10*, no. 6 (June 2015). doi: 10.1371/journal.pone.0131712.

Victorian Aboriginal Corporation for Languages. "Aboriginal Languages in Victoria Today." 2016. http://www.vaclang.org.au/.

Vidino, Lorenzo, and Seamus Hughes. *Countering Violent Extremism in America*. Washington, DC: Center for Cyber & Homeland Security The George Washington University, 2015.

Walter, Phil. "Toward a Common Lexicon of Violent Extremism." LawFare Institute, July 22, 2016. https://www.lawfareblog.com/toward-common-lexicon-violent-extremism.

Waskiewicz, Todd. *Friend of a Friend Influence in Terrorist Social Networks*. New York: Air Force Research Laboratory, AFRL/RIEA, 2012.

Wasserman, Stanley, and Katherine Faust. *Social Network Analysis: Methods and Applications.* New York: Cambridge University Press, 1999.

White, Harrison C. “Preface: “Catnets” Forty Years Later.” *Sociologica* (May 2008). doi: 10.2383/26575.

Williams, Michael, John Horgan, and William Evans. “Research Summary: Lessons from a U.S. study Revealing the Critical Role of ‘Gatekeepers’ in Public Safety Networks for Countering Violent Extremism” in *Countering Violent Extremism: Developing an Evidence-base for Policy and Practice*, edited by Sara Zeiger and Anne Aly. Australia: Hedaya and Curtin University, 2015.

Wilson-Grau, Ricardo, and Martha Nunez. “Toward a Conceptual Framework for Evaluating International Social Change Networks.” *Development in Practice*, 2003. http://www.people.bath.ac.uk/edsajw/madpdf/app3.htm.

Yin, Robert K. *Applications of Case Study Research*, 3rd ed. Thousand Oaks, CA: SAGE, 2011.

Zeiger, Sara, and Anne Aly. *Countering Violent Extremism: Developing an Evidence-base for Policy and Practice*. Australia: Hedaya and Curtin University, 2015.

Zenk, L., C. Stadtfeld, F. Windhager, and O. Allmendinger. “The Networks of High Performing Teams: A Dynamic Network Approach to Explain High and Low Performing Teams.” In *Networking Networks, Origins, Applications, Experiments*, 64–79. Vienna: Turia, 2013.

Zeuthen, Martine. “From Policy to Practice: Findings and Lessons Learned from a Research-based Pilot Countering Violent Extremism Programme in the Horn of Africa.” In *Countering Violent Extremism: Developing an Evidence-base for policy and Practice*, edited by Sara Zeiger and Anne Aly, 31–36. Australia: Hedaya and Curtin University, 2015.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Ft. Belvoir, Virginia

2. Dudley Knox Library
   Naval Postgraduate School
   Monterey, California