ABSTRACT

BRUGH, CHRISTINE SHAHAN. Heterogeneity across Terrorism Contexts and Actors: Improving the Evidence Base Supporting Counterterrorism Strategy. (Under the direction of Dr. Joseph Simons-Rudolph and Dr. Sarah L. Desmarais).

Though the research on terrorism has grown vastly since the September 11th terrorist attacks, the field still grapples with critical questions regarding who is likely to perpetrate terrorist acts and how to intervene to prevent terrorist violence (Desmarais, Simons-Rudolph, Brugh, Schilling, & Hoggan, 2017). Annual global deaths from terrorism remain in the tens of thousands (Miller, 2018), making the study of terrorism is crucially important for effective, evidence-based counterterrorism strategy. As the methods used to study terrorism have become increasingly diverse, the consensus among researchers has moved away from a “one-size-fits all” approach to explain why individuals participate in terrorism to an understanding that terrorist participation must be studied with respect to individual differences, diverse community contexts, and changing sociopolitical circumstances (LaFree & Freilich, 2017). To that end, this dissertation examines heterogeneity across actors and contexts by 1) summarizing the extant literature on terrorism, 2) studying terrorism-involved women, and 3) comparing the characteristics of U.S. and European lone actor terrorists.

In the first manuscript, the state of terrorism research is summarized using a systematic review approach. In the largest aggregate review of the research to date, 12,000 articles were screened, revealing trends and gaps in the extant literature base. Existing literature is predominately theoretical and written by authors from the United States. Articles often lacked specificity regarding the type of terrorist, action, or ideology of interest. Findings from the 50 empirical articles show nine factors with some support for an association with terrorism.
involvement. However, only 24 articles reported inferential statistics, six of which performed comparisons between known terrorists and nonterrorist control groups.

In the second manuscript, I examine the characteristics and outcomes of women involved in jihadism-inspired terrorism. Existing literature on women in terrorism shows support for differences in drivers of terrorist action and organizational roles (González et al., 2014; Jacques & Taylor, 2009). Our study was the first to test for differences in terrorism-related outcomes and to use a matched comparison group approach to develop samples of women and men. Results showed that women’s involvement in terrorism is a more recent phenomenon. Women also more often had no recent employment and less often had histories of criminal activity. Further analyses showed that women were often successful on their first foreign fighting attempt, often associated with terrorist organizations, and less often were involved in terrorist plots.

In the third manuscript, I explore the utility of an existing risk assessment framework for lone actor terrorism. Building off of literature which suggests that drivers of lone actor terrorist action may differ between the United States and Europe (Nesser & Stenersen, 2014), I compared U.S. and European lone actors on the prevalence of assessment items. Results showed that the only about half of the assessment items were generally feasible to code based on publicly available information, and that two of the items may be more suitable for use with U.S. than European populations.

Taken together, these results show the promise, but also the limitations, of research on subpopulations of terrorism-involved individuals using public information. Reported in the literature review, considering heterogeneity and performing research with specificity on actors and outcomes is necessary to advance the science. The second manuscript shows that further exploration of gender differences in terrorism is a promising direction for future study,
recommending comparative studies with non-terrorist general population groups and gender-informed counterterrorism strategy. The final study shows that risk assessment of terrorism must also consider heterogeneity, as some items may pertain to individuals within specific sociopolitical contexts. Though these advances have been made through use of public information, accessing more robust data or terrorism-involved individuals themselves is a critical next step.
Heterogeneity across Terrorism Contexts and Actors: Improving the Evidence Base Supporting Counterterrorism Strategy

by
Christine Shahan Brugh

A dissertation submitted to the Graduate Faculty of North Carolina State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Psychology

Raleigh, North Carolina 2019

APPROVED BY:

_______________________________
Dr. Joseph Simons-Rudolph
Committee Co-Chair

_______________________________
Dr. Sarah L. Desmarais
Committee Co-Chair

_______________________________
Dr. Mark Wilson

_______________________________
Dr. William Boettcher
BIOGRAPHY

Christine Shahan Brugh was born and raised in Hagerstown, Maryland. She completed her Bachelor’s Degree at American University in 2014, majoring in Interdisciplinary Studies: Communications, Legal Institutions, Economics, and Government. She minored in Psychology and Physics. While at American University, Christine completed internships with the Campaign for Youth Justice and the National Prison Project of the American Civil Liberties Union. She also served as a research assistant in the Behavioral Pharmacology and Health Promotion Laboratory on campus, assisting with studies on nicotine and caffeine use and withdrawal.

Christine joined the Applied Social and Community Psychology program at North Carolina State University in fall 2014. During her time at NC State, she became interested in applying the research techniques from her courses to terrorism through her experience as a graduate research assistant, funded through the Laboratory for Analytic Sciences. Christine also served as a graduate affiliate with the Center for Family and Community Engagement at NC State, where she assisted with the evaluation of a parenting program in North Carolina for fathers with children involved in Child Protective Services. Christine completed an internship at RTI International in the Center for Justice, Safety, and Resilience where she contributed to evaluating an employment-focused reentry program and analysis of qualitative data from interviews with former white supremacists. After graduation, she will be continuing her training as a postdoctoral research scholar with the Laboratory for Analytic Sciences at North Carolina State University.

Christine currently lives in North Carolina with her three W’s: Wade, Willow, and Wallace.
ACKNOWLEDGMENTS

I would first like to express my immense appreciation to my committee co-chairs, Joseph Simons-Rudolph and Sarah Desmarais. Through your mentorship I have experienced tremendous personal and professional growth, and truly would not be where I am today without your support. I am so grateful to have had you as advisors along the path to my PhD – thank you. I would further like to extend a special thanks to my committee members, Mark Wilson and Bill Boettcher, for your insightful questions, encouragement, and enthusiasm for this work.

Being a part of the Applied Social and Community Psychology program at NC State has challenged me to be the best researcher possible while also staying true to my values. For that, I would like to thank the faculty, my cohort, and my peers in the Applied Social and Community Psychology program. I feel fortunate for all the experiences I have had as a part of this community.

Finally, I would like to thank my parents for always encouraging me to pursue higher education. You kept me going through my undergraduate degree and your support made it possible to fulfill my goal of earning a PhD. You really have seen me through it all – and somehow never once doubted my ability to achieve more than I even thought was possible for myself. Now, since you’ve read this far, keep reading to the end! Love you all.
TABLE OF CONTENTS

LIST OF TABLES ........................................................................................................... v
LIST OF FIGURES ......................................................................................................... vi

Chapter 1: Introduction .............................................................................................. 1
   Defining Terrorism and its Impact ............................................................................ 1
   Theories of Terrorism ............................................................................................... 3
   Current Approaches in the Study of Terrorism ......................................................... 5
   Overview of the Research Chapters ....................................................................... 9

Chapter 2: The State of the Scientific Knowledge Regarding Factors Associated with
Terrorism ..................................................................................................................... 12
   Abstract .................................................................................................................... 12
   Methods .................................................................................................................. 17
   Results .................................................................................................................... 20
   Discussion .............................................................................................................. 41
   References ............................................................................................................. 52

Chapter 3: Gender in the Jihad: Characteristics and Outcomes Among Women and Men
Involved in Jihadism-Inspired Terrorism ................................................................... 85
   Abstract .................................................................................................................... 85
   Methods .................................................................................................................. 92
   Results .................................................................................................................... 99
   Discussion .............................................................................................................. 105
   References ............................................................................................................. 114

Chapter 4: Application of the TRAP-18 Framework to U.S. and Western European Lone
Actor Terrorists ....................................................................................................... 123
   Abstract .................................................................................................................... 123
   Methods .................................................................................................................. 132
   Results .................................................................................................................... 139
   Discussion .............................................................................................................. 144
   References ............................................................................................................. 154

Chapter 5: Integrative Review .................................................................................. 165
   Summary of Findings .............................................................................................. 166
   Implications .......................................................................................................... 168
   Future Directions .................................................................................................. 174
   Conclusion ............................................................................................................. 176

References for Chapters 1 & 5 ............................................................................... 178

Appendix ..................................................................................................................... 183
**LIST OF TABLES**

Table 2.1 Characteristics of Articles Included in Systematic Review ................................................. 81
Table 2.2 Terrorist Organizations Discussed in the Reviewed Articles.................................................. 82
Table 2.3 Variables Examined in Relation to Terrorism Outcomes in Empirical Articles ...... 83
Table 3.1 Descriptive Statistics for Matching Variables ........................................................................... 118
Table 3.2 Characteristics and Outcomes of Women Involved in Jihadism-Inspired Terrorism .............................................................................................................. 119
Table 3.3 Comparison of Women and Men Involved in Jihadism-Inspired Terrorism across Categorical Variables .............................................................................................................. 121
Table 3.4 Comparison of Women and Men Involved in Jihadism-Inspired Terrorism across Continuous and Count Variables .............................................................................................................. 122
Table 4.1 Lone Actor Demographic and Criminal History Characteristics .............................. 161
Table 4.2 Summary of TRAP-18 Item Ratings among Full Sample .............................................. 162
LIST OF FIGURES

Figure 2.1  Results of Systematic Literature Search.................................................................84

Figure 2.2  Methodology of Articles over Time........................................................................85

Figure 4.1  Percentage of Items Rated as Present Among U.S. and European Lone Actors....163

Figure 4.2  Percentage of Lone Actors given each TRAP-18 Priority Recommendation........164
CHAPTER 1

Introduction

The proliferation of terrorist attacks in the years after 9/11 has heightened global awareness of terrorism and has contributed to a critical need to find ways to ensure public safety. Though definitions of terrorism vary between agencies and researchers, there is consensus that terrorism generally involves the use or threat of violence for the furtherance of political or social objectives (Black, 2004), and may target civilians as a means to accomplish these goals.

Globally, there were more than 10,000 terrorist attacks in 2017, resulting in more than 26,000 deaths (Miller, 2018). The targets of terrorist violence are diverse and often depend on the ever-evolving strategy of the terrorist organization. In this introduction, I will contextualize the issue of terrorism with statistics on the prevalence and dominant theories about why terrorism occurs. I will further describe current approaches to studying terrorism, along with their principle challenges.

Defining Terrorism and its Impact

Disagreements about the definition of “terrorism” exist among scholars and governmental agencies alike, in part due to the need for a legal definition of terrorism for use in prosecuting terrorism cases. Drawing together core elements of varying definitions, Agnew (2010) gives a cohesive definition of terrorism as “the commission of criminal acts, usually violent, that target civilians or violate conventions of war when targeting military personnel; and that are committed at least partly for social, political or religious ends” (p. 132). For comparison, the definition of terrorism given by the United States Department of Defense (DOD), and used in the first study of this dissertation, is: “The calculated use of unlawful violence of threat of unlawful violence to inculcate fear, intended to coerce or to intimidate governments and societies in the pursuit of
goals that are generally political, religious, or ideological” (2010). These two definitions differ in several ways; first, in whether or not the unlawful or criminal act must be violent to be considered terrorism. The DOD definition excludes acts that are non-violent, other than threats of violence. Second, the DOD definition delves into the intention behind the act (“to coerce or intimidate”), whereas the definition from Agnew does not. The more encompassing definition given by Agnew is better suited for the dataset being used in the second and third studies comprising this dissertation, and avoids the problem of having to make inferences about an individual’s intent with oftentimes very limited data.

Though terrorism more frequently impacts a number of Middle Eastern countries, attacks occur across the global, particularly when extremist ideology endorses violence against particular states or groups. Data from the Global Terrorism Database reveal patterns of where terrorist attacks occur most frequently and also give a historical understanding of the known prevalence of such attacks. There was a rapid increase in terrorist attacks in the years leading up to 2014, after which deaths and number of attacks have declined, though they have not yet reached pre-2013 levels (Miller, 2018). In recent years, attacks have been concentrated within Afghanistan, India, Iraq, Nigeria, and Pakistan, with Syria also experiencing a high number of fatalities due to terrorist attacks (nearly 4,000 in 2014). In stark contrast, over the 22 year period from 1995 to 2017, the United States had 3,516 deaths from resulting 694 attacks, fewer than many Middle Eastern countries experience in just one year. Excluding the September 11th terrorist attacks brings the total number of fatalities down to just over 500, showing that many attacks cause few, if any, fatalities. An analysis of the ideologies of the groups/individuals perpetrating these attacks show that they generally follow the Four Waves Theory – discussed in more detail in the next section – but then sharply diversify from the 2000s through the present day (Miller, 2017).
Herein we see the beginning of one of the main aims of this dissertation: to demonstrate the importance of considering heterogeneity across contexts and actors.

**Theories of Terrorism**

Scholars studying terrorism have approached the topic from both macro-level and individual-level perspectives, with theories seeking to describe national and international drivers of terrorist activity as well as individual trajectories of radicalization. One of the most prominent macro-level theories of terrorism is Rapoport’s Four Waves (2004), which posits that the use of terrorist tactics to accomplish ideological goals is best understood within four temporal groupings and associated sociopolitical contexts. At present, we are likely still within Rapoport’s “Religious Wave,” in which terrorist action is largely driven by a concentrated number of well-organized religious extremist groups with specific aims and targets. The Religious Wave, which began around 1980, is also notable for driving the proliferation of suicide attacks as a deadly and effective method for attacking targets. This is supported by a recent analysis which shows that attackers affiliated with Al-Qaeda were more likely to have been a part of a suicide mission than right-wing attackers (Freilich, Parkin, Gruenewald, & Chermak, 2017). Rapoport, while acknowledging the uncertainty in making an exact prediction about its duration, estimated that the Religious Wave will likely give way to a new wave in the mid-2020s. Other scholars have expanded upon the four waves theory in recent years, proposing that we are on the verge of entering a fifth wave of terrorism, which has been described as the “New Tribalism” (Kaplan, 2007) or “technological” wave (Simon, 2010). The end of the present Religious Wave has been supported by analysis of terrorism incidents over time, which showed a “cresting” of the Religious Wave similar to the observed pattern that marked the end of previous waves (Weinberg & Eubank, 2010). Two notable critiques of the Four Waves theory focus on the
spread of successful terrorist tactics, and argue for different naming of the phenomena observed to better convey patterns of terrorist action (Parker & Sitter, 2015; Sedgwick, 2007). Regardless of how we label the patterns, understanding the current drivers of the dominant form of terrorist action is critically important to understanding the expected targets, tactics, and recruitment strategies that may be used by terrorists or terrorist organizations. We must further evaluate whether our research methods and resulting theories of radicalization make sense, not only for the wave currently being experienced, but also for future waves.

In addition to the macro-level theories of terrorism, there are also a number of models that seek to explain the processes by which individuals radicalize and become involved in terrorism. Several theories build upon existing psychological and criminological theory to explain radicalization; among these are Agnew’s (2010) General Strain Theory of Terrorism and Bandura’s (1990) Mechanisms of Moral Disengagement. In Agnew’s theory, individuals embrace terrorism from a combination of strains that are high impact in nature, perceived as unjust, and perpetrated by a dominant group unto a subordinate group. Bandura theorizes that a shifting of attribution of blame for reprehensible conduct to the victim is the mechanism by which individuals are able to justify their engagement in terrorism. Other individual-level models take on different forms (e.g., staircases, pathways, matrices, and prongs, to name a few), include different variables, and have differing numbers of stages (King & Taylor, 2011). For example, one of the most widely cited models is Moghaddam’s (2005) Staircase to Terrorism. Moghaddam’s (2005) model is linear and progressive, in which individuals become progressively more vulnerable as they move further along the staircase. The staircase begins with “psychological interpretation of material conditions,” closely linked to the concept of relative deprivation, or comparing one’s own economic condition to that of others around them and
finding it lacking. This perception of economic disadvantage is viewed as an injustice and leads to feelings of resentment and aggression when individuals find a lack of options to change their circumstances. The individual externalizes their feelings of persecution through anger and aggression against a perceived oppressor, begins to believe that the only moral option is to take violent action against their oppressors, and engages with groups that reinforce these beliefs.

**Current Approaches to the Study of Terrorism**

The study of terrorism exists at the intersection of political science, sociology, international studies, criminology, and psychology, each contributing unique perspectives on the political circumstances, group behaviors, foreign policy considerations, engagement in deviant social action, and individual motivations driving terrorist violence. From this interdisciplinary foundation comes considerable strengths from approaching this global issue from a diverse array of theoretical approaches, data sets, and methodologies. However, there are also challenges and limitations to our current approaches. In the sections that follow, I discuss three key aspects of our current approaches to the study of terrorism, as well as the challenges associated with each.

First, the study of terrorism has thus far been dominated by the publication of articles examining the theoretical causes of terrorism and models of radicalization (Desmarais, Simons-Rudolph, Brugh, Schilling, & Hoggan, 2017). As the labeling of political violence as “terrorism,” and the study of it as such, became more common after the September 11th terrorist attacks, this predominance of theoretical articles makes sense for the field. Historically a number of terms were used to describe what we might now understand to be terrorism, and have largely now been consolidated under this label – though the use of terms such as “violent extremism” and “political violence” are still popular and may be used to express meaningful distinctions from “terrorism.” The progression of research to practice has been described as “17-year
odyssey” during which funding priorities are set, research is performed and peer-reviewed, extant knowledge is synthesized, and finally guidelines for evidence-based practice are developed, disseminated, and implemented (Green, Ottoson, García, & Hiatt, 2009). During this process, researchers and practitioners alike must grapple with the challenges of internal versus external validity. As described by Green and colleagues, this struggle can oftentimes result in the “elimination from the pipeline a large number of studies related to diverse populations and circumstances [leaving] a small pool of evidence-based best practices that are unrepresentative of the realities in which the end users live and work” (p. 156). Nearing the end of the pipeline has been marked by the publication by several important synthesizes of the research (Desmarais et al., 2017; Monahan, 2017; Smith, 2018), which show both the convergence and divergence of the evidence base about factors related to terrorism. The reality of terrorism exists within ever-changing social and political contexts, necessitating the study of diverse populations to create counterterrorism strategies which are both effective and adaptive.

Second, the study of terrorism has faced unique challenges in gathering the data necessary to both validate existing theory and test for correlates of terrorism involvement. Principally among these challenges are the low-base rate of terrorism offending, the difficulty and dangerousness associated with accessing individuals actively participating in terrorism, and the legal constraints of communicating with incarcerated terrorists (Monahan, 2012). Taken together, these factors make it impossible to perform experiments with random-assignment methodology, thus leading to uncertainty about the true causation of participation in terrorist activity. The urgency of establishing an evidence-base to inform counterterrorism strategy has led to the adoption of alternative data collection methodologies, primarily the creation of data sets through publicly available information. This method has been used in numerous individual
studies, and has also resulted in a few large scale data sets with cases numbering in the thousands. However, these data sets typically examine terrorism at the event-level, such as the Global Terrorism Database developed in the early 2000s to describe global patterns in rates and types of terrorist attacks. Efforts at the individual level, such as the Western Jihadism Project and the Profiles of Individual Radicalization in the United States, have been developed more recently. Of course, gathering information from publicly accessible sources means that a host of information on variables in the models and potential correlates remains oftentimes unknown or inaccessible.

A third direction in the current study of terrorism is the development of risk assessment tools. This approach is in many ways similar to the longstanding field of violence risk assessment, which empirically establishes the probability of various outcomes based on static and dynamic risk and protective factors (Singh, 2012). Once established, tools are tested and retested across settings, populations, and outcomes. Though similar in goals to violence risk assessment, the risk assessment of terrorism cannot be accomplished through typical methods of prospective validation and must instead focus on known groups comparisons as a means of validation (Monahan, 2017). However, the known groups comparison approach is subject to the same limitations regarding data on characteristics of known terrorists that have made it difficult to validate models of radicalization. Despite these limitations, a number of risk assessments for terrorism have been developed, most notably the Terrorist Radicalization Assessment Protocol-18 (TRAP-18) (Meloy & Gill, 2016) and the Violent Extremist Risk Assessment-2 (VERA-2) (Pressman & Flockton, 2012). The TRAP-18 is a structured professional judgement framework designed to guide analyst’s processing of information while the VERA-2 follows in the tradition of actuarial instruments. Though specifically designed for use with lone actor terrorists, the
TRAP-18 has been used with a number of different populations of terrorism-involved individuals, including one known groups comparison to a non-violent control group (Meloy et al., 2019). These studies show promise, but without partnership with the intelligence community remain of uncertain value (Monahan, 2017).

In sum, the limitations associated with current approaches in study of terrorism – including the lack of an empirical evidence base and predominance of theory-focused articles, the difficulty in creation of data sets, and the beginnings of development of risk assessment tools – raise questions about the validity of extant research on terrorist actors and actions and the degree to which its findings can inform effective counterterrorism strategies. For these reasons, a deliberate and rigorous empirical approach to informing theory, identifying individual characteristics and social context that may increase risk for membership in terrorist organizations and perpetration of terrorist actions, and validating threat assessment tools is critical to the advancement of the scientific field, as well as our national security.

**Overview of the Research Chapters**

This dissertation will summarize and integrate findings from three papers that have examined correlates of membership in terrorist organizations and involvement in terrorist activity, in including perpetration of terrorist plots. The three papers seek to advance science, policy, and practice by using rigorous methods to develop empirical support for factors associated with terrorism. In line with the title of this dissertation, each paper makes a contribution to the field’s understanding of terrorism by elucidating differences across terrorist actors and contexts while simultaneously contributing information on methodologies that may be replicated or extended by other researchers to advance the science. Specifically, the first paper synthesizes the existing literature on risk factors for terrorism to identify promising factors for
This paper also serves as an introduction to the field of terrorism research, reporting on trends in publication and methodology. The second paper delves into the understudied population of women who are involved in terrorism and uses a matched comparison group of men to test for differences in characteristics and outcomes. The third paper applies an existing threat assessment framework to a sample of lone actor terrorists, reporting on the feasibility of using the tool and testing for differences between U.S. and European individuals. Each manuscript contributes to addressing a gap in the current knowledge regarding terrorism through three specific aims.

**Specific Aims**

**Aim 1. Describe the extant literature on membership in terrorist organizations and participation in terrorist acts.** Existing research on terrorism has broadly focused on characteristics of individuals within terrorist groups, motivations for engaging in terrorism, and developing models of pathways to engagement in terrorist activity. The first paper in this dissertation (Chapter 2) uses a systematic review approach to gather and synthesize the existing literature on terrorist participation. Results reveal that the majority of work in the field has been theoretical in nature, with relatively few empirical studies to test and validate the plethora of models which have been developed. From reviewing the 50 articles which utilized data on terrorists, we find nine factors with at least some support for their association with terrorism membership or participation. The findings provide an empirical foundation for developing new studies and testing promising risk assessment instruments, as is proposed in manuscripts two (Chapter 3) and three (Chapter 4).

**Aim 2. Describe and compare a large sample of women involved in jihadism-inspired terrorism with a matched sample of male peers.** The subpopulation of women in
terrorism has received limited attention, even though there appears to be an increasing number of women participating in terrorism (Jacques & Taylor, 2009). There is preliminary evidence that women’s roles and motivations may differ from those of their male peers (Gonzalez-Perez, 2008); however, only two studies have sought to statistically compare women and men involved in terrorism. The second manuscript (Chapter 3) builds upon findings from the first and recommendations from experts in the field (see Monahan, 2012) to test factors relevant the specific populations of women involved in terrorism with clearly defined outcomes of interest. The study reports upon the results of chi-square and negative binomial regressions using a large sample of women and men involved in jihadism-inspired terrorism. To that end, in the second manuscript, I test factors related to terrorism involvement in a sample of women involved jihadist-inspired terrorism across multiple outcomes: affiliation with a terrorist organization, participation in a terrorist plot, and foreign fighting attempts.

**Aim 3. Test the feasibility of applying an existing threat assessment framework with a sample of jihadism-inspired lone actor terrorists.** A second population of increasing focus is the lone actor terrorist. Although attacks by lone actor terrorists are rare (Meloy & Yakeley, 2014), they pose unique security risks due to the difficulty in detecting and preventing violent actions that are done without the external command of a terrorist organization. The third manuscript (Chapter 4) applies the Terrorist Radicalization Assessment Protocol-18 (TRAP-18) to a sample of jihadism-inspired lone actor terrorists and tests for differences in the prevalence of items between United States-based and European lone actors. Results show that use of the framework with solely publicly accessible information may not be feasible, decreasing its utility as a tool for triaging cases and deciding how to allocate additional information-gathering efforts. Item-by-item comparisons show most items are more relevant to U.S. than European lone actors.
Findings advance our understanding of lone actor terrorism, including whether or not drivers are unique to the individual’s social and political context via geographic location.
CHAPTER 2

The State of Scientific Knowledge Regarding Factors Associated with Terrorism

We conducted a systematic review of the contemporary scientific literature to: (a) identify consensus, where it exists, regarding factors associated with membership in terrorist organizations and/or perpetration of terrorist attacks; b) drive future research directions; and c) inform evidence-based counterterrorism strategies. Systematic searches of six databases identified 205 articles that met inclusion criteria. Most articles were produced in the last 10 years. About half were written by authors from the United States. Only 50 articles reported on findings of empirical research. Across various aspects of terrorism and terrorists (e.g., ideology, type of terrorist, type of attack), articles rarely specified their focus. When examined empirically, risk factors typically focused on characteristics of the individual. Review of the empirical findings suggest nine variables with at least some support as risk factors across studies: age, socioeconomic status, prior arrest, education, employment, relationship status, having a grievance, geographic locale, and type of geographic area. Findings identified additional characteristics of an individual (i.e., country of birth, Islamic faith, military experience, foreign travel history, family or friend in a terrorist or extremist organization) and their environment (i.e., income inequality, media and government influences) that merit further evaluation. Findings also emphasized the importance of a triggering event in the process of radicalization. Finally, findings indicate that some widely accepted ‘risk’ factors, such as acceptance of Jihad, are not consistently associated with terrorism, at least in the extant scientific literature. A focus

---

1. Journal of Threat Assessment and Management, 4(4), 180–209. ©American Psychological Association, 2017. This paper is not the copy of record and may not exactly replicate the authoritative document published in the APA journal. Please do not copy or cite without author's permission. The final article is available at: http://dx.doi.org/10.1037/tam0000090
on these factors may contribute to discrimination and reduce the effectiveness of counterterrorism strategies.
Introduction

With terrorist attacks an almost constant topic of media coverage worldwide, many steps are being taken in the fight against terrorism. One counterterrorism strategy has been to try to identify individuals and/or organizations at risk of becoming (more) radicalized. To be successful, such a threat assessment and management strategy requires an understanding – and most importantly, empirical evidence – of the factors associated with membership in terrorist organizations and/or perpetration of terrorist attacks (Meloy, Roshdi, Glaz-Ocik, & Hoffman, 2015; Monahan, 2012; Sarma, 2017). To date, government agencies have relied almost exclusively on the intelligence community for such information, independent of the scientific literature (Atran, Axelrod, Davis, & Fischhoff, 2017). However, this work typically is driven by crises or imminent threats to public safety that necessitated actionable information over a relatively short period of time. In contrast, for several decades, academics and other independent researchers from diverse disciplines have been engaging in efforts to develop a conceptual understanding of terrorism and the process of radicalization (King & Taylor, 2011). In the long run, these scientific endeavors may be better positioned to identify factors associated with terrorism, thereby improving our ability to prevent terrorist attacks (Atran et al., 2017).

Though much has been written in the scientific literature about terrorism over the years, the body of work has not been without criticism. In particular, efforts have been largely independent with limited integration of the theories, models, and findings across articles (King & Taylor, 2011). The literature is predominantly conceptual (as opposed to empirical) in nature (Borum, 2015), with heavy reliance on case studies (Beck, 2008). The literature also demonstrates a lack of consensus on foundational concepts. For instance, there is limited consensus regarding how terrorism and radicalization are defined (Agnew, 2012; Black, 2004;
Lloyd & Dean, 2015). Additionally, there is often a lack of specificity regarding the aspect of radicalization or terrorism outcome under examination (Agnew, 2012; Monahan, 2012).

Much of the extant literature centers on a few prominent models describing aspects of radicalization, such as the terrorist mindset (Borum, 2003, 2015), the pathway to terrorism (Moghaddam, 2005), and the process of radicalization (Precht, 2007; Silber & Bhatt, 2007). These models demonstrate considerable overlap in their constructs. On the one hand, for example, Borum’s terrorist mindset describes a progression from experiences of social and economic deprivation to inequality and resentment to blame and attribution to stereotyping and demonizing the enemy. On the other hand, Moghaddam’s staircase to terrorism describes very similar psychological interpretations of material conditions, perceptions of options to fight unfair treatment that ultimately lead the same categorical thinking. Sageman (2008) and Wiktorowicz (2004) similarly describe a sense of moral outrage and cognitive opening, respectively, as the first stages of radicalization, but the processes unfold differentially. Regrettably, there has been limited validation or empirical (as opposed to conceptual) comparison of these models with respect to the terrorism outcomes (King & Taylor, 2011; see Silber & Bhatt, 2007 for an exception). Consequently, the ability of the extant scientific literature to inform effective counterterrorism strategies and policies may be questionable.

For these reasons, there is a need for efforts to synthesize the contemporary scientific literature to clarify what we do and do not know about factors that are associated with terrorism. To this end, we conducted a systematic review of the published and unpublished studies to elucidate the state of scientific knowledge regarding factors that may be associated with terrorism outcomes. The review was focused on two key terrorism outcomes: 1) membership in terrorist organizations, and 2) perpetration of terrorist attacks. In doing so, our goals were
threefold. The first goal of this review was to identify consensus in the scientific literature, where it exists, regarding factors associated with membership in terrorist organizations and/or perpetration of terrorist attacks. The second goal of this review was to drive future research directions. The third goal of this review was to inform evidence-based strategies to prevent terrorist attacks.

There is an ongoing debate regarding the definition of terrorism within the field (Beck, 2008). For this review, we operationalize terrorism to be consistent with the Department of Defense’s (2017) definition; specifically, “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.”\(^2\) We applied the social ecological model as a framework for organizing information on factors that may be associated with terrorism (Dawson, 2017). Briefly, the social ecological model posits that behavior can be understood as an interaction between the characteristics of an individual and those of their environment. Thus, we organized our review of factors that may be associated with terrorism at those two levels. We additionally examined individual, social, community, and societal factors, as described in the social ecological model, that may be associated with radicalization, including both the motivation for and process of radicalization. The social ecological model has been adopted by several agencies in the United States (e.g., Centers for Disease Control and Prevention) and internationally (e.g., World Health Organization) to inform violence-related research and prevention efforts, but there has been less application to the context of terrorism (but see Dawson, 2017; Kruglanski & Fishman, 2009).

---

\(^2\) Although this operational definition informed our inclusion criteria and search process, we acknowledge that not all included articles operationalized terrorism using the same definition.
Methods

When possible, we adhered to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement to report all findings of this systematic review (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009).

Inclusion Criteria

This review included all published and unpublished literature that met the following inclusion criteria: 1) discussed membership in terrorist organizations and/or perpetration of terrorist attacks, consistent with the Department of Defense (2017) definition; 2) addressed individual, social, community, organization, or socio-political factors in relation to at least one of the terrorism outcomes; 3) reported in peer-reviewed journals, dissertations, theses, conference presentations, government reports, or book chapters; 4) written in English or reliable translation available; and 5) produced between January 1, 1990 and December 31, 2015.

Literature Search and Screening Process

A systematic review of the contemporary literature was conducted using six online databases: PsycINFO, PsycArticles, Web of Science, National Criminal Justice Reference Service Abstracts (NCJRS), ProQuest Dissertation & Theses, and Google Scholar. Keyword searches were conducted using all possible combinations within a two-part search term approach, consisting of one terrorism term (terror*) paired with one affiliation term (member*, affiliat*, radical*, predict*) to allow for a broad literature search. Identified articles were screened against inclusion criteria to ensure all relevant articles were included.

Initial literature searches identified 12,121 articles. After removal of duplicate records, we evaluated the title of each article against inclusion criteria, resulting in 1,346 articles. We identified an additional 56 articles through review of reference sections. We then screened
articles at the abstract level, resulting in 335 articles. After full-text was assessed for eligibility, a total of 205 articles remained that met inclusion criteria (see Figure 2.1).

Variable Coding

We developed and applied two comprehensive coding sheets to record all relevant data for articles that met inclusion criteria (available upon request). The first coding sheet was used with all articles meeting inclusion criteria to record article characteristics such as year of publication, data source, methodology, and type of terrorism. The second coding sheet was used for the empirical studies to record findings regarding associations of factors with terrorism outcomes. Data were extracted and coded consistent with the operationalization definitions used in each original article. All articles were coded by two research assistants. Both raters contributed to the development of the coding sheets and completed a comprehensive training on all coding procedures. A small subset of articles ($k = 19$) was coded by both raters to establish interrater reliability. Rater agreement ranged from 63.2% to 100%, but was perfect or near perfect for the vast majority of items ($M = 94.8\%, \text{Mdn} = 100\%, \text{Mode} = 100\%)$.

Disagreements were resolved through rater discussion and consensus with the full research team.

Variables

Article characteristics. Methodology included five categories: theoretical, empirical (including cross-sectional, longitudinal, prospective, and retrospective), case study, literature review, and other. Substantive focus was classified into five categories: individual processes (processes by which individuals become radicalized); group processes (processes by which a group becomes more radical over time); individual characteristics (characteristics of individuals

---

3 Although kappa is a preferred measure of rater agreement for categorical variables, we calculated rater agreement using Yeaton and Wortman’s (1993) formula due to the presence of high agreement, which adversely affected the kappa estimates (Gwet, 2008).
who become terrorists); group characteristics (characteristics of groups involved in terrorist activities); and critique (discussion of or argument against theories or findings presented in previous research). Data source was recorded as either primary (authors collected their own data, including interviews or surveys) or secondary (authors used existing data, including public records, courtroom testimony, news reports, databases). Gender of terrorist, ideology of terrorist (right-wing, left-wing, religious fundamentalist, social revolutionary, nationalist-separatist), type of terrorist (lone-wolf or lone-actor, autonomous cell, group member), type of attack (suicide bombing, school shooting, workplace violence), position in organization (leader, follower), and name of terrorist organization(s) were also recorded. For all empirical articles, the country of the data source, period of the study, and sample size also were recorded. All variables included ‘not specified’ option.

**Outcome variables.** Our two terrorism outcomes of interest were membership in terrorist organizations and perpetration of terrorist attacks.

**Content of empirical articles.** For empirical articles, we coded variables that measure potential risk factors for terrorism outcomes, including individual factors (sociodemographic characteristics, criminal history, religion and spirituality, work and education, personal experiences, attitudes and beliefs, relationships, and mental health) and environmental factors (characteristics of region). We additionally coded variables that measure aspects of radicalization (motivation and process).

**Type of association.** For each variable, we also examined the nature of the association, if any, with each terrorism outcome. Although the term risk factor is ubiquitous in the literature, it implies an empirical association that meets two specific criteria: first, that the variable is correlated with the outcome of interest, and second, that the variable occurs prior to the outcome
(Kraemer et al., 1997). If there is evidence that the variable is statistically associated with the outcome of interest but there is no evidence regarding temporal ordering of the variable and outcome, then it is a *correlate* of the outcome. Applying these criteria, our operational definition of *risk factor* is consistent with current perspectives in this and related fields (see, for example, Monahan, 2012; Skeem & Monahan, 2011; Van Dorn et al., 2017).

**Results**

**Descriptive Characteristics**

Table 2.1 presents the characteristics of the 205 articles included in this systematic review. The majority (\(k = 121, 59.0\%\)) were written by authors from the United States. As may be seen in Figure 2, there has been a considerable increase in publications over time, with most (\(k = 153, 74.6\%\)) published in the last 10 years. Despite the increase in number of publications, almost half of the articles were theoretical in nature (\(k = 98, 47.8\%\)). Only 50 articles (24.4\%) reported on findings of empirical research, and about half these (\(k = 22, 44.0\%\)) were published between 2011 and 2015. Data sources ranged from publicly accessible databases to small case studies. The vast majority of articles (\(k = 166, 81.0\%\)) cited findings reported in other articles as their data source. Of the empirical articles, 23 (46.0\%) reported analyses of primary data, whereas 30 (60.0\%) reported findings from secondary data. The mean sample size for the empirical articles was 4,407.57 (\(SD = 34,295.87\)), ranging from 7 to 287,204. When the outlier at

---

4 Kraemer et al. (1997) further distinguish between *variable risk factors* (i.e., a factor that meets the criteria for being a risk factor and can be changed), *fixed markers* (i.e., a factor that meets the criteria for being a risk factor but cannot be changed), *variable markers* (i.e., a factor that meets the criteria for being a variable risk factor but manipulation of the factor does not change the outcome), and *causal risk factors* (i.e., a factor that meet the criteria for being a variable risk factor and manipulation of the factor changes the outcome). The level of evidence reported in the literature that met criteria for inclusion in our review did permit such a nuanced analysis.
the top end of the sample size range was removed, the mean was 248.79 \( (SD = 250.33) \), ranging from 7 to 1,625.

Across the various aspects of terrorism and terrorists examined in this review (i.e., ideological focus, type of terrorist, type of attack, gender of the terrorist, position in the terrorist organization), the majority of articles did not specify their focus (see Table 2.1). Ideological focus was not specified in almost half \( (k = 85, 41.5\%) \) of the articles. When specified, religious fundamentalism was the ideology most often addressed \( (k = 75, 36.6\%) \), with smaller numbers of articles addressing social revolutionary \( (k = 17, 8.3\%) \), right-wing \( (k = 45, 22.0\%) \), left-wing \( (k = 32, 15.6\%) \), and national-separatist \( (k = 39, 19.0\%) \) ideologies. One-third of the articles \( (k = 74, 36.1\%) \) did not specify the type of terrorist. When specified, group members were the most frequently discussed type of terrorist, reviewed in approximately one-fifth of the articles \( (k = 44, 21.5\%) \). Lone wolf \( (k = 34, 16.6\%) \) and autonomous cell terrorists \( (k = 25, 12.2\%) \) were addressed less frequently. Over half of the articles failed to specify the type of attack of interest \( (k = 112, 54.6\%) \). Suicide bombings \( (k = 80, 39.0\%) \) were the most prominent type of attack discussed, while school shootings and workplace violence together were mentioned in only seven articles \( (3.5\%) \). The majority of articles did not specify the gender of the terrorist \( (k = 126, 61.5\%) \). When gender was specified, male terrorists \( (k = 76, 37.1\%) \) was discussed more frequently than female terrorists \( (k = 40, 19.5\%) \). Similarly, the majority of articles did not specify the terrorist’s position in the organization \( (k = 141, 68.8\%) \). When specified, leaders and followers were discussed with comparable frequency: leaders were mentioned in about a quarter of the articles \( (k = 54, 26.3\%) \) and followers were discussed in a slightly smaller number of articles \( (k = 44, 21.5\%) \).
A wide range of terrorist organizations were discussed in the literature, with only 12.7% (k = 26) of the articles not specifying an organization. As shown in Table 2.2, among the most frequently named terrorist organizations were Al-Qaeda Central (k = 110, 53.7%), Hamas (k = 49, 23.9%), Hezbollah/Hizballah (k = 41, 20.0%), Islamic Jihad/Islamic State/ISIS/ISOL (k = 47, 22.9%), Liberation Tigers of Tamil Eelam (LTTE) (k = 40, 19.5%), and the Provisional Irish Republican Army (IRA) (k = 40, 19.5%). These were similar across articles overall and empirical articles, specifically (see Table 2.2).

**Content of Empirical Articles**

Content of empirical articles addressed two distinct issues as they relate to membership in terrorist organizations and/or perpetration of terrorist attacks: 1) factors that may be associated with terrorism outcomes; and 2) characteristics of radicalization, including motivation and process. The frequency with which specific variables within these two broad domains were examined in empirical articles overall and as they relate to each terrorism outcome are presented in Table 2.3.

Across the empirical articles, quantitative analyses were often limited to descriptive statistics (e.g., frequencies and percentages); fewer than half (k = 24) reported inferential statistics. Even when inferential statistics were reported, the articles were mixed in terms of the variables examined, the comparison groups, the outcome variables, and even the threshold for statistical significance (p < .10 vs. p < .05; see, for example, Chermack & Gill, 2012; Krueger & Malečková, 2003; Lee, 2011). With respect to the comparison groups, of the 24 articles reporting inferential statistics, only six compared characteristics of known terrorists to those of control or comparison groups of non-terrorists (Gottschalk & Gottschalk, 2004; Kavanagh, 2011; Krueger, 2008; Krueger & Malečková, 2003; Lee, 2011; Smith, 2008) and two of those included
overlapping samples (Kavanagh, 2011; Krueger & Malečková, 2003). Eight articles compared characteristics between known groups of terrorists, such as those distinguished by ideology or successful (versus thwarted) attacks (Chermak & Gruenewald, 2015; Fair, 2014; Gruenewald, Chermak, Frelitch, 2013; Lankford, 2013; Meloy, Roshdi, Glaz-Ocik, & Hoffmann, 2015; Merari, Diamant, Bibi, Broshi & Zakin, 2009; Sela-Shayovitz, 2007; Yilmaz, 2009). Three articles compared larger communities, such as those defined by ethnicity, or countries with respect to prevalence of known terrorists or terrorist activity (Freytag et al., 2011; Santana et al., 2013; Piazza, 2011). Two studies examined support for terrorism or related constructs in non-terrorist groups (e.g., college students, community members) using experimental designs (Orehk, Kruglansky, & Dechesne, 2014; Thomas, McGarty, & Louise, 2014). Five articles did not include a comparison group (Doosje, Loseman, & van den Bos, 2013; Gill, 2012; Gill, Horgan, & Deckert, 2014; Ginges & Atran, 2009; & Schumm et al., 2006). Due to these methodological differences and limitations, effect sizes were not compared across studies. Instead, we provide a descriptive summary of the findings across the empirical articles, highlighting findings of those studies that did statistically compare factors between known terrorists and comparison groups of non-terrorists.

Factors associated with terrorism outcomes. The specific variables examined in the empirical literature in relation to membership in terrorist organizations and/or perpetration of terrorist attacks fall into two categories: 1) individual factors, and 2) environmental factors (see Table 2.3).

Individual factors. The vast majority of the research on terrorism that met our inclusion criteria has focused on the identification of individual factors, including sociodemographic characteristics, criminal history, religion and spirituality, work and education, personal
experiences, attitudes and beliefs, relationships, and mental health (see Table 2.3). Of the individual-level factors, sociodemographic characteristics were examined most frequently (in 43 of 50 articles) and personal experiences, least frequently (in just three articles).

*Sociodemographic characteristics.* As noted above, sociodemographic characteristics were the most frequently examined category of factors. Among them, age or birth date was most commonly examined while country of birth was least frequently examined. There was evidence age or birth date as a correlate of both terrorism outcomes. Specifically, age (or birth date) was examined in slightly over half of the articles addressing membership in terrorist organizations ($k = 20, 58.8\%$) (Berko & Erez, 2005; Berrebi, 2007; Fair, 2014; Fair, 2008; Florez-Morris, 2007; Gill, 2012; Gill & Horgan, 2013; Gruenewald, Chermak, & Freilich, 2013b; Haddad, 2010; Hegghammer, 2006; Hewitt, 2002; Kavanagh, 2011; Krueger, 2008; Krueger & Malečková, 2003; Lee, 2011; Porter & Kebbell, 2011; Reinares, 2004; Smith & Morgan, 1994; Teymur, 2007; Yilmaz, 2009), with evidence supporting its relevance to this terrorism outcome in 15 of them (Fair, 2014; Gill, 2012; Gill & Horgan, 2013; Haddad, 2010; Hegghammer, 2006; Hewitt, 2002; Kavanagh, 2011; Krueger, 2008; Krueger & Malečková, 2003; Lee, 2011; Porter & Kebbell, 2011; Reinares, 2004; Smith & Morgan, 1994; Teymur, 2007; Yilmaz, 2009). Three of these articles (Kavanagh, 2011; Krueger, 2008; Lee, 2011) showed a statistically significant inverse association between age and membership in a terrorist organization, when comparing known terrorists to the general population; in other words, younger age was associated with greater risk for membership in a terrorist organization. Age was examined in just under half of the articles addressing perpetration of terrorist attacks ($k = 10, 47.6\%$), with some evidence supporting the relevance of age to this terrorism outcome in most ($k = 8$) (Lankford, 2012;
Examined less frequently, there were mixed findings regarding race and/or ethnicity as a correlate of terrorism outcomes. Race and/or ethnicity were examined in about one-third of the articles addressing membership in terrorist organizations \( (k = 12, 35.3\%) \) (Bartlett & Miller, 2012; Blazak, 2001; Chermak & Gruenewald, 2015; Doosje et al., 2013; Fair, 2014; Gottschalk & Gottschalk, 2004; Handler, 1990; Hegghammer, 2006; Hewitt, 2002; Satana, Inman, & Birnir, 2013; Teymur, 2007), with some evidence of the relevance to this terrorism outcome in half of those articles (Chermak & Gruenewald, 2015; Doosje et al., 2013; Gruenewald et al., 2013a; Handler, 1990; Hewitt, 2002; Satana et al., 2013). Race and/or ethnicity were only included in one article addressing perpetration of terrorist attacks (Newman, 2006), which showed some support for its relevance to this terrorism outcome.

In contrast, there was fairly consistent findings regarding socioeconomic status as a correlate of both outcomes. Socioeconomic status was examined in one-quarter of the articles addressing membership in terrorist organizations \( (k = 8, 23.5\%) \) (Berrebi, 2007; Fair, 2014; Florez-Morris, 2007; Handler, 1990; Kavanagh, 2011; Reinares, 2004; Teymur, 2007; Yilmaz, 2009), all of which provided some evidence of its relevance to this terrorism outcome. One article (Krueger & Malečková, 2003) found a statistically significant inverse association between socioeconomic status and membership in a terrorist organization when comparing Hezbollah militants to the Lebanese population; specifically, poverty was associated with increased risk for membership in a terrorist organization. Socioeconomic status also was examined in about one-quarter of the articles addressing perpetration of terrorist attacks \( (k = 6, 28.6\%) \) (Brym & Araj, 2012a; Freytag, Kruger, Meierrieks, & Schneider, 2011; Merari, 2005; Newman, 2006; Piazza,
2011; Speckhard & Ahkmedova, 2006) and was found to be relevant to this terrorism outcome in five articles (Freytag et al., 2011; Merari, 2005; Newman, 2006; Piazza, 2011; Speckhard & Ahkmedova, 2006). Across these articles, most individuals involved in terrorist organizations or activities were identified as low to middle class; few were identified as upper middle or upper class.

Country of birth was rarely examined, but when it was examined, there was some support for its relevance to terrorism outcomes. To demonstrate, country of birth was examined in relation to membership in terrorist organizations in three articles (Gill & Horgan, 2013; Krueger, 2008; Teymur, 2007), all of which found some support for its relevance to this terrorism outcome, including a statistically significant difference between homegrown Islamic terrorists and a representative sample of Muslim Americans (Krueger, 2008). Of note, however, homegrown terrorists were more likely to be born in the United States than other Muslim Americans in this study. No articles examined country of birth in relation to perpetration of terrorist attacks.

Family characteristics, such as parents’ nationality, number of children, and number of siblings, were examined rarely. When examined, articles typically failed to find compelling support for the relevance of these variables to terrorism. For instance, only two articles reported on the number of children in relation to membership in terrorist organizations (Gill & Horgan, 2013; Teymur, 2007) and only one in relation to perpetration of terrorist attacks (Merari et al., 2009), with limited supported.

**Criminal history.** Within this category, there were different measures of criminal history, such as prior arrest, prison activities, prison terms, ongoing trial/fugitive status, as well as measures of current criminal activity. In terms of prior arrest, we found some evidence
suggesting its relevance to membership in terrorist organizations. Prior arrests was examined in seven (20.6%) of the articles addressing membership in terrorist organizations (Gill, 2012; Gill & Horgan, 2013; Gruenewald et al., 2013b; Haddad, 2010; Hewitt, 2002; Teymur, 2007; Yilmaz, 2009), which generally showed elevated rates among members of terrorist organizations. There were no articles that examined prior arrests in relation to perpetration of terrorist attacks. Having a criminal record more generally was examined infrequently: this variables was examined in only one article in relation to each of membership in terrorist organizations (Porter & Kebbell, 2011) and perpetration of terrorist attacks (Gill, Horgan, & Deckert, 2014). In both articles, there was some evidence supporting the relevance of having a criminal record to the terrorism outcomes.

Religion and spirituality. Articles examined the role of affiliation with specific religions, as well as aspects of spirituality more generally, such as interest in religion or religious values. In regards to specific religions, Islam was examined most frequently, but there was very mixed support regarding whether being Islamic was associated with terrorism outcomes. Specifically, being Islamic was examined in slightly under half of the articles addressing membership in terrorist organizations ($k = 15, 44.1\%$) (Bartlett & Miller, 2012; Berko & Erez, 2005; Berrebi, 2007; Chermak & Gruenewald, 2015; Doosje et al., 2013; Fair, 2014; Fair, 2008; Gottschalk & Gottschalk, 2004; Haddad, 2010; Hewitt, 2002; Kleinmann, 2012; Krueger, 2008; Nilsson, 2015; Post, Sprinzak, & Denny, 2003; Schumm, Anderson, Brinneman, Magsanoc-Deoki, Pakhalchuk, & Ulrick, 2006), with evidence suggesting its relevance to this terrorism outcome in only seven of those (Chermak & Gruenewald, 2015; Doosje et al., 2013; Hewitt, 2002; Kleinmann, 2012; Krueger, 2008; Nilsson, 2015; Post et al., 2003). The one statistical comparison between terrorists and non-terrorists on this variable (Krueger, 2008) was not significant. In other words,
more often than not, research failed to support the relevance of being Islamic to membership in terrorist organizations. Being Islamic was examined in four articles addressing perpetration of terrorist attacks (Berko & Erez, 2005; Krugslanski, Chen, Dechesne, Fishman, & Orehek, 2009; Newman, 2006; Speckhard & Ahkmedova, 2006), and unlike findings regarding membership, there was evidence supporting the relevance of being Islamic to perpetration of terrorist attacks in most (Krugslanski et al., 2009; Newman, 2006; Speckhard & Ahkmedova, 2006). That said, none of these articles reported inferential statistics, let alone the results of statistical comparisons between known terrorists and non-terrorists. Other religions (e.g., Judaism, Christianity, Hinduism) and specific denominations of those religions were only examined in a few articles (Blazak, 2001; Florez-Morris, 2007; Gruenewald et al., 2013a; Gottschalk & Gottschalk, 2004; Handler, 1990; Krueger & Malečková, 2003; Lee, 2011) and when examined, results did not support their relevance either terrorism outcome. Taken together, evidence supporting being Islamic or affiliating with other religions as a correlate of terrorism outcomes is equivocal.

Work and education. Variables examined within the category of work and education included educational attainment, employment status and specific occupations, and other training. Overall, findings were mixed regarding the relevance of variables within this category. To demonstrate, there was evidence suggesting the relevance of educational attainment to both membership in terrorist organizations and attack. Educational attainment was examined in half of the articles (\( k = 18, 52.9\% \)) addressing membership in terrorist organizations (Bartlett & Miller, 2012; Berko & Erez, 2005; Berrebi, 2007; Chermak & Gruenewald, 2015; Fair, 2014; Fair, 2008; Florez-Morris, 2007; Gill, 2012; Haddad, 2010; Handler, 1990; Kavanagh, 2011; Krueger & Malečková, 2003; Krueger, 2008; Lee, 2011; Porter & Kebbell, 2011; Smith & Morgan, 1994; Teymur, 2007; Yilmaz, 2009) and was found to be relevant to this terrorism outcome in two-
thirds (Berrebi, 2007; Chermak & Gruenewald, 2015; Fair, 2014; Florez-Morris, 2007; Gill, 2012; Haddad, 2010; Handler, 1990; Kavanagh, 2011; Krueger & Malečková, 2003; Lee, 2011; Smith & Morgan, 1994; Yilmaz, 2009). Four of these articles (Kavanagh, 2011; Krueger, 2008; Krueger & Malečková, 2003; Lee, 2011) showed statistically significant differences in education between known terrorists and comparison samples. Educational attainment was examined in just under half \((k = 10, 47.6\%)\) of the articles addressing perpetration of terrorist organizations (Berko & Erez, 2005; Brym & Araj, 2012; Gill et al., 2014; Meloy, Roshdi, Glaz-Ocik, & Hoffmann, 2015; Merari, 2005; Merari et al., 2009; Porter & Kebbell, 2011; Sela-Shayovitz, 2007; Smith & Morgan, 1994; Speckhard & Ahkmedova, 2006), and when examined, there was evidence supporting its relevance this terrorism outcome. The majority of individuals involved in terrorist organizations or activities were described as having at least a high school education, with many having at least some university education. In most cases, however, a university degree or postgraduate training were rare.

When employment status was examined, the evidence supporting its relationship to the terrorism outcomes was mixed. Like educational attainment, employment status was examined in nearly half the articles \((k = 15, 44.1\%)\) addressing membership in terrorist organizations (Bartlett & Miller, 2012; Blazak, 2001; Fair, 2008; Gill & Horgan, 2013; Haddad, 2010; Handler, 1990; Hegghammer, 2006; Hewitt, 2002; Krueger & Malečková, 2003; Lee, 2011; Porter & Kebbell, 2011; Reinares, 2004; Smith & Morgan, 1994; Teymur, 2007; Yilmaz, 2009) and was found to be relevant to this outcome in nine articles (Gill & Horgan, 2013; Haddad, 2010; Handler, 1990; Hewitt, 2002; Krueger & Malečková, 2003; Lee, 2011; Reinares, 2004; Smith & Morgan, 1994; Yilmaz, 2009). One article (Lee, 2011) demonstrated a statistically significant association between unemployment and membership in a terrorist organization when comparing known
terrorists to a general population sample. Employment status was examined in six articles (28.6%) addressing perpetration of terrorist attacks (Brym & Araj, 2012; Gill et al., 2014; Meloy et al., 2015; Porter & Kebbell, 2011; Smith & Morgan, 1994; Speckhard & Ahkmedova, 2006), but there was support for its relevance in only three (Gill et al., 2014; Smith & Morgan, 1994; Speckhard & Ahkmedova, 2006). Across these articles, employed individuals involved in terrorist organizations or activities were typically described as having blue-collar occupations, with the vast majority in skilled and/or specialized labor positions. When the presence of work or school-related problems, more specifically, was examined, there was greater evidence of the relevance to membership in terrorist groups and perpetration of terrorist attacks.

Though there is often discussion of military experience in relation to terrorism, this variable was infrequently examined: only one study for each of membership in terrorist organizations (Fair, 2008) and perpetration of terrorist attacks (Gill et al., 2014). That said, in both cases, prior military experience appeared to be relevant to the terrorism outcome. This remains an important variable for future consideration.

**Personal experiences.** Empirical articles rarely examined associations of personal experiences with terrorism outcomes, but when they did, they typically focused on variables that might reflect a vulnerability to radicalization, such as major personal loss. Experience of a major personal loss, such as the loss of a relationship, was examined in four articles (Berko & Erez, 2005; Krugslanski et al., 2009; Speckhard & Ahkmedova, 2006; Teymur, 2007); one found it to be relevant to membership in terrorist organizations (Teymur, 2007) and two found it to be relevant to perpetration of terrorist attacks (Krugslanski et al., 2009; Speckhard & Ahkmedova, 2006). Many variables related to other personal experience that are commonly referenced as risk factors were infrequently examined in the empirical literature. For instance, foreign travel history
is widely cited in the media and elsewhere as a risk factor for terrorism outcomes, but it was examined in just two studies addressing membership in terrorist organizations (Teymur, 2007; Kleinmann, 2012); neither showed support for its relevance to this terrorism outcome. As another example, even though being the subject of torture was mentioned in the reviewed literature, there were no empirical articles included in this review that examined this variable in relation to either membership in terrorist organizations or perpetration of terrorist attacks. Overall, there was some limited support for associations between personal experiences and terrorism outcomes, but more empirical work is clearly needed.

**Attitudes and beliefs.** Attitudes and beliefs examined in the empirical literature on terrorism were wide ranging, from beliefs about the inherent morality of a group, ethnic nationalism, and stereotypes to feelings of sociopolitical alienation to attitudes supporting of violence. Generally speaking, specific attitudes and beliefs were examined in just one or two studies and with respect to each terrorism outcome. Having a grievance, either personal or political, was examined more frequently: 10 (29.4%) empirical articles examined grievances in relation to membership in terrorist organizations (Bartlett & Miller, 2012; Blazak, 2001; Florez-Morris, 2007; Gill, 2012; Hegghammer, 2006; Hewitt, 2002; Kleinmann, 2012; Krugslanski & Gelfand, 2012; Porter & Kebbell, 2011; Reinares, 2004) and three (14.3%) in relation to perpetration of terrorist attacks (Porter & Kebbell, 2011; Speckhard & Ahkmedova, 2006; Thomas, McGarty, & Louis, 2013). When examined, there was empirical support for the relevance of grievances to these terrorism outcomes in about half to two-thirds of these articles (Speckhard & Ahkmedova, 2006; Thomas et al., 2013; Gill, 2012; Hewitt, 2002; Kleinmann, 2012; Reinares, 2004). Identifying with an extremist political group or having certain ideologies, including extremist ideologies, also were examined fairly often with respect to membership in
terrorist organizations – eight (23.5%) articles (Blazak, 2001; Chermak & Gruenewald, 2015; Gruenewald et al., 2013b; Handler, 1990; Hewitt, 2002; Smith & Morgan, 1994; Teymur, 2007; Yilmaz, 2009) – but there was evidence supporting their relevance to this terrorism outcome in only half ($k = 4$) (Hewitt, 2002; Smith & Morgan, 1994; Teymur, 2007; Yilmaz, 2009).

**Relationships.** The empirical articles examined diverse types and characteristics of relationships, such as marital status, friendships, social isolation, and attachment (or lack thereof). On the whole, there was some empirical support for the relevance of relationship characteristics to terrorism outcomes. For instance, being single and not having children were often found to be relevant to the terrorism outcomes, but more so for membership in terrorist organizations than perpetration of terrorist attacks. Specifically, marital and/or relationship status was examined in close to half of the articles ($k = 14, 41.2\%$) (Berko & Erez, 2005; Berrebi, 2007; Chermak & Gruenewald, 2015; Fair, 2008; Gill & Horgan, 2013; Haddad, 2010; Hewitt, 2002; Krueger & Malečková, 2003; Krugslanski & Gelfand, 2012; Lee, 2011; Porter & Kebbell, 2011; Reinares, 2004; Teymur, 2007; Yilmaz, 2009) addressing membership in terrorist organizations with support for their relevance to this terrorism outcome in most cases ($k = 10$) (Berrebi, 2007; Chermak & Gruenewald, 2015; Gill & Horgan, 2013; Haddad, 2010; Hewitt, 2002; Krueger & Malečková, 2003; Porter & Kebbell, 2011; Reinares, 2004; Teymur, 2007; Yilmaz, 2009). That said, the one comparison of known terrorists and a general population sample on this variable failed to show statistically significant differences (Lee, 2011). Among the articles examining marital and/or relationship status in relation to perpetration of terrorist attacks ($k = 9, 42.9\%$) (Berko & Erez, 2005; Brym & Araj, 2012; Gill et al., 2014; Meloy et al., 2015; Merari et al., 2009; Merari, 2005; Porter & Kebbell, 2011; Sela-Shayovitz, 2007; Speckhard & Ahkmedova, 2006), this variable was relevant to the terrorism outcome in two-thirds ($k = 6$) (Gill et al., 2014;
Examined less frequently, current evidence suggests social exclusion may have differential associations with membership in terrorist groups and perpetration of terrorist attacks. Social exclusion was examined in relation to membership in terrorist groups in only two articles (5.9%) (Teymur, 2007; Blazak, 2001) and neither supported its relevance to the terrorism outcome. Social exclusion was examined with respect to perpetration of terrorist attacks in three articles (14.3%) (Krugslanski et al., 2009; Lankford, 2012; Newman, 2006), all supported its relevance to this terrorism outcome. In contrast, findings regarding the relevance of having family members in an organization to terrorism outcomes were more consistent, although this variable was examined relatively infrequently. Of the six (17.6%) articles examining having family members in an organization with respect to membership in terrorist organizations (Fair, 2008; Hegghammer, 2006; Hewitt, 2002; Post et al., 2003; Teymur, 2007; Yilmaz, 2009), all reported evidence suggesting its relevance to this terrorism outcome. In the single article that examined having family members in an organization in relation to perpetration of terrorist attacks (Speckhard & Ahkmedova, 2006), there was evidence supporting its relevance to this terrorism outcome, but additional research is clearly needed.

**Mental health.** Aspects of mental health that were examined in relation to terrorism outcomes included specific mental disorders (such as depression), classes of disorders (such as personality disorders), or mental illness more generally. Mental illness was examined in seven articles (20.6%) with respect to membership in terrorist organizations (Chermak & Gruenewald, 2015; Gottschalk & Gottschalk, 2004; Gruenewald et al., 2013b; Hewitt, 2002; Kleinmann, 2012; Porter & Kebbell, 2011; Teymur, 2007) and found to be relevant to this terrorism outcome.
in just over half of those \((k = 4, 11.8\%)\) (Chermak & Gruenewald, 2015; Gottschalk & Gottschalk, 2004; Gruenewald et al., 2013b; Kleinmann, 2012). Mental illness was examined in three articles \((14.3\%)\) addressing perpetration of terrorist attacks (Brym & Araj, 2012; Gill et al., 2014; Porter & Kebbell, 2011), with findings supporting its relevance to this terrorism outcome in one (Gill et al., 2014). However, it is difficult to know exactly what was being measured within this broad label of ‘mental illness’. Some of the articles specified mental illness if it had been diagnosed by a mental health professional, while other articles did not specify the operational definition or mention diagnostic requirements.

Of specific mental disorders, depression was examined in three articles, two in relation to membership in terrorist organizations and one in relation to the terrorism outcomes (Gottschalk & Gottschalk, 2004; Kleinmann, 2012; Merari et al., 2009). There was support for its relevance across all three, including a statistically significant differences in depressive tendencies as measured by the MMPI-2 between a sample of known Middle Eastern terrorists and a control group (Gottschalk & Gottschalk, 2004). Personality disorders, in general, are recognized as predictors of violence and crime (Gendreau, Little, & Goggin, 1996), but they were examined very rarely in the empirical literature on terrorism. In fact, personality disorders were only examined in one article in relation to membership in terrorist organizations, with findings showing statistically significant differences in psychopathic tendencies measured using the MMPI-2 between known Middle Eastern terrorists and a control group (Gottschalk & Gottschalk, 2004). Personality disorders were not examined in relation to perpetration of terrorist attacks.

**Environmental factors.** Environmental factors examined in the empirical articles described specific geographic locales, as well as the characteristics of geographic regions that
may be associated with terrorism outcomes. Those environmental factors examined more frequently include specific geographic region, type of geographic area, and income inequality.

Specific geographic region (e.g., West Bank, Gaza) was examined in relation to membership in terrorist organizations in just over one-quarter of the articles \((k = 9, 26.5\%)\) (Berrebi, 2007; Fair, 2008; Fair, 2014; Haddad, 2010; Hegghammer, 2006; Kavanagh, 2011; Krueger & Malečková, 2003; Lee, 2011; Reinares, 2004), with evidence suggesting its relevance to this terrorism outcome in most (Berrebi, 2007; Fair, 2014; Hegghammer, 2006; Kavanagh, 2011; Krueger & Malečková, 2003; Reinares, 2004). Two of these articles (Kavanagh, 2011; Krueger & Malečková, 2003) showed statistically significant increases in risk for membership in terrorist organizations associated with specific geographic regions (i.e., Beirut and South Lebanon compared to other regions of Lebanon), when comparing known terrorists to the general population. Specific geographic region was examined in only one article in relation to perpetration of terrorist attacks (Merari, 1990), which did find evidence supporting its relevance.

Type of geographic area – and urban versus rural areas, in particular – was found to be relevant to both terrorism outcomes.

Type of geographic area was examined in almost one-quarter of the articles addressing membership in terrorist organizations \((k = 8, 23.5\%)\) (Berrebi, 2007; Chermak & Gruenewald, 2015; Florez-Morris, 2007; Gill & Horgan, 2013; Gill, 2012; Lee, 2011; Smith & Morgan, 1994; Teymur, 2007), with all of articles reporting evidence supporting its relevance to this terrorism outcome. However, the one statistical test of this association failed to show statistically significant differences between known terrorists and a comparison sample (Lee, 2011). Type of geographic area was only examined in three \((14.3\%)\) of the articles addressing perpetration of terrorist attacks (Merari, 2005; Newman, 2006; Smith & Morgan, 1994), but all provided
evidence supporting the relevance to this terrorism outcomes. Across these articles, urban settings typically were associated with greater risk for terrorism outcomes than rural settings (although this may be specific to certain geographic locales).

There was some evidence supporting the relevance of income inequality to both terrorism outcomes. Specifically, income inequality was examined in three articles (8.8%) addressing membership in terrorist organizations (Chermak & Gruenewald, 2015; Florez-Morris, 2007; Teymur, 2007) with evidence supporting its relevance to this terrorist outcome in two of them (Chermak & Gruenewald, 2015; Florez-Morris, 2007). Income inequality was examined in only one article addressing perpetration of terrorist attacks (Piazza, 2011), which did find evidence supporting its relevance to this terrorism outcome.

Other environmental factors were typically examined in only one or two empirical articles. For instance, the percentage of foreign-born residents was only examined in one article addressing membership in terrorist organizations (Chermak & Gruenewald, 2013), which did report a link with this terrorism outcome. Two articles (5.9%) examined the percentage of Muslim residents with respect to membership in terrorist organizations (Krueger & Malečková, 2003; Schumm, Anderson, Brinneman, Magsanoc-Deoki, Pakhalchuk, & Ulrick, 2006), with only one article supporting its relevance to this terrorism outcome (Schumm et al., 2006). Neither the percentage of foreign-born residents nor percentage of Muslims were examined in relation to the perpetration of terrorist attacks. One article (Chermak & Gruenewald, 2013) examined the percentage of foreign-born residents in the country in relation to membership in terrorist organizations, reporting some evidence suggesting its relevance to this terrorism outcome. The number of ethnic groups in an area was examined in one article for each terrorism outcome (Piazza, 2011; Satana et al., 2013), with evidence supporting its relevance to terrorism
in both cases. However, because these variables were examined in only one or two empirical articles included in this review, support for their association with terrorism outcomes is tentative, at best.

**Radicalization.** Empirical articles included in this review focused on factors that may be associated with two main aspects of radicalization – namely, the motivation for and process of radicalization – as they relate to membership in terrorist organizations and/or perpetration of terrorist attacks. The former was examined more frequently than the latter (see Table 2.3). However, there was relatively limited examination of any one variable: typically less than one-quarter of the articles addressing membership in terrorist organizations and less than one-quarter of the articles addressing perpetration of terrorist attacks.

**Motivation.** Variables in this category described individual motivation for involvement in terrorist activity, either membership or attacks, from general motivation to specific drivers. Ideological motivation was most frequently examined. To demonstrate, ideological motivation was examined in six of the articles (17.6%) involving membership in terrorist organizations (Chermak & Gruenewald, 2015; Haddad, 2010; Handler, 1990; Hewitt, 2002; Kleinmann, 2012; Lee, 2011), with evidence supporting its relevance to this terrorism outcome in all but one ($k = 5, 14.7\%$) (Haddad, 2010; Handler, 1990; Hewitt, 2002; Kleinmann, 2012; Lee, 2011). Ideological motivation was examined in five articles (23.8%) addressing perpetration of terrorist attacks (Gill et al., 2014; Krugslanski et al., 2009; Meloy et al., 2015; Newman, 2006; Speckhard & Ahkmedova, 2006), with evidence supporting its relevance, again, in all but one ($k = 4, 19.0\%$) (Gill et al., 2014; Krugslanski et al., 2009; Newman, 2006; Speckhard & Ahkmedova, 2006).

Desire for revenge or vengeance for self or others was examined in about one-quarter of the articles regarding both terrorism outcomes. In regards to membership in terrorist
organizations, there was evidence supporting its relevance in six (17.6%) of seven (20.6%) articles (Berko & Erez, 2005; Florez-Morris, 2007; Gill, 2012; Post et al., 2003; Speckhard & Akhmedova, 2005; Teymur, 2007; Yilmaz, 2009). Similarly, desire for revenge or vengeance was examined in six (28.6%) of the articles addressing perpetration of terrorist attacks (Berko & Erez, 2005; Krugslanski et al., 2009; Merari, 2005; Newman, 2006; Speckhard & Akhmedova, 2006; Speckhard & Akhmedova, 2005), with support for its relevance in five (23.8%) (Krugslanski et al., 2009; Merari, 2005; Newman, 2006; Speckhard & Akhmedova, 2006; Speckhard & Akhmedova, 2005). In contrast, there was relatively limited evidence supporting the relevance of a desire to be with others of a like mind and desire to be known or special with terrorism outcomes. Specifically, desire to be with others of a like mind was examined in four (11.8%) articles addressing membership in terrorist organizations (Blazak, 2001; Florez-Morris, 2007; Kleinmann, 2012; Porter & Kebbell, 2011), with evidence supporting its relevance to this terrorism outcome in just half \((k = 2, 5.9\%)\) (Florez-Morris, 2007; Kleinmann, 2012). Desire to be known or special was examined in two (5.9%) articles related to membership in terrorist organizations (Berko & Erez, 2005; Post et al., 2003), but only one article found evidence supporting its relevance (Post et al., 2003). Desire to be with others of a like mind and desire to be known or special were each examined in one article addressing perpetration of terrorist attacks, with no evidence supporting their relevance to this terrorism outcome.

The role of media or government influences, including propaganda, was examined in two articles in relation to each of membership in terrorist organizations (5.9%) (Florez-Morris, 2007; Teymur, 2007) and perpetration of terrorist attacks (9.5%) (Merari, 2005; Speckhard & Akhmedova, 2006). Despite the limited number of investigations, there was consistent support for their relevance to terrorism outcomes. Because media or government influences were only
examined two empirical articles, these findings are preliminary, but they remain important factors for consideration in future research.

Finally, social drivers as a catch-all category, including specific environmental factors examined individually in other articles (e.g., overcrowding, violence, and lack of integration), were examined in relation to the terrorism outcomes with mixed findings. Social drivers were examined in three (8.8%) articles addressing membership in terrorist organizations (Doosje et al., 2013; Satana et al., 2013; Teymur, 2007), with evidence supporting their relevance to this terrorism outcome in one article (Doosje et al., 2013). Conversely, social drivers were examined in two (9.5%) articles addressing perpetration of terrorist attacks (Piazza, 2011; Thomas et al., 2013), with support for their relevance in both.

**Process.** Variables in this category generally described the phases or steps of the radicalization process, though not necessarily defined in a linear fashion. Specific variables examined included: acceptance of or experience with Jihad; conversion from one religion to another; having a family member or friend recruited, age of recruitment; participation in combat or training camp (of paramilitary or terrorist organization); and experiencing a triggering event. When addressed, these variables were typically examined in relation to membership in terrorist organizations rather than perpetration of terrorist attacks. On the whole, there was relatively limited support for the relevance of these variables to terrorism outcomes. Findings are discussed in greater detail below.

Age of recruitment, experiencing a triggering event, and participation in combat or training camp were examined most frequently, albeit in no more than four empirical articles related to either terrorism outcome. Age of recruitment was examined in four articles (11.8%) articles addressing membership in terrorist organizations (Fair, 2008; Fair, 2014; Reinares, 2004;
Teymur, 2007), with two (5.9%) supporting the relevance of younger age of recruitment to this terrorism outcome (Fair, 2014; Reinares, 2004). Age of recruitment was not examined in relation to perpetration of terrorist attacks. Experiencing a triggering event was examined in four (11.8%) articles addressing membership in terrorist organizations (Berko & Erez, 2005; Gill, 2012; Teymur, 2007; Yilmaz, 2009), three of which (8.8%) supporting its relevance to this terrorism outcome (Gill, 2012; Teymur, 2007; Yilmaz, 2009). Experiencing a triggering event was examined in two (9.5%) articles addressing perpetration of terrorist attacks (Berko & Erez, 2005; Speckhard & Ahkmedova, 2006), but only linked to this terrorism outcome in one article (Speckhard & Ahkmedova, 2006). Participation in combat or training camp was examined in three (8.8%) articles addressing membership in terrorist organizations (Fair, 2008; Fair, 2014; Teymur, 2007), but there was no evidence supporting its relevance to this terrorism outcome. As for age of recruitment, participation in combat or training camp was not examined in relation to perpetration of terrorist attacks.

Acceptance of or experience with Jihad, conversion from one religion to another, and having a family member or friend recruited were each examined in two empirical articles at most. Specifically, acceptance of or experience with Jihad was examined in two (5.9%) articles addressing membership in terrorist organizations (Bartlett & Miller, 2012; Nilsson, 2015), but there was no empirical support for an association with this terrorism outcome. Acceptance of or experience with Jihad was not examined in relation to perpetration of terrorist attacks. These findings are inconsistent with a prominent narrative that acceptance of or experience with Jihad is a critical or necessary step in the radicalization process. Conversion from one religion to another (e.g., conversion to Islam from Christianity) was examined in three (8.8%) articles addressing membership in terrorist organizations (Kleinmann, 2012; Krueger, 2008; Porter &
with some evidence supporting its relevance in two (5.9%) (Kleinmann, 2012; Krueger, 2008). Yet, in one of these articles (Krueger, 2008), the association was not statistically significant when comparisons were conducted between known homegrown Islamic terrorists and a representative sample of Muslim American. Conversion from one religion to another was examined in two (9.5%) articles perpetration of terrorist attacks (Gill et al., 2014; Porter & Kebbell, 2011), with evidence supporting its relevance in only one of them (Gill et al., 2014). Finally, having a family member or friend recruited was examined in two articles (5.9%) addressing membership in terrorist organizations (Teymur, 2007; Yilmaz, 2009), both of which supported its relevance. Having a family member or friend recruited was not examined in relation to perpetration of terrorist attacks and further research is needed.

Discussion

This review summarizes the contemporary literature on factors related to two terrorism outcomes, membership in terrorist organizations and perpetration of terrorist attacks. Our search of the published and unpublished literature across six online databases identified 205 articles produced between 1990 and 2015. Consistent with prior critiques, findings of our systematic review show that the preponderance of the scientific literature on terrorism is largely conceptual in nature, with a relatively limited number of empirical investigations. This review also revealed, however, that there has been a significant increase in empirical studies in recent years, contributing to important advances in knowledge regarding factors associated with terrorism. Even so, only 24 of the empirical articles included in our review reported inferential statistics and these articles varied considerably in terms of the variables examined, the comparison groups, the outcome variables, and even the level of at which statistical significance was inferred. As
such, we focus our discussion of findings on potential \textit{correlates}, rather than \textit{risk factors}, for terrorism.

Across the empirical articles, this review revealed a predominance of work focused on individual factors associated with terrorism outcomes. Although there is an obvious need – and also tradition in the field – to focus on characteristics of an individual in the context of assessing risk for terrorism (Monahan, 2012), the consideration of environmental or situational characteristics is also essential (Lloyd & Dean, 2015). To be sure, most individuals involved in terrorist organizations or even at risk for radicalization will not actually perpetrate a terrorist attack. Instead, a specific political or social context will provide the impetus and opportunity for an attack itself (Hoffman, 2006). Such environmental factors, however, have been examined relatively infrequently in the empirical literature. Indeed, we were restricted to summarizing findings for variables and outcomes that were identified and selected for examination (and for which findings were reported) by the study authors. These decisions, even when data or theory-driven, can be susceptible to biases that may have, in turn, biased the findings of our review (Greenland, 1989; Hutton & Williamson, 2000). Variables that have yet to be examined in the context of terrorism may very well be correlates or even risk factors for terrorism outcomes, including membership in terrorist organizations and engagement in terrorist activities that are currently not known to the intelligence and scientific communities. Exploring these unknown unknowns remains a critical avenues for future research, and to be successful, will require ongoing collaboration and information exchange (to the extent possible) between these two communities.

Nonetheless, among variables that were examined in the extant empirical literature, some emerged with fairly consistent support for their role as potential correlates of terrorism outcomes.
At the individual level, these were: *sociodemographic characteristics*, including age and socioeconomic status; criminal history, including prior arrests (in relation to membership in terrorist organizations, but not perpetration of terrorist attacks); *work and education*, including educational attainment, employment, and problems with work or school, specifically; *relationships*, including being single, not having children; and *attitudes and beliefs*, including having a grievance (political or personal). Of these, young age, low socioeconomic status, education, and unemployment were notable for their statistically significant associations with terrorism outcomes when comparisons were conducted between known terrorists and non-terrorists. With respect to characteristics of radicalization, *motivation*-related factors, including ideological motivation and desire for revenge or vengeance, had the strongest (but still marginal) empirical support. Indeed, grievances can provide the basis for extremist ideology and serve as an “activating” factor, while social factors may serve as a “disinhibiting” factor for terrorism (with the obvious exception of having a friend or family member involved in a terrorist organization) (see Borum, 2015; Kruglanski, Jasko, Chernikova, Dugas, & Webber, 2017). At the environmental level, only geographic locale and type of geographic area (i.e., urban or rural) showed empirical associations with terrorism outcomes.

Given the limitations of the extant research, including the predominance of descriptive statistics and correlational designs, there is insufficient evidence to conclude that any of these are empirically-supported risk factors for terrorism (Kraemer et al., 1997). Nonetheless, these findings are suggestive of an individual with relatively limited social ties, some education but limited vocational success, who has (or perceives s/he has) been wronged in some way -- either personally or as a member of a group -- and for whom engagement in terrorist activity is therefore justified or even necessary.
These individual-level factors map closely onto what are known as the “central eight” risk factors for criminal behavior (Andrews, Bonta, & Wormith, 2006), with some exceptions (e.g., substance abuse). They also align with risk factors commonly included in instruments designed to assess risk for criminal recidivism amongst offenders (Desmarais, Johnson, & Singh, 2016). Ostensibly, such similarities challenge the assertion that risk factors for general offending and violence differ meaningfully from those that increase risk for terrorism (Monahan, 2012). However, the associations between a given factor and a given terrorism outcome observed in our review were not always in the expected direction or even consistent across terrorism outcomes. For instance, lower socioeconomic status is well established as a risk factor for criminal behavior and violence (Sampson, Raudenbush, & Earls, 1997). With respect to terrorism, in contrast, higher socioeconomic status was linked with greater risk for terrorism in some studies, but in others, lower socioeconomic status was associated with decreased risk. In fact, the risk for terrorism associated with socioeconomic status depended in large part on other contextual factors, including the terrorist organization of interest, the position of an individual within the terrorist organization, the individual’s education level, and the geographic region. For this reason, it is imperative that future research examine these factors in relation to specific terrorist organizations, roles, and types of attacks to establish the directionality of their effects.

That said, identifying associations between individual-level factors and terrorism outcomes may be of limited use from a pragmatic point of view. Although most terrorists are young, single men (LaFree & Dugan, 2004), for example, not all young, single men are at heightened risk for terrorism nor, conversely, are older married women at lowered risk. Additionally, knowing that young age, male gender, and being single are correlates of terrorism outcomes will not help discriminate amongst a pool of potential targets who are all young, single
men. There is another practical and ethical issue related to management of a potential threat: the
static, unchangeable nature of many of these factors. Though they may inform decision-making
regarding apprehension and confinement of a potential terrorist (Hart, Webster, & Douglas,
2001), they offer little in the way of guidance regarding how to prevent that individual from
becoming radicalized (Douglas & Skeem, 2005). Alternatively, dynamic factors – that is, factors
that could change and thus may be amenable to intervention, such as attitudes or employment –
hold promise for preventing radicalization in the first place. Further, research in related fields,
such as violence risk assessment, suggest that dynamic risk factors have both independent and
incremental validity of dynamic factors over static factors in the assessment of future risk (e.g.,
Wilson, Desmarais, Nicholls, Hart, & Brink, 2013).

This review also identified some variables that merit further investigation with regard to
their potential association with terrorism. For instance, country of birth was examined in two
empirical articles and only in relation to membership in terrorist organizations, but both showed
an association was linked with this terrorism outcome. Likewise, personal experiences, including
military experience, experience of a major personal loss, and foreign travel all were investigated
infrequently, but when examined, were related to terrorism outcomes. Other examples include
individual factors, such as having an extremist ideology, desire for to be with others of a like
mind, desire to be special or known (in relation to membership in terrorist organizations, but not
perpetration of terrorist attacks), social exclusion (in relation to perpetration of terrorist attacks,
but not membership in terrorist organizations), mental illness, and having a family member in an
extremist or terrorist organization. Environmental factors that similarly merit continued
investigation in relation to terrorism outcomes include income inequality, percentage of foreign
residents, percentage of Muslims, and number of ethnic groups.
Other factors emerged with mixed or limited evidence supporting associations with terrorism outcomes, in contrast with their central role in current counterterrorism strategies and policies. For instance, variables related to an individual’s religion and spirituality were examined with relative frequency, but results were mixed. The evidence supporting being Islamic, specifically, as a correlate of membership in terrorist organizations was inconsistent, whereas the evidence supporting its relevance to perpetration of terrorist attacks was more consistent (although examined in only three articles, none of which reported inferential statistics). Family characteristics, including parents’ nationality, number of siblings, and number of children were examined infrequently and when examined, failed to show relevance to terrorism outcomes.

Being the subject of torture was mentioned frequently in the literature but was not examined in any of the empirical articles. Other factors were consistently unrelated to terrorism outcomes when examined, including personality disorders, participation in combat or training camps, and acceptance of or experience with Jihad. Because of the dearth of empirical research overall, this is not to say these variables should be discounted as correlates or even risk factors for terrorism, but rather that there currently is no empirical evidence supported them as such.

This systematic review – and the literature on the whole – has focused almost exclusively on factors that may increase risk for terrorism (Monahan, 2012). As noted by others, there is very little discussion and even less research on factors that might protect against or reduce the risk for terrorism (Sarma, 2017). However, there are reasons to pursue such a line of research. In particular, research in other domains, notably demonstrates protective factors are significant predictors of violent outcomes and can improve the accuracy of predictive models (i.e., predictive validity) (e.g., Desmarais, Nicholls, Wilson, & Brink, 2012; de Vries Robbé, de Vogel, & Douglas, 2013; Lowder, Desmarais, Rade, Johnson, & Van Dorn, 2017; Miller, 2015;
Ullrich & Coid, 2011). This appears to be especially true for highly vulnerable populations and/or those living in impoverished conditions, for whom we might observe limited variability across risk factors (i.e., ceiling effect) (Lowder et al., 2017). There also is some evidence that consideration of protective factors improves the accuracy of structured professional (as opposed to mechanical) judgments of violence risk (Desmarais et al., 2012; de Vries Robbé et al., 2013); the same is likely to be true of judgments of risk for terrorism. Returning to the earlier example of young single men, consideration of protective factors may help discriminate between those at lower versus higher risk, within this high-risk group.

**Limitations**

Conclusions based on findings of this review should be qualified by limitations of our approach overall and with respect to our analysis of the empirical articles. In particular, we used an inclusive selection strategy and did not conduct a systematic assessment of quality. Because of the range in quality, we chose to summarize the findings of the empirical articles, rather than computing and statistically comparing effect sizes. Indeed, one of the limitations of the empirical articles included in this review was the inconsistent reporting of effect sizes. When statistical findings were reported, they were typically descriptive (e.g., frequencies) rather than inferential (i.e., statistical comparisons) in nature. Additionally, we identified factors for which there was some empirical evidence suggesting their relevance to membership in terrorist organizations and/or perpetration of terrorist attacks generally; however, we were unable to examine associations with membership in specific organizations and perpetration of specific types of attacks. There was simply too few empirical articles examining any given factor vis-à-vis a specific terrorism outcome. Further, there were relatively few comparative studies that met our inclusion criteria. Among these comparative studies, comparisons were typically conducted
between known groups of terrorists, rather than between known groups of terrorists and comparison or control groups of non-terrorists. Even then, the comparison and control groups may have included terrorists that were unknown to the authorities (or researchers). Thus, the degree to which variables discriminate between terrorists and non-terrorists is not known, a problem noted by others in the field (Meloy, Roshdi, Glaz-Ocik, & Hoffmann, 2015).

Finally, we did not assess other aspects of the empirical studies themselves, such as data source or research methodology that may have important effects on findings regarding associations between factors and terrorism outcomes. As one example, there is skepticism in the field of intelligence and national security regarding the accuracy of self-report (National Research Council, 2010). Though social and behavioral science research supports the appropriateness and validity of self-report measures of sensitive issues, including the perpetration of violence, over and above other data sources, including official records (Johnson, Desmarais, Tueller, & Van Dorn, under review), the validity of self-report amongst terrorists or with respect to terrorism outcomes is unknown.

Conclusions and Future Research Directions

Despite these limitations, the present review represents a comprehensive summary of the current state of scientific knowledge regarding factors associated with membership in terrorist organizations and perpetration of terrorist attacks. One of the key findings of this review is the limitations of the scientific literature as a whole, particularly compared to the robust empirical foundations underlying threat assessment and management strategies in other domains, including general offending and violent behavior (Borum, 2015; Sarma, 2017). Accordingly, current counterterrorism strategies and policies may lack an empirical foundation to support their
effectiveness. That is not to say that they are necessarily ineffective, but rather that the evidence is currently lacking to support them as evidence-based approaches. Moreover, findings demonstrate that some presumed risk factors for terrorism are not associated with terrorism outcomes in the extant research. These assumptions -- unfounded in the empirical evidence, but based on anecdotal evidence -- may contribute to bias and perpetuate stereotypes (Dovidio, Hewstone, Glick, & Esses, 2010) and reduce decision-making accuracy (Kahneman & Tversky, 1973). Bias and stereotypes also may increase discrimination against individuals who match a presumed terrorist profile, such as the “lone-actor terrorist profile” (de Roy van Zuijdewijn & Bakker, 2016). Ultimately, reliance on unsubstantiated risk factors limits our ability to accurately identify terrorists and deploy counterterrorism strategies that are effective in preventing terrorist attacks.

In contrast, combining empirically supported risk factors and looking at subgroups within types of terrorists as a function of several defining characteristics (e.g., region, role in organization, specific organization, etc.) may offer directions for effective counterterrorism strategies and policies. For instance, a recent paper by Ghanem and Bhatia (2017) found that although unemployment did not increase risk for radicalization on its own in a nationally representative survey of individuals aged 15 and above from eight Arab countries, the interaction of unemployment and education was associated with increased risk. Additionally, our review revealed that there is at least some scientific support regarding factors that may be helpful in identifying individuals at risk for membership in terrorist organizations, but much less evidence regarding factors that are associated with the perpetration of terrorist attacks. Together, these findings suggest that prevention of terrorist attacks will require a dual strategy that examines both person and event-focused levels of analysis. That is, there is a need for consideration of
both factors that are associated with a person’s risk for radicalization and indicators of an ongoing or upcoming terrorist plot (e.g., Kaplan, 2010). In this way, we may improve our ability to prevent terrorism through the simultaneous identification of an ongoing terrorist plot and the individual(s) likely to perpetrate the violent act(s).

Our findings indicate several critical avenues for future research, towards the goal of developing evidence-based strategies and policies to support the fight against terrorism. In particular, there is a need to move from conceptual and theoretical discussions to the use of (diverse) primary and secondary data sources to validate extant models. There also is a need to prioritize research on factors for which there was some promising evidence, but were relatively infrequently examined, as well as those situational and environmental factors that interact with the individual-level factors to produce circumstances promotive of terrorist attacks. However, in doing so, future research also must clarify the operational definitions of key constructs and specify focus of the empirical investigation in terms of the outcome of interest (i.e., membership in terrorists organizations or perpetration of terrorist attacks), as well as other aspects of the terrorism under investigation, including ideology, region, specific organization, role, type of attack, among others. Finally, there are many practical and ethical challenges associated with studying terrorism outcomes (Atran et al., 2017). As such, it may be useful to draw from theories, studies, and prevention and intervention strategies in fields, such as gang membership and violence (Kruglanski et al., 2017), while recognizing that there may be substantive differences in the factors associated with risk for terrorism compared to these outcomes (Monahan, 2012).
References

References marked with an asterisk indicate studies included in the systematic review.


*Khalil, J. (2014). Radical beliefs and violent actions are not synonymous: How to place the key disjuncture between attitudes and behaviors at the heart of our research in political violence. *Studies in Conflict & Terrorism, 37*, 198-211. doi: 10.1080/1057610X.2014.862902


*  
Terrorism and Political Violence, 26, 735–758. doi: 10.1080/09546553.2013.805094

  10.1146/annurev.soc.30.012703.110510

  10.1516/EY30-319C-5DLJ-VCL3


Table 2.1

*Characteristics of Articles Included in Systematic Review*

<table>
<thead>
<tr>
<th>Categories</th>
<th>Group</th>
<th>Number of k = 205 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country of Authors</td>
<td>United States</td>
<td>121 (59.0)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>84 (41.0)</td>
</tr>
<tr>
<td>Methodology</td>
<td>Theoretical</td>
<td>98 (47.8)</td>
</tr>
<tr>
<td></td>
<td>Empirical</td>
<td>50 (24.4)</td>
</tr>
<tr>
<td></td>
<td>Case study</td>
<td>33 (16.1)</td>
</tr>
<tr>
<td></td>
<td>Literature review</td>
<td>24 (11.7)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3 (1.5)</td>
</tr>
<tr>
<td>Substantive Focus</td>
<td>Individual process</td>
<td>57 (27.8)</td>
</tr>
<tr>
<td></td>
<td>Group process</td>
<td>25 (12.2)</td>
</tr>
<tr>
<td></td>
<td>Individual characteristics</td>
<td>103 (50.2)</td>
</tr>
<tr>
<td></td>
<td>Group characteristics</td>
<td>22 (10.7)</td>
</tr>
<tr>
<td></td>
<td>Critique</td>
<td>8 (3.9)</td>
</tr>
<tr>
<td></td>
<td>Not Specified</td>
<td>42 (20.5)</td>
</tr>
<tr>
<td>Data Source</td>
<td>Primary</td>
<td>25 (12.2)</td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>19 (9.3)</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>49 (23.9)</td>
</tr>
<tr>
<td></td>
<td>Public Record</td>
<td>31 (15.1)</td>
</tr>
<tr>
<td></td>
<td>Other Articles</td>
<td>166 (81.0)</td>
</tr>
<tr>
<td>Ideology of Terrorist</td>
<td>Right wing</td>
<td>45 (22.0)</td>
</tr>
<tr>
<td></td>
<td>Left wing</td>
<td>32 (15.6)</td>
</tr>
<tr>
<td></td>
<td>Religious fundamentalist</td>
<td>75 (36.6)</td>
</tr>
<tr>
<td></td>
<td>Social revolutionary</td>
<td>17 (8.3)</td>
</tr>
<tr>
<td></td>
<td>Nationalist - separatist</td>
<td>39 (19.0)</td>
</tr>
<tr>
<td></td>
<td>Not Specified</td>
<td>85 (41.5)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>6 (2.9)</td>
</tr>
<tr>
<td>Type of Terrorist</td>
<td>Lone-wolf or lone-actor</td>
<td>34 (16.6)</td>
</tr>
<tr>
<td></td>
<td>Autonomous cell</td>
<td>25 (12.2)</td>
</tr>
<tr>
<td></td>
<td>Group member</td>
<td>44 (21.5)</td>
</tr>
<tr>
<td></td>
<td>Not specified</td>
<td>74 (36.1)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>79 (38.5)</td>
</tr>
<tr>
<td>Position in Organization</td>
<td>Leader</td>
<td>54 (26.3)</td>
</tr>
<tr>
<td></td>
<td>Follower</td>
<td>44 (21.5)</td>
</tr>
<tr>
<td></td>
<td>Not specified</td>
<td>141 (68.8)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td>Type of Attack</td>
<td>Suicide bombing</td>
<td>80 (39.0)</td>
</tr>
<tr>
<td></td>
<td>School shooting</td>
<td>4 (2.0)</td>
</tr>
<tr>
<td></td>
<td>Workplace violence</td>
<td>3 (1.5)</td>
</tr>
<tr>
<td></td>
<td>Not Specified</td>
<td>112 (54.6)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>12 (5.9)</td>
</tr>
<tr>
<td>Sample Size – M (SD)</td>
<td>Empirical articles</td>
<td>4,407.57 (34,295.87)</td>
</tr>
</tbody>
</table>
Table 2.2

*Terrorist Organizations Discussed in the Reviewed Articles*

<table>
<thead>
<tr>
<th>Organization</th>
<th>All Articles $k = 205$ (%)</th>
<th>Empirical Articles $k = 50$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu Nidal</td>
<td>5 (2.4)</td>
<td>2 (4.0)</td>
</tr>
<tr>
<td>Al-Fatah</td>
<td>13 (6.3)</td>
<td>6 (12.0)</td>
</tr>
<tr>
<td>Al-Qaeda in the Arabian Peninsula</td>
<td>12 (5.9)</td>
<td>2 (4.0)</td>
</tr>
<tr>
<td>Al-Qaeda Central</td>
<td>110 (53.7)</td>
<td>20 (40.0)</td>
</tr>
<tr>
<td>Basque Fatherland and Liberty (ETA)</td>
<td>26 (12.7)</td>
<td>7 (14.0)</td>
</tr>
<tr>
<td>Democratic Front for the Liberation of Palestine (DFLP)</td>
<td>1 (0.5)</td>
<td>1 (2.0)</td>
</tr>
<tr>
<td>Fifteen- May Organization (M-15)</td>
<td>2 (1.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Hamas</td>
<td>49 (23.9)</td>
<td>12 (24.0)</td>
</tr>
<tr>
<td>Hezbollah/Hizballah</td>
<td>41 (20.0)</td>
<td>11 (22.0)</td>
</tr>
<tr>
<td>Islamic Jihad/ISIS/ISOL</td>
<td>47 (22.9)</td>
<td>11 (22.0)</td>
</tr>
<tr>
<td>Japanese Red Army (JRA)</td>
<td>6 (2.9)</td>
<td>2 (4.0)</td>
</tr>
<tr>
<td>Kach and Kahane Chai</td>
<td>1 (0.5)</td>
<td>1 (2.0)</td>
</tr>
<tr>
<td>Klu Klux Klan (KKK)</td>
<td>8 (3.9)</td>
<td>5 (10.0)</td>
</tr>
<tr>
<td>Kurdistan Workers’ Party (PKK)</td>
<td>21 (10.2)</td>
<td>4 (8.0)</td>
</tr>
<tr>
<td>Liberation Tigers of Tamil Eelam (LTTE)</td>
<td>40 (19.5)</td>
<td>9 (18.0)</td>
</tr>
<tr>
<td>Movement Revolutionaire Tupac Amaru (MRTA)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>National Liberation Army Colombia (ELN)</td>
<td>2 (1.0)</td>
<td>1 (2.0)</td>
</tr>
<tr>
<td>Neo-Nazi/Skinheads</td>
<td>6 (2.9)</td>
<td>4 (8.0)</td>
</tr>
<tr>
<td>Palestine Liberation Organization (PLO)</td>
<td>20 (9.8)</td>
<td>4 (8.0)</td>
</tr>
<tr>
<td>Partido Comunista del Peru (PCP)/Shining Path</td>
<td>10 (4.9)</td>
<td>2 (4.0)</td>
</tr>
<tr>
<td>Popular Front for the Liberation of Palestine (PFLP)</td>
<td>12 (5.9)</td>
<td>5 (10.0)</td>
</tr>
<tr>
<td>Provisional Irish Republican Army (IRA)</td>
<td>40 (19.5)</td>
<td>11 (22.0)</td>
</tr>
<tr>
<td>Red Army</td>
<td>21 (10.2)</td>
<td>5 (10.0)</td>
</tr>
<tr>
<td>Red Brigades</td>
<td>21 (10.2)</td>
<td>3 (6.0)</td>
</tr>
<tr>
<td>Revolutionary Armed Forces of Columbia (FARC)</td>
<td>9 (4.4)</td>
<td>4 (8.0)</td>
</tr>
<tr>
<td>Sendero Luminoso</td>
<td>2 (1.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Taliban</td>
<td>0 (0.0)</td>
<td>2 (4.0)</td>
</tr>
<tr>
<td>Weather Underground</td>
<td>14 (6.8)</td>
<td>2 (4.0)</td>
</tr>
</tbody>
</table>

*Notes.* – value could not be computed. *p* < .05, **p* < .01, ***p* < .001.
Table 2.3

*Variables Examined in Relation to Terrorism Outcomes in Empirical Articles*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Overall</th>
<th>Membership</th>
<th>Attack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Individual Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sociodemographic characteristics</td>
<td>43 (86.0)</td>
<td>28 (82.4)</td>
<td>19 (90.5)</td>
</tr>
<tr>
<td>Criminal history</td>
<td>14 (28.0)</td>
<td>13 (38.2)</td>
<td>3 (14.3)</td>
</tr>
<tr>
<td>Religion and spirituality</td>
<td>32 (64.0)</td>
<td>26 (76.5)</td>
<td>8 (38.1)</td>
</tr>
<tr>
<td>Work and education</td>
<td>32 (64.0)</td>
<td>24 (70.6)</td>
<td>11 (52.4)</td>
</tr>
<tr>
<td>Personal experiences</td>
<td>3 (6.0)</td>
<td>3 (8.8)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Attitudes and beliefs</td>
<td>25 (50.0)</td>
<td>20 (58.5)</td>
<td>8 (38.1)</td>
</tr>
<tr>
<td>Relationships</td>
<td>35 (70.0)</td>
<td>23 (67.6)</td>
<td>15 (71.4)</td>
</tr>
<tr>
<td>Mental health</td>
<td>12 (24.0)</td>
<td>7 (20.6)</td>
<td>6 (28.6)</td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristics of region</td>
<td>24 (48.0)</td>
<td>19 (55.9)</td>
<td>8 (38.1)</td>
</tr>
<tr>
<td><strong>Radicalization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>25 (50.0)</td>
<td>17 (50.0)</td>
<td>11 (52.4)</td>
</tr>
<tr>
<td>Process</td>
<td>18 (36.0)</td>
<td>14 (41.2)</td>
<td>6 (28.6)</td>
</tr>
<tr>
<td><strong>Number of Articles</strong></td>
<td>50 (100.0)</td>
<td>34 (68.0)</td>
<td>21 (42.0)</td>
</tr>
</tbody>
</table>

*Note.* *Categories are not mutually exclusive; five empirical articles addressed both outcomes.*
Figure 2.1. Results of Systematic Literature Search
Figure 2.2. Methodology of Articles over Time
CHAPTER 3

Gender in the Jihad: Characteristics and Outcomes among Women and Men Involved in Jihadism-Inspired Terrorism5

There has been relatively limited empirical investigation of the characteristics and activities of women involved in jihadism-inspired terrorism. To address this knowledge gap, we describe demographic characteristics, criminal history, organizational involvement, plot involvement, and foreign fighting of 405 women involved in jihadism-inspired terrorism. We also perform comparative analyses with a subgroup of women (n = 272) matched to a sample of male terrorists (n = 266). Women involved in jihadism-inspired terrorism were diverse in their ethnicities and countries of citizenship; the majority were legal, native residents of their countries. Most had completed at least high school; about half had no recent employment. Women rarely had criminal histories. Most women were linked to at least one terrorist organization, but were not often involved in plots. About half of the women attempted to engage in foreign fighting. Compared to men, women were more often born in 1990 or later, more likely to have no recent profession, and had significantly fewer crimes prior to radicalization. We found no differences on education or criminal activity after radicalization. Compared to men, women were more often associated with at least one organization and less likely to be involved in plots. Women were more likely to attempt foreign fighting at least once and were more often successful on their first attempt. We did not find differences on age of radicalization or age of first foreign fighting attempt. Implications for research, policy, and practice include the need for

5 Journal of Threat Assessment and Management, 6(2), 76 – 92. ©American Psychological Association, 2019. This paper is not the copy of record and may not exactly replicate the authoritative document published in the APA journal. Please do not copy or cite without author's permission. The final article is available at: http://dx.doi.org/10.1037/tam0000123
gender-informed theories of radicalization, threat assessment, and other counterterrorism strategies.

*Public Significance Statement:* The present study reveals differences in the backgrounds of women and men involved in jihadism-inspired terrorism, suggesting different pathways into terrorism. We further find differences in women’s and men’s terrorism-related outcomes, demonstrating that some types of terrorist activity are likely to vary by gender.
Introduction

Despite discussion among counterterrorism experts that women are becoming increasingly involved in terrorist organizations (Bloom, 2011; Cunningham, 2003; Jacques & Taylor, 2009), there has been relatively limited empirical investigation of the characteristics and activities of women involved in terrorism. In the extant research, terrorism-involved women typically have comprised too small of a sample to afford meaningful comparisons with their terrorism-involved male peers, if they were even mentioned at all (Dalton & Asal, 2011). As a result, theories of radicalization and terrorism involvement are male-centric, often ignoring the gendered contexts in which these processes takes place. Yet, findings of research in related fields, such as interpersonal violence, gang involvement, and right wing extremism, suggest that gender-informed prevention, threat assessment, and intervention strategies should have great likelihood of success in reducing violence (Cullerton-Sen et al., 2008; González, Freilich, & Chermak, 2014; Simon, Ritter, & Mahendra, 2013). Unfortunately, the knowledge base to contribute to the development of gender-informed counterterrorism strategies is lacking. To that end, the present study explores the characteristics and outcomes among women from Western countries involved in jihadism-inspired terrorism and compares them to a matched-sample of men. In the sections that follow, we briefly review the extant theory and research on women involved in terrorism to identify key knowledge gaps and to set the stage for the current work.

Literature Review

While there has been an exponential growth in research on terrorism over the past 20 years (Silke, 2010), there have been relatively few rigorous empirical studies of female terrorists. To demonstrate, a recent systematic review of 205 articles addressing membership in terrorist organizations or perpetration of terrorist attacks found that just under two-thirds ($n = 126$)
specified gender of the terrorist at all (Desmarais, Simons-Rudolph, Brugh, Schilling, & Hoggan, 2017). Of those, only 40 (19.5%) discussed female terrorists explicitly and just 22 (17.5%) presented any data that included female terrorists. None presented statistical comparisons between female and male terrorists. A second review of the literature focused specifically on female terrorism similarly showed limited reporting of data: of 54 articles, just over one-third ($n = 21, 38.9\%$) presented any statistical findings (Jacques & Taylor, 2009). Instead, most of the articles on female terrorism provide a broad, historical overview of women’s participation in terrorism. For example, only five articles (23.8%) in this review presented statistics describing the characteristics of the women in their sample. When comparisons were presented, authors described the prevalence of women and men within a terrorist organization or perpetrating terrorist acts ($n = 15, 71.4\%$). Only one article reported statistical comparisons between women and men, which failed to identify differences in vis-à-vis engagement in suicide attacks.

Consequently, the field lacks empirical evidence regarding the profiles of women involved in terrorism and how they may differ from those of men.

At the same time, there is evidence that involvement of women in terrorism may be increasing (Bloom, 2011; Cunningham, 2003; Jacques & Taylor, 2009). Based on the articles included in the Jacques and Taylor (2009) review, for example, it appears that women’s participation in terrorism is growing in nine out of 11 terrorist organizations: European left-wing, Liberation Tigers of Tamil Eelam (LTTE), Domestic Latin American, Irish Republican Army, American right-wing, Euskadi Ta Askatasuna (ETA), Palestinian, Chechen, and Al Qaeda. Additionally, some descriptive work also suggests that attacks by women appear to be evolving over time. Using news sources, Margolin (2016) created a dataset of 97 terrorist attacks perpetrated by women in Palestine over a 30-year period (1965-1995). Results show how
women’s participation increases and changes over time: female attacks became more prevalent over time but decreased in intensity. Specifically, about three-quarters of attacks carried out before 1986 were high intensity attacks (involved a significant amount of planning, often over an extended period of time, and used weapons likely to inflict significant damage or loss of life), compared to just five high intensity attacks in 1986 and after. Instead, low intensity attacks, in which women used “knives, light weapons fire, or vehicular assaults” (Margolin, 2016, p. 932-933), became more common. Although this study demonstrates important changes in women’s participation in terrorist activities over time, it did not explore the characteristics of the women themselves.

The roles women play within terrorist organizations have been explored in a few studies, which typically find that women tend to be in supportive rather than leadership or fighting roles (Chermak & Gruenewald, 2015; González et al., 2014; Jacques & Taylor, 2009). Again, however, there is some evidence that this may be changing over time, as a function of organizational and societal factors. For instance, research comparing women’s predominant role in 13 terrorist organizations found that women often transition from passive supporters to active combatants as conflicts progress (Raghavan & Balasubramaniyan, 2014). Other work has found women are more likely to be involved in domestic, rather than international, terrorist activity, arguing that domestic action may be linked to societal power structures and women’s empowerment (Gonzalez-Perez, 2008). Other work, still, has drawn from feminist theory and similarly identifies connections between terrorism and female empowerment. An ethnographic study of the Liberation Tigers of Tamil Eelam, for example, shows the historical roots of the ethno nationalist conflict and how women’s roles have developed, including new meaning for their gender identity and empowerment (Herath, 2011). Other work has found a connection
between women’s participation in terrorist violence and levels of women’s rights and education within a country, suggesting again that an overall understanding of women’s terrorist involvement is linked to empowerment. To demonstrate, one study found a connection between terrorist violence perpetrated by women, characteristics of the country in which they are based, and the characteristics of the terrorist organization with which they are affiliated (Dalton & Asal, 2011). In particular, the level of women’s rights in the country was inversely related to rate of female participation in terrorist activity, while higher average level of education among women is associated with increased engagement in terrorism. Further, as terrorist organizations become larger and older, their use of women in violent action increases. The extent to which the findings of this macro-level analysis translate to individual-level factors associated with women’s participation in terrorist activity is unclear.

Research on female suicide bombers and right-wing extremists suggests that women and men also may differ in their involvement in specific forms of violent action. For example, a study of suicide ($n = 80$) and non-suicide terrorists ($n = 743$) who perpetrated attacks in Israel (Pedahzur, Perliger, & Weinberg, 2003) showed that while women represented a very small proportion of the sample – just 1.3% suicide terrorists and 2.6% of their overall sample – women appear to be less likely to engage in suicide terrorism compared to men. Specifically, of 80 suicide terrorists, 79 were men (9.9% of the total number of men in the sample) and only one was a woman (5.0% of the total number of women). That said, the small sample size limited power to detect this potential difference. An investigation of women in right-wing extremist groups also suggests there may be differences between women and men who engage in extremist acts (González et al., 2014). Using data compiled from publicly accessible sources on violent crimes by far-right, environmental, and animal rights extremists in the United States, analyses
showed that compared to men, women participated in fewer ideological crimes, were less often lone-actors, and, across ideologies, were often bound by contractual marriage relationships. The extent to which these findings extend to women involved in terrorism in different countries – as opposed to right-wing extremism in the United States – is unclear.

Finally, the only large-scale comparison of male and female terrorists from diverse terrorist organizations supports the need for gender-informed theories of radicalization and counterterrorism strategies. Using data compiled from publicly available sources, Jacques and Taylor (2013) developed a large sample of women involved in terrorism ($n = 222$) along with a comparison sample of men ($n = 269$). Descriptive analyses showed that female terrorists were generally well-educated, young, single, employed, and native residents who seldom had criminal histories. Further analyses showed, that compared to the sample of men involved in terrorism, women were more highly educated, but less often employed, providing the first evidence of meaningful differences between the characteristics of women and men involved in terrorism. However, the extent to which these findings generalize to other samples of women involved in terrorism is unknown. Additionally, the authors examined only eight variables and did not test for differences in terrorism outcomes between women and men. We seek to extend these findings using more rigorous methods, including case control matching, and to clarify differences in outcomes, not just correlates, of jihadism-inspired terrorism.

The Present Study

Given the increased involvement of women in terrorist organizations and activities, there is a critical need to examine the unique and shared characteristics of male and female terrorists (González et al., 2014; Jacques & Taylor, 2013; Margolin, 2016). The extant literature suggests that female terrorists may differ meaningfully from male terrorists in terms of their
characteristics and outcomes. However, methodological limitations, including small sample sizes, reliance on descriptive statistics, and few statistical comparisons between male and female terrorists hinder conclusions based on the existing research. The current study builds on the extant work by exploring the characteristics and activities of women and men who spent their formative years in the West and went on to become involved in jihadism-inspired terrorist activity, organizations, or foreign fighting. Specifically, we sought to answer two research questions: 1) What are the characteristics of women involved in jihadism-inspired terrorism, including their demographic characteristics, criminal history, terrorism involvement and activities, and foreign fighting? 2) Do women and men involved in jihadism-inspired terrorism differ along these dimensions? In doing so, our overarching goal is to increase knowledge regarding the similarities and differences between women and men involved in jihadism-inspired terrorism to support gender-informed counterterrorism strategies.

**Methods**

Drawing data from a large, secondary dataset, we used a quasi-experimental design to examine and compare characteristics of women involved in jihadism-inspired terrorism with those of their male peers. We first examined demographic characteristics, criminal history, terrorism involvement and activities, and foreign fighting of all women included in the database. We then created a matched comparison group of men and compared them across these four domains. Details on our data, variables of interest, matching procedures, and analyses follow.

**Data**

Data were drawn from the Western Jihadism Project, a database comprised of information drawn from publicly available sources on known terrorism-involved individuals who spent formative years in the West (Klausen, 2017). Started in 2006, the Western Jihadism Project
research team searches public records dating back to the early 1990s. For a detailed description of data collection procedures see Klausen (2016) and Barbieri and Klausen (2012). Constructs of interest included geographic information, such as residences, citizenships, and immigration status, in addition to demographic (education, occupation, age, religion), criminal behavior (types of offenses and dates), and terrorism-related factors (including terrorist group affiliation and terrorist plots). Data collection and coding is ongoing through the present day; herein we report on data collected as of September 2017.

Individuals are included in the dataset if they meet at least one of the following inclusion criteria: 1) subject of legal action related to terrorism in a Western court; 2) died while committing a terrorist act; 3) publicly identified as a terrorist by inclusion on an international watch list; or 4) self-identified as a foreign fighter on social media or in other media, or a plot or organization that has been identified as terrorist on the national or international level. Individuals with whom the Western jihadists associate are also included, for use in mapping terrorist networks of influence. At the time of data extraction, the dataset comprised a total of 5,718 individuals, 405 (7.1%) of whom are women.

Variables of Interest

Demographic characteristics. Women and men in the dataset were compared on their year of birth, education, profession, and conversion to Islam. Year of birth was categorized into quartiles as follows: 1) prior to 1974; 2) 1974 – 1982; 3) 1983 – 1990; and 4) after 1990.

Education was defined as the highest level of completed education. Individuals were categorized into one of five possible categories (i.e., less than high school, high school, college, technical

6 Full details provided in the Western Jihadism Project codebook (August, 2017).
school, postgraduate) based on their known level of education, or inferred level of education in cases where their profession gave a clear indication of the level of education required.

*Profession* was defined as the most recent profession held by the individual, except in cases where the individual has military or public/private security experience. Those who have served in the military were coded within the military category, regardless of other more recent professions they may have held after separating or discharge. Similarly, the label public/private security experience superseded all other professions, save military. Eight categories of most recent profession were observed within the sample of female terrorists (*n* = 405): 1) IT professional; 2) medical professional; 3) caring service sector professional (i.e., teachers, counselors); 4) service/manual worker (i.e., cleaners, clerks); 5) military; 6) self-employed; 7) other industry; and 8) no recent profession. For our comparative analyses, *profession* was coded into one of five categories: 1) unskilled laborer (e.g., service/manual worker); 2) skilled laborer or professional (e.g., engineers); 3) military and police/security; 4) other (e.g., media personality); and 5) no recent profession.

*Conversion to Islam* was coded as yes, no, or unknown. Marking “yes” requires the individual to have been raised outside of Islam and later converted. It does not include individuals who have left the faith and later returned.

**Criminal history.** Information on criminal behavior was coded from lists of known crimes committed by each individual and the years in which they took place. *Criminal behavior prior to radicalization* was a count of any crimes that were committed prior to the individual’s year of radicalization. When year of radicalization was unknown, other known aspects of the crime (e.g., specific acts, locations, targets) were examined to determine whether it had any basis in religious extremism. Only crimes determined to be independent of involvement in extremism
were recorded in this category. *Criminal behavior after radicalization* was a count of the number of crimes taking place after radicalization or those clearly motivated by extremism, which the exception of offenses linked to terrorist plots or acts. We also created variables representing the types of crimes committed prior to and after radicalization across seven possible categories: 1) assault/murder; 2) robbery; 3) theft; 4) fraud (including credit fraud and identity theft); 5) drug; 6) weapons smuggling; and 7) unspecified crime.

**Terrorism involvement and activities.** A number of variables described membership in terrorist organizations and participation in terrorist acts. *Age of radicalization* was computed by subtracting each individual’s year of birth from their recorded year of radicalization. *Year of radicalization* was defined as the year in which the individual first showed signs of endorsing an extremist ideology. It was often inferred from other markers, such as criminal behavior related to extremism, distributing extremist materials, or associating with a radicalized peer group. Each extremist organization with connections to individuals in the dataset was recorded and given an organization ID number to facilitate linking of people and organizations. Key information about organizations was recorded, including the name, general ideological affiliation, and years active. When individuals were associated with an organization, the nature of the affiliation and the organization ID were recorded and linked to the individual’s ID.

*Number of organizations* was calculated by counting the number of organizational links to each individual in the sample. *Role within organization* was coded as one of nine possible roles: 1) member; 2) supporter; 3) associate; 4) plot actor (e.g., involved with the planning or perpetration of a terrorist plot); 5) financial/logistical supporter; 6) leader; 7) recruiter; 8) visitor; or 9) other role. *Primary organizational affiliation* was defined as the first recorded organization link for each individual. For use in analyses, the variable was coded into four categories, which
reflect the three most commonly affiliated with groups: 1) Islamic State group, 2) Al-Qaeda and affiliates, including Al-Qaeda central, Al-Qaeda in Iraq, and Al-Qaeda in the Arabian Peninsula, 3) Al-Shabaab, and 4) all other organizations.\(^7\)

A similar approach was used with variables related to involvement in specific terrorist plots. Within the Western Jihadism Project, each plot connected to individuals within the dataset was given a plot ID. Key information on each plot was recorded, including start and end date, ideological affiliation, and type of action. *Number of plots* was calculated by counting the number of linked plots for each individual in the sample. *Plot type* was categorized into one of four groups: 1) fundraising/support activities (e.g., supplying money or weapons to terrorist organizations); 2) incitement (e.g., proselytizing or distributing terrorist propaganda); 3) recruitment (e.g., recruiting for a terrorist organization or providing assistance with foreign travel to join or fight); or 4) violent acts (e.g., terrorist attacks, suicide bombings). Violent acts superseded all other labels, such that any plot directly intending to cause harm or death to other individuals was classified as a violent act, regardless of whether or not some of the other tactics were used to accomplish this goal. Acts of incitement that triggered violent action were classified under violent acts rather than incitement; all acts of incitement in the dataset remained non-violent in that they did not directly result in death or harm.

**Foreign fighting.** Foreign fighting was defined as travel outside of the West to an insurgency zone during specified time periods in which extremist organizations were participating in the conflict. Key information was recorded about each foreign fighting attempt by an individual, including whether they were successful, the location to which they desired to travel, the beginning and end dates of their travel or participation, and whether they have

---

\(^7\) Within the matched sample, no other single group had more than 10 individuals affiliated with it.
returned to the West.

Number of foreign fighting attempts was a count of the total number of known foreign fighting attempts recorded for each individual. Number of successful attempts was a count of the total number of attempts noted as “successful,” defined as reaching the intended location and engaging in the conflict activities happening there, by way of a terrorist organization. Attempts not coded as successful fell into one of three categories: 1) prevented in the West; 2) prevented outside of the West; or 3) failed.\(^8\) Age at first foreign fighting attempt was calculated by subtracting birth year from year of earliest foreign fighting attempt, regardless of outcome.

Location of foreign fighting was recorded as the country to which the individual sought to travel to engage in foreign fighting during years of conflict in that region. There were five possible locations in the matched sample: 1) Afghanistan; 2) Iraq; 3) Somalia; 4) Syria – Iraq; 5) Yemen; and 6) multiple countries.

Matching Variables

Variables used in case control matching were country of residence, legality of residence, ethnicity, and age at first law enforcement contact related to terrorism. Country of residence was defined as the country in which the individual had spent the majority of their time in the six months preceding involvement in terrorist action or foreign fighting. The variable capturing legality of residence was coded according to the primary country of residence, as defined above. For the purpose of matching, we used three categories: 1) legal residents of their primary country, either through citizenship or other legal means (e.g., visas, green cards, etc.); 2) undocumented individuals who were residing in the country illegally for at least six months; or 3) unknown. Ethnicity is a categorical variable capturing information about each individual’s

\(^8\) Failed attempts were not prevented \textit{per se}, but rather the individual was unable to engage with a terrorist organization in a foreign insurgency due to failures in planning or rejection by the terrorist organization
ethnic background. Only one ethnicity was assigned to each individual, based upon the best available information about their and their family’s origin. For individuals from mixed-ethnic backgrounds, ethnicities other than Western superseded Western ones in coding. The final matching variable, *age at first law enforcement contact related to terrorism*, was calculated using year of birth and year of their first terrorism-related law enforcement contact, defined as the year the individual was first clearly identified as being involved in extremism-related activity (whether through the news media, the initiation of law enforcement surveillance of the individual, or arrest for involvement terrorist action). 9

**Matching Procedures**

Using case control matching, 266 matches from among the 5,313 men were found for 272 of the 405 women in the dataset, resulting in a final matched sample of 538 terrorism-involved women and men. Additional demographic characteristics were not used for matching due to our interest in comparing women and men on variables often identified in the literature as risk factors for terrorism, including education, profession, and other relevant characteristics (Desmarais et al., 2017). Pairwise comparisons confirmed that our matching procedure produced roughly equivalent groups across all four matching variables (see Table 3.1). Specifically, there were no significant differences between women and men in our matched sample in terms of their country of residence, ethnicity, and legality of residence, all $ps \geq 0.831$. As may be seen in Table 3.1, just under half of women and men were residents of European countries. African and White-European ethnicities were most common, representing just under one-third of both women and men. More than three-quarters of women and men were legal residents of their countries. Mean

---

9 Although we would have preferred to use age of radicalization for matching purposes, this variable suffered high rates of missingness. For this reason, we used *age of first terrorism-related law enforcement contact* as a proxy for *age of radicalization* in our matching procedures.
age of first terrorism-related law enforcement contact was 29 years.

**Statistical Analyses**

To answer our first research question, we calculated descriptive statistics within the sample of all women \((n = 405)\) for all variables of interest. To answer the second research question, we conducted a series of tests to test for group differences between the matched samples of women and men involved in terrorism. For categorical variables, most comparisons were conducted using chi-square analyses. When cell sizes were less than five, the conservative Fisher’s exact test was used in place of chi-square analyses. When the omnibus chi-square or Fisher’s exact test was significant, Bonferroni-corrected post hoc \(z\)-score comparisons were performed to identify within which levels or categories of the variable women and men involved in terrorism differed significantly. For continuous variables (e.g., age of first foreign fighting attempt), we conducted \(t\)-tests. For count variables (e.g., number of plots), we conducted Poisson regression analyses to compare the number of occurrences of terrorism outcomes.

**Results**

**Characteristics of Women Involved in Jihadism-Inspired Terrorism**

Table 3.2 presents the descriptive statistics for the demographic characteristics, criminal history, and terrorism involvement among the full sample of female terrorists, including the rates of data missingness, which ranged widely from 6.7% missing \((n = 27)\) for conversion to Islam to 76.0% missing \((n = 308)\) for profession. In the sections that follow, we summarize findings as a function of the valid percent (i.e., women for whom information was available on the variable in question).

**Demographic characteristics.** Women in our sample were born between 1939 and 2001, with the majority born in the years after 1990. Women were of a diverse array of European,
Middle-Eastern, North American, South Asian, and African ethnicities and held citizenships in a variety of countries (see Table 3.2). Information on ethnicity was available for just over three-quarters of women in our sample. The most prevalent ethnicities were White-European, representing almost one-quarter of women, followed by Moroccan, Somali, and Pakistani, each representing less than 10% of the sample. Approximately 1 in 5 women in our sample were citizens of the United Kingdom, which was the most common citizenship, followed by France, United States, Belgium, and Germany (see Table 3.2). More than two-thirds of women were legal, native residents of the country in which they resided, and most had completed at least high school. Information on most recent profession was available in less than a quarter of the sample and when known, indicated that just under half of women were not recently employed. Service/manual worker followed by caring service sector positions were among the most common professions (see Table 3.2). Finally, conversion to Islam was not very common – just under one-third of women in our sample had converted to Islam.

**Criminal history.** Only seven women had recorded instances of criminal behavior prior to radicalization. Of these, five were for drug-related offenses, one for fraud charges, and one for a violent offense. The number of women with criminal offenses after radicalization remained relatively low, representing less than 1 in 10 women. Only one woman had a record of criminal behavior both prior to and after radicalization. Criminal behavior after radicalization, when present, was most commonly related to fraud ($n = 26, 74.3\%$), with smaller numbers of weapons smuggling ($n = 4, 11.4\%$), drug crimes ($n = 3, 8.6\%$), assault/murder ($n = 1, 2.9\%$), and unknown offenses ($n = 1, 2.9\%$).

**Terrorism involvement and activities.** Women were an average of 22.52 years old ($SD = 8.15$, range 13-55) at the time of radicalization. Age at first law enforcement contact related to
terrorism ranged from 13 to 63 years old \( (M = 27.55, SD = 10.44) \). About one-third of women had no known links to any terrorist organizations and about half of women were linked to only one organization. Very few women – about 1 in 10 – were linked to two terrorist organizations, and rarely were women linked to three or four organizations (see Table 3.2). About one-third of the women in the sample were linked to the Islamic State group; just under half of these women were members and a slightly smaller percentage were supporters. Al-Shabaab was a distant second, with less than 5% of the women. Ten of the women affiliated with Al-Shabaab were members and five were financial/logistical supporters. Among women who were linked to a terrorist organization, slightly over half were members of their respective organizations.

Over two-thirds of women did not have any known links to terrorist plots (see Table 3.2). Among the one-third who were involved in terrorist plots, the vast majority were linked to only one plot. Similarly, an overwhelming majority of women - more than 90% - did not participate in a martyrdom or suicide operation; a very small number (less than 2%) had planned or completed one.

**Foreign fighting.** Just under half of women in the sample had at least one foreign fighting attempt (see Table 3.2); only 11 women had two or more foreign fighting attempts. Women attempting foreign fighting were an average of 23.11 years old \( (SD = 8.44, \text{ range } = 13 - 60) \) at the time of their first attempt. Three-quarters of first foreign fighting attempts by women were successful. About one in five of women’s foreign fight attempts were prevented in the West and very few – less than one in 10 – were prevented in other geographic regions (see Table 3.2).
Comparisons to Men Involved in Jihadism-Inspired Terrorism

Tables 3 and 4 present the descriptive statistics and comparisons between women and men with respect to their demographic characteristics, criminal history, and terrorism involvement. In the sections that follow, we summarize results of these comparisons.

**Demographic characteristics.** When known, there was no difference between women and men in terms of their age of radicalization ($p = .111$): mean age of radicalization was 23.33 ($SD = 8.63, \text{range } 14-55$) for women ($n = 82$) and 24.57 ($SD = 7.36, \text{range } 16-55$) for men ($n = 65$). In contrast, there were differences in year of birth ($p < .001$). Post hoc comparisons showed that a higher proportion of men were born between 1983 and 1990, whereas as a higher proportion of women were born after 1990 (see Table 3.3). Education did not differ significantly by gender ($p = .054$), but there was a difference in most recent profession ($p < .001$, two-tailed Fisher’s exact test). Post hoc comparisons showed that women were significantly more likely than men to have no recent profession, while men were more likely to be involved in military and police/security careers (see Table 3.3). The proportion of women and men who converted to Islam did not differ significantly ($p = .768$): about one-third of both women and men in the matched sample had converted to Islam.

**Criminal behavior.** Men were significantly more likely than women to be involved in any criminal behavior prior to radicalization ($p < .001$, see Table 3.3), and accordingly however, had a greater number of crimes than did women ($p < .001$, see Table 3.4). That said, the vast majority of men ($n = 215, 80.8\%$) and women ($n = 266, 97.8\%$) were *not* involved in any criminal behavior prior to radicalization. Of those men who did have a noted criminal history, most had one crime ($n = 39, 76.5\%$) and just 12 men (21.6\%) had two or more crimes. Only six women (2.2\%) had a noted criminal history prior to radicalization, five of whom had only one
crime listed. These five women were all involved in drug-related crime; the woman with two charges was also involved in fraud. Among men involved in crime prior to radicalization, theft was most common (\(n = 17, 33.3\%\)), followed by drug-related crime, assault/murder, and unspecified crime, with 13 men (25.5\%) involved in each. Involvement in crime after radicalization also was rare; only 28 men (10.5\%) were known to be involvement in post-radicalization criminal behavior, 27 (96.4\%) of whom were involved in only one crime.

Similarly, only 25 women (9.2\%) had noted instances of criminal behavior after radicalization, of whom 19 (76.0\%) had only one crime. There were no significant differences between women and men in terms of criminal behavior after radicalization, either overall (\(p = .655\)) or the number of crimes (\(p = .967\)).

**Terrorism outcomes.** While women were more likely than men to be affiliated with a terrorist organization (\(p = .009\), see Table 3.3), women and men did not differ significantly in the number of terrorist organizations with which they associated (\(p = .164\), see Table 3.4). Specifically, just over half of women (\(n = 147, 54.0\%\)) were linked to one organization, with fewer women linked to two (\(n = 28, 10.3\%\)), three (\(n = 3, 1.1\%\)), and four (\(n = 3, 1.1\%\)) organizations. In contrast, only about one-third of the men in the sample were affiliated with one organization (\(n = 89, 33.5\%\)), with similar rates of affiliation with two (\(n = 37, 13.9\%\)), three (\(n = 12, 4.5\%\)), and four or more organizations (\(n = 10, 3.8\%\)).\(^{10}\) We found differences in the specific organization with which women and men affiliated (\(p < .001\), two-tailed Fisher’s exact test). Post hoc comparisons revealed more than half of women (\(n = 98, 54.1\%\)) were affiliated with the Islamic State group, in contrast to just over one-quarter of men (\(n = 39, 26.4\%\)). With Al-Qaeda and affiliated groups, the opposite pattern was observed: more than twice the

\(^{10}\) Since affiliation with a known terrorist organization is one of the possible inclusion criteria, this finding suggests that over half of the men in the sample were included based on one of the other inclusion criteria.
proportion of men affiliated with Al-Qaeda ($n = 20$, 13.5%) as compared to women ($n = 9$, 5.0%). The percentage of women and men affiliated with Al-Shabaab was comparable ($n = 10$, 5.5% of women vs. $n = 8$, 5.4% of men).

Roles within terrorist organizations also differed significantly between women and men ($p = .008$, two-tailed Fisher’s exact test). Post hoc comparisons revealed a significant difference in the proportion of women and men who were linked as visitors of their respective organization (0% of women vs. 2.7% of men). Men were most often members ($n = 94$, 63.5%), with a smaller percentage affiliated as supporters ($n = 27$, 18.2%) and associates ($n = 11$, 7.4%). Just over half of the women with links to terrorist organizations were actually members of the organization ($n = 99$, 54.7%). About one-quarter of women were supporters ($n = 46$, 25.4%); fewer were associates ($n = 13$, 7.2%). No men in our matched sample were recruiters for a terrorist organization. Only one woman in our matched sample was identified as a leader of an organization; she was affiliated with the Islamic State group.

Women were less likely than men to be involved in a terrorist plot ($p < .001$). Indeed, the vast majority of men were linked to at least one plot compared to just over one-third of women (see Table 3.3). Among women and men involved in at least one plot, the types of plots also differed, $\chi^2 (3,353) = 24.77$, $p < .001$, $\phi = .27$. Post hoc comparisons showed significant differences in their involvement in violent plots and fundraising plots, in particular. To demonstrate, of those involved in at least one terrorist plot, over three-quarters of men ($n = 189$, 76.2%) but just over half of women ($n = 55$, 52.4%) were involved in plots intended to inflict death or harm to others. In contrast, women were more likely than men to be involved in plots intended to help supply a terrorist or terrorist organization with money or supplies through non-violent means: 34.3% ($n = 36$) versus 12.5% ($n = 31$), respectively.
Foreign fighting. Women were more likely than men to have engaged in any foreign fighting ($p < .001, \varphi = .184$, see Table 3.3), although the number of foreign fighting attempts did not differ significantly ($p = .063$, see Table 3.4). Additionally, among women and men who engaged in foreign fighting, mean age at first attempt did not differ significantly, $p = .163$. On average, women were 24.01 years old ($SD = 8.95$) at their first attempt and men were 25.69 years old ($SD = 6.46$). Among women and men who attempted foreign fighting, women were more likely than men to be successful ($p = .027$, see Table 3.3). Yet, overall, women had fewer successful foreign fighting attempts than men ($p = .008$, see Table 3.4). Lastly, location of foreign fighting also differed significantly between women and men ($p < .001$, two-tailed Fisher’s exact test). In particular, post hoc comparisons showed that the vast majority of women engaged in foreign fighting ($n = 110, 88.0\%$), in contrast with about one third of men ($n = 28, 37.3\%$), were solely engaged in foreign fighting in Syria-Iraq, reflecting conflict during years 2011 to the present. Almost one third of men ($n = 24, 32.0\%$) engaged in foreign fighting solely in Afghanistan compared to just five women (4.0\%). Attempts to travel to Somalia for foreign fighting were uncommon, but was more common among men ($n = 7, 9.3\%$) than women ($n = 3, 2.4\%$). Only two women (1.6\%) engaged in foreign fighting in multiple countries compared to about one in five men ($n = 15, 5.6\%$).

Discussion

This study contributes to the emerging body of work examining the characteristics and outcomes of women involved in terrorism - and jihadism-inspired terrorism, specifically - by examining their demographic characteristics, criminal history, and involvement in terrorist organizations, plots, and foreign fighting. In doing so, we extend prior work by examining a broader range of individual characteristics (e.g., criminal history) and outcomes (e.g.,
participation in terrorist plots, foreign fighting) among a large sample of women involved in jihadism-inspired terrorism, beyond simply describing their demographic characteristics. We also compared the characteristics of women and men involved jihadism-inspired terrorism across these characteristics and outcomes. Our study represents an improvement upon prior efforts due to our use of a statistically rigorous approach – namely, case control matching – to create roughly equivalent and sufficiently large groups of women and men to afford meaningful comparisons. Overall, findings revealed some similarities but also notable differences between women and men, which adds to mounting empirical evidence showing heterogeneity in the characteristics of terrorists, as well as in their pathways to terrorism (Desmarais et al., 2017; Monahan, 2012). Findings also provide empirical support for gender-informed theories of radicalization and models of threat assessment. In the sections that follow, we highlight some of our findings and discuss their implications in more detail.

**Summary of Findings**

Findings revealed notable similarities and differences in the demographic characteristics of women and men involved in terrorism and also underscore some emerging trends regarding the prevalence and role of women in jihadism-inspired terrorism. For example, we did not find significant differences between women and men in terms of their age of radicalization, but there were differences in their years of birth. In particular, a greater proportion of women than men involved in terrorism were born in 1990 or later. Thus, the conflicts and groups with which women are involved may be newer, suggesting that women’s methods of participation in terrorism may differ from those of their male counterparts to fit with the needs of conflicts taking place in the near-present day. The implications of these findings are twofold. First, for both women and men, emerging adulthood or young adulthood (defined as 18-28 years old) appears
to be a critical period of study and prevention of radicalization (Arnett, 2007; Klausen, Morrill, & Libretti, 2016; Schwartz, 2005). Indeed, average age of radicalization for women and men in our sample was between 23 and 25 years old, squarely within this range. Second, the differences in birth cohorts between women and men in our matched sample suggest that women’s participation in jihadism-inspired terrorism is a relatively newer phenomenon and, as discussed elsewhere (Bloom, 2011; Cunningham, 2003; Jacques & Taylor, 2009), that we may anticipate continued increases in their involvement over time.

We found that the majority of women and men in our sample had at least a high school level of education, with many going on to college. In this way, our findings provide further evidence against the assumption that terrorists – whether female or male - are poorly educated (Desmarais et al., 2017). However, we did see gender differences in professions: a greater proportion of women (almost half) than men involved in terrorism had no recent profession while a greater proportion of men than women were employed in military and police or security-related careers. Together, these findings suggest potentially different pathways, as well as opportunities for intervention, among women and men involved in jihadism-inspired terrorism. For instance, counterterrorism strategies targeting military, police, or security personnel may be less effective in preventing radicalization of women compared to men. We did not find significant differences between women and men in terms of the frequency or prevalence of conversion to Islam. Moreover, conversion to Islam was relatively uncommon among both women and men in our samples: only about one-third were identified as having converted to Islam, suggesting that conversion is likely not a distinguishing factor among those who engaged in jihadism-related terrorist action. So, despite the prominence of conversion to Islam in counterterrorism policy and practice, our findings adds to the mixed empirical evidence on the
role of conversion to Islam as a risk factor for terrorism (Desmarais et al. 2017); further research is needed.

While there is considerable emphasis in counterterrorism efforts on the importance of contact with the criminal justice system, there is some debate in the field regarding the connection between prior criminal behavior and terrorism involvement (Monahan, 2012). The prevalence of prison radicalization is similarly disputed in the academic literature, and yet, concerns over the spread of jihadism within prisons have led to recommended practices for the management of terrorist detainees (Hamm, 2013; Hamm, 2009). In contrast with the broader terrorism literature (Desmarais et al., 2017), but in line with previous research on women involved in terrorism (Jacques & Taylor, 2013), criminal activity unrelated to terrorism was extremely rare among women in our sample, challenging prior criminal justice involvement as a common step in the pathway to terrorism. This point may be relevant for the development of gender-informed counterterrorism practices and policies. Specifically, the low rates of criminal justice contact among women in our sample suggest that the criminal justice system may not be a viable intervention point for targeting women at risk of radicalization. Instead, our results suggest that interventions targeting women who are not currently or recently employed, such as through publicly-funded social service programs for example, may represent a more effective counterterrorism approach vis-à-vis women involved in terrorism than would be prison deradicalization programs.

In terms of membership in terrorist organizations, we found that even though women were significantly more likely to affiliate with a terrorist organization than were men in our sample, the number of organizational affiliations did not vary based on gender. The median number of organizational affiliations for both women and men was one, which, when combined
with the previous finding, suggests that women are less likely to be terrorists without affiliating with a specific organization. Membership across multiple terrorist organizations has been under-researched as an outcome variable, with most studies looking only at membership in a particular organization. As such, our findings are a first contribution to the field regarding the number of memberships in terrorist organizations. We also found significant differences in the primary organizations with which women and men affiliated: women more often affiliated with the Islamic State group while men more often affiliated with Al-Qaeda. In line with most previous research (Jacques & Taylor, 2009), results also showed women were more frequently engaged in supportive roles and actions that indirectly facilitated terrorist organizations’ broader goals, while men were more frequently active members of terrorist organizations who engaged in violent plots. Taken together, these findings suggest that affiliation with terrorist organizations may not be a static and may differ in meaningful ways for women and men. As such, research, policy, and practice should consider diverse roles within and moves between organizations in addition to primary organizational affiliation. Moreover, counterterrorism strategies targeting women at risk of involvement in jihadism-inspired terrorism should be developed with attention to the current messaging around acceptance, recruitment, and roles of women across terrorist organizations.

Regarding perpetration of terrorist acts, women were involved in fewer terrorist plots, on average, than men. This finding builds upon what has been found in previous studies, which show only that women tend to be involved in supportive roles rather than as active combatants in terrorist plots (Jacques & Taylor, 2009). Specifically, our variable measuring involvement in terrorist plots captures both known supportive activities and actual perpetration of the terrorist plot allowing us to distinguish between the two within the same individuals, whereas prior work
using samples comprised of both women and men often fails to distinguish between type of activity or role within the organization. Additionally, within our dataset, terrorist plots are not constrained to those in which violent action takes place, but instead activities such as recruitment, financial support, logistic organizing, and spreading jihadism propaganda. In this way, we are able to show that women are less often involved in all types of terrorist plots and not that they are merely engaging in different types of activity.

Finally, our comparisons between women and men involved in jihadism-inspired terrorism with respect to foreign fighting revealed that a greater number of women engaged in at least one foreign fighting attempt and they were also more likely to be successful in a foreign fighting attempt (defined as reaching the desired area and engaging with a terrorist organization); however there was no difference in the average number of attempts between women and men. Together, these findings suggest that women engaged in a lower average number of attempts perhaps because they were more often successful on their first attempt. The higher rate of successful first attempts by women suggests that a) current counterterrorism efforts may be more effective at preventing foreign fighting by men, perhaps attributable to different methods of entry into foreign fighting among women and men, for example; and/or b) there is insufficient focus on risk for foreign fighting by women, more generally. Once again, we present the first results of statistical comparisons of foreign fighting among women and men involved in terrorism. Thus, while our study is the first to contribute to the knowledge base in this way, findings need to be replicated in future research.

**Limitations and Future Research**

Conclusions based on our findings must be considered in the context of several limitations that may affect validity and generalizability. First, although methodological strengths
include our large sample size and use of state-of-the-art statistical techniques to develop a matched sample of women and men involved in terrorism, the dataset is limited to individuals affiliated with jihadism-inspired organizations, people, and actions. Therefore, our findings may not generalize beyond terrorists who express jihadism ideologies or who come from jihadism-inspired terrorist organizations. Further, the sample is comprised of jihadism-affiliated individuals who also spent formative years in the West (defined in this study as the United States, Canada, Western Europe, the United Kingdom, Australia, and New Zealand) and those for whom there was sufficient information to statistically match women and men on key characteristics. For these reasons, we do not assert that all male and female terrorists are similar or different in the ways found in our study, but rather some difference by gender exist within a sample of individuals affiliated with jihadism ideologies who grew up in Western nations. The differences between women and men we found in this study should be considered in the context of other research on terrorism across ideologies and geographic locations. Future research should continue testing for differences in groups of terrorists, be it by gender, culture, ideology, or other defining characteristics.

A second limitation of our work is the reliance on publicly accessible information. Our findings are limited to what is known and reported on by the media and the extent to which court documents and other records are available to the public. The accuracy of media reports may vary as the stories selected for reporting are subject to the bias of reporters, editors, and a host of others in the newsroom and beyond. Accessibility of court documents and other public records is also variable and may differ country-by-country based upon privacy laws. Further, information on key variables is unknown for a portion of the sample. Yet, the use of public information to develop datasets is not uncommon in terrorism and other fields in which researchers may face
barriers to accessing participants directly (see for example Dalton & Asal, 2011 and Jacques & Taylor, 2013). Despite its limitations, the use of publicly accessible information affords the development of samples sufficiently large for statistical analyses that can be used to empirically test and validate theories and models of radicalization (Desmarais et al., 2017; Jacques & Taylor, 2009).

Third, we describe characteristics of women and men involved in jihadism-inspired terrorism, but cannot specify risk factors for jihadism-inspired terrorism *per se*. While our use of case control matching and inferential statistics are advances over most prior research in this area (Desmarais et al., 2017; Jacques & Taylor, 2009; Monahan 2012), these methods do not afford the level of evidence necessary to be establish any of the examined variables as risk factors for jihadism-inspired terrorism. Specifically, we cannot establish with certainty that these factors precede terrorist involvement nor that they distinguish terrorist actors from individuals who are not involved in terrorism – key criteria of risk factors (Kraemer et al., 1997). As such, our results simply show differences and similarities between women and men in likely correlates of later terrorist involvement, whether it be membership in a terrorist group, participation in a terrorist plot, or attempted foreign fighting. Further research is needed using matched samples of non-terrorism-involved women to develop predictive models of women’s participation in terrorist activity. Another important direction for future research would be to test validity of existing threat assessment frameworks, such as the Terrorist Radicalization Assessment Protocol-18 (TRAP-18) (Meloy & Gill, 2016) or the Violent Extremist Risk Assessment-2 (VERA-2) (Pressman & Flockton, 2014) among women involved in terrorism.
Conclusion

This research describes the characteristics and outcomes of a large sample of women involved in jihadism-inspired terrorism overall and in comparison to a matched sample of men. Our work moves beyond a unique focus on individual characteristics to consider terrorism outcomes. Results showed that women and men differ significantly on several aspects of their involvement in terrorism, including their roles in organizations, the number of plots in which they are involved, and their attempts at foreign fighting. Strong, evidence-informed counterterrorism practice requires consideration of heterogeneity across actors and contexts (A. G. Smith, 2018), including differences that may exist in the characteristics of terrorism-involved women and men. Our finding suggests the need for different tactical considerations in counterterrorism practice to prevent radicalization among and mitigate the threats posed by women and men. They also emphasize the importance of including women in studies of radicalization and terrorism, as the generalizability of findings reported herein regarding women and men involved in terrorism is unclear. Indeed, the prevalence and characteristics of women involved in terrorism will undoubtedly grow and change as the nature of terrorist organizations and sociopolitical contexts change over time. Nonetheless, our findings advance the current state of the science on women involved in jihadism-inspired terrorism.
References


Klausen, J., Morrill, T., & Libretti, R. (2016). The terrorist age-crime curve: An analysis of American Islamist terrorist offenders and age-specific propensity for participation in

doi:10.1111/ssqu.12249


doi:10.1080/1057610X.2016.1148934


doi:10.1177/0743558405274890


### Table 3.1. Descriptive Statistics for Matching Variables

<table>
<thead>
<tr>
<th>Categorical Variables</th>
<th>Men (n = 266)</th>
<th>Women (n = 272)</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia/New Zealand</td>
<td>10 (3.8%)</td>
<td>10 (3.7%)</td>
<td>0.11</td>
</tr>
<tr>
<td>Canada</td>
<td>6 (2.3%)</td>
<td>6 (2.2%)</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>114 (42.9%)</td>
<td>115 (42.3%)</td>
<td></td>
</tr>
<tr>
<td>Great Britain</td>
<td>66 (24.8%)</td>
<td>68 (25.0%)</td>
<td></td>
</tr>
<tr>
<td>International</td>
<td>4 (1.5%)</td>
<td>5 (1.8%)</td>
<td></td>
</tr>
<tr>
<td>Nordic Countries</td>
<td>11 (4.1%)</td>
<td>11 (4.0%)</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>55 (20.7%)</td>
<td>57 (21.0%)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African</td>
<td>83 (31.2%)</td>
<td>83 (30.5%)</td>
<td>2.20</td>
</tr>
<tr>
<td>African American</td>
<td>3 (1.1%)</td>
<td>3 (1.1%)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>44 (16.5%)</td>
<td>44 (16.2%)</td>
<td></td>
</tr>
<tr>
<td>Caribbean</td>
<td>3 (1.1%)</td>
<td>3 (1.1%)</td>
<td></td>
</tr>
<tr>
<td>Eastern European</td>
<td>16 (6.0%)</td>
<td>16 (5.9%)</td>
<td></td>
</tr>
<tr>
<td>Latino</td>
<td>2 (0.8%)</td>
<td>3 (1.1%)</td>
<td></td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>34 (12.8%)</td>
<td>36 (13.2%)</td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>0 (0.0%)</td>
<td>2 (0.7%)</td>
<td></td>
</tr>
<tr>
<td>White-European</td>
<td>81 (30.5%)</td>
<td>82 (30.1%)</td>
<td></td>
</tr>
<tr>
<td>Legality of Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal</td>
<td>209 (78.6%)</td>
<td>212 (77.9%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Undocumented</td>
<td>2 (0.8%)</td>
<td>2 (0.7%)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>55 (20.7%)</td>
<td>58 (21.3%)</td>
<td></td>
</tr>
<tr>
<td>Continuous Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of First Extremism-Related Law Enforcement Contact</td>
<td>29.08 (8.57)</td>
<td>28.90 (10.69)</td>
<td>0.21</td>
</tr>
</tbody>
</table>
Table 3.2. Characteristics and Outcomes of Women Involved in Jihadism-Inspired Terrorism

<table>
<thead>
<tr>
<th>Variables</th>
<th>Women (n = 405)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Demographic Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Year of birth</strong></td>
<td></td>
</tr>
<tr>
<td>Prior to 1974</td>
<td>64 (15.8%)</td>
</tr>
<tr>
<td>1974 – 1982</td>
<td>69 (17.0%)</td>
</tr>
<tr>
<td>1983 – 1990</td>
<td>70 (17.3%)</td>
</tr>
<tr>
<td>After 1990</td>
<td>137 (33.8%)</td>
</tr>
<tr>
<td>Missing</td>
<td>65 (16.0%)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>White-European</td>
<td>95 (23.5%)</td>
</tr>
<tr>
<td>Moroccan</td>
<td>37 (9.1%)</td>
</tr>
<tr>
<td>Somali</td>
<td>28 (6.9%)</td>
</tr>
<tr>
<td>Pakistani</td>
<td>25 (6.2%)</td>
</tr>
<tr>
<td>Other ethnicities</td>
<td>279 (31.1%)</td>
</tr>
<tr>
<td>Missing</td>
<td>94 (23.2%)</td>
</tr>
<tr>
<td><strong>Citizenship</strong></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>80 (19.8%)</td>
</tr>
<tr>
<td>France</td>
<td>54 (13.3%)</td>
</tr>
<tr>
<td>United States</td>
<td>47 (11.6%)</td>
</tr>
<tr>
<td>Belgium</td>
<td>32 (7.9%)</td>
</tr>
<tr>
<td>Germany</td>
<td>27 (6.7%)</td>
</tr>
<tr>
<td>Other citizenships</td>
<td>131 (32.3%)</td>
</tr>
<tr>
<td>Missing</td>
<td>34 (8.4%)</td>
</tr>
<tr>
<td><strong>Legality of residence</strong></td>
<td></td>
</tr>
<tr>
<td>Legal</td>
<td>290 (71.6%)</td>
</tr>
<tr>
<td>Undocumented</td>
<td>2 (0.5%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>113 (27.9%)</td>
</tr>
<tr>
<td><strong>Native resident</strong></td>
<td></td>
</tr>
<tr>
<td>Native</td>
<td>285 (70.4%)</td>
</tr>
<tr>
<td>Immigrant</td>
<td>59 (14.6%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>61 (15.1%)</td>
</tr>
<tr>
<td><strong>Highest level of education</strong></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>17 (4.2%)</td>
</tr>
<tr>
<td>High school</td>
<td>56 (13.8%)</td>
</tr>
<tr>
<td>Technical school</td>
<td>2 (0.5%)</td>
</tr>
<tr>
<td>College</td>
<td>46 (11.4%)</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>6 (1.5%)</td>
</tr>
<tr>
<td>Missing</td>
<td>278 (68.6%)</td>
</tr>
<tr>
<td><strong>Profession</strong></td>
<td></td>
</tr>
<tr>
<td>Caring service sector</td>
<td>11 (2.7%)</td>
</tr>
<tr>
<td>IT professional</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>Medical professional</td>
<td>6 (1.5%)</td>
</tr>
<tr>
<td>Military</td>
<td>2 (0.5%)</td>
</tr>
<tr>
<td>Self-employed</td>
<td>5 (1.2%)</td>
</tr>
<tr>
<td>Service/manual worker</td>
<td>18 (4.4%)</td>
</tr>
<tr>
<td>Other profession</td>
<td>11 (2.7%)</td>
</tr>
<tr>
<td>No recent profession</td>
<td>43 (10.6%)</td>
</tr>
<tr>
<td>Missing</td>
<td>308 (76.0%)</td>
</tr>
</tbody>
</table>
Table 3.2. (continued).

<table>
<thead>
<tr>
<th>Conversion to Islam</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>253 (62.5%)</td>
</tr>
<tr>
<td>Yes</td>
<td>125 (30.9%)</td>
</tr>
<tr>
<td>Missing</td>
<td>27 (6.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criminal History</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Criminal behavior prior to radicalization</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>398 (98.3%)</td>
</tr>
<tr>
<td>Yes</td>
<td>7 (1.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criminal behavior after radicalization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>376 (92.8%)</td>
</tr>
<tr>
<td>Yes</td>
<td>29 (7.2%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terrorism Involvement and Activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Links to terrorist organization(s)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>148 (36.5%)</td>
</tr>
<tr>
<td>1</td>
<td>204 (50.4%)</td>
</tr>
<tr>
<td>2</td>
<td>45 (11.1%)</td>
</tr>
<tr>
<td>3</td>
<td>5 (1.2%)</td>
</tr>
<tr>
<td>4</td>
<td>3 (0.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terrorist organization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Islamic State group</td>
<td>143 (35.3%)</td>
</tr>
<tr>
<td>Al-Shabaab</td>
<td>15 (3.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Role within organization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Member</td>
<td>140 (34.6%)</td>
</tr>
<tr>
<td>Supporter</td>
<td>72 (17.8%)</td>
</tr>
<tr>
<td>Associate</td>
<td>16 (4.0%)</td>
</tr>
<tr>
<td>Financial/logistical supporter</td>
<td>10 (2.5%)</td>
</tr>
<tr>
<td>Other role</td>
<td>19 (4.7%)</td>
</tr>
<tr>
<td>Missing</td>
<td>148 (36.5%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Links to terrorist plot(s)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>266 (65.7%)</td>
</tr>
<tr>
<td>1</td>
<td>120 (29.6%)</td>
</tr>
<tr>
<td>2 or more</td>
<td>19 (4.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Martyrdom/suicide operation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>380 (93.8%)</td>
</tr>
<tr>
<td>Planned</td>
<td>6 (1.5%)</td>
</tr>
<tr>
<td>Completed</td>
<td>4 (1.0%)</td>
</tr>
<tr>
<td>Missing</td>
<td>15 (3.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foreign Fighting</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign fighting attempt(s)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>204 (50.4%)</td>
</tr>
<tr>
<td>1</td>
<td>190 (46.9%)</td>
</tr>
<tr>
<td>2 or more</td>
<td>11 (2.6%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome of first attempt</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful</td>
<td>144 (75.8%)</td>
</tr>
<tr>
<td>Prevented in West</td>
<td>35 (18.4%)</td>
</tr>
<tr>
<td>Prevented in other geographic regions</td>
<td>11 (5.8%)</td>
</tr>
</tbody>
</table>
### Table 3.3. Comparison of Women and Men Involved in Jihadism-Inspired Terrorism across Categorical Variables

<table>
<thead>
<tr>
<th>Categorical Variables</th>
<th>Women (n = 272)</th>
<th>Men (n = 266)</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>$\chi^2$</td>
</tr>
<tr>
<td><strong>Demographic Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year of birth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior to 1974</td>
<td>64 (23.5%)</td>
<td>70 (26.3%)</td>
<td></td>
</tr>
<tr>
<td>1974 – 1982</td>
<td>60 (22.1%)</td>
<td>77 (28.9%)</td>
<td></td>
</tr>
<tr>
<td>1983 – 1990*</td>
<td>55 (20.2%)</td>
<td>79 (29.7%)</td>
<td></td>
</tr>
<tr>
<td>After 1990*</td>
<td>93 (34.2%)</td>
<td>40 (15.0%)</td>
<td></td>
</tr>
<tr>
<td>Highest level of education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>14 (14.7%)</td>
<td>9 (8.5%)</td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>41 (31.1%)</td>
<td>33 (43.2%)</td>
<td></td>
</tr>
<tr>
<td>Technical school</td>
<td>2 (2.1%)</td>
<td>7 (6.6%)</td>
<td></td>
</tr>
<tr>
<td>College</td>
<td>32 (33.7%)</td>
<td>42 (39.6%)</td>
<td></td>
</tr>
<tr>
<td>Postgraduate</td>
<td>6 (6.3%)</td>
<td>15 (14.2%)</td>
<td></td>
</tr>
<tr>
<td>Profession</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unskilled labor</td>
<td>26 (31.0%)</td>
<td>38 (32.5%)</td>
<td></td>
</tr>
<tr>
<td>Skilled labor</td>
<td>7 (8.3%)</td>
<td>18 (15.4%)</td>
<td></td>
</tr>
<tr>
<td>Military and police/security*</td>
<td>2 (2.4%)</td>
<td>12 (10.3%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>14 (16.7%)</td>
<td>33 (28.2%)</td>
<td></td>
</tr>
<tr>
<td>No recent profession*</td>
<td>35 (41.7%)</td>
<td>16 (13.7%)</td>
<td></td>
</tr>
<tr>
<td>Conversion to Islam</td>
<td>95 (35.1%)</td>
<td>89 (33.8%)</td>
<td>.09</td>
</tr>
<tr>
<td><strong>Criminal History</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any criminal behavior prior to radicalization</td>
<td>6 (2.2%)</td>
<td>51 (19.2%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Any criminal behavior after radicalization</td>
<td>25 (9.2%)</td>
<td>28 (10.5%)</td>
<td>.665</td>
</tr>
<tr>
<td><strong>Terrorism Involvement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any terrorist organizations</td>
<td>181 (66.5%)</td>
<td>148 (55.6%)</td>
<td>.009</td>
</tr>
<tr>
<td>Any terrorist plots</td>
<td>105 (38.6%)</td>
<td>248 (93.2%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>Foreign Fighting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any foreign fighting attempts</td>
<td>125 (46.0%)</td>
<td>75 (28.2%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Successful foreign fighting attempts¹</td>
<td>96 (76.8%)</td>
<td>67 (41.1%)</td>
<td>.027</td>
</tr>
</tbody>
</table>

**Notes.** Discrepancies between cell ns and total ns reflect missing data. % = valid percent calculated within gender. P-values are for chi-square analyses, except when cell sizes n < 5 for which Fisher’s exact tests were used instead. *indicates the specific categories within which Bonferroni-corrected posthoc comparisons showed that women and men differed significantly. ¹Among those who engaged in any foreign fighting attempts.
Table 3.4. Comparison of Women and Men Involved in Jihadist-Inspired Terrorism across Continuous and Count Variables

<table>
<thead>
<tr>
<th>Continuous Variables</th>
<th>Women</th>
<th>Men</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terrorist Involvement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of radicalization</td>
<td>23.33 (8.63)</td>
<td>24.57 (4.36)</td>
<td>0.923 (145)</td>
</tr>
<tr>
<td><strong>Foreign Fighting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of first foreign fighting attempt</td>
<td>24.01 (8.95)</td>
<td>25.69 (6.46)</td>
<td>1.526 (185.191)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Count Variables</th>
<th>Women</th>
<th>Men</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criminal History</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crimes prior to radicalization</td>
<td>0.03 (0.18)</td>
<td>0.00 (0.62)</td>
<td>0.101 [0.046, 0.219]</td>
</tr>
<tr>
<td>Crimes after radicalization</td>
<td>0.11 (0.38)</td>
<td>0.11 (0.35)</td>
<td>1.011 [0.612, 1.669]</td>
</tr>
<tr>
<td><strong>Terrorist Involvement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terrorist organizations</td>
<td>0.82 (0.74)</td>
<td>0.94 (1.18)</td>
<td>0.880 [0.734, 1.054]</td>
</tr>
<tr>
<td>Terrorist plots</td>
<td>0.46 (0.69)</td>
<td>1.23 (1.94)</td>
<td>0.371 [0.302, 0.456]</td>
</tr>
<tr>
<td><strong>Foreign Fighting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign fighting attempts</td>
<td>0.49 (0.55)</td>
<td>0.38 (0.69)</td>
<td>1.278 [0.986, 1.656]</td>
</tr>
<tr>
<td>Successful foreign fighting attempts (^1)</td>
<td>0.78 (0.45)</td>
<td>1.16 (0.75)</td>
<td>0.676 [0.506, 0.902]</td>
</tr>
</tbody>
</table>

Notes. For count variables, IRR is the incidence rate ratio for women compared to men and 95% CI is the 95% confidence interval for the incidence rate ratio. 
\(^1\)Among those who engaged in any foreign fighting attempts.
CHAPTER 4

Application of the TRAP-18 Framework to U.S. and Western European Lone Actor Terrorists

The TRAP-18 is an investigative framework to identify those at risk of lone actor terrorism. Using publicly available information on 77 jihadism-inspired lone actors, we rated TRAP-18 items and compared item prevalence across U.S. and European subsamples. Results reveal challenges in completing the TRAP-18 using publicly available information on this population: only four of 18 items were rated as present more often than they were rated absent or unknown. In contrast, two-thirds of the items were more often rated unknown than present or absent. Findings show some, but not many, differences in item ratings between U.S. and European lone actors.
Introduction

Lone actor terrorism has captured the attention of news media, politicians, and intelligence and security experts for its ability to seemingly come out of nowhere and cause immense harm. The names of lone actor terrorists often become common knowledge along with the stories of their acts of destruction. However, the fears about falling victim to one of these types of attack may be inflated, as studies have shown that lone actor terrorists comprise less than two percent of the total population of terrorists operating around the world (Meloy & Yakeley, 2014). Despite the relatively low risk to national security presented by lone actors compared to other extremist and terrorist actors, prevention of lone actor terrorist violence has been the focus of a disproportionately high number of research and intelligence community efforts. The significant public concern and potential for grievous harm resulting from lone actor attacks means that these efforts are not without cause, but still calls for the critical evaluation of the products of these efforts. No matter the prevalence, tools used by law enforcement to improve the assessment and management of threats should be empirically supported and valid across the multitude of contexts in which they may be applied. They also should be feasible to use in day-to-day practice and have practical utility. Indeed, even approaches that demonstrate good validity will fail to produce the intended outcomes of improved public safety and national security if they cannot be used as designed in practice (Desmarais & Lowder, 2019). To that end, the present study assesses the feasibility and applicability of one such framework, the Terrorist Radicalization Assessment Protocol (TRAP-18) among known U.S. and European lone actor terrorists (Meloy, 2017).
Literature Review

Though lone actor attacks are relatively rare events in comparison to attacks by group-based terrorists, their prevalence is increasing as they offer strategic advantages in areas that may otherwise be difficult to access (Meloy & Yakeley, 2014; Monahan, 2012; Nesser & Stenersen, 2014). As with terrorism itself, a number of definitions of lone actor terrorism exist, and their meanings may vary between the academic context and law enforcement contexts. The strengths and pitfalls of a number of these definitions are reviewed in a seminal article by Spaaij and Hamm (2015), setting research priorities for the study of lone actor terrorism. Since we focus on the TRAP-18 in this paper, we use the definition of lone actor terrorism set forth by the authors of the TRAP-18 framework. Specifically, in this paper we consider lone actor terrorists to be “those who research, plan, prepare and implement an attack on their own and do not rely on external command and control” (Meloy & Yakeley, 2014, p. 350). Although jihadism-inspired lone actors have rarely been studied as a distinct sample of lone actors, the unique ideological motivations driving this particular type of lone actor terrorist violence merit further examination. Unlike other types of ideological lone actor violence, the sociopolitical underpinnings of conflicts and interpretation of religious texts by jihadist leaders has specifically emphasized the lone actor attack as a supported tactic (Nesser & Stenersen, 2014).

Assessing risk of lone actor terrorist violence

Within intelligence and security communities, there is a critical need for empirically validated strategies to help triage information and guide decisions about individuals at risk for perpetration of terrorist violence. The case of the lone actor terrorist, someone guided by extremist principles but operating separately from terrorist organizations, presents a unique challenge; in particular, the lack of outside (and potentially observable) communication during
the planning of the attack can make them exceedingly difficult to identify and prevent (Spaaij, 2012). Further, evidence suggests that characteristics that contribute to risk for engaging in terrorist acts – that is, risk factors – may differ for lone actor and group-based terrorists (Monahan, 2017). As such, approaches developed and validated for assessing and managing the risk of group-based terrorism may not generalize to lone actor terrorism. For these reasons, there is a need for counterterrorism strategies that are designed specifically for assessing and managing the risk of terrorist acts within the context of lone actors. One potential strategy for identifying individuals who may be at heightened risk of perpetrating lone actor terrorism is the use of the TRAP-18.

The TRAP-18 is an investigative framework for identifying individuals at risk of lone actor terrorist violence (Meloy, 2017). The structured professional judgement tool is designed for use by threat assessment professionals to guide decision making about an individual’s risk for engaging in lone actor terrorist violence. The 18 items are comprised of 10 Distal Characteristics, defined as patterns of belief or behavior related to extremist ideology or participation in terrorism, and eight Warning Behaviors, indicators of imminent violent action. Items are rated “present,” “absent,” or “unknown” according to the evaluators’ judgement based on the available information. The final judgement about risk is at the sole discretion of the evaluator; item ratings are not summed to create subscale or total “threat” scores, but instead are intended to facilitate the organization and analysis of available data. The TRAP-18 framework provides recommendations about the priority level of the case, indicating that a cluster of Distal Characteristics should place the case into Active Monitoring and that the presence of one or more Warning Behaviors should prioritize the case into Active Risk Management. The TRAP-18 concludes by asking the evaluator to address a number of open-ended questions, such as whether
relevant risk factors are present that were not captured by the TRAP-18, the likely method and
targets of violence if it were to occur, potential protective factors, and other external factors
which may exacerbate the situation.

A number of studies have applied the TRAP-18 to various populations of lone actor and
group-based terrorists. Foundational studies often used case study methodologies to test and
develop items. Among these are studies of the Frankfurt airport attacker (Böckler, Hoffmann, &
Zick, 2015), Anders Breivik (Meloy, Habermeyer, & Guldimann, 2015), and the Fort Hood
Shooter (Meloy & Genzman, 2016). In two of these studies (Frankfurt airport attacker and Fort
Hood Shooter) the lone actors were evaluated on the full TRAP-18, finding that 15 (83.3%) and
13 (86.7%) of the items were present, respectively. For Anders Breivik, only the eight Warning
Behaviors were investigated, finding that six out of eight (75.0%) were present. There was some
overlap in the items for which no evidence was present; in all three case studies, there was no
evidence for items Novel Aggression and Directly Communicated Threat. In the two studies
evaluating the full TRAP-18, there was no evidence for Criminal Violence. Additionally, in the
case of the Fort Hood Shooter, there was no evidence for an additional two items: Failure to
Affiliate with an Extremist or Other Group, and Mental Disorder. These findings suggest that, at
least in these three cases, the majority of items included on the TRAP-18 framework appear to be
relevant and descriptive of the characteristics of lone actor terrorists, however select items may
not be relevant to lone actors.

Using a comparative approach, the authors of the TRAP-18 tested for prevalence of items
by ideology in a sample of 111 lone actor terrorists of various ideologies in the United States and
Europe (Meloy & Gill, 2016). There were no significant differences in the average number of
items present in each ideological group, each averaged about 10 out of 18 items rated as present.
Results of chi-square analyses demonstrated that radical Islamic lone actors showed more evidence of dependence on the virtual community compared to single-issue lone actors, providing some of the first evidence that the applicability and relevance of TRAP-18 items may vary by ideology. Together, the findings of these initial studies of the TRAP-18 framework suggest that some items may be more relevant than other items for particular groups of lone actors, supporting the need for further research examining differences in item prevalence across different groups of lone actors. This is one of the goals of the current study.

More recent research has examined the performance of the TRAP-18 framework across groups of individuals involved in terrorism in different ways, such as violent and nonviolent actors. A study of 58 individuals or groups associated with the Sovereign Citizens movement in the United States, for example, found differences in the prevalence of TRAP-18 item prevalence between violent and nonviolent cases (Challacombe & Lucas, 2019). Results from binary logistic regression showed that the total number of TRAP-18 items rated as present was predictive of perpetration of violent action; subjects with higher scores were approximately two times more likely to be involved in violent action. A second study compared 33 ideologically diverse lone actor terrorists in North America to 23 individuals in the United States and Canada who had come to the attention of law enforcement or mental health services as potential security concerns but did not engage in any action (Meloy et al., 2019). The demographic characteristics of the two groups were compared, showing that lone actors more often were single, had children, and reached higher levels of education. Lone actors and non-actors had similar employment statuses. The proportion of items coded as present and absent revealed that seven items (Pathway, Identification, Energy Burst, Last Resort, Framed by an Ideology, Changes in Thinking and Emotion, and Creativity and Innovation) were significantly more likely to be present among the
sample of lone actors than the non-actors, supporting the ability of the TRAP-18 to differentiate between the characteristics of violent and non-violent persons of interest in lone actor investigations.

The findings of these two studies offer evidence of the TRAP-18 framework’s postdictive validity; that is, the ability of the tool to produce scores or estimates that correctly assess the likelihood of lone actor terrorist violence in cases in which the outcome is already known. However, they fall short of offering evidence comparing lone actors of the same ideology across geographic regions or sociopolitical contexts. In particular, both studies drew samples from the United States (Challacombe & Lucas, 2019; Meloy et al., 2019). More generally, the body of research evidence supporting the TRAP-18 framework, though promising, is nascent and heavily reliant on case studies or small samples, with potentially limited generalizability. Further empirical research is needed to support its utility in practice, including studies that examine the feasibility and applicability of items included the TRAP-18 framework to samples of lone actor terrorists across diverse sociopolitical contexts.

United States and European sociopolitical contexts

While both the United States and Europe have seen an increase in lone actor terrorist attacks since 1978 (Spaaij, 2012), these two geographic regions differ in terms of their sociopolitical contexts. In particular, the United States and Europe have differed meaningfully in recent years with regard to their responses to terrorism and these differences may have implications for our understanding and application of approaches that seek to support the assessment and management of threat of terrorist violence. In the years since the September 11th terrorist attacks, the United States has increasingly embraced sting operations as a method to detect and prevent lone actor terrorist violence, in stark contrast to European countries wherein
sting operations are not permitted under law (Spaaij & Hamm, 2015). Spaaij and Hamm describe how the differential use of sting operations may lead to a difference in the observed methods and sophistication of lone actor attacks. To demonstrate, access to bombs or bomb-making materials used in lone actor attacks perpetrated in the United States may actually be facilitated by the undercover law enforcement agents involved in the sting operation. Outside of the United States, sophisticated methods of attack, including making bombs, are not often seen without support from an established terrorist network.

Moreover, recent research suggests that there are differences in the fundamental drivers of lone actor terrorism within the United States and Europe. For instance, within the United States, the phenomenon and popularity of “leaderless resistance” appears to motivate lone actor terrorism (Spaaij, 2012), whereas lone actors in Europe appear to be more directed by the goals of the prominent terrorist organizations regarding targets of violence (Nesser & Stenersen, 2014). A review of jihadism-inspired terrorism in Europe – both lone actor and group-based – describes a change in target selection from U.S.-affiliated targets to European targets in response to the directives from Al Qaeda and European involvement in the War on Terror. Lone actor terrorists who radicalize independently of terrorist organizations appear to nonetheless follow “ideological and strategic guidelines emanating from al-Qaida’s central leadership” and engage in target selection in ways that are similar to group-based terrorists in Europe (Nesser & Stenersen, 2014, p. 20). The contrasting tendencies of European lone actors look to centralized leadership compared to the tendencies of U.S. lone actors to independently engaging in violent action suggest that the individual trajectories of radicalization may also differ between lone actor terrorists operating in the United States and Europe. Yet, there is no research, of which we are aware, which has extended this work to examine and compare the application of threat
assessment and management strategies, or the TRAP-18 framework specifically, across lone actors in the United States and Europe. This is an important gap in knowledge that we seek to address with the present study.

**The Present Study**

The present study applies the TRAP-18 framework to a sample of 77 jihadism-inspired lone actor terrorists and reports on the feasibility and relevance of the framework overall and compared between lone actor terrorists in the United States ($n = 35$) and Europe ($n = 38$). This investigation is guided by three research objectives:

1. To apply the TRAP-18 to a sample of jihadism-inspired lone actor terrorists and report on the feasibility of using the framework with publicly available information.
2. To describe the characteristics of the framework and distribution of ratings across items.
3. To compare lone actor terrorists from the United States and Europe in terms of the presence of TRAP-18 items and priority recommendations.

By addressing these research objectives, we advance the science and practice regarding the application of the TRAP-18 framework as a counterterrorism strategy in at least three important ways. First, to our knowledge, this study is the first to explore the TRAP-18 focusing uniquely on jihadism-inspired lone actor terrorists. Second, our study represents the first comparison of United States and European lone actors. Prior research has compared United States and European lone actors as a function of their ideologies, not as a function of the sociopolitical contexts represented by geographic regions. Third, though reported on tangentially in prior studies, this study is the first to explicitly address the feasibility of completing the TRAP-18 framework using publicly available information by focusing on the prevalence of items rated as unknown and discussing the characteristics of TRAP-18 assessments in detail.
Method

Sample

The lone actor terrorist dataset was compiled through screening of the Western Jihadism Project database (Klausen, 2019). The Western Jihadism Project database is comprised of publicly available information on individuals involved in terrorist plots, connected to terrorist networks, or self-identifying as involved with a terrorist group or action. All individuals must have either primary residence or citizenship in a Western country (United States, United Kingdom, Western European, Canada, Australia, and New Zealand). Exceptions to this rule were made for tracking links between Western individuals and prominent leaders of terrorist organizations with citizenship and residence outside of the West. Since 2006, publicly available information has been gathered and synthesized, and records have been screened back to the early 1990s. Sources used in the creation of the dataset include news media, court records, social media posts, and other publicly available records.

As of April 2019 (the date we finalized cases for inclusion in the current investigation), the dataset comprised 6,462 individuals, representing the largest compilation of data on individuals involved in jihadism-inspired terrorism available to researchers. Accordingly, the Western Jihadism Project database has been used to analyze the social networks and spatial relationships of terrorist organizations as well as investigate subpopulations of terrorism-involved individuals (Klausen, Campion, Needle, Nguyen, & Libretti, 2016). Variables include personal demographic characteristics and links to terrorist groups, plots, and other affiliated individuals. Whenever available, details on the associated organizations and plots, including the nature of the individual’s relationship, are included within the database.
To create our analytic dataset of lone actor terrorists, we began by screening the 464 violent plots included in the Western Jihadism Project database. For this screening, the plot descriptions were reviewed to determine whether (1) the plot was undertaken by a single individual or pair of individuals who (2) operated independently of a terrorist organization. A total of 137 plots were identified as potential plots undertaken by lone actors. A subset of plots was screened by two coders and disagreements were resolved through consensus. These 137 plots were linked to a total of 234 individuals, who were then screened a second time to determine whether they met inclusion criteria for lone actor terrorists. For this second round of screening, the brief biographies included in the Western Jihadism Project database were first reviewed. Individuals were excluded if they received extensive aid or support from another individual in preparing for or carrying out the plot, or were not self-directed in the plot (i.e., controlled by another individual or organization). An additional four cases were identified through keyword searches of the Western Jihadism Project database (“lone” and “singleton”).

A subset of the individuals (n = 69, 28.6%) was reviewed by two coders and revealed good agreement (kappa = .720) (Cicchetti, 2001). While coding the TRAP-18, the primary source documents associated with each individual were reviewed due to the level of detail needed to code TRAP-18 items. For three cases, reviewing these additional materials revealed details showing that they did not, in fact, operate alone. These cases were excluded from the final analytic sample reported upon in this paper. In total, we identified 77 lone actor terrorists, representing just 1.3% of the total number of individuals within the Western Jihadism Project dataset at the time of our data extraction.

Table 4.1 presents the sociodemographic and criminal history characteristics of our analytic sample. Almost half of the 77 lone actor terrorists were born in the years between 1983
and 1990. Lone actor terrorists represented a diverse array of ethnic backgrounds, including White-European, Pakistani, and Moroccan. Among lone actors for whom level of education was known, all had completed at least a high school level of education, with most progressing beyond high school to college, technical school, or postgraduate education. About one-third of the lone actors in our sample had converted to Islam, meaning that they had been raised outside of the religion and converted to Islam later in their lives. Among the two-thirds of the sample for whom information on profession was known, most worked in unskilled labor (i.e., service/manual workers). About one-fifth had no recent profession in the period leading up to their apprehension or carrying out of the lone actor plot. Just over one-third of the lone actors in the sample had at least one known instance of criminal activity prior to their involvement in terrorism. Specific prior criminal activities ranged from assault/murder to drug-related offenses and fraud.

*U.S. and European Subsamples*

Lone actors were included in either the U.S. or European subsample if their primary country affiliation was in the United States or Europe (i.e., Austria, Belgium, France, Germany, Italy, Spain, Sweden, United Kingdom). Primary country affiliation was assigned based upon the country in which the individual spent the most time in the six months prior to their radicalization or participation in terrorist activity. Only five lone actor terrorists were not from either the United States or a European country; those lone actors were from Canada (\(n = 3\)) and Australia (\(n = 2\)) and were excluded from analyses comparing U.S. and European samples.

Table 4.1 also presents the sociodemographic and criminal history characteristics of U.S. and European lone actors. As can be seen in Table 4.1, U.S. and European lone actors were similar in many ways. Specifically, there were no significant differences on year of birth, level of education, and being an asylum seeker, \(p_s \geq .117\). As seen in the full sample, U.S. and European
lone actors were most frequently born between 1983 and 1990, with the second highest proportion born between 1974 and 1982. Though information on education was unknown for almost three-quarters of the European lone actors, lone actors were fairly well educated in both subsamples, often completing high school or advanced education. Asylum seekers were rare in both subsamples, comprising less than one in 10 of the lone actors.

U.S. and European lone actors also differed in meaningful ways, including their ethnicity, legality of residence, profession, conversion to Islam, and criminal behavior prior to radicalization. Almost half \( n = 16, 48.5\% \) of European lone actors were of African ethnicities, as compared to less than one-quarter \( n = 6, 17.6\% \) of U.S. lone actors. There was a significant difference in the legality of lone actor’s residence in their current country; however, post-hoc analyses revealed that the difference was in the number rated as unknown, meaning that their legal status could not be determined from the publicly available information. No U.S. lone actors had unknown legal statuses, while legality of residence was unknown for seven (18.4\%) European lone actors. Over three-quarters of U.S. and European lone actors were legal residents of their countries, and less than one out of 10 of the lone actors in the sample were undocumented. In terms of professions, U.S. and European lone actors differed on the prevalence of military and police/security careers and other professions. Specifically, over one-quarter of the U.S. lone actors were in military and police/security careers, compared to none of the European lone actors. A far greater proportion, almost one-quarter, of European lone actors were in other professions, compared to only one U.S. lone actor. As noted earlier with regard to education, a larger proportion of European than U.S. lone actors were missing information on their profession. Among U.S. lone actors, conversion to Islam was fairly common, occurring in just under half of all cases, compared to less than one-quarter of European lone actors. Known
criminal behavior prior to radicalization was also fairly common among both samples, but significantly more so among European lone actors: over half of European lone actors were known to have engaged in criminal behavior prior to radicalization compared to just over one-quarter of U.S. lone actors.

Measures

TRAP-18

As introduced earlier, the TRAP-18 is an investigative framework for organizing information and assisting with determinations of risk (Meloy, 2017). The TRAP-18 is comprised of two subcomponents: Warning Behaviors and Distal Characteristics. The eight Warning Behaviors are: 1) Pathway, 2) Fixation, 3) Identification, 4) Novel Aggression, 5) Energy Burst, 6) Leakage, 7) Last Resort, and 8) Directly Communicated Threat. The 10 Distal Characteristics are as follows: 1) Personal Grievance and Moral Outrage, 2) Framed by an Ideology, 3) Failure to Affiliate with an Extremist or Other Group, 4) Dependence on the Virtual Community, 5) Thwarting of Occupational Goals, 6) Changes in Thinking and Emotion, 7) Failure of Sexually Intimate Pair Bonding, 8) Mental Disorder, 9) Creativity and Innovation, and 10) Criminal Violence. During the coding process, we developed study-specific operational definitions and coding conventions for each TRAP-18 item to promote consistency between coders and application to the Western Jihadism Project dataset. We provide these operational definitions and coding conventions in the Appendix.

Consistent with the structured professional judgment approached to assessing risk, TRAP-18 item ratings are meant to facilitate the organization of information and guide and support, but not replace, the evaluator’s decision making regarding threat of lone actor terrorism (Guy, Packer, & Warnken, 2012). To be clear, the item ratings are not summed to create total or
subscale scores that are then used to determine a probability of lone actor terrorism. Instead, the items ratings are used to inform two priority recommendations. The first, Active Monitoring, is suggested when a clustering of Distal Characteristics is present. For the purposes of this study, we defined a “clustering” as the presence of three or more Distal Characteristics. Active Monitoring means that the case would continue to be observed to determine if there are other indicators of imminent action. The second priority recommendation, Active Risk Management, is suggested when at least one Warning Behavior is present and entails undertaking immediate risk management activities. We adhered to this guidance in this study.

**Procedures**

Before using the TRAP-18, all coders completed the online TRAP-18 training provided by the Global Institute of Forensic Research and reviewed the user manual (Meloy, 2017). The training is approximately two hours long and covers the foundational studies used to develop the TRAP-18, as well as all the item definitions and coding guidance. The online training and user manual both provide extensive case examples of lone actor terrorism. All members of the research team then met to develop our study-specific codebook to guide the application of the TRAP-18 to our analytic sample of lone actor terrorists drawn from the Western Jihadism Project database. A lone actor terrorist’s profile was randomly selected; we began by first independently reading all information associated with the profile, then proceeded to collaboratively decide on the appropriate rating (present, absent, or unknown) for each item on the TRAP-18. Items were rated as present when there was sufficient information to conclude that one or more elements of the item were evident. The rating of absent was used when there was evidence to show that elements of the item definition were not met. Items were rated as unknown when there was not enough information to make a decision about presence or absence of the item or when the
information that was available provided conflicting evidence regarding presence or absence. Collaborative coding was repeated for a second, randomly selected lone actor. Coders then independently coded two more lone actors, pausing in between to discuss how each item was coded. Throughout this process, disagreements were resolved through consensus and our working definitions were established and continuously revised. Once we were satisfied with our study operational definitions and coding conventions, the TRAP-18 was coded for all 77 lone actors. A random subset of 20 lone actors (26.0% of our analytic sample) was assessed by all coders to assess inter-rater reliability. Analyses revealed excellent inter-rater reliability ($\alpha = .950$).

**Analytic Plan**

To understand the feasibility of coding TRAP-18 items based on publicly available information, we calculated descriptive statistics and measures of central tendency for the TRAP-18 item ratings overall and across its subcomponents (i.e., Warning Behaviors and Distal Characteristics). This approach has been used in prior investigations examining the feasibility of using risk assessments and decision-making frameworks in practice (Desmarais, Sellers, et al., 2012; Desmarais, Van Dorn, Telford, Petrila, & Coffey, 2012). We also examine the prevalence (i.e., frequency and percentage) of unknown ratings for each item. To address our second research objective of describing the characteristics of TRAP-18 assessments, we compare the prevalence and distribution of present, absent, and unknown ratings per item using chi-square tests. We additionally report on the prevalence of the priority recommendations. To address our third research objective of comparing TRAP-18 assessments completed on U.S. and European lone actors, we perform a chi-square tests of the prevalence of items coded as present and the priority recommendations between the two subsamples.
Results

Feasibility

To address our first research objective of determining the feasibility of completing the TRAP-18 using publicly available information, we examined the prevalence of unknown ratings overall, by subcomponent, and by item. These frequencies and percentages are presented in Table 4.2.

Review of Table 4.2 shows that the degree to which a given item could not be rated as either present or absent, but instead had to be rated as unknown, ranged considerably. Specifically, the number of items rated as unknown ranged from just one item (5.6%) to 16 (88.9%) out of the possible 18 items. There were no cases for which every TRAP-18 item was rated as present or every item rated as absent or every item was rated unknown. So, for all cases, there was some distribution of items across the possible ratings of present, absent, or unknown. That said, on average, nine TRAP-18 items (50.0%, $M = 9.49$, $SD = 3.36$, median = 9.00, mode = 8.00) were rated as unknown by the coders per case. In other words, on average, half of the TRAP-18 items could not be rated for a given lone actor in our sample.

Consideration of items distributed across the subcomponents suggest that Warning Behaviors were more challenging to rate than were Distal Characteristics. To demonstrate, out of the eight Warning Behaviors, coders rated an average of five items – or almost two-thirds (62.5%) – as unknown per case ($M = 4.62$, $SD = 1.79$, median = 5.00, mode = 4.00). The number of Warning Behaviors items rated as unknown per case ranged from none to all eight items (i.e., 0.0% to 100.0%). Out of the 10 Distal Characteristics, coders rated an average of five items (50.0%, $M = 4.87$, $SD = 2.09$, median = 5.00, mode = 5.00) as unknown per case. Among Distal
Characteristics, the number of items rated as unknown across all cases ranged from zero to nine (0.0% to 90.0%).

Examining the prevalence of unknown versus absent or present ratings revealed that coders were significantly more likely to mark two-thirds of the TRAP-18 items (i.e., 12 items) as unknown than as present or absent, $\chi^2$s > 6.87, ps < .009 (see Table 4.2). These items were: Fixation, Novel Aggression, Energy Burst, Leakage, Last Resort, Directly Communicated Threat, Failure to Affiliate, Thwarting of Occupational Goals, Changes in Thinking and Emotion, Failure of Sexually Intimate Pair Bonding, Mental Disorder, and Criminal Violence. Among these items, three were rated as unknown over 80% of the time (i.e., Fixation, Directly Communicated Threat, and Failure to Affiliate), suggesting that a coding determination regarding presence or absence of these items can almost never be made based upon publicly available information. One TRAP-18 item, Energy Burst, was rated unknown in just under half of the cases, suggesting that it may be possible to improve the feasibility of coding this item with minor adjustments to the definition or available information.

**Characteristics of TRAP-18 Assessments Overall**

For our second research objective, we sought to describe the characteristics of TRAP-18 assessments overall, reporting on the prevalence and distribution of present, absent, and unknown ratings overall and by item. Examining first the characteristics of all TRAP-18 items, coders rated an average of about seven out of 18 items as present (38.9%, $M = 6.61$, $SD = 2.71$, median = 7.00, mode = 4.00) and about two items as absent (11.1%, $M = 1.88$, $SD = 1.15$, median = 2.00, mode = 1.00) per case. The number of items rated as present per case ranged from one to 12 (5.5% to 66.6% of the possible 18 items), while the number of items rated as absent ranged from zero to seven (0.0% to 38.8%). The higher number of items rated as present...
than absent suggests that the TRAP-18 items are relevant to lone actor terrorists overall. However, with the range of items rated as present starting as low as one and less than half of items rated as present, on average, our findings raise potential concerns about the applicability of items across lone actors.

Among the eight Warning Behaviors items, coders rated an average of three items as present (37.5%, $M = 2.96$, $SD = 1.53$, median = 3.00, mode = 3.00) and less than one item as absent (12.5%, $M = 0.40$, $SD = 0.67$, median = 0.00, mode = 0.00) per case. Across cases, the number of Warning Behavior items rated as present ranged from zero to six (0.0% to 75.0%), while the number rated as absent ranged from zero to three (0.0% to 37.5%). Two Warning Behaviors were significantly more likely to be rated as present than absent or unknown, both of which were rated as present over 80% of the time: Pathway and Identification. Since the presence of one or more Warning Behaviors results in a priority recommendation of Active Risk Management, the high prevalence of present ratings for these two items lead to the vast majority of individuals in our sample ($n = 73$, 94.8%) receiving this recommendation. This finding is expected due to our use of a sample of known lone actors.

Among the 10 Distal Characteristics items, coders rated an average of four items as present (40.0%, $M = 3.65$, $SD = 1.79$, median = 4.00, mode = 3.00 and 4.00) and one item as absent (10.0%, $M = 1.48$, $SD = 0.80$, median = 1.00, mode = 1.00) per case. Across cases, the number of Distal Characteristics items rated as present ranged from 0 to eight (0.0% to 80.0%), while the number of items rated as absent ranged from 0 to four (0.0% to 40.0%). Two Distal Characteristics were significantly more likely to be rated as present than absent or unknown: Personal Grievance and Moral Outrage and Framed by an Ideology. Given the somewhat low average number of Distal Characteristics rated as present, just under three-quarters of cases ($n =$
were recommended for Active Monitoring. As a reminder, this recommendation requires a clustering of Distal Characteristics, which was defined as three or more items in the current study.

Further examination of the priority recommendations showed considerable overlap between those recommended for Active Minority and Active Risk Management. Specifically, 55 of our 77 cases (71.4%) received priority recommendations for both Active Monitoring and Active Risk Management. Of the remaining cases, 18 (23.4%) received an Active Risk Management priority recommendation but were not recommended for Active Monitoring, and one case (1.3%) received an Active Monitoring priority recommendation but was not recommended for Active Risk Management. Three cases (3.9%) did not meet criteria for either the Active Monitoring or Active Risk Management priority recommendations. As all lone actors within our sample were involved in the planning or perpetration of a lone actor terrorist plot, we had expected all individuals to qualify for Active Risk Management. As such, our findings show that the priority recommendation guidelines may underestimate threat of lone actor terrorism among certain individuals.

As described earlier in this paper, 12 of the TRAP-18 items were rated unknown more frequently than they were rated either present or absent. For four of the six remaining items, coders were significantly more likely to rate them as present than either unknown or absent (see Table 4.2). Those four items are: Pathway, Identification, Personal Grievance and Moral Outrage, and Framed by an Ideology. The prevalence for these items ranged from 72.7% (Personal Grievance and Moral Outrage) to 87.0% (Framed by an Ideology). Only one item, Creativity and Innovation was significantly more likely to be rated as absent than either present or unknown. This item was rated as absent in 93.5% of cases. There was no significant
difference in the distribution of present, absent, and unknown ratings for one item: Dependence on the Virtual Community. In other words, on average, this item was rated present about as often as it was rated absent or unknown, questioning the relevance of the construct to our sample of jihadism-inspired lone actors.

**Known Groups Comparison: U.S. and European Lone Actors**

To address our third research objective regarding the prevalence of TRAP-18 items among samples of U.S. and European lone actors, we first performed pairwise comparisons on the average number of items rated as present. Results revealed significant differences between the two groups. A significantly higher average number of items were rated as present among U.S. lone actors ($M = 7.29$, $SD = 2.55$, median = 7.00, mode = 7.00, Range 1.00 to 12.00) as compared to European lone actors ($M = 5.74$, $SD = 2.60$, median = 6.00, mode = 4.00, Range 2.00 to 11.00), $t(70) = 2.56$, $p = .013$. There was also a significant difference in the average number of items rated as unknown, $t(70) = 2.13$, $p = .037$. Specifically, fewer items were rated as unknown for U.S. lone actors ($M = 8.76$, $SD = 3.10$, median = 9.00, mode = 8.00, Range 1.00 to 16.00) than European lone actors ($M = 10.42$, $SD = 3.46$, median = 10.50, mode = 8.00, Range 2.00 to 16.00). That said the average number of items rated as unknown was high for both groups, representing at least half of the TRAP-18 items. There was no significant difference in the average number of items coded as absent for U.S. and European lone actors, $p = .651$. In both subsamples, about two items were rated as absent per case, on average.

We then examined differences in the distributions of present ratings for each item between U.S. and European lone actors, shown graphically in Figure 4.1. Results showed that the distribution of ratings differed significantly between U.S. and European lone actors on two items: Energy Burst and Leakage. Coders rated Energy Burst as present for a greater percentage
of U.S. lone actors (58.8%) than European lone actors (34.2%), \( \chi^2(1) = 4.31, p = .038 \). Similarly, Leakage was rated as present for a greater, albeit still relatively small, percentage of U.S. lone actors (35.3%) than European lone actors (13.2%), \( \chi^2(1) = 4.79, p = .029 \). The ratings for two other items – Fixation and Dependence on the Virtual Community – showed a similar trend of being rated present more frequently for U.S. lone actors compared to European lone actors, but the differences were not significant, \( p = .080 \) and \( p = .061 \), respectively.

The final step of our known groups comparison tested for differences in the priority recommendations produced through completion the TRAP-18. Our analyses showed a significant difference in the proportion of U.S. lone actors and European lone actors recommended for Active Monitoring, Fisher’s exact test, \( p = .034 \). Specifically, the vast majority of U.S. lone actors were coded as meeting the criteria for Active Monitoring \( (n = 29, 85.3\%) \) compared to just under two-thirds of European lone actors \( (n = 23, 60.5\%) \). We did not find a significant difference in the proportion of U.S. and European lone actors recommended for Active Risk Management, \( p = .117 \). So, while the differences we observed in the present, absent, and unknown item ratings appears to affect Active Monitoring priority recommendation, there was no such impact on the Active Risk Management priority recommendation.

**Discussion**

Lone actor attacks were popularized by the “leaderless resistance” message of right-wing extremist leaders (Simi & Bubolz, 2017), but the tactic has since spread to other ideologies with recent research showing that Al Qaeda-inspired attacks were more likely to be perpetrated by lone actors (Gruenewald & Klein, 2017). Although lone actors are a very small proportion of all terrorist actors, they perpetrate about one quarter of all terrorist attacks in the United States (Smith, Roberts, Gruenewald, & Klein, 2014). The secrecy around the planning of lone actor
attacks makes prevention difficult, and as a result, lone actor terrorism is a pressing security concern in the United States and Europe. Evidence-based threat assessment tools may support counterterrorism strategies to detect and prevent lone actor terrorism. To that end, our findings add to the growing body of literature on the TRAP-18 framework. In particular, we present the first findings to explicitly suggest some concerns regarding the feasibility of coding items using only publicly available information. Our findings also show that differences in the United States and European sociopolitical contexts may contribute to differences in the prevalence of TRAP-18 items, and accordingly, potential differences in indicators of lone actor terrorist action across these contexts. By examining a sample solely of jihadism-inspired lone actor terrorists, we avoid testing for relevance of TRAP-18 items and priority recommendations from assessments across lone actors of diverse ideologies.

Our first research objective was to assess the feasibility of completing TRAP-18 items with our sample using publicly available information. While previous research on the TRAP-18 has similarly drawn data from public records, extant studies have not explicitly reported on feasibility of completing TRAP-18 assessments by examining the rates of unknown ratings. However, our finding suggests the importance of such an investigation with regard to the use of the TRAP-18 in practice. Indeed, in our sample of lone actors, two-thirds of the TRAP-18 items - 12 out of the 18 total items - were more often rated as unknown than present or absent. These low-feasibility items generally reflect specific details about the lone actor’s mental state (i.e., Fixation, Energy Burst, Last Resort, Changes in Thinking and Emotion, and Mental Disorder), prior violence (i.e., Novel Aggression and Criminal Violence), vocational success (i.e., Thwarting of Occupational Goals), interpersonal relationships (i.e., Failure of Sexual-Intimate Pair Bonding and Failure to Affiliate with an Extremist or Other Group), and communications
(i.e., Leakage, Directly Communicated Threat). Half of these low-feasibility items were Warning Behaviors and the other half, Distal Characteristics. Given the greater number of Distal Characteristics compared to Warning Behaviors, these findings suggest that Warning Behaviors tended to be more difficult to rate based on publicly available information. These findings make intuitive sense, Distal Characteristics generally reflect historical information that is more likely to be documented in some way compared to Warning Behaviors, which typically reflect more transient (or dynamic) proximal risk factors that may be less likely to be noted in official records (unless an individual is monitored in some way). On the one hand, predictive utility of historical risk factors is well-documented; these factors can support the identification of groups of individuals at heightened risk (Desmarais et al., 2017). On the other hand, research demonstrates the importance of proximal risk factors for identifying short-term, more imminent threat to public safety (Johnson et al., 2016). As such, in its current form, the TRAP-18 completed using public records may be less useful in supporting the identifying specific individuals who may engage in lone actor plots from amongst a group of individuals at risk of lone actor terrorism more generally.

Items related to planning or perpetration of the plot (i.e., Pathway and Creativity and Innovation) and the lone actor’s ideological motivation (i.e., Identification, Personal Grievance and Moral Outrage, and Framed by an Ideology) were more readily coded in our sample. This finding suggests that information regarding planning and perpetrating lone actor plots, as well as the motivation for the plot, is more likely to be captured in public records than are details regarding the individual’s social and interpersonal context. Indeed, the “if it bleeds, it leads” approach to news programming reflects the mass media’s tendency to focus on the specifics regarding the methods of violent events, as well as efforts to answer questions regarding why an
individual would want to engage in such violence. The frequent rating of items regarding lone actors’ current circumstances as unknown also may reflect lesser public interest in humanizing an individual lone actor.

Some of these findings are congruent with the case studies of the TRAP-18; specifically, these case studies similarly failed to find evidence supporting the presence of Novel Aggression, Directly Communicated Threat, and Criminal Violence (Böckler et al., 2015; Meloy & Genzman, 2016; Meloy et al., 2015). However, overall, these case studies were much more successful in coding based upon publicly available information, finding evidence for the presence of the majority of TRAP-18 items. This is likely due to the studies’ use of widely covered lone actor cases in which the plot was successfully carried out, causing deaths and injuries. In all three cases, the lone actors survived the perpetration of the attack, and many details of their lives were presented and examined in the subsequent criminal trials. Thus, the TRAP-18 may be more suitable for postdictive analyses when a great deal of information is available to public, either through extensive reporting by the media or release of court documents on the case.

Our findings regarding feasibility connect to several important discussions and topics of research in the field. First, ideological motivation and grievance have been explored in many studies on lone actor and group-based terrorism (Desmarais et al., 2017; Spaaij, 2010). As mentioned above, three items related to ideological motivation were often present among our sample. Along with the two items on planning and perpetration that also often rated as either present or absent, these items could be tested for their utility as a short-term screening tool that may represent a first step in the threat assessment process and may support decisions about whether or not to search for further information on a given case. Such strategies are gaining
Second, prior research has established that mental illness is more prevalent among lone actors than group-based terrorists (Gill & Corner, 2017), which is supported by our results despite the high prevalence of unknown ratings for the item Mental Disorder. This item was observed to be present in nearly half of the sample \((n = 34, 44.2\%)\), similar to what has been found in other studies which place the prevalence of mental illness among lone actors in the range of 22 – 40% (Webber & Kruglanski, 2017). The prevalence of mental illness among lone actors certainly appears to be more common than mental illness in the general population, it may only be useful to distinguish between individuals at risk of lone actor compared to group-based terrorism amongst those at heightened risk of radicalization. Yet, the majority of lone actors do not show signs of mental illness, both in the current and prior research. Further, “mental illness” is not one thing. Future research should explore whether there are differential associations between certain types of mental disorders – and perhaps more importantly, specific symptoms of mental illness – and lone actor terrorism.

Third, although several studies have shown social isolation is commonly seen among lone actors (Gill, Horgan, & Deckert, 2014; Spaaij, 2010), we did not find evidence for the absence of TRAP-18 items related to interpersonal relationships. Instead, these items (i.e., Failure of Sexual-Intimate Pair Bonding and Failure to Affiliate with an Extremist or Other Group) were most often rated as unknown, indicating that further research and information beyond that which is publicly accessible would be needed to establish the nature and extent of the lone actor’s interpersonal relationships. Further, this finding makes it unclear whether a similar trend of social isolation was present within our sample or if the finding is an artifact of
the differing samples used within previous research. Understanding lone actors’ interpersonal relationships, or lack thereof, contributes to both knowledge about drivers of lone actor terrorism and practical guidance for law enforcement regarding intervening to prevent lone actor terrorist violence.

Despite many items being rated as unknown, most lone actors were still recommended for Active Monitoring or Active Risk Management, the TRAP-18 framework’s two priority recommendations. Because we completed TRAP-18 assessments on a sample of known lone actor terrorists, all individuals in our sample arguably should have received at least one of these priority recommendations. Instead, the framework produced three false negatives – individuals who were not recommended for either priority category and yet were involved in the planning or perpetration of a lone actor terrorist plot. Reasons for these false negatives are not known. It is possible that these individuals displayed distal characteristics or warning behaviors not captured within the TRAP-18. It is also possible that our interpretation of “clustering” for the Active Monitoring priority recommendation was too rigid. Our study is the first to report on prevalence of the TRAP-18 priority recommendations, it is not clear how others may interpret and apply “clustering” nor is it clear how our interpretation of “clustering” would play out in other samples.

We interpreted “clustering” of Distal Characteristics to mean three or more present within any given case and applied this rule across all cases for consistency. In practice, interpretation of “clustering” would be up to the evaluator, who may see fit to recommend Active Monitoring in the presence of two compelling Distal Characteristics. For all three of the individuals who did not receive any priority recommendation, two Distal Characteristics were rated as present, just outside our established criteria. Specifically, both Personal Grievance and Moral Outrage were rated as present for all three; Mental Disorder was rated as present for two; and Framed by an
Ideology was rated as present for one. All other items (including Warning Behaviors) were rated as unknown. Similar false negatives could occur in the real world when there is little information available on a person of potential interest. Future research should continue to explore the feasibility of coding these items in practice, as well as whether there may additional or alternative items for inclusion among Distal Characteristics. Another avenue to explore is how evaluators make decisions about these priority recommendations, including their interpretations and application of the “clustering” of Distal Characteristics that inform the Active Monitoring recommendation. As a starting point, we recommend that a rigid definition should not be applied across all cases – such as we did in this study – to afford discretion and minimize the possibility of false negatives.

Our final set of analyses compared the prevalence of TRAP-18 items among U.S. and European lone actors. Our findings suggest that two to four TRAP-18 items may be more commonly present, and thus, potentially more relevant for U.S. than European lone actors: Fixation, Energy Burst, Leakage, and Dependence on the Virtual Community. We hypothesize two possible explanations for this trend. The first possibility is that information on items among U.S. lone actors may be more often available due to the heightened use of sting operations, which were used with nine of the U.S. lone actors and only one of the European lone actors. That is, the sting operations themselves may produce detailed information about the planning, preparation, and tactics surrounding the act. While previous research suggests the use of sting operations may skew data on lone actor terrorists toward more sophisticated methods of attack (Spaaij & Hamm, 2015), our findings suggest they also result in more publicly available information on lone actor terrorists. In particular, we saw that the use of sting operations provided data on events leading up to the attack, including disclosure of the method of a planned
plot to undercover agents. The observations made by undercover law enforcement agents often become public when court documents are made available to the public could be linked to our findings related to differences in Energy Burst (i.e., an increase in activity leading up to the attack) and Leakage (i.e., communication to a third party about the intent to carry out an attack) between U.S. and European lone actors.

Another possible explanation for the differences we found between U.S. and European lone actors reflects the overwhelming influence of Western – and particularly American – researchers on the field of terrorism. Specifically, there may be factors more relevant to European than U.S. lone actors that have systemically been overlooked (Desmarais et al., 2017). A noted gap in the field is research that integrates individual-level and environmental or situational characteristics to examine risk for terrorism. This point becomes particularly relevant to comparisons of terrorist actors across different geographic regions. Indeed, there are noted differences between the United States and Europe in the societal-level drivers of lone actor terrorism. Specifically, lone actor terrorism in the United States has historically been linked to the trend of “leaderless resistance” while European lone actor terrorism is often undertaken as a response to the tactical recommendations of Al Qaeda and associated groups (Nesser & Stenersen, 2014). Consideration of current messaging from established terrorism groups acting in various regions regarding the tactical use of lone actor attacks may supplement the individual-level factors to augment the predictive validity and practical utility of the TRAP-18.

Our findings must be considered in the context of several limitations. First, reliance on a dataset compiled using publicly available information may not have captured all relevant documents or testimony needed to accurate code all TRAP-18 items. It is likely that some items (e.g., Changes in Thinking and Emotion) could only be completed after an interview with the
individual themselves or based on information from close friends or family. While public records may not be the ideal data source, it is also a common starting point for intelligence analysts when attempting to make a preliminary decision about whether or not the case merits further investigation, and as such is a relevant avenue for study. That said, publicly available information, has been the dominant data source in studies of the TRAP-18. Future research should test the feasibility and utility of the TRAP-18 completed by evaluators in the context of routine practice (as opposed to researchers) and/or using diverse data sources, including collateral informants, interviews, etc., in addition to public records. Our sample size, though comparable to other those of other published studies on lone actor terrorists, was small and may have limited our power to detect potential differences between U.S. and European lone actors. However, the small sample size reflects the reality of the phenomenon: lone actors are estimated to comprise a mere two percent of all terrorist actors (Meloy & Yakeley, 2014). Finally, our analyses were based upon a sample of jihadism-inspired lone actor terrorists residing in the West and, as such, may not generalize to other populations of lone actors or other types of terrorists.

Yet, given recent evidence that prevalence of TRAP-18 items differs between lone actors of varying ideologies (Meloy & Gill, 2016), research within ideological groups of lone actors is critical. The limitations notwithstanding our study is the first to both examine the feasibility and applicability of the TRAP-18 to a sample of only jihadism-inspired lone actors, as well as the first to compare lone actors of the same ideology across two sociopolitical contexts. We are also the first to report on the priority recommendations given by the TRAP-18, contributing evidence regarding its practical utility in the United States and Europe.

Overall, our findings raise questions regarding the feasibility of completing TRAP-18 using publicly available information and thus, its practical utility, at least during the early stages
of investigation. However, our findings do not speak to predictive validity. While many of the items that were more feasible to code in the present study do align with extant research showing personal grievance as a factor driving terrorist action; there were also instances in which we could not code items that are empirically-supported risk factors, notably items related to social isolation. Further, based upon the overwhelming ratings of absent for Creativity and Innovation, a novel means for carrying out the attack does not appear to be a factor with utility in determining who will or will not attempt lone actor terrorism. Thus, future research could test both shortened versions of the TRAP-18 and versions without the Creativity and Innovation item to determine if there are practical benefits to these approaches. Taken together, our results suggest that some TRAP-18 items show promise, but that the framework as a whole may lack feasibility for identifying jihadism-inspired lone actors, particularly among lone actors in Europe. More research is needed to explore the generalizability of our findings and strategies for improving the feasibility of completing the TRAP-18 in practice, including how contextual or situational factors may be incorporated in the threat assessment process.
References


Table 4.1. Lone Actor Demographic and Criminal History Characteristics

<table>
<thead>
<tr>
<th>Lone actor characteristics</th>
<th>Full Sample (N = 77)</th>
<th>United States (N = 34)</th>
<th>Europe (N = 38)</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>(\chi^2)</td>
</tr>
<tr>
<td>Year of birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1973 and earlier</td>
<td>15 (19.5%)</td>
<td>6 (17.6%)</td>
<td>8 (21.6%)</td>
<td>0.44</td>
</tr>
<tr>
<td>1974 – 1982</td>
<td>18 (23.4%)</td>
<td>7 (20.6%)</td>
<td>9 (24.3%)</td>
<td></td>
</tr>
<tr>
<td>1983 – 1990</td>
<td>35 (45.5%)</td>
<td>17 (50.0%)</td>
<td>16 (43.2%)</td>
<td></td>
</tr>
<tr>
<td>1991 and later</td>
<td>8 (10.4%)</td>
<td>4 (11.8%)</td>
<td>4 (10.8%)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>1 (1.3%)</td>
<td>0 (0.0%)</td>
<td>1 (1.3%)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td>11.50</td>
</tr>
<tr>
<td>African*</td>
<td>23 (29.9%)</td>
<td>6 (17.6%)</td>
<td>16 (42.1%)</td>
<td></td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>14 (18.2%)</td>
<td>9 (26.5%)</td>
<td>3 (7.9%)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>14 (18.2%)</td>
<td>5 (14.7%)</td>
<td>8 (21.1%)</td>
<td></td>
</tr>
<tr>
<td>White European</td>
<td>12 (15.6%)</td>
<td>8 (23.5%)</td>
<td>3 (7.9%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>9 (11.7%)</td>
<td>6 (17.6%)</td>
<td>3 (7.9%)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>5 (6.5%)</td>
<td>0 (0.0%)</td>
<td>5 (13.2%)</td>
<td></td>
</tr>
<tr>
<td>Legality of residence</td>
<td></td>
<td></td>
<td></td>
<td>8.09</td>
</tr>
<tr>
<td>Legal</td>
<td>63 (81.8%)</td>
<td>29 (85.3%)</td>
<td>29 (76.3%)</td>
<td></td>
</tr>
<tr>
<td>Undocumented</td>
<td>7 (9.1%)</td>
<td>5 (14.7%)</td>
<td>2 (5.3%)</td>
<td></td>
</tr>
<tr>
<td>Unknown*</td>
<td>7 (9.1%)</td>
<td>0 (0.0%)</td>
<td>7 (18.4%)</td>
<td></td>
</tr>
<tr>
<td>Highest level of education</td>
<td></td>
<td></td>
<td></td>
<td>7.38</td>
</tr>
<tr>
<td>Less than high school</td>
<td>3 (3.9%)</td>
<td>1 (2.9%)</td>
<td>2 (5.3%)</td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>11 (14.3%)</td>
<td>11 (32.4%)</td>
<td>0 (0.0%)</td>
<td></td>
</tr>
<tr>
<td>Technical school</td>
<td>2 (2.6%)</td>
<td>1 (2.9%)</td>
<td>1 (2.6%)</td>
<td></td>
</tr>
<tr>
<td>College</td>
<td>20 (26.0%)</td>
<td>14 (41.2%)</td>
<td>6 (15.8%)</td>
<td></td>
</tr>
<tr>
<td>Postgraduate</td>
<td>4 (5.2%)</td>
<td>3 (8.8%)</td>
<td>1 (2.6%)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>37 (48.1%)</td>
<td>4 (11.8%)</td>
<td>28 (73.7%)</td>
<td></td>
</tr>
<tr>
<td>Profession</td>
<td></td>
<td></td>
<td></td>
<td>12.75</td>
</tr>
<tr>
<td>Unskilled labor</td>
<td>16 (20.8%)</td>
<td>7 (20.6%)</td>
<td>9 (23.7%)</td>
<td></td>
</tr>
<tr>
<td>Skilled labor</td>
<td>4 (5.2%)</td>
<td>2 (5.9%)</td>
<td>2 (5.3%)</td>
<td></td>
</tr>
<tr>
<td>Military and police/security*</td>
<td>9 (11.7%)</td>
<td>8 (23.5%)</td>
<td>0 (0.0%)</td>
<td></td>
</tr>
<tr>
<td>Other*</td>
<td>6 (7.8%)</td>
<td>1 (2.9%)</td>
<td>4 (10.5%)</td>
<td></td>
</tr>
<tr>
<td>No recent profession</td>
<td>14 (18.2%)</td>
<td>11 (32.4%)</td>
<td>3 (7.9%)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>28 (36.4%)</td>
<td>5 (14.7%)</td>
<td>20 (52.6%)</td>
<td></td>
</tr>
<tr>
<td>Asylum Seeker</td>
<td>6 (7.8%)</td>
<td>3 (9.7%)</td>
<td>2 (6.7%)</td>
<td>FET &gt; .999</td>
</tr>
<tr>
<td>Conversion to Islam</td>
<td>26 (33.8%)</td>
<td>16 (47.1%)</td>
<td>8 (21.6%)</td>
<td>FET .027</td>
</tr>
<tr>
<td>Criminal behavior prior to radicalization</td>
<td>31 (40.3%)</td>
<td>19 (55.9%)</td>
<td>10 (26.3%)</td>
<td>FET .016</td>
</tr>
</tbody>
</table>

Notes. FET indicates Fisher’s Exact Test. Totals may not equal 100% due to rounding.

* Indicates the specific categories within which Bonferroni-corrected posthoc comparisons showed that U.S. and European lone actors differed significantly.
### Table 4.2. Summary of TRAP-18 Item Ratings among Full Sample

<table>
<thead>
<tr>
<th>TRAP-18 Items</th>
<th>Frequency of Endorsement n (%)</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td><strong>Warning Behaviors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pathway</td>
<td>63 (81.8%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Fixation</td>
<td>15 (19.5%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Identification</td>
<td>64 (83.1%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Novel Aggression</td>
<td>1 (1.3%)</td>
<td>18 (23.4%)</td>
</tr>
<tr>
<td>Energy Burst</td>
<td>36 (46.8%)</td>
<td>3 (3.9%)</td>
</tr>
<tr>
<td>Leakage</td>
<td>18 (23.4%)</td>
<td>4 (5.2%)</td>
</tr>
<tr>
<td>Last Resort</td>
<td>27 (35.1%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Directly Communicated Threat</td>
<td>4 (5.2%)</td>
<td>6 (7.8%)</td>
</tr>
<tr>
<td><strong>Distal Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Grievance and Moral Outrage</td>
<td>56 (72.7%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Framed by an Ideology</td>
<td>67 (87.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Failure to Affiliate</td>
<td>3 (3.9%)</td>
<td>12 (15.6%)</td>
</tr>
<tr>
<td>Dependence on the Virtual Community</td>
<td>41 (53.2%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Thwarting of Occupational Goals</td>
<td>17 (22.1%)</td>
<td>4 (5.2%)</td>
</tr>
<tr>
<td>Changes in Thinking and Emotion</td>
<td>27 (35.1%)</td>
<td>1 (1.3%)</td>
</tr>
<tr>
<td>Failure of Sexually-Intimate Pair Bonding</td>
<td>7 (9.1%)</td>
<td>18 (23.4%)</td>
</tr>
<tr>
<td>Mental Disorder</td>
<td>34 (44.2%)</td>
<td>1 (1.3%)</td>
</tr>
<tr>
<td>Creativity and Innovation</td>
<td>2 (2.6%)</td>
<td>72 (93.5%)</td>
</tr>
<tr>
<td>Criminal Violence</td>
<td>27 (35.1%)</td>
<td>6 (7.8%)</td>
</tr>
</tbody>
</table>

*Notes. N = 77. $\chi^2$, chi-squared test of distribution of present, absent, and unknown ratings.*
Figure 4.1. Percentage of items rated as present among U.S. and European lone actors.
Figure 4.2. Percentage of Lone Actors given each TRAP-18 Priority Recommendation.
CHAPTER 5

Integrative Review

A key tool in the creation of effective counterterrorism strategy is the development of an empirical foundation to understand the correlates of involvement in terrorist action. The field is grappling with the simultaneous challenges of an abundance of theoretical literature with little empirical support and difficulty in accessing necessary data to validate models, while also attempting to develop risk assessment tools for terrorism (Monahan, 2017). As countries across the globe continue to experience terrorist attacks and prepare for the imminent release from prison of individuals convicted for terrorism-related offenses, the pressure to preserve public safety and national security has led to the implementation of counterterrorism strategy based on factors which are - as of yet - not fully established within the academic literature. As systematic reviews summarizing the evidence base emerge (i.e., Desmarais et al., 2017; Monahan, 2012, 2017; Smith, 2018), the field must now contend with the question of what works and for whom, as it has been shown that no one model accurately describes radicalization across people and groups within different contexts (LaFree & Freilich, 2017). Psychology is poised to make an important contribution to addressing these questions, drawing upon data-driven approaches in social, developmental, and forensic psychology. This dissertation is a first step toward answering the challenges in current approaches raised in Chapter 1, by integrating knowledge and using known-groups comparisons to advance the evidence about heterogeneity across actors and contexts. In the sections that follow, the findings of this dissertation are summarized, implications of this research are discussed, and future directions are recommended.
Summary of Findings

**Aim 1.** In Chapter 2, the extant literature on terrorism is summarized and critiqued, with attention to two outcomes: membership in terrorist organizations and perpetration of terrorist acts. Using a systematic review approach, we screened over 12,000 articles on terrorism, and found 205 that met our inclusion criteria. Results revealed a preponderance of theoretical articles and a small number of empirical articles, of which only six performed statistical comparisons to non-terrorists. Thus, existing knowledge about factors related to participation in terrorist activity is based overwhelmingly on descriptions of the populations of interest and models that have not yet been validated. Although current strategy may be effective, findings show that we do not have evidence to support factors which may aid intelligence analysts in distinguishing potential terrorists from the general population.

As a whole, the body of literature often lacked specificity about the groups, ideologies, or actions to which their models applied. Review of the 50 empirical articles revealed nine factors with some support for an association with terrorist membership or action: age, socioeconomic status, prior arrest, education, employment, relationship status, grievance, geographic location, and type of geographic area. Additionally, factors showing some promise, but needing further investigation (i.e., country of birth, military experience, and income inequality) are also described, as well as factors that do not appear to have any known association with terrorist participation. Findings have implications for the development of terrorism risk assessment frameworks and the factors that should be examined in future studies. Implications for the field of terrorism study include shifting focus to empirical studies and data-driven validation of existing models, in addition to increased specificity about focus and outcomes when describing research with terrorist populations.
**Aim 2.** In Chapter 3, a sample of 405 women involved in jihadism-inspired terrorism is described and statistical matching techniques are used to generate matched samples of women and men involved in terrorism. The samples were drawn from the Western Jihadism Project, a dataset comprised of information drawn from publicly accessible sources on over 6,000 individuals residing in Western countries (United States, Canada, Western Europe, United Kingdom, Australia, and New Zealand) (Klausen, 2019). Results revealed the diversity of characteristics of women involved in jihadist-inspired terrorism: women came from a variety of countries and were of a diverse array of ethnicities. As compared to men, women were more often born in 1990 or later, suggesting more recent, and perhaps increasing, involvement of women in terrorist groups, actions, and foreign fighting. Women were more likely to have no recent employment and less likely to have been involved in criminal activity prior to terrorism, suggesting different pathways into terrorism and differing intervention points.

Examination of terrorism-related outcomes showed that women’s participation in terrorist activity was more organization-based; women were less likely to be involved in terrorism plots but more likely to be involved with at least one terrorist organization. We found no difference in the average number of foreign fighting attempts between women and men; however, women were significantly more often successful on their first foreign fighting attempt. Implications of this finding are that counterterrorism practices are less effective at preventing women’s foreign fighting, due to either different pathways into foreign fighting or a lack of focus on foreign fighting by women. Results broadly show the need for consideration of gender in assessing terrorism risk and designing counterterrorism practice and policy.

**Aim 3.** In Chapter 4, the Terrorist Radicalization Assessment Protocol-18 (TRAP-18) is applied to a sample of lone actors from the United States and Europe. The TRAP-18 is a
structured professional judgement instrument designed for use by threat assessment professionals
to guide decision making about an individual’s risk for engaging in lone actor terrorist violence.
Data on the lone actor terrorists were once again drawn from the Western Jihadism Project.
Results reveal difficulty in completing many items using solely publicly available information:
12 out of 18 items were more often rated as unknown than either present or absent. Further, on
average, nine items were rated as unknown per lone actor. The implications of this finding are
that there may be limited practical utility for many of the TRAP-18 items, and suggest that the
four items which were most often found to be present (i.e., Pathway, Identification, Personal
Grievance and Moral Outrage, and Framed by an Ideology) should be further evaluated.

When comparing the United States to European lone actors, a higher average number of
items were rated as present and a lower average number of items were rated as unknown among
United States-based lone actors. This finding suggests that TRAP-18 items may be more feasible
to code within a United States-based population and that TRAP-18 items are generally more
relevant to U.S. rather than European lone actors. To further explore the nature of this difference,
we tested for differences in the proportion of ratings of present among each sample. Results
showed that two items (i.e., Fixation and Dependence on the Virtual Community) were more
often rated as present for United States-based lone actors. Though many TRAP-18 items are
related to established constructs within terrorism research, all items assess factors at the
individual level, which may fall short when it has been shown that European lone actor terrorists
are often responding to contextual factors, such as dominant narratives of terrorist organizations.

Implications

The series of manuscripts comprising this dissertation contribute to the study of terrorism
by addressing factors related to specific populations of terrorism-involved individuals with
attention to outcomes and contexts. First, this work integrates and analyzes what is known about membership in terrorist organizations and perpetration of terrorist attacks, identifying gaps in knowledge as well as likely and promising correlates of terrorism-involvement (Aim 1). The findings provide an empirical foundation for developing new studies and testing promising risk assessment frameworks, undertaken in the studies comprising Chapters 3 and 4. Second, building upon findings from the first study and recommendations from experts in the field (see Monahan, 2012), factors relevant to a specific subpopulation of terrorist-involved individuals are tested (Aim 2). Using a sample of women involved jihadism-inspired terrorism, characteristics are compared to a matched sample of male peers and differences across multiple outcomes (i.e., affiliation with a terrorist organization, participation in a terrorist plot, and foreign fighting attempts) are tested. This work also addresses the gap in knowledge concerning women’s participation in terrorism. Third, to address the noted gap regarding specificity of risk factors, an existing risk assessment framework is applied to two populations: European and U.S. lone actors (Aim 3). Findings demonstrate the challenges in completing assessments with publicly accessible information and show that some drivers are unique to the individual’s social and political context via geographic location. Taken together, the results from these studies have implications for 1) understanding who terrorists are and research methods in terrorism and 2) risk assessment of terrorism.

**Understanding Characteristics of Terrorists.** This dissertation approaches the question of who engages in terrorist activity from three distinct perspectives, each providing evidence and implications for advancing the study of terrorism. First, our systematic review revealed that the majority of articles related to membership in terrorist groups and perpetration of terrorist acts lack specificity with regard to the type of group and violent action. This raises questions about
whether the characteristics found apply to 1) all individuals involved in terrorism, 2) only the individuals within a specific terrorist organization, or 3) only to individuals carrying out a certain action or organizational role. This state of the science is limited by the small number of articles reporting empirical results, which were often frequencies or percentages within a known group of terrorism-involved individuals. Only six articles performed comparative analysis. The implications of this work give a broad base of potential correlates of terrorism-involvement from which future studies may base their analyses and also emphasizes the importance of specificity in future research. Future research on characteristics of terrorists should be done with respect to the type of terrorist and type of terrorist action, which should be reported upon in the results. Type of terrorist action is likely to become of increasing importance as we are able to refine our models and evidence base to distinguish between those who engage in nonviolent support-type activities from those who actively carry out violent terrorist action.

As described in the Introduction (Chapter 1), the pipeline of research to practice necessitates the gathering and synthesizing of available research to demonstrate areas of consensus and disagreement across studies (Green et al., 2009). Thus, this work makes an important contribution to the study of terrorism by reporting on likely, promising, and unlikely correlates of terrorism-involvement, as have been established by the field so far. It also shows where improvement is needed, and recommends that research on characteristics of terrorists do so with specificity to the type of terrorist and type of terrorist action under examination. These recommendations are followed in the studies comprising Chapters 3 and 4 of this dissertation.

The second perspective on understanding characteristics of terrorists compares women and men involved in jihadism-inspired terrorism on likely correlates and terrorist outcomes. The findings from this study show that there do appear to be meaningful differences in the
characteristics of women and men involved in terrorism, adding support to the findings from
Chapter 2 while also giving broader implications. As a starting point, this work shows that
women and men should not be grouped together into one category of “terrorist” as doing so may
dilute findings about characteristics and type of action. To demonstrate, our results showed that
women were more often members of terrorist organizations while men were more often engaged
in terrorist plots. Analyzed together, one might see that this group of jihadism-inspired
individuals was joining terrorist organizations and perpetrating terrorist acts, but would not show
who within the sample was taking on each of these actions. Thus, an intervention designed based
solely on the general trend within the group might not be effective for the subpopulations who
are actually engaging in the behaviors on which we wish to intervene.

The third study addresses differences in characteristics of lone actors via geographic
region through the use of an existing threat assessment framework. From this perspective, the
study tests whether or not the items on the framework perform equally well for lone actors from
different geographic regions. Through two metrics - the total average number of items rated as
present and comparing the proportion rated as present per item across the two samples - we
found that the framework performed better with the United States-based sample than with the
European sample. Analyses comparing the demographics of these two samples showed that this
result was likely not due to any known differences in characteristics, though we did find some
differences in ethnicity, employment, and prior criminal behavior.

**Risk Assessment of Terrorism.** Creating tools with robust reliability and validity for
assessing risk of terrorism would provide similar benefits to those seen within general violence
risk assessment at the primary, secondary, and tertiary levels of prevention. At the primary level,
tools could be used to generally understand risk and help law enforcement gather the information
needed to make a more accurate determination about risk and necessity of intervention. It could further help with the targeting of prevention efforts to vulnerable populations. At the secondary level, deradicalization efforts could be delivered to individuals in ways that intervene upon dynamic risk factors, thus lowering their likelihood of further engagement in terrorist activity. Finally, at the tertiary level, information on likelihood of risk could also help determine risk of reoffending upon release from prison, both lowering costs to the criminal justice system and increasing public safety. At every level, empirically based information on risk can help improve the accuracy of unstructured decision making, which in violence risk assessment was shown to be not much better than chance (Hanson & Morton-Bourgon, 2009; Singh, 2012). For all these reasons, it is crucially important that the field of terrorism research continue conducting studies which can lead to, if not risk factors, validated correlates of terrorist action. As shown in our systematic review (Chapter 2), there does not yet exist the level of evidence necessary to make call any characteristics “risk factors” with confidence.

Results from the study in Chapter 3 demonstrate that correlates and outcomes of terrorist involvement differ for women and men involved in jihadism-inspired terrorism. As has been established within violence risk assessment (see Van Voorhis, Wright, Salisbury, & Bauman, 2010), this work suggests that gender-specificity in risk assessment of terrorism may also improve prediction of risk. Following along from this implication, the differing characteristics of women and men involved in jihadism-inspired terrorism suggests varying intervention points and potentially different drivers of radicalization. Just as risk assessment of terrorism should be responsive to gender, so too should our intervention and deradicalization efforts be gender appropriate. The final implication from the study in Chapter 3 is that our counterterrorism efforts may not be as effective at preventing terrorism-involvement among women, specifically with
respect to foreign fighting and joining terrorist organizations. Since women’s involvement in these types of activities is a relatively new phenomenon, at least when considering women from the West who are engaging in jihadism-inspired terrorist activity, it appears that counterterrorism efforts are not as effective at preventing their involvement in these activities, combined with the possibility that they are taking different pathways to involvement for which prevention efforts have not yet intercepted.

In Chapter 4, an existing risk assessment framework is applied to a sample of jihadism-inspired lone actor terrorists, demonstrating the feasibility of completing the framework with this type of terrorist using only publicly available information. The TRAP-18 is designed to assist intelligence analysts and law enforcement with the organization of information to make a determination about an individual’s risk for lone actor terrorism (Meloy, 2017). Though previous studies have compared item prevalence across lone actors of various ideologies (Meloy & Gill, 2016), our work was the first to assess a sample of solely jihadism-inspired lone actors, providing insight into how well the framework functions with this population. Our findings show difficulty completing assessments using only publicly available information: specifically, only five out of 18 items were feasible to code based on available information. This evidence bolsters the urgency of gaining access to individuals involved in terrorism (see Monahan, 2017), as direct contact with individuals in the population of interest appears to be the only mechanism by which the utility of these items can be established. Results further imply that future risk assessment efforts should consider sociopolitical context in their design; some TRAP-18 items appeared to be more relevant to U.S. than European lone actors, suggesting that the drivers of terrorist action in these two regions may differ. These results contribute to the evidence that a “one-size-fits-all”
approach to assessing risk of terrorism is likely not feasible, and that consideration of context can contribute to more accurate guidance on how to determine risk (LaFree & Freilich, 2017).

**Future Directions**

In the past 20 years the study of terrorism has undergone remarkable advances in both scope and methodology - applying increasing nuanced qualitative and quantitative methods to ever expanding numbers of terrorist organizations and subsamples of the population. The limited access to data on terrorists has necessitated this creativity in methods to answer what would otherwise be unanswerable questions. Next steps in the study of terrorism must continue this tradition of advancement while addressing the primary challenges in the field. Building off of the findings presented in this dissertation, there are three directions which are feasible next steps in advancing the science.

First, future research must endeavor to perform comparisons of terrorism-involved individuals to individuals in the non-terrorist general population. This kind of research is exceptionally rare: performed in only six studies found within our systematic review (Desmarais et al., 2017). Comparisons against the general population are the only way establish characteristics that distinguish individuals involved in terrorism from others in the general population. Take, for example, a widely cited factor: low educational attainment. In an area where completing a college degree is the norm, ceasing education after high school would be considered low educational attainment. On the other hand, in areas where completing high school is rare, this same high school graduate would be considered more highly educated. As such, comparisons to the general population of non-terrorists must be done responsibly, so that comparisons are appropriate for individual’s geographic location and sociohistorical context.
Whenever possible, groups for whom meaningful differences have been established should be tested separately, or should be controlled for in analyses.

Second, the question of the relationship of gender to engagement in terrorist activity is in need of further study. Though we have empirically established that there are differences in women’s and men’s characteristics and type of involvement in terrorism, the mechanism driving these differences remains unclear. Harkening back to the first proposed future research direction, we do not yet have evidence to say what distinguishes women involved in terrorism from women in the general, non-terrorist population. Further, though we observed differences in the type of participation in terrorist activity, whether this distinction is by choice or assignment remains unclear. Are women actively choosing to participate in some types of terrorism-involvement (i.e., organizational support and membership) and not others (i.e., participating in terrorist plots) or are they assigned to the roles seem as a best fit for their abilities? Since terrorist involvement is embedded within changing sociopolitical norms around gender and the acceptability of women’s participation, how might we see this trend evolve over time? The results from Chapter 3 show that women tend to be younger than men involved in jihadism-inspired terrorism, suggesting that women’s involvement is newer and might still be developing.

Third, following along with the potential policy considerations given above, greater collaboration between academics and intelligence analysts opens the door for testing the feasibility of risk assessment tools for terrorism as they would be applied in practice. Looking specifically at the TRAP-18 and conclusions from Chapter 4, there has yet to be a study published reporting on the use of the TRAP-18 by actual intelligence analysts or law enforcement. Drawing from lessons learned in violence risk assessment, the validity of risk assessment tools for terrorism must be assessed when they are administered by both researchers
and practitioners to establish that the tool performs equally well for both groups. In the realm of terrorism, “practitioners” are likely to be intelligence analysts and law enforcement experts in terrorism whose interpretations of items and the data may be influenced by their training and experience in the field. Thus, a critical priority for any tool designed to assist with the assessment of risk should be validation with item data generated by those who would be using the tool in their day-to-day practice of counterterrorism efforts.

**Conclusion**

As demonstrated by our systematic review (Chapter 2), there does not yet exist the evidence base to make conclusive policy recommendations. Yet, our work does demonstrate some potential policy considerations around access to data and dissemination of results. Both Chapters 3 and 4 rely on publicly accessible information, and show the difficulty this data source can pose in reaching conclusions. Our study of the TRAP-18 specifically demonstrates that the type of work needed to be done to validate risk assessment instruments for terrorism is simply not feasible when relying solely on publicly available information. As noted by prominent scholar John Monahan, “studying terrorism without studying terrorists is ultimately a futile enterprise” (2017, p. 530). Though his statement was made in regard to the risk assessment of terrorism, it is undoubtedly necessary to develop a partnership with the intelligence community to facilitate greater access to data and collaboration on the study of terrorism. This sentiment is echoed by terrorism expert, Marc Sageman, who wrote, “We have a system of terrorism research in which intelligence analysts know everything but understand nothing, while academics understand everything but know nothing…. The solution is obvious: we need more productive interactions between the two communities” (2014, p. 576).
There are two avenues through which this partnership could be strengthened: first, policy around sharing of classified information could be modified to allow researchers access to cases that are no longer active and that would not compromise public safety or national security to be reported on either in the aggregate or de-identified. A second avenue is to prioritize funding for and facilitate of primary data collection efforts by researchers in this area. This approach would be best paired with allowing researchers access to currently incarcerated terrorists within the United States (Monahan, 2017). Along with establishing this stronger evidence base, mechanisms for integration and dissemination of research should also be prioritized. This could take the form of increased funding for dissemination of research to the intelligence community, placing greater emphasis on collaborative efforts between academics and intelligence analysts, and supporting the pipeline of research to practice. Strengthening existing partnerships and creating new collaborations between these communities and policymakers is a first step towards counterterrorism policy that is both practical and empirically supported.
REFERENCES

Chapters 1 & 5


Parker, T., & Sitter, N. (2016). The four horsemen of terrorism: It’s not waves, it’s strains. 
*Terrorism and Political Violence, 28*(2), 197–216.
https://doi.org/10.1080/09546553.2015.1112277

237–251. doi: 10.1108/14636641211283057

*Attacking Terrorism: Elements of a Grand Strategy* (pp. 46–73). Washington, DC:
Georgetown University Press.


& Terrorism, 30*(2), 97–112. https://doi.org/10.1080/10576100601101042

*Terrorism, Identity and Legitimacy: The Four Waves theory and political violence*. New 

Singh, J. P. (2012). The history, development, and testing of forensic risk assessment tools. In E. 
L. Grigorenko (Ed.), *Handbook of Juvenile Forensic Psychology and Psychiatry* (pp. 

Smith, A. G. (2018). *Risk factors and indicators associated with radicalization to terrorism in 
the United States: What research sponsored by the National Institute of Justice tells us.* 
Retrieved from National Institute of Justice website:
https://www.hsdl.org/?abstract&did=

APPENDIX

**Study-Specific Coding Notes for the TRAP-18 Items**

<table>
<thead>
<tr>
<th>TRAP-18 Item</th>
<th>Coding Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warning Behaviors</strong></td>
<td></td>
</tr>
<tr>
<td>Pathway</td>
<td>Rating as present requires evidence of premeditation or impending action; can take the form of written materials, threats, outlining routes, establishing where and when the attack will take place. May be rated as present even if the attack does not take place.</td>
</tr>
<tr>
<td>Fixation</td>
<td>Rating as present requires a clear link between preoccupation and deterioration.</td>
</tr>
<tr>
<td>Identification</td>
<td>Can rate as present for a close association with weapons (i.e., stockpiling, collecting, building, or naming weapons). It is not sufficient simply to buy several weapons for an attack. May be rated as present when support for an extremist organization or cause is publicly declared or explicitly supported by the act.</td>
</tr>
<tr>
<td>Novel Aggression</td>
<td>May be rated as present if there is a violent act in the weeks, days, or months leading up to the attack.</td>
</tr>
<tr>
<td>Energy Burst</td>
<td>Activities months in advance may be considered evidence of presence of Energy Burst if there is a clear link to the plot. Rating as present requires a clear deviation from normal routine of activities. May be rated as present if there is a threat against the target followed by an attack, provided the individual hasn’t previously made threats against the target.</td>
</tr>
<tr>
<td>Leakage</td>
<td>May be rated as present for posting online about the plot and for communication with undercover law enforcement, provided the lone actor does not know they are law enforcement. Communicating plans to others involved in the plot is not the presence of Leakage. Usually rated as unknown because not enough is known about outside contacts.</td>
</tr>
<tr>
<td>Last Resort</td>
<td>Rating as present requires clear last resort mentality or violent action imperative, usually in the form of beliefs that compel the person to commit a violent act.</td>
</tr>
<tr>
<td>Directly Communicated Threat</td>
<td>Must be communicated to the target or law enforcement. Communication to undercover law enforcement does not qualify.</td>
</tr>
</tbody>
</table>

Full definitions for each item can be found in the TRAP-18 user manual (Meloy, 2017).
### Distal Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Grievance and Moral Outrage</td>
<td>May be rated as present for any grievance/outrage, does not require clear link to the plot. Name calling (i.e., “infidel”) is not sufficient to rate as present, must be connected to a specific grievance. May be rated as present for individuals showing that they are distressed by harm that has been caused to themselves or their communities.</td>
</tr>
<tr>
<td>Framed by an Ideology</td>
<td>May not be rated as present solely for expressing support for a jihadist group or possession of jihadist materials. Marking present requires evidence that they espouse the ideology/beliefs that justify their action.</td>
</tr>
<tr>
<td>Failure to Affiliate with an Extremist or Other Group</td>
<td>Mark as absent (1) if the individual has never attempted to affiliate with a group or (2) has been successful in their attempts to join groups. Attempts to join gangs or autonomous cells may be considered.</td>
</tr>
<tr>
<td>Dependence on the Virtual Community</td>
<td>May be rated as present for accessing online resources or computer programs related to extremism, including social media use. Rated as unknown if computer or social media use is not mentioned or if it is unclear where or how extremist materials were obtained.</td>
</tr>
<tr>
<td>Thwarting of Occupational Goals</td>
<td>To rate as present, evidence of a setback must be paired with evidence of what the person wanted to achieve. For example, a person came to the United Kingdom to look for work, but was currently unemployed.</td>
</tr>
<tr>
<td>Changes in Thinking and Emotion</td>
<td>Rated based upon direct quotes or information from close associates. Conversion alone is not sufficient to rate as present.</td>
</tr>
<tr>
<td>Failure of Sexually-Intimate Pair Bonding</td>
<td>Rated as absent if there was any evidence of long-term relationships, even if those relationships did not work out. Rating as present required explicit evidence of serial relationship failures; in many cases this information was too personal to be public and was rated as unknown. Rated as present for compulsive use of pornography or sex addition.</td>
</tr>
<tr>
<td>Mental Disorder</td>
<td>May be rated as present based on clinician diagnoses, evidence given by family, or self-report. Coded as unknown unless the presence or absence of a disorder was explicitly stated. Substance use disorders (i.e., addiction) were rated as present.</td>
</tr>
</tbody>
</table>
Creativity and Innovation  May be rated as present/absent even if the plot is not fully carried out, based on available information about the intended means of attack. Plots involving threats, bombs, and kidnapping are generally not rated as present, unless using a novel means of accomplishing the act.

Criminal Violence  Rated as present if there is evidence of criminal activity before the terrorist activity. The individual does not need to have been arrested or involved in the justice system to rate as present. Differs from novel aggression in that it does not need to take place in the days, weeks, or months leading up to the attack.