

PSYCHOLOGICAL AND CRIMINOLOGICAL UNDERSTANDING OF TERRORISM

Theories and models¹

Zoe Marchment and Paul Gill

Introduction

Terrorism studies began as a niche area of enquiry in the early 1970s within history, political science and sociology. Such approaches explain the emergence of, and motivation for, politically violent campaigns within their socio-political context. From the outset, the field of terrorism studies was not so interested in the terrorist event itself. Instead, studies focused upon two almost incompatible approaches, each with varying, and often dubious, levels of scientific rigour. First, analyses sought to discover the dispositional traits of terrorist group members (Cooper, 1978). Such approaches initially offered anecdotal glimpses into the supposed ‘irrationality’ of the individual perpetrator by emphasizing psychopathy and other particular personality traits. Second, analyses focused on the ‘root causes’ of terrorist grievances (Alexander, 1976), offering empirical descriptions of the ‘rationality’ of terrorist groups turning toward violence. The emphasis was on individual and group ‘agency’ in strategic decision-making. For example, various studies examine how terrorism can be an effective political strategy that is more optimal than other forms of military engagement, can produce effective gains, and can undermine confidence in the functioning and authority of the state.

The initial dominance of history and political science had a major path-dependent effect upon the study of terrorism. Instead of viewing a terrorist attack as a single crime, the tendency within the literature has been to explain the attack in terms of a group’s ideological position (Drake, 1988) or strategic orientation (Abrahms, 2008). Such depictions emphasize terrorism as a political, rather than a criminal, problem. Correspondingly, whereas these studies traditionally focused upon the rational

adoption of terrorism as a strategy or a tactic, they typically do not look at the ‘rationality’ underpinning the actual commission of a terrorist offence.

In the past few years however, there has been a major shift within terrorism studies. A greater variety of disciplines now bring their methodological expertise to the domain. Insight from the humanities now extends beyond the discipline of history and includes linguistics, the visual arts and theology (Maher, 2016). The social sciences have increased their problem-oriented approaches, bringing in a diverse range of disciplines, including geography (Bahgat and Medina, 2013) and psychology (Horgan, 2015). The natural sciences have also applied their methodological tools and paradigms to understand terrorist behaviour (Johnson et al., 2013; Manrique et al., 2016). The growth of importance in the internet for radicalization and terrorist engagement (Gill et al., 2017) has also witnessed more input from computer science (Brynielsson et al., 2013). Terrorism studies, as a whole, is becoming increasingly more empirically and quantitatively oriented after years of questionable data and science (Schuurman, 2018).

Psychopathology, personality and pathways

As with the study of more traditional crimes, early psychological approaches to understanding terrorism were based on the assumption that something in the makeup of terrorists differed to the “normal” population (Mullins and Dolnik, 2009). Silke (2003, p. 30) commented that “in the early 1970s ... it was widely believed that terrorists suffered from personality disorders and that there would be an exceptionally high number of clinical psychopaths, narcissists and paranoids in the ranks of the average terrorist group.” Walter Laqueur wrote that “all terrorists believe in conspiracies by the powerful, hostile forces and suffer from some form of delusion and persecution mania ... The element of ... madness plays an important role in terrorism” (as quoted in Silke, 2003, p. 30).

The quest for a terrorist psychopathology or for a unique terrorist personality profile has borne disappointing results, with the majority of such research pointing to the ‘normality’ of individuals involved in terrorist organizations. Horgan (2003, p. 114) commented that “despite their attractiveness, personality traits are useless as predictors for understanding why people become terrorists”. “The concepts of abnormality and

psychopathology are not useful in understanding terrorist psychology or behaviour” (Post, 2007).

Multiple papers have attempted to use psychoanalytical theories to explain the cause of terrorist behaviour. Kaplan (1978, p. 247) wrote that terrorism is a response to poor self-esteem, used by an individual to counter impulses of self-contempt. By carrying out terrorist acts, it can “not only shore up a weakened ego; it can also shatter its walls altogether, freeing the self from what has come to be felt as a prison”. Friedland (1992) proposes that terrorism is a result of interactions between social processes and individual character. An individual’s quest for significance may increase their readiness to be recruited. Terrorists groups may also (a) seek out individuals who want to increase their social significance and (b) highlight how group membership may facilitate the attainment of supreme significance (Kruglanski and Fishman, 2009). Motivations for becoming a member of an organization vary across individuals, and personal desires facilitating radicalization and entry are not necessarily due to social factors.

Bartlett and Miller (2012) suggest that those who engage in violence have the following characteristics: they have a strong emotional pull to act in the face of injustice; they have a strong sense of thrill and excitement associated with action; they have a sense of status; and have been affected by peer pressure. Moghaddam (2005) distinguishes terrorists from other individuals as those that “believe they have no effective voice in society, are encouraged by leaders to displace aggression onto out-groups, and become socialized to see terrorist organizations as legitimate and out-group members as evil”.

Empirical lessons about group dynamics from social psychology help to clarify some of the behaviour of terrorist collectives. Group contexts promote extreme attitudes. Group opinions and attitudes tend to be more extreme than those held by its individual members, and individual opinions and attitudes tend to become more extreme in a group context (Borum, 2011). Groups have internal norms and rules that control member behaviour; there are implicit and explicit expectations for how individual members behave (McCauley and Segal, 1987).

Early group theories of terrorism focused on psychological heterogeneity and group-induced homogenization. Although each individual has a different personal

justification for entering into an organization, the collective moderates their behaviour when they become part of a group. This sense of collective is said to overwhelm an individual and provide validation for actions carried out whilst part of the group (Post *et al.*, 2003). Sageman draws attention to the fact that terrorists are not always aware of the main reasons for their actions, “Consciousness, like solidarity and collective identity, does not always precede action, but may arise in the process of carrying out an action” (Sageman, 2004, p. 7). Horgan (2015: p.138) contends that “for the individual terrorist increasing psychological investment, or the process of becoming a more committed member, is shaped most remarkably through engagement in terrorist activities”.

At the collective level, identification with a given ethnicity or religion promotes empathy and a desire to pursue justice in the name of “the people”. This also encourages a dualistic categorization of the world into “us” and “them”, thus stereotyping social groups and dehumanizing the enemy. This “us vs them” dichotomy between members and non-members of an organization effectively weakens psychological barriers against violence (Grossman, 2014) and eases the process of viewing civilians as legitimate targets (Tilly, 2003). Likewise, identification with others may promote diffusion of responsibility, and individuals may feel less personally responsible for the actions of the group. Post (2007, p. 7) explained that collective identity may provide justification for actions: “terrorists have subordinated their individual identity to the collective identity, so that what serves the group, organisation or network is of primary importance.”

While psychopathy and personality approaches focus on ‘why’ individuals become members of terrorist groups, pathway approaches primarily focus on ‘how’ individuals become members. Shaw (1986) published the first ‘pathway model’, consisting of four elements: socialization processes, narcissistic injuries, escalatory events, and personal connections with militant group members. The dominant explanation, narcissism, profoundly influenced the model. Taylor and Horgan (2006) suggest that, rather than a psychological state, researchers should view terrorism as highly complicated process. They suggested that a pathway involves the interaction between three critical elements: setting events (relating to contextual influence);

personal factors (relating to psychological and environmental experiences); and social/political/organizational contexts. During terrorist involvement, the influence of setting events and personal factors weaken. Social, political and organizational factors grow in their influence on an individual and merge with personal factors. Horgan (2008) expresses the importance of focusing on contexts and relationships, as opposed to psychological or moral qualities, and advocates that terrorism should be viewed as a pathway process. This process involves three phases: becoming involved in terrorism, engaging in terrorist activity, and disengaging from terrorism.

Interpersonal connections shape individual behaviour. In a review of case studies from the Weatherman organization, Sageman (2004) suggests that social bonds are vital in understanding terrorist behaviour and of greater importance than ideology: “it’s a group phenomenon. To search for individual characteristics in order to understand them is totally misleading. It will lead you to a dead end”. The process of becoming involved in terrorism may develop through natural group interactions. These connections strengthen their identity, facilitate radicalization, and encourage action (Leistedt, 2013). Mullins (2009) hypothesized that dynamic variations in group structure correlate with changes in group and individual psychology. When modelling the development of two Islamic terrorist organizations using social network analysis, Mullins (2009) concluded that individuals strengthen their commitment to the group through assimilation of the ideas put out by influential figures.

In his book, *Understanding Terror Networks*, Sageman discusses the origins, evolution and nature of the “global Salafi jihad”. He found that “78 percent [of 172 Al Qaeda members] were cut off from their cultural and social origins” (Sageman, 2004, p. 92). He found that there was a common experience of displacement – of separation, loneliness and cultural disorientation, with individuals often seeking companionship and solidarity with others similarly perturbed. As these relationships intensified so did their resentment of society, which they perceived as excluding them. A common religious collective identity followed, which may have been a driving force on to greater extremism.

A theoretical framework often applied to understanding radicalization processes and violent extremism is Social Movement Theory (SMT), where movements arise

from collective behaviour occurring under strained environmental conditions. SMT is useful in the study of terrorism as it focuses on processes, not sociodemographics (Dalgaard-Nielsen, 2010). Della Porta (1995) connected SMT concepts to violent extremism in her studies of Italian and German militants. Wiktorowicz conducted an in-depth study of how people came to join Al-Muhajiroun and presented a four-component developmental model for radicalization using SMT as a framework. Those who came to be radicalized first revealed an openness to new worldviews (cognitive opening), then came to view religion as a path to find meaning (religious seeking), eventually found the group's narrative and ethos to "make sense" (frame alignment), and, ultimately, through a process of socialization, became fully indoctrinated into the movement. Similarly, concluding their study of a millenarian cult, Lofland and Stark (1965) commented,

For conversion, a person must experience, within a religious problem-solving perspective, enduring, acutely-felt tensions that lead him to define himself as a religious seeker; he must encounter the cult [deviant perspective] at a turning point in his life; within the cult an affective bond must be formed (or pre-exist) and any extra-cult attachments neutralized; and there he must be exposed to intensive interaction if he is to become a 'deployable agent'.

Traditional criminology

Few studies have empirically tested traditional criminological theories such as anomie, strain, disorganization, or control approaches in a terrorism context (Agnew, 2010; Akyuz and Armstrong, 2011; LaFree and Dugan, 2009; Shechory and Laufer, 2008). Psoiu (2015) tested elements of strain and subcultural perspectives, focusing on the individual situation and motivation for involvement in terrorism, in a qualitative study of seven jihadi and far-right case studies in Germany. The findings showed little support for the appraisal of subcultural capital drawing on socially deprived groups or status frustration. Her findings supported the illegitimate opportunity structure thesis and sub-cultural claims such as resistance, bricolage, homology, agency, and cultural cross-

fertilization. Psoiu concluded that the extremists in her study were assertive and purposive agents who were not directed by situational circumstances.

Chermak and Gruenewald (2015) highlight the importance of considering the macro contexts in which terrorists choose to act. They compared individual and contextual sociodemographic characteristics across far-right, far-left, and jihadi extremists who committed violent crimes. They considered whether these violent extremists, which are similar to more typical non-extremist offenders, experience an identity crisis caused by the strain of wanting to achieve the goals of society but having inadequate means to achieve them. Those with an extreme right-wing ideology were less educated and less successful when it came to employment, Jihadists were unable to integrate fully into American communities, and members of far-left groups believed the “American Dream” to be uncertain and harmful, especially to the environment.

The classic social disorganization perspective posits that individuals experiencing rapid social changes such as revolutionary and ethnic war, adverse regime change, and genocide will stop conforming to social norms and laws. Fahey and LaFree (2015) examined the effects of a measure of country-level social disorganization on levels of terrorist attacks and fatalities in 101 countries from 1981 to 2010. They found that social disorganization is consistently associated with increases in terrorist attacks and fatalities (even when controlling for variables such as state capacity).

Understanding relationships is critical to understanding involvement in terrorism. The importance of friends, family and social ties for recruitment into terrorist groups is long established across multiple terrorist groups, including al-Qaeda (Sageman, 2004), the Hofstad Group (Schuurman, 2017), al-Shabaab (Botha, 2014), German foreign fighters (Reynolds and Hafez, 2019), Italian left-wing groups (Della Porta, 1988), the PKK (Columbian terrorist groups. Florez-Morris, 2010), Palestinian terrorists (Post *et al.*, 2003), and the extreme right in the US (Schafer *et al.*, 2014). Such social ties expose individuals to radicalizing agents and settings (Bouhana and Wikström, 2011), builds peer pressure (Botha, 2014), develops trust between potential co-offenders (Morrison, 2016), and reinforces extremist beliefs and commitment to the group (Gill, 2012).

The formation of social relationships is constrained by geography, and people who live within close proximity to one another are more likely to know each other than other individuals who live further away (Onnela *et al.*, 2011). Owing to this elevated chance of meeting one another, those who are spatially close also tend to be socially close (Tayebi, 2012). Indeed, criminals are more likely to commit offences with the people they spend the most time with socially (Olofsson, 1967, 1971; Dunér and Haglund 1974; Ward 1998). Correspondingly, one of the strongest predictors of criminal behaviour is the number of criminal friends an individual has (Matsueda, 1988; Warr, 1996; Matsueda and Anderson, 1998; Loeber *et al.*, 1998), and the importance of the role of family members in the recruitment to co-offending has also been emphasized (Jones *et al.*, 1980). There is a temporal relationship between criminal behaviour and exposure to delinquent peers, finding a new relationship with a delinquent peer to be an antecedent for involvement in criminal behaviour. In other words, co-offending is spatially situated, and such collaborations play a role in the recruitment of others into criminal behaviour who may not have participated in crime otherwise (Cohen & Felson, 2003; Reiss, 1988; Warr 1996).

Qualitative autobiographical accounts and interviews conducted with members of Provisional Irish Republican Army (PIRA) highlight the importance of local connections in the recruitment process. One former member, Eamon Collins, explained that “He suggested another possible recruit... I had been at junior school with him” (Collins, 1998, p. 92) and “I asked him if he knew any other people who would be suitable. He gave me eight names” (Collins, 1998, p. 88). Other academics emphasize the importance of “local and family connections” (English, 2003, p. 113) for PIRA recruitment and discuss how “family connections, and the immediate concerns of his northern setting, helped lead [Gerry] Adams towards the Provisionals...” (English, 2003, pp. 109–110). Many members of PIRA were not motivated by ideology or considered themselves as national-ists when they entered the organization (Alonso, 2006): “[I was] not politically motivated at that time... the whole thing permeated right through into our lives, into our local communities” (Alonso, 2006). Bosi (2012) and Bosi and Ó Dochartaigh (2018) systematically examined the pathways of individuals who joined Republican groups in Northern Ireland between 1969 and 1972. They found

local connections to be a facilitating factor in this process and that individuals often joined alongside people they knew: “I think that they made decisions because of who they knew, or which street they lived on...” (cited in Bosi, 2012, p. 369); “When I first joined the Republican movement, I first joined the Officials with a group of friends from the same street where I was living” (cited in Bosi and Ó Dochartaigh, 2018, p. 42). This facilitated the recruitment process as new volunteers could be personally introduced by their friends, families and colleagues. This, in turn, reduced the risk of informers and ensured operational security. Finally, Gill *et al.* (2014) found that residing in the same county was a consistently stronger predictor of co-offending within PIRA than other homophily-related characteristics (e.g. age, gender, etc.)

Anecdotal evidence further suggests that when individuals join terrorist organizations, either (a) recruiters assign roles and tasks based on an assessment of organizational needs and the individuals’ ability, or (b) the new recruit has a sense of what roles they are willing or eager to adopt. For example, when US troops raided an al-Qaeda safe house in the Iraqi town of Sinjar in October 2007, they found a wealth of data on the biographies of individuals who had signed up for the insurgency. Of those who joined, most requested assignment as a fighter, combatant or martyr. However, others asked to be doctors, journalists and to occupy other media roles. Furthermore, in an interview with Horgan (2009, p. 80), a former member of the Provisional Irish Republican Army stated:

There have always been very astute people involved in recruiting to the IRA
... There is a sense in which people were evaluated and put into certain roles
... Every large organization is going to have that challenge – how do you fit people into things?

This suggests that (at least in the case of the Provisional IRA) there is often a purposeful relationship between individuals and the roles into which they are initially guided. In addition, there may be a natural logic to how actual and subsequent involvement unfolds and diversifies for the individual. Taylor and Horgan (2006, p. 595) argue that some roles and activities might “tend to cluster together more naturally

than others” (they give the example of financing, political and community activism), but to date there is no empirical evidence to support this claim.

Understanding the nature and function of terrorist roles is important for many reasons. From a disruption perspective, policies need to be tailored for role-specific interventions. Because their behaviours, routines and proximity to violent plots differ substantially, what works in the effective disruption of tasks conducted by a bomb-maker may not necessarily be applicable to those of a financier of a terrorist organization. From a justice perspective, a greater understanding of roles may help with targeted treatment policies and risk assessments (Tracy and Kempf-Leonard, 1996). From a research perspective, it will ultimately help with our understanding of who joins terrorist organizations, the nature of their involvement with the terrorist organization, how individuals migrate from one kind of role to another over time, and ultimately how they desist or disengage from terrorist activities (Horgan, 2009; Taylor & Horgan, 2006). Investigating whether particular variables more closely correlate with particular terrorist roles also concerns the very nature of how we theorize about terrorist involvement and whether general models of ‘radicalization’ or ‘pathways’ into terrorism are appropriate or whether they should be tailored for particular manifestations of terrorist activity.

Environmental Criminology

Traditional criminology seeks to identify and explain *why* individuals engage in criminal activity, with a focus on sociological, psychological and developmental perspectives. There is a focus on criminality and the criminal disposition, and the factors underlying why an individual would engage in crime. However, this emphasis on the distal causes of crime offers little insight to the proximal determinants of criminal activity (Brantingham and Brantingham, 1981; Clarke, 2004). To address these limitations an alternative framework, *environmental criminology*, was introduced (Brantingham and Brantingham, 1981). Environmental criminology emphasizes the importance of the crime setting and the role of person–situation interactions. It posits situational factors and the environment as key in determining spatial and temporal

distributions of crime. Environmental criminology is focused on *where*, *when* and *how* crime events occur, rather than *why* they occur.

The modern rational choice perspective of crime, as proposed by Cornish and Clarke in 1986,² assumes that offenders are rational and purposeful in their decision-making. The perspective denotes that an offender acts in their own self-interest while calculating the costs and benefits of each possible alternative, before making a choice that offers the greatest benefit and lowest cost (Cornish and Clarke, 1986). This decision-making process can then be subdivided into: (a) decisions regarding criminal *involvement*, and (b) decisions regarding criminal *events*. When a rational actor makes a choice, there is the assumption that they will be utility maximizing (making a decision that offers the best perceived utility) based on expected rewards, effort and risk (Phillips, 2011; Phillips and Pohl, 2012). Rationality is subject to limits and is guided by time, effort, experience and knowledge (Clarke and Felson, 1993). This led Cornish and Clarke³ to posit that offenders act with *bounded rationality*. This concept, relating to the criminal event, posits that crime is influenced by opportunities, and that the opportunities are dependent on the individual's environment. Although their knowledge of the associated effort, rewards and risks is imperfect, an offender will still maximize utility based on what they do know.

Treating the terrorist as a rational actor is not a new approach. Although the goals of a terrorist may be irrational, their actions will be guided by rationality. Much like 'ordinary' criminals, terrorists make a series of cost-benefit analyses to judge whether an act is worth committing (Gill *et al.*, 2020). They make carefully calculated decisions that are utility-maximizing (Asal *et al.*, 2009) and are likely to increase their probability of success (Clarke and Newman, 2006; Hoffman, 2006). A terrorist's rationality is bounded by a number of individual factors such as risk sensitivity, group guidance, prior experience, and personality. Rationality, in this sense, is bounded by time, effort, experience, and knowledge, which in turn feeds into the weighting of rewards, costs, and alternative action plans. Such rational calculations may include having to choose between terrorism and opting for the strategically most advantageous tactics. Pape's (2005) work on suicide terrorism is probably the most oft-cited example of such an approach. Rational calculations are also framed by the group's ideological content and

therefore targeting practices may differ across the ideological spectrum. For example, Drake (1998) notes that a terrorist organization's ideology relates to targeting practices because "it sets out the moral framework within which they operate."

The rational choice perspective has been useful in understanding political violence including terrorism (Pape, 2005; Clarke and Newman 2006) and literature consistently supports the presumption that terrorists are rational actors (Sandler *et al.*, 1983; Enders *et al.*, 1990; Enders and Sandler, 1999; Crenshaw, 2000; Silke, 2001; Pape, 2005; Taylor and Horgan, 2006; Caplan, 2006). Perry and Hasisi (2015) used rational choice theory to analyse the motivations of jihadist suicide attackers and concluded that there is no fundamental difference between terrorist perpetrators' motivations and those of more ordinary criminals. They argue that suicide attackers are mostly driven by the anticipation of future self-gratifying benefits, not by altruistic motivation. Dugan *et al.* (2005) examined trends in 1101 attempted aerial hijackings that occurred around the world from 1931 to 2003. Using survival analysis, they estimated the impact of major counter-hijacking interventions on the hazard of differently motivated hijacking attempts. New hijacking attempts were less likely to be undertaken when the likelihood of apprehension was increased through metal detectors and law enforcement at passenger checkpoints.

Insights from environmental criminology into why people engage in terrorist acts have been limited, to date, for a number of reasons. First, the overwhelming emphasis within the field has been to explain the "terrorist" as opposed to explaining the "terrorist act". Second, existing studies have tended to focus on entirely different units of analysis than is traditionally the case within crime science. For example, Desmarais *et al.* (2017) conducted a systematic review of the scientific knowledge regarding risk factors for terrorist involvement. The review demonstrates the existing literature has tended toward 'distal' explanations rooted in factors associated with sociodemographic characteristics, criminal history, religiosity, attitudes and beliefs, employment status, education, poverty, relationship status and mental health. On the other hand, studies looking at the association between personal experiences (e.g. proximal factors) and terrorist engagement were depicted as 'rare' and 'infrequently examined' (Desmarais *et al.*, 2017, p. 190). Second, there has also been a lack of rigorous attention to causal

mechanisms behind radicalization and engagement in terrorism. Gøtzsche-Astrup (2018) evaluated several common approaches to understanding such mechanisms. These approaches lean on aspects of social-identity theory, ideology and values, and various motivational frameworks. The study concluded that research designs insufficiently demonstrated causality and could only offer simple correlations.

Finally, perhaps the biggest problem has been the field's lack of specificity in terms of the dependent variable being considered. To date, academic approaches to understanding who becomes a 'terrorist' have largely tended toward generalist explanations. Such explanations, be they psychopathological, psychoanalytical, theoretical models or descriptive analyses of large-*N* datasets, tend to treat each individual group member equally. That is, they fail to effectively distinguish different member types, not just across terrorist groups, but also within them. Analyses of "the terrorist" frequently treat actors as monolithic in nature, differing merely in presumed personality traits and little else. Terrorist organizations, however, tend to possess some form of command and functional structure, be it hierarchical or linear. Within this structure, a wide variety of roles, responsibilities and behaviours are delegated to individual members and sub-units. Such responsibilities may range from storing weapons to engaging in shooting attacks; from procuring vehicles for car-bombing attacks to being a bomb-maker; from being a suicide bomber to being a recruiter of suicide bombers; from being a foot soldier to being an executive leader. Because of this differentiation of focus and task, there are some important differences in both the nature and level of involvement by different members of terrorist groups. An individual may hold one or several distinct roles over time in their "terrorist career". These roles may be distinctive in the nature of the social, psychological and organizational demands required of the person in that role. The differences range from the level of violence the individual either directly engages in or merely facilitates; in expertise levels; individual risk to personal liberty and harm; and responsibility for overall strategy (Taylor and Horgan, 2006, p. 595).

Terrorists make cost-benefit decisions in much the same way as ordinary criminals (Gill *et al.*, 2020; Marchment *et al.*, 2019). The field of crime prevention is testament to the vast potential for situationally focused crime-prevention approaches.

Situational prevention means focusing on the settings in which offences take place, rather than the underlying motivation or criminal disposition of the individual. Reducing the opportunities for terrorism via environmental design broadly construed is, therefore, a valid and worthwhile pursuit. Each type of terrorist attack, be it a vehicular assault or a bombing, depends on a crystallization of multiple opportunities. Marchment *et al.* (2019) found differences in risk factors for bombings and bomb hoaxes by dissident Republicans in Northern Ireland. Police stations were found to be risky for bomb hoaxes but not significantly correlated with bombings. The targeting of police services naturally comes with a higher risk of arrest and the level of security at these premises may have affected the offender's perceived risk of detection. This suggests that there is some assessment of risk by the offenders, and that they are selecting targets rationally.

In turn, each specific attack type offers its own set of environmental opportunities that can be manipulated with the intention of impacting the terrorist cost-benefit calculus. Such endeavours increase the effort via target hardening, controlling access to facilities, deflecting offenders, and controlling access to the necessary weapons. They also increase the risks by extending guardianship, assisting with natural surveillance, and increasing surveillance. They may also reduce the rewards of an attack by concealing or removing potential targets. Such approaches focus on the situational qualities of terrorist behaviour (e.g. what terrorists do and how they do it) and are largely informed by developments in the area of environmental criminology and situational crime prevention.

Although it still may be true that the “criminological study of terrorism [lags] far behind many other specialized branches of criminology” (LaFree, 2009, p. 434), there have been major advances recently in a variety of areas. Research increasingly covers issues such as target choice, weapon choice, the spatio-temporal clustering of offences, the distances travelled to commit a terrorist attack, victimology, and the displacement of incidents. Findings show great promise, and reinforce the argument that when we focus on terrorism from a preventative angle, we should focus on terrorist behaviours – *what they do* – rather than remain preoccupied with concerns about *who they are* or *why they have become terrorists*.

Notes

- 1 This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (Grant Agreement No. 758834).
- 2 This work stemmed from economist Gary Becker's 1968 paper, in which he argued that choices regarding crime are not dissimilar to other non-crime related decisions. Cornish and Clarke's model differs from Becker's economic model as it emphasizes that utility is not always dictated by monetary gain.
- 3 As well as Simon (1957; 1986).

References

- Abrahms, M. (2008) What terrorists really want: Terrorist motives and counterterrorism strategy. *International Security*, 32(4), 78–105.
- Agnew, R. (2010) A general strain theory of terrorism. *Theoretical Criminology*, 14(2), 131–153.
- Akyuz, K. and Armstrong, T. (2011) Understanding the sociostructural correlates of terrorism in Turkey. *International Criminal Justice Review*, 21(2), 134–155.
- Alexander, Y. (ed.) (1976) *International Terrorism: National, Regional, and Global Perspectives*. New York: Praeger.
- Alonso, R. (2006) *The IRA and Armed Struggle*. London: Routledge (Cass Series on Political Violence).
- Asal, V. H., Rethemeyer, K., Anderson, I., Stein, A. Rizzo, J., and Rozea, M. (2009) The softest of targets: a study on terrorist target selection. *Journal of Applied Security Research*, 4(3), 258–278.
- Bahgat, K. and Medina, R. M. (2013) An overview of geographical perspectives and approaches in terrorism research. *Perspectives on Terrorism*, 7(1).
- Bartlett, J. and Miller, C. (2012) The edge of violence: Towards telling the difference between violent and non-violent radicalization. *Terrorism and Political Violence*, 24(1), 1–21.
- Bosi, L. (2012) Explaining pathways to armed activism in the Provisional Irish Republican Army, 1969–1972. *Social Science History*, 36(3), 347–390.
- Bosi, L. and Ó Dochartaigh, N. (2018) Armed activism as the enactment of a collective identity: the case of the Provisional IRA between 1969 and 1972. *Social Movement Studies*, 17(1), 35–47.

- Botha, A. (2014) Political socialization and terrorist radicalization among individuals who joined al-Shabaab in Kenya. *Studies in Conflict & Terrorism*, 37(11), 895–919.
- Bouhana, N. and Wikström, P. O. (2011) Al Qai'da-Influenced Radicalisation: A Rapid Evidence Assessment Guided by Situational Action Theory. Home Office Occasional Paper No. 97. <https://www.gov.uk/government/publications/al-qaida-influenced-radicalisation-a-rapid-evidence-assessment>
- Brantingham, P. L. and Brantingham, P. J. (1981) Notes on the geometry of crime. In *Environmental Criminology*. Beverly Hills, CA: Sage, pp. 27–54.
- Brynielsson, J., Horndahl, A., Johansson, F., Kaati, L., Mårtenson, C., and Svenson, P. (2013) Harvesting and analysis of weak signals for detecting lone wolf terrorists. *Security Informatics*, 2(1), 11.
- Caplan, B. (2006) Terrorism: The relevance of the rational choice model. *Public Choice*, 128(1), 91–107.
- Chermak, S. and Gruenewald, J. A. (2015) Laying a foundation for the criminological examination of right-wing, left-wing, and Al Qaeda-inspired extremism in the United States. *Terrorism and Political Violence*, 27(1), 133–159.
- Clarke, R.V. and Felson, M. (eds) (1993) *Routine Activity and Rational Choice*. New Brunswick: Transaction Publishers.
- Clarke, R. V. and Newman, G. R. (2006) *Outsmarting the Terrorists*. New York: Praeger.
- Clarke, R. V. (2004) Technology, criminology and crime science. *European Journal on Criminal Policy and Research*, 10(1), 55–63.
- Cohen, L. E. and Felson, M. (2003) Routine activity theory. *Criminological Theory: Past to Present (Essential Readings)*. Edited by F. Cullen and R. Agnew. Transaction Publishers: Los Angeles, CA: , pp. 284–294.
- Collins, E. (1998) *Killing Rage*. London: Granta Books.
- Cooper, H. H. A. (1978) What is a terrorist: A psychological perspective. *Legal Medical Quarterly*, 1, 16.
- Cornish, D. B. & Clarke, R. V. (1986) *The Reasoning Criminal: Rational Choice Perspectives on Offending*. New York: Springer-Verlag.
- Crenshaw, M. (2000) The psychology of terrorism: An agenda for the 21st century. *Political Psychology*, 21(2), 405–420.
- Dalgaard-Nielsen, A. (2010) Violent radicalization in Europe: What we know and what we do not know. *Studies in Conflict & Terrorism*, 33(9), 797–814.

- Della Porta, D. (1988) Recruitment processes in clandestine political organizations. *International Social Movement Research*, 1, 155–169.
- Della Porta, D. (1995) Social movements and the state: Thoughts on the policing of protest. Working Paper, EUI RSC, 1995/13.
- Desmarais, S. L., Simons-Rudolph, J., Brugh, C. S., Schilling, E., and Hoggan, C. (2017) The state of scientific knowledge regarding factors associated with terrorism. *Journal of Threat Assessment and Management*, 4(4), 180.
- Drake, C. J. (1998) The role of ideology in terrorists' target selection. *Terrorism and Political Violence*, 10(2), 53–85.
- Dugan, L., LaFree, G., & Piquero, A. R. (2005) Testing a rational choice model of airline hijackings. *Criminology*, 43(4), 1031–1066.
- Dunér, A. and Haglund, B. (1974) Tonårspojkar och brott (Teenage boys and crime.) Utbildningsforskning. SÖ rapport 8. Stockholm: Skolstyrelsen.
- Enders, W. and Sandler, T. (1999) Transnational terrorism in the post-Cold War era. *International Studies Quarterly*, 43(1), 145–167.
- Enders, W., Sandler, T. and Cauley, J. (1990) Assessing the impact of terrorist- thwarting policies: An intervention time series approach. *Defence Economics*, 2(1), 1–18.
- London. Pan.
- Fahey, S. and LaFree, G. (2015) Does country-level social disorganization increase terrorist attacks? *Terrorism and Political Violence*, 27(1), 81–111.
- Florez-Morris, M. (2010) Why some Colombian guerrilla members stayed in the movement until demobilization: A micro-sociological case study of factors that influenced members' commitment to three former rebel organizations: M-19, EPL, and CRS. *Terrorism and Political Violence*, 22(2), 216–241.
- Friedland, N. (1992) *Becoming a Terrorist: Social and Individual Antecedents*. New York NY, Praeger.
- Gill, P., Horgan, J., and Deckert, P. (2014) Bombing alone: Tracing the motivations and antecedent behaviors of lone-actor terrorists. *Journal of Forensic Sciences*, 59(2), 425–435.
- Gill, P., Corner, E., Conway, M., Thornton, A., Bloom, M., and Horgan, J. (2017) Terrorist use of the internet by the numbers. *Criminology & Public Policy*, 16(1), 99–117.
- Gill, P., Marchment, Z., Corner, E., and Bouhana, N. (2020) Terrorist decision-making in the context of risk, attack planning and attack commission. *Studies in Conflict & Terrorism*, 43(2):145-170.

- Gøtzsche-Astrup, O. (2018) The time for causal designs: Review and evaluation of empirical support for mechanisms of political radicalisation. *Aggression and Violent Behavior* 39(1):90-99.
- Grossman, D. (2014) *On Killing: The Psychological Cost of Learning to Kill in War and Society*. New York, NY: Open Road Media.
- Hoffman, B. (2006) *Inside Terrorism*. New York: Columbia University Press.
- Horgan, J. (2003) The search for the terrorist personality. In A. Silke (ed.), *Terrorists, Victims and Society: Psychological Perspectives on Terrorism and its Consequences*. Chichester, West Sussex, UK: John Wiley & Sons, pp. 3–27.
- Horgan, J. (2008) From profiles to pathways and roots to routes: Perspectives from psychology on radicalization into terrorism. *The ANNALS of the American Academy of Political and Social Science*, 618(1), 80–94.
- Horgan, J. G. (2009) *Walking Away from Terrorism: Accounts of Disengagement from Radical and Extremist Movements*. London, Routledge.
- Horgan, J. G. (2015) *The Psychology of Terrorism*. London, Routledge.
- Johnson, N. F., Medina, P., Zhao, G., Messinger, D. S., Horgan, J., Gill, P., ... and Manrique, P. (2013) Simple mathematical law benchmarks human confrontations. *Scientific Reports*, 3, 3463.
- Jones, M. B., Offord, D. R., and Abrams, N. (1980) Brothers, sisters and antisocial behaviour. *The British Journal of Psychiatry*, 136(2), 139–145.
- Kaplan, A. (1978) The psychodynamics of terrorism. *Studies in Conflict & Terrorism*, 1(3–4), 237–254.
- Kruglanski, A. W. and Fishman, S. (2009) Psychological factors in terrorism and counterterrorism: Individual, group, and organizational levels of analysis. *Social Issues and Policy Review*, 3(1), 1–44.
- LaFree, G., and Dugan, L. (2009) Research on terrorism and countering terrorism. *Crime and Justice*, 38(1), 413–477.
- LaFree, G. (2009) Criminology third war-special issue on terrorism and responses to terrorism. *Criminology & Public Policy*, 8, 431.
- Leistedt, S. J. (2013) Behavioural aspects of terrorism. *Forensic Science International*, 228(1–3), 21–27.
- Loeber, R., Farrington, D. P., Stouthamer-Loeber, M., Moffitt, T. E., and Caspi, A. (1998) The development of male offending: Key findings from the first decade of the Pittsburgh Youth Study. *Studies on Crime & Crime Prevention* 7(2):141-171.

- Lofland, J., & Stark, R. (1965) Becoming a world-saver: A theory of conversion to a deviant perspective. *American Sociological Review* 30(6), 862–875.
- Maher, S. (2016) *Salafi-Jihadism: The History of an Idea*. Oxford: Oxford University Press.
- Manrique, P., Cao, Z., Gabriel, A., Horgan, J., Gill, P., Qi, H., ... and Johnson, N. (2016) Women's connectivity in extreme networks. *Science Advances*, 2(6), e1501742.
- Marchment, Z., Gill, P., and Morrison, J. (2019) Risk factors for violent dissident republican incidents in Belfast: A comparison of bombings and bomb hoaxes. *Journal of Quantitative Criminology*, 1–20.
- Matsueda, R. L. and Anderson, K. (1998) The dynamics of delinquent peers and delinquent behavior. *Criminology*, 36(2), 269–308.
- Matsueda, R. L. (1988) The current state of differential association theory. *Crime & Delinquency*, 34(3), 277–306.
- McCauley, C. R. and Segal, M. E. (1987) Social psychology of terrorist groups. *Annual Review of Social and Personality Psychology*.
- Moghaddam, F. M. (2005) The staircase to terrorism: A psychological exploration. *American Psychologist*, 60(2), 161.
- Morrison, J. F. (2016) Trust in me: Allegiance choices in a post-split terrorist movement. *Aggression and Violent Behavior*, 28, 47–56.
- Mullins, S., and Dolnik, A. (2009) Terrorist networks and small group psychology. *The Faces of Terrorism—Multidisciplinary Perspectives*. Chichester, West Sussex: John Wiley & Sons, pp. 137–150.
- Olofsson, B. (1967) *Brottslighet bland skolbarn i Örebro (Criminality among School-children in Örebro)*. Stockholm: Örebroprojektet.
- Olofsson, B. (1971) *Vad var det vi sa! Om kriminellt och konformt beteende bland skolpojkar (What Did We Tell You! On Criminal and Conformist Behavior among Schoolboys)*. Stockholm: Utbildningsförlaget.
- Onnela, J. P., Arbesman, S., González, M. C., Barabási, A. L., and Christakis, N. A. (2011) Geographic constraints on social network groups. *PLoS one*, 6(4), e16939.
- Pape, R. (2005) *Dying to Win. The Strategic Logic of Suicide Terrorism*. New York, Random House.
- Perry, S., and Hasisi, B. (2015) Rational choice rewards and the jihadist suicide bomber. *Terrorism and Political Violence*, 27(1), 53–80.

- Phillips, P. J. and Pohl, G. (2012) Economic profiling of the lone wolf terrorist: Can economics provide behavioral investigative advice? *Journal of Applied Security Research*, 7(2), 151–77.
- Phillips, P. J. (2011) Lone wolf terrorism. *Peace Economics, Peace Science and Public Policy*, 17(1), 1–29.
- Pisoiu, D. (2015) Subcultural theory applied to jihadi and right-wing radicalization in Germany. *Terrorism and Political Violence*, 27(1), 9–28.
- Post, J. M. (2007) Countering Islamist militancy. An epidemiologic approach. *Faith-based Radicalism. Christianity, Islam and Judaism: Between Constructive Activism and Destructive Fanaticism*. Brussel: PIE Peter Lang, pp. 191–206.
- Post, J., Sprinzak, E., and Denny, L. (2003) The terrorists in their own words: Interviews with 35 incarcerated Middle Eastern terrorists. *Terrorism and Political Violence*, 15(1), 171–184.
- Reiss Jr, A. J. (1988) Co-offending and criminal careers. *Crime and Justice*, 10, 117–170.
- Reynolds, S. C. and Hafez, M. M. (2019) Social network analysis of German foreign fighters in Syria and Iraq. *Terrorism and Political Violence*, 31(4), 661–686.
- Sageman, M. (2004) *Understanding Terror Networks*. University of Pennsylvania Press.
- Sandler, T., Tschirhart, J., and Cauley, J. (1983) A theoretical analysis of transnational terrorism. *American Political Science Review*, 77, 36–54.
- Schafer, J. A., Mullins, C. W., and Box, S. (2014) Awakenings: The emergence of white supremacist ideologies. *Deviant Behavior*, 35(3), 173–196.
- Schuurman, B. W. (2017) Becoming a European homegrown jihadist: A multilevel analysis of involvement in the Dutch Hofstadgroup, 2002–2005 (Doctoral dissertation).
- Schuurman, B. (2018) Research on terrorism, 2007–2016: A review of data, methods, and authorship. *Terrorism and Political Violence*, 1–16.
- Shechory, M., and Laufer, A. (2011) Ideological delinquency: Gender differences among Israeli youth during the withdrawal from the Gaza Strip. *International Journal of Offender Therapy and Comparative Criminology*, 55(2), 326–343.
- Silke, A. (2001) The devil you know: continuing problems with research on terrorism. *Terrorism and Political Violence*, 13, 1–14.
- Silke, A. (2003) Terrorists, victims and society. *Psychological Perspectives on Terrorism and its Consequences*. London, Wiley.
- Simon, H. A. (1957) *Models of Man, Social and Rational: Mathematical Essays on Rational Human Behavior in a Social Setting*. New York: John Wiley and Sons.

- Simon, H. A. (1986) Rationality in psychology and economics. *Journal of Business*, 59(4), 209–224.
- Tayebi, M. A., Frank, R., and Glässer, U. (2012) Understanding the link between social and spatial distance in the crime world. In *Proceedings of the 20th International Conference on Advances in Geographic Information Systems*. ACM, pp. 550–553.
- Taylor, M., and Horgan, J. (2006) A conceptual framework for addressing psychological process in the development of the terrorist. *Terrorism and Political Violence*, 18(4), 585–601.
- Tilly, C. (2003) *The Politics of Collective Violence*. Cambridge, UK: Cambridge University Press.
- Tracy, P. E., and Kempf-Leonard, K. (1996) *Continuity and Discontinuity in Criminal Careers*. London, Springer Science & Business Media.
- Ward, M. (1998) *Barn och Brott av vår tid? Sjävldeklarerad Ungdomsbrottslighet*
- Warr, M. (1996) Organization and instigation in delinquent groups. *Criminology*, 34(1), 11–37.
- Warr, M. (2002) *Companions in Crime: The Social Aspects of Criminal Conduct*. Cambridge, UK: Cambridge University Press.
- Wiktorowicz, Q. (2004) A genealogy of radical Islam. *Studies in Conflict and Terrorism*, 28(2), 75–97.

