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Understanding (non)involvement in terrorist violence: What sets extremists who use terrorist violence apart from those who do not?

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Abstract

Research summary: We compare European and North American radicalization trajectories that led to involvement in terrorist violence ($n = 103$) with those for which this outcome did not occur ($n = 103$). Regression analyses illustrate how involvement in terrorist violence is determined not only by the presence of risk, but also the absence of protective factors. Bivariate analyses highlight the importance of considering the temporality of these factors; i.e., whether they are present before or after radicalization onset. The most salient risk factors identified were alignment with a group or movement with an exclusively violent strategic logic, and access to weapons. In terms of protective factors, parenting children during radicalization, self-control, and participation in extremist groups with a strategic logic that was not exclusively focused on violent means were all associated with noninvolvement in terrorist violence.

Policy implications: Different patterns of risk and protective factors influence whether radicalization will, or will not, lead to involvement in terrorist violence. One-size-fits-all radicalization-prevention efforts may therefore be less effective than programs tailored to address a particular outcome. Even when terrorist

violence is prevented, the targeted individual is likely to remain radicalized. Preventative efforts must carefully assess whether the measures used to avert terrorist violence in the short-term risk contributing to a longer term societal threat. The efficacy of preventative efforts depends in part on when they are deployed, that is, before or after radicalization onset.

KEYWORDS
comparative research, extremism, protective factors, radicalization outcomes, terrorism

Since the early 2000s, "radicalization" has been a central concept in research on how and why individuals become involved in terrorism (Coolsaet, 2019). Although its exact meaning remains contested (Borum, 2017), radicalization is generally seen as a process whereby individuals adopt worldviews that legitimize and advocate the use of terrorism to achieve revolutionary societal change (Della Porta, 2018). As radicalization-based research developed, scholars have emphasized that such processes have distinct cognitive and behavioral dimensions (Borum, 2011a; Hafez & Mullins, 2015; Khalil et al., 2022; McCauley & Moskalenko, 2008). Radical thoughts do not necessarily lead to radical actions, and most individuals who come to support the use of terrorism in principle will not do so in practice (McCauley & Moskalenko, 2014; Sageman, 2021).

In part, the disparity between cognitive radicalization and involvement in terrorism reflects radicalizing individuals' different degrees of commitment to their newfound convictions. Although many are likely to tacitly support the use of terrorism by others, only a minority will actually see such violence as a personal obligation (McCauley & Moskalenko, 2017). However, this gap also stems from the fact that behavioral radicalization encompasses a range of activities, of which terrorist violence is ultimately only one of several "action pathways" that can be undertaken (Borum, 2011b, p. 2). Radicalized individuals can enact their ideological aims through a variety of means, encompassing legal as well as illegal activities (Horgan et al., 2018). Examples include spreading propaganda online (Rieger et al., 2020), providing financial support to extremist organizations (Sullivan et al., 2017), or collectively pursuing political power through electoral participation (Ellinas & Lamprianou, 2017).

Essentially, although radicalization processes share the adoption of some degree of cognitive support for the use of terrorism, they can yield a variety of behavioral outcomes besides involvement in terrorist attacks (Monahan, 2017; Perliger et al., 2016). However, which combinations of risk and protective factors make any one particular outcome more likely to emerge? Scholars have recently begun to explore this line of inquiry by disaggregating and comparing various forms of behavioral radicalization, in some cases with a specific focus on the *obstacles* to violent outcomes (Becker, 2021; Holt et al., 2018; Jaskoski et al., 2020; Knight et al., 2017; LaFree et al., 2018; Schuurman, 2020b; Simi & Windisch, 2017). To this growing body of work, we contribute novel insights into what is arguably the starkest, and among the most societally relevant, contrasts—namely, what distinguishes individuals whose behavioral radicalization includes involvement in terrorist violence from those whose behavioral radicalization does not?

Our article begins with an overview of the theoretical and empirical work from which we drew our study's variables. We then describe our methodology, including our study's key contributions as well as its limitations, before presenting our results and discussing these findings in relation to existing work. We specifically reflect on their implications for the policy and practice of terrorism prevention, as our results raise several concrete suggestions for such work, as well as a number of dilemmas.

1 | THEORETICAL FOUNDATION

Our study is rooted in an extensive review of the literature on radicalization, terrorism, and delinquency more generally. Compartmentalized across the structural, group, and individual levels of analysis, these insights were operationalized as variables in our codebook. This enabled exploratory and inductive comparative research on why some individuals behaviorally radicalize to the point of becoming involved in terrorist attacks, whereas others' behavioral radicalization falls short of this threshold. As existing work on understanding (non) involvement in terrorist violence stresses the multicausal nature of these processes (Lia & Skjølberg, 2004), and the relevance of considering this question from several levels of analysis (LaFree & Ackerman, 2009), we utilized a broad analytical perspective rather than one, particular theoretical angle.

To reflect that radicalization processes and their outcomes are not just influenced by risk factors that predict offending, we paid particular attention to potential *protective* factors that may mitigate the influence of risk factors, as well as *promotive* factors, which are present before the onset of risk, lowering the likelihood of future involvement in a particular behavior (Farrington et al., 2016). Here, the risk being offset is involvement in terrorist violence. Factors emerging during radicalization are described as "protective," whereas those emerging before its onset are considered "promotive." It is outside the scope of this article to provide an extensive overview of all literature reviewed; instead, we summarize the main analytical perspectives below. All variables, their operationalization(s), and the literature to which they relate are available as online supplements.[1]

1.1 | Structural-level variables

Structural-level accounts of involvement in terrorism take a "big picture" perspective on the issue, highlighting how elements of the broader social, cultural, political, and economic *context* can influence the likelihood that elements within society will turn to this form of political violence (Crenshaw, 1981; Schuurman & Carthy, 2022). As our study's geographical scope was limited to established democracies and highly industrialized states in Europe and North America, theories related to the potentially disruptive effects of modernization (Krieger & Meierrieks, 2011) and democratization (Bapat, 2011) were not considered.

One important insight at this level of analysis underlines that (perceived) inequalities between societal groups, for instance in terms of socioeconomic status (Piazza, 2011) or political representation (Gleditsch & Polo, 2016), can be powerful drivers of conflict and terrorism. Another set of findings highlight the role that the state can play in contributing to, or exacerbating, conditions that can produce terrorism—for instance, by using repressive tactics that are seen as disproportionate or applied unequally, thereby feeding into terrorist groups' narratives about the state's lack of legitimacy (Duyvesteyn, 2021; Hsu & McDowall, 2020). Such perceived state repression can have a mobilizing effect even when experienced vicariously; the internet and social media

especially have allowed individuals to identify with others despite geographical barriers (Haggerty & Bucerius, 2020). The thousands of "foreign fighters" who traveled to fight with jihadist groups in Syria and Iraq in the mid-2010s also led us to consider the "spillover" mechanism. This refers to the degree to which an overseas conflict can increase the domestic terrorist threat through, for instance, diaspora links between the two countries or because the conflict leads to military interventions from other states, inviting retaliatory attacks (Addison & Murshed, 2005; Braithwaite & Chu, 2018).

1.2 | Movement- and group-level variables

Radicalization is an individual-level process, but it seldom occurs in a social vacuum. As Della Porta (1995, p. 136) has argued, "conversion to violence requires a specific redefinition of reality" and socialization processes induced through exposure to extremist movements and groups are integral to this change (Smith et al., 2020). Consideration of movement- and group-level variables also allowed us to gain more clarity on why, despite many people being exposed to structural influences conducive to terrorism, few will actually use terrorist violence. We distinguished specifically between broad, informal, transnational *movements* (e.g., neo-Nazism, Salafi-Jihadism) and *groups* within them (e.g., al-Qaeda). This allowed us to capture socialization effects on group members as well as "lone actors" who, although not members of distinct groups, still draw inspiration from the broader movement through, for instance, their consumption of online propaganda (Schuurman et al., 2019).

Research suggests that extremist movements and groups offer a variety of benefits to their participants (Della Porta, 2009; McCauley & Segal, 2009). These can be instrumental in nature; groups are generally more effective than individuals at acquiring, allocating, and replenishing the various resources (e.g., members, capital, public support) needed to sustain protest activities, political campaigns, propaganda dissemination, or armed resistance (Beck, 2008). The appeal of extremist groups and movements can, thus, be partially explained by their ability to function as powerful instruments for achieving far-reaching political or societal change (McCormick, 2003). Moreover, as Kruglanski (2014, p. 73) has posited, human beings share a fundamental desire "to matter, to be someone, to have respect." This is something that extremist movements and groups are well-placed to fulfil. They can offer a sense of comradeship based on shared ideals, strengthened by mutually experienced danger, as well as the ability for members to find purpose by re-imagining themselves as brave warriors fighting for a just and righteous cause (Kruglanski et al., 2020).

Beyond their instrumental and identity-related attractions, extremist movements and groups play a crucial role in socializing members into particular worldviews (Turk, 2004). Such socialization processes are integral to convincing participants that the prescriptions for revolutionary change suggested by ideologies such as Jihadi-Salafism or neo-Nazism are justified and necessary. They also help convey to group members that they have a personal duty to ensure that these revolutionary "utopias" come to fruition or, conversely, that a set of sacred beliefs, or a particular in-group, are protected from enemies intent on their destruction (McCauley & Segal, 2009; Smith et al., 2020). Social learning theory's premise that (anti)social behavior is learned through interactions with others (Bandura, 1971), and its application to terrorism (Becker, 2021), drew our attention to the influence of peer pressures on engendering behavioral and ideological conformity (Crenshaw, 1987; Victoroff, 2005). We also noted the particular ability of extremist "role models" to inspire emulation, both in face-to-face and online settings (Pauwels & Schils, 2016).

Especially relevant for understanding *non*involvement in terrorist violence is a new line of research that considers how group norms on the appropriateness and effectiveness of political violence can create barriers for its use. Busher et al. (2019, 2021) point to numerous group-level mechanisms of restraint, including moral qualms about (certain types of) violence and questions about the (continued) efficacy of violence as a strategy (see also: Dowling, 2023). In a similar vein, others have highlighted characteristics of terrorist groups that may influence their lethality, including their age, size, presence of members with (para)military experience, ties to extremist movements that explicitly call for attacks, and internal competition over means or ends (Asal & Rethemeyer, 2008; Asal et al., 2015; Chermak et al., 2013). As followers are more likely than leaders to commit violent acts (Jasko & LaFree, 2020), our study also considered the role(s) that individuals occupied within extremist movements or groups. Finally, cognizant that individuals may pursue extremist goals through nonviolent means (e.g., in the political wings of militant movements), and thereby not see personal involvement in terrorism as a necessity for goal attainment, involvement in nonviolent activism was also examined (Jaskoski et al., 2020).

1.3 | Individual-level variables

Research on terrorism places particular emphasis on factors and processes at the individual level of analysis (Wolfowicz et al., 2021), meaning that most of our study's variables were drawn from this segment of the literature. These include well-established criminological approaches such as social control theory (Hirschi, 1969), which has recently been applied to study how violent and nonviolent extremists differ from one another (Becker, 2021; LaFree et al., 2018). This work prompted us to consider the potential protective influence of a range of prosocial ties, including educational enrollment, employment, relationships, and family responsibilities (Horgan et al., 2018; Jensen et al., 2020; Perliger et al., 2016). We also considered labeling theory's argument that contacts with the justice system may increase the likelihood of future offending (Motz et al., 2020), especially as this mechanism has featured in research on the nexus between criminal antecedents and involvement in terrorism (Ljujic et al., 2017). We further drew on self-control theory and the established relationship between low levels of self-control and criminal or deviant behavior (Vazsonyi et al., 2017), which has also proved relevant for understanding radicalization and terrorism-related behavior (Lösel et al., 2018; Pauwels & Svensson, 2017; Rottweiler & Gill, 2022).

Criminologists have done considerable work on how childhood experiences can increase or diminish the likelihood of delinquent behavior later in life (Farrington et al., 2016). As we sought to incorporate a life-course perspective in our study, numerous aspects of parental involvement and upbringing were considered. These included the stability of household relationships, parental ability to provide a safe and emotionally nurturing home environment, their commitment to their children's educational success, and the socioeconomic status of the parents or guardians as well as the neighborhood in which the child was raised (Bynner, 2001; Farrington, 1998; Lösel & Farrington, 2012; Spalek, 2016; Wikström & Loeber, 2000). We also noted the potential protective effects of well-developed social skills (Polan et al., 2013) and paid specific attention to the relationship between adverse childhood experiences and future delinquency, an association that has recently been extended to extremism-related offenses (Graf et al., 2021; Logan et al., 2022). A final addition to this set of variables came from intergenerational transmission theory, which led us to consider the effects of parental socialization into radicalized worldviews on future radicalization outcomes (Førland et al., 2012; Wareham et al., 2009).

Research on terrorism and radicalization has underlined the importance of considering how individuals come to justify and encourage the use of violence. Here, grievances feature prominently, ranging from the personal (e.g., job loss) to the political (e.g., viewing the government as illegitimate or actively hostile) (Clemmow et al., 2020; Crenshaw, 1981; LaFree & Ackerman, 2009). Studies have indicated that grievances derived from perceptions of deprivation can become particularly powerful drivers of (violent) political mobilization when they coincide with societal fault lines—when an individual experiences a lack of political representation or socioeconomic opportunity because they belong to a marginalized societal group, for instance (Gurr, 2011; Moghaddam, 2005). Relatedly, we also considered whether individuals felt a strong sense of identification with victims of perceived injustice (e.g., by witnessing the suffering of coreligionists) (Sageman, 2008), felt a marked sense of in-group threat (Stankov et al., 2018), or had lost trust in the (fair) functioning of society and its institutions (Bhui et al., 2012).

As mentioned above, extremist groups can be attractive for their ability to offer meaning and belonging to members. In significance quest theory, the roots of this attraction are summarized as the "motivation to feel worthy, to be respected, and to matter to others" (Kruglanski et al., 2022, p. 1050). In the context of terrorism, it has been hypothesized that extremist ideologies and the groups that espouse them can offer an individual means of overcoming a sense of "significance loss" (e.g., due to trauma or a sense of failure in life), as well as providing opportunities for "significance gain," as membership in a dangerous vanguard movement imbues the participant with status in the eyes of the group's support base (Kruglanski et al., 2009). A related perspective is "terror management theory" and its premise that reminders of death's inevitability can prompt adherence to meaning-giving ideologies or religions, and hostility toward those that threaten them, which informed our item on "mortality salience" (Vergani et al., 2019).

Extremist and terrorist movements and groups tend to lay exclusive claims on their participants, becoming the sole source of companionship and the only frame through which to interpret the outside world (Della Porta, 2009). To ascertain the extent to which such isolation occurred, and whether salient differences emerged between individuals who engaged in terrorist violence and those who did not, we charted both the size of an individual's social network during their radicalized period and whether it included people who held different ideological views (Kaczkowski et al., 2022).

Although radicalization and terrorism are commonly seen as expressions of fanaticism, the degree of actual ideological or religious commitment varies (Schuurman & Taylor, 2018). Subsequently, we gauged whether cases and controls were willing to abandon important relationships (e.g., with family) or commitments such as work to pursue their convictions (per Kruglanski et al., 2020). We also considered whether perceived opportunity costs, such as imprisonment or death, diminished the extent to which individuals were willing to take risks on behalf of their worldviews (Cragin, 2014; Simi & Windisch, 2017). A stated intent to cause harm, or openly advocating extremist views, were also coded as both have been associated with involvement in terrorism (Schuurman et al., 2018; Snook et al., 2022).

Whether mental health issues are associated with involvement in terrorism has long been subject to debate (Gill, Clemmow, et al., 2021). Recent meta-analytical work finds that, excepting particular subpopulations (e.g., lone actors), those involved in terrorist violence exhibit unremarkable rates of diagnosed disorder or suspected disorder (Sarma et al., 2022). We contributed to this subject by collecting clinical information on the presence or absence of neurodevelopmental and mental health disorders, before and during radicalization. Both items were disaggregated into a formal diagnosis made by a qualified professional, or as notable symptoms observed through self-reporting or a subclinical assessment. We also collected data on a number of demographic

variables (e.g., sex, age, immigration status) and considered whether age at radicalization onset was associated with subsequent (non) involvement in terrorist violence (Becker, 2021). Finally, in line with research observing that access to weapons can provide practical means for engaging in terrorism through an increased sense of self-efficacy (Rottweiler & Gill, 2022), we also gauged whether individuals in the sample had access to firearms or (improvised) explosives.

2 | METHOD

2.1 | Key definitions

As noted in the introduction, radicalization processes have distinct cognitive and behavioral dimensions (McCauley & Moskalenko, 2017). Within the cognitive domain, a differentiation can be made in terms of the goals that individuals come to embrace and the means they see as acceptable for obtaining them. Useful conceptual clarity here is offered by Schmid (2013), who contrasts "radicalism" with "extremism." Radicals generally desire relatively limited sociopolitical change and tend to shy away from adopting violence-focused strategies, instead pursuing goals that can usually be accommodated within the existing sociopolitical order. Extremists, on the other hand, desire revolutionary change that necessitates the destruction and replacement of the existing order, and perceive violence as uniquely effective and legitimate. As the link between radicalism and terrorism is conceptually tenuous, our study only considered individuals whose cognitive radicalization allowed them to be classified as extremists. In other words, both cases and controls supported, in principle, the use of violence in pursuit of revolutionary sociopolitical change. It is from this conceptual standpoint that we sought to examine the varying extents to which such views manifested behaviorally.

This leads to a second important definition—namely, what it means for our cases to have been "involved in terrorist violence." Defining terrorism remains a contentious issue (Richards, 2019). Here, we rely on the Academic Consensus Definition (Schmid, 2011) that sees terrorism as the premeditated, or threatened, use of deadly violence against civilians or noncombatants, intended to generate attention for the perpetrators' cause or ideology, in turn coercing opponents and inspiring adherents. Involvement in terrorist violence was operationalized as participation in attack planning (e.g., target selection), preparation (e.g., weapons procurement), or execution. Conversely, our controls were identified by the absence of any such behavior, despite their adherence to worldviews that supported this type of violence.

To be clear, this does not mean that our "noninvolved in terrorist violence" controls never used *other* forms of violence or were never prosecuted for terrorism-related offenses. In fact, many controls engaged in hate crimes (e.g., nonfatal opportunistic attacks against members of minority groups) or vandalism and many were sentenced for offenses such as spreading extremist propaganda, recruiting individuals for extremist causes, or providing financial support to known members of extremist organizations. Although technically "terrorists" according to the criminal law statutes of many of the countries represented in our sample (see Figure 1), the crucial difference is that these controls never became directly involved in the planning, preparation, or execution of a terrorist attack.

Furthermore, it is important to note that most of our cases and controls also used legal means to advance their worldviews, such as proselytizing on behalf of their convictions or vying for political power in (local) elections. Thus, when we refer to "extremists engaged in nonviolent activism" in our discussion section, this is not an oxymoron but reflective of the ability of radicalized
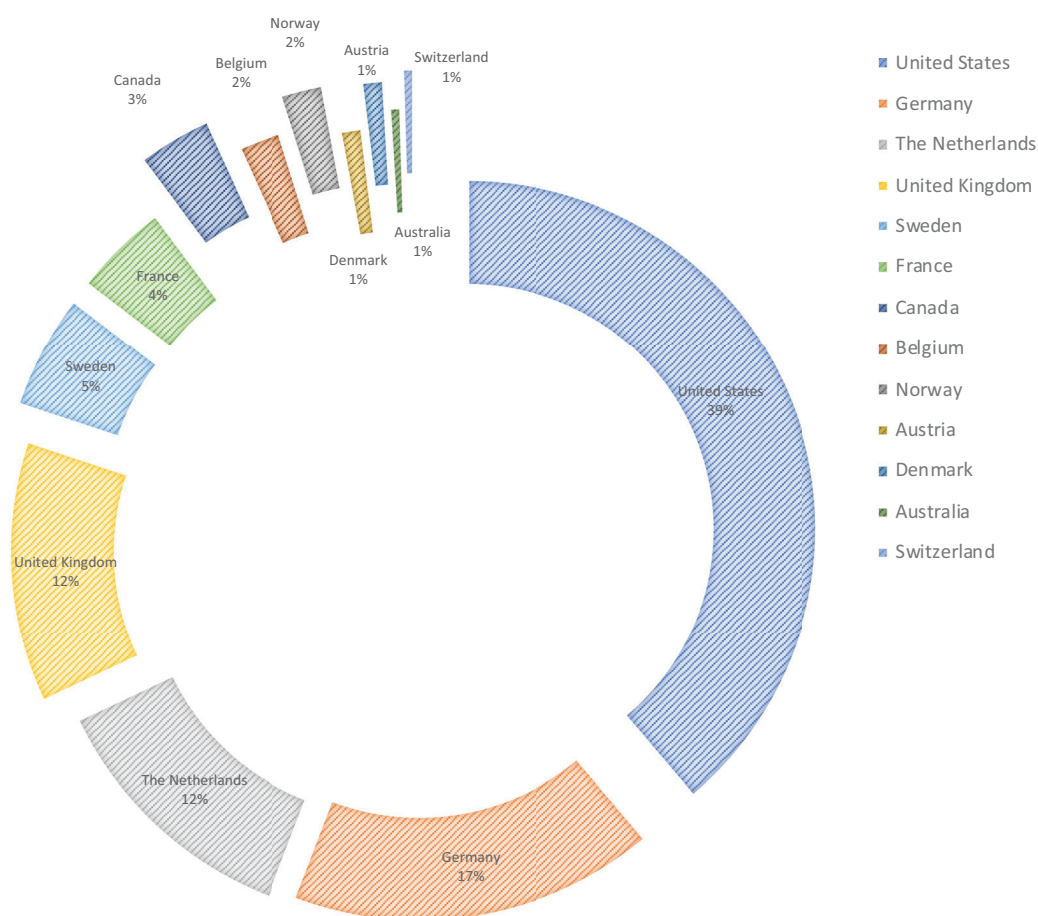
FIGURE 1 (Non) Involvement in Terrorist Violence (NITV) dataset geographical scope. [Color figure can be viewed at wileyonlinelibrary.com]

individuals to pursue revolutionary upheaval through legal as well as illegal means. For some of the individuals in our sample, such activism, (which Moskalenko and McCauley (2009, p. 240) define as "legal and non-violent political actions") formed a stepping stone toward clearly illegal and, in some cases, violent activities. For others, legal and illegal strategies co-existed to a certain extent. Clearly, behavioral radicalization can take many forms and a variety of useful comparisons can be drawn between them. Our focus here is on understanding why, among individuals who behaviorally radicalize and share convictions that encourage and justify the use of terrorist attacks, only some will become personally involved in this form of political violence.

2.2 | Sampling

In line with the *British Medical Journal* guidelines for conducting comparative studies of this nature (Coggon et al., 2009), particular attention was paid to sampling, ascertainment of exposure, and coder bias.

2.2.1 | Source population

Cases and controls were drawn from populations of radicalized individuals across North America and Europe, broadly active between 1980 and 2020. To inform debates about the extremist ideologies currently most likely to constitute a terrorist threat to Western countries, the sample was divided between right-wing extremists ($n = 103$) and Salafi-Jihadists ($n = 103$). To maintain broadly comparable sociopolitical backgrounds, sampling was limited to "homegrown" extremists—individuals with a strong sense of belonging to the countries in which they radicalized, gained through citizenship or prolonged residence (Crone & Harrow, 2011). Hence, we excluded individuals who made their way to Europe or North America for the purpose of a terrorist attack but had no other significant ties to these regions (e.g., the 9/11 perpetrators). We also excluded "foreign fighters" who joined insurgents overseas, such as the so-called Islamic State. We consider such participation in insurgent violence and state building to be significantly different from involvement in extremism and terrorism in countries like Germany or the United States (Duyvesteyn & Fumerton, 2009).

2.2.2 | Identification of cases and controls

Our sample is broadly comparable except for the presence or absence of the outcome of interest: involvement in terrorist violence. This means that both cases and controls cognitively radicalized to the point of embracing extremist worldviews that justified and encouraged the use of terrorism, and also behaviorally radicalized to the point of enacting these worldviews in a variety of legal and (or) illegal ways. The cases, however, extended this behavioral radicalization to the point of personal involvement in terrorist violence.

Despite its considerable societal impact, terrorism is generally considered a low-base-rate problem, meaning that the number of cases available to study is relatively limited (Sageman, 2021; Sarma, 2017). Accordingly, we began our sampling approach by casting a wide net and considering all terrorist attacks in North America and Europa since 1980, consulting publicly available resources such as academic publications and terrorism-focused data sets. The sampling frame for "noninvolved in terrorist violence" controls included all individuals who had, in the past, been cognitively and behaviorally radicalized, but whose behavioral radicalization never included planning, preparing, or executing a terrorist attack.

By focusing on individuals who were no longer involved in extremist activities (i.e., having behaviorally disengaged and in many cases cognitively deradicalized as well), the likelihood that controls were only noninvolved in terrorist violence because they had been apprehended before they could strike, or that they would develop an interest in terrorist violence at a later stage of their radicalization process, was minimized. In other words, for our controls, we selected individuals who had transitioned out of extremism without engaging in terrorist violence, despite having had opportunities to do so. For the identification of such individuals, we relied on court cases concerning nonviolent terrorism-related offenses (e.g., financing or propagandizing on behalf of extremist organizations), compilations of interviews with and (auto)biographies about extremists,[2] and "formers" currently engaged in so-called "Exit" programs who could serve as gatekeepers to others who had left extremism behind. By including both relatively obscure former extremists and those with a more public profile, we avoided biases that could stem from relying exclusively on a handful of high-profile "formers" who may not be representative of the broader extremist movements to which they belonged.

TABLE 1 Distribution of involved "cases" and noninvolved "controls" across ideological conviction

Outcome	Extremist conviction		
	Right-wing extremist	**Jihadist extremist**	
Involved in terrorist violence	$n = 44$	$n = 59$	$n = 103$
Noninvolved in terrorist violence	$n = 59$	$n = 44$	$n = 103$
	$n = 103$	$n = 103$	

Although the control sample was representative of the source population that produced the cases (i.e., extremists who had behaviorally radicalized as well), the sampling frame was larger for those noninvolved in terrorist violence, increasing the likelihood of sampling bias. To address this, we sought to match "involved" and "noninvolved" groups according to extremist affiliation. However, we found it challenging to identify, in particular, jihadist *controls* and right-wing *cases* due to the nature of our sampling frame and data-related limitations (detailed below). In other words, although we ensured that there were equal numbers of right-wing extremists and jihadist extremists in the sample, the matching procedure was not 1:1 and some right-wing cases had more than one control, whereas some jihadist cases were without individual controls (Table 1). This is discussed in more detail in the limitations section.

Out of circa 260 radicalized individuals who were sampled, 206 were selected for inclusion in our study, half of whom were involved in terrorist violence. Cases or controls were excluded for one of several reasons: upon closer examination, these individuals were not (clearly) ideologically extremist, claims of involvement in terrorist violence turned out to be sensationalist exaggerations, or because there was insufficient information available on the individual, inhibiting effective coding. The sample is drawn from 13 European and North American countries and the median year of birth is 1980 (Figure 1).

2.3 | Data collection and coding

Variables were collated in a 159-item codebook and all data were gathered by the authors. As is common with research on hard-to-reach populations (Coggon et al., 2009), data were drawn from primary as well as secondary sources. The notable attention given to terrorist attacks, especially mass-casualty ones, meant that the biographies and radicalization processes of many attackers could be reconstructed in considerable detail using publicly available data. These include sentencing documents (which often cite passages from psychological or psychiatric assessments), in-depth reporting (often including interviews with a range of the suspects' acquaintances), and official inquiries. By contrast, extremists who do not engage in terrorist violence tend to draw little public attention, meaning we could generally not rely on secondary sources. Therefore, we principally sought primary data for our control group of extremists whose behavioral radicalization fell short of involvement in terrorist attacks, though primary sources were also gathered for some of the lesser known terrorist attackers in our data set.

Primary data were drawn from semistructured interviews with extremists and terrorists, autobiographical materials (e.g., books, manifestos), and case files made available by the Dutch Public Prosecution Service (Table 2). Where possible, we coded cases using a variety of sources to increase our results' reliability and accuracy. Whenever we could not confidently code for a certain variable, we similarly sought alternative source types (e.g., requesting an interview, applying for access

TABLE 2 Sources used for data collection

Source type	Noninvolved in terrorist violence		Involved in terrorist violence		Total	
	Frequency	%	Frequency	%	Frequency	%
Secondary only	32	8.7	85	41.7	117	56.8
Semistructured interviews	32	17.5	5	4.9	37	18.0
Autobiographical materials	41	34.0	15	12.6	56	27.2
Investigative files[a]	12	11.7	7	6.8	19	9.2

Note: N = 206. Because some cases drew on a variety of primary sources (e.g., semistructured interview and autobiography), frequency totals exceed the number of cases in our data set, and percentage totals exceed 100.
[a]Provided by the Dutch Public Prosecution Service.

to investigative files) and, where data remained missing, followed a clear procedure to ensure that missing data would not undermine the reliability of our analyses (see next section).

Where relevant, we coded for the presence of variables both "before" and "during" radicalization onset in order to gain an understanding of how changes in exposure over time could influence radicalization process outcomes. This allowed us, for instance, to assess whether individuals became more socially isolated as they radicalized, or whether job loss preceded radicalization onset and acted as a catalyst to the adoption of extremist views. For changeable phenomena such as employment status, we used ordinal scales to chart whether their influence was stable, increased, decreased, or essentially ceased during an individual's radicalized period. Given the absence of valid, standardized measures of violent radicalization constructs (Carthy & Sarma, 2023), it was beyond the scope of our project to use continuous or ordinal measures for the majority of variables. Therefore, unless otherwise stated, variables were binary in nature, broadly capturing their "presence" or "absence."

To ensure exposure was measured in a standard and reliable way, our coding decisions underwent eight months of interrater reliability (IRR) assessment. Cohen's kappa (κ) was calculated to account for agreement being reached due to chance. The average IRR score indicated "substantial" levels of agreement ($M = 0.65$, $SD = 0.06$) and never dropped below "moderate" as defined by Landis and Koch (1977). University ethics approval was granted in November 2019, and data collection took place between January 2020 and December 2021.[3] All information was fully anonymized before being recorded by removing subjects' names, nationalities, and exact dates of birth. Interviews were conducted on the basis of informed consent.

2.4 | Statistical procedure

Data were analyzed in SPSS 25 (IBM Corporation, 2017). In the absence of formal hypotheses, we initially examined associations between structural-, group-, movement-, and individual-level variables and the outcome. In line with other research analyzing binary data (O'Keeffe et al., 2016), our reporting includes all statistically significant findings ($p \leq 0.05$) but focuses on significant findings that were deemed robust ($p \leq 0.01$).

We then conducted binary logistic regressions predicting the outcome of our dichotomous variable, *involvement in terrorist violence*. In line with the iterative purposeful selection of covariates approach outlined by Bursac et al. (2008; see also Hosmer et al., 2013), the *p*-value cutoff for inclusion in the model was 0.15 and variables were removed from the model if they were (1)

nonsignificant or (2) not a confounder, with the latter defined as any variable that creates a change in any remaining parameter estimate greater than 20%. The variables in the model were "deleted, refitted, and verified" (Bursac et al., 2008, p. 2) to create a model containing only significant covariates and confounders. Any variables that did not meet the threshold for the original model were added back, one by one, to determine which, by themselves, made an important contribution alongside the other variables. Bivariate associations between predictors were also explored in the context of the regression model.

Missing data are a pervasive challenge in epidemiological studies, including the literature on terrorism and violent extremism (Safer-Lichtenstein et al., 2017). To address this, we followed a systematic procedure to ensure that missing data were missing at random (i.e., the inclusion of missing values would not affect the results). Statistically significant variables with more than 5% missing data were identified and, in line with Perkins et al. (2018), their valid and invalid cases were then compared across age, gender, outcome, and, for certain variables, source type (e.g., interview or open source). The purpose of this procedure was to identify potential sources of confounding. Where confounding was identified, the variable was not included in the prevalence reporting, nor was it selected for inclusion in the regression models. A detailed overview of our missing data procedure for all statistically significant variables is available as Table S5.

2.5 | Contribution to the literature and limitations

We conclude the methods section by considering our study's main contributions to the literature, as well as acknowledging several limitations. Because our data set represents European as well as North American countries, and includes both jihadist and right-wing extremists, it provides a broader perspective on behavioral radicalization outcomes than existing studies on this topic, which have tended to emphasize one particular country or ideology (Knight et al., 2022; LaFree et al., 2018; Thijs et al., 2022). At $N = 206$, our sample is larger than several other recent contributions to this literature (Knight et al., 2017, 2022; Snook et al., 2022), though it remains smaller than LaFree et al.'s (2018) pathbreaking study with a sample of more than 1,400 cases (see also Becker, 2021; Holt et al., 2018; Jensen et al., 2020).

Although we provide a robust sample size, certain methodological objectives proved challenging. We were unable to match all cases and controls 1:1 based on conviction while still prioritizing high-quality sources and acceptable percentages of missing data. Still, we also observed that matching based on conviction was subject to the same drawbacks as most matching based on demographic variables—namely, that one case could be matched to other controls without substantially changing the association (Kuo et al., 2018). For these reasons, our data remain loosely matched, an approach that has also been employed in other terrorism-related comparative studies (Gill, Silver, et al., 2021; Gruenewald et al., 2013).

For data collection, we relied on open as well as privileged sources. As LaFree (2019, 2022) and Kearns et al. (2019) have noted, open sources, and media reporting in particular, are subject to potential limitations in terms of accuracy, contradictory findings, or editorial biases that may lead to uneven coverage of different forms of extremism. As a result, using open sources will inevitably result in issues related to missing data (Freilich & LaFree, 2016). Although we followed a systematic procedure to ensure that "missingness" did not undermine the reliability of analyses (see previous section), this also meant that some variables could not be reported upon despite their relevance to the field of inquiry. However, this approach to missing data

also means that the likelihood of spurious findings is reduced, improving the validity of the results.

To reduce issues related to a reliance on open-source data, we prioritized primary and privileged data where possible. These included semistructured interviews, autobiographical materials, and police investigative files, allowing us to draw from particularly detailed sources to a degree still infrequently seen in this area of study (Munden, 2023; Schuurman, 2020a). Although multiple data sources have routinely been used in other population-based research such as family history studies (Kendler et al., 1991; Silverman et al., 1989) and service utilization research (Zahner & Daskalakis, 1997), the comparability of these sources should not be assumed. This limitation notwithstanding, it is important to iterate that this approach to data collection is widely championed in "nascent" areas of multidisciplinary research (Decker & Pyrooz, 2015, p. 105), particularly on hard-to-reach populations such as radicalized individuals (Clemmow et al., 2022; Gill, Silver, et al., 2017; Pyrooz et al., 2018). As with the epidemiological research mentioned above, the application of inferential statistics is not uncommon, both on specific events (Ri et al., 2019; Sierra-Arévalo & Nix, 2020) and at the level of the individual (Gill, Corner, et al., 2017; LaFree et al., 2020). That being said, we wish to emphasize that any inferences emerging from these analyses would be strengthened using a triangulation of causal, future designs such as randomized control trials and natural experiments (Hammerton & Munafò, 2021).

Relatedly, we are also cognizant that the primary data gathered in the current study are not infallible; indeed, information gathered from primary sources can often be at odds with official sources such as registries (Desai et al., 2001). Moreover, it can be challenging for others to verify the veracity of claims informed by such sources (Ranstorp, 2009). Like open-sources, primary data can also lack reliability and objectivity (Freilich & LaFree, 2016). For instance, interviewees' recollections of past events may be marred by forgetfulness, post hoc reconstructions, or a desire to portray themselves favorably. Autobiographical materials may be self-aggrandizing or purposefully shocking to increase sales. Although police files can provide particularly rich details of radicalization trajectories, their purpose imputes them with a degree of subjectivity. They are compiled to enable criminal prosecution, not academic research (Lentini, 2010). Although we attempted to maximize the reliability of our data by using multiple source types wherever possible, these limitations could not be fully overcome.

At 159 variables per case, we believe that our assessment of potential influences on (non) involvement in terrorist violence is more comprehensive than previously published work. Although this increases the likelihood of thematic overlap between variables, it provides a broad theoretical perspective on a complex issue and complements work on different forms of behavioral radicalization that has taken a specific theory as its point of departure (e.g., Jensen et al., 2020). Furthermore, by assessing whether particular variables exerted an influence *before* as well as *during* radicalization, our study offers a dynamic, life course–oriented perspective on radicalization process outcomes not yet seen in this area of inquiry (Rottweiler, 2021).

By explicitly incorporating protective as well as risk factors in the analyses, we also address a field-wide tendency to study terrorism primarily from a risk factor perspective (Desmarais et al., 2017; Rottweiler, 2021; Wolfowicz et al., 2020). Additionally, our iterative approach to modeling, which captures both risk and protective perspectives, allowed us to ensure that potentially important variables were not overlooked (Mickey & Greenland, 1989). Finally, although we are cognizant of the limitations of qualitative accounts for exposure measurement in epidemiological studies, we believe that our data set represents some of the most detailed and reliable information on radicalization process outcomes related to (non) involvement in terrorist violence currently available.

3 | RESULTS

3.1 | Bivariate analyses

The descriptive and inferential statistics for all significant ($p \leq 0.05$) associations between predictor variables and the outcome are displayed in Table 3. Of the seven structural variables tested, two were significantly associated with involvement in terrorist violence. Of the 13 group- and movement-level variables, nine were significant, and of the remaining 124 individual-level variables, 28 were significantly associated with the outcome. Fifteen variables were excluded from the current analyses as they were not relevant for understanding involvement in terrorist violence (e.g., attack details). As shown in Table S5, 26 variables had nonrandom distributions of missing data and were omitted. To account for the number of comparisons, a Bonferroni correction was used to create an adjusted threshold for significance. With 118 comparisons, this adjusted threshold is $p \leq 0.00042$.

At the structural level of analysis, behavioral radicalization including involvement in terrorist violence was strongly associated with the perception of state use of excessive force against the ideological in-group. For instance, numerous jihadists in our sample saw Western states' overseas counterterrorism campaigns, such as the U.S.-led coalition against the so-called Islamic State, not only as direct attacks against groups they identified with, but as proof of a broader and more sinister ambition to combat what they saw as "true" Islam. By contrast, a structural-level protective factor was the presence of political parties that provided (some) sense of political representation of extremist viewpoints.

At the group and movement level, as measured post-radicalization onset, involvement in terrorist violence was associated with the perception that other extremist groups successfully used terrorism to gain media attention or political objectives. Terrorist attackers were also more likely to look up to extremist role models and align with movements and groups that viewed terrorist violence as unequivocally morally and strategically legitimate, and openly called for its use. Overall, however, participation in an extremist group was strongly associated with *non*involvement in terrorist violence, particularly larger groups and those that published ideological materials (such as pamphlets or Web sites).

We found several individual-level, pre-radicalization demographic characteristics significantly associated with later involvement in terrorist violence. These include gender (male), an immigrant background, criminal history, (para)military experience or training, a history of a diagnosed mental disorder, and exposure to adverse childhood experiences (e.g., serious illness, victimization). After radicalization onset, a diagnosed mental health disorder was also associated with involvement in terrorist violence. The pre-radicalization presence of prosocial support systems, such as education- or employment-related commitments, were also associated with noninvolvement in terrorist violence. This was also the case for socialization into *radical* but not *extremist* views during childhood (see Section 2.1). After radicalization onset, prosocial support systems continued to be associated with noninvolvement, as did being in a relationship, parenting children, and continuing with education. Behavioral radicalization characterized by noninvolvement in terrorist violence was also associated with lower social isolation.

Those who became involved in terrorist violence tended to be regarded as displaying poorer social skills. They also received fewer observations for self-control and were, on average, three years older at radicalization onset than those who remained noninvolved. Participation in

TABLE 3 Significant structural-, group-, movement-, and individual-level associations

Variable	Operationalization	Involved in terrorist violence			Noninvolved in terrorist violence			χ^2	Odds ratio	Missing data
		Yes	No	Sum	Yes	No	Sum			
Structural										
Perceived excessive use of force by state(s)**	No/yes/unknown	68 (34.7)	29 (14.8)	97 (49.5)	51 (26.0)	48 (24.5)	99 (50.5)	7.10	2.21	5%
(Partial) political representation during radicalization*	No/yes/unknown	28 (15.5)	63 (34.8)	91 (50.3)	42 (23.2)	48 (26.5)	90 (49.7)	4.82	0.51	12%
Movement										
Group/movement: violence morally legitimate****	No/yes, legitimate/yes, qualified/unknown/DNA[a]	80 (39.8)	20 (10.0)	100 (49.8)	44 (21.9)	57 (28.4)	101 (50.2)	28.23	5.18	2%
Group/movement: violence strategically effective****	No/yes, effective/yes, qualified/unknown/DNA	77 (38.3)	22 (10.9)	99 (49.3)	17 (8.5)	85 (42.3)	102 (50.7)	75.36	17.50	2%
Group/movement encourages terrorism****	No/yes/unknown/DNA	91 (45.7)	9 (4.5)	100 (50.3)	59 (29.6)	40 (20.1)	99 (49.7)	26.44	6.86	3%
Perceived effectiveness terrorism during radicalization***	No/yes/unknown	85 (42.9)	10 (5.1)	95 (48.0)	75 (37.9)	28 (14.1)	103 (52.0)	8.84	3.17	4%
Extremist role model prior to radicalization**	No/yes/unknown	96 (48.0)	3 (17.6)	99 (49.5)	87 (43.5)	14 (7.0)	101 (50.5)	7.54	5.15	3%
Group/movement operates in prison*	No/yes/unknown/DNA	77 (40.5)	16 (8.4)	93 (48.9)	66 (34.7)	31 (16.3)	97 (51.1)	5.55	2.26	8%
Group										
Joined an extremist group****	No/yes/unknown	58 (28.2)	45 (21.8)	103 (50.0)	86 (41.7)	17 (8.3)	103 (50.0)	18.09	0.25	0%
Group published ideological materials (incl. online)****	No/yes/unknown/DNA	22 (16.2)	31 (22.8)	53 (39.0)	71 (52.2)	12 (8.8)	83 (61.0)	29.01	0.13	1%

(Continues)

TABLE 3 (Continued)

Variable	Operationalization	Involved in terrorist violence			Noninvolved in terrorist violence			*t*	Cohen's *d*	Missing data
		M	**SD**	**n**	**M**	**SD**	**n**			
Group age (months)*	Numerical	30.4	63.8	50	76.8	147.3	72	−2.37	0.41	14%
Individual										
Criminal antecedents**	Composite item[b]	1.6	1.5	78	0.7	1.1	88	3.92	0.68	19%
Self-control****	6-point scale (Gibson, 2014)	2.7	1.2	99	3.9	1.4	102	−6.79	−0.96	2%
		Yes	**No**	**Sum**	**Yes**	**No**	**Sum**	**χ²**	**Odds ratio**	
Poor social skills****	Social skills perceived by others as: well-developed/neutral/underdeveloped (...)	38 (19.7)	56 (29.0)	94 (48.7)	14 (7.3)	85 (44.0)	99 (51.3)	16.92	4.12	6%
Nonviolent activism during radicalization****	No/yes/unknown	26 (12.6)	77 (37.4)	103 (50.0)	67 (32.5)	36 (17.5)	103 (50.0)	32.95	0.18	0%
Stability or increased time spent on nonviolent activism[c]****	Less time/stability/more time/abandoned/unknown/DNA	5 (5.6)	21 (23.3)	26 (28.9)	54 (60.0)	10 (11.1)	64 (71.1)	34.74	0.04	3%
Stable or increased viewpoint diversity during radicalization****	Decrease/consistency/increase/essentially ceased/unknown/DNA	12 (6.1)	84 (42.6)	96 (48.7)	48 (24.4)	53 (26.9)	101 (51.3)	28.51	0.16	4%
Access to weapons****	No/yes/unknown	83 (41.1)	20 (9.9)	103 (51.0)	38 (18.8)	61 (30.2)	99 (49.0)	37.42	6.66	2%
Communicated violent intent during radicalization****	No/yes/unknown	67 (34.2)	31 (15.8)	98 (50.0)	28 (14.3)	70 (35.7)	98 (50.0)	31.07	5.40	5%
Socialized into radical worldview (childhood)[d]***	No/yes, radical/yes, extremist/unknown	11 (5.3)	92 (44.7)	103 (50.0)	27 (13.1)	76 (36.9)	103 (50.0)	8.26	0.34	6%
Parenting children during radicalization***	No/yes/unknown/DNA	15 (7.3)	88 (42.9)	103 (50.2)	35 (17.1)	67 (32.7)	102 (49.8)	10.84	0.33	<1%
Increased isolation during radicalization***	No/yes/unknown	28 (13.7)	74 (36.3)	102 (50.0)	10 (4.9)	92 (45.1)	102 (50.0)	10.47	3.48	1%

(Continues)

TABLE 3   (Continued)

Variable	Operationalization	Involved in terrorist violence			Noninvolved in terrorist violence					Missing data
Nonviolent activism pre-radicalization***	No/yes/unknown	3 (1.5)	99 (49.5)	102 (51.0)	14 (7.0)	84 (42.0)	98 (49.0)	8.27	0.18	3%
Prosocial ties during radicalization**	No/yes/unknown	80 (39.0)	23 (11.2)	103 (50.2)	93 (45.4)	9 (4.4)	102 (49.8)	7.10	0.34	<1%
Relationship during radicalization**	No/yes/unknown	46 (22.4)	56 (27.3)	102 (49.8)	65 (31.7)	38 (18.5)	103 (50.2)	6.69	0.48	<1%
Radicalized partner**	No/yes/unknown/DNA	18 (20.0)	20 (22.2)	38 (42.2)	38 (42.2)	14 (15.6)	52 (57.8)	6.17	0.33	19%
Employed or in school during radicalization*	No/yes/unknown	73 (36.0)	29 (14.3)	102 (50.2)	87 (42.9)	14 (6.9)	101 (49.8)	6.45	0.41	1%
Abandoned employment[c]***	Less time on work/stability/more time/abandoned/unknown/DNA	22 (18.0)	37 (30.3)	59 (48.4)	11 (33.3)	52 (58.4)	63 (51.6)	6.07	2.81	4%
Communicated violent intent pre-radicalization*	No/yes/unknown	11 (6.0)	79 (43.4)	90 (49.5)	3 (1.6)	89 (48.9)	92 (50.5)	5.15	4.13	12%
Adverse childhood experiences*	No/yes/unknown	83 (42.1)	14 (7.1)	97 (49.2)	74 (37.6)	26 (13.2)	100 (50.8)	4.07	2.08	4%
Prosocial ties pre-radicalization*	No/yes/unknown	90 (43.9)	13 (6.3)	103 (50.2)	97 (47.3)	5 (2.4)	102 (49.8)	3.81	0.36	<1%
Abandonment or less time spent on education[f]*	Less time on education/completed or stable/more time/abandoned/unknown/DNA	29 (23.6)	28 (22.8)	57 (46.3)	45 (36.6)	21 (17.1)	66 (53.7)	3.82	2.07	5%
Being male***	Male/female	99 (48.1)	4 (1.9)	103 (50.0)	86 (41.7)	17 (8.3)	103 (50.0)	8.96	4.89	0%

(Continues)

TABLE 3 (Continued)

Variable	Operationalization	Involved in terrorist violence			Noninvolved in terrorist violence					Missing data
Immigrant background***	No/yes/unknown	58 (30.1)	41 (21.2)	99 (51.3)	35 (18.1)	59 (30.6)	94 (48.7)	8.81	2.38	6%
(Para)military background***	No/yes/unknown	53 (26.5)	46 (23.0)	99 (49.5)	33 (16.5)	68 (34.0)	101 (50.5)	8.88	2.37	3%
Mental disorder pre-radicalization*	No/yes/unknown	14 (7.4)	77 (40.7)	91 (48.1)	5 (2.6)	93 (49.2)	103 (51.9)	5.52	3.38	8%
Mental disorder during radicalization*	No/yes/unknown	15 (7.6)	80 (40.4)	95 (48.0)	7 (3.5)	96 (48.5)	103 (52.0)	4.05	2.57	4%
		M	SD	n	M	SD	n	t	Cohen's *d*	
Age at radicalization onset[g]****	Numerical	21.6	6.5	102	18.6	5.4	103	3.51	0.50	<1%
Social isolation during radicalization[h]****	5-point scale (Alcaraz et al., 2019)	2.2	1.0	103	3.0	0.8	103	–	–	<1%

Note: N = 206. Entries in the table are counts, with percentages out of column totals in parentheses. Variables are grouped per level of analysis in order of ascending correlation. Odds ratios were calculated according to Altman (1990). All variables with >5% missing data underwent testing for significant differences in outcome, gender, age, conviction, and, where necessary, source type, to confirm that data were missing at random. Only variables with data determined to be missing at random are reported upon.

aDoes not apply.

bAssessed on a 4-point scale capturing violent crime, nonviolent crime, run-ins with the authorities short of formal convictions, and incarceration before radicalization.

cFor those who participated in nonviolent activism during radicalization (n = 93).

dUnlike other variables in the data set, "unknowns" were treated as "no" on this item.

eFor those in employment during radicalization (n = 127).

fFor those in education during radicalization (n = 129).

gTwo outliers were removed from analysis.

hHigher scores indicate lower social isolation. A nonparametric equivalent (i.e., the Mann–Whitney *U* test) was used as the data were negatively skewed and the assumption of homogeneity not met.

*p ≤ 0.05;

**p ≤ 0.01;

***p ≤ 0.001;

****p ≤ 0.0004 (Bonferroni correction).

TABLE 4 Binary logistic regression predicting involvement in terrorist violence

Predictor	Odds ratio (*B*)	95% CI for odds ratio
Constant	−0.45 (0.63)	
Violent strategic logic (group or movement)	2.64**** (14.06)	4.66–42.40
Parenting children (during radicalization)	−1.60* (0.20)	0.05–0.91
Relationship (during radicalization)	0.07 (1.07)	0.28–4.05
Criminal antecedents	0.29 (1.34)	0.85–2.13
Adverse childhood experiences	−0.06 (0.94)	0.23–3.85
Participation in an extremist group	−1.55* (0.21)	0.06–0.76
Access to weapons	2.30**** (10.01)	3.00–33.39
Socialized into radical worldview in childhood	−1.03 (0.36)	010–1.32
Self-control	−0.72** (0.49)	0.31–0.77
Gender[a]	1.45 (4.30)	0.71–26.20

Note: Model fit Hosmer and Lemeshow, $\chi^2 = 7.33$ ($p = 0.50$). $n = 156$. Positive values predict involvement.

Abbreviation: CI, confidence interval.

[a]Male = 1; female = 0.

*$p \leq 0.05$;

**$p \leq 0.01$;

***$p \leq 0.001$;

****$p \leq 0.00045$ (Bonferroni correction).

nonviolent activism, both before and during radicalization, was strongly associated with noninvolvement in terrorist violence, as was consistent or increased viewpoint diversity present in an individual's social network, expressed as the presence of ties to people with different political convictions. Stated intent to commit deadly or terrorist violence, both before and after radicalization onset, as well as access to firearms or (improvised) explosives during radicalization was associated with involvement in terrorist violence.

3.2 | Binary logistic regressions

Predictor variables associated with behavioral radicalization leading to involvement in terrorist violence at $p < 0.15$ were entered into a logistic regression model. The model was refitted to reflect only significant covariates and confounders.

As shown in Table 4, the best model fit was achieved with the following variables: violent strategic logic (group or movement), parenting children (during radicalization), relationship (during radicalization), criminal antecedents, adverse childhood experiences, participation in an extremist group, access to weapons, socialization into a radical worldview (during childhood), self-control, and gender. Associations among these variables were investigated and no multicollinearity ($r > 0.8$) was identified. The full model was statistically significant (χ^2 (10, $N = 156$) = 115.51, $p < 0.001$) and explained between 52% (Cox and Snell R^2) and 70% (Nagelkerke R^2) of the variance in involvement in terrorist violence, correctly classifying 86% of cases across 156 observations.

As an overall model of involvement in terrorist violence, both risk and protective factors are represented. The most salient contributors are alignment with a group or movement with a violent strategic logic, access to weapons, and, in terms of protective factors, parenting children during

radicalization, participation in an extremist group, and self-control. Although not significant contributors on their own, being in a relationship, having criminal antecedents, exposure to adverse childhood experiences, socialization into a radical worldview in childhood, and gender improved model fit.

3.3 | Bivariate associations between model covariates

Bivariate associations between predictor variables were initially explored to satisfy the assumption of no multicollinearity for the regression analysis. Once no multicollinearity was identified in the model, we returned to these variables to explore their relationships with the 10 covariates. We considered these relationships noteworthy as they provided context to the model variables, offering insight into the potential mechanisms at play. Although too numerous to list in detail here, we highlight several such associations in the discussion section, drawing upon those we consider to be particularly salient and theoretically plausible. An extensive overview of these association is provided in Table S6.

4 | DISCUSSION

As an overall model of involvement in terrorist violence, our findings demonstrate the saliency of both risk and protective factors in determining whether behavioral radicalization is likely to culminate in terrorist attacks. We discuss our model's risk factors first, which corroborate several well-established criminological insights into predictors of violent offending and terrorism, as well as more recent insights into these phenomena.

A key risk factor in our model is alignment with extremist groups or movements that promote a "strategic logic" (Busher et al., 2019, p. 8) that unreservedly favors violence as a means of achieving extremist goals. In other words, extremist groups who see nonviolent approaches (or strategies that mix violent and nonviolent means) as inherently *in*effective appear to be more likely to have members who will later become involved in terrorist attacks. This also applies to individuals who are not members of a particular extremist group but still engage with a broader extremist movement (through the internet, for instance). When such individuals associate with a movement that is unequivocally in favor of terrorism, they seem more likely to engage in such violence as lone actors.

In line with a sizeable literature on low self-control as a key predictor of deviance (Pratt & Cullen, 2000), low levels of self-control emerged as another, salient risk factor for involvement in terrorist violence. Furthermore, criminal antecedents surfaced as an important confounder in the model, suggesting, in line with the broader, criminological literature, that a strong predictor of future delinquency is past involvement in crime (Ouellette & Wood, 1998). This also underlines the utility of research on the so-called "crime–terror nexus" (Ljujic et al., 2017). Individuals with low self-control were also less likely to have prosocial ties, reflected, for instance, in their lower commitment to educational responsibilities.

Another salient risk factor for involvement in terrorist violence was the extent to which the sample had access to weapons. In line with research on firearm ownership and crime (Monuteaux et al., 2015), we found that possession of weapons is associated with a greater likelihood of their use. In many ways, this is not surprising. Guns and bombs are powerful instruments of destruction that have been found to increase their owners' sense of self-efficacy, or the belief that they

will be able to successfully pursue a particular course of action (Rottweiler & Gill, 2022). This is also reflected in the association with (para)military experience or training (e.g., going to gun ranges, being in a militia, military service) which improves technical proficiency in the use of weapons. Relatedly, our model also underlines the overrepresentation of males among those who became involved in terrorist violence, which corresponds with a long-standing body of work on the overrepresentation of men in acts of violence more broadly (Archer, 2022).

Turning to our model's protective factors, we come to a surprising main finding. Namely, that membership of an extremist group is associated with *non*involvement in terrorist violence. This may seem counterintuitive; after all, historically, extremist groups such as the Irish Republican Army (IRA) and al-Qaeda have been among the most infamous instigators of terrorism. However, the finding has plausibility, explainable, at least in part, by Busher et al.'s (2019) proposition that various, internal logics may function as "brakes" on extremist groups' willingness to engage in terrorist attacks. Most extremist groups operating in Western countries will recognize that the state is a very powerful adversary and that opting for a strategy of terrorism will bring swift incarceration or death. Keen to avoid such outcomes, many extremist groups will essentially socialize members into operating (just) within the boundaries of the law, even though the desire for revolutionary change remains. We found this to be especially likely for older, more established groups, whose survival to (relative) old age may reflect their ability to avoid the repressive measures that would come from their members engaging in terrorist violence.

Our finding that extremist group membership is less likely to lead to involvement in terrorist violence is given further credence when we take the shifting strategic outlook of extremist movements into account. Although it was possible for 20th-century terrorist groups, such as the West-German *Rote Armee Fraktion* (RAF), to live an "underground" existence for years using bank robberies and the help of sympathizers (Aust, 2017), such a prolonged run from the authorities is highly unlikely given the considerably increased (surveillance) powers of most Western states (Hegghammer, 2021). Would-be terrorists appear to have realized this too. Starting in the 1990s, U.S.-based right-wing extremists began propagating "leaderless resistance" as an operational alternative to the cell-based concept that had proven too vulnerable to state countermeasures (Kaplan, 1997). Contemporary Salafi-Jihadist groups have similarly adopted the notion, and called upon followers to conduct simple attacks on their own that are harder to interdict (Brown, 2021). Thus, our observation that terrorist violence appears more strongly associated with individuals who are not members of groups and operate as lone actors corresponds with key, contextual developments.

It should be kept in mind that our study looked specifically at involvement in terrorist violence, and that we can make no claims about extremist group membership protecting against other ways in which radicalized people can enact their convictions. As we discuss in more detail in the section on policy implications, although extremist group membership appears to be associated with noninvolvement in terrorist violence, it is simultaneously likely to exacerbate other extremism-related harms to society. Moreover, as one of the main risk factors in our model suggests, a lot depends on the strategic logic of the group. As noted earlier, when violence is seen as the only effective means for change, membership of an extremist group is more likely to lead to involvement in terrorist attacks. However, at least in part for reasons of self-preservation previously noted, many extremist groups appear to have actually adopted more flexible strategic logics in which nonviolent means (e.g., electoral participation, propagandizing) or a mixture of violent and nonviolent approaches are seen as alternatives to relying exclusively on violence. Noteworthy here is also the association between involvement in extremist groups and participation in nonviolent activism.

Nonviolent activism can provide legal means of pursuing extremist goals that minimize personal risk to members while still allowing them to work toward their ideological goals.

Furthermore, the association between nonviolent activism as a promotive factor *prior to* and as a protective factor *after* radicalization onset points to Jaskoski's (2020) argument that path dependency may influence what form behavioral radicalization will take. Our findings suggest that individuals who have become accustomed to pursuing change nonviolently appear more likely to adopt similar means once radicalization occurs. They may seek out extremist groups that operate nonviolently or play a role in moving them toward such preferences. Here, social learning theory's emphasis on interactions with peers as a mechanism for learning (Bandura, 1971) appears salient.

Group involvement was also found to be associated with neutral to well-developed social skills and negatively associated with a diagnosed mental disorder, and increased isolation during radicalization. Our social skills assessment, although rudimentary, corresponds with work suggesting that interpersonal skills are associated with lower levels of violence and other delinquent behavior (Polan et al., 2013). We are also reminded of two selection effects: one in which people with more socially oriented personalities seek the company of like-minded individuals, and the other where (extremist) groups are likely to deny (continued) membership to individuals perceived as unreliable or erratic, whether as a result of limited social skills or mental health–related issues (Lindekilde et al., 2019). Arguably, such selection effects are part of the reason why mental health issues may be particularly prevalent among lone-actor terrorists and less so group-based ones (Sarma et al., 2022).

Interestingly, our conclusions about the potential protective effects of membership in an extremist group contrast somewhat with existing work that notes such involvement as making radicalized individuals *more* likely to engage in violence (Becker, 2021; Holt et al., 2018; LaFree et al., 2018). We suspect that this contrast is less stark than it may appear at first, reflecting principally our incorporation of a "strategic logic" variable that allows us to qualify the types of extremist groups more likely to form a risk or protective factor for involvement in attacks. Second, these authors defined violence as an "ideologically motivated act that resulted in casualties or was clearly intended to result in injury or death but failed" (Becker, 2021, p. 1109). The inclusion of an intention to injure as well as kill appears to make for a broader take on violence that can include terrorism as well as, for instance, hate crime. By contrast, our study focused singularly on one particular type of violence: terrorist attacks. Our argument that extremist groups tend to socialize members to *not* use terrorist violence should not obscure the fact that many of these members do engage in *other forms* of violence. Had we used a less specific contrast, we suspect that our findings would be more closely aligned.

Returning to our model and main, bivariate findings, we see the potential protective influences of being in a relationship and parenting children underlined. This reflects a broader pattern in our findings that suggests the relevance of social control theory's emphasis that prosocial ties, such as commitments to work, education, or children, reduce the likelihood of involvement in criminal or deviant behavior (Hirschi, 1969; Laub & Sampson, 1993). We found that prosocial ties such as parenting children or being in a relationship were also associated with group involvement, and negatively associated with increased isolation during radicalization, providing additional glimpses into why extremist groups may be reticent to escalate to terrorism. Simply put, many of their members actually seem to have a sizeable stake in the political systems and societies that they are avowedly seeking to destroy and replace.

Children appear especially susceptible to socialization into extremist thinking and violent behavior, whether through exposure to the worldviews of radicalized parents (Førland et al., 2012) or forcible recruitment and indoctrination by terrorist organizations (Bloom & Horgan, 2019). Our model's emphasis on the influence of radicalized parents supports this line of reasoning but suggests that the degree of parental or peer radicalization matters. Compared to those exposed to an

extremist worldview or none at all, we found that children exposed to a *radical* worldview by parents or peers were less likely to use terrorist violence once radicalized themselves. As detailed in the section on definitions, although radicals will generally advocate for far-reaching sociopolitical changes that can usually be accommodated within the existing order, and generally pursue them without recourse to violence, extremists will only accept revolutionary upheaval and are positively in favor of the use of violence to achieve it (Schmid, 2013).

It is worth reiterating that our sample includes individuals with extremist views only, suggesting that the promotive influence of parents with radical but not extremist views holds true even for individuals who will ultimately come to adopt more violent and revolutionary ideologies than their parents. We hypothesize that family members and peers' ability to hold radical views while remaining integrated into society through work, relationships, or education sets a behavioral template that reduces the likelihood that a child will adopt violent means, if and when it radicalizes later in life. Essentially, children exposed to radical but not extremist family members and peers may learn that society can be opposed without necessarily having to be personally combatted. Interestingly, we found that exposure to adverse childhood experiences, despite being associated with involvement in terrorist violence at the bivariate level, emerged as a confounder in our model, likely due to its relationship with this variable (i.e., socialization into a radical worldview in childhood was considered an adverse childhood experience). This demonstrates not only the potential complexities at play, but also the importance of taking a life-course perspective when accounting for radicalization process outcomes (Rottweiler, 2021; Windisch et al., 2022).

In short, the results of our modeling support the relevance of key criminological theories for understanding radicalization process outcomes. Like LaFree et al. (2018), Holt et al. (2018), and Becker (2021), our study's findings highlight the salience of social control theory and self-control theory. Both the presence of prosocial ties and the ability to exercise self-control exerted a protective influence, limiting the likelihood that radicalization would yield involvement in terrorist violence. Our findings also draw particular attention to the social context in which these processes occur, echoing Smith et al.'s (2020) call to refocus attention on the group as a key site for understanding radicalization and its various behavioral manifestations.

4.1 | Policy implications

A first implication of our findings for the policy and practice of terrorism prevention is that (behavioral) radicalization should not be equated with involvement in terrorist attacks. Such a view risks obscuring the heterogeneity of these trajectories and their outcomes. The radicalization processes and, to some extent, the biographical backgrounds of those who become involved in terrorist violence differ markedly from those who do not. A concrete question emerging from this heterogeneity concerns the specific behavior that preventive programs seek to target. Because radicalization processes leading to terrorist violence are defined by different constellations of risk and protective factors from those that do not, programs aimed specifically at preventing terrorist attacks may not be equally effective at preventing other forms of behavioral radicalization. The effective design, implementation, and evaluation of preventative programs might usefully begin by asking what concrete threat, or specific radicalization outcome, they wish to target, rather than attempting the broad, umbrella-type approaches that are still quite common (Brouillette-Alarie et al., 2022).

Our results are particularly relevant to two types of prevention-oriented contexts: identifying and averting an acute risk of a terrorist attack, and more fundamental, longer term efforts to

prevent radicalization processes yielding such violence. In the acute scenario (which is likely to be of concern principally to intelligence agencies and police forces), investigators are aware of one or more radicalized individuals and must assess whether a terrorist attack is likely. The variables associated with involvement in terrorist violence can inform threat assessment work of this kind, helping to increase the confidence with which the most likely terrorist attackers can be identified and guiding the timely allocation of investigative or surveillance-oriented resources. Our findings' contribution to longer-term prevention is twofold. When individuals at risk of radicalization are identified, knowledge of the behavioral and biographical correlates of involvement in terrorist attacks can be applied to help identify those persons most in need of support or interventions. Second, knowledge of the protective factors that make terrorist violence a less likely outcome of radicalization processes can be incorporated into preventative programs to maximize the likelihood that those who radicalize will not become involved in its most grievous outcome.

One finding that may lend itself to this type of intervention in a preventative context is encouraging nonviolent activism. It bears keeping in mind, however, that although nonviolent activism can appear relatively harmless, in the context of this study it was deployed by groups and individuals seeking revolutionary social and political change. Its suitability as a "lightning rod" for diverting extremists from pursuing their ambitions by using terrorism must be carefully assessed—not only against the controversy and outrage such activism is likely to spark among citizens, but also against whether such activism stands a chance of actually bringing about a violent upheaval of the existing order. Provided that their electoral chances can confidently be estimated as minimal, there may, for instance, be some value in allowing extremist political parties to exist from a counterterrorism point of view. However, under particular circumstances, extremist political parties can also become vectors for undermining the democratic order from within, as the case of Greece's "Golden Dawn" demonstrates (Ellinas & Lamprianou, 2017). The short-term goal of averting terrorist violence therefore needs to be very carefully weighed against the potential longer term consequences.

Another finding from our model that presents a similar dilemma is that participation in extremist groups, unless their strategic logic exclusively emphasizes violence as a mechanism of change, is associated with noninvolvement in terrorist attacks. Set against this association, the ability of extremist groups to instill and reinforce violence-legitimizing ideologies must not be discounted (e.g., Horgan et al., 2017). Moreover, although most members of extremist groups will not use *terrorism*, they are still likely to engage in other forms of violent behavior such as hate crimes. This raises a more general, and sobering, point about our research, namely, that it only covers risk and protective factors for the *worst possible* radicalization outcome. Successfully averting the use of terrorist violence by extremist individuals or groups does not mean that they are no longer in favor of revolutionary societal change, or that they do not pursue these goals in other (violent) ways.

The bivariate associations in Table 3 provide further starting points for designing preventative programs. Although the associations with (non) involvement in terrorist violence may not be as salient as those drawn from our model, a benefit to many of the bivariate associations is that they are less likely to spark controversy when implemented. For instance, addressing perceptions of the state as a violent opponent, encouraging the development of social networks with greater viewpoint diversity, increasing radicalized individuals' prosocial ties through school or work, and providing mental health support to those who need it are all likely to diminish the likelihood that behavioral radicalization will lead to involvement in terrorist attacks. We are conscious that many of these elements are already utilized in radicalization-prevention initiatives (Koehler, 2017), and hope that our findings will prompt further, explanatory research that can support these efforts.

The identification of movement-, group-, and individual-level variables in our overall model of involvement in terrorist violence is an important reminder that the causes and consequences of radicalization must be assessed by looking beyond the radicalized individual. Neither should risk or protective factors be assessed in a purely static fashion; as our study has demonstrated with exposure to viewpoint diversity, a variable's association with noninvolvement may depend on its continued, rather than incidental, presence during an individual's radicalized period. Finally, we underline the importance of "phase-specific" approaches to terrorism prevention (Horgan et al., 2016, p. 53). Several variables, such as having children or being employed, exerted a protective influence but not a promotive one. Initiatives that focus on creating employment opportunities, for instance, may be effective in limiting the likelihood that radicalized individuals will turn to terrorism, while having little chance of success when targeted at individuals in a pre-radicalization stage. In other words, the *timing* of preventative measures matters, as their efficacy depends not only on the mechanism upon which they are based, but the moment at which they are introduced to an at-risk individual.

5 | CONCLUSION

Behavioral radicalization is more likely to lead to involvement in terrorist violence for individuals who are not members of extremist groups but, instead, operate as lone actors. They are likely to be associated with movements that see violence as the only effective mechanism for achieving change. When compared with radicalization trajectories not culminating in terrorist violence, involvement in terrorist attacks is also associated with less well-developed social skills, a higher likelihood of a diagnosed mental disorder, increased isolation during radicalization, limited prosocial ties, and being male. These individuals stand out particularly in terms of low self-control, criminal antecedents, adverse childhood experiences, and access to weapons.

Individuals whose behavioral radicalization falls short of involvement in terrorist attacks tend to be members of extremist groups, whose weakness vis-à-vis the modern Western state appears to impel them to socialize participants into (just) abiding by the law. Such individuals also tend to have greater self-control, stronger social skills, a lower probability of diagnosed mental health problems, and familiarity with nonviolent activism. They are also more likely to maintain various prosocial ties during radicalization, particularly in terms of relationships and parenting children, that impede their use of terrorist violence. Interestingly, exposure to a radical worldview in childhood does not appear to be associated with involvement in terrorist violence later in life, hinting at a complex interplay between exposure to radicalized peers during childhood and future radicalization outcomes.

Our results suggest that involvement in terrorist violence is as much about the absence or gradual disappearance of protective factors as the presence of particular risk factors. Moreover, the variable influence of factors at different, temporal stages (i.e., before or during radicalization) was notable; variables such as having a family or being employed exerted a protective effect but not a promotive one. This demonstrates the intricacy of radicalization processes, as well as the difficulties faced by policy makers and practitioners designing initiatives to mitigate the risk they pose. Ultimately, our study's focus on terrorist violence as a specific behavioral radicalization outcome is only one of several ways in which such processes can be disaggregated. Hopefully, our work can be used to better understand (non) involvement in terrorist violence, contribute to a promising emergent direction of academic research, and provide empirically robust insights that can be used in efforts to prevent radicalization from yielding its worst possible outcome.

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ENDNOTES
[1] The dataset, codebook and methodological supplements are available at https://doi.org/10.7910/DVN/NJX5BV.
[2] For example, the one maintained by Oslo University's Centre for Research on Extremism.
[3] Reference: 2019-012-ISGA-Schuurman.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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