

European Lone Actor Terrorists Versus “Common” Homicide Offenders: An Empirical Analysis

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Abstract

The term “Lone Actor” has been applied to a variety of violent individuals who are thought to act out of ideological motivations using terrorist tactics. So far, much of the research is U.S.-based. There is an empirical vacuum of Lone Actor violence in Europe and a conceptual gap in how these acts may be understood as a variation of homicidal behavior. We examine and compare characteristics of European Lone Actors to European “common” homicide offenders. Lone Actor terrorists constitute a heterogeneous group that is similar to homicide offenders but differs in terms of substance use, weapon use, and target. These findings may be understood in the context of instrumental versus expressive aims.

Keywords

Lone Actors, homicide, Europe, terrorism, ideology

Introduction

Lone Actors have been referred to as lone wolves, individual terror cells, solo terrorists, lone operator terrorists, and freelancers (Borum, Fein, & Vossekul, 2012). While the term “Lone Actor” implies a single actor, definitions of Lone Actors have spanned from independently operating individuals (Spaaij, 2011), solo-actor terrorists (who

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conducted an act themselves but were directed and controlled by a larger organization), lone dyads (a group of two individuals; Corner, Gill, & Mason, 2016; Pantucci, 2011), to small cells (Bakker & de Roy van Zuijdewijn, 2015). The term “Lone Actor” is thus a contested construct. It has been argued that it is a term created by the media and by radical political actors themselves, rather than a social science concept or a legal term (Spaaij & Hamm, 2015). Furthermore, even though within terrorism studies, Lone Actors are considered as a subset of a wider group of terrorists, prior studies show that a distinction between terrorist ideology, criminal intent, or personal motivation is sometimes difficult to draw (Spaaij, 2011). Some individuals are incorrectly classified as Lone Actor terrorists when in fact their attacks were “violent acts by stand-alone individuals that were carried out for reasons of personal motivation or simply with criminal intent” (Spaaij, 2011, p. 11). In addition, there is no consensus on the types of behavior exhibited by Lone Actors: Definitions range from “violent and nonviolent behaviors” (Corner & Gill, 2015), such as “behaviors that facilitated or encouraged violent actions carried out by others” (Gill, Horgan, & Deckert, 2014), to “the threat or use of violence” (Bakker & de Roy van Zuijdewijn, 2015) and, in some studies, also include cyber-attacks (Gordon, Sharan, & Florescu, 2015).

Studies on Lone Actors include individuals who “either self-radicalized, or radicalized via a larger organization” (Corner & Gill, 2015), and individuals who are inspired by a terrorist ideology or organization to conduct attacks (Integrated Threat Assessment Centre, 2007, cf. Borum et al., 2012). In terrorism publications, the political approach to this phenomenon is underscored in Lone Actor definitions such as “autonomous leadership units” and Lone Actor events as carried out through “leaderless resistance” (Joosse, 2015).

The interchangeable use of the terms “Lone Actors” and “Lone Actor terrorists” further emphasizes the notion that these individuals are thought to act out of terrorist political motivations using terrorist tactics. Some authors therefore argue that Lone Actor attacks should only include politically or religiously motivated acts, aimed to influence public opinion or decision making (Bakker & de Graaf, 2010), and should thus exclude attacks by stand-alone individuals motivated by other reasons, such as school or workplace shooters. In other studies, the net is cast wider, including school shooters and other Lone Actors whose crimes were aimed at a broader societal goal, with the hopes of influencing a wider audience, as well as “classical” terrorists such as jihadists and right-wing extremists (de Roy van Zuijdewijn & Bakker, 2016).

A complicating factor is that assigning motivations to individual acts of terror is inherently subjective and open to considerable interpretation (Quillen, 2002). In their study on lone attackers of a prominent public official or public figure in the United States, Fein and Vossekuil (1999) found a diversity of motivations, ranging from searching for notoriety, attention, revenge, and personal fixation to suicide as a goal. Findings showed some attackers to have clothed their motives with political rhetoric, through which they became “murderers in search of a cause” who construct a narrative to legitimize their acts (see also Hoffmann, Meloy, Guldemann, & Ermer, 2011). Similarly, Joosse (2007) warned for taking value statements about political motivation at face value, as Lone Actors can have an interest in upgrading their violence by

flavoring it with a political motivation while in fact they are driven by personal motives. On the contrary, networks or organizations may also have an interest in claiming violent acts that are in fact only very loosely connected to their wider ideological cause because it gives them an image of strength.

Furthermore, the very idea of what is considered to be “political” or not is also depending on changing circumstances. van Buuren and de Graaf (2014), for instance, argued that Lone Actor violence can be understood as “performative violence”; in an age in which traditional ideologies have lost most of their appeal, alternative signifying frames are attractive for people looking for sense and meaning in a sometimes confusing and complex world (van Buuren & de Graaf, 2014). Performative violence can be understood as the construction of identity or position through active expression. It is not so much directed against the world, but clamors for attention from audiences, demands audiences to look intently at the act and its perpetrator, and by doing so it recognizes and acknowledges the perpetrator in his very existence and uniqueness. van Buuren and de Graaf argued that the assumed double change in current manifestations of political violence—from groups and networks to individuals, and from ideologically motivated violence to performative violence—in fact should be understood as gradual shifts within a continuum. Both tightly organized terrorist groups and supposedly “Lone Actors” should be seen as ideal types, as poles on a political violence scale. Ideologically motivated violence and performative violence also should be understood as ideal-type categorizations, demarcating a continuum on which different kinds of violence might erupt and conflate. According to van Buuren (2012), what characterizes the motivation of Lone Actors is that they transcend existing categories and classifications and botch together a narrative that suits them. In a comparable line of reasoning, McCauley, Moskalenko, and Van Son (2013) concluded, after comparing Lone Actor terrorists with assassins and school attackers, that the common denominators were outrage and grievances. They therefore proposed to understand Lone Actor terrorism as part of a larger phenomenon of Lone Actor grievance-fueled violence.

In sum, in the literature to date, there appears to be a wide range of (contested) definitions of Lone Actor terrorism. What they seem to have in common is that the acts by these individuals aim to have a societal impact, be it guided by a political or religious motivations or by a personal motivations ranging from revenge to searching for notoriety.

Prior Studies on Lone Actor Terrorism

Study Areas

In terms of prior empirical studies, because of the emphasis on radicalized thought patterns and terrorist objectives, Lone Actor violence has mostly been studied in the realms of terrorism and political violence, rather than in criminology or sociology. Notable exceptions to this trend include prior studies by Agnew (2010); Freilich, Chermak, and Gruenewald (2015); Gruenewald and Pridemore (2012); Gruenewald, Chermak, and Freilich (2013a); and Pridemore, Chamlin, and Trahan (2008).

This lack of criminological research is intriguing, as the advantages of examining Lone Actor terrorism from a criminological perspective are many, as Freilich and LaFree (2015) argued: “Similarities in theoretical conceptualization, data collection, and research methods suggest that both fields can advance by examining the theories and methods of the other” (p. 6). At the same time, scholars acknowledge that there are also important differences between terrorism and “common” crime (Freilich & LaFree, 2015). Agnew (2010), for instance, argued that terrorism is more extreme than most common crimes because it often randomly victimizes civilians. Furthermore, terrorism is committed wholly or in part for political, social, or religious reasons, whereas most common crimes are committed for reasons of self-interest. Moreover, from a methodological perspective, the need for more systematic, quantitative work in studying terrorism is hindered by definitional ambiguity (Silke, 1996) and the difficulty of accessing data due to issues such as secrecy (Silke, 2001, 2009). Access to official data, self-reported data, or data on victimization of terrorist violence therefore is far more difficult than studying other types of criminal behavior (Chermak & Gruenewald, 2015). Particularly, in contrast to studies on other types of crime, studies on terrorism are therefore said to suffer from a lack of systematic review and statistical analysis of data sources, a lack of new data being generated, and to a large extent being driven by anecdotal and descriptive evidence (Gruenewald & Pridemore, 2012).

Previous Empirical Studies

Prior studies based on empirical data on Lone Actor terrorists are primarily U.S.-based and predominantly focus on single-case studies. Against this backdrop, to date, one of the most comprehensive databases is the American Lone Wolf Terrorism Database by Hamm and Spaaij (2015), including 98 American cases covering the period 1940-2013. While the authors found no single “profile,” the majority of individuals in their sample were unemployed, single White males with a criminal record. Compared with members of terrorist groups, they found lone wolves to be older, less educated, and more prone to mental illness. The authors further compared American Lone Actors with members of al-Qaeda and found that American Lone Actors were more likely to be unmoored from society, suggesting that lone wolf terrorism is caused by relative deprivation.

In their social exclusion, lone individuals feel deprived of what they perceive as values to which they are entitled, and form grievances against the government responsible for their unemployment, discrimination and injustices. Their violence is a deviant adaptation to this gap between means and goals. (Hamm and Spaaij, 2015; pp. 6-7)

A second large-scale dataset on ideologically motivated homicide offenders constitutes Gruenewald and Pridemore’s (2012) dataset of 108 far-right homicides based on the Extremist Crime Database (ECDB), a comprehensive open-source database that includes information on homicides committed by domestic far-right extremists and terrorists in the United States between 1990 and 2008. The larger number of individuals in

this dataset compared with the Hamm and Spaaij database covering a broader time frame can be explained by the fact that the latter, contrary to the ECDB, excluded individuals who belonged to a terrorist organization or network. Gruenewald and Pridemore found that the far-right offenders in their sample were motivated by sentiments against certain ethnic groups, as well as sentiments ranging from antigovernment, antihomless, antihomosexual to antiabortion. Far-right terrorism, they held, is primarily a White male phenomenon, in which perpetrators are “fueled by the need for white males to re-establish their threatened dominant position in society” (Gruenewald & Pridemore, 2012, p. 157).

Collecting data on 119 Lone Actor (with and without command links) U.S. and European terrorists between 1990 and 2012, Gill et al. (2014) made use of data retrieved from the Global Terrorism Database (GTD) and open sources such as LexisNexis. The sample included those who engaged in or planned to engage in Lone Actor terrorism within the United States and Europe and were convicted for their actions or died in the offense. Lone Actors in their sample were predominantly men over 30 years old, half of whom were single individuals who had never married. More than half were characterized as socially isolated. There was a generally even distribution across the spectrum of educational achievement. In total, four out of 10 were unemployed, and those who were employed were mostly working in the service industry. Notably, about 40% had previous criminal convictions—a figure much higher than what is anecdotally suggested regarding members of formal terrorist organizations (Gill et al., 2014). Just less than a third had a history of mental illness or personality disorder. Finally, the Lone Actor terrorists in their sample presented a range of ideologies—religiously inspired and right-wing actors constituting the majority of their sample. Unfortunately, the study did not distinguish between U.S. or European individuals.

Focusing on Europe alone, a recently generated dataset constitutes the Countering Lone Actor Terrorism (CLAT) Project (Ellis et al., 2016a), including 120 cases of Lone Actor terrorism in Europe between 2000 and 2014. Findings showed that religiously inspired attacks were the most frequent. The majority of Lone Actor terrorists were not politically active (58%) and had not joined extremist movements. Almost half of the Lone Actors exhibited “leakage”—meaning that they gave “an indication of either their extreme views, intention to act or even some attack details in advance” (Ellis et al., 2016a; p. vi).

Comparative Research

Comparative research into Lone Actor terrorism mostly focuses on distinguishing Lone Actors from those who undergo radicalization in a group setting (Nesser, 2012; Spaaij & Hamm, 2015), or comparing Lone Actor terrorists with other violent individuals, such as school attackers (McCauley et al., 2013). Some scholars have comparatively examined so-called bias crimes (crimes against social minorities) and “routine” crimes (for an overview, see Gruenewald & Pridemore, 2012). Gruenewald and Pridemore (2012), for example, compared 108 far-right motivated homicides with 540 “common” homicides. Their findings showed that victims in the former group

were more likely to be male, older, and non-White. Domestic far-rightists were found to be more likely to be male, White, to commit the homicide with others, to victimize strangers, use other methods than firearms, and to kill multiple victims compared with offenders of “common” homicides. These results suggest that certain offender, victim, and situational aspects are unique to ideologically motivated homicides, compared with so-called “common” homicides.

In another study, Gruenewald, Chermak, and Freilich (2013a) distinguished “loner” attacks from other domestic extremist violence with a focus on far-right homicides. Their findings showed that Lone Actors were “both different and surprisingly similar” (Gruenewald et al., 2013a, p. 84) to other far-rightists who had connections to extremist groups. Variables that significantly distinguished the far-rightist loners from far-rightist who did not act alone included a higher proportion of military backgrounds, use of guns, being older, more likely to be single, more likely to suffer from a mental illness, and a higher prevalence of suicide (Gruenewald et al., 2013a).

Parkin and Freilich (2015) further assessed the differences between victims of ideologically and nonideologically motivated homicides committed by American far-rightists. Their findings revealed that victims of ideologically motivated homicides committed by far-rightists were more likely to be murdered outside, as part of their routine activities (for instance, police patrolling on the job or homeless people). Victims of nonideologically motivated homicides (including domestic violence victims), on the contrary, were more likely to be attacked in a domestic setting. Furthermore, the study showed that the victims of nonideological offenders mirrored the literature on “common” homicides, as they were more likely to be younger, to have a criminal record, and to be victimized at a risky location.

Furthermore, recent work by Capellan (2015) looked into ideologically active shooters between 1970 and 2014 in the United States, defined as individuals actively engaged in killing or attempting to kill as many people as possible using a firearm. Their analysis of almost 300 cases showed that individuals in both groups were mostly White males in their 30s, approximately 50% of them suffering from mental illness. Most ideological shooters were far-rightist or jihad inspired. Both types of active shooters appeared to have rather dysfunctional adult lives, in which single/divorced status, being unemployed, and having achieved low levels of education were prevalent. However, ideologically active shooters were found to be significantly more likely to hold a blue-collar job and have a criminal record compared with their nonideological counterparts. Furthermore, ideologically active shooters were much more likely to plan their attack and discuss their plans with others, and to attack people and places with which they had no prior personal or professional relationships. Nonideological shooters, on the contrary, were more likely to attack familiar people and places. Ideological attackers, on average, killed and injured a significantly higher number people than their nonideological counterparts. In both groups, between 30% and 40% of the offenders committed suicide, and arresting an ideological shooter needed lethal force more frequently compared with those not motivated by a specific ideology.

In addition, recently, Horgan, Gill, Bouhana, Silver, and Corner (2016) compared 71 Lone Actor terrorists with 115 solo mass murderers in the United States between

1990 and 2015, using the GTD as one of the main sources of information. The study found no significant differences between both groups in terms of sociodemographic profiles. Lone Actors and mass murderers were on average in their late 30s, predominantly male, and about 40% of them were single. Two thirds of the Lone Actors had a higher education level, yet later in life about 40% was unemployed. Mass murderers were less educated, and about one third were unemployed. Lone Actors appeared to be more socially isolated, have combat, and have military experience. Mass murderers were more likely to have a history of substance abuse and experience long-term stress compared with Lone Actor terrorists.

So far, however, the vast majority of comparative studies have been based on data stemming from the United States. The apparent lack of non-U.S. data has come to the forefront because Europe has seen a recent uptick in lethal terrorist attacks, as illustrated by recent attacks in 2017 in London (May 22, June 3, and June 19), Stockholm (April 7), Paris (April 20), Manchester (May 22), and Barcelona (August 17).

To the best of our knowledge, until now there have been no prior comparisons of homicides committed by Lone Actor terrorists versus “common” homicides in Europe. This study fills the research gap by comparatively examining how perpetrator and incident characteristics of European Lone Actor terrorists compare with European “common” or “routine” homicide offenders.

Method

We used a case-control design to compare characteristics of Lone Actor terrorists with a control group of “common” (nonideologically motivated) homicide offenders. To this end, we used data from two separate datasets: one individual-level dataset on European Lone Actors, and one individual-level dataset on European homicide.

Definitions

Following prior research (Ellis et al., 2016b), *Lone Actor terrorism* was defined as the threat or use of violence by a single perpetrator (or small cell), not acting out of purely personal or 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).

Homicide was defined as an intentional criminal act of violence by one or more human beings resulting in the death of one or more other human beings.¹ Following prior research (Granath et al., 2011), this definition covers the legal codes of murder, manslaughter, infanticide, and assault leading to death.

Data Sources

Data on European Lone Actor terrorists. For the purpose of this study, we rely on data collected in the European Union (EU)–funded CLAT project (Ellis et al., 2016b).

Even though the original data also include individuals *threatening* to use violence, who were convicted for planning an act of terrorism, for the purpose of this study, we define Lone Actor terrorists as a single perpetrator (acting alone, in a dyad or triad), who committed an attack, and hence exclude those only threatening to commit an attack. The definition is not uncontested, as it may be questioned whether or not dyads and triads should be included in the definition. Arguably, the importance of group processes in radicalization or adopting violence leads to a strong difference between group versus individual terrorists (Bakker & de Roy van Zuijdwijn, 2015). This assumes that Lone Actors are not merely different from group terrorists in the fact that they act alone but also in their personal pathways toward violence. From Gill et al. (2014), however, we know that “lone-actor terrorists regularly engaged in a detectable and observable range of activities with a wider pressure group, social movement, or terrorist organization” (p. 425), which counters the idea that they follow an isolated path that is strongly different from group terrorists. Another counterargument is that while Lone Actors might be detached from direct, physical contact with extremist peers, more research is needed to see what the possible role of an online community could be in those cases. While the academic debate on this matter is far from ended, the CLAT research project was not the first to include dyads and triads. For instance, Gill and colleagues (2014) also included isolated dyads—defined as “pairs of individuals who operate independently of a group” (p. 426) in their study, as have others (see Ellis, Pantucci, & Chaplais, 2015).

The dataset includes information from multiple sources, starting with data from the GTD. Data from the GTD were included if they occurred in the EU, comprising 30 European countries: the EU member states as well as Norway and Switzerland. Cases were selected for inclusion if they occurred between January 1, 2000, and December 31, 2014. The definition of Lone Actor terrorism was broken down in the following inclusion criteria: (a) Violence, or the threat of violence, must be planned or carried out; (b) the perpetrator(s) must be an individual, dyad, or triad; (c) the perpetrator must act without any direct support in the planning, preparation, and execution of the attack; (d) the perpetrator’s decision to act must not be directed by any group or other individuals; (e) the motivation cannot be purely personal material gain; and (f) the target of the attack extends beyond those victims who are immediately affected by the act (Ellis et al., 2016b). Next, additional Internet and news media searches were carried out to both supplement information on each individual offender previously identified by the GTD and include further cases that fit the inclusion criteria. These Internet searches were done in both the English language and the local language, using terms such as “terrorism,” “attack,” “shooting,” and “Lone Actor.” When researchers were not certain about whether a case matched the six inclusion criteria, the case was discussed with EU research partners. When no consensus was reached, the case was not included (Feve & Bjornsgaard, 2016). Finally, country experts were contacted to verify that relevant cases had been identified and asking whether they believed these met the inclusion criteria, thereby ensuring the database was as comprehensive as possible. To update the CLAT dataset, for the purpose of this study, we added Lone Actor events committed in the years 2015 and 2016, using the same inclusion criteria.

The identified perpetrators were coded on 17 variables reflecting their personal characteristics, including age, gender, educational and school dropout, employment, relationship status, children, social isolation, criminal record, previous physical violence, drug use, mental disorder, diagnosis and treatment, and indications of a noteworthy life event (see Ellis et al., 2016b, for details on definitions and operationalizations). Social isolation was coded as present if family, friends, colleagues, or others close to the perpetrator mentioned perpetrator's social isolation. It should be emphasized that this is an indirect way of assessing social isolation. Mental health issues were operationalized into two variables, the first indicating evidence of an official diagnosis by a mental health professional and the second serving as an indication of a mental disorder mentioned by other sources, including family members or other third parties. Given the reporting bias involved in mental health issues, these findings should be interpreted with caution.

Perpetrator motives were categorized based on the Europol Situation and Trend Reports (Europol, 2015) and included the categories right wing, left wing and anarchist, religiously inspired, single issue, and "other." The difference between "single issue" and "other" warrants further explanation. "Single issue" refers to perpetrators who solely focus on specific political issues such as abortion or animal rights. The category "other," however, reflects the fact that many Lone Actor terrorists (mostly school shooters) made a personal mix of sometimes contrasting elements from various broad ideologies and were only included when the actor was not merely acting out of revenge but aimed to convey a message to a wider audience. For instance, one perpetrator who killed eight people in Finland left behind a manifesto describing himself as a "social Darwinist" who saw it as his obligation to eliminate those he deemed unfit and to reverse the "process of devolving" of the human race. He also wrote that "although [*sic*] I choosed [*sic*] the school as target, my motives for the attack are political and much much deeper and therefore I don't want this to be called only as 'school shooting'" (Auvinen, 2017).

This multicenter search yielded a total of 136 perpetrators of Lone Actor terrorism, who were involved in 111 unique events (79 attacks and 32 plots) in the period 2000-2016, resulting in a total of 528 injured victims (ranging from 1 to 242) and 220 lethal victims (ranging from 1 to 77). Even though the data collected in the CLAT project also include individuals *threatening* to use violence, who were convicted for planning an act of terrorism, for the purpose of this article, we exclude plots. This results in a total of 98 perpetrators involved in 79 actual attacks.

Data on European Homicide Offenders

The European Homicide Monitor (EHM). The EHM is constructed by a consortium of European homicide researchers, enabling homicide comparisons and analyses among three European countries: Finland, the Netherlands, and Sweden (for an overview, see Granath et al., 2011; Liem et al., 2013). To date, the EHM used in the mentioned studies covering the period of 2003-2006 is the only European joint dataset including individual-level homicide data from multiple European countries. Up to the construction of this dataset, matching and comparability of national figures derived from

separate datasets were hampered by national legal and definitional differences, as well as by using different data sources containing divergent inclusion criteria. The EHM includes 85 variables on victim, offender, and incident level. In the dataset used, it covers 1,577 cases of homicide between 2003 and 2006, with a total of 1,666 victims and 1,917 offenders. The EHM is an ongoing collaboration between European countries, with a prospect of widening the time frame beyond 2003-2006, involving more countries and incorporating additional variables.

We relied on the EHM as a source for creating our control group of “common” homicide offenders, that is, individuals who committed nonideologically motivated homicides. We retained only the principal offender per event. For offenders whose age and gender were known, we randomly selected 100 offenders from each of the participating countries (Finland, the Netherlands, and Sweden). Even though countries such as Great Britain and France are not included in this dataset, previous studies show similar homicide patterns in these countries (Mucchielli, 2012; Sothill & Francis, 2012) in terms of victimization rates as well as in terms of relationship between victim and perpetrator, modus operandi, location, and individual characteristics, compared with EHM participating countries.

Joint New Dataset

To enable direct empirical comparisons, we merged the selected data into a joint dataset, containing European Lone Actor terrorists between 2000 and 2016, and European nonideologically motivated homicides by “common” homicide offenders between 2003 and 2006 (“controls”). We made sure that none of the Lone Actor events in Finland, the Netherlands, or Sweden were included in the EHM dataset. For each Lone Actor ($n = 98$), we randomly selected three controls or “homicide offenders,” creating a control group of 300 offenders. The newly created dataset contains sociodemographic characteristics, such as age and age category, gender (male/female), educational level (enrolled in or completed primary education, secondary education, or higher education), marital status (not in a relationship vs. in a relationship), and employment status (employed vs. unemployed). Other variables cover psychological background and violent history such as indications of substance use, which entails whether there are at least some indications of illegal substance and/or alcohol use in the past or prior to attack (yes/no). Mental disorder was coded as present (yes/no) if some or sure indications of mental illness existed. Physical violence was coded as present (yes/no) if indications of previous physical violence were observed. For Lone Actors specifically, we included the variable “ideology,” distinguishing between religiously inspired, right wing, left wing, ethnonationalist and separatist, single issue, and “other causes” (this category includes school shooters). Also, for the Lone Actors, we present data on social isolation and prior criminal sanctions. For homicide offenders, we coded the type of homicide, distinguishing domestic (e.g., partner killing or other familial killing) and nondomestic homicides (e.g., criminal milieu, nightlife violence, or other in noncriminal milieu). Event characteristics² include the number of fatalities for Lone Actor events; the relationship between offender and victim (stranger/random vs. knew each other/not random); the

location of the homicide (or type of targets attacked by the Lone Actor), including private homes, parks/forests, and religious buildings; and the modus operandi (firearm, knives, smoke/fire, explosives, and other weapons such as poisoning, strangulation/suffocation, drowning, hands-on weapons and weapons such as axes or blunt objects). Finally, we included offender's suicide following the event (yes/no).

Analyses

The joint dataset includes a total of 398 individuals, both Lone Actors and a subset of "common" homicide offenders. For Lone Actor data, we included all perpetrators per event. The randomly selected sample of 300 homicide offenders consists of different types of homicide: 37% domestic homicides (partner killing 25%, child killing and infanticide 3%, other familial killing 9%), 55% nondomestic homicides (11% criminal milieu, 4% robbery killings, 7% nightlife violence, 5% nonfamilial killing by mentally ill, 1% sexual killing, 27% other in noncriminal milieu), and 8% unknown. This random sample resembles the distribution of the type of homicide committed (38%, 53%, and 9%, respectively) in the total study EHM population of principal offenders with known age and gender.

Given the ongoing debate on including dyads and triads to define Lone Actors, we choose to analyze (a) the Lone Actors and homicide offenders who acted individually or in a triad of dyad, as well as (b) the Lone Actors and homicide offenders who acted individually. Ideally, we would have liked to compare whether Lone Actor acting in small cells are different from those acting alone. The number of actual dyads and triads in the database, however, turned out to be too small to allow for such comparisons.

We conducted a two-step analysis. First, we analyzed both groups, including perpetrators who committed their acts together with others. Second, we compared a subset of Lone Actors who were not part of a small cell ($n = 66$) with a subset of the comparison group, namely, common homicide offenders who acted alone ($n = 249$). Bivariate statistics were applied to compare the sociodemographic, psychological background and violent history, and event characteristics between groups. As we were interested in the contribution of the sets of characteristics to the likelihood of belonging to the Lone Actor group versus the homicide offender group, we employed a logistic regression model using the enter method. For this purpose, we created several dummy variables. First, we added age (younger than 25; yes/no), gender (male; yes/no), and marital status (single; yes/no) of the offender; second, we added history of violence (yes/no) and substance use (yes/no) to the model. Finally, we added relationship to victim (victim stranger; yes/no), weapon use (firearm used; yes/no), and suicidal outcome (suicide; yes/no). Analyses were conducted using SPSS for Windows, Version 23.0.0.3.

Results

European Lone Actor Terrorists

Event characteristics. In the period 2000-2016, 98 Lone Actors carried out 79 Lone Actor events. In these events, the number of injured victims ranged from 0 to 242; the

number of lethal victims ranged from 0 to 77. Half of the Lone Actor events included two victims or less. In most events (see Table 1), Lone Actors attacked seemingly random victims, while others involved public figures (politicians) or former classmates. The majority of the 79 events were carried out alone ($n = 66$; 84%). In the studied time period, the majority took place in Great Britain ($n = 41$; 28%), France ($n = 15$; 14%), Germany ($n = 11$; 10%), and Sweden ($n = 6$; 5%). In other European countries, including Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, Greece, Italy, the Netherlands, Northern Ireland, Poland, Romania, Slovakia, Spain, and Switzerland, the number of Lone Actor incidents ranged from one to four.

Concerning attack methodology, Lone Actor events were typically carried out by firearms ($n = 29$; 37%) or explosives ($n = 16$; 20%), and to a lesser extent by sharp instruments, by smoke/fire, or by making use of vehicles. Public places (street/café/car; $n = 33$; 47%) or public buildings (religious or government buildings; $n = 18$; 25%) were the most prevalent targets. While targets of religiously inspired Lone Actors were mostly civilian targets ($n = 12$; 40%) and military targets ($n = 6$; 20%) in public places, right-wing Lone Actors generally targeted civilians ($n = 7$; 35%) in public places (i.e., street or shop and residences of asylum seekers or refugees) or religious buildings, such as mosques, Islamic cultural centers, or synagogues ($n = 7$; 35%).

Comparing Lone Actor events with homicide events (see Table 1, left), results showed that for both, little more than 80% is committed by one offender and the remaining events by two or more offenders. Other event-based differences between the groups included the number of killed victims, which for Lone Actors ranged from 0 to 77, and for homicide offenders ranged from 1 to 4 lethal victims.

While Lone Actor terrorists typically attacked a “random” victim, the vast majority of “common” homicides in this sample constituted homicides between nonrandom victims such as family members or acquaintances ($n = 233$; 90%). Very few homicides occurred between total strangers ($n = 31$; 10%), as opposed to almost 80% for Lone Actor events, $\chi^2(1) = 137.8$; $p \leq .001$.

As for crime location, Lone Actor terrorists were more likely to commit their offense in public places ($n = 33$; 47%) such as on the street or in cafés, in public buildings ($n = 18$; 25%) such as government buildings or religious buildings, and to a lesser extent on university campuses or in high schools ($n = 6$; 9%). Homicide offenders typically committed the homicide event in a private setting ($n = 193$; 65%); or in a (semi)public place, such as a park or forest ($n = 20$; 7%); or on the street, in a café, or in a car ($n = 68$; 23%).

In terms of modus operandi, the most prevalent used weapons among Lone Actors to attack victims were firearms ($n = 29$; 37%) and explosives ($n = 16$; 20%), in contrast to homicide offenders, who used sharp instruments such as knives ($n = 110$; 38%) more frequently than firearms ($n = 64$; 22%), and, opposed to Lone Actors, used non-weapon violence such as strangulation ($n = 25$; 8%) and kicking, hitting, or using psychical violence ($n = 38$; 13%).

Next, we compared characteristics for individual Lone Actors ($n = 66$) with homicide offenders acting alone ($n = 249$) (see Table 1, right). In terms of event characteristics, this subsample of single perpetrators did not differ from the main sample of

Table 1. Characteristics of European Lone Actor Events Versus European Homicide Events.

Event characteristics	All perpetrators					Single perpetrators				
	Lone Actor events (n = 79)		Homicide events (n = 300)		Significant	Lone Actor events (n = 66)		Homicide events (n = 249)		Significant
	n	%	n	%		n	%	n	%	
Number of perpetrators per event										
One offender	66	84	249	83	ns	—	—	—	—	—
Two offenders	7	9	37	12		—	—	—	—	
Three or more offenders	6	7	13	5		—	—	—	—	
Number of lethal victims ^a	2.0 (0-77)		1.0 (1-4)			2.0 (0-77)		1.0 (1-4)		
Relationship to victim ^b										
Stranger/random	61	80	31	10	***	50	77	21	9	***
Knew each other/not random	16	21	233	90		15	23	202	91	
Missing	2		36			1		26		
Weapon use ^c										
Firearm	29	37	64	22	—	27	41	44	18	—
Sharp instrument	14	18	110	38		12	18	105	43	
Smoke/fire	9	11	5	2		3	5	5	2	
Explosive	16	20	—	—		13	20	—	—	
Vehicle	6	8	2	1		6	9	2	1	
Violence without weapon	—	—	38	13		—	—	27	11	
Other	5	6	72	24		5	7	62	25	
Missing			9					4		
Location										
Private home	3	4	193	65	—	2	3	164	68	—
Park/forest	—	—	20	7		—	—	18	7	
Institution	6	9	5	2		6	10	5	2	
Public place (street/café/car)	33	47	68	23		30	50	49	20	
Religious building	10	14	—	—		8	13	—	—	
Government building	8	11	—	—		8	13	—	—	
Residence refugee or asylum seekers	2	3	—	—		—	—	—	—	
Other	9	12	13	3		6	11	7	3	
Missing	8		4			6		6		

Note. Percentages are based on known observations only. — = no significance tests because of cell count less than 5.

^aMedian and range.

^bChi-square.

^cPlease note that weapon use among Lone Actor Events could only be determined by offender. Given the sometimes very large number of victims involved in Lone Actor attacks, for Lone Actors this variable reflects offender-based weapon use.

$p \leq .05$. $p \leq .01$. *** $p \leq .001$ (two-tailed).

Lone Actors and homicide offenders: Individual Lone Actors were also significantly more likely than homicide offenders acting alone to attack strangers, 77% versus 9% ($\chi^2(1) = 123.5$; $p \leq .001$).

Similar to Lone Actors acting alone or as a small cell, individual Lone Actors mostly attacked “random” victims. Also, the modus operandi (mostly firearms, explosives, and knives) and location (public places and public buildings) of single perpetrators appeared to be similar to those of the group including Lone Actor acting in small cells.

Sociodemographic characteristics. Two thirds of European Lone Actor terrorists acted alone ($n = 66$; 67%), and in another third as part of a dyad ($n = 12$; 12%) or triad ($n = 20$; 21%). Homicide offenders acted alone in four out of five cases ($n = 249$; 83%; $\chi^2(2) = 25.3$; $p \leq .001$). Overall, European Lone Actors were predominantly male ($n = 98$; 96%), who were on average 30 years old ($\mu = 30.03$; $SD = 9.7$, see Table 2). In terms of ideological motivation, the majority of the 98 Lone Actors were religiously inspired Lone Actors ($n = 39$; 40%), of which most were motivated by jihadist views. The second most common group involved right-wing Lone Actors ($n = 30$; 31%), who were motivated by neo-Nazi thinking or anti-immigrant or anti-Islam sentiments. The third most predominant group ($n = 18$; 18%) included Lone Actors motivated by other causes³ and included six school shooters. Other, much smaller categories constituted single-issue Lone Actors ($n = 6$; 7%), left-wing and anarchist Lone Actors ($n = 3$; 3%), and ethnonationalist and separatist Lone Actors ($n = 2$; 2%). When we take ideological subgroups into account, findings showed that right-wing Lone Actors were predominantly male ($n = 27$; 90%), who were on average 32 ($\mu = 31.7$; $SD = 10.2$) years old. Religiously inspired Lone Actors were exclusively—with the exception of one—male ($n = 39$; 97%) in their late 20s ($\mu = 27.9$; $SD = 7.5$). Lone Actors motivated by other causes included school shooters, who were exclusively male ($n = 18$; 100%) and in their late 20s ($\mu = 29.7$; $SD = 10.2$). Finally, all single-issue Lone Actors were male and on average 37 years old.

For those for whom data were available, findings showed that more than 60% of the Lone Actors were not in a relationship at the time of the event ($n = 35$; 64%). Interestingly, the relatively high educational level of Lone Actors did not appear to translate into holding a job (half were unemployed). Right-wing actors (10 out of 24 actors for whom information was available) were more often unemployed compared with religiously inspired actors (16 out of 28), and Lone Actors were motivated by other causes (10 out of 16).

Both Lone Actor terrorists and homicide offenders were predominantly male (96% and 90%, respectively; see Table 2, left). Our sample of homicide offenders was on average significantly older, about 36 years old, compared with Lone Actors who were on average 30 years old, $t = -4.0$ (396); $p \leq .001$. This difference was also reflected in age categories, where one third of Lone Actors were aged under 25 years as opposed to one out of five homicide offenders, $\chi^2(2) = 15.4$; $p \leq .001$.

As for marital status, employment status, and educational level, the available data indicate that the two groups of offenders did not differ significantly in terms of relationship status, as between 50% and 60% of Lone Actors ($n = 35$; 64%) and homicide offenders ($n = 86$; 51%) were not in a relationship at the time of the event. Also, for both groups about half were unemployed, homicide offenders slightly ($n = 109$; 63%),

Table 2. Sociodemographic Characteristics of European Lone Actors Versus European Homicide Offenders.

Sociodemographic characteristics	All perpetrators					Single perpetrators				
	Lone Actors n = 98		Homicide offenders n = 300		Significant	Lone Actors n = 66		Homicide offenders n = 249		Significant
	n	%	n	%		n	%	n	%	
Gender^a										
Male	94	96	271	90	—	222	89	222	89	—
Female	4	4	29	10		27	11	27	11	
Age^b										
M	30.3 (±9.7)		36.0 (±13.1)		***	31.1 (±10.4)		37.2 (±13.4)		***
Age category^a										
<25	33	34	61	20	***	21	32	47	19	**
25-39	49	50	131	44		32	48	104	42	
>40	16	16	108	36		13	20	98	39	
Constellation										
Acting alone	66	67	249	83	***	—	—	—	—	—
Part of dyad	12	12	37	12		—	—	—	—	
Part of triad	20	21	13	5		—	—	—	—	
Ideology										
Ethnonationalist and separatist	2	2	—	—	—	2	3	—	—	—
Left wing and anarchist	3	3	—	—		3	5	—	—	
Other	18	18	—	—		18	27	—	—	
Religiously inspired	39	40	—	—		24	36	—	—	
Right wing	30	31	—	—		14	21	—	—	
Single issue	6	6	—	—		5	8	—	—	
Type of homicide										
Domestic homicide	—	—	111	37		—	—	107	43	—
Nondomestic homicide	—	—	165	55		—	—	123	49	
Unknown	—	—	24	8		—	—	19	8	
Marital status^a										
Not in a relationship	35	64	86	51	ns	33	77	71	49	***
In a relationship	20	36	83	49		10	23	75	51	
Missing	43		131			23		103		
Employment status^a										
Unemployed	39	51	109	63	ns	30	56	90	60	ns
Employed	38	49	65	37		24	44	59	40	
Missing	21		126			12		100		
Education level^a										
Primary	0	0	27	25	***	0	0	25	26	***
Secondary	36	66	75	67		26	63	64	66	
Higher	19	34	9	8		15	37	8	8	
Missing	43		189			25		152		

Note. Percentages are based on known observations only. ns = nonsignificant; — = no significance tests because of cell count less than 5.

^aChi-square.

^bThe t test.

p ≤ .05. p ≤ .01. ***p ≤ .001 (two-tailed).

although not significantly, more than Lone Actors ($n = 39$; 51%). Our sample of homicide offenders was, however, significantly less educated than Lone Actors: About one third of Lone Actors obtained some form of higher education, compared with less than 10% of homicide offenders, $\chi^2(2) = 29.2$; $p \leq .001$.

When we zoom in on the ideology of the 66 Lone Actors acting alone, results showed that among both right-wing oriented and religiously inspired Lone Actors, about half acted truly alone (48% and 56%). All of the Lone Actors motivated by "other" ideologies acted alone. Comparing Lone Actors acting alone with homicide offenders acting alone, results showed the first group to be younger, $t = -3.4$ (313); $p \leq .001$, than the latter (see Table 2, right); more often single, $\chi^2(1) = 10.6$; $p \leq .001$; and more educated in school. Furthermore, distributions in gender, employment status, and educational level did not differ between the subset of single perpetrators and all Lone Actor perpetrators. Individual Lone Actors were, however, more likely to be single compared with those acting alone or in dyads or triads.

Psychological background and violent history. Among all European Lone Actor terrorists, in approximately one third ($n = 36$; 37%), there was some indication of mental illness. Of this subset, about 25% underwent a clinical examination and were diagnosed with a particular mental disorder. Indications of mental illness did not appear to be highly prevalent among right-wing ($n = 8$; 27%) and religiously inspired actors ($n = 11$; 28%). Yet, for the subgroup of those motivated by other causes (including school shooters), a higher percentage of indications for mental illness was found ($n = 13$; 72%). In total, social isolation was reported in about one quarter ($n = 24$; 25%). Lone Actors motivated by other causes, including school shooters, experienced the highest degree of social isolation ($n = 10$; 56%); religiously inspired actors, in contrast, the lowest ($n = 5$; 13%). Furthermore, substance use was found in about two out of 10 ($n = 21$; 21%) Lone Actors. As for history of violence, in about one third ($n = 32$; 33%), there were indications of previous physical violence. When we zoom in on perpetrator ideology, findings showed that for right-wing and religiously inspired actors, one third ($n = 10$ and $n = 13$; 34%) had been previously violent and 17% for actors motivated by other causes ($n = 3$). Little over one third of the total sample of Lone Actors had previously been criminally sanctioned ($n = 34$; 35%). Finally, 11 out of 98 perpetrators committed suicide following the attack, eight of which were single perpetrators.

Compared with "common" homicide offenders, as for mental health disorder, there appeared to be at least some indication of mental illness for both Lone Actors ($n = 36$; 37%) and "common" homicide offenders ($n = 47$; 48%), though both groups did not differ significantly in this regard (see Table 3, left). In terms of event outcome, Lone Actors were significantly more likely to commit suicide ($n = 11$; 11%) compared with homicide offenders ($n = 11$; 5%); $\chi^2(1) = 4.9$; $p \leq .05$.

Other personal characteristics included having a history of violence and having a history of substance use (e.g., alcohol and/or drugs). Sixty-one percent of homicide offenders had a history of (physical) violence versus only one third of the Lone Actors, $\chi^2(1) = 19$; $p \leq .001$. As for substance use, only 21% of Lone Actors had a history of

Table 3. Psychological Background and Violent History of European Lone Actors Versus European Homicide Offenders.

Psychological background and violent history	All perpetrators					Single perpetrators				
	Lone Actors n = 98		Homicide offenders n = 300		Significant	Lone Actors n = 66		Homicide offenders n = 249		Significant
	n	%	n	%		n	%	n	%	
Indication of mental illness ^a										
No	62	63	51	52	.11	34	52	45	51	.91
Yes	36	37	47	48		32	48	44	49	
Missing	—		202			—		160		
Indication of substance use ^a										
No	77	79	33	19	***	52	79	29	19	***
Yes	21	21	145	81		14	21	121	81	
Missing	—		122			—		99		
History of violence ^a										
No	66	67	59	39	***	46	70	53	41	***
Yes	32	33	92	61		20	30	75	59	
Missing	—		149			—		121		
Committed suicide ^a										
No	87	89	228	95	*	58	88	188	95	*
Yes	11	11	11	5		8	12	10	5	
Missing	—		61			—		51		

Note. Percentages are based on known observations only. ns = nonsignificant.

^aChi-square.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$ (two-tailed).

substance use, which is substantially less than the 81% for homicide offenders, $\chi^2(1) = 95; p \leq .001$.

When we compared Lone Actors acting alone with homicide offenders acting alone (Table 3, right), we found the first group to be significantly more likely to commit suicide following the event—12% versus 5%; $\chi^2(1) = 3.9; p \leq .05$ —but less likely to have a history of substance use—21% versus 79%; $\chi^2(1) = 69.1; p \leq .001$ —or a history of violence—30% versus 59%; $\chi^2(1) = 13.9; p \leq .001$ —compared with homicide offenders.

Relative to the overall group of Lone Actor terrorists, indications of mental illness ($n = 32; 48\%$) and social isolation ($n = 24; 31\%$) appeared to be somewhat more prevalent among individual actors. Furthermore, similarities between the subset of single perpetrators and the total group of Lone Actor perpetrators were found in terms of suicidal outcome, indications of substance use, and history of violence.

Multivariate analysis. The results of the logistic regression analysis showed that none of the sociodemographic characteristics differed between Lone Actors and homicide offenders, when controlling for the other variables (see Table 4). Multivariate analysis showed that relative to common homicide offenders, Lone Actors were about 3.5 times less likely to have a history of substance use (odds ratio [OR] = $-0.03; p \leq .001$).

Table 4. Logistic Regression Analysis for Lone Actors Versus Homicide Offenders.

Characteristics	Logistic coefficient	SE	Odds ratio
Predictor variables			
Age under 25	0.466	0.756	1.593
Male	2.049	1.482	7.763
Not in a relationship	0.689	0.654	1.992
Violent history	-0.062	0.664	0.940
History of substance use	-3.674	0.857	0.025***
Victim was stranger ^a	4.515	0.865	91.35***
Firearm used ^a	1.774	0.810	5.893*
Suicide	2.198	1.567	9.009

^aAnalyzed on perpetrator level.

$p \leq .05$. $p \leq .01$. *** $p \leq .001$ (two-tailed).

Lone Actors, however, were about 4.5 times more likely to have attacked “stranger” victims (OR = 91.35; $p \leq .001$) and about 1.8 times more likely to have used firearms in their attacks (OR = 5.7; $p \leq .001$).

Discussion

Findings

This is the first study to empirically assess the characteristics of Lone Actor terrorists in Europe in the period 2000-2016 and empirically compare this group of offenders with “common” homicide offenders. Findings showed that in this period, the majority of Lone Actor attacks took place in Great Britain, France, Germany, and Sweden. In line with previous studies on Lone Actors (Fein & Vossekuil, 1999; Gill et al., 2014; Spaaij & Hamm, 2015), our results showed that religiously inspired Lone Actors, followed by right-wing Lone Actors, committed the majority of these attacks. They mostly used firearms and explosives to commit the offense, and typically targeted civilians, military targets, or religious targets. The majority of Lone Actors were men in their late 20s to mid-30s, a finding comparable with previously described European and American Lone Actor samples (Gill et al., 2014). Also, Lone Actors were oftentimes single and/or unemployed, and obtained some form of higher education. In one out of three actors, there were indications of mental illness, but less so among the two most predominant groups of religiously inspired and right-wing Lone Actors.

We also found one in five perpetrators to be socially isolated, which might lead us to reevaluate the use of the term “lone wolf”: Rather than operating out of social isolation, these actors act alone but may not actually be lonely. When particularly looking at subgroups, those inspired by religion were rarely socially isolated, in contradiction to those motivated by so-called “other causes.” Perpetrators in the latter group were oftentimes socially isolated and previously diagnosed as suffering from mental health problems. A critical observation needs to be made, however, when it comes to

operationalizing social isolation: In this digital era, one can feel very much connected to online groups and online contacts who may share similar ideologies and interests, while considered by conventional standards as “socially isolated.” Furthermore, from the data itself it cannot be concluded whether “isolated individuals” were already attracted to political violence but unable to join a group, or were once part of an organization but thrown out because of extremist behavior or lack of social skills, or that the isolation itself formed a cause of anger and resentment leading to violence.

Furthermore, in about one third of the Lone Actor perpetrators, we found indications of a mental disorder. Even though it should be emphasized that this figure is subject to reporting bias, and needs to be cross-checked with health records, such prevalence does not differ tremendously from the general European population—A representative random sample of over 20,000 inhabitants in six European countries showed that one third reported a lifetime history of a mental disorder, of which mood disorders and anxiety disorders were the most common (Alonso et al., 2004). This finding, combined with the observation that in the majority of Lone Actors there was no indication of a mental disorder, challenges the popular notion that Lone Actors are “crazy” or “lunatics.”

Furthermore, our findings revealed that, in spite of a large proportion of missing values, many Lone Actors completed secondary education or even higher education. Such relatively high levels of education may partially explain why these individuals have been successful in designing, planning, and eventually committing an attack.

Cut From the Same Cloth?

In terms of differences between Lone Actor terrorists and homicide offenders, we found Lone Actors, paradoxically, to be more likely to commit the offense with others compared with homicide offenders, the latter being more likely to truly act alone, rather than in a dyad or triad. The differences between both groups could mostly be summarized by instrumental versus expressive motivations, a distinction commonly used in homicide research (Salfati, 2000): Lone Actors being mostly driven by instrumental aims, whereas homicide offenders typically commit the offense in the context of interpersonal conflict. The expressive nature of the homicidal act was reflected in the higher prevalence of a history of physical violence and substance use among homicide offenders. Furthermore, the expressive nature of the violent event could be observed in the direction of their aggression: While Lone Actors victimized strangers, military targets, or religious targets, in public places with a firearm or explosives, homicide offenders rarely attacked strangers and instead committed the offense in a private location, with knives, firearms, or hands-on weapons, findings reported before in U.S.-based comparative research (Capellan, 2015; Gruenewald, 2011; Gruenewald & Pridemore, 2012; Horgan et al., 2016). It may be argued that such Lone Actor targets represent either strategic targets, such as military objects, or targets chosen to send out an ideological message of terror—including targets that are associated with a large number of victims to maximize impact. In such cases, the high prevalence of suicide among Lone Actors may be understood as a willingness to die in the “mission”

(Fein & Vossekuil, 1999), while carrying out their ideological pursuit, rather than suicide following a “common” homicide. In these homicides, which are mostly of domestic nature, the suicidal offender is oftentimes motivated by dependency on the victim(s) and a desire to be reunited with the victim(s) after death (Liem, 2010).

Exceptions to the expressive versus instrumental dynamic include Lone Actors who choose targets that represent a particular personal grievance: For example, students in school or college who represent the bullies who once bullied the shooter. These offenders, one may argue, have more in common with homicide offenders who attack victims known to them, toward who they have a particular grievance, such as (estranged) intimate partners, rivals in love, or friends/acquaintances with whom they are in conflict (McCauley et al., 2013). Such heterogeneity calls for future comparisons of Lone Actor subgroups compared with homicide offender subgroups.

Also, we should be careful not to equate the attacking of strangers with the attacking of random individuals. While most Lone Actors do not personally know their victims, this does not imply that victims are chosen at random—For the offender, such victims represent “infidels,” “cultural Marxists,” or “baby killers.” This is arguably exactly the difference between Lone Actors and homicide offenders: Because the Lone Actor event is ideologically or religiously motivated, we tend to label the victims as “strangers,” thereby risking to lose sight of underlying Lone Actor motivations that may help us to better understand how these categories truly differ from one another.

Limitations and Future Research

While homicide research has a long tradition of assessing homicides by subtype, such as by distinguishing motives, the Lone Actor empirical literature to date has suffered from a fairly low *n*, hampering such distinctions and differentiations. The study at hand struggled with the same limitation, as subgroups of Lone Actors were overall too small to statistically assess differences between subgroups. Future studies should attempt to overcome this limitation by resorting to a multicenter design, also employed in the study of other rare types of lethal violence (see, for example, Nielsen et al., 2009).

Furthermore, ideally we would have liked to use similar time periods and similar geographical distributions in cases (Lone Actors) and controls (homicide offenders) to optimize comparisons. To date, however, the EHM is the only European, internationally comparable dataset with individual-level data in use. Future research endeavors, including implementing the EHM in other European countries, may allow for such future comparisons. Efforts such as these are currently made to extend the EHM to Estonia, Scotland, and Switzerland (Liem, Lehti, Kivivuori, & Granath, 2017). In doing so, each EHM country member should be encouraged to also include variables specific to Lone Actors, to not only increase the sample size of European Lone Actors but also increase the overall comparability of this special group of offenders.

The empirical research base of Lone Actor attacks, particularly occurring in Europe, is still limited, despite some recent attempts to further improve our understanding of these events (Ellis et al., 2016a, 2016b). On one hand, this may be due to the

fragmented nature of lethal violence research in Europe (Liem & Pridemore, 2014), in which each European country adheres to its own homicide definition and its own national reporting agency. On the other hand, the relative scarcity of empirical research in this area may be due to the lack of access to primary data. This holds true not only for Lone Actor terrorist attacks but also for other types of rare events such as mass homicides (see also Sarteschi, 2016). Furthermore, low-*n* attacks such as Lone Actor offenses, particularly when they constitute hate crimes, may go underreported, inhibiting a concise, structural evaluation of this phenomenon. By using open-source data, we attempted to overcome this problem. This approach, however, suffers from several shortcomings, primarily concerning missing values. For instance, some reports were too short to provide insight into some variables, such as the political motivation of the perpetrator, or were not reliable. Where available, court proceedings or public investigation reports were used to confirm or adjust findings from media reports. In addition, to improve reliability, as documented elsewhere (Freilich & LaFree, 2015), sometimes the materials found on a specific case include different types of sources (e.g., indictments vs. news articles). Future empirical work in this area should rank the different source types in terms of reliability (Freilich & LaFree, 2015).

Also, even though all Lone Actor terrorists included in the studied dataset concern individuals who aimed for their attack to be lethal, not in all cases the outcome led to fatalities. Ideally, our comparison group of homicide offenders would also have included those who intended to lethally wound the victim but did not do so. Future research should overcome this limitation, and also seek to include detailed offender information, such as level of education, marital status, noteworthy life events, and so forth, to conduct detailed comparisons on both populations (Lone Actor terrorists and homicide offenders), with the overall aim to come to a complete understanding of these extremely rare, but high-impact events.

In spite of these shortcomings, this is the first study to examine how perpetrator and incident characteristics of European Lone Actor terrorists compare with European “common” or “routine” homicide offenders. Estimation models showed that Lone Actors did not differ that much on sociodemographic features, but rather on event and personal characteristics. On the contrary, these findings call into question to what extent we are truly dealing with a particular subtype of offenders—The fact that both Lone Actors themselves and society deem their motive to be ideological, religious, or political, combined with the fact that their attacks have a profound societal impact in terms of the number and seeming randomness of victims and modus operandi, sets them apart from other types of violent offenders.

It should be questioned, however, whether this construct (defining Lone Actor terrorism based on ascribed ideological motivation and victim choice) is a useful one to come to a full understanding of individual motivations underlying the event. Future research should further assess this notion, whereby criminological literature on the influence of life events (e.g., Sampson & Laub, 2005), criminal careers (e.g., Piquero, Jennings, & Barnes, 2012), and impulsivity (e.g., Meloy & Pollard, 2017) may provide theoretical insights. In such future attempts, the role of mental illness warrants particular attention—In the case of a profound role of mental illness, it may be questioned

what causes one offender to commit a politically, religiously, or ideologically motivated crime aimed at strangers, while another offender suffering from a similar mental disorder resorts to victimizing individuals known to him.

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Notes

1. This definition roughly covers the definition used in the U.S. National Violent Death Reporting System (NVDRS) employed by the U.S. Department of Health and Human Services (Centers for Disease Control and Prevention, 2016).
2. When analyzing event characteristics specifically, we retained only one Lone Actor of each small cell per event.
3. Separate events by Lone Actors targeting six schools, five politicians, three police officers, and four random events.

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