

Scattered Attacks: The Collective Dynamics of Lone-Actor Terrorism

Stefan Malthaner, Francis O'Connor and Lasse Lindeskilde

The proliferation of lone-actor terrorist attacks over the past decade has led to a rapidly expanding literature and a subfield of research. However, this research has only to a limited degree been brought into wider discussions on political violence and social movements. In the present article, we take up this synthetic challenge and argue the need to theorize the social and collective dynamics of lone-actor terrorism. The article proposes a novel analytical framework for understanding lone-actor terrorism. We provide a conceptualization that draws attention to the social embeddedness of terrorist lone-actor radicalization and the collective dynamic of lone-actor attacks. Our point of departure is the recurrent finding that lone-actor terrorists are in fact not that alone, and that their attacks tend to cluster in time and space. First, we propose to conceive of lone-actor radicalization as a relational pathway shaped by social ties and interactions with radical milieus/movements. Second, taking inspiration from Charles Tilly's notion of "scattered attacks" as a pattern of dispersed, loosely coordinated collective violence, we suggest three complementary ways of analyzing these processes and their temporal and interactive dynamic. We argue that theorizing the social and collective dynamics of lone-actor political violence is not only about addressing an empirical puzzle (the abundance of social ties; the clustered pattern of violent attacks), but about analytically capturing an entirely different and potentially increasingly relevant logic of violent processes. Thereby, and paradoxically, the very notion of "lone actors" can help us to understand the social dynamics of collective political violence more generally.

Introduction

Why do we speak of "lone-actor terrorism"? Or to put it differently: why do we find it *conspicuous* that a person would carry out an act of terrorism alone and on their own initiative? After all, individual

perpetrators of most other types of crime or violence do not seem enigmatic or to require explanation: we do not speak of "lone-actor thieves" or "lone-actor rapists." The answer to this question is, of course, that these attacks are understood—by perpetrators, victims, authorities, and

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observers—to be acts of *political* violence, and that there is a relational element in the way political meanings are constructed in violent action. Political violence is violence “in the name” (Heath-Kelly 2013): violence that claims legitimacy based on a notion of representation, of fighting for the sake of some religious or ethnic community, the “white race,” or an equal and just future society. When it comes to political violence, the targets of attacks symbolically represent larger groups or categories of people, entities such as “the state,” or certain values or lifestyles (Goodwin 2006). Violence is perceived as political when it is linked to broader radical movements that are acknowledged as the collective protagonists (however incoherent and constructed) in episodes of violent contention, and which, in their countercultural work, produce the identities and categories toward which violent acts are oriented.

Lone-actor terrorism, thus, is a confusing phenomenon, but at the same time one that is illuminating for political analysis. Lone-actor attacks are positioned in a relational matrix of political meanings and motives. But the fact that the perpetrators planned and carried out the attack on their own, that their relationships to militant groups are more diffuse and contradictory, and that their ideological references are at times more idiosyncratic is unsettling for the way we are accustomed to conceive of political violence. Therefore, the question of the extent to which lone actors are embedded in and “speak for” a movement and in what way their violent acts form part of broader violent campaigns is crucial for understanding the mechanics of lone-actor radicalization and the threat of future attacks. It also allows us to examine the elementary social and political dynamics that shape this phenomenon and political violence more generally.

In this article, we offer a novel approach to theorizing the social embeddedness of terrorist lone actors and the collective dynamics of lone-actor political violence. While its purpose is mainly theoretical, we draw on extensive empirical data—including the Lone Actor Radicalisation and Terrorism (LART) dataset as well as a number of in-depth case studies—to illustrate and develop our theoretical arguments.¹ Our point of departure is the recurrent finding in the literature that most terrorist lone actors² are not that alone, and that their attacks tend to cluster in time and space. Many perpetrators not only identify with broader political movements but also have direct, personal ties to radical networks or have participated in radical movements in the past (Gill 2015; Gill, Horgan, and Deckert 2014; Hofmann 2020; Lindekilde, Malthaner, and O’Connor 2019; Schuurman et al. 2018). Yet, even if lone-actor political violence is rarely a matter of isolated loners, theories of group-based radicalization or organized terrorist campaigns are ill suited to analyzing lone-actor terrorism, given their focus on intragroup dynamics,

leaders’ strategic decision making, and linear-like radicalization toward political violence. This leads to the two-fold challenge that this article seeks to address. First, to develop an understanding of lone actors as linked to radical milieus³ and movements while recognizing the conflictive, discontinuous, and often contradictory nature of this relationship. Second, to analyze lone-actor attacks not as singular events but as connected and as a part of “waves” of attacks, while taking seriously their autonomous, decentralized, and emergent character. In sum, we argue that we need to move beyond an individualizing notion of lone-actor terrorism, while capturing the inherent tension in this phenomenon between a detached form of radicalization and autonomous attacks *and* a collective dimension of imbibing others’ ideas, interacting with political movements (extremist or otherwise), and the connectivity of otherwise scattered episodes of lone-actor attacks.

The analytical framework that we suggest seeks to outline ways of theorizing the social and collective dynamic of lone-actor terrorism at two interconnected levels. The first section of this article addresses the question: *how are individual perpetrators and trajectories of lone-actor radicalization socially embedded in radical milieus, networks, and personal relationships?* We conceive of lone-actor radicalization as a *relational pathway* that is driven and shaped by particular patterns of interaction within (or on the margins of) online and offline settings, and that is facilitated and to some extent “produced” by the structure and legitimizing discourses of particular radical milieus and movements. The second section shifts the focus away from individual trajectories to the *collective dynamics of episodes of lone-actor political violence*. Taking inspiration from Charles Tilly’s work on collective violence—and his notion of “scattered attacks” as a pattern of dispersed, loosely coordinated collective violence (Tilly 2003)—we seek answers to the following questions: *How does lone-actor political violence “spread”? And how do violent incidents tend to become connected in sequences or “waves” of lone-actor attacks?* We suggest three complementary approaches to theorize these processes and their temporal and interactive dynamics. First, the clustering of attacks in time and space can be understood as resulting from *parallel responses* by disconnected individuals to a particular event or changes in their political and sociocultural environment. Second, episodes of lone-actor violence can be analyzed by focusing on *processes of diffusion*, in which tactics and ideas are transmitted across movements and societies, thus accounting for the spread of particular violent practices. Finally, a third way of explaining the dynamics of violent episodes is to examine patterns of *interactive coordination*, in which autonomous perpetrators display what we call “microstrategic agency,” by linking their actions to prior attacks and broader movements, thereby collectively (and interactively) constructing a common, interconnected violent campaign.

Table 1
Overview of Approach to Theorizing the Collective Dynamics of Lone-Actor Terrorism

Level of analysis	Suggested conceptualization
Individual Actors: the social embeddedness of lone actors	(I) Radicalization as a relational pathway
Clusters of Attacks: the collective dynamic of lone-actor terrorist attacks	(II) Parallel responses (III) Processes of diffusion (IV) Interactive coordination

Table 1 summarizes our approach to theorizing the collective nature of lone-actor terrorism, both in terms of the social embeddedness of the actor and the collective dynamics of clusters of violent attacks.

With this framework, we seek to provide tools for theorizing what has been called “post-organizational violent extremism” or “stochastic terrorism” (see, *inter alia*, Hamm and Spaaij 2017; Hoffman and Clarke 2020), the more diffuse, decentralized patterns of political violence that currently seem to be proliferating across the United States and Europe. These pose a particular challenge to security services by undermining traditional methods of intelligence gathering. Paradoxically, the strength and sophistication of contemporary intelligence agencies in infiltrating and surveilling organized extremist movements may have contributed to the proliferation of lone-actor terrorist attacks. Movements responded to successful policing operations by decentralizing their control and command structures, shifting the onus onto individuals to act according to broader ideological goals rather than specific leadership orders. Emphasizing the *social* dynamics that shape these phenomena must not be misunderstood as discounting the relevance of personal backgrounds and psychological processes (Corner and Gill 2015). On the contrary, we aim to chart new ways of analyzing how they interact. This article’s approach implies a fundamental shift in how we conceive of lone-actor terrorism, which is not merely about the fact that perpetrators are “not that alone.” It demonstrates that lone-actor terrorism—as a particular form of political violence perpetrated by autonomous individuals—is nevertheless a *collective phenomenon*, shaped by processes of interaction and diffusion within networks and movements, which are no less effectual for being decentralized, emergent, and sometimes conflictive and discontinuous. We contend that by theorizing the collective nature of lone-actor terrorism, we offer a vantage point better suited to analytically grasping this phenomenon, which can potentially help social and security services to deal with it more effectively. It is only by recognizing trajectories of lone-actor radicalization as relational pathways shaped by decentralized and discontinuous interactions with extremist communities and milieus, and considering episodes of lone-actor attacks as scattered, albeit to some extent coordinated, that authorities can hope to identify patterns

of intelligence that will enable prevention and interdiction of lone-actor terrorism.

This article is organized into two main sections, following the structure outlined in table 1. The first section addresses the social embeddedness of lone-actor radicalization and outlines a conception of lone-actor radicalization as a relational pathway. We do so by drawing upon extant relational approaches to the study of political activism and militancy developed primarily within social movement studies. The second section moves from the analytical level of individual radicalization to the level of violent attacks and their clustering in space and time. Here we address the collective nature of lone-actor terrorist attacks by offering three complementary explanations of how lone-actor violence spreads and becomes connected—“parallel responses,” “processes of diffusion,” and “interactive coordination”—which draw inspiration from Charles Tilly’s (2003) notion of “scattered attacks” as weakly or indirectly coordinated violence. In both sections we review the relevant literature used to build our theoretical argument and integrate empirical data to illustrate this. We conclude by summarizing the suggested theoretical approach and discussing its implications, limitations, and relevance for practical counterterrorism work.

The Social Embeddedness of Lone-Actor Terrorists

During the past decade, lone-actor terrorism became the subject of a rapidly expanding literature—and a subfield of research in its own right. This research has certainly yielded valuable results (for overviews, see Holzer et al. 2022; Kenyon, Baker-Beall, and Binder 2023). Several systematic studies based on large datasets identified dispositional factors, as well as patterns of radicalization and attack preparation (see, *inter alia*, Gill 2015; Gill, Horgan, and Deckert 2014; Hamm and Spaaij 2017; Pitcavage 2015; Spaaij 2012). In-depth research on smaller samples of cases produced various typologies of lone actors and insights into mechanisms of radicalization (Bakker and de Graaf 2011; Borum, Fein, and Vossekuij 2012; Feldman 2013; Gartenstein-Ross 2014; Hewitt 2014; McCauley and Moskalenko 2014; Nesser 2012; Pantucci 2011). Even if the paradigm of the “lone actor” (or “lone wolf”)

led some researchers to (overly) focus on the perpetrators' personal characteristics and social backgrounds, early empirical studies found that lone actors were, in different forms and to varying degrees, linked to radical milieus and movements. Gill and his colleagues found that in 79% of the cases in their dataset, acquaintances had knowledge of the perpetrator's radical beliefs; more than half of the perpetrators had personal contacts with members of radical networks; and another 35% had contacts with radical milieus via digital media (Gill, Horgan, and Deckert 2014, 433–34). Schuurman and colleagues (2018, 3) found that the majority of lone actors referred to or even received some kind of justification from radical leaders. Building on these insights, subsequent research started to examine processes of lone-actor radicalization in the context of broader radical milieus (Lindekilde, Malthaner, and O'Connor 2019; Malthaner and Lindekilde 2017; McCauley and Moskalenko 2014); the role of ideological and support networks (Berntzen and Sandberg 2014; Bright, Whelan, and Harris-Hogan 2020; Hofmann 2020; Weimann 2012); the impact of extremist discourse; or strategies of "leaderless resistance" propagated by movement ideologues (e.g., Joosse 2007; Joosse, Bucerius, and Thompson 2015; Kaplan 1997; Pitcavage 2015). For example, Berntzen and Sandberg (2014) convincingly show how Anders Behring Breivik drew ideological inspiration for his manifesto's rationalization of violence from the broader anti-Islamic movement, although this movement, for the most part, is opposed to lethal political violence. Yet, despite this shift toward emphasizing social context, conceptual advances have been limited, and most studies have confined themselves to identifying some sort of connection to or support from others, or relying on a generic notion of "contextual factors." More recently, the focus seems to have shifted, again, to the individual level and the character traits of the perpetrator, in particular the role of mental illness.

Building on advances in this field, we argue that to understand lone-actor radicalization—and to link it analytically with the broader dynamics of violent episodes—we must go beyond adding context to an individualizing explanatory paradigm focusing on single perpetrators' backgrounds and motivations. Starting from the empirical puzzle that many lone-actor terrorists act alone while having ties to radical milieus and online communities, we propose an approach that analyzes *lone-actor radicalization as a relational pathway*, which draws on, among other things, social movement theory on micromobilization.

Lone-Actor Radicalization as a Relational Pathway

Conceiving of radicalization as a relational pathway means, for one thing, examining how individual trajectories are facilitated, driven, and shaped by relationships and interactions with other activists, networks, and radical milieus. The basic idea, developed in the literature on

micromobilization, is that "radical" motivations and mindsets do not precede (and thus cannot explain) pathways toward activism. Instead, preexisting social ties enable recruitment by connecting individuals to activist milieus. Newly formed activist friendships then channel new recruits toward more militant forms of action, as attitudes and ideas are gradually transformed through processes of socialization in activist groups (McAdam 1986; McAdam and Paulsen 1993; Passy 2001; Snow, Zurcher, and Ekland-Olson 1980). Applying this approach to the study of jihadist terrorism, Mark Sageman and Quintan Wiktorowicz similarly find that friendship and kinship ties are instrumental in linking individuals to jihadist networks (Sageman 2004), and that radicalization is driven by dense interactions and "learning" within radical milieus (Wiktorowicz 2005; for an overview, see Malthaner 2017, 376–82). Thus, this literature stresses what Florence Passy (2001, 174, 180–82) calls the *structural-connection function* of networks, as well as their *socialization function* (174, 178). Moreover, it shows that micromobilization often unfolds in a sequential pattern, with "low-risk activism" facilitating and "paving the way" toward "high-risk" forms of activism (McAdam 1986, 69–70). Within this dynamic, the transition from nonviolent political activism to clandestine violence is frequently inadvertent rather than a conscious decision (McCauley and Moskalenko 2017, 49).

How, then, can this perspective help us to capture the social and collective dynamics of lone-actor terrorism? Existing research on the social embeddedness of lone-actor radicalization charts the relational connections of a sample of perpetrators ($n = 30$) over time (Lindekilde, Malthaner, and O'Connor 2019; Malthaner and Lindekilde 2017). It finds that most pathways of lone-actor radicalization are, in fact, embedded in various types of social environments, with at times intensive social ties to other radical activists and radical milieus, online and offline. Yet, these trajectories do not correspond to known patterns of radicalization into terrorist groups. Instead, the radicalization of lone actors seems to follow more discontinuous, conflictive, and overall more complex trajectories, which often evolve on the periphery rather than at the center of radical networks and milieus. While some individuals are socially embedded in groups or movements at least for some period of time, other lone actors fail to join or are rejected from milieus, drift in the margins, or withdraw after conflicts with others from these settings. Thus, Lindekilde and colleagues find that while almost all lone actors are, indeed, not "that alone," they differ significantly in the way and the degree to which they are embedded in radical groups or milieus, which leads them to identify a *set of different but recurring relational patterns* in lone-actor radicalization (see table 2, and Lindekilde, Malthaner, and O'Connor 2019). One pattern is that individuals at some earlier point in time became members of radical milieus or even terrorist groups

Table 2
Relational Patterns of Lone-Actor Radicalization

Embedded	Peripheral
Formerly embedded: involuntary or voluntary departure from radical group before attack.	Withdrawn: selective commitment and self-withdrawal.
Autonomous: remains embedded in radical group until attack.	Anti-social: social rejection and inability to engage socially.
	Volatile: unstable commitment and lifestyle.

Note: Based on tables 2 and 3 in Lindekilde, Malthaner, and O'Connor (2019).

but for some reason left, were expelled, or were cast adrift after groups disintegrated. This *formerly embedded* subset of cases includes “Abdi,”⁴ a Danish man of Somali origin, respected in his local community, who, after becoming part of jihadist networks in Denmark, had joined the al-Shabab militia to fight in Somalia. He was later arrested in Kenya and had to leave the group. Upon his return to Denmark, he withdrew in frustration from personal as well as political/religious networks and eventually decided to carry out an attack on his own. A second, slightly more common pattern involves *autonomous* lone actors who are more or less well integrated into broader movements or radical milieus but carry out a terrorist attack alone and on their own initiative—either because they believe that their comrades are incapable or unwilling to put their beliefs into action or to protect the milieu by taking individual responsibility for violence. A good example of such a pattern is Timothy McVeigh,⁵ who was an active and well-connected figure in the US patriot militia milieu before planning and perpetrating the Oklahoma City bombing in 1995. Whereas these embedded and formerly embedded types account for around half of the cases in the sample, the other half comprise lone actors who remained on the periphery of radical groups or milieus without ever becoming full members or engaging in more serious activism before their attacks. The reasons and the resulting trajectories, however, are quite different across several subtypes of peripheral lone actors. A *withdrawn* subtype is characterized by passivity and indecisiveness in their relations with radical groups, refraining from becoming more active members even when they potentially have the opportunity. An example of this radicalization pattern can be seen in the case of “Fedja,” who frequented a radical jihadist milieu and had relatively close personal contacts with jihadist activists but never managed to take the step to solidify these ties into a meaningful involvement with other radicals. In stark contrast to this “withdrawn” pattern, the *antisocial* subtype is overly self-confident and persistently engages with radical milieus, but because of their poor social skills is marginalized by others within these milieus. Finally, *volatile* lone actors alternate in an erratic pattern between engagement and withdrawal, being too impulsive and unstable to uphold their commitment for long or to be trusted by other

militants. One example of this latter type is “Kyrill,” a Belgian of Chechen descent, close to his family and friends; a boxer who got into street fights and became part of criminal networks but eventually found his way to religion. While he at times led a pious life, he time and again reverted to criminal activities, sexual affairs, and partying, before spontaneously deciding to plant an explosive device in revenge for what he saw as an insult against his religion (see Lindekilde et al. 2018 and their supplement detailing patterns of radicalization in 30 empirical cases).

Theorizing lone-actor radicalization as a relational pathway can inform our understanding of the social and collective nature of this phenomenon in several ways. First, it highlights the paradoxical fact that “lone” perpetrators, who end up carrying out acts of terrorism on their own, emerge in a fundamentally social process. We find trajectories in which interactive processes in the context of radical online and offline milieus produce varying degrees and forms of “loneness.” Rather than complete social isolation, “loneness” thereby often seems to consist of complex, discontinuous, and conflictive relationships with militant groups and movements. Distinguishing between different *types of lone-actor trajectories*, based on different relational patterns, allows us not only to capture variation in the degree of social embeddedness, but also to identify different mechanisms (and combinations of mechanisms) that drive and shape these pathways (see also Lindekilde, Malthaner, and O'Connor 2019; Malthaner and Lindekilde 2017). Furthermore, the typology suggests ways of specifying the impact of personality traits (or mental disorders); not necessarily as factors that directly affect individuals’ radicalization or violent acts, but as factors that shape how perpetrators form and sustain (different types of) relationships with their social environment.

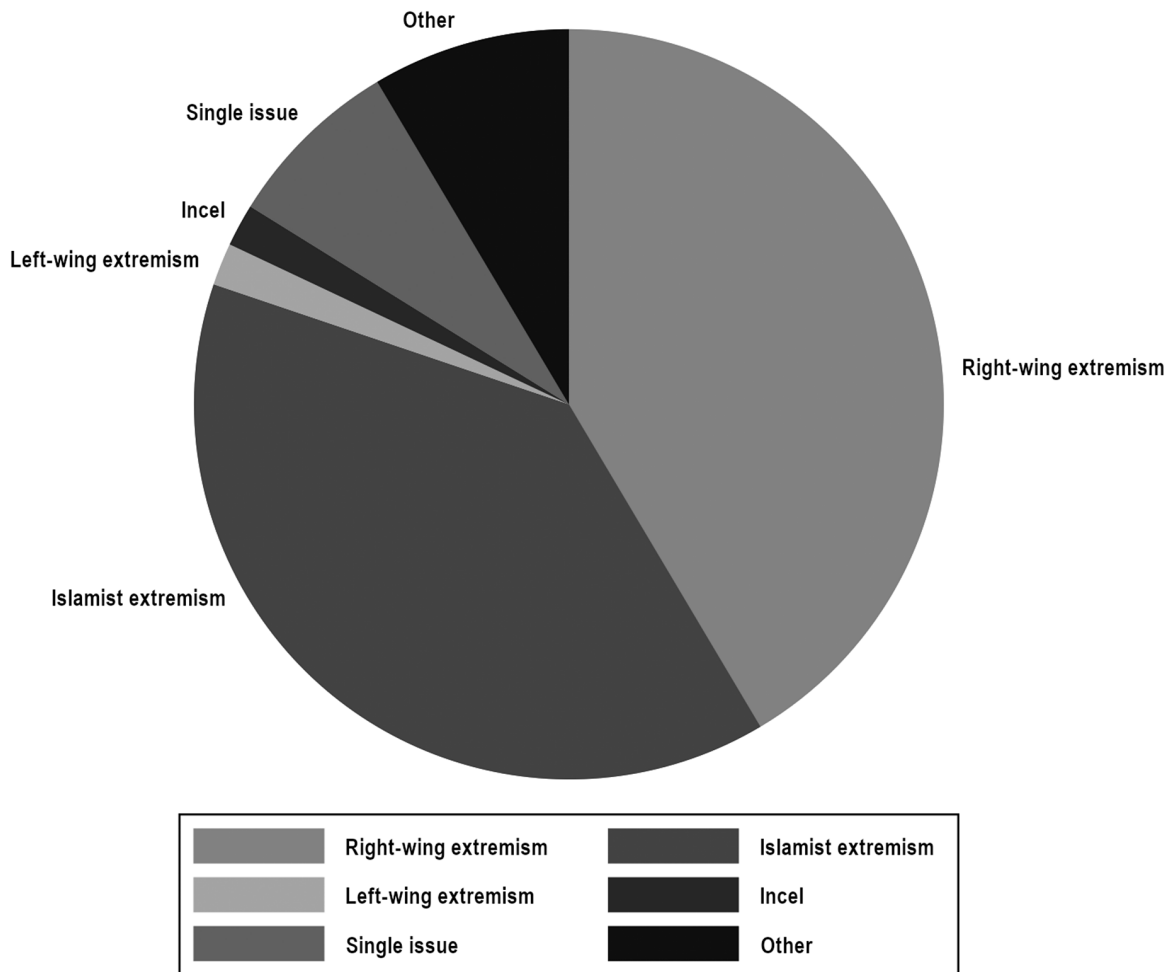
Second, and crucially, analyzing and specifying the distinctive features of lone actors’ social embeddedness allows us to address the forms of influence, identification, and connectivity that these relationships produce. The paradox, therefore, is that weak and contradictory ties can have strong relational effects. Even peripheral integration into networks and weak or conflictive social relations can serve to develop and maintain collective identities and radical frameworks of interpretation (the *socialization*

function of networks [Passy 2001]). Moreover, networks of (weak) social ties are conduits for the flow of information and communication (and spaces for the reinterpretation of external information). Because lone-actor terrorists rely on identities and legitimations to link their actions to broader movements and causes, and devise their actions in response to information about prior events, variance in social embeddedness affects the dynamics of episodes of lone-actor terrorism. In other words, the typology of relational pathways also points to different capacities and limitations of collective coordination and connectivity.

Finally, we argue that to fully grasp the extent to which lone-actor radicalization constitutes a social phenomenon, we should not individualize these pathways. A comprehensive analysis should also investigate how relational pathways are embedded in radical milieus and movements, and how they are facilitated, stabilized, and shaped by the discourses, interpretative frameworks, and structural

characteristics of these environments. We do not unpack this additional level of analysis here but limit ourselves to highlighting its relevance by pointing to the empirical observation that lone-actor radicalization and attacks do not occur evenly across different movements. Rather, particular types of movements and (local) milieus seem *more prone to “producing” lone actors than others*, and, in some cases, tend to produce specific pathway patterns. For one thing, the vast majority of lone-actor attacks emerge in the context of jihadist and right-wing movements (as well as single-issue movements, e.g., anti-abortion), but rarely in the context of left-wing militant activism or separatist movements (see figure 1). In terms of geographic distribution, countries such as Italy, with burgeoning far-right scenes and periodic instances of collective violence, see comparatively few lone-actor attacks, whereas lone-actor attacks dominate in countries such as Austria, or coexist alongside other forms of violence—for example, in

Figure 1
Lone-Actor Terrorist Incidents per Ideology, Europe and North America



Source: LART dataset, N = 328.

Germany and the UK (Castelli Gattinara, O'Connor, and Lindekilde 2018; Ravndal 2017; see also O'Connor, Lindekilde, and Malthaner 2023).

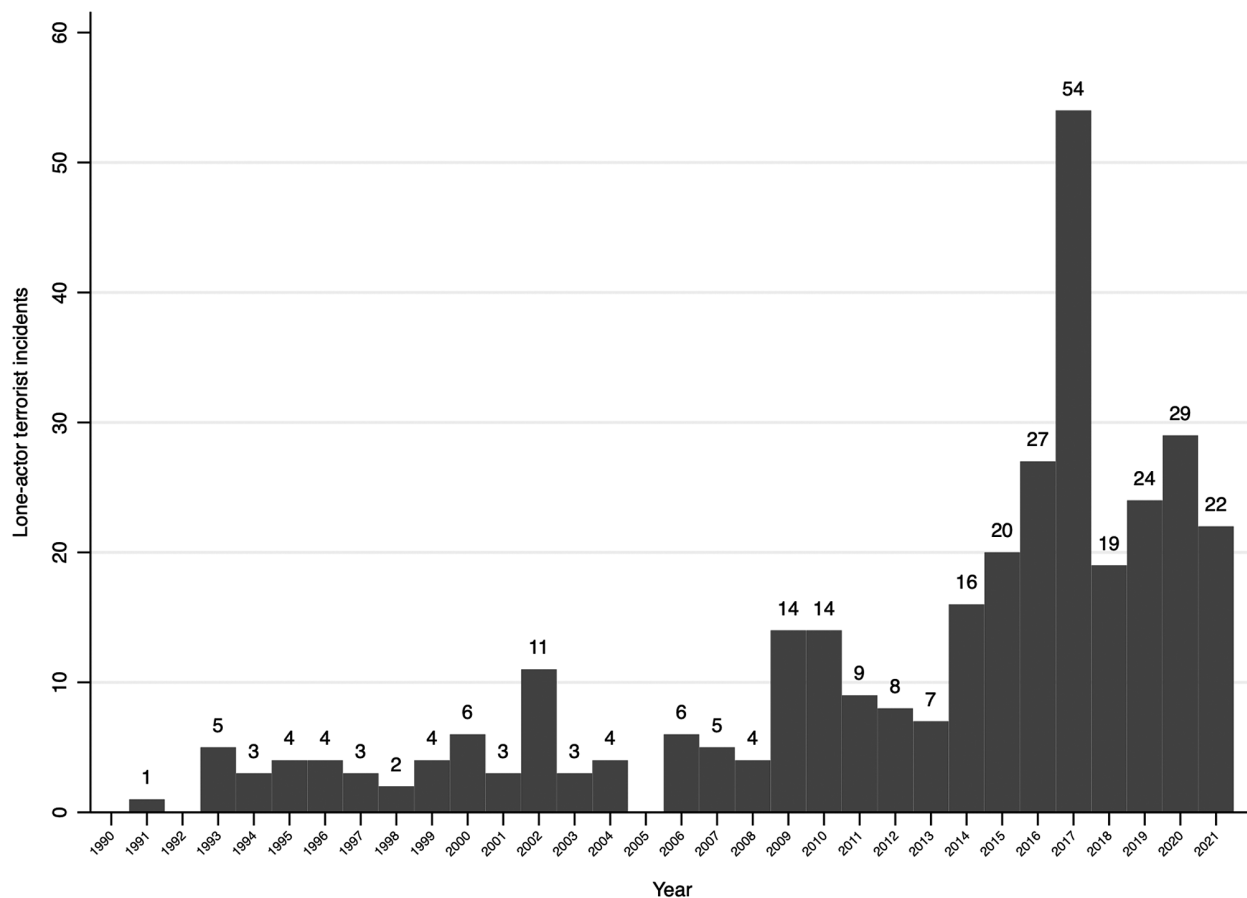
The Collective Dynamics of Lone-Actor Terrorist Attacks

We now turn our analytical attention away from the level of individual lone actors and their social embeddedness to the level of collective dynamics of lone-actor attacks. The need to think of lone-actor political violence as a collective phenomenon—and find ways to theorize its social and collective dynamics—becomes even more apparent when we make this analytical shift and consider that these attacks are rarely isolated incidents but frequently occur in clusters or “waves” and are part of broader episodes of violent mobilization. To some extent, this is reflected in the significant increase in the overall number of lone-actor terrorist attacks since 2009 (see figure 2). This increase was driven by several distinct (but overlapping) developments: the proliferation of al-Qaeda-related jihadist attacks after 2008 (e.g., the Fort Hood shooting in 2009, and the

attacks in Frankfurt in 2011 and Montauban in 2012); an upsurge of ISIS-related lone-actor incidents in 2014–18, which accompanied the group’s rapid expansion and subsequent decline in Syria and Iraq (the attacks in Nice in July 2016, Berlin in December 2016, and Manchester in May 2017, to name only a few); and a parallel surge in right-wing extremist attacks in the context of antirefugee violence. A third peak, in 2019–20, comprised a cluster of right-wing extremist attacks on mosques and synagogues following the Christchurch massacre, and overlapped with a smaller resurgence of jihadist attacks during the same period.

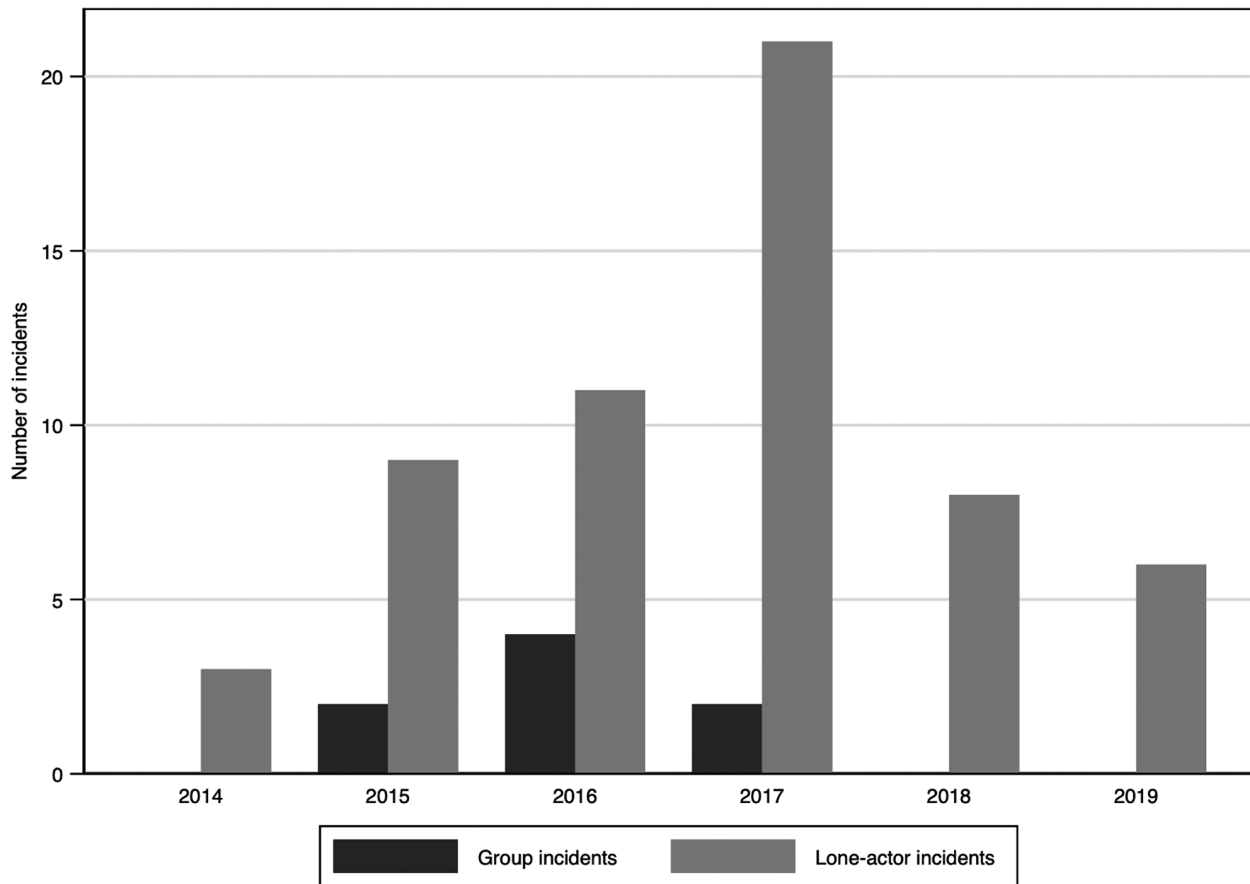
Moreover, certain episodes of lone-actor violence (with respect to geography or the perpetrators’ ideological affiliation) often seem to unfold in a similarly clustered, wavelike pattern. For example, when we look at ISIS-related lone-actor jihadist attacks in Europe between 2014 and 2019, the number of incidents increased gradually between 2014 and 2016, culminated in 2017, and then declined in 2018 and 2019, which mirrors a parallel, albeit smaller, cluster of ISIS-related group attacks (see figure 3).

Figure 2
Lone-Actor Terrorist Incidents per Year, Europe and North America



Source: LART database, N = 331.

Figure 3
Jihadist Terrorist Incidents in Europe, 2014–19



Note: N = 66.

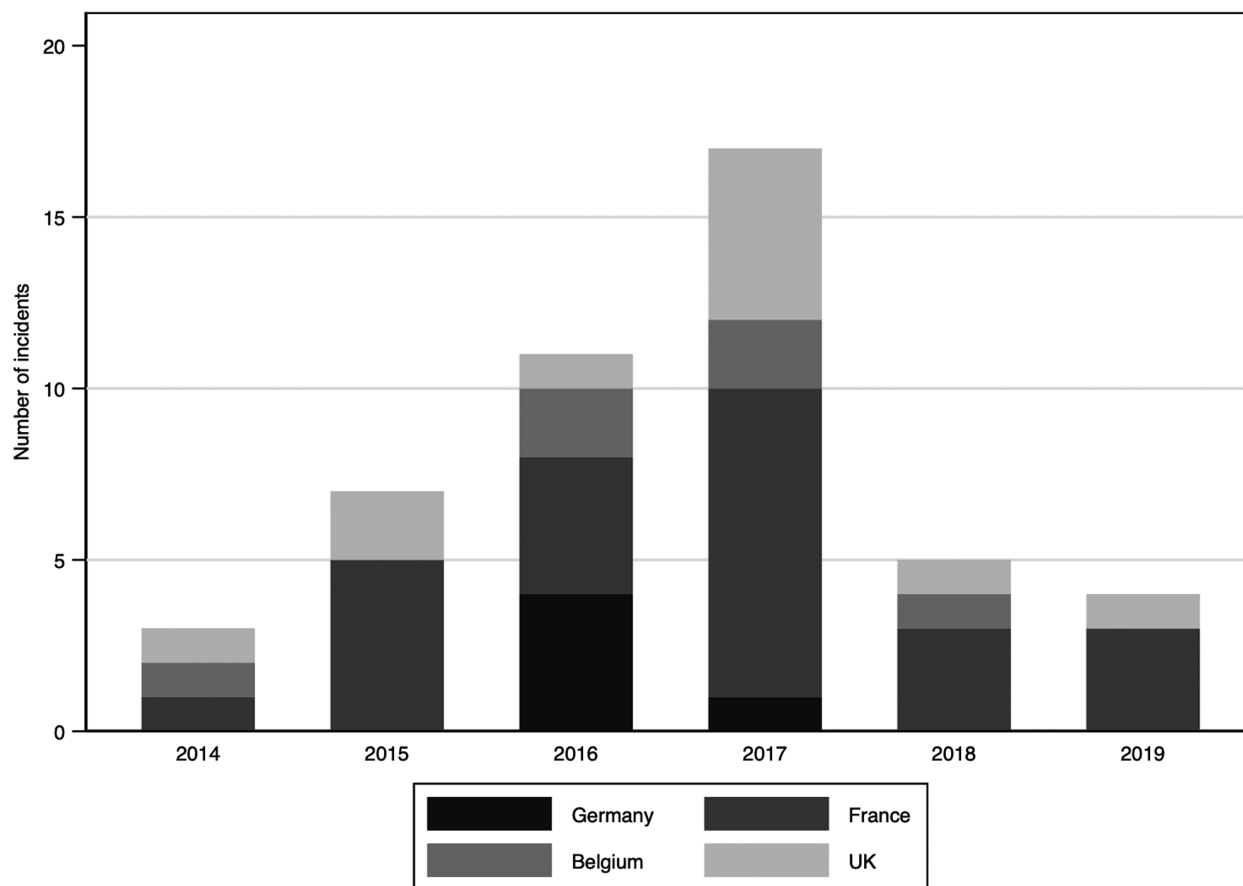
Zooming in on lone-actor violence in the four most affected countries—France, the UK, Belgium, and Germany—we again see that the overall wavelike pattern is an aggregate of several local clusters/waves, with temporally slightly offset peaks. In Germany and Belgium, violent incidents culminated in 2016, while Britain saw a peak of attacks in 2017 and France experienced a more prolonged plateau of attacks in 2015–17 (see figure 4).

As these examples show, lone-actor political violence tends to unfold in collective patterns in which individual attacks are clustered in time and space and are part of broader episodes of violent contention.

The idea that episodes of terrorist violence can be composed of dispersed and largely autonomous attacks by lone actors or cells is not alien to the literature on political violence. After all, the first (anarchist) “wave” of modern terrorism in the late nineteenth century corresponded to this pattern (Kaplan 2016; Rapoport 2004). Yet, as terrorism was understood to have since evolved into more organized violent campaigns by clandestine groups, research well into the 1990s considered it to be a

phenomenon of the past,⁶ leading scholars to focus on terrorist groups’ strategic choices or organizational structures. In the late 1990s, studies on “leaderless resistance” (Kaplan 1997; 2011) reopened a debate on the social formations behind terrorist campaigns. Dismissing centralized, hierarchical forms of organization as too vulnerable to government surveillance, leaders of right-wing extremist groups in the US had promoted “leaderless resistance” as a strategy of dispersed violent attacks by individuals or autonomous groups, “independent of any movement, leader, or network of support” (Kaplan 1997, 80), mobilized and held together by their common ideology and strong personal commitment, and coordinated via organs of information distribution such as newsletters (Kaplan 1997, 88; Michael 2012, 260). Initially considered a symptom of the decline and isolation of the militant right-wing movement (Kaplan 1997, 80, 91; Rapoport 2001, xii), the notion of autonomous individual attacks as part of a broader campaign of political violence then found its way into the “new terrorism” literature around the turn of the millennium. It predicted the advent of more

Figure 4
Jihadist Lone-Actor and Group-Based Terrorist Incidents per Country, 2014–19



Note: N = 47.

decentralized terrorist networks and individual perpetrators (and violent campaigns as “netwars”; Hoffman 2006, 292) but interpreted this transformation not as a sign of decline, but as a harbinger of increasingly unpredictable, uncontrollable, and potentially more dangerous violent threats (see, inter alia, Hoffman 2006; Lesser et al. 1999). Marc Sageman’s (2008) famous *Leaderless Jihad* alludes to these earlier debates but with a different analytical focus, analyzing emerging patterns of “homegrown” jihadist terrorism in Europe and the US after 2005. Against the background of weakening organizational leadership and increasing constraints on open radical activism, jihadism, as Sageman (vii) argues, increasingly took the form of more dispersed “grassroots radicalization” by small, loosely connected groups.

In short, even before the emergence of a more focused literature on lone actors, an idea that episodes or campaigns of political violence can consist of and be driven by autonomous attacks by individuals or small cells did exist. Yet, even if some studies on lone actors did prominently discuss the impact of “leaderless resistance” (Gill 2015;

Joose 2017; Michael 2012), attempts to conceptualize these phenomena were limited to notions of movement ideologues “instigating” lone-actor attacks, or the idea that individual perpetrators are somehow linked by their shared ideology. While not incorrect, this does not help us much to understand the collective and interactive dynamics that shape the expansion and temporal patterns of episodes of lone-actor political violence.

Research on organized terrorism could arguably provide some clues as to how to explain the dynamics of lone-actor attacks. A number of studies have examined spatial and temporal patterns of violence by terrorist organizations (LaFree et al. 2012; Tench, Fry, and Gill 2016; Townsley, Johnson, and Ratcliffe 2008), highlighting differences in local conditions that favor or constrain terrorism, as well as the strategic choices made by these organizations and their adaptation to these environments. Another relevant line of research is studies on clusters of hate crimes related to triggering or antecedent events (King and Sutton 2013). In a sense, the subjects addressed by these two literatures mark the opposite extreme poles of a spectrum of collective

violence: terrorist organizations with central control on the one hand; hate crime as aggregate individual behavior on the other. Thus, these approaches provide an important frame of reference for the phenomena studied here. However, their contribution to answering the questions raised—the emergent dynamics of weak coordination in episodes of collective violence (somewhere “in-between” on this spectrum)—is limited.

So, how can we account for clusters or “waves” of lone-actor attacks? The analytical perspective that we develop in this section focuses on the *collective dynamics* of lone-actor political violence. This approach is inspired by Charles Tilly’s (2003) *Politics of Collective Violence*, in which he develops a way of conceptualizing collective violence that refers not primarily to the fact that violence is committed by collective actors such as organizations or movements but focuses on forms and patterns of *coordination* (3). Therefore, Tilly considers not only centrally organized violence but also weakly or indirectly coordinated violent phenomena, such as “scattered attacks,” comprising “sabotage, clandestine attacks on symbolic objects or places, assaults on governmental agents, and arson,” in the form of dispersed acts of violence accompanying broader episodes of contention (15). Even if lone-actor terrorism cannot be placed neatly in any of Tilly’s categories, his notion of “weakly coordinated collective action” is, as we argue, of great heuristic value, because it opens up new ways of conceiving of the interactive processes that connect lone-actor attacks and produce “waves” of violence.

To chart ways of theorizing these processes, we turn to approaches from social movement theory, in particular research on protest cycles (or protest waves) and studies of diffusion, which have sought to account for the episodic expansion and decline of mobilization, as well as the spread of innovations across and among movements.⁷ We draw on Alberto Melucci’s (1996) notion of collective action as interactively constructed by heterogeneous and fragmented movements, as well as Tilly’s (2003; 2005) concept of signaling spirals to capture communicative processes in the emergence of collective action. On this basis, we propose to distinguish ideal-typically three ways of conceptualizing the collective dynamics of episodes of lone-actor violence. First, violent incidents can be understood to cluster in time and space because they represent *parallel individual responses* to particular events or changes in the social and political environment. Second, collective dynamics can be explained as resulting from *processes of diffusion*, in which frames of interpretation and tactical repertoires are transmitted within and across movements. Finally, multiple violent incidents may be seen as interconnected and as forming part of a violent campaign due to processes of *interactive coordination* among autonomous individual perpetrators. These are ideal types in the sense that they capture different aspects of collective processes or different causal dynamics that may explain the sequential, temporal,

and spatial patterns of lone-actor political violence. Specific violent episodes can exhibit—and be analyzed as—a particular combination of several of these ideal-type processes.

Parallel Responses

The notion that clusters of lone-actor attacks may result from a dynamic in which individuals without any direct or indirect interconnection respond in similar ways to a particular event or to changes in their broader political and sociocultural environment is, in a way, the most basic pattern of *noninteractive “coordination.”* According to this type of explanation, attacks take similar forms and cluster in time and space not because of any kind of (interactive) dynamic within the cluster of attackers or movements, but because of external events or factors, which trigger independent reactions from a sample of individuals. This notion of “parallel response” is useful as a baseline hypothesis to formalize our thinking by contrasting it with other types of coordination—social and interactive. But it also highlights important, observable effects of events and changes in contextual factors (opportunity structures) that cannot be explained by looking only at dynamics that are endogenous to the process of mobilization. Waves of protest may indeed, as Oliver and Myers (2003, 175) have noted, arise “from common responses to external events” (see also Tarrow 2011). Or as Koopmans (2004, 22–23) argues, from sudden or gradual sociostructural changes that affect political opportunities and available resources. For example, when examining urban disturbances such as “bread riots,” the rise and fall of prices for basic commodities clearly influence the temporal pattern of these incidents. Similarly, the series of lone-actor terrorist attacks in various European countries in the aftermath of the publication of caricatures depicting the prophet Mohammed by Danish newspapers in 2005/6, or right-wing extremist attacks in the wake of a rapid influx of refugees into Germany in 2015, might simply be conceived of as independent responses to these events—if not in terms of underlying causes, then at least with respect to their timing and, thus, their co-occurrence.⁸

Interestingly, in Tilly’s “low-coordination” types of collective violence we also find elements of a “parallel response” dynamic. “Scattered attacks” occur when some individuals respond—independently from one another—to obstacles or challenges in their environment with violent means (2003, 14–15). Episodes of violence (and their temporal patterns), then, may be shaped by changes in environmental conditions (in particular, political opportunities and threats) or mobilize around particular events (14, 131–32, 172–73; on changes in political opportunities and waves of xenophobic violence, see also Koopmans and Olzak 2004). Yet, Tilly’s way of linking violent episodes to political environments also highlights

the limitations of a mere “parallel response” explanation, because events, opportunities, and threats, as Tilly and his collaborators repeatedly make clear, are not objective conditions, but ones that need to be perceived and interpreted and are subject to processes of “collective attribution” (McAdam, Tarrow, and Tilly 2001, 43–45). In other words, “events” and “threats” need to be recognized as such and given political relevance to trigger a response and mobilize action. Moreover, reactions by disconnected individuals depend on collective identities and take similar forms only when they draw on a shared repertoire of action. The outrage against the Mohammed cartoons in Danish newspapers is a particularly instructive case, as the cartoons became a focus of mobilization—and triggered lone-actor terrorist attacks—only after a lengthy and complex process of collective attribution by Muslim activists and movements, in which they were transformed into a symbol of injustice (Lindekilde 2008; Olesen 2011).

In sum, the temporal dynamic of episodes of lone-actor political violence cannot be understood without examining their relation to events or changes in their political and social environment. However, the notion of lone-actor terrorist attacks as *parallel responses* has its limits. It leaves us in the dark about the processes by which certain events are constructed as triggering events, through which practices become available and “waves” of attacks become connected in the wake of events (or even independently of them). To shed light on these, we must turn to dynamics of diffusion and interactive coordination and examine how they are intertwined.

Processes of Diffusion

Originally developed in the study of innovations (Rogers 2003), “diffusion” refers to the processes through which ideas and practices are transmitted and spread, across a society or from one place to another, as a way to account for the expansion or clustering in time and space of particular forms of behavior. Students of social movements and collective violence, intrigued by dramatic “waves” of protests—for example, the Arab Spring or the proliferation of urban rioting in the US in 1964–71—have emphasized that these phenomena need to be conceived of as a series of interconnected events. They have examined the way “rioting” spread from one city to another, and how symbols and tactics traveled between different sites of protests and between movements (see Givan, Roberts, and Soule 2010; Koopmans 2004; Myers 2000; Soule and Roggeband 2018; Tarrow 2005; 2011). Realizing that the spread of protest, and of particular forms of action, had to do with the fact that “(a)ctivists operating in different contexts took inspiration and learned from the successes and failures of other movements” (Soule and Roggeband 2018, 236), this strand of research studied *behavioral diffusion*, including the spread of tactical repertoires, as

well as (and as intertwined with) *ideational diffusion*, in particular the transmission of collective action frames (Givan, Roberts, and Soule 2010, 3–6). Moreover, by emphasizing that the diffusion of ideas and practices is not only driven by the dissemination of information via mass media and similar forms of communication (indirect or nonrelational diffusion) but also often depends on personal bonds between individuals and organizations (direct or relational diffusion), scholars have shown how interpersonal networks (strong and weak ties) act as conduits for ideas, and how relationships influence individual decisions to adopt innovations (with the rise of the internet and new social media increasingly blurring the boundaries between relational and nonrelational diffusion) (Givan, Roberts, and Soule 2010, 7–12; Soule and Roggeband 2018, 237–40; Tarrow 2011, 252–54).

From this perspective, the proliferation of lone-actor attacks, as an overall trend as well as during particular episodes, can be analyzed as a process of behavioral diffusion, in which the spread of a repertoire of action is driven and reinforced by the dispersion of frames and narratives that legitimize this form of violence and make it available as a practice. This also means that the temporal pattern and expansionary dynamic of clusters, such as the “wave” of attacks following on from the Mohammed cartoons, is shaped not merely by the event itself but by the processes in which particular narratives and symbols—as well as specific repertoires of violent action—are produced and disseminated. Furthermore, processes of diffusion can be observed when specific forms of violence or tactical innovations spread or travel across settings. For example, lone-actor vehicle and knife attacks as a tactical repertoire emerged in Israel and the occupied Palestinian territories, were adopted by jihadist terrorists, and became a hallmark of the wave of lone-actor attacks in Europe linked to ISIS, particularly after 2016 (Schneckener 2019). Vehicle attacks were even adopted across the political divide, by right-wing extremists (e.g., the 2017 attacks in Charlottesville and Finsbury Park in London), which confirms the transferability—or *modularity* (Tarrow 2011, 37–41)—of this tactic. In other words, the diffusion of pieces of information or techniques that can inspire or shape terrorist acts is not limited to one movement but can traverse ideological boundaries. As a result, waves of lone-actor terrorist attacks with different political leanings may trigger or intensify each other and become interlinked.

Approaches from social movement studies need to be adapted to the study of lone-actor political violence, of course, as clusters of autonomous violent actions are not the same as conventional protest campaigns. Nevertheless, we argue that diffusion theory offers important conceptual advantages and tools to capture the processes that drive this phenomenon. First, diffusion theory links the spread of ideas (and repertoires) with the spread of forms of

behavior and thus addresses the connection between, for example, extremist narratives or conspiracy theories, on the one side, and violent action, on the other. By pointing to the role of social networks not only in transmitting information (about events and innovations, as well as in the form of interpretative frames and practices) but also in the crucial steps of making this information relevant, assessing its applicability, and translating it into action (Rogers 2003, 300–5), diffusion theory enables us to connect the social embeddedness of individual pathways of radicalization—the first part of our framework—with the collective dynamics that shape episodes of lone-actor violence. Network ties—however peripheral, discontinuous, or conflictive—are the “connective tissue” (Soule and Roggeband 2018, 236) through which information and practices become available. Moreover, even when individuals become aware of ideas and techniques via nonrelational diffusion, they typically need some degree of confirmation and reinforcement through personal relationships to make these ideas relevant and translate them into action.

Second, diffusion theory offers ways to explain the wavelike patterns in which lone-actor attacks proliferate by pointing to *network- and critical-mass effects* (Rogers 2003, 342–51, 360–62). Indeed, the puzzle at the heart of many diffusion studies is that the spread of innovations does not evolve evenly but often accelerates rapidly at a certain point in time (Rogers 2003, 11). Applied to the analysis of lone-actor violence, diffusion approaches thus allow us to examine points in time when certain narratives or repertoires spread into particular communication spaces (or when they are disseminated by particular opinion leaders) as critical junctures that lead to sudden acceleration in a wave of lone-actor attacks. And it makes us look for critical-mass effects—for example, by examining how the number of previous attacks, the media attention they received, as well as certain characteristics of the perpetrators (e.g., similar social background) lower the threshold for subsequent lone actors and, consequently, lead to an upsurge in the rate of proliferation.

Third, and linked to this notion of critical mass, studying the proliferation of lone-actor attacks as a process of diffusion also allows us to link different phases in a “wave” of lone-actor attacks to different types of perpetrators. Distinguishing between “innovators,” “early adopters,” and “late adopters” not only allows us to capture their different functions in the process of diffusion; it also points to different individual thresholds (e.g., moral justification, risk aversion, expectation of success) to lone-actor attacks at different points in the process, as well as potential differences in personal characteristics, network embeddedness, etc., among these types.

In sum, in the case of lone-actor political violence, the notion of “diffusion” allows us to explore the collective processes in which narratives, frames, and practices are

produced and disseminated. It also makes it possible to link these processes to different types of “adopters,” as well as to the differing patterns of relationships that connect lone actors to radical networks and milieus—and to develop an understanding of the dynamics of waves of lone-actor attacks based on the interaction of these elements. Yet, debates in research on diffusion have also made clear that there are limits to the extent to which waves of mobilization can be analyzed based on a notion of diffusion as the spread of an innovation to “adopters.” Various studies have not only shown that not all ideas and tactics diffuse easily, but that they also differ in modularity (Givan, Roberts, and Soule 2010, 4–6). The more recent literature also has started to develop a more nuanced understanding of the process of perceiving, selecting, and acting upon frames and repertoires. Instead of reducing individuals to passive adopters, these studies emphasize the agency of actors who not only strategically select innovations from “transmitters” but also experiment with these repertoires, redeploy frames, and creatively adjust them to their needs (Chabot 2012, 106–8; Soule and Roggeband 2018, 241–42, 244). In other words, the way individuals use and act upon signals and repertoires transmitted through diffusion processes involves an element of purposeful deliberation and adaptation. To capture this element in episodes of lone-actor political violence, we propose to examine how diffusion dynamics intersect and combine with a third type of collective dynamic: “interactive coordination,” which emerges from what could be termed the “microstrategic agency” of dispersed, autonomous actors who jointly construct a campaign of collective violent action.

Interactive Coordination

In his seminal book *Challenging Codes*, Alberto Melucci (1996, 4) argues against the common misconception of social movements as unitary phenomena, which he argues is inadequate to capture the “reality of reticular and diffuse forms of collective action.” Instead, he calls on us to examine how individuals and groups actually manage to act together, how they *construct collective action* via interpretative processes that enable them to “define a ‘situation’ as a field of shared action,” and to “recognize each other and become part of a ‘we’” (15–16).

Our third type of collective dynamics shaping episodes of lone-actor political violence—dynamics of *interactive coordination*—refers to analogue processes in clusters of autonomous perpetrators who interactively construct a notion of a common identity (being part of a radical movement) and of their violent acts as part of a collective violent campaign. Lone actors plan and carry out violent attacks autonomously and on their own initiative, but they often conceive of their actions as following in the footsteps of prior lone actors, as being part of a broader movement

and of a broader struggle against a common enemy. Moreover, many lone-actor attacks implicitly or explicitly seek to inspire and mobilize others to follow their lead and to demonstrate the feasibility and effectiveness of lone-actor attacks (or particular tactics or technologies) as part of a repertoire of political violence. In other words, the perpetrators, in their communications and manifestos as well as in the symbolism of their violent attacks (timing, weapons, other references), set themselves in relation to prior (and potential subsequent) lone actors or broader movements, refer to a common enemy and purpose, and construct an image of their terrorist act as part of some collective violent campaign.

We propose to distinguish two different patterns in which this process of interactive coordination can play out, depending on the nature of the relationship between lone actors and radical movements and milieus. One common pattern is that individual perpetrators conceive of themselves and their violent attacks as being part of a movement and an ongoing violent campaign that is driven not only by lone actors, but also (or mainly) by terrorist groups or even larger armed organizations. For example, numerous jihadist lone actors in Europe and the US from 2015 onward proclaimed their acts to be part of the broader war waged by the so-called Islamic State in Syria and Iraq, referring to other lone-actor attacks, but identifying especially with ISIS and the jihadist movement, which in many cases then recognized or claimed these attacks as their own (Hansen 2021). However, interactive coordination is not just about individuals aspiring to become part of a larger movement and terrorist groups “absorbing” lone-actor attacks. A second pattern is composed of sequences of lone-actor attacks, where the perpetrators primarily refer to and take their cues from other lone perpetrators, in more or less self-contained and self-referential episodes of lone-actor terrorism that are only loosely connected to broader radical movements. An example of this “self-referential” pattern is the cluster of lone actors in one way or another following “in the footsteps” of Anders Behring Breivik. The perpetrators of a number of far-right extremist attacks—including those in Charleston, USA (June 2015); Munich, Germany (July 2016); Christchurch, New Zealand (March 2019); Poway, USA (April 2019); El Paso, USA (August 2019); Baerum, Norway (August 2019); and Halle, Germany (October 2019)—explicitly referenced Breivik and his 2011 attack, with subsequent attacks in this same sequence further acknowledging one another as well as deliberately seeking to inspire future attacks, leading to the consolidation of an increasingly interlinked narrative (see, *inter alia*, Baele, Brace and Coan 2023; Macklin 2022; Macklin and Bjørge 2021; Ware 2020).

The distinction between self-referential sequences of lone-actor attacks and those more directly related to organized terrorist campaigns is, of course, an analytical distinction, and empirical episodes of lone-actor terrorism

may exhibit features of both. Moreover, in some cases lone-actor attacks may become the predominant form of violence within a terrorist campaign that was originally driven by an armed organization (like jihadist lone-actor attacks in Europe at a certain point in time), reshaping the logic of the overall episode of terrorist violence. Nevertheless, the distinction is important, because it points to a potential link between different types of lone-actor social embeddedness (see the first section) and patterns of interactive coordination.

So, what are the processes by which decentralized attacks are coordinated and a notion of being part of a collective violent campaign is constructed in these various patterns of lone-actor episodes? How do lone actors “communicate”? We argue that Charles Tilly’s notion of “signaling spirals” can help to conceptualize this dynamic. According to Tilly’s (2003, 176) analysis, signaling spirals are particularly relevant in low-coordination forms of collective violence, as they “communicate the current feasibility and effectiveness” of certain forms of violent action.⁹ Applied to the phenomenon of lone-actor terrorism, this notion of “signaling spirals” points to the fact that in the absence of direct channels of communication between perpetrators and without organizational direction, the violent attacks themselves become a means of conveying information about threats and “enemies,” but also of communicating the claim to be part of a common effort and a means of “proposing” a form of action by demonstrating its effectiveness. In other words, lone actors not only “send a message” through their manifestos or statements, but the violent attack itself also becomes a signal that shows others that a certain tactic is viable and justified—that it is possible “to do something.” The attack as a signal—to refer and connect to prior and subsequent attacks and to a larger struggle—only works within some forms of collective identity, of course, and with reference to interpretative frames shared among perpetrator and addressees (Melucci 1996, 64–67). It thus relies on and “invokes” identities formed in pathways of radicalization embedded (weakly and discontinuously) in radical milieus as well as in frames and practices diffused across movements. In episodes of lone-actor terrorism, signaling spirals therefore not only activate and reinforce identities and notions of a common struggle, but by conveying the message of timeliness and opportunity (or threat) and by inspiring others to follow in their footsteps, they also create a coordinative dynamic that contributes to shaping wave-like patterns of violence.

In sum, we suggest exploring how, through processes of interactive coordination, autonomous and organizationally independent perpetrators produce a shared imagination of their violent acts as a collective campaign—and how by acting on this imagination they make it real. This perspective equally allows us to link individual perpetrators and their attacks to the collective dynamics that they

jointly produce. As this introduces a strategic logic to emergent collective processes (and individual deliberations), it enables us to capture a different type of threshold or critical-mass effect. Tipping points leading to the proliferation of attacks, then, can be expected when shared interpretations of the situation (or political opportunity structure) as favorable to lone-actor political violence become dominant, when attacks are widely interpreted as successes, and when a notion that lone actors are part of broader movements and campaigns becomes normalized.

Conclusions

The proliferation of lone-actor terrorist attacks over the past decade can be understood as part of a broader transformation of the landscape of political violence in Western countries, which seems to entail a shift toward more decentralized, weakly coordinated, and emergent phenomena of violence (also including collective urban violence, such as the January 6th Capitol attacks in Washington, DC), as well as borderline and hybrid phenomena at the intersection of political violence, nonpolitical violence, and organized crime. Thus, exploring ways of theorizing the social and collective dynamics of lone-actor political violence is not only about addressing an empirical puzzle (the presence of social ties; the uneven occurrence across milieus and movements; the clustered pattern of violent attacks), but about analytically capturing an entirely different and potentially increasingly relevant logic of violent processes. Yet, analyzing the social and collective dynamics of lone-actor political violence poses considerable challenges. The task is to develop an understanding of lone-actor radicalization as embedded in radical milieus and movements while emphasizing the discontinuous, incomplete, and conflictive nature of these relations, and to theorize the coordinative dynamics that shape episodes of lone-actor violence—all without neglecting the disparate, autonomous, and at times idiosyncratic nature of lone-actor attacks.

This article outlines an approach that analyzes lone-actor political violence at two interconnected levels. First, with respect to the social embeddedness of lone-actor radicalization as *relational pathways*, we suggest that these are shaped by ties to and interactions with radical online and offline milieus and movements, but also that these relational patterns vary considerably between embedded and peripheral lone-actor radicalization trajectories. Second, we propose to ideal-typically distinguish three kinds of collective dynamics that shape the temporal patterns of episodes of lone-actor attacks: lone-actor violence as resulting from a *parallel response* to an external event or changes in the social or political environment; the increase and spread of lone-actor violence as driven by processes of *diffusion*, in which frames and repertoires are transmitted

across movements and settings; and processes of *interactive coordination* through which lone actors actively interlink their attacks to construct a notion of a common identity, enemy, and collective action. These levels are inherently interconnected. The frames, narratives, and repertoires that facilitate and “produce” pathways of radicalization in the context of milieus and movements are subject to processes of diffusion, which help to explain their uneven and changing availability over time and across milieus. The social networks in which lone-actor pathways are (partially) embedded form the “connective tissue” through which ideas and practices are spread and which enables individuals to act on them. Finally, “microstrategic agency” shapes coordinative processes in collective episodes as well as individual pathways.

The shift in perspective that this framework entails—toward the *social and collective dynamics* of lone-actor terrorism—might be heuristically useful in opening new ways of exploring violent phenomena more generally, by decentering the analysis from the perpetrators. It suggests an analytical logic similar to experiments in particle physics, which use the trajectory of a single particle to make visible the structure and dynamics of an electromagnetic field. Quite similarly, from this perspective, lone actors represent a window into the structure of radical movements and networks, as well as into the cultural and interpretative processes that construct lone-actor attacks as a repertoire of violence. Therefore, and paradoxically, the very notion of “lone actors” can help us to understand the social dynamics of collective violence more generally by questioning and thereby highlighting the nature of social ties, and it lays bare the referential logic in which violence is perpetrated and perceived as *political*. As such, our theoretical framework may aid counterterrorism efforts by highlighting the link between threats from lone-actor terrorists and larger violent movements and campaigns, which have tended to be assessed and approached separately.

Notes

- 1 The data on which this article is based (Malthaner, O'Connor and Lindekilde 2023) was originally compiled for a collaborative research project (PRIME—Preventing, Mitigating, and Interdicting Lone-Actor Extremist Events, 2014–17). This dataset was subsequently extended chronologically and geographically and transformed into the Lone Actor Radicalization and Terrorism (LART) dataset (N = 331), which includes the majority of known instances of lone-actor terrorism in Europe and North America between 1991 and 2021. See also O'Connor, Lindekilde, and Malthaner (2023) and Lindekilde, Malthaner, and O'Connor (2019).
- 2 *Lone-actor terrorists* are defined here as individuals threatening to carry out or carrying out acts of terrorist violence who (1) operate as a single perpetrator in the preparation and the execution of the attack, (2) do not

- belong to a terrorist organization or group at the time of the attack, and (3) do not act on direct orders or under the direct influence of a leader or group (see Lindekilde, Malthaner, and O'Connor 2019, as well as Borum, Fein, and Vossekuil 2012; Gill 2015). For the purpose of this article, *terrorism* is defined as the use of violence, or the threat of violence, often (but not exclusively) against civilian targets, as a means of creating fear among particular target audiences to effect (or resist) political change (see Hoffman 2006; Schmid 2011).
- 3 The term “radical milieu” refers to the “formative and supportive social environment” of terrorist groups and individuals, which is also the context in which they form radical perspectives and understandings (Malthaner and Waldmann 2014).
 - 4 In order to comply with data protection obligations, names of perpetrators in inverted commas, such as “Abdi,” are pseudonyms.
 - 5 Not all authors agree with the classification of McVeigh as a lone-actor terrorist (see Hamm and Spaaij 2017), as he did receive a degree of assistance in the making of the bomb.
 - 6 As David Rapoport (2001, xi) conceded: “we thought it would never be resuscitated in our lifetime and did not give it much attention.”
 - 7 A thorough discussion of the social movement literature on diffusion would go beyond the scope of this article. For an overview, see Givan, Roberts, and Soule (2010), Soule and Roggeband (2018), and Tarrow (2005; 2011).
 - 8 Interestingly, in the strategy of “leaderless resistance” as devised by right-wing extremist Louis R. Beam (1992), we find elements of this idea: “Since the entire purpose of Leaderless Resistance is to defeat state tyranny ... all members of phantom cells or individuals will tend to react to objective events in the same way through usual tactics of resistance. Organs of information distribution such as newspapers, leaflets, computers, etc. ... keep each person informed.” One must emphasize, however, that Beam—a radical activist—describes a theoretical (imagined) strategy of “leaderless” attacks, rather than an empirical analysis.
 - 9 The notion of “signaling” in a dynamic of decentralized, emergent, and interactive coordination can also be found in (symbolic) interactionist accounts of how “crowds” establish shared understandings and common objectives via processes of communication based on visible, performed, and observed action; a process that Turner and Killian (1987, 50–59, 77–78, 84–85) have called “keynoting.” The concept of keynoting, thus, also allows us to capture the contingent nature of these processes, resulting from competition among violent actors signaling different interpretations of the situation and projecting different lines of action, and it points to

the role of particular audiences in making particular “keynotes” dominant (59, 88–89).

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