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How can the literature inform counter-terrorism practice? Recent advances and remaining challenges

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ABSTRACT

In 2014 an intense debate over the state of terrorism literature was published. Sageman [2014. The stagnation in terrorism research. *Terrorism and Political Violence*, 26(4), 565–580. doi:10.1080/09546553.2014.895649] claimed that the field had stagnated, mainly due to lack of data sharing between government departments that have access to valuable information that could inform our understanding, and researchers who have the skills and expertise to make sense of this. However, others were more positive regarding the literature, highlighting areas where progress has been made [e.g. McCauley, & Moskalenko (2014). Some things We think We've learned since 9/11: A commentary on Marc Sageman's 'The stagnation in terrorism research'. *Terrorism and Political Violence*, 26(4), 601–606. doi:10.1080/09546553.2014.895653; Stern (2014). Response to Marc Sageman's 'The stagnation in terrorism research'. *Terrorism and Political Violence*, 26(4), 607–613. doi:10.1080/09546553.2014.895654; Taylor (2014). If I were you, I wouldn't start from here: Response to Marc Sageman's 'The stagnation in terrorism research'. *Terrorism and Political Violence*, 26(4), 581–586. doi:10.1080/09546553.2014.895650]. Here we re-visit the literature and identify advances that have been made since 2014. We explore ongoing challenges for terrorism researchers and practitioners, and options for ways forward to ensure evidence-based responses to terrorist individuals and groups.

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Introduction

Five years ago, Marc Sageman published a fairly damning account of what he described as 'the stagnation in terrorism research' (Sageman, 2014, p. 565). Sageman claimed that, despite a profusion of literature in this field, answers to the question 'What leads a person to turn to political violence?' continued to elude academics and the US intelligence community within which he had been working. This was, he claimed, due to issues such as (i) a reactive and somewhat unsystematic government strategy regarding funding decisions and setting requirements, and (ii) a lack of data, and absence of data sharing

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between governments that have access to data about terrorists and extremists, and researchers who have the skills, resources and expertise to make sense of this information. Moreover, Sageman claimed that whilst there are numerous self-appointed 'experts' and a wealth of literature in this area, many of these experts are not scholars, and most accounts are journalistic rather than empirical in nature. As such, the focus of these were often on what authors perceive as particularly interesting elements of a narrative, rather than on any careful consideration and rigorous analysis of the breadth of reasons why individuals may be drawn into terrorism. A lack of scrutiny and rigour means that many of the speculations made and peoples' beliefs about extremism and terrorism lack a sound, empirical basis. This, plus a lack of data sharing and strategic and systemic flaws regarding whom and what governments should fund has led to 'an unbridgeable gap' between academics and intelligence communities (Sageman, 2014, p. 565).

The current article is based on a systematic review of the literature that was conducted to re-visit two core themes in Sageman's critique, which he saw as underlying this 'stagnation' and the aforementioned gap between intelligence communities and academia. The two core themes under investigation are: (i) the need for more data-driven, scientific research by academics who have the necessary knowledge and skills to ensure findings are applicable to real-world problems; and (ii) issues regarding government systems and strategies that influence our progress towards understanding of 'What leads a person to turn to political violence?'. More generally, the article also explores findings from the literature review to identify recent developments in the field and to understand which gaps have been filled and which remain. This is important for both academics and government policy makers, in order to ensure that future efforts are based on and informed by current evidence-based understanding and to influence where future research should focus.

Criticisms of terrorism research are not new, and complexities facing the field were highlighted many years prior to Sageman's critique (for example, see Gurr, 1988; Reich & Laquer, 1998; Schmid & Jongman, 1985). More recently, others have also noted the need for more empirical research in this area, for primary sources of data to be used and for the gap between academic research and counterterrorism intelligence (in terms of data sharing and the skills needed to make sense of this) to be narrowed (e.g. Borum, 2012; Desmarais, Simons-Rudolph, Brugh, Schilling, & Hoggan, 2017; Ranstorp, 2007; Schmid, 2016; Schuurman, 2018). This longstanding self-reflection by those seeking to understand terrorism demonstrates that researchers are not ignorant to the limitations associated with this field of study, and that serious attempts to address these have been made.

The current article examines key areas where research and understanding have advanced since 2014, five years on from Sageman's somewhat controversial paper. First, we review recent publications to describe the increase in empirical studies on terrorism and demonstrate that academics have overcome obstacles regarding data access to develop a more nuanced, evidence-based understanding of different types of terrorism (Section One). Next, we extrapolate key ongoing, data-specific challenges for terrorism researchers, from the publications included in Section 1 (Section Two). We then focus on governments, their role in terrorism research and collaborations with academia, outlining where advances have been made and where challenges remain (Section Three).

Finally, we look at evidence-based Counter Terrorism in practice, and explore ongoing issues facing CT practitioners and potential solutions to these (Section Four).

Section one: advances in empirical research

A search of the literature commenced with the authors reviewing articles that were published in direct responses to Sageman's article, and those that have cited this in the last five years between 2014–2019. Google Scholar, Web of Science, EBSCO Discovery and PubMed databases were searched in order to identify relevant literature, and further documents were identified via backward- and forward-citation searches.

At the time, and in direct response to Sageman's criticisms, others painted a more positive picture of terrorism research (for example, see McCauley & Moskaleiko, 2014). McCauley and Moskaleiko briefly reviewed the literature since 9/11 and suggested that steady progress in this area is being made. This view has been echoed by others (Gill & Corner, 2017; Gruenewald, Chermak, & Freilich, 2013; Schuurman, 2018; Silke & Schmidt-Petersen, 2017; Stern, 2014; Taylor, 2014; Youngman, 2018), and there have been a number of studies published since 2014 that have applied empirical methods to examine real-world data, for example, via the collation and analysis of open source data (e.g. Corner & Gill, 2015; Ellis et al., 2016; Knight, Woodward, & Lancaster, 2017). Data have included first-hand interviews (e.g. by the police, press and researchers) with individuals of interest, biographies and autobiographies, and other secondary information provided by those with a knowledge of those individuals of interest (for example, see Bandhauer-Schoffmann, 2010; Corner, Gill, & Mason, 2016; Gill, Horgan, & Deckert, 2014; Hemmingby & Bjørge, 2016; LaFree, Jensen, James, & Safer-Lichtenstein, 2018). Others have compared different types of extremists, for example those who opt for violent versus non-violent action, or in terms of individual roles within a terrorist group or organisation (Gruenewald et al., 2013; Horgan, 2014; Horgan, Shortland, Abbasciano, & Walsh, 2016; Knight et al., 2017; Perliger, Koehler-Derrick, & Pedahzur, 2016; Simcox & Dyer, 2013).

The volume and range of academic studies cited above demonstrates an increase in empirical research to advance our understanding of terrorism. Indeed a systematic review of the literature published 2007–2016 showed that the use of primary data 'has increased considerably and continues to do so' (Schuurman, 2018, p. 1). Thus, Sageman's criticisms about a scarcity of empirical literature in this area should no longer be a particular concern.

Section two: data-specific challenges for terrorism research

Despite the improvements in the literature as outlined above, several key data-specific challenges remain. These relate mainly to the quantity and quality of data available to researchers (either provided by governments or accessed via open sources) and defining and categorising cases, and are outlined and explored below.

Quantity and quality of data

A key challenge facing those seeking to apply an evidence-based approach to understanding extremism and terrorism relates to the lack of access to (a) sufficiently detailed data on (b) a sufficient number of cases, to allow for rigorous analysis. There are large datasets such

as the Global Terrorism Database (GTD) and Profiles of Radicalization in the United States (PIRUS); however, these include a range of different types of extremists (violent and non-violent, inspired by Islamic, right wing and other ideologies), and therefore lack the specificity that small datasets can provide. However, relatively small sample size for studies in this area can present a challenge for researchers, especially those wanting to conduct quantitative analyses. This issue is inevitable due to the small population of cases to study, especially when examining particular types of terrorism. For example, a study seeking data to compare violent versus non-violent extremists, acting alone versus as part of a group, to include only individuals operating only in the UK, found only seven non-violent lone actors cases to include in their sample (Knight et al., 2017).

At around the same time that this study was being conducted, two other studies were underway. One analysed the socio-demographic characteristics and antecedent behaviours of 119 lone-actor terrorists from the USA and Europe (Gill et al., 2014). The other was the 'Countering Lone Actor Terrorism' (CLAT) project, which examined 120 instances of lone-actor terrorism across Europe. Sample sizes therefore varied between these three similar (empirical, lone actor) studies. This variance was a result of different definitions and inclusion criteria for cases to be analysed, which diverged, for example, as to (i) their interpretation of 'lone', (ii) the threshold required for an attack to be considered 'terrorist' in nature, and (iii) according to other study parameters regarding the nationality of individuals and timescales within which the case must have occurred. This allowed the inclusion of some individuals in the larger two studies, for example individuals who had committed violent crimes such as school shooter attacks.

Knight et al.'s (2017) study inclusion criteria dictated that *group member extremists, dyads and lone individuals* were included, *convicted of a post 9/11, extremist-related crime* (related to Islamic extremism, right wing extremism and single issues), and *operating in the UK*. The resultant sample size was 40: This was the maximum number of individual cases that could be found that comprised sufficient amounts of data for analysis, and fitted the definitions that determined the inclusion and exclusion of individuals. In contrast, the CLAT project included individuals, dyads and triads operating across 30 countries between 1 January 2000 and 31 December 2014, whilst Gill et al. (2014) included post-1990 events involving individuals and dyads operating across Europe and the USA. This demonstrates how different inclusion/ exclusion criteria for cases can provide a means to a larger sample size, which can facilitate our understanding of this phenomenon, but may be problematic in that the potential generalisability of results might be limited.

There are several other issues regarding the type and quantity of information available for researchers to access. For example, the role of 'media-induced contagion' that relates to which information and events journalists and the media are likely to report and focus on, adding another element of reporting bias (Franzosi, 1987). Gill et al. (2014) similarly cautioned that not all relevant plots had been captured in their databases, citing particular difficulties where incidents attracted little public attention, or where plots had been abandoned or disrupted at an early stage, meaning they were unlikely to have entered the public domain. Where researchers rely on open source information, they are unlikely to be able to identify every case: plots may not be reported in the public domain, especially if abandoned at an early stage or disrupted by authorities, and there may be variations across countries regarding how incidents are reported (for example, they may be classified as a 'hate crime' and therefore not be identified by researchers looking at extremist-related

offences) (Schmid, 2016). Similarly, some academic work such as literature reviews and meta-analyses may suffer from publication bias, and research into terrorism may mainly focus on those acts of terrorism that come to fruition, whilst failed, foiled, or thwarted attacks may be excluded from analyses (Schmid, 2016).

Definitions and categorisation of individuals

Definitional issues can extend beyond the initial application of inclusion criteria, with variations in their application further influencing the dataset created. A key criticism of the field of terrorism research has been the failure to acknowledge distinctions between different types of terrorism, and therefore we lack a nuanced understanding of how, when, and why individuals reach different behavioural outcomes (Zekulin, 2016). Knight et al. (2017) attempted to respond to this issue by comparing different types of extremists (violent, nonviolent, lone and group members) in their sample in order to compare and understand the similarities and differences between these. The process for categorising individuals (as violent or nonviolent, and as lone or as group extremists) required three researchers to independently read through every case study developed and allocate each to a category based on the information provided. However, categorising individual cases proved to be problematic for several reasons, relating mainly to the definitions developed at the start of the study to determine the inclusion or exclusion of specific cases in the dataset to be analysed. Despite significant effort to develop precise definitions and criteria for inclusion and exclusion, when evaluating real-life cases, a number of difficulties arose that required definitions and criteria to be reviewed and refined. Moreover, despite these efforts the process remained difficult for some of the cases, and 16 case studies were eventually excluded from the dataset (reducing the sample from 56 to 40).

The above demonstrates various difficulties in defining and categorising individuals of this kind, for example:

- i. If an offender is arrested and convicted prior to execution of a violent act, can we be certain that they would have gone on to perform the action? That is, can we categorise them as 'violent' when they have not actually conducted a violent act, if there is strong evidence that they fully intend to do so?
- ii. If an offender conducts a nonviolent action (e.g. provide weapons/ explosives) that would directly contribute to and/or facilitate a violent terrorist attack, should we categorise them as violent or nonviolent?
- iii. How can we know which nonviolent extremists are likely to remain nonviolent, and which will move towards violence at a later point?
- iv. If an offender conducts an attack alone, but has varying degrees of contact with other extremists, at which point should they be categorised as a group member rather than a lone extremist?

The issue of non-violent individuals who might potentially be violent in the future has been explored (Sarma, 2017), and others have presented considered discussions and options regarding the difficulties in categorising an individual as 'lone' (Ellis et al., 2016; Schuurman et al., 2019). How researchers respond to these kinds of questions will determine which cases are included in their analyses, and it is likely that the more precise the

inclusion criteria, the smaller the sample will be. Therefore researchers need to balance the need for specificity against the need for larger sample sizes.

Whilst a larger sample may be desirable, there is also the issue of missing data to consider. Knight et al. (2017) chose to exclude cases where substantial data were missing, including only cases where information available was of sufficient depth and quality to allow independent coders to reach an agreement as to how they should be categorised. Available information varied dramatically regarding the length of case studies, with the word count ranging between 428–5257 words; thus, it was rich for some (i.e. those that were high profile and of interest to the media), mainly those involving violent attacks conducted by extremist group members and lone actors: Both of these generated considerably more information than the other sub-groups and for nonviolent cases, information was often scarce and/or difficult to verify. Such challenges are regularly encountered by researchers seeking to use open source data, and different approaches to dealing with missing data have implications for data validity and interpretation of findings (Safer-Lichtenstein, LaFree, & Loughran, 2017). Moreover, 'even small amounts of missing data can lead to large uncertainty in prediction', and therefore researchers must be transparent in terms of the assumptions they make in order to deal with the issue of missing data (Safer-Lichtenstein et al., 2017, p. 281).

Even where studies adopt consistent definitions, limitations in their application can continue to undermine opportunities for wider comparison (along with their immediate findings). The absence of consistent definitions and variation in inclusion criteria can lead to substantial variations in the datasets to be analysed. We propose that this 'thin slicing' based on different definitions is making the literature replete with too many studies that are harder to aggregate.

Section three: collaboration between governments and academia

Above we explore the advances made by academia to improve the terrorism literature, and ongoing issues that they face to ensure that research in this area is scientific, rigorous and evidence-based. However, another theme that emerged from Sageman's critique related to governmental approaches to terrorism. For example how they identify and apply 'evidence' from the terrorism literature to inform CT responses and their decision making regarding the research they opt to fund, and how this can hamper advances in understanding for both the intelligence community and academia. Whilst we have been able to systematically review the literature to understand the advances that have been made since 2014, it is harder to assess changes in government systems, how they make funding decisions and set their requirements and work with academics to facilitate research in this field. This is because, for example, the information may not be easily accessible and will vary between countries and different government departments. However, below we set out and examine some key examples of advances that have been made in the UK and US, and where challenges remain.

Sageman claimed that government strategies are often reactive, and reliant on information from self-proclaimed 'experts', much of which lacks the rigour that academia provides. The increase in empirical research in this field provides governments with more and better evidence to inform decisions, for example in terms of whom and what to fund. However, stakeholders and end users do not always possess the skills needed to critically

evaluate what they read and identify that which can be acted upon, how it can be applied and that which should be discarded and ignored (see Section Four for an expansion of this point). Moreover, government departments are inevitably influenced by changes regarding the political parties in charge and the political environment more generally. For example, the recent inquiries into three separate terrorist attacks in the UK, at Manchester Arena, London Borough market and Westminster Bridge, have meant that Islamic-related terrorism has attracted the attention of the media and the public. This has led to pressure on the UK government to ensure and assure that such events will not be repeated.

These types of external pressures, plus internal pressures to appeal to voters and a need to be seen to be addressing high profile current issues may inevitably lead to reactive, short-term responses. For example, as seen with the UK CT strategy (CONTEST), first developed in 2003, which was heavily criticised for focusing solely on the threat from Islamic individuals. This narrow focus has been accused of fuelling Islamophobia, leading to marginalisation of Muslims communities, and not necessarily helping protect the UK public from future threats. Moreover, any government focus on a certain type of terrorism is likely to drive and be reflected in terrorism research: Schuurman (2019) demonstrated that the literature remains over-focused on the threat posed by jihadism and noted a dearth of empirical research on other types of terrorism, such as that involving extreme right-wing individuals. The latter pose an ongoing and increasing threat, and empirical research in this area is urgently needed.

Another of Sageman's key criticisms was that government agencies have access to detailed data that is needed to advance our understanding of extremism (see also Gill et al., 2014; Stern, 2014); but, that they do not share this with independent researchers who have the skills and resources to examine and make sense of this information in a scientific and rigorous manner. Researchers often assume that governments have the data that they need to address important questions, and Sageman stressed a need for an appetite and mechanisms that encourage and enable sharing of data between governments and academia. However, cases of governments providing or even facilitating access to data remain rare. This may be because they do not have the data that others assume they do, due to sensitivities with data, or because the processes in place to protect data (and individuals) create obstacles for sharing.

For example, in the UK there is a clear process for researchers to request access to convicted terrorists in prison in order to collect first-hand data. The first part of this process is fairly straightforward, involving the researcher making an application to Her Majesty's Prison and Probation Service. However, even if the request for access to prisoners is approved, the permission and support of various gatekeepers involved in the management and welfare of offenders is also required. Gatekeepers include Prison Governors, Offender Managers, and Psychologists, all of which may obstruct researchers accessing offenders because, for example, they may not appreciate the potential benefits of research, or they simply do not have the time and resources needed to enable access and make data collection happen. And of course, the offender also needs to consent to participating in the proposed research, which presents another potential challenge to researchers seeking to collect first-hand data. As such, whilst there may be room for improvement regarding government systems and how they might facilitate empirical research in this field, there remain other issues which may be out of their control.

Regarding the ‘unbridgeable gap’ noted by Sageman (2014, p. 565), some serious attempts have been made by governments to bring intelligence communities and academics together. Examples include the Centre for Research and Evidence on Security Threats (CREST), a UK initiative with funding secured for five years, led by a consortium of universities. Other schemes also exist, such as the US Minerva Research Initiative (MRI), and the National Consortium for the Study of Terrorism and Responses to Terrorism (START), which is led by the University of Maryland. MRI and START were established before Sageman’s critique, but CREST was established since then in 2015, and sets out a number of sensible goals. These include: (i) to address stakeholder requirements; (ii) to identify and address gaps in the literature; (iii) to produce outputs that describe the ‘state-of-the-art’ regarding potential solutions to security; (iv) to facilitate engagement and relationships between academic, stakeholder and public communities; and (iv) to support the professional development of new and existing researchers and educators. If these aims are achieved, CREST should help address a number of Sageman’s key concerns related to government-academic collaborations.

As well as those outlined above, there are other initiatives driven by governments that seek to bring together academic, stakeholder and end user communities. For example, the Defence and Security Accelerator (DASA) is a UK framework set up to: (i) collect requirements from across different government departments, customers and stakeholders; and (ii) facilitate joint funding to support research that addresses Defence and Security (D&S) problems and builds capability required for the future. DASA has themed calls that focus on specific areas of interest to those responsible for D&S, and an ‘Open Call’ whereby researchers can propose innovative ideas and solutions to D&S challenges.

Whilst efforts such as those described above have been made to ensure that programmes of research are based on sensible questions, that they are forward thinking, and will lead to practical solutions for CT practitioners, several other problems are worth mentioning here. One is that, as Sageman noted, governments often require quick solutions to complex problems. As such, researchers are required to be ‘agile’ and ‘flexible’, in order to generate results fast. This means that sometimes the method and approach taken will not necessarily match the high scientific quality associated with academic research; a sometimes inevitable result of conducting research in ‘the real world’ (for example, issues explored in Section Two regarding quantity and quality of data, missing data and so on). This can deter researchers from involving themselves in government research programmes, especially if their outputs cannot be published.

The likelihood and appetite of governments to publish research that they fund is low compared to the drive in academia to ‘publish or perish’. Governments are not driven by this need to continually publish their work, and may not publish findings because these have security implications. This means that whilst advances in knowledge might be made, academics may not necessarily be aware of these; leading to misunderstandings regarding what research is needed and where the gaps are, and a focus on certain areas that are either (a) no longer of concern, or (b) well understood due to in-house research that has not been published. Moreover, Social and Behavioural Science expertise usually does exist ‘in-house’ within relevant government departments, and this expertise will be informed by academic research. Formal and informal networks between government departments and academics also exist, therefore government strategies, policies and research programmes should where possible reflect findings from the literature.

Section Four: evidence-based counter terrorism in practice

Above we explore certain challenges for terrorism researchers and governments responsible for CT efforts. In this last section we explore ongoing issues facing CT practitioners and potential solutions to these. The term ‘practitioner’ is used here to mean those with a responsibility to pursue potential terrorists, and /or prevent, protect against or prepare for a hostile attack. We describe the general goals of practitioners around the ‘4Ps’ (Prevent, Pursue, Protect, and Prepare) of the UK government’s CT strategy (CONTEST): For example, law enforcement and security agencies – that need to detect and apprehend potential attackers, prison and probation staff – that conduct risk assessments on incarcerated individuals in order to advise on how these should be managed, and policy makers and intervention providers – that need to ensure that policies and programmes designed to deter terrorism do not contribute to the problem. Such practitioners are skilled at developing pragmatic and concrete ways of responding to a person (or persons) who pose a risk to national security, and are driven by the various government departments responsible for CT policies.

It is generally agreed that CT responses should, wherever possible, be based on evidence-based decision making (Gomis, 2015). Empirical research can help to ensure that CT practitioners make evidence-based decisions that are defensible and maximise the potential success regarding their efforts. However, there is an issue with this approach: The evidence for (push, pull, protective) factors underlying radicalisation, violent extremism and terrorism, and what works regarding CT, is varied in terms of the underlying science, the degree to which it has been tested and evaluated, and its applicability to specific threats (for example, see Sageman, 2014; Schomerus & El Taraboulsi-McCarthy with Sandhar, 2017). For example, different research studies rely on data concerning different types of extremists (e.g. Islamic and right wing extremists, home grown terrorists, foreign fighters, lone actors, violent and nonviolent extremists and so on). Some of these are likely to vary dramatically in terms of their characteristics and the factors that have influenced them, therefore findings from the study of one cohort may not be applicable to another cohort.

Whilst there is a mass of literature by academics and others seeking to understand and prevent acts of terrorism that can be drawn on to inform CT responses, practitioners need to be prudent when using research findings to inform their work. The applicability of these can be affected by the population/ individual characteristics, parameters of effectiveness and setting/ context. Practitioners need to be able to evaluate the evidence for (a) quality, in terms of how scientifically robust the research is, and (b) when, to whom and how this may or may not be applicable to the problem(s) they are addressing. However, not all research studies fully articulate how sub-groups of extremists have been categorised, which creates a problem for those wishing to fully understand the population under investigation, for practitioners wanting to apply findings, and for those wishing to replicate the research. Researchers therefore need to provide detailed descriptions of their inclusion/ criteria and any other relevant information regarding how their cases were selected and categorised. Whilst this will help, it has been recently noted that the literature remains (over) narrowly focused on Islamic-inspired terrorism, despite right-wing inspired attacks outnumbering jihadism in the US as well as increasing across Europe (Schuurman, 2019). Practitioners are in urgent need of empirical research that provides an

understanding of right-wing terrorism to enable evidence-based CT interventions for this fast growing threat.

Practitioners need to consider not only the applicability and specificity of the research as well as the quality of the research; a problem which is compounded by the sheer volume of literature on terrorism. Those responsible for making evidence-based decisions regarding CT will need to sift through the massive literature in this area, which includes news articles, books, scientific research and reports, from a range of different perspectives and disciplines, all of which vary significantly in terms of the underlying science and rigour involved. However, whilst certain relevant government agencies and units have some form of Social Science expertise to review external work and to be cognisant of the weaknesses in the existing literature, some do not. Practitioners may not be equipped with the skills to understand the underlying science and rigour (or lack of) involved, or may inadvertently apply findings erroneously to a problem. Academics, on the other hand, are trained to critically evaluate literature in order to establish the quality and potential applicability of empirical research to a specific problem. Therefore combining the efforts of practitioners and academics who have complementary skillsets, may be one way to ensure the best evidence is applied to real-world problems in an appropriate way.

The study of terrorism and violent extremism is notoriously difficult due to obvious issues regarding how data can be collected and what data are available. Because researchers cannot easily conduct a 'controlled' study, or necessarily collect data direct from 'participants', they often rely on data from secondary sources, which may be imperfect and incomplete (Keatley, 2018). However, progress has been made in this area, and recent research has begun to develop and analyse datasets comprising open source information, indicating that there is value in examining this kind of publically available data (Keatley, 2018). Yet without the detail contained in other sources, significant obstacles remain for those seeking to conduct in-depth empirical research.

The sharing by authorities of available information with experienced researchers could do much to facilitate and further understanding in this area. Any reluctance to share potentially sensitive data is completely understandable given the sensitive nature of the research; however, to further our understanding of why some individuals are drawn into terrorism, we need a body of scientific research to build a comprehensive picture, to answer questions and address problems. It is therefore important that authorities that have access to relevant information find ways of being able to share this with researchers who have the time and expertise to make sense of the data. In criminology, advancements are being made to bridge the gap between academics and applied practitioners in police major crimes, the same should be facilitated in terrorism research (for example, see Keatley & Cormier, *in press*). Also, a specific initiative currently funded by the US Department of Justice/ National Institute of Justice is developing a 'Federal Terrorism Court Record Repository' that will enable access to data by a range of researchers, analysts and practitioners (J. Gruenewald, personal communication, August 16, 2019). Moreover, easier access to incarcerated extremists could allow for the collection of first-hand data in a controlled and robust way (see Khalil, 2019, for a guide to interviewing terrorists and violent extremists).

Above we have explored the advances made in terrorism research since Sageman's (2014) critique of the literature. We show that there has been a notable increase in empirical research and note that academics should, whenever possible, endeavour to (i) collect

and share data, (ii) be clear about the cases they included / excluded, and (iii) select and categorise cases using definitions and inclusion criteria used previously by other researchers. The latter will allow for easier and more meaningful comparisons between and triangulation across, research studies. We also outline government initiatives that aim to enhance collaboration between intelligence communities and academia, whilst accepting that challenges do remain. It is also important to note that practitioners are not always involved in setting requirements and making decisions regarding funding strategies. Mechanisms need to be in place to ensure that those on the frontline can inform government strategies to maximise the effectiveness of these strategies. Moreover, longer term programmes of work are needed to generate effective solutions to complex problems. Further focused collaborations are needed in order to identify and understand gaps in knowledge and future threats, to ensure strategic funding decisions are sensible. The aforementioned DASA provides one such mechanism for doing so, and CREST is seeking to develop effective collaborations between practitioners and academics with complementary skillsets. We recommend that governments continue to develop and nurture formal and informal networks with academia, and that this engagement informs both their short-term and long-term goals and how they aim to achieve these.

Conclusion

The aim of the current article was to examine recent advances and ongoing challenges regarding terrorism research against some of the key criticisms set out by Sageman five years ago. We have also proposed some potential ways forward to address remaining issues in order to facilitate evidence-based CT efforts. It is hoped that other researchers will respond to this article with other options and solutions and suggest further ways to generate a more nuanced understanding of different kinds of extremism that is based on the analysis of solid, real-world evidence. We highlight the need for government departments to collaborate with expert researchers in the field: If those responsible for countering extremism and terrorism require a better, evidence-based understanding of this problem, then they need to continue to identify more mechanisms to support and enable this.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Dr Sarah Knight was an academic at the University of Portsmouth for 10 years before moving to the Defence Science and Technology Laboratory (Dstl) in 2009 to work in applied research. In 2006 she was gained her PhD that examined the relationship between beliefs, attitudes and behaviour from a Social Psychological perspective, following which she was awarded a one-year postdoctoral research fellowship focusing on the role of emotion as a 'gut reaction' that may drive attitude and action. At Dstl she has led a variety of projects related to the military and homeland security, for example, to develop understanding of terrorist innovation, the evolution of ideology, and lone actor and right wing extremism. In 2011 she was awarded a Dstl scholarship which takes an empirical approach to understanding lone offending and to compare violent versus non-violent extremists. This has

led to the development of a number of relationships with others working in this area and potential customers, stakeholders and academics interested in this area. Sarah is also the Lead and Chair for a NATO Research Task Group (RTG-278) on Countering Violent Extremism, which focuses on the risk posed by Foreign Fighters returning to their home countries, how to counter this risk and that posed by 'home grown terrorism', and the role of social media regarding recruitment to violent extremism and how to prevent and counter this. She is a full member of Dstl's Scientific Advisory Committee and remains a Visiting Research Fellow at the University of Portsmouth.

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