

Terrorist or murderer?

On the offender characteristics of lone-actor terrorists and routine homicide offenders in Europe

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Abstract

This Master's thesis seeks to create a better understanding of the phenomenon of lone-actor terrorism in Europe, given the challenges that security practitioners are facing to disrupt such attacks. Lone-actor terrorism will be analysed through a criminological lens by comparing the offender characteristics of lone-actor terrorists to those of routine homicide offenders, and by applying elements of Social Bond Theory to lone-actor terrorism. To date, little is known to what extent the two groups of violent perpetrators are different from each other. Building upon the database of the Countering Lone-Actor Terrorism Project, this research empirically examines the offender characteristics of 136 lone-actor terrorists in the period between 2000-2016. The results are compared to findings from the European Homicide Monitor. Important differences were found between different subgroups of lone-actor terrorists. It was also found that lone-actor terrorists do indeed share similar characteristics with routine homicide offenders, and that a considerable part of the lone-actor terrorists lack strong and meaningful bonds with society. Criminological risk-management strategies may be applied to deal with lone-actor terrorism.

Table of contents

Abstract	2
1. Introduction	5
1.1 Background	5
1.2 Academic relevance	7
1.3 Societal relevance.....	9
1.4 Research question.....	10
1.5 Sub-questions	10
1.6 Thesis outline	10
2. Literature review	12
2.1 Definitions	12
2.2 Potential facilitating factors	14
2.2.1 Gender.....	15
2.2.2 Age.....	15
2.2.3 Social isolation.....	15
2.2.4 Mental disorder.....	16
2.2.5 Family-related issues	16
2.2.6 School and work-related issues.....	17
2.2.7 Previous criminal convictions.....	17
2.2.8 Drug and alcohol abuse.....	17
2.3 Previous empirical studies on lone-actor terrorists	18
2.3.1 Religiously-inspired perpetrators	18
2.3.2 Right-wing perpetrators	19
2.3.3 Left-wing perpetrators.....	20
2.3.4 Ethno-nationalist and separatist perpetrators	21
2.3.5 Single-issue perpetrators.....	21
2.3.6 School attackers	21
2.4 Previous empirical comparisons with routine homicide offenders	23
3. Bridging criminology and lone-actor terrorism	26
3.1 The lack of appropriate theories	26
3.2 Social Bond Theory.....	27
4. Methodology	30
4.1 Working definitions.....	30
4.2 Data sources	31
4.2.1 The Countering Lone-Actor Terrorism project.....	31
4.2.2 Global Terrorism Database	31
4.2.3 News reports.....	31
4.2.4 European Homicide Monitor	32
4.3 Coding	32
4.3.1 Case selection.....	32

4.3.2	<i>Content analysis</i>	33
4.3.3	<i>Operationalization of variables</i>	34
4.4	Missing data	34
4.5	Analyses	35
5.	Analysis	37
5.1	The defining characteristics of lone-actor terrorists	37
5.1.1	<i>Database overview</i>	37
5.1.2	<i>Overall offender characteristics</i>	39
5.1.3	<i>Offender characteristics by ideological motivation</i>	41
5.1.4	<i>Offender characteristics by perpetrator type</i>	47
5.2	The defining characteristics of routine homicide offenders	49
5.3	Comparing lone-actor terrorists with routine homicide offenders	51
5.4	Social Bond Theory and lone-actor terrorism	53
6.	Discussion	57
6.1	Important research findings and policy recommendations	57
6.2	Limitations and research recommendations	61
7.	Reference list	64
	Appendix A – Search terms	70
	Appendix B – Data sources	71

1. Introduction

1.1 Background

Although the use of terrorism is often considered to be a collective activity, perpetrators of terrorist attacks do not necessarily have to belong to a particular group (Gruenewald et al., 2013, p. 1009). Among the most prominent examples of individuals in Europe who operated individually is the Norwegian mass murderer Anders Behring Breivik, who killed 8 people in a bomb attack in Oslo as well as 69 others in a shooting on the Norwegian island of Utøya (Gordon et al., 2015, p. 235). In his manifesto, Breivik expressed his political motivation for his acts, arguing that multiculturalism has undermined national identities in Europe (Beirich, 2013, p. 96). The case of Breivik illustrates the large impact that one individual perpetrator can have on a particular society, even without any direct assistance from other individuals or organisations.

Lone-actor terrorism is currently becoming an increasingly common threat, and it therefore ranks high on the list of security threats that national governments in Europe aim to address (Pavlov, 2015, p. 206). It is perceived to be among the most unpredictable forms of terrorism that European states are facing, as the malicious intentions of the perpetrators are hard to uncover for security authorities (Pavlov, 2015, p. 203). The lack of communication with others about the planned attack, which often characterises lone-actor terrorism, makes it more difficult to detect and intercept these individuals (Phillips, 2015, p. 7).

Although current attention towards lone-actor terrorism is predominantly devoted to the threat posed by unaffiliated, susceptible individuals who are answering calls of jihadist organisations to commit terrorist attacks in Western States (LaFree, 2013, p. 60; United Nations, 2017), religiously-inspired terrorism is certainly not the only type of terrorism. Europol's annual *European Union Terrorism Situation and Trend Report* distinguishes five different terrorism categories, based on the motivation of the perpetrator (Europol, 2016, p. 53). More specifically, these types comprise religiously-inspired, right-wing, left-wing, ethno-nationalist and separatist, and single-issue terrorist attacks (Europol, 2016, p. 44). The prevalence of each type can vary depending on the time and place. However, since a consensus on how to define lone-actor terrorism does not exist (Spaaij & Hamm, 2015, p. 168), the exact number of lone-actor terrorist attacks that occurred in Europe is hard to determine. In spite of the lack of consensus, recent data does suggest an upward trend in the number of lone-actor attacks in Europe (Pavlov, 2015, p. 206). Religiously-inspired and right-

wing terrorist attacks are the two most prevalent types of lone-actor terrorism in Europe (Gill et al., 2014, p. 429). This can partially be explained by the recent international developments. The existence of violent jihadist organisations, along with the substantial number of foreign fighters who have joined the Syrian conflict and pose a risk when returning to their country of residence, have increased the threat of a potential lone-actor terrorist attack in Europe (Bakker & De Roy van Zuijdewijn, 2015, p. 2-3). National governments have taken a number of security measures, such as passport confiscations, to prevent these individuals from travelling to these conflict regions to partake in illegal activities (Bakker et al., 2013, p. 7). The flip side of these preventative measures is that individuals who are not able to reach their destination may instead decide to carry out an attack in the country of residence (ICCT, 2016, p. 15). Furthermore, it is believed that some individuals are susceptible to propaganda material which encourages individuals in Europe to commit lone-actor attacks (United Nations, 2017). Right-wing lone-actor terrorism is also particularly present in Europe (Gill et al., 2014, p. 429). The rise of populist political parties, such as the *Front National* in France, the *Alternative für Deutschland* in Germany, and the *Partij voor de Vrijheid* in the Netherlands, reflects the growing nationalist, racist and anti-immigration sentiments across European states, which can, in turn, lead to right-wing terrorism (Europol, 2016, p. 5).

Contrary to popular belief, however, lone-actor terrorism is not a new phenomenon. Historically, lone-actor terrorists were present during each of the four modern terrorism waves as identified by David Rapoport (2004, p. 47). The “Anarchist Wave”, which started with violence used by the People’s Will party in Russia in the 1880s and spread to other parts of the world, was characterised by assassinations of government officials and other important political targets in order to disrupt societal conventions imposed by central governments, and to foster a revolution (Rapoport, 2004, p. 50). In the second wave that started in the 1920s, the “Anti-Colonial Wave”, local populations sought independence from their colonial power by using force, whereas offenders belonging to the third wave, the “New Left Wave”, aimed to raise awareness and governmental action for social and political issues characterizing the 1960s (Rapoport, 2004, p. 47-48). The current global terrorism wave is referred to as the “Religious Wave”, and is characterised by the use of religiously-motivated violence by organisations and individuals with the aim to end Western influence in other regions of the world and the creation of an Islamic state, governed by the Sharia law (Rapoport, 2004, p. 61-64).

1.2 Academic relevance

The threat posed by lone-actor terrorists requires the creation of an effective risk-management strategy. However, previous research has often concentrated on studying collective terrorism (Gruenewald et al., 2013, p. 1009; Spaaij, 2011, p. 3), while it has been increasingly suggested that attacks committed by unaffiliated individuals may require a different approach (Hamm & Spaaij, 2017, Chapter 1, para. 1). An increased understanding of lone-actor terrorism can contribute to the creation of an effective risk-management strategy regarding lone-actor terrorists (Spaaij & Hamm, 2015, p. 171). To date, however, several considerable knowledge gaps exist in the literature, which hinder the creation of effective countermeasures.

Therefore, the first knowledge gap that this research aims to address is the lack of thorough empirical research on the offender characteristics of lone-actor terrorists in general, as well as of different ideological subgroups (Gruenewald et al., 2013, p. 1011). Indeed, most research on terrorism offenders is not based on empirical data (Chermak et al., 2012, p. 193; LaFree & Dugan, 2009, p. 414). Previous research that has been conducted on the offender characteristics of lone-actor terrorists concluded that a distinguishable profile of these perpetrators has not been found (Gill et al., 2014, p. 431; McCauley & Moskalkenko, 2014, p. 83). Nevertheless, additional empirical research on this subject is required to uncover possible risk-factors for lone-actor terrorism (McCauley & Moskalkenko, 2014, p. 83). In order to gain an increased understanding of lone-actor terrorism in Europe, the Countering Lone-Actor Terrorism (CLAT) project has constructed a database containing information about all lone-actor terrorists that planned and/or committed an attack in Europe in the period between 2000 and 2014 (Ellis et al., 2016a, p. 4). The variables contain information about lone-actor terrorist incidents, the perpetrators and the activities that these perpetrators have done in the preparation phase of the (planned) attack (Ellis et al., 2016a, p. 3). Adding to this study, the current research will expand the CLAT database by including lone-actor terrorist incidents of 2015 and 2016. This allows the researcher to examine the offender characteristics of lone-actor terrorists in Europe thoroughly. Since prior research has furthermore suggested that notable differences may exist between different subgroups of lone-actor terrorists (Gill et al., 2014, p. 434), it is also relevant to distinguish between different subgroups when analysing common patterns among perpetrators. Similar to the CLAT project, in this research Europol's terrorism classification system, which is based on the motivation of the perpetrator, will be used to distinguish between different subgroups (Europol, 2016, p. 53).

A second knowledge gap that will be addressed in this research is to what extent lone-actor terrorists are different from those who commit homicides for non-political motives.

Lone-actor terrorists have rarely been empirically compared to routine homicide offenders, as the former are often considered a distinct category in the literature (Gruenewald & Pridemore, 2012, p. 141). In this research, lone-actor terrorism will therefore be analysed in relation to homicides committed by routine homicide offenders. The main difference between these two groups of violent perpetrators lies in the motivation for the act. Routine homicide offenders are often driven by (inter)personal motives (Ganpat et al., 2011, p. 58), whereas lone-actor terrorists are primarily motivated by a particular belief system or ideology (Meloy & Yakeley, 2014, p. 352). Despite this motivational difference, it may be possible that lone-actor terrorists share similar characteristics with routine homicide offenders. In the case of both lone-actor terrorism and homicide offending, few offenders are directly involved in the violent offence. One of the key characteristics of lone-actor terrorism is that the (threat of) violence was planned and/or executed by an individual or a small, isolated cell (Spaaij & Hamm, 2015, p. 169). Similarly, in the majority of routine homicides only one perpetrator was involved (Ganpat et al., 2011, p. 44; Gruenewald, 2011, p. 187). Besides the number of perpetrators, it can be argued that both political violence and personally-motivated violence may be influenced by an individual's past experiences. Political violence committed by lone-actors is, according to Meloy and Yakeley (2014, p. 352) often 'consciously framed by an ideology, or belief system'. However, the violent act would be unconsciously fuelled by perceived feelings of resentment and moral outrage as a result of events that occurred recently or in the more distant past (Meloy & Yakeley, 2014, p. 351-352). It may therefore be valuable to examine the personal characteristics of lone-actor terrorists and compare these findings to those of routine homicide offenders. If the findings suggest that both types of offenders share similar characteristics, risk-management strategies with regard to homicide offenders may be applicable to tackle lone-actor terrorism.

The last knowledge gap that will be addressed in this research concerns the insufficient theoretical contributions to understand engagement in lone-actor terrorism (Corner & Gill, 2015, p. 24; LaFree & Dugan, 2009, p. 413; Spaaij, 2011, p. 4). Theories are relevant as they are designed to make sense of phenomena (Oxford Dictionaries, 2017). Therefore, in order for security practitioners to deal with lone-actor terrorism, it is important to have testable theories. To date, however, few studies in the terrorism literature proposed and/or tested theoretical explanations as to why a small number of individuals or small cells is willing to resort to political violence (Corner & Gill, 2015, p. 24; LaFree & Dugan, 2009, p. 413; Spaaij, 2011, p. 4). In this research, the applicability of Social Bond Theory in relation to lone-actor terrorism will be explored. This theory has been derived from the criminology literature and

may shed on light on the phenomenon of lone-actor terrorism. Criminological theories have rarely been applied to explain lone-actor terrorism, since lone-actor terrorists are often considered as a distinct category of offenders in the literature (Agnew, 2010, p. 131). However, although criminological theories are developed to explain engagement in more common criminal activities, the elements of these theories may be used to analyse lone-actor terrorism as well, since both lone-actor terrorist and routine homicide offenders resort to violence. Additionally, the phenomenon of lone-actor terrorism will be studied from a criminological perspective, as this research explores the supposition that lone-actor terrorists and routine homicide offenders may be relatively similar to each other. Applying elements of Social Bond Theory may offer valuable insights, as the theory analyses the socialisation process of individuals, as well as the connection that an individual has with society (Hirschi, 2002, p. 16). It is assumed that deviant behaviour occurs when an individual's connection with society is weakened. Since lone-actor terrorists use violence to promote change in (part of) the societal structure (Kydd & Walter, 2006, p. 52-53), it can be argued that lone-actor terrorists indeed lack strong social bonds with society. Furthermore, it is believed that the variables in the CLAT database can be used as general indicators to assess the applicability of Social Bond Theory, as it contains relevant information about the perpetrators and their personal circumstances (Ellis et al., 2016a, p. 3).

1.3 Societal relevance

By addressing the above-mentioned knowledge gaps, this research aims to gain more insight into which (combination of) factors can drive individuals to commit an attack, and to what extent these perpetrators are actually different from routine homicide offenders. These insights can contribute to the development of an effective risk-management strategy regarding lone-actor terrorists (Spaaij & Hamm, 2015, p. 171). The rise in the number of lone-actor-style attacks is a cause for concern to European states (Pavlov, 2015, p. 206), since the consequences of such attacks include the loss of human lives as well as potential material damage to public and private properties. The results of the CLAT research indicate that a total number of 449 people were wounded and 195 lost their lives as a result of lone-actor terrorist attacks that happened between 2000 and 2014 (Ellis et al., 2016b, p. 8). Furthermore, the violent and unpredictable aspect characterizing most of these (planned) attacks can result in considerable levels of fear among populations (Euractiv, 2016). As a way to prevent such attacks, efforts are made by European governments to design and implement measures that would help uncover the planned attacks (Ellis et al., 2016a, p. 1). Countermeasures include

increased surveillance practices and data gathering methods (Zedner, 2007, p. 264). According to Phillips (2015, p. 7), the communication and interaction between perpetrators makes it possible for security authorities to disrupt planned attacks. Efforts by security authorities to disrupt communications are therefore more likely to prevent collective terrorism, as these perpetrators are likely to communicate with one another when orchestrating the attack. Generally, collective terrorists experience, according to Phillips (2015, p. 7), particular challenges in developed states due to the strong capacities of their security authorities. The often insufficient communication in the preparation phase of lone-actor terrorists, on the other hand, challenges security authorities to uncover their plans, which may partially explain the presence of lone-actor terrorism (Phillips, 2015, p. 7). To prevent future attacks and their consequences, it is necessary to gain more insight into the background of these perpetrators.

1.4 Research question

Based on the aforementioned knowledge gaps, the following research question will be explored in this research:

What are the defining offender characteristics of (different subgroups of) lone-actor terrorists in Europe, and how do these findings relate to those of routine homicide offenders?

1.5 Sub-questions

- *What are, based on the extended CLAT data, the defining offender characteristics of (different subgroups of) lone-actor terrorists in Europe?*
- *What are the defining offender characteristics of routine homicide offenders in Europe?*
- *What are the similarities and differences between the offender characteristics of lone-actor terrorists and routine homicide offenders?*
- *Can Social Bond Theory offer a potential explanation for lone-actor terrorism?*

1.6 Thesis outline

Before addressing the aforementioned knowledge gaps, chapter 2 first includes a literature review which elaborates on the conceptual issues that arise when defining lone-actor terrorism. Furthermore, the second chapter will discuss a number of potential facilitating factors for engagement in lone-actor terrorism, and will discuss previous empirical research on the offender characteristics of lone-actor terrorists. Lastly, this chapter elaborates on the

previous empirical comparisons between the offender characteristics of lone-actor terrorists and routine homicide offenders. By doing so, the current body of knowledge will be presented, and important gaps in research on this subject will be highlighted. Chapter 3 elaborates on the lack of appropriate theories to explain lone-actor terrorism, and discusses how Social Bond Theory may offer an explanation for engagement in this specific type of violence. In the fourth chapter, the methodological choices of this research and the operationalization of the variables derived from the theoretical framework will be discussed. Chapter 5 discusses the results of this research on the offender characteristics of lone-actor terrorists in general, and divided by ideological motivation and perpetrator type. This chapter furthermore explores the possible differences with routine homicide offenders, as well as the applicability of Social Bond Theory in explaining lone-actor terrorism. In chapter 6, the most important findings of this research and the possible implications of these findings for security practitioners are discussed. This chapter furthermore elaborates on the limitations of this research, and provides several suggestions for future research on this subject.

2. Literature review

2.1 Definitions

Consensus amongst scholars as to how to define ‘lone-actor terrorism’ does not exist (Spaaij & Hamm, 2015, p. 168), which is striking considering the revival of academic interest in terrorism studies in the post-9/11 era (Chermak et al., 2011, p. 192). Different conceptualisations derive from the subjective nature of this phenomenon. The meaning of lone-actor terrorism, and security-issues in general, is dependent on the different perspectives of actors, and hence, considerable variation exists in the literature (Spaaij & Hamm, 2015, p. 168-169). These different conceptualisations are problematic when conducting research, as it makes comparative research on this phenomenon highly difficult (Spaaij & Hamm, 2015, p. 168). By having different conceptualisations of lone-actor terrorism, different inclusion criteria appear, which in turn can lead to divergent case selections and findings across studies (Spaaij & Hamm, 2015, p. 169-170). Since the lack of consensus also makes it problematic to build on previous research, a thorough understanding of, in this case, the defining characteristics of lone-actor terrorists is hindered. To illustrate the lack of consistency, the table below provides an overview of several conceptualisations of authors in the lone-actor terrorism literature.

Table 1: Conceptualisations of ‘lone-actor terrorism/terrorists’

Author(s)	Definition
Becker (2014, p. 960)	“Ideologically driven violence, or attempted violence, perpetrated by an individual who plans and executes an attack in the absence of collaboration with other individuals or groups”
Corner and Gill (2015, p. 26)	“Violent and nonviolent behaviors carried out by individuals and isolated dyads who either self-radicalized, or radicalized via a larger organization and then carried out acts external to command and control links.”

Table 1: Continued.

Author(s)	Definition
Gordon et al (2015, p. 234)	“Single individuals acting essentially alone who kill or injure people or inflict significant damage on essential infrastructure at a single instant or over time, or plan to do so, in order to right perceive wrongs, or accomplish political, social, religious, or ideological aims.”
Hamm & Spaaij (2017)	“A lone wolf is not one who conspires with others in an attempt to commit terrorism. The lone wolf is solitary by nature and prefers to act totally alone, although his or her radicalization to action may be spurred by violent media images, incendiary books, manifestos, and fatwas.”
McCauley et al. (2013, p. 4, 6)	“Political violence committed by individuals [...] without assistance or organisational support.”
Phillips (2015, p. 3)	“An individual terrorist who is not directed by a terrorist organization, regardless of inspiration from or minor connections to an organization.”

Although there is no consistent definition of lone-actor terrorism, the definitions often include elements that refer to the “lone” character of the perpetrator(s), the threat or use of political violence, and the absence of direct support and command from a wider network (Spaaij & Hamm, 2015, p. 169). The interpretation of these elements is, however, rather debated (Spaaij & Hamm, 2015, p. 168). Narrowly-defined definitions argue that a lone-actor terrorist attack should be perpetrated by one individual, whereas more broadly defined definitions also include isolated dyadic and triadic cells (Spaaij & Hamm, 2015, p. 169). Although individuals within these small groups do not truly act alone, one can argue that these isolated cells should be classified as lone-actor terrorists, as they operate independently of a wider network (Gill et al., 2014, p. 426). In addition, these cells can be initiated by one individual for the purpose of committing the planned attack (Gill et al., 2014, p. 426).

A lack of consensus also arises with regard to the inclusion of cases with links to a wider network (Phillips, 2015, p. 2-3). Some conceptualisations exclude cases in which the perpetrator (or small cell) had links with terrorist organisations or radicalised individuals (Phillips, 2015, p. 3). Others have used a more broadly defined definition and argue that it is rather the lack of direction that determines whether an act can be classified as lone-actor terrorism (Corner & Gill, 2015, p. 26). This broader notion also includes those individuals who are inspired by certain extremist organisations or even claim to act on behalf of that organisation (Gruenewald et al., 2013, p. 1008-1009). In this view, it is possible for lone-actor terrorists to have links to an extremist organisation, on the condition that direct influence from this organisation is absent.

Despite the above-mentioned conceptual issues, attempts have been made in recent years to identify common patterns and key characteristics of these perpetrators (Spaaij & Hamm, 2015, p. 167). Examining offender characteristics of (various subgroups of) lone-actor terrorists should contribute towards a comprehensive understanding of this phenomenon. Before discussing previous empirical research on the offender characteristics, the following section will first discuss the relevance of some frequently researched variables in previous research on lone-actor terrorists. These variables have been derived from the literature as potential risk factors for engagement in lone-actor terrorism (Gill et al., 2014, p. 426).

2.2 Potential facilitating factors

Previous research has concluded that a specific profile of the lone-actor terrorist has not been found (De Roy van Zuijdewijn & Bakker, 2016, p. 44; Gill et al., 2014, p. 433; McCauley & Moskalenko, 2014, p. 83). Empirical findings indicate that lone-actor terrorists are not distinctively different from people who did not resort to extreme violence. Others, on the other hand, argue that ‘the opinion that terrorists do not have a common psychological profiles rests on the absence of research rather than on direct findings’ (Corner et al., 2016, p. 2). Since there is currently a lack of empirical data and comparative research on this topic, it is not yet possible to conclude that such a profile does not exist.

Therefore, as argued by McCauley and Moskalenko (2014, p. 83), it may be possible to create a profile for potential lone-actor terrorists. It is generally agreed upon that extreme violence is the product of a combination of both personal and situational factors (Brookman, 2005, p. 98; Hamm & Spaaij, 2017). It is, therefore, possible to look for common patterns in data to identify potential facilitating factors for an individual’s willingness to engage in lone-actor terrorism (McCauley & Moskalenko, 2014, p. 83). However, it is important to stress that

empirical findings are not necessarily generalizable to all lone-actor terrorists, and should therefore not be interpreted in a definite way. The presence of certain factors does not necessarily imply that an individual will engage in lone-actor terrorism. Similarly, the absence of certain facilitating factors does not mean that an individual cannot resort to political violence. It is believed that each person experiences a different combination of internal and external factors which could eventually lead to engagement in lone-actor terrorism (Precht, 2007, p. 83). The reasoning behind the inclusion of certain variables in previous research will now be discussed.

2.2.1 Gender

Biological theorists often hypothesized that higher levels of testosterone are associated with a higher propensity to violent behaviour (Dabbs et al., 1987, p. 279). Although difficult to prove a one-way causal relationship, the idea that testosterone would have a facilitating effect on aggression provides an explanation as to why men are disproportionately represented as perpetrators in crime, as well as in terrorism (Lauritsen et al., 2009, p. 362). When analysing the personal characteristics of lone-actor terrorists, it is therefore relevant to examine the gender of the perpetrators. The expectation for this research is, therefore, that most lone-actor terrorists are male.

2.2.2 Age

It is believed that the likelihood to get involved in non-conventional behaviour generally decreases with age. Biologically, testosterone levels, which are believed to facilitate aggressive behaviour, often decline in a gradual way as men age (Dabbs et al., 1987, p. 279). Sociologically, it is also believed that the incentive for an individual to engage in non-conventional behaviour decreases with age. Social factors, such as having a job and a family, generally lead to an increased level of responsibility, attachment and commitment, which in turn would prevent engagement in deviant behaviour (Hirschi, 2002, p. 16; Sampson et al., 2006, p. 466). For these reasons, the expectation is that the majority of lone-actor terrorists are young adults.

2.2.3 Social isolation

Social isolation has frequently been included in previous research as a possible facilitating factor for lone-actor terrorism (Corner & Gill, 2015, p. 25; Gill et al., 2014, p. 430; Lankford, 2012, p. 262), which seems reasonable considering the “lone” aspect that is associated with this particular type of perpetrators. Feeling socially isolated may lead to feelings of

frustration, despair, and depression, which can in turn lead to a violent outrage (Gill et al., 2014, p. 434). Furthermore, individuals who are socially isolated may not be presented with arguments by other people that challenge their radical thoughts and ideas. Considering this, the expectation is that a considerable part of the lone-actor terrorists feel socially isolated.

2.2.4 Mental disorder

The relationship between the presence of mental disorders and engagement in violence is highly complex, due to the wide range of existing mental disorders and the difficulties in proving direct causation (Corner & Gill, 2015, p. 24). It is often assumed that people who use extreme violence are mentally ill, considering the disproportionate level of violence that is being used in the attack (McCauley et al., 2013, p. 6). Empirical evidence on this possible causal relationship is, however, inconsistent (Corner & Gill, 2015, p. 24). Early research on the relationship between mental disorders and violence demonstrates that the presence of certain mental disorders were associated with an increased propensity for violent behaviour (Corner et al., 2016, p. 1). This assumption became increasingly challenged by scholars who argued instead that terrorists are rational actors. Crenshaw was one of the first scholars who argued that terrorists are acting rationally, as they collectively decide to use terrorism as an instrument to achieve a particular political goal (1981, p. 385). The decision whether or not a terrorist attack should be carried out is the result of a cost-benefit analysis. However, it has been argued that this argument of rationality is particularly valid for collective terrorism rather than for lone-actor terrorism (Corner et al., 2016, p. 2). Research by Corner and Gill (2015, p. 30) has demonstrated that terrorists who are part of a larger organisation are less likely to suffer from a mental disorder compared to individuals who did not receive direct support. Therefore, the expectation for this research is that a significant part of the lone-actor terrorists, and in particular those who operate individually rather than in a small cell, suffer from a mental health disorder.

2.2.5 Family-related issues

The presence of family-related issues could, possibly along with other situational and individual factors, be a facilitating factor for lone-actor terrorism. Family-related issues include parental separation, issues with violent or successful siblings, experienced violence and low parental involvement (O'Brien et al., 2013, p. 421). These events and experiences could have a negative effect on an individual's development. Additionally, the absence of strong family ties is believed to increase the probability of engaging in crime (Durkin et al.,

1999, p. 451-452; Wright et al., 2001, p. 325). Family-related issues could therefore be present in a considerable part of the lone-actor terrorists.

2.2.6 Work and school-related issues

Similar to family problems, a wide range of school or work-related problems exist which could facilitate an individual's propensity to violence (Lankford, 2012, p. 257). School-related issues include bullying, absence or bad relationships with teachers or peers, and low academic performances (O'Brien et al., 2013, p. 421). Work-related issues include bad relationships with colleagues or supervisors, work-related stressors, long-term unemployment, or recent dismissal (Lankford, 2012, p. 270). Work and school-related issues could facilitate violence, as these occupations give individuals a sense of purpose (Lankford, 2012, p. 257). It is therefore expected that a large number of lone-actor terrorists experienced work or school-related issues.

2.2.7 Previous criminal convictions

Some researchers have attempted to analyse whether or not lone-actor terrorists had been convicted for other criminal offenses before the (planned) attack (Gill et al., 2014, p. 428). From a criminal careers perspective, it can be argued that an ideologically-motivated attack can eventually be carried out as part of an individual's criminal career (Gill et al., 2014, p. 435). Furthermore, the notion that some individuals (self)radicalise during their time in prison is worthwhile to mention (Gill et al., 2014, p. 428). This research will, therefore, also take a look at the previous engagement in criminal behaviour of lone-actor terrorists. It is expected that a significant part of these perpetrators did resort to crime before.

2.2.8 Drug and alcohol abuse

Drug and alcohol abuse have been included in some research as a potential facilitating factor (Gruenewald et al., 2013, p. 1016; McCauley et al., 2013, p. 13), as the consumption of these substances have an effect on an individual's biological functioning (Brookman, 2005, p. 69). Although it is difficult to prove direct causation (Brookman, 2005, p. 70), drug and alcohol abuse are believed to facilitate aggressive behaviour, as these substances have an effect on a person's cognitive processes and lead to a decreasing sense of values (Fagan, 1990, p. 299). For this reason, it is also expected that part of the lone-actor terrorists either abused alcohol or drugs in their life.

2.3 Previous empirical studies on lone-actor terrorists

The overall findings of previous research on lone-actor terrorists indicate that the large majority of the perpetrators are men, with an average age of approximately 30 years (De Roy van Zuijdewijn & Bakker, 2016, p. 43; Gill et al., 2014, p. 427). In terms of their ideological motivation, the majority of the lone-actor terrorists were either religiously or right-wing inspired (De Roy van Zuijdewijn & Bakker, 2016, p. 43; Gill et al., 2014, p. 429). Furthermore, various research findings suggest that approximately a third of all lone-actor terrorists had a suggested or confirmed mental disorder, and that a significant proportion felt socially isolated before the attack (De Roy van Zuijdewijn & Bakker, 2016, p. 43-44; Gill et al., 2014, p. 428-430).

However, when conducting research on this subject, it is important to distinguish between several subgroups of lone-actor terrorists. In the current literature, politically-inspired perpetrators are often dichotomously classified as either ‘lone-actor terrorist’ or ‘no lone-actor terrorist’ (Gill et al., 2014, p. 425). By doing so, it is suggested that all lone-actor terrorists share similar characteristics, while it is believed that considerable differences exist between these subgroups (Gill et al., 2014, p. 434; De Roy van Zuijdewijn & Bakker, 2016, p. 44). Lone-actor terrorists are often categorised based on their ideological motivation (Gill et al., 2014, p. 431). This distinction is similar to Europol’s categorisation of terrorism, which will also be used in this research (2016, p. 53). Previous empirical research on the personal characteristics of different subgroups of lone-actor terrorists will now be discussed.

2.3.1 Religiously-inspired perpetrators

Much attention is currently devoted to prevent religiously-inspired terrorism, due to the recent increase in plots and attacks by violent jihadists (Europol, 2016, p. 44). Motivations for this subgroup of perpetrators to use violence include the termination of and retaliation for Western interference in other regions of the world and the creation of a state governed by the Sharia law (Europol, 2016, p. 52-53). Despite the increased focus on jihadist terrorists, few studies have empirically examined the personal characteristics of lone-actor terrorists (LaFree & Dugan, 2009, p. 414). Moreover, the number of religiously-inspired terrorist incidents is particularly low in the United States, which makes empirical research in this country challenging (Miller, 2014, p. 13).

De Roy van Zuijdewijn and Bakker (2016, p. 43) analysed and reported the personal characteristics of 120 lone-actor terrorists in Europe, of which 46 religiously-inspired lone-actor terrorists. The findings are based on data from the CLAT project, which this research

also builds upon. The researchers found that religiously-inspired perpetrators have an average age of 27.3 years (De Roy van Zuijdewijn & Bakker, 2016, p. 43). Besides the mean age, the researchers also analysed the presence of any mental disorders among religiously-inspired perpetrators, and the findings indicate that in 24 per cent of the cases, a mental disorder was indeed present (De Roy van Zuijdewijn & Bakker, 2016, p. 44). Lastly, the researchers found that only 9 per cent of the religiously-inspired lone-actors experienced social isolation (De Roy van Zuijdewijn & Bakker, 2016, p. 44).

In their research on lone-actor terrorists from both Europe and the United States, Gill et al. (2014, p. 431) found that perpetrators who were inspired by an al-Qaeda-related ideology were, on average, 26.7 years old. Approximately 1 out of 4 had been convicted for a criminal offense before, and 1 out of 4 were believed to suffer (or had suffered in the past) from a mental disorder (Gill et al., 2014, p. 431). The results furthermore indicate that 30.8 per cent of these perpetrators were unemployed, whereas 17.3 per cent were student (Gill et al., 2014, p. 431). Less than a third (28.8 per cent) had at least one child (Gill et al., 2014, p. 431).

The abovementioned results suggest that a considerable part of the religiously-inspired lone-actors terrorists lived in social isolation and/or had a mental disorder. Interestingly, too, is the finding that nearly 1 out of 4 religiously-inspired lone-actors had been convicted for a criminal offense. However, the relatively small number of cases that have been analysed in these studies may compromise the generalisability of the findings. Furthermore, little is for instance known about whether these individuals abused any substances or received any training that could be relevant for the attack.

2.3.2 Right-wing perpetrators

Lone-actor terrorist attacks inspired by the right-wing ideology are also among the most commonly occurring attacks in both Europe and the United States, as approximately 35 per cent of all lone-actor terrorist attacks are believed to be right-wing inspired (De Roy van Zuijdewijn & Bakker, 2016, p. 43; Gill et al., 2014, p. 429). Right-wing extremism refers to the use of extreme violence with the aim to create far-right policies and to protect him or herself from a perceived threat to his or her way of life. This threat is often believed to come from a specific religious or ethnic subgroup within society (Gruenewald, 2011, p. 180). Nationalistic, supremacist, anti-immigration and racist sentiments are often present among right-wing terrorists (Europol, 2016, p. 53).

Unsurprisingly, previous research has indicated that right-wing lone-actor terrorists are predominantly White males (Gruenewald et al., 2013, p. 1015). Furthermore, with an average age of 30-35 years, right-wing terrorists were notably older compared to other ideological subgroups (De Roy van Zuijdewijn & Bakker, 2016, p. 43; Gill et al., 2014, p. 431; Gruenewald et al., 2013, p. 1015). In terms of social isolation, the findings by De Roy van Zuijdewijn and Bakker (2016, p. 43-44) indicate that 33 per cent of the right-wing perpetrators felt socially isolated. Noteworthy too, half of the analysed right-wing perpetrators were unemployed, and half had a previous criminal conviction (Gill et al., 2014, p. 431). Gruenewald et al. (2013, p. 1016) found that 55 to 65 per cent of the right-wing perpetrators had been arrested at least once in their life, and that approximately 1 out of 3 had problems with either alcohol or drugs. Lastly, 30 per cent of the right-wing perpetrators had a history of mental illness (Gill et al., 2014, p. 431).

In sum, previous research has shown that right-wing perpetrators are predominantly White males who are, on average, aged between 30 and 35. Some empirical evidence is present on other variables, such as previous criminal convictions, social isolation and the presence of a mental disorder. More empirical evidence is, however, necessary to create a potential profile for right-wing perpetrators. Furthermore, the studies by Gruenewald et al. (2013) and Gill et al. (2014) are partly or completely based on perpetrators from the United States. Less is therefore known about the offender characteristics of right-wing perpetrators in Europe.

2.3.3 Left-wing perpetrators

Left-wing terrorism has been used by individuals as a means to introduce a socialist or communist state structure, as a result of deep dissatisfaction among these people about the domestic political and social situation (Europol, 2016, p. 53). In both absolute and relative terms, cases of extreme violence committed by left-wing inspired lone-actor terrorists occur rarely (Ellis et al., 2016b, p. 11; Gill et al., 2014, p. 429). The issue of (collective) left-wing terrorism was particularly prevalent between the 1960s and 1980s, with the Vietnam War as an important driving force behind this wave of terrorism (Rapoport, 2004, p. 56). Since lone-actor terrorism inspired by left-wing ideology rarely occurs, little is known about the personal characteristics of these perpetrators, and how these findings compare to those of other lone-actor terrorists.

2.3.4 Ethno-nationalist and separatist perpetrators

Ethno-nationalist and separatist-motivated terrorism is used with the aim to create an independent state for a particular group or community. Violence can be used to either promote the creation of a separate state from a larger country, or to promote the unification of a particular group or community with another state (Europol, 2016, p. 53). Similar to left-wing terrorism, however, ethno-nationalist and separatist lone-actor terrorism rarely occurs in Europe (Ellis et al., 2016b, p. 11). This type of terrorism in Europe is often perpetrated by collective terrorist organisations, such as the Kurdistan Worker's Party (PKK) and the Irish Republican Army (IRA) (Europol, 2016, p. 34-35). The low prevalence of lone-actor terrorists who are motivated by the ethno-nationalist and separatist ideology makes it challenging to draw any valid inferences. Consequently, little is known about the personal characteristics of these perpetrators.

2.3.5 Single-issue perpetrators

Rather than using violence to promote a change in the structure of society, single-issue perpetrators are concerned about specific issues. These issues may include animal rights, abortion, homosexuality and the environment (Europol, 2016, p. 53). Due to the low prevalence of single-issue motivated lone-actor terrorists in Europe, it is difficult to make any valid inferences about this particular group of perpetrators. Of the 21 single-issue perpetrators that were analysed in the research by Gill et al. (2014, p. 431), the majority of the perpetrators (71.4 per cent) operated in the United States rather than in Europe. Of the 120 analysed perpetrators in the period between 2000 and 2014, the CLAT classified 6 of these perpetrators as single-issue terrorists (Ellis et al., 2016b, p. 11). Consequently, any of these findings have to be interpreted with caution.

2.3.6 School attackers

The sixth category includes those individuals (or small cells) who have specifically chosen to commit an attack on an educational institution. School-related attacks do often have a large public impact, as people of all social classes can increasingly fear the risk of becoming a direct or indirect victim of such attacks (Burns & Crawford, 2000, p. 147; Muschert, 2007, p. 60). Furthermore, as the attacks occur at school property, many people believe that the violence infiltrates their lives and challenges the social order, and that an attack could occur at any moment (Burns & Crawford, 2000, p. 147). Although perpetrators of school-related attacks are often not classified as terrorists, school attackers do share some important

similarities with lone-actor terrorists (McCauley et al., 2013, p. 6). In most cases, both lone-actor terrorists and school attackers operate individually (McCauley et al., 2013, p. 6). Furthermore, the victims of school attackers as well as lone-actor terrorists are most often chosen for their symbolic significance and do often not know the perpetrator personally (Lankford, 2012, p. 265). Another similarity between the two types of perpetrators is that, as opposed to routine homicide offenders, the violent act is often planned rather than impulsive (McCauley et al., 2013, p. 10). Fourth, it has been argued that school attackers do, similar to lone-actor terrorists, commit their violent act as a result of some perceived grievance (McCauley et al., 2013, p. 10). Grievance among school attackers is often a result of experienced bullying or mistreatment (McCauley et al., 2013, p. 16). Taken together, it can be argued that school-related attacks are at least partly political (Ellis et al., 2016a, p. 5). Relevant school-related plots and attacks will, therefore, together with the five ideological subgroups as classified by Europol (2016, p. 53), be analysed in this research.

The phenomenon of school shootings and attacks has been particularly present in the United States and hence, research on these perpetrators has predominantly used data from the United States (Borum et al., 2010, p. 27). When analysing previous research on school attackers, it becomes apparent that the average perpetrator is approximately 20 years old (De Roy van Zuijdewijn & Bakker, 2016, p. 43; Lankford, 2012, p. 261; McCauley et al., 2013, p. 13). This is considerably lower compared to other subgroups of lone-actor terrorists. Furthermore, the majority of the school attackers are men (Lankford, 2012, p. 261; McCauley et al., 2013, p. 13). With regard to mental disorder, De Roy van Zuijdewijn and Bakker (2016, p. 44) found that in 63 per cent of the cases, an indication of a mental disorder at some point in their lives was present. McCauley et al. (2013, p. 15) found that 78 per cent of the analysed school attackers suffered from a mental disorder. Empirical research also suggests that a significant number of the school attackers felt socially isolated, as both the studies of De Roy van Zuijdewijn and Bakker (2016, p. 44) and Lankford (2012, p. 262) suggest that 75 per cent of the perpetrators experienced social isolation. In his research on four different types of violent offenders in the United States, including school attackers, Lankford (2012) also analysed whether these perpetrators experienced any work or school-related problems. He found that 88 per cent of the school attackers did indeed experience work or-school related problems (Lankford, 2012, p. 262), which seems evident considering the selected location of the attack. It is also worthwhile to mention that 56 per cent of the analysed school attackers experienced some family issues in their lives (Lankford, 2012, p. 262). Lastly, rather than focusing on the presence of school, work and family-related problems, McCauley et al. (2013)

analysed whether school attackers had been convicted for criminal offenses or abused any substances. The researchers found that approximately 1 out of 4 school attackers had a history of substance abuse and has been arrested at least once (McCauley et al., 2013, p. 13).

To conclude, the findings of the aforementioned studies suggest that school attackers may, on some aspects, be notably different compared to other subgroups of lone-actor terrorists. With an average age of approximately 20 years, school attackers were found to be relatively young. Furthermore, the findings that 75 per cent of these perpetrators felt socially isolated and that 63 per cent were believed to suffer from a mental disorder are particularly interesting. However, due to the higher prevalence of school attackers in the United States, less is known about school attackers in Europe.

2.4 Previous empirical comparisons with routine homicide offenders

Empirical comparisons between (different subgroups of) lone-actor terrorists and routine homicide offenders have rarely been made and hence, little is known about the similarities and differences between these two types of violent perpetrators (Gruenewald & Pridemore, 2012, p. 141). Capellan (2011) has analysed the similarities and differences between ideological and non-ideological active shooters between the years 1970 to 2014 in the United States. As argued by Capellan:

“Most ideological active shooter attacks could be considered lone wolf terrorism, as 70 percent of events were motivated by ideological extremism. [...] Seventy-seven percent of ideological shooters had no formal ties to extremist organizations, which means they self-radicalized through Internet forums and other forms of media, such as music, book and magazines.” (2011, p. 407).

When comparing ideological and non-ideological active shooters, both types of perpetrators are predominantly men with an average age of respectively 38 and 34 (Capellan, 2011, p. 403). Whereas 70 per cent of the ideological active shooters are White, this percentage drops to 59.2 per cent for non-ideological active shooters (Capellan, 2011, p. 403). This means that non-ideologically active shooters are relatively more often non-White (e.g. Black, Latino) compared to ideological active shooters. Furthermore, approximately 25 per cent of the ideological and non-ideological active shooters suffered from a confirmed mental disorder, and respectively 67.6 and 53 per cent were unemployed (Capellan, 2011, p. 403). Interestingly, the difference with regard to previous criminal records was found to be

statistically significant, as 1 out of 4 non-ideological active shooters had a criminal record, in contrast to 43.6 per cent of the ideological active shooters (Capellan, 2011, p. 403). Overall, Capellan concluded that the personal characteristics of ideological and non-ideological active shooters are relatively similar (Capellan, 2011, p. 406).

Gruenewald (2011) compared far-right extremists with average homicide offenders in the United States. The two criteria for far-right homicides to be included in the database were that the homicide could be classified as a criminal homicide, and that at least one perpetrator was an official member of a right-wing organisation when committing the homicide (Gruenewald, 2011, p. 185-186). Although not specifically focused on lone-actor terrorists, this research is worthwhile mentioning, as it compares the average age, race and gender of far-right extremists to those of average homicide offenders (Gruenewald, 2011, p. 187). The findings indicate that the dominant age category for both far-right extremists and average homicide offenders is 19-28, and that the vast majority of perpetrators are men (Gruenewald, 2011, p. 191). However, even though men are overrepresented in both categories, there are relatively more women involved in average homicides (10.5 per cent) compared to far-right homicides (2.5 per cent) (Gruenewald, 2011, p. 187). Lastly, the finding that 96.9 per cent of the far-right extremists are White, whereas this percentage drops to 46 per cent for average homicide offenders, was found to be statistically significant (Gruenewald, 2011, p. 191). Overall, the findings suggest that far-right extremists are fairly similar to average homicide offenders with regard to age and gender, and are significantly different with regard to their ethnicity.

Similarly, Gruenewald and Pridemore (2012) have analysed incident characteristics as well as the age, gender and race of both the perpetrators and victims of far-right extremism and routine homicide offending. Although this research is, again, not specifically focused on lone-actor terrorists, the findings indicate that far-right extremists and routine homicide offenders are, on average, approximately 30 years old when committing the homicide (Gruenewald & Pridemore, 2012, p. 152). Besides, homicides committed by far-right extremists are relatively more often committed by men (98 per cent) compared to average homicides (91 per cent). The findings also indicate that a far-right terrorist homicide is significantly more likely than a routine homicide to be committed by a White person (Gruenewald & Pridemore, 2012, p. 152).

In sum, the above-mentioned studies have, to a certain extent, analysed whether the profiles of far-right extremists were distinct from routine or non-ideologically-motivated offenders. These studies have, besides the incident characteristics, also analysed the mean

age, gender, and race of the perpetrators in the United States. Consequently, little is known about other, more detailed offender characteristics, as well as whether any differences exist between perpetrators from Europe and the United States. Furthermore, since both studies included perpetrators who were part of a right-wing movement, the focus of these studies is on right-wing extremism in general rather than on right-wing lone-actor terrorism. Lastly, by comparing far-right extremists to routine homicide offenders, there is a lack of knowledge on how other subgroups of lone-actor terrorists compare to routine homicide offenders.

To overcome these knowledge gaps, this research will first analyse the offender characteristics of lone-actor terrorists in Europe by building on the CLAT database, followed by an analysis of the personal characteristics of the different ideological subgroups. This research will furthermore examine whether any notable differences exist between perpetrators who operated individually and perpetrators who operated in a dyad or triad. Finally, this research will explore how a number of offender characteristics of the analysed lone-actor terrorists compare to those of routine homicide offenders in Europe.

3. Bridging criminology and lone-actor terrorism

3.1 The lack of appropriate theories

In order to understand what drives a small number of individuals (and isolated, small cells) within society to carry out a lone-actor terrorist attack, a theoretical understanding of the phenomenon is required. To date, however, the majority of empirical research on the subject has a descriptive rather than an explanatory nature (Corner & Gill, 2015, p. 24). This is due to the great complexity of the issue. The causes for engagement in lone-actor terrorism are believed to be multi-determined: it is the result of a complex interplay of different factors (Hamm & Spaaij, 2017; Schuurman & Eijkman, 2015, p. 216). Furthermore, the personal circumstances preceding the (planned) attack are believed to be unique to each person (Precht, 2007, p. 83). In spite of this complexity, a theoretical framework is necessary in order to interpret and make sense of empirical findings.

Attempts by terrorism researchers to explain political violence mainly focused on collective terrorism, rather than on lone-actor terrorism (Corner & Gill, 2015, p. 24). These explanations often emphasize the importance of group processes (Crenshaw, 2000, p. 409; Meloy & Yakeley, 2014, p. 348). An increased sense of belonging, and feelings of support from and identification with members of a terrorist group result in increased commitment to that group. Once member of the group, an individual can become further radicalised and can thus be more willing to use extreme force (Crenshaw, 2000, p. 409). Theoretical explanations based on rational choice theory have been offered as well (Crenshaw, 1981; Pape, 2003). The assumption that terrorists (threaten to) use violence when the potential benefits outweigh the costs associated with the attack, has been frequently applied (LaFree & Dugan, 2009, p. 421). It has been argued that, even though the act may not seem rational for the perpetrator him or herself as he or she may die as a result of the attack, the act may be rational at the collective level (Crenshaw, 1981, p. 385). Theories focussing on group processes or rational choice theory are, however, less applicable in explaining attacks committed by lone-actor terrorists, as these perpetrators do not officially belong to a particular group or organisation that directs the attack or provides direct assistance (Spaaij, 2011, p. 4; McCauley et al., 2013, p. 6). Since communication with other people is facilitated by the development of modern technology, it is possible for lone-actor terrorists to have contact with like-minded individuals on the internet. However, as mentioned in the CLAT report: ‘The information gathered overwhelmingly indicates a one-way relationship; reading and sharing relevant news, and

expressing opinions, rather than utilising these [social media] platforms to form connections with other people' (Ellis et al., 2016a, p. 13).

To overcome the rather limited applicability of theoretical explanations for lone-actor terrorism in the terrorism literature, this research will explore whether the criminology literature, which has traditionally focused on explaining more common types of criminal activities, may be relevant in explaining lone-actor terrorism. Similar to terrorism researchers, criminologists are interested in the question as to why a small number of people in society decide to commit unlawful acts (LaFree, 2007, p. 3). In particular with regard to lone-actor terrorism, it seems surprising that the phenomenon has not been examined through a criminological lens, considering that both lone-actor terrorists and routine homicide offenders predominantly operate alone or in a small group (Spaaij & Hamm, 2015, p. 1; Ganpat et al., 2011, p. 44; Gruenewald, 2011, p. 187). Although sometimes adjusted, it has been argued that criminological theories can offer potential explanations for political violence (Agnew, 2010, p. 131; LaFree & Dugan; 2009, p. 427). More specifically, this research explores the applicability of Social Bond Theory in explaining lone-actor terrorism. Before applying this theory to lone-actor terrorism, the following section will first discuss the main elements of Social Bond Theory, as well as why this theory may offer a potential explanation for lone-actor terrorism.

3.2 Social Bond Theory

Social Bond Theory, which has been developed by American criminologist Travis Hirschi, is a social theory that tries to explain criminal behaviour by focussing on people's personal development and how it influences an individual's bond to society (Hirschi, 2002, p. 16). The theory argues that the socialization process and strong interpersonal relationships will deter individuals from engaging in criminal behaviour. When strong and meaningful bonds with people and with society in general are absent or lacking, an individual is more inclined to show deviant behaviour (Hirschi, 2002, p. 16). Hirschi identified four components which influence the bond between an individual and society. These components (which partially overlap) are: attachment, commitment, involvement, and beliefs (Durkin et al., 1999, p. 451).

An individual's attachment includes the interpersonal relations that this person has with others, such as relatives and peers (Durkin et al., 1999, p. 451). Strong interpersonal relations, in particular with one or both parents, would lead to lower risks of engagement in crime, as they would positively shape an individual's affectionate capacity, and social norms and values (Durkin et al., 1999, p. 451-452). The second aspect of social bond theory,

commitment, refers to what extent an individual partakes in, for instance, work and school-related activities (Durkin et al., 1999, p. 452). The higher the desire to achieve certain aspirations in society is, the higher is the individual's commitment and hence, the acceptance of societal norms and principles. It is then less likely for individuals to engage in criminal behaviour, as the opportunity costs are high (Durkin et al., 1999, p. 452). The involvement in either conventional or deviant behaviour is determined by the time that individuals spend on, for instance, school and work-related activities. Involvement in meaningful activities generally prevents an individual from resorting to crime (Durkin et al., 1999, p. 452). The last element of social bond theory, beliefs, refers to the extent to which an individual has accepted the common value system of society, and is also dependent on the attachment and commitment to, and involvement in society (Durkin et al., 1999, p. 452).

Social Bond Theory has thus generally been applied to explain why some individuals in society resort to more common forms of crime. However, the components of Social Bond Theory may be applied to lone-actor terrorism as well, as the theory emphasises the role of the direct environment in which an individual operates (Hirschi, 2002, p. 16). Since it is believed that an individual's willingness to engage in terrorism is a result of both internal and external factors (Precht, 2007, p. 83), analysing the characteristics of the perpetrators as well as their direct environment may offer valuable insights into what drives these individuals. Furthermore, it seems plausible to suggest that lone-actor terrorists do indeed lack strong social bonds with society, as these individuals resort to violence with the aim to encourage societal change (Kydd & Walter, 2006, p. 52-53). The final reason to assess the applicability of Social Bond Theory is that the CLAT variables that are analysed in this research allow the researcher to analyse relevant events, experiences, relationships and other things that might be relevant in the lives of the perpetrators.

Social Bond Theory may therefore offer a potential explanation for lone-actor terrorism. Although little empirical evidence is present with regard to family-related issues amongst lone-actor terrorists, Lankford (2012, p. 262) found in this study that 56 per cent of the school shooters did experience some issues within their family environment. Social Bond Theory stresses the importance of a strong relationship with one or both parents on the social development of an individual, and suggests that low levels of attachment increase the risk for criminal behaviour (Durkin et al, 1999, p. 452). Furthermore, attachment to people other than the individual's parents may also lack. As mentioned previously, empirical research suggests that lone-actor terrorists are relatively often socially isolated (Corner & Gill, 2015, p. 31), which can indicate the lack of attachment among these perpetrators. In this research,

attachment will be measured by analysing whether the perpetrator was socially isolated and had any issues with his or her parents.

With regard to commitment, it may be argued that a significant number of the lone-actor terrorists are not committed to school and/or work, as engagement in meaningful activities generally prevents criminal behaviour. Unsurprisingly, Lankford (2010, p. 262) found that 88 per cent of the school shooters experienced work or school-related problems. Further, Gill et al. (2014, p. 429) found that 40 per cent of the lone-actor terrorists were unemployed, and that a significant part of those individuals were fired a few months prior to the attack. Although more empirical research is required, there are reasons to believe that work and/or school-related problems among lone-actor terrorists are present, which can facilitate deviant behaviour. The absence of commitment to and involvement in meaningful activities may therefore partially explain engagement in lone-actor terrorism. In this research, commitment and involvement will thus be measured by analysing whether the perpetrator had any work-related problems, such as being unemployed, or school-related problems, such as early school leaving.

Finally, the lack or absence of support for the values in society increases the risk of engagement in crime (Durkin et al., 1999, p. 452). It can be argued that lone-actor terrorists oppose at least part of society's values prior to the engagement in deviant behaviour. Although difficult to measure, sympathy and support on social media for radical ideas or groups can be an indicator of an individual's opposition to society's norms and values. Furthermore, measuring the previous criminal history of the perpetrator as well as links to extremist groups can indicate whether the perpetrator supports the societal values. Overall, to assess whether Social Bond Theory may offer a valuable explanation for lone-actor terrorism, a number of general indicators, which measure the presence of these four elements, have been identified. The indicators are also listed in table 2 in the methodology section.

4. Methodology

4.1 Working definitions

The aim of this research is to answer the following research question: *What are the defining offender characteristics of (different subgroups of) lone-actor terrorists in Europe, and how do these findings relate to those of routine homicide offenders?* To analyse the offender characteristics of lone-actor terrorists, this research builds upon the study of the CLAT project (Ellis et al., 2016a). Before all relevant cases were selected, a working definition had to be created. However, as discussed previously, a consistent definition of lone-actor terrorism does not exist (Spaaij & Hamm, 2015, p. 168). Therefore, the working methods and procedures of the CLAT project have been applied in order to ensure consistency. In the CLAT research project, lone-actor terrorism is defined as:

“The threat or use of violence by a single perpetrator (or small cell), not acting out of purely personal-material reasons, with the aim of influencing a wider audience, and who acts without any direct support in the planning, preparation and execution of the attack, and whose decision to act is not directed by any group or other individuals (although possibly inspired by others)” (Ellis et al., 2016a, p. 3).

This definition of lone-actor terrorism is relatively extensive, as it includes isolated cells of two or three perpetrators, in addition to perpetrators who operate individually. Moreover, this definition argues that a case can be classified as lone-actor terrorism when links to terrorist organisations or radicalised individuals are present, but only if the individual (or small cell) did not receive direct support or guidance for the attack.

Since this research compares lone-actor terrorists to routine homicide offenders, it is also necessary to have a definition of the latter group of perpetrators. In this research, a routine homicide offender refers to a person who committed homicide, which is defined by the European Homicide Monitor as: *“An intentional criminal act of violence by one or more human beings resulting in the death of one or more other human beings.”* (Ganpat et al., 2011, p. 32). It is important to note that the EHM definition does not include attempted but failed homicides, involuntary manslaughter, and killings that were committed in justified self-defence (Ganpat et al., 2011, p. 32).

4.2 Data sources

4.2.1 The Countering Lone-Actor Terrorism project

This research builds upon recent work of the Countering Lone-Actor Terrorism (CLAT) project. The CLAT project has recently published its final report which specifically focuses on the issue of lone-actor terrorism in Europe (Ellis et al., 2016a, p. 1). Besides the attack specifics, the political engagement and online behaviour of the perpetrators, and their interactions with public authorities, the project also analysed the offender characteristics of lone-actor perpetrators in Europe (Ellis et al., 2016a, p. 6). With regard to the offender characteristics, the CLAT database includes information on all perpetrators of lone-actor terrorism plots and attacks that were planned and/or carried out in Europe in the period between 2000 and 2014. More specifically, the analysis comprises thirty European countries, the twenty-eight member states of the European Union as well as Norway and Switzerland (Ellis et al., 2016a, p. 4). The developed database includes a wide range of variables with regard to the personal characteristics of the perpetrators, and may offer more insight into which (combination of) factors may result in lone-actor terrorism (Ellis et al., 2016a, p. 19-22).

4.2.2 Global Terrorism Database

In this research, the identification of cases for 2015 and 2016 in Europe has, similarly to the CLAT project, primarily been done using the open-source Global Terrorism Database. This database is one of the few publicly accessible terrorism database and reported both domestic and international incidents that happened worldwide between 1970 and 2015 (Global Terrorism Database, 2016). However, since the Global Terrorism Database does not yet include the terrorism cases of 2016, the planned and committed attacks in 2016 have been identified through web searches only. Additional web searches have been conducted to identify possible cases of 2015 and 2016 which may have been omitted from the database. Web searches, in addition to open-source databases, are believed to be valuable when identifying cases, as these databases may not comprise all relevant incidents (Spaaij & Hamm, 2016, p. 173).

4.2.3 News reports

For each case that has been identified and included in the dataset, various newspaper articles in which the perpetrator(s) of a lone-actor terrorist attack is discussed, were collected and analysed. News reports are useful information sources for this study, since the reports are

available and accessible to the general public and provide relevant information for research on the perpetrators. The information is often obtained from sources within the direct environment of the perpetrator as well as intelligence services and police. In addition, news reports are considered to be useful sources since they provide information that can otherwise be highly difficult to obtain. The perpetrator(s) may be on the run from authorities or may have died in the wake of the attack. The researcher aimed to select 'non-sensational' news sources to ensure objectivity as much as possible. In some cases, less reputable news sources were selected only if these news sources included detailed information about the perpetrator(s) which could not be found elsewhere. In order to find newspaper articles, a wide range of search terms, based on geographical location, attack type, and ideological motivation, were entered in the Google News section. The search terms have been summarised in appendix A.

4.2.4 European Homicide Monitor

Examining the prevalence of homicides in Europe as well as incident and offender characteristics is pivotal to a proper understanding of homicide trends and patterns in this region of the world. However, cross-national comparisons in Europe are difficult to conduct, as definitions of homicide and homicide-related terms are not consistent across countries (Smit et al., 2012, p. 8). Furthermore, national data on homicides are accessible to the public in some, though not all, European countries (Smit et al., 2012, p. 14). In order to overcome the absence of a standardised database which includes comparable homicide data on all European countries, the European Homicide Monitor (EHM) has been established (Ganpat et al., 2011, p. 10). The EHM includes national data on all homicides in the period 2003-2006 for, so far, three European countries: Finland, the Netherlands and Sweden (Ganpat et al., 2011, p. 31). Data on 1,917 homicide offenders are included in the EHM (Ganpat et al., 2011, p. 79).

4.3 Coding

4.3.1 Case selection

Relevant cases, according to the CLAT definition of lone-actor terrorism, were selected on the following six criteria (Ellis et al., 2016a, p. 4):

- (1) Violence, or the threat of violence, must be planned or carried out.
- (2) The perpetrator(s) must be an individual, dyad or triad.
- (3) The perpetrator must act without any direct support in the planning, preparation and execution of the attack.

- (4) The perpetrator's decision to act must not be directed by any group or other individuals.
- (5) The motivation cannot be purely personal-material gain.
- (6) The target of the attack extends beyond those victims who are immediately impacted by the act.

With regard to the inclusion of cases, it is important to note that evidence for each of these six criteria needs to be present for a case to be included in the analysis. In case evidence for the presence of one or multiple criteria is absent or doubtful, a case has not been included, since it cannot be labelled as lone-actor terrorism with certainty (Ellis et al., 2016a, p. 4). Besides, in this research a case can be a planned but intercepted lone-actor attack as well as a committed attack (Ellis et al., 2016a, p. 4). The case selection includes all lone-actor incidents in Europe that meet the inclusion criteria in order to draw valid inferences.

4.3.2 Content analysis

Content analysis is a suitable research technique to collect data about these perpetrators, as it enables researchers to analyse subjects that are not directly observable (Krippendorff, 2004, p. 32). Obviously, in the case of lone-actor terrorism, it is not possible to observe the perpetrator due to the secretive nature of the phenomenon. The perpetrators do not want to be observed and researchers cannot know their plans beforehand. To overcome this, lone-actor cases that happened in the past were analysed instead. By analysing previous cases, this study looked for general patterns and ascribed defining characteristics to this particular group of violent offenders (Krippendorff, 2004, p. 32). When conducting content analysis, researchers strive to promote objectivity and to conduct systematic research on written documents (Berelson, 1952, p. 18). In this way, it is believed that the findings can be generalizable to all lone-actor terrorists in Europe (Krippendorff, 2004, p. 25). The codebook developed by the CLAT project was used to enhance the replicability and hence, the reliability of this research. Data on lone-actor terrorists were obtained from news reports by conducting content analysis. For each perpetrator, data for all variables as described in the CLAT codebook (Ellis et al., 2016a, p. 17-26) were obtained from these news reports and entered into the CLAT database by the researcher.

4.3.3 Operationalization of variables

As discussed in the theoretical framework section, this research explores the applicability of Social Bond Theory to explain engagement in lone-actor terrorism. To assess the relevance of this theory, it is required to operationalize the main elements of this theory. It is necessary to operationalize the concepts of ‘attachment’, ‘commitment/involvement’ and ‘beliefs’ (in the conventional value system of society). It is important to note that it became clear during the literature research that the creation of an exhaustive list of indicators to measure the aforementioned concepts would be challenging. Nevertheless, as far as possible, several general indicators were identified. These indicators are existing variables in the CLAT dataset, and allow the researcher to explore the applicability of Social Bond Theory in explaining lone-actor terrorism. The indicators to measure whether the perpetrators had a lack of social bonds are listed in table 2.

Table 2: Indicators of a lack of social bonds

Attachment:

- Indication of social isolation
- Indication of a noteworthy life event (e.g. early parental death, parental divorce)

Commitment/Involvement:

- Unemployment
- School dropout

Beliefs:

- Reported previous criminal behaviour and/or convictions
 - Links to extremist/violent groups or organisations
 - Expression of radical thoughts, or support for radical organisations, individuals or ideas on the internet
-

4.4 Missing data

When coding, it became apparent that for some variables, the number of observations were, to a greater or lesser extent, missing. An overview of the number of missing values for each variable are listed in table 3. These missing values have been omitted from the analysis. To overcome high numbers of missing values for variables for which information may be

difficult to obtain from news reports, the CLAT created specific variables which would suggest rather than confirm the presence of a specific factor (Ellis et al., 2016a, p. 6).

Table 3: Distribution of missing values

Variables	Lone-actor terrorists (N=136)
Number of perpetrators per event	–
Age	1
Gender	–
Level of education	57
Dropout	74
Employment	31
Military experience	–
Relationship status	64
Children	65
Indication of a successful sibling	–
Indication of a safe space	–
Indication of social isolation	–
Previous criminal conviction	–
Previous physical violence	–
Substance abuse	–
Mental health disorder	–
Clinical diagnosis	85
Received mental health care	86

4.5 Analyses

Since comparing lone-actor terrorists to routine homicide offenders is an unexplored area of research (Gruenewald & Pridemore, 2012, p. 141), this study has a mixed-method research design (Creswell, 1999, p. 455). The overall rationale for choosing a mixed-method research design is that the combination of both quantitative and qualitative data collection and analysis allows to explore the differences and similarities between the offender characteristics of lone-actor terrorists and routine homicide offenders thoroughly. In addition, the qualitative analysis and data allow the researcher to interpret the results (Creswell, 1999, p. 460), as theoretical

explanations for lone-actor terrorism are lacking (Corner & Gill, 2015, p. 24; LaFree & Dugan, 2009, p. 413).

The analysis contains four parts. In the first part, data on lone-actor terrorists who planned and/or committed an attack in Europe between 2000 and 2016 were analysed. Frequency counts for each categorical variable were run in SPSS. For the non-categorical variable 'age', descriptive statistics (minimum, maximum, mean and standard deviation) were generated. These steps were repeated for the analysis of different ideological subgroups and different perpetrator types. Moreover, in order to determine whether the results of the two largest ideological subgroups were statistically significant, a number of 2x2 Pearson's chi-squared (X^2) tests of independence were run. An alpha level of .05 was used for these tests. For the variables for which more than two options were available, the variables were recoded into new, dichotomous variables. For the non-categorical variables 'age', an independent samples T-test was conducted to determine whether the difference in age was statistically significant.

For the second part of the analysis, a general profile of homicide offenders has been constructed by discussing the results of the European Homicide Monitor. These empirical data are necessary in order to compare the personal characteristics of routine homicide offenders to those of lone-actor terrorists and hence, to answer the main research question. The results of the EHM exclude missing values, which ensures data comparability with lone-actor terrorists. In the third section, some of the findings of this research will be compared to those of the European Homicide Monitor, and the similarities and/or differences will be discussed. In the final section, it will be analysed whether or not the research findings with regard to lone-actor terrorists support the assumptions of Social Bond Theory.

5. Analysis

In order to examine the personal characteristics of lone-actor terrorists in Europe, and to compare the findings with those of routine homicide offenders, the analysis is divided into four main sections. Each section will address one of the four formulated sub-questions, and will contribute to addressing the identified knowledge gaps. In the first section, the overall characteristics of 136 perpetrators who planned and/or committed a lone-actor terrorist attack in Europe in the period between 2000 and 2016 are analysed. This section furthermore examines whether any notable differences exist between perpetrators with different ideologies or belief systems, as empirical research on the offender characteristics of different ideological subgroups is lacking (see literature review). In the second section, the offender characteristics of routine homicide offenders in Europe are presented by discussing the results from the European Homicide Monitor (EHM). The results of both groups of perpetrators are then combined and analysed in the third section. The final section assesses whether Social Bond Theory may be a valuable theoretical explanation for lone-actor terrorism.

5.1 The defining characteristics of lone-actor terrorists

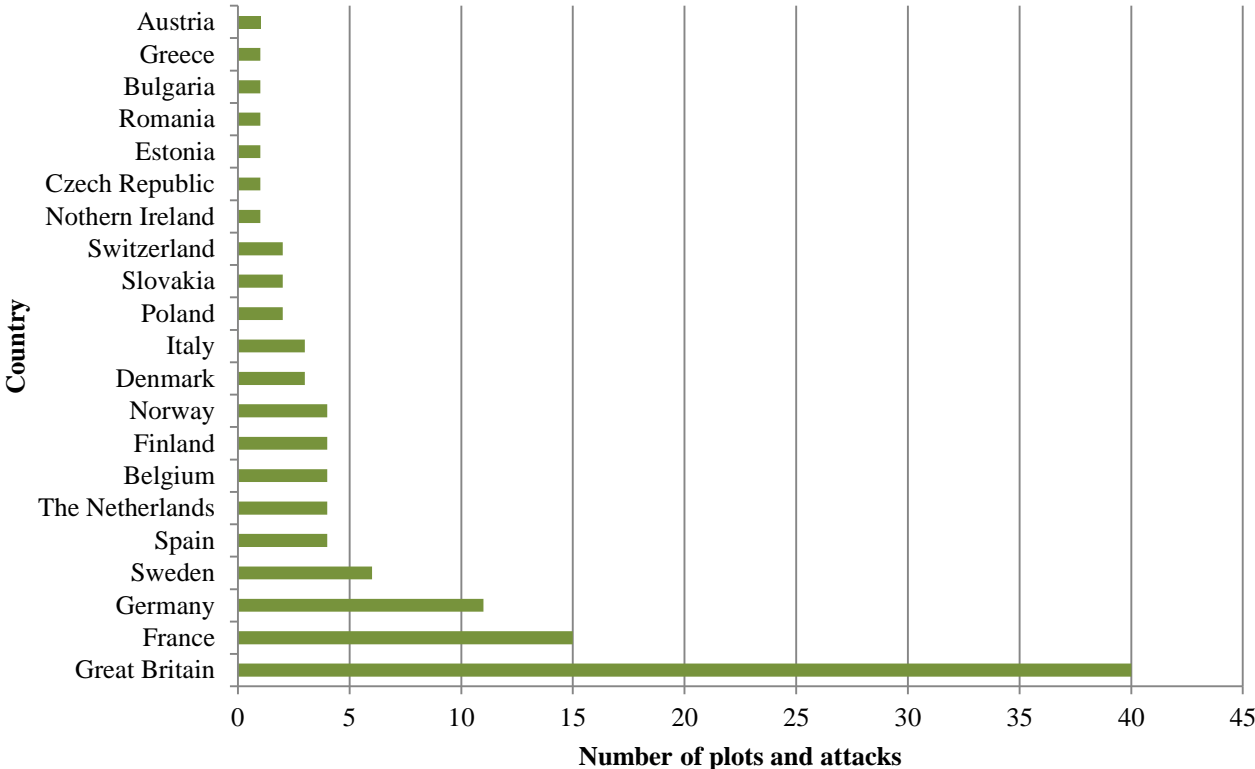
In this section, the following sub-question will be addressed: *What are, based on the extended CLAT data, the defining personal characteristics of (different subgroups of) lone-actor terrorists in Europe?* The database includes a wide range of variables with regard to offender characteristics, as identified by the CLAT project (Ellis et al., 2016a, p. 17-26). Based on the adopted definition, a total number of 136 lone-actor terrorists, who planned and/or committed an attack in one of the 30 European countries between the years 2000 and 2016, were identified and analysed. Since some attacks were planned and/or committed by a small cell of perpetrators (either a dyad or a triad), these 136 perpetrators were responsible for 111 plots and attacks across Europe. First, some general findings will be discussed, followed by the analysis of the personal characteristics of lone-actor terrorists.

5.1.1 Database overview

For the period 2000-2016, a total number of 111 plots and attacks were classified as lone-actor terrorism. The results indicate that the prevalence of lone-actor terrorism highly varies across European countries. The majority of lone-actor plots and attacks in Europe between 2000 and 2016 were concentrated in only three countries: Great-Britain, France, and

Germany, with 40, 15, and 11 plots and attacks respectively. Ten European countries – Croatia, Cyprus, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Portugal, and Slovenia – did not experience any cases of lone-actor terrorism. Figure 1 illustrates the distribution of lone-actor terrorist plots and attacks across those European countries in which at least 1 plot or attack had been identified.

Figure 1: Distribution of lone-actor plots and attacks by country in Europe (2000-2016)



When looking at the ideology of the perpetrators, it appears that the large majority was inspired by either the religious (38.2 per cent) or the right-wing (36 per cent) ideology. This finding is noteworthy, considering the large number of terrorism threat assessments which are predominantly emphasizing the threat posed by religiously-inspired perpetrators (The Guardian, 2016). The third largest category comprises those who are inspired by another ideology as the five described by Europol, as well as those who are inspired by multiple ideologies or belief systems (Ellis et al., 2016a, p. 5). School attackers are included in this subgroup, and comprise 6.6 per cent of the total number of perpetrators. 4.4 per cent of the perpetrators were classified as single-issue perpetrators. A very small proportion of the

perpetrators were either classified as left-wing and anarchist (2.2 per cent) or ethno-nationalist and separatist (1.5 per cent).

5.1.2 Overall offender characteristics

The extended CLAT database includes data on lone-actor terrorists who are responsible for 111 plots and attacks. The majority of these attacks (81.1 per cent) were planned and/or committed by individual perpetrators, whereas 11.7 and 7.2 per cent were planned and/or committed by a dyad or a triad respectively. Of the 136 analysed perpetrators, 95.6 per cent were men, and most perpetrators fall within the 25-39 age category. The average age of the analysed perpetrators appeared to be 29.8 years, with a standard deviation of 10.5. The three youngest perpetrators were 15 and the oldest one was 74 years old. The results furthermore indicate that of the 79 perpetrators for whom data were available, 65.6 per cent attended a secondary educational institution, whereas 35.4 per cent attended a higher educational institution. Nearly 4 out of 10 lone-actor terrorists did, however, not complete their education. When planning or committing the attack, 46.7 per cent of the perpetrators were unemployed, 12.4 per cent were full-time student, and a further 40 per cent were either employed or self-employed. Approximately 18 per cent had some type of military experience or training. With regard to the marital status, 54.2 per cent of the perpetrators were single, 8.3 per cent were in a relationship and nearly 27.8 per cent were married. Only a small percentage of the perpetrators were separated (2.8 per cent) or divorced (6.9 per cent). Although data were available for only 71 perpetrators, nearly 40 per cent of these perpetrators had one or more children. In only 2.9 per cent of the cases, it was believed that the perpetrator had a brother or sister who seemed more successful than him or her. In 28.7 per cent of the cases, there were indications that that the perpetrator had access to a place in which he or she could be alone. For instance, living alone can be an indicator of a safe space (Ellis et al., 2016a, p. 21). Nearly 30 per cent of the lone-actor terrorists felt socially isolated prior to the (planned) attack, and over a third (34.6 per cent) were believed to suffer from some type of mental health disorder. Of the 51 perpetrators for whom data were available, 66.7 per cent of the perpetrators underwent a clinical examination and were diagnosed with a particular mental disorder. 42 per cent of the perpetrators received treated for their mental health disorder. With regard to previous engagement in criminal behaviour, approximately a third (32.4 per cent) of the perpetrators had ever been penalized for a criminal offence, and 30.9 per cent had ever used psychical violence. Lastly, 1 out of 5 perpetrators either abused alcohol or drugs in their life.

Table 4: Characteristics of lone-actor terrorists in Europe (2000-2016)

Characteristics	Lone-actor terrorists (N=136)	
	N	%
Number of perpetrators per event¹		
Individual	90	81.1
Dyad	13	11.7
Triad	8	7.2
Age category		
≤ 17	6	4.4
18-24	46	34.1
25-39	61	45.2
40-64	21	15.6
≥ 65	1	0.7
Mean age	29.8 (SD 10.5)	
Gender (% male)	130	95.6
Education		
Secondary education	51	65.6
Higher education	28	35.4
Dropout		
Yes	24	38.7
No	38	61.3
Employment		
Employed	37	35.2
Self-employed	5	4.8
Full-time student	13	12.4
Unemployed	49	46.7
Retired	1	1
Military experience	24	17.6
Relationship status		
Single	39	54.2
In a relationship	6	8.3
Married	20	27.8
Separated	2	2.8
Divorced	5	6.9
Children		
Yes	28	39.4
No	43	60.6
Indication of a successful sibling	4	2.9
Indication of a safe space	39	28.7
Indication of social isolation	40	29.4
Previous criminal conviction	44	32.4

Table 4: (Continued)

Characteristics	Lone-actor terrorists (N=136)	
	N	%
Previous physical violence	42	30.9
Substance abuse (drugs and/or alcohol)	28	20.6
Indication of a mental health disorder	47	34.6
Clinical diagnosis		
Yes	34	66.7
No	17	33.3
Received mental health care		
Yes	21	42
No	29	58

[†] An event includes both plots and attacks

In short, it appears that lone-actor terrorist attacks are predominantly committed by men aged between 25 and 39, followed by men aged between 18 and 24. Most attacks were planned and/or committed by a single perpetrator (81.1 per cent) rather than by a dyad (11.7 per cent) or triad (7.2 per cent). Nearly half (46.7 per cent) of the lone-actor terrorists were unemployed prior to the attack, and more than half (54.2 per cent) were single. Most lone-actor terrorists went to a secondary educational institution, and nearly 4 out of 10 did not complete their education. Furthermore, in nearly 30 per cent of the cases, indications were present that the perpetrator was socially isolated. Notably, too, 1 out of 3 perpetrators were believed to suffer from a mental health disorder, and 1 out of 4 had been treated for their disorder. Lastly, 1 out of 3 perpetrators were engaged in criminal behaviour before.

5.1.3 Offender characteristics by ideological motivation

As discussed previously, it may also be useful to distinguish between different subgroups of lone-actor terrorists (Gill et al., 2014, p. 434; De Roy van Zuijdewijn & Bakker, 2016, p. 44). Therefore, this section also includes the characteristics of the perpetrators divided by the ideological motivation. Europol (2016, p. 53) has distinguished five ideological subgroups: religiously-inspired, right-wing, left-wing and anarchist, ethno-nationalist and separatist, and single-issue terrorists. Based on the CLAT methodology, this research also includes the category 'other', which includes those perpetrators who are inspired by an ideology other than the ones described by Europol, as well as those who are inspired by multiple ideologies or

belief systems (Ellis et al., 2016a, p. 5). The results of the analysis are presented in table 5. However, due to the very small number of cases classified as either left-wing and anarchist (N=3) or ethno-nationalist and separatist (N=2), no valid inferences can be drawn from this sample, and the results have therefore not been listed in this section. Furthermore, the entire category 'other' has not been included in table 5, as the 24 perpetrators belonging to this category do not share the same ideology or belief system. Instead, the perpetrators who are considered to be school attackers were selected from this category, as the phenomenon of school-related attacks is in many ways similar to lone-actor terrorism (see section 2.3.6 school attackers) (McCauley et al., 2013, p. 6). The results of single-issue terrorists (N=6) and school attackers (N=9) should be interpreted with caution, as the samples are very small as well. The results of the chi-squared tests and independent sample T-test are listed in table 6.

When comparing the results of the different subgroups, some notable differences appeared. Religiously-inspired lone-actors were, on average, 5 years younger compared to those who are inspired by right-wing beliefs. The standard deviation for these two subgroups was found to be 7.5 and 11.9 respectively, which suggests that there is a larger variation in age among right-wing perpetrators. The difference in age between religiously-inspired and right-wing perpetrators was found to be statistically significant ($T=-2.525$, $df=77.789$, $p=.014$) as shown in table 6. School attackers were with an average age of 20.6 the youngest perpetrators. Men are disproportionally represented in lone-actor terrorism, as more than 90 per cent of the perpetrators of all subgroups are male. A chi-squared test could not be conducted to test whether the difference between religiously-inspired and right-wing perpetrators was significant, as the low expected frequency of female perpetrators would affect the accuracy of the result (Howell, 2011, p. 251). However, it is not believed that the variation is statistically significant. Besides, no statistically significant difference was found with regard to the perpetrator type ($X^2=0.09$, $df=1$, $p=.759$). Although some variation exists, the large majority of the perpetrators operated alone, rather than in a dyad or triad. Right-wing perpetrators (75 per cent) were, compared to religiously-inspired perpetrators (62.5 per cent), also more likely to have attended a secondary educational institution. This difference was, however, not found to be statistically significant ($X^2=0.95$, $df=1$, $p=.330$). 55.6 per cent of the school attackers and 33.3 per cent of the single-issue perpetrators have attended a secondary educational institution, although the findings have to be interpreted with caution due to the very small sample sizes. With regard to school dropout, the findings indicate that there is a small difference between religiously-inspired perpetrators (42.9 per cent) and right-wing perpetrators (50 per cent). This difference was not found to be statistically significant

Table 5: Characteristics of lone-actor terrorists by ideological motivation in Europe (2000-2016)

Characteristics	Religiously inspired (N=52)		Right-wing (N=49)		School attackers (N=9)		Single-issue (N=6)	
	N	%	N	%	N	%	N	%
Number of perpetrators per event¹								
Individual	33	78.6	28	75.7	7	87.5	5	83.3
Dyad	6	14.3	4	10.8	1	12.5	0	–
Triad	3	7.1	5	13.5	0	–	1	16.7
Age								
≤ 17	2	3.8	2	4.2	0	–	0	–
18-24	22	42.3	12	25	9	100	0	–
25-39	24	46.2	22	45.8	0	–	4	66.7
40-64	4	7.7	11	22.9	0	–	2	33.3
≥ 65	0	–	1	2.1	0	–	0	–
Mean age	27.1 (SD 7.5)		32.2 (SD 11.9)		20.6 (SD 2.2)		37.5(SD 13.3)	
Gender (% male)	50	96.2	46	93.9	8	88.9	6	100
Education								
Secondary education	15	62.5	21	75	5	55.6	1	33.3
Higher education	9	37.5	7	25	4	44.4	2	66.7
Dropout								
Yes	9	42.9	9	50	2	28.6	2	66.7
No	12	57.1	9	50	5	71.4	1	33.3
Employment								
Employed	15	40.5	17	42.5	0	–	1	25
Self-employed	0	–	2	5	0	–	1	25
Full-time student	2	5.4	5	12.5	2	33.3	0	–
Unemployed	20	54.1	15	37.5	4	66.7	2	50
Retired	0	–	1	2.5	0	–	0	–
Military experience	5	9.6	13	26.5	2	22.2	1	16.7
Relationship status								
Single	11	40.7	10	52.6	8	100	1	20
In a relationship	1	3.7	4	21.1	0	–	1	20
Married	14	51.9	3	15.8	0	–	1	20
Separated	1	3.7	1	5.3	0	–	0	–
Divorced	0	–	1	5.3	0	–	2	40
Children								
Yes	12	42.9	8	44.4	0	–	4	80
No	16	57.1	10	55.6	8	100	1	20
Indication of a successful sibling	2	3.8	2	4.1	0	–	0	–
Indication of a safe space	11	21.2	18	36.7	3	33.3	1	16.7

Table 5: (Continued)

Characteristics	Religiously inspired (N=52)		Right-wing (N=49)		School attackers (N=9)		Single-issue (N=6)	
	N	%	N	%	N	%	N	%
Indication of social isolation	7	13.5	16	32.7	7	77.8	1	16.7
Previous criminal conviction	19	36.5	17	34.7	0	–	2	33.3
Previous physical violence	17	32.7	15	30.6	1	11.1	3	50
Substance abuse (drugs/alcohol)	11	21.2	9	18.4	1	11.1	0	–
Indication of mental disorder	13	25	14	28.6	5	55.6	2	33.3
Clinical diagnosis								
Yes	9	56.3	11	78.6	3	60	1	50
No	7	43.8	3	21.4	2	40	1	50
Received mental health care								
Yes	4	22.2	6	50	3	50	1	33.3
No	14	77.8	6	50	3	50	2	66.7

¹ An event includes both plots and attacks

($X^2=0.20$, $df=1$, $p=.656$). 28.6 per cent of the school attackers and 66.7 per cent of the single-issue perpetrators dropped out of school, although again these findings have to be interpreted with caution. The unemployment rates varied between 37.5 and 66.7 per cent across these four ideological subgroups. These numbers are noteworthy, but the variation between religiously-inspired (54.1 per cent) and right-wing (37.5 per cent) perpetrators was not found to be statistically significant ($X^2=2.12$, $df=1$, $p=.145$). Interestingly, the results suggest that right-wing perpetrators (26.5 per cent) were significantly more likely ($X^2=4.93$, $df=1$, $p=.026$) to have had some kind of military experience or training, compared to religiously-inspired perpetrators (9.6 per cent). For school attackers and single-issue perpetrators, these percentages were 22.2 and 16.7 respectively. Noteworthy too, are the differences between religiously-inspired and right-wing perpetrators regarding the marital status. 51.9 per cent of the religiously-inspired perpetrators were married, whereas this percentage drops to only 15.8 for right-wing perpetrators. This difference was also found to be statistically significant ($X^2=6.23$, $df=1$, $p=.013$). Right-wing perpetrators, on the other hand, were more likely (21.1 per cent) than religiously-inspired perpetrators (3.7 per cent) to be in a relationship. A chi-squared test could not be conducted to measure whether this difference was

Table 6: Chi-square (X^2) tests of independence, and independent T-test (T), religiously-inspired versus right-wing lone-actor terrorists

Characteristics (in %)	Religiously inspired (N=52)	Right-wing (N=49)	X^2	T
Events that involved one perpetrator	78.6	75.7	0.09	
Mean age	27.1	32.2		-2.525*
Gender (% male)	96.2	93.9	–	
Secondary education	62.5	75	0.95	
Dropped out of school	42.9	50	0.20	
Unemployed	54.1	37.5	2.12	
Previous military experience	9.6	26.5	4.93*	
Married	51.9	15.8	6.23*	
Children	42.9	44.4	0.01	
Had a successful sibling	3.8	4.1	0.00	
Had a safe space	21.2	36.7	2.99	
Socially isolated	13.5	32.7	5.28*	
Previous criminal conviction	36.5	34.7	0.04	
Previous physical violence	32.7	30.6	0.05	
Substance abuse (drugs/alcohol)	21.2	18.4	0.12	
Indication of a mental disorder	25	28.6	0.16	
Clinically diagnosed	56.3	78.6	1.67	
Received mental health care	22.2	50	–	

* $p < .05$.

statistically significant, due to the low expected frequencies (Howell, 2011, p. 251). Right-wing perpetrators (52.6 per cent) were found to be single more often compared to religiously-inspired perpetrators (40.7 per cent), whereas the proportion of right-wing and religiously-inspired perpetrators being either separated or divorced were rather similar. Of the 8 school attackers for whom data were available, all perpetrators appeared to be single. The proportion of religiously-inspired (42.9 per cent) and right-wing (44.4 per cent) perpetrators who were parent of at least one child were rather similar, and the difference was not found to be statistically significant ($X^2=0.01$, $df=1$, $p=.916$). Although based on a small sample size, 80

per cent of the analysed single-issue perpetrators were parent of at least one child, whereas none of the school attackers had children. The results furthermore suggest that right-wing perpetrators (36.7 per cent) were more likely than religiously-inspired perpetrators (21.2 per cent) to have a safe space. This difference was, however, not found to be statistically significant ($X^2=2.99$, $df=1$, $p=.084$). Indications of a safe space were present for 33.3 per cent of the school attackers and 16.7 per cent of the single-issue perpetrators. Right-wing perpetrators were also more likely (32.7 per cent) to feel socially isolated compared to religiously-inspired offenders (13.5 per cent). The result of the chi-squared test ($X^2=5.28$, $df=1$, $p=.022$) indicates that this difference is statistically significant. Interestingly, nearly 4 out of 5 school attackers were believed to be socially isolated, which is remarkably higher compared to the other three subgroups. Furthermore, the results indicate that 25 per cent of the religiously-inspired perpetrators and 28.6 per cent of the right-wing perpetrators were believed to suffer from a mental health disorder. This difference was not found to be statistically significant ($X^2=0.16$, $df=1$, $p=.685$). Indications of a mental health disorder were present for more than half (55.6 per cent) of the school attackers and a third of the single-issue perpetrators. 56.3 per cent of the religiously-inspired perpetrators and 78.6 per cent of the right-wing perpetrators were diagnosed with a particular mental disorder. This difference is noteworthy, but not statistically significant ($X^2=1.67$, $df=1$, $p=.196$). A chi-squared test was not conducted to test whether there was a significant difference with regard to the received treatment, as the expected frequency was too low (Howell, 2011, p. 251). Nevertheless, it was found that 50 per cent of the right-wing perpetrators and school attackers did receive treatment for their mental disorder. This percentage drops to 33.3 and 22.2 for single-issue and religiously-inspired perpetrators respectively. Besides the mental state of the perpetrators, approximately 1 out of 3 religiously-inspired, right-wing, and single-issue perpetrators had a previous criminal conviction, whereas none of the school attackers had. Consequently, the difference between religiously-inspired and right-wing perpetrators with regard to previous criminal convictions was not found to be statistically significant ($X^2=0.04$, $df=1$; $p=.847$). The difference between these two groups with regard to previous engagement in physical violence was also not found to be statistically significant ($X^2=0.05$, $df=1$, $p=.822$). Nevertheless, the results indicate that a fairly high number of the religiously-inspired (32.7 per cent) and right-wing (30.6 per cent) perpetrators did engage in physical violence before. The proportion of school attackers and single-issue perpetrators who engaged in physical violence before was 11.1 per cent and 50 per cent respectively. Lastly, the results of religiously-inspired (21.2 per cent) and right-wing (18.4 per cent) perpetrators with regard to substance abuse are fairly

similar, and were therefore not found to be statistically significant ($X^2=0.12$, $df=1$, $p=.725$). 11.1 per cent of the school attackers and none of the single-issue perpetrators were believed to abuse any substances.

In sum, the offender characteristics of religiously-inspired and right-wing perpetrators appeared to be notably different with regard to the average age, type of education, employment status, previous military experience, marital status, indication of a safe space, social isolation, and clinical diagnosis and treatment. Furthermore, the differences with regard to the average age, previous military experience, marital status and social isolation were found to be statistically significant. Although the sample size is very small, the results indicate that the majority of the school attackers (77.8 per cent) operated alone, and that all school attackers fall within the 18-24 age category. None of the school attackers were in a relationship, and a large proportion (77.8 per cent) lived in social isolation. Additionally, more than half of the school attackers (55.6 per cent) were believed to suffer from a mental disorder. Although the results are based on a small sample size, the findings seem to suggest that single-issue perpetrators are, in general, older than perpetrators of other subgroups. Furthermore, 4 out of 5 were parent of at least one child.

5.1.4 Offender characteristics by perpetrator type

In order to know whether any considerable differences exist between individual and small-cell perpetrators, this subsection will discuss the offender characteristics of lone-actor terrorists divided by the number of perpetrators that were directly involved in the plot or attack. The results are shown in table 7, and indicate indeed some considerable differences between perpetrators who operated individually and perpetrators who operated in either a dyad or triad. Perpetrators belonging to a dyad were, on average, 25.4 years old, which made them considerably younger compared to perpetrators who operated individually (31 years) or in a triad (29.4 years). The results furthermore suggest that women were more likely to operate within a small cell, rather than on an individual basis. Only 1.1 per cent of the individual perpetrators were women, whereas for dyads and triads this percentage increased to 8.3 and 13.6 respectively. The results with regard to the educational level are fairly similar for perpetrators operating alone and in dyads, as respectively 61.4 and 53.8 per cent went to a secondary educational institution. Perpetrators operating in triads, on the other hand, all went to a secondary educational institution. Besides, nearly half (49.3 per cent) of the individual perpetrators were unemployed, whereas this was 37.5 and 43.8 per cent for perpetrators

Table 7: Characteristics of lone-actor terrorists by perpetrator type in Europe (2000-2016)

Characteristics	Individual (N=90)		Dyad (N=24)		Triad (N=22)	
	N	%	N	%	N	%
Age						
≤ 17	2	2.2	2	8.3	2	9.1
18-24	28	31.5	12	50	6	27.3
25-39	42	47.2	8	33.3	11	50
40-64	16	18	2	8.3	3	13.6
≥ 65	1	1.1	0	–	0	–
Mean age	31 (SD 11.1)		25.4 (SD 7.9)		29.4 (SD 9.4)	
Gender (% male)	89	98.9	22	91.7	19	86.4
Education						
Secondary education	35	61.4	7	53.8	9	100
Higher education	22	38.6	6	46.2	0	–
Dropout						
Yes	17	37	3	27.3	4	80
No	29	63	8	72.7	1	20
Employment						
Employed	21	28.8	8	50	8	50
Self-employed	5	6.8	0	–	0	–
Full-time student	10	13.7	2	12.5	1	6.3
Unemployed	36	49.3	6	37.5	7	43.8
Retired	1	1.4	0	–	0	–
Reported military experience	18	20	2	8.3	2	18.2
Relationship status						
Single	36	66.7	2	20	1	12.5
In a relationship	2	3.7	1	10	3	37.5
Married	11	20.4	6	60	3	37.5
Separated	1	1.9	0	–	1	12.5
Divorced	4	7.4	1	10	0	–
Children						
Yes	17	37	4	44.4	7	43.8
No	29	63	5	55.6	9	56.3
Indication of a successful sibling	2	2.2	1	4.2	1	4.5
Indication of a safe space	28	31.1	2	8.3	9	40.9
Indication of social isolation	34	37.8	4	16.7	2	9.1
Previous criminal conviction	30	33.3	7	29.2	7	31.8
Previous physical violence	27	30	6	25	9	40.9

Table 7: (Continued)

Characteristics	Individual (N=90)		Dyad (N=24)		Triad (N=22)	
	N	%	N	%	N	%
Substance abuse (drugs/alcohol)	18	20	4	16.7	6	27.3
Indication of mental disorder	37	41.1	6	25	4	18.2
Clinical diagnosis						
Yes	29	70.7	3	75	2	33.3
No	12	29.3	1	25	4	66.7
Received mental health care						
Yes	19	50	1	25	1	12.5
No	19	50	3	75	7	87.5

operating in dyads and triads respectively. A higher proportion of the individual perpetrators were single (66.7 per cent) compared to perpetrators operating in dyads (20 per cent) and triads (12.5 per cent). Perpetrators operating in dyads (60 per cent) and triads (37.5 per cent), on the other hand, were more likely to be married compared to individual perpetrators (20.4 per cent). The proportion of perpetrators who were parent of at least one child was found to be fairly similar across these groups, as it varied between 37 and 44.4 per cent. In line with the researcher's expectations, a higher proportion of the individual perpetrators were socially isolated and were believed to have a mental disorder. The more perpetrators were involved in the plot or attack, the less likely it was for these perpetrator to be socially isolated or to have a mental disorder.

5.2 The defining characteristics of routine homicide offenders

In order to compare the offender characteristics of lone-actor terrorists to those of routine homicide offenders in Europe, it is necessary to have empirical data on the latter group of perpetrators. This section will therefore address the second sub-question: *What are the defining offender characteristics of routine homicide offenders in Europe?* The results of the European Homicide Monitor are listed in table 8, and will now be discussed (Ganpat et al., 2011).

The results indicate that routine homicide offenders predominantly commit homicides alone. Of the 1,415 cases for which data on the number of perpetrators were known, 1,105 cases (78.1 per cent), involved only one victim and one perpetrator, and 42 cases (3 per cent)

involved multiple victims and one perpetrator (Ganpat et al., 2011, p. 44). These results imply that, in total, approximately 81 per cent of the homicides were committed by one perpetrator. In case of multiple perpetrators, 246 cases (17.4 per cent) of the homicides involved one victim and multiple perpetrators, and 22 cases (1.6 per cent) involved multiple victims and multiple perpetrators (Ganpat et al., 2011, p. 44). Thus, according to these data, approximately 19 per cent of the homicides were committed by more than one perpetrator.

Of the 1,714 perpetrators for whom data were available regarding the variable 'gender', it appears that homicide offending is largely male-dominated. Indeed, 9 out of 10 homicides in the analysed countries were carried out by men, whereas 1 out of 10 perpetrators were female (Ganpat et al., 2011, p. 80). The age of homicide offenders varies greatly, as the youngest perpetrator was only 13 years old, while the oldest perpetrator was 85 (Ganpat et al., 2011, p. 81). Of the 1,645 perpetrators for whom data on age were available, the average age was found to be 34.1, with a standard deviation of 12.6. The results of the EHM furthermore suggest that most homicide offenders (42.2 per cent) fall within the 25-39 age category, followed by perpetrators who are aged between 40 and 64 (28 per cent) (Ganpat et al., 2011, p. 81). Approximately 1 out of 4 perpetrators were aged between 18 and 24, nearly 4 per cent were 17 or younger, and only 2.6 per cent were found to be 65 or older (Ganpat et al., 2011, p. 81).

Results with regard to the marital status of the perpetrators only include cases of Sweden and Finland, as data from the Netherlands were missing (Ganpat et al., 2011, p. 86). Of the 699 perpetrators for whom data on the marital status were available, 47.2 per cent of the perpetrators were single, 21.7 per cent were married, and a further 9.7 per cent were in a relationship (Ganpat et al., 2011, p. 86). Nearly 1 out of 5 homicide offenders were living together with their partner without being married (Ganpat et al., 2011, p. 86). To ensure data comparability with lone-actor terrorists, homicide offenders who were in a relationship and perpetrators who were living together without being married are combined in this research, and will hereafter be referred to as 'in a relationship'. Approximately 3 per cent of the perpetrators were divorced, and only 1 perpetrator was widowed (Ganpat et al., 2011, p. 86).

A significant proportion of the homicide offenders in Finland and Sweden were unemployed prior to the incident. Research data on employment were missing for the Netherlands (Ganpat et al., 2011, p. 87). Of the 718 homicide offenders for whom data were available, 47.5 per cent were found to be unemployed (Ganpat et al., 2011, p. 88). In terms of employment, 16.9 per cent of the homicide offenders were considered to be part of the working class, and 5.8 per cent were classified as 'intermediate, managers and professionals'

(Ganpat et al., 2011, p. 87). Combined, 22.7 per cent of the analysed homicide offenders were employed. A small proportion of the homicide offenders were either student (5.7 per cent) or retired (4.3 per cent) prior to the incident (Ganpat et al., 2011, p. 88). Other possible entries include asylum seekers (2.8 per cent), sick-listed, disabled and early retired individuals (14.3 per cent), stay-at-home parents or partners (1.4 per cent) and individuals classified as ‘other’ (1.3 per cent). To ensure data comparability with lone-actor terrorists, these 4 possible entries will be combined and will hereafter be referred to as ‘other’.

5.3 Comparing lone-actor terrorists with routine homicide offenders

In this comparative section, the results derived from the analysis and the literature review will be combined and compared in order to answer the third sub-question: *What are the similarities and differences between the offender characteristics of lone-actor terrorists and routine homicide offenders?* The results are combined and listed in table 8.

When comparing the results, it becomes apparent that the majority of lone-actor terrorists and routine homicide offenders operated individually. Of the analysed lone-actor terrorist events and routine homicide events, 81.1 per cent were planned and/or committed by one perpetrator. There also appeared to be a difference in the age distribution between the two groups. The relative majority of the lone-actor terrorists (45.2 per cent) and routine homicide offenders (42.2 per cent) fall within the 25-39 age category. Also, minor differences exist with regard to the two smallest age categories. It was found that 4.4 per cent of the lone-actor terrorists and 3.8 per cent of the routine homicide offenders were 17 or younger, and 0.7 and 2.6 per cent respectively were 65 or older. The main difference in age distribution between these two groups can be found in the second largest category. For lone-actor terrorists, the second largest age category included perpetrators who are aged between 18 and 24, whereas for routine homicide offenders the second largest age category included those who were aged between 40 and 64. The difference in age distribution is reflected in the mean age, which was found to be 29.8 for lone-actor terrorists and 34.1 for routine homicide offenders. The results furthermore indicate that, although the large majority of offences were committed by men, 10.7 per cent of the homicide offenders were female, whereas this percentage drops to 4.4 for lone-actor terrorists. It is important to note that the EHM includes more possible entries than the CLAT database regarding the perpetrator’s employment status. This resulted in a relatively high number of routine homicide offenders that were classified in the category ‘other’. In spite of this, little variation was found with regard to the unemployment rate, as 46.7 and 47.5 per cent of the lone-actor terrorists and routine homicide offenders respectively

Table 8: Characteristics of lone-actor terrorists and routine homicide offenders in Europe

Characteristics	Lone-actor terrorists (N=136)		Routine homicide offenders (N=1,917)	
	N	%	N	%
Number of perpetrators per event¹				
One perpetrator	90	81.1	1,147	81.1
Multiple perpetrators	21	18.9	268	18.9
Age				
≤ 17	6	4.4	63	3.8
18-24	46	34.1	385	23.4
25-39	61	45.2	694	42.2
40-64	21	15.6	460	28
≥ 65	1	0.7	43	2.6
Mean age	29.8 (SD 10.5)		34.1 (SD 12.6)	
Gender (% male)	130	95.6	1,531	89.3
Employment				
(Self-)employed	42	40	163	22.7
Student	13	12.4	41	5.7
Unemployed	49	46.7	341	47.5
Retired	1	1	31	4.3
Other	0	–	142	19.8
Relationship status				
Single	39	54.2	330	47.2
In a relationship	6	8.3	194	27.8
Married	20	27.8	152	21.7
Divorced	5	6.9	22	3.1
Other	2	2.8	1	0.1

¹ An event includes both plots and attacks

did not have a job. However, lone-actor terrorists (12.4 per cent) were relatively more often than routine homicide offenders (5 per cent) student at the moment of the (planned) attack. Furthermore, 40 per cent of the lone-actor terrorists were found to be employed, whereas this percentage drops to 22.7 per cent for routine homicide offenders. This difference is noteworthy, although it is difficult to interpret these results accurately as not all variables from these two databases are directly comparable. With regard to the marital status, it was found that routine homicide offenders (27.8 per cent) were more often than lone-actor terrorists (8.3 per cent) in a relationship. No major differences were found for the other possible entries. The results indicate that 54.2 per cent of the lone-actor terrorists and 47.2 per cent of the routine homicide offenders were single at the moment of the (planned) attack.

Furthermore, 27.8 per cent of the lone-actor terrorists and 21.7 per cent of the routine homicide offenders were married.

Overall, the two types of perpetrators share some similar characteristics and differ on some of the analysed variables. However, generally speaking, no major differences were found. Routine homicide offenders were, on average, approximately 4 years older than the average lone-actor terrorist. When distinguishing between different subgroups, it appears that routine homicide offenders were, regarding the average age, most similar to right-wing perpetrators, who have an average age of 32.2. The majority of routine homicide offenders and lone-actor terrorists were men and the unemployment rates were found to be similar. Lastly, the percentage of lone-actor terrorist events and routine homicide events that were planned and/or committed by one perpetrator was found to be exactly the same (81.1 per cent).

5.4 Social Bond Theory and lone-actor terrorism

To address the lack of appropriate theoretical explanations for the phenomenon of lone-actor terrorism (Corner & Gill, 2015, p. 24; LaFree & Dugan, 2009, p. 413; Spaaij, 2011, p. 4), this section will now explore whether the assumptions of Social Bond Theory may be applicable to lone-actor terrorists. To do so, the presence of the four elements of Social Bond Theory – attachment, commitment, involvement, and beliefs in conventional values – among lone-actor terrorists will now be examined. A number of general indicators for these concepts have been identified, and are listed in table 2 in the methodology section.

To measure an individual's attachment with parents and peers, this research primarily looked at the presence of social isolation and indications of a noteworthy life event among lone-actor terrorists. The findings suggest that indications of social isolation were present for 29.4 per cent of the lone-actor terrorists. Although based on a small sample size, 77.8 per cent of the school attackers (N=9) were believed to be socially isolated, which suggests the lack of interpersonal relationships with, for instance, peers among school attackers, and to a lesser yet still considerable extent, lone-actors terrorists in general. Furthermore, it is important to note that of the 39 perpetrators who were single at the time of the (planned) attack, 64.1 per cent were believed to be socially isolated. Of the 90 perpetrators who operated individually, 37.8 per cent were believed to be socially isolated. In a few cases (n=11), there were indications of a relevant event that happened in the lives of the perpetrators which could have affected the attachment to one's parents, such as parental death or divorce. These high-impact experiences are believed to be essential in the social development of an individual (Durkin et al., 1999, p.

451-452). In most cases, however, there were no indications of a noteworthy life event which could have affected an individual's relationship with his or her parents. In sum, the presence of social isolation among lone-actor terrorists in particular could suggest the absence of strong relationships and hence, a lack of attachment with other people for a significant part, but not the majority of lone-actor terrorists.

Due to the overlapping definitions, commitment to and involvement in meaningful activities are measured in this research by examining unemployment and school dropout rates among lone-actor terrorists. The absence of employment and/or early school leaving obviously limit the time that an individual spends on meaningful activities, and can therefore limit an individual's aspirations (Durkin et al., 1999, p. 452). This, in turn, leads to lower commitment in meaningful activities, which can result in deviant behaviour. The costs of engaging in deviant behaviour are low when an individual is not engaged in meaningful activities (Durkin et al., 1999, p. 452). The finding that 46.7 per cent of the lone-actor terrorists in Europe were unemployed at the time of the (planned) attack does indeed suggest a lower commitment to and involvement in meaningful activities. Additionally, of the 49 perpetrators who were unemployed, 36.7 per cent were also believed to be socially isolated. Furthermore, it was found that, of the 68 perpetrator for whom data were available, 38.7 per cent did drop out of an educational institution. Although this does not necessarily have to imply that these individuals are not engaged in meaningful activities, dropping out of school is believed to facilitate unemployment and social exclusion (European Commission, 2017). Indeed, of the 24 perpetrators who dropped out of school, 70 per cent were found to be unemployed. In sum, the research findings do suggest that low commitment to and involvement in meaningful activities are present for a considerable part of the perpetrators. Particularly the finding that nearly half of the perpetrators were unemployed might partially explain engagement in lone-actor terrorism.

The final element of Social Bond Theory – beliefs in the conventional value system of society – is dependent on the aforementioned elements (Durkin et al., 1999, p. 452), and is measured by examining previous engagement in criminal behaviour as well as the presence of links to extremist groups, and expressions of radical thoughts, or support for radical groups, individuals or ideas on the internet. With regard to previous engagement in criminal behaviour, the findings of this research indicate that 30.9 per cent of the lone-actor terrorists used physical violence against others, and 32.4 per cent of the perpetrators had been convicted for a criminal offense before the (planned) attack. These results are noteworthy, as engagement in physically violent behaviour and/or other illegal criminal activities suggest the

lack of acceptance of (part of) society's values. Additionally, to measure beliefs in the conventional value system, this research analysed to what extent links to extremist groups were present. It was found that 32.4 per cent of the perpetrators were or had ever been active in extremist groups, which varied from communicating with members of a particular group to attending meetings or demonstrations. Furthermore, 22.6 per cent of the perpetrators had links to an extremist group that either used or supported the use of violence. Examples of violent groups included Al Qaeda, the Dutch *Hofstadgroep*, the National Front party in the United Kingdom and some self-established movements, such as the German Resistance Movement. Lastly, when analysing beliefs, it may also be relevant to analyse a person's online activity. Since modern technology and social media platforms facilitate communication and information-sharing between people, lone-actor terrorists can make use of these facilities to gather information and to express non-conventional thoughts and beliefs (Spaaij, 2011, p. 3). It was found that 46.3 per cent of the perpetrators used the internet to express radical thoughts or beliefs, to consume radical material, or to find relevant information to commit the (planned) attack. Examples included visiting extremist pages on social media platforms and conducting research on how to make an explosive device. These findings suggest that part of the lone-actor terrorists do not hold conventional beliefs, which increases the likelihood of engaging in criminal behaviour (Durkin et al., 1999, p. 452).

Overall, some of the variables that were analysed in this research serve as general indicators to examine the applicability of Social Bond Theory to lone-actor terrorism. The findings suggest that a considerable part of the perpetrators may lack strong bonds with other people as well as with society in general, as 29.4 per cent were believed to be socially isolated and nearly half of the perpetrators (46.7 per cent) were unemployed at the moment of the (planned) attack. Since the unemployment rate is significantly higher compared to the European average of 8 per cent (Eurostat, 2017a), part of these lone-actor terrorists may indeed lack commitment to and involvement in meaningful activities. Statistics of Eurostat (2017b) also reveal that social isolation is less present among average European citizens (7.2 per cent) compared to lone-actor terrorists (29.4 per cent). Although not all perpetrators were socially isolated and/or unemployed, the findings are considerably higher compared to the European averages, and may therefore indicate a lack of attachment and commitment for at least part of the lone-actor terrorists. The school dropout rate among lone-actor terrorists was found to be 38.7 per cent, which is considerably higher compared to the European average of 11 per cent (Eurostat, 2017c). However, this result needs to be interpreted with caution, as the school dropout variable contains a high number of missing values. Lastly, the results of this

research partially support the lack of acceptance of conventional values among lone-actor terrorists, as approximately a third of the lone-actor terrorists had a criminal history. Although no clear European statistics were found, it is believed that this rate is considerably higher than the European average. Furthermore, nearly a third of the lone-actor terrorists had links to extremist groups, and 46.3 per cent used the internet in such a way that the lack of acceptance of conventional beliefs became apparent.

6. Discussion

6.1 Important research findings and policy recommendations

Several knowledge gaps have been explored in this research. First, this research has attempted to address the lack of empirical research on the offender characteristics of (different subgroups of) lone-actor terrorists. The extended CLAT results offer several interesting insights into the phenomenon of lone-actor terrorism, which may have important implications for security practitioners who are dealing with this type of treat.

To start with, the findings of this research indicate that the unemployment rates ranged from 37.5 to 66.7 per cent across the four subgroups, which is notably higher compared to the European average of 8 per cent. This research has argued that perhaps one explanation for these high rates can be found in Social Bond Theory. According to this theory, the absence of employment leads to a lower commitment to and involvement in meaningful activities, which can result in deviant behaviour (Durkin et al., 1999, p. 452). Although we cannot expect unemployment rates to fall to zero in Europe, the results suggest that security practitioners should, in combination with other factors, pay more attention to at-risk individuals who do not have a job. Although it is often assumed that lone-actor terrorist attacks are difficult to intercept, the CLAT findings indicate that a significant part (46 per cent) of the perpetrators revealed their extremist beliefs or attack intentions to others (Ellis et al., 2016a, p. 10-11). It may therefore be possible for security practitioners to uncover the intentions for at least part of the lone-actor terrorists.

Another interesting finding of this research is that 26.5 per cent of the right-wing perpetrators in Europe had some kind of military experience. Furthermore, when compared to religiously-inspired perpetrators, the difference was found to be statistically significant. Approximately 20 per cent of the right-wing perpetrators served the national military. It does not seem surprising that a considerable part of these individuals gained experience in the national military, as nationalist sentiments are often present among right-wing perpetrators (Europol, 2016, p. 53). Moreover, since these individuals received training on how to use a weapon and may have access to weapons and other equipment, it facilitates the planning and executing of an attack. Therefore, the finding that approximately 1 out of 5 right-wing perpetrators served in the military stresses the importance of appropriate assistance and checks before, during, and after an individual has served in the national military in order to tackle lone-actor terrorist attacks by right-wing perpetrators in particular.

It was also found that approximately a third of all lone-actor terrorists were convicted for a criminal offense prior to the (planned) attack. This may suggest that, for these perpetrators, the use of terrorism is part of a sequence of criminal activities and hence, part of an individual's criminal career (DeLisi & Piquero, 2011, p. 289). Therefore, instead of mainly focussing on punishing the guilty, it may be relevant to reduce recidivism rates by engaging these perpetrator into meaningful activities. In the view of Social Bond Theory, engagement in meaningful activities would reduce the likelihood to engage in deviant behaviour (Durkin et al., 1999, p. 452). Besides increasing the costs of engaging in terrorism, prior research has shown that it may be useful to reduce the potential benefits of terrorism by taking away feelings of frustration and resentment (LaFree & Dugan, 2009, p. 416). If these frustrations are not effectively dealt with, these perpetrators may resort to lone-actor terrorism as part of their criminal career.

Although based on a small sample size, school attackers were, compared to the other subgroups, less likely to have a criminal history, but indications of social isolation and mental health disorders were particularly present among these perpetrators. This may be explained by the fact that school attackers most often operated individually, rather than in a dyad or triad. The results of the offender characteristics by perpetrator type (listed in table 7) indicate that individual perpetrators are more likely to be socially isolated and are believed to suffer more from a mental health disorder. It is important to note that many of these school attackers were bullied at school, which is believed to have had a significant impact on these individuals. Since the experienced bullying can facilitate their violent outrage, the importance of bullying awareness and prevention programs is stressed to tackle school-related attacks.

The second knowledge gap that this research aimed to address is to what extent the offender characteristics of lone-actor terrorists are similar to those of routine homicide offenders. Even though both lone-actor terrorists and routine homicide offenders use violence against other human beings and predominantly operate individually, the two types of perpetrators have rarely been empirically compared to each other (Gruenewald & Pridemore, 2012, p. 141). When it is found that these two groups of perpetrators share similar characteristics, risk-management strategies regarding routine homicide offenders may be applied to deal with lone-actor terrorism. This research has analysed the potential similarities and differences between lone-actor terrorists and routine homicide offenders on a number of personal characteristics.

The findings of this research indicate that lone-actor terrorists are, on average, 4.3 years younger than routine homicide offenders. However, this research has shown that

considerable differences exist across different lone-actor terrorist subgroups. When taking these differences into account, routine homicide offenders were most similar to right-wing perpetrators in terms of age, as the difference was found to be less than 2 years. The average routine homicide offender was found to be 7 years older compared to religiously-inspired perpetrators. This may partially be explained by the idea that many religiously-inspired perpetrators are relatively young males who are susceptible to propaganda distributed by jihadist organisations (United Nations, 2017). This propaganda can inspire these individuals to commit a lone-actor-style attack in Europe. Given the location of the attack, it is not surprising that the average routine homicide offender was found to be 13.5 years older compared to school attackers. Since school attackers deliberately choose to attack schools as these locations have an important symbolic significance (Lankford, 2012, p. 265), the perpetrators are found to be relatively young (20.6 years on average). Additionally, the standard deviation of 2.2 indicates that there was little variation in age among school attackers.

The rates regarding the number of perpetrators that were involved per event were found to be identical. The findings indicate that the large majority of the lone-actor events (81.1 per cent) and routine homicide events (81.1 per cent) were planned and/or committed by individual perpetrators, rather than by dyads or triads. This similarity may encourage researchers to combine both types of perpetrators in future empirical research, as both lone-actor terrorists and routine homicide offenders use violence against other individuals and are often driven by personal grievances and (inter)personal motives respectively (Meloy & Yakeley, 2014, p. 351-352).

It was also found that the large majority of lone-actor terrorist attacks and routine homicides were committed by men. Although it is difficult to prove one-way causation, it is believed that testosterone can facilitate aggressive behaviour as well as status-seeking behaviour (Dabbs et al., 1987, p. 279). Since testosterone levels in men peak during their early adult years, young men may be more likely to engage in violence. When compared to lone-actor terrorists, however, it was also found that a larger proportion of the routine homicides were committed by women as well as by perpetrators who fall within the 40-64 age category. This may be explained by prior research findings that routine homicides are often committed as a result of (inter)personal motives between two or more human beings (Ganpat et al., 2011, p. 58). Since many routine homicides are personally-motivated acts rather than planned symbolic attacks against people with whom the perpetrator does not have any

personal connection, it may be more likely that these acts are committed by women and older people, for instance as the result of an argument.

With regard to the employment status of the perpetrators, it is important to note that the results are hard to interpret, as the EHM includes more possible entries than the CLAT database. Consequently, the employment status of approximately 1 out of 5 routine homicide offenders were classified as 'other'. Furthermore, it may be possible that the unemployment rate of lone-actor terrorists decreases if the same possible entries as in the EHM were available. For instance, an individual who does not have a job in order to take care of his or her child would, according to the CLAT codebook, be considered unemployed, whereas this perpetrator would be classified as a 'stay-at-home parent' in the EHM. Although the data are not directly comparable, the results are evident as nearly half of the lone-actor terrorists and routine homicide offenders were unemployed, and do suggest the lack of commitment to and involvement in meaningful activities among both these groups of perpetrators. The findings furthermore suggest that routine homicide offenders do share similar characteristics with lone-actor terrorists, although further research should include more variables to test this assumption.

The third knowledge gap that was explored in this research involves the lack of theoretical explanations for lone-actor terrorism (Corner & Gill, 2015, p. 24; LaFree & Dugan, 2009, p. 413; Spaaij, 2011, p. 4). Since it is important to have testable theories as to why some individuals resort to lone-actor terrorism, this research has explored the applicability of Social Bond Theory by identifying several general indicators which would suggest the lack of social bonds among lone-actor terrorists. The four components of Social Bond Theory include attachment, commitment, involvement, and beliefs in the conventional values of society. The unemployment and dropout rates among these perpetrators could suggest low levels of commitment to and involvement in meaningful activities for a considerable part of these perpetrators. Indications of social isolation were particularly present among lone-actor terrorists who operated individually and who were single at the moment of the (planned) attack. Additionally, the majority of the school attackers were believed to be socially isolated, which could suggest lower levels of attachment among part of these perpetrators. A lack of beliefs in the conventional values of society was also found for a considerable part of the perpetrators by analysing previous criminal behaviour, links to extremist and/or violent groups, and internet activities of the perpetrators. Therefore, the results of this research do suggest that Social Bond Theory may at least explain engagement in lone-actor terrorism for part of these perpetrators. Since the unemployment, dropout and

social isolation rates are considerably higher compared to the European averages, the findings do indeed suggest a lack of strong and meaningful bonds among part of these perpetrators, which may facilitate their engagement in lone-actor terrorism. Future research could examine whether criminological theories other than Social Bond Theory can shed light on the issue.

By way of conclusion, although Social Bond Theory may not hold for all lone-actor terrorists, it is important to keep in mind that there is no single profile or combination of factors which would lead to engagement in lone-actor terrorism. Consequently, no single explanation can be provided and no single solution can be offered to deal with this particular threat. Nevertheless, this research has attempted to analyse the offender characteristics of (different subgroups of) lone-actor terrorists thoroughly by conducting empirical research and to approach the issue from a criminological perspective. The results of this research can contribute to the current body of knowledge, although more empirical research is necessary to determine how lone-actor terrorists can best be dealt with.

6.2 Limitations and research recommendations

As with any research study, there are some limitations which could influence the results of this research. These limitations should be taken into consideration and offer room for improvement. This section will therefore discuss the limitations of this research, and will provide some recommendations that would benefit future research on this subject.

In terms of the methodology, this research has built on previous work by expanding the CLAT database with lone-actor cases of 2015 and 2016. This implied that the same working definition, inclusion criteria and procedures were used as far as possible to ensure consistency. Engaging multiple coders and double-coding the same data was, however, not possible for this research. This could potentially reduce the validity of this research, since manual coding of written documents increases the risk for a coder bias. When conducting content analysis, it is crucial for the research to remain objective and to follow replicable procedures (Krippendorff, 2004, p. 18-19). Having multiple coders and double-coding data can reduce the potential coder bias, as it assesses the consistency of the coding process (Lombard et al., 2002, p. 589). Further research may therefore benefit from engaging multiple coders and coding the data twice. Besides the lack of inter-coder reliability, unlike the researchers of the CLAT project (Ellis et al., 2016a, p. 4), no country experts have been contacted to verify whether cases have been overlooked.

Another limitation of this research concerns the data collection. The CLAT project identified possible lone-actor cases from 2000 to 2014 primarily through the Global Terrorism

Database, complemented with web searches on different geographical locations, attack types, and motivations (Ellis et al., 2016a, p. 4). Similarly, this research aimed to identify all lone-actor cases of 2015 that meet the inclusion criteria through the Global Terrorism Database and by extensive web search. It has been argued that, in this way, more relevant cases will be identified, which increases the validity of the research findings (Spaaij & Hamm, 2015, p. 173). However, since the Global Terrorism Database does not yet include the terrorism cases of 2016, the planned and committed attacks in 2016 have been identified through web searches only. Despite the numerous search terms that have been used, it may be possible that not all cases have been identified due to the limited media attention that some lone-actor plots and attacks received. This is because the attention that is given to particular cases, which can depend on the location, number of victims, motivation, and type of attack, varies significantly (Ellis et al., 2016a, p. 5).

Considering this, another limitation of this research may be that the data used in the analysis are primarily based on news reports. The information can therefore to a greater or lesser extent be considered subjective evidence, since they can include a biased interpretation of the event or perpetrator (Wiebe et al., 1999, p. 246). However, as mentioned in the methodology section, news reports are among the few publicly accessible and valuable sources to analyse the characteristics of the perpetrators, since directly observing or interviewing the perpetrators is not possible. Although news reports are the best available proxy for information about the subjects, the researcher is aware that the information obtained from these sources may not always be entirely objective. Although difficult, future researchers may seek to obtain relevant information from sources other than news reports, such as police reports, to overcome these limitations.

Fourth, since the data collection for this research relies on information that is present in news reports, some variables contain high numbers of missing values. The distribution of missing values is listed in table 4 in the methodology section, and shows that data were particularly missing for the variables related to the presence of any mental health disorder as well as early school leaving. The validity of the results of those variables with high numbers of missing values may therefore be affected. It could be possible that these missing values would be systematically different from the existing values in the database (Ellis et al., 2016, p. 5). Consequently, the results of variables with high numbers of missing values should be interpreted with caution. To overcome high numbers of missing values, future research may, for instance, benefit from analysing these cases when investigations or trials are completed, as trials or investigations of perpetrators who planned and/or committed an attack in 2015 and

2016 were sometimes still ongoing at the time of the data collection. When these investigations are completed, more information about these perpetrators could be available.

With regard to the comparison of lone-actor terrorists with routine homicide offenders, several methodological choices were made by the researcher which limit the scope of the analysis and may limit the validity of the results. As discussed previously, a comprehensive and standardised European database with data on homicide offenders does not yet exist (Ganpat et al., 2011, p. 10). The EHM has been developed to facilitate cross-national comparisons in Europe, and includes offender characteristics of 1,917 perpetrators in Finland, the Netherlands and Sweden (Ganpat et al., 2011, p. 79). Despite the relative cultural and economic similarities across Europe, it may be possible that data on homicide offenders varies across European countries, which implies that this sample is not representative of all homicide offenders across Europe. Therefore, to facilitate cross-national comparisons as well as comparisons with lone-actor terrorists, the EHM should be expanded with data of other European countries.

Ideally, a case-control study would be conducted for this research to identify possible discrepancies between these two groups of perpetrators (Bryman, 2012, p. 51). However, due to time constraints it was not feasible to directly compare these perpetrators by randomly selecting a number of routine homicide cases as controls for each lone-actor terrorist. Instead, the results of the analysis have been compared to already existing findings of the European Homicide Monitor. Consequently, some of these variables were operationalised differently from the CLAT variables, which makes a direct comparison of some variables not always possible. Future research would benefit from a standardised coding scheme and the inclusion of more variables, such as the presence of any mental health disorder and substance abuse. Considering the variables that are included in this research, it is believed that the operationalization of these variables is fairly similar. The analysed variables describe some general offender characteristics of both lone-actor terrorists and routine homicide offenders, and reflect the explorative nature of this research.

By incorporating these recommendations, the identified knowledge gaps as discussed in this research could be addressed. An increased understanding of the backgrounds of lone-actor terrorists, and to what extent these perpetrators are different from routine homicide offenders, can possibly contribute to the creation of an effective risk-management strategy regarding lone-actor terrorism.

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Appendix A – Search terms

The list of search terms to identify lone-actor terrorism cases in Europe is endless. This is because of the large number of possible combinations which characterises lone-actor terrorism. This section provides some general search terms that were used to identify relevant cases for 2015 and 2016. Search terms with regard to lone-actor terrorism were used and combined with search terms based on the geographical location, ideological motivation and attack type.

Lone-actor terrorism	Lone actor attack, lone attack, lone wolf attack, terrorism, attack, terrorist attack Offender, perpetrator, suspect, arrested/convicted/arrête/condamné/festgenommen/verurteilt
Geographical location	Countries: Great Britain, France, Germany, Sweden, Spain, the Netherlands, Belgium, Finland, Norway, Denmark, Italy, Poland, Slovakia, Switzerland, Czech Republic, Estonia, Romania, Bulgaria, Greece, Austria, Hungary, Slovenia, Lithuania, Croatia, Ireland, Latvia, Malta, Portugal, Cyprus, Luxembourg Cities (when known)
Ideological motivation	Religiously-inspired, Islamic State, Al Qaeda, Islamic terrorism, right-wing, far-right, right-wing extremism, left-wing, anarchist, single-issue, abortion, environment, rights, separatist, school shooter, school attacker
Attack type	Fire setting, incendiary, Molotov cocktail, explosive, bomb, gun, weapon, shooting, knife, stabbing, vehicle

Appendix B – Data sources

Nice - 3th February 2015

<https://www.nytimes.com/2015/02/05/world/europe/man-who-stabbed-3-at-jewish-center-in-france-had-been-held-for-questioning.html>

<http://www.france24.com/en/20150205-france-knife-attack-hates-jews-military>

http://www.lepoint.fr/societe/moussa-coulibaly-un-timide-vire-de-sa-salle-de-sport-pour-proselytisme-05-02-2015-1902468_23.php

<http://www.lalibre.be/dernieres-depeches/afp/moussa-coulibaly-un-timide-vire-de-sa-salle-de-sport-pour-proselytisme-54d264dd35701001a18bfe56>

<https://www.nytimes.com/2015/02/04/world/europe/charlie-hebdo-sets-date-for-next-issue.html?action=click&contentCollection=Europe&module=RelatedCoverage®ion=Marginalia&pgtype=article>

<http://www.independent.co.uk/news/world/europe/moussa-coulibaly-three-french-anti-terror-soldiers-stabbed-on-patrol-10021246.html>

http://www.lemonde.fr/societe/article/2015/02/04/attaque-de-nice-un-agresseur-au-profil-indetectable_4569209_3224.html

http://www.lexpress.fr/actualite/societe/qui-est-moussa-coulibaly-l-agresseur-presume-des-militaires-a-nice_1647969.html

Berlin – 23 March 2015

<http://www.berliner-zeitung.de/berlin/polizei/haft-nach-anschlaegen-gegen-kanzleramt-und-reichstag-rechtsradikaler-brandstifter-nimmt-sich-das-leben-im-gefaengnis-22438658>

<Http://www.n-tv.de/politik/Musiklehrer-gesteht-Anschlag-auf-Kanzleramt-article15490126.html>

<http://www.n-tv.de/politik/Rechtsextremist-toetet-sich-in-U-Haft-article15502301.html>

<http://www.bz-berlin.de/tatort/brandanschlaege-auf-staatsgebaeude-in-berlin-aufgeklaert>

<http://www.bz-berlin.de/tatort/nach-brandanschlagsserie-rechtsextremist-tot-in-u-haft>

Salzhemmendorf – 28 August 2015

<http://www.sueddeutsche.de/politik/urteil-in-hannover-brandanschlag-in-salzhemmendorf-acht-jahre-haft-fuer-haupttaeter-1.2911626#redirectedFromLandingpage>

<http://www.spiegel.de/panorama/justiz/brandanschlag-in-salzhemmendorf-so-verhalten-sich-die-angeklagten-a-1076670.html>

<http://www.spiegel.de/panorama/justiz/salzhemmendorf-urteil-terrorismus-nichts-anderes-a-1082828.html>

<http://www.spiegel.de/panorama/justiz/brandanschlag-in-salzhemmendorf-angeklagte-angeblich-nicht-fremdenfeindlich-a-1079511.html>

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Altena – 3rd October 2015

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