2. Psychopathology and terrorism: State of affairs, gaps and priorities for future research[1]

2.1 Preface

What is the relationship between psychopathology, radicalisation, violent extremism and terrorism, and what should future research focus on? By means of literature research, expert interviews and a focus group, this report examines several sub-questions from various angles, which together provide an answer to these two main questions. The study was commissioned by the Research and Documentation Centre (WODC, Project no. 2911) at the request of the National Coordinator for Counterterrorism and Security (NCTV) and the Ministry of Justice and Security (J&V), and conducted by researchers at the University of Amsterdam.

The supervisory committee was chaired by Professor K. van den Bos (Utrecht University), and the members were M.H. Donia (Ministry of Justice and Security/NCTV), E. Rodermond (VU University Amsterdam/NSCR), N. Duits (Child and Adolescent Psychiatrist at the Netherlands Institute for Forensic Psychiatry and Psychology) and E.M.H. van Dijk (Scientific Research and Documentation Centre). We would like to thank all of them for the constructive way in which they supervised this research project. Without exception, the meetings took place in a positive atmosphere, in which the committee always clearly stated its points for improvement and put forward stimulating points of discussion. We greatly appreciate their input and are certain that this has benefited our research and report. We would also like to thank Dr Anton Weenink (National Police Service, Netherlands) for his essential advice and contribution to the report, and Janneke Staaks of the University Library of the University of Amsterdam for her indispensable contribution to the literature review via online databases.

Finally, we would like to thank the experts we had the privilege of interviewing for this report: Prof Andrew Silke, Cranfield University, UK; Prof Arie Kruglanski, University of Maryland, USA; Prof Reid Meloy, University of California, USA; Prof Eric Zillmer, Drexel University, USA; Dr Emily Corner, Australian National University, Australia; Dr Harald Weilnböck, Psychotherapist for Deradicalization Interventions and Expert at the *RAN Centre of Excellence*, Germany; Bram Sizoo, Psychiatrist, Threat Management Team, Police, Netherlands; Dr Nils Duits, Child and Adolescent Psychiatrist at the Netherlands Institute for Forensic Psychiatry and Psychology and project leader of the DARE project, Netherlands; and finally the anonymous experts from the police and a municipality in the Netherlands.

2.2 Summary

Radicalisation and terrorism are internationally prominent social problems. There are many models that attempt to understand and explain radicalisation processes leading to terrorism. These models are developed to allow preventive policies to respond to processes resulting in terrorism, so that it can

[1] Chapter 2 is a direct translation from Dutch into English of the report for the Dutch Ministry of Justice and Security - WODC - *Psychopathology and terrorism: State of affairs, gaps, and priorities for future research* (reference: Schulten, N., Doosje, B., Spaaij, R., & Kamphuis, J. H. (2019). *Psychopathologie en terrorisme*. Ministry of Justice and Security, The Netherlands. Consulted on https://english.wodc.nl/onderzoeksdatabase/2911-geestelijke-gezondheid-en-betrokkenheid-bij-terrorisme.aspx).

possibly be prevented. Since the 1970s, scholars have been focusing on the role of one specific psychological factor that occurs at the micro-level in a large part of the population: psychopathology. In the early years of this field of research, psychopathological characteristics were attributed to terrorists, such as psychopathy (antisocial personality), narcissism, narcissistic rage and paranoia. Alongside this, however, a view emerged, often based on interviews with terrorists, that terrorists rarely displayed psychopathological characteristics. The evidential value of both perspectives often fell short empirically due to a lack of statistically and systematically obtained data, validated psychological tests and diagnostics, comparison groups and nuances within groups of terrorists and due to various forms of political and psychological bias.

In 2018, however, there seems to be a consensus among experts that psychopathology cannot solely lead to radicalisation or terrorism, without any other factors being involved, and it is therefore not a direct causal risk factor in the general population. Psychopathology is often included in risk assessment instruments. A more nuanced picture is needed in order to better understand the relationship between psychopathology and terrorism for sound case management. The present exploratory study therefore attempts to answer the following two main questions:

1) What is known from existing scientific research about the relationship between mental disorders and radicalisation/terrorism?
2) What is a relevant and feasible research agenda in this area?

These questions have been answered by a systematic literature review (PRISMA method), interviews with academic (N=4), clinical (N=4) and practitioner (N=1) experts and one focus group (N=3).

Prevalence of psychopathology in terrorists

a. What mental disorders in relation to which forms of radicalisation/terrorism have been the subject of scientific research? What are the findings with regard to the relationship between mental disorders and terrorism?

A wide range of mental disorders in terrorists have been investigated by various researchers. The prevalence literature supports the conclusion that psychopathology is more common among lone actor terrorists than among terrorists acting within group structures (i.e. group terrorists). In general, psychopathology seems to occur in a relatively large minority of lone actors. In one sample of lone actors, the prevalence rates of schizophrenia, delusional disorders and autism spectrum disorders seemed elevated compared to general population base rate. However, the included studies did suffer from substantial methodological and diagnostic limitations, so the latter conclusions should be interpreted with caution.

For group terrorists there currently seems to be no evident evidence that psychopathology occurs more frequently than in the general population. Some studies do suggest, however, that psychopathology can occur in a small minority of American right-wing extremists, some of whom have also acted in group structures. This is also the case with subgroups such as violent (suicide) terrorists (depression and suicidality) and jihadists (schizophrenia and psychosis). For the above forms of

terrorism, however, no obvious significant differences with comparison groups have been demonstrated and the question is whether a psychiatrist or psychologist would have made the diagnosis. Future research should therefore further investigate the role that psychopathology may play in these subgroups. For the time being, the bulk of the explanatory power of group terrorists seems to lie with other factors such as socio-psychological, economic and political risk factors.

The role of psychopathology in terrorism

1b. Through which mechanisms does (mutual) influence take place? What factors play a role in this?
1c. Are the factors/mechanisms that play a role in radicalisation/terrorism found in an analogous way in other problematic behaviour? If so, which problematic behaviours are they? What does this say about the risk that these factors/mechanisms may lead to radicalisation/terrorism?
1d. Are there theories and/or models that can describe/explain the (possible) influence of mental disorders on radicalisation/terrorism? If so, what are they?

In order to study which mechanisms play a role in psychopathology of terrorists and which other factors are relevant here, we considered empirical and theoretical studies on both radicalising individuals and terrorists who demonstrated signs of mental health disorders. These studies were supplemented with expert interviews and insights from the DSM-5 (the categorisation system for mental disorders). Specific research on such processes is scarce, and relies heavily on case histories. As a result, the answers to these questions are of a theoretical, speculative nature. More knowledge about this role can be useful for professionals in dealing with a terrorism case in which psychopathology seems to be present.

When psychopathology is involved in terrorism, especially lone actor terrorism, it appears to play a non-specific and complex role in a complex, highly individualised chain of context-dependent events and factors that ultimately culminate in terrorist activity. The events and factors that support violence and that can interact with psychopathology in a cumulative way come from various sources. Examples of such factors are situational conditions (e.g. access to and stockpiling of weapons), stress (e.g. chronic stress symptoms, acute stressful situations, and socially stressful conditions), violence-inducing cognitions (e.g. perceived grievances, moral outrage, and an ideology that supports violence), a history of violence, radical social environments (e.g. a radical partner and/or an encounter with a radical person), and physical and social isolation (e.g. and therefore strong internet influence).

Disorders from the schizophrenia spectrum and other psychotic disorders (particularly delusional disorder), social communication disorders and autism spectrum disorders can be relevant for individual lone actor terrorist cases. In the case of terrorists with a psychotic disorder, it is assumed that the extreme views can provide the perpetrator with some structure, because these views (black and white) and the resulting behavioural agenda offer support and provide meaning for the derailed mind. In the case of social disorders, personal isolation (i.e. absence of corrective, nuancing influences) and a tendency to obsession are thought to promote extremity of opinion. Furthermore, the nexus between depression and terrorism may lie in giving meaning to pre-existing suicidal thoughts. Experts also indicate that more extreme personality traits or formal personality disorders can translate into intensified reactions to humiliation or reduced empathy for the fate of others. Finally, mental disorders can also function as a protective factor if they impede the planning and execution of a terrorist attack because

of reduced cognitive and acting capacities.

As described above, psychopathology does not appear to be common among group terrorists. Other factors from recognised models seem considerably more evident, such as feelings of helplessness, powerlessness, insecurity, personal victimisation and experienced grievances. Theory-building studies and experts speculate that, in some people, psychopathological vulnerabilities such as depression, schizophrenia, narcissism or trauma may interact with the above factors in individual cases. As indicated earlier, these suggested links should be treated with caution, as they are not (yet) based on empirical evidence, but on speculation.

Research Agenda

2a. Which mental disorders and/or mediating factors are missing from research of good scientific quality? 2b. Is it possible to obtain this knowledge through empirical research? If so, what is a relevant and feasible research agenda in this area?

Based on the gaps in the existing literature, expert interviews and the focus group, a research agenda has been drawn up consisting of five priorities (visions). These visions will be supported by a multi-method approach, in which priority research and quantitative, qualitative and experimental research complement each other.

The five perspectives that have been formulated run dynamically into each other and complement each other. The first objective is to use future research to further refine theories and to conduct further research with specific (sub)groups regarding motivational processes and psychopathology. The report shows that various themes, such as the role of psychopathology in foreign fighters, still deserve more attention. The second goal is to unify the (treatment) protocols for thorough case management of (potential) terrorists. The third and fourth goals concern the standardisation of psycho-diagnostics and definitions in the field of terrorism. The fifth goal is to build an international network to promote the exchange of (existing) clinical knowledge.

A bottleneck for this research agenda lies in its practical feasibility. One of these bottlenecks for both quantitative and qualitative research is around the sharing, management and publication of confidential data, due to medical confidentiality and the new privacy legislation in Europe. However, there are various possibilities for conducting this research within the legal parameters. For example, a privacy impact assessment can be made, and researchers can work with an independent third party that collects, manages, links and encrypts the confidential data.

Conclusion

Prevalence studies of psychopathology in terrorism show that there is no single specific profile for terrorists. Psychopathology seems to play a limited role among lone actors and no specific role in group terrorism. Moreover, mental disorders are generally not useful for statistically predicting who will or will not commit a terrorist act in the general population. For any disorder, even if it is found more frequently in lone actor terrorists, the vast majority of people suffering from it will never feel drawn to radicalisation or terrorist activities. Future research will have to further clarify which mental disorders are more

common in certain specific types of terrorism, and with which violence-supportive factors these disorders may be associated. Qualitative knowledge about (treatment) protocols will also be able to assist clinical experts and professionals at the international level in sound case management.

2.3 Introduction

Radicalisation and terrorism are internationally prominent societal problems. Attacks are planned and conducted both by terrorist groups (e.g. Paris 2015, Brussels 2016 and London 2017) and by lone actors (e.g. Charleston, South Carolina in 2015). Research shows that a radicalisation process often precedes the attack (McCauley & Moskalenko, 2008). We regard *radicalisation* as "the process of growing readiness to accept the extreme consequence of a way of thinking and to convert it into acts (of violence)" (NCTV, 2016, p. 6)[2]. *Terrorism* can then be defined as "the ideologically motivated perpetration of violence aimed at human life, or the infliction of socially disruptive material damage, with the aim of bringing about social undermining and destabilisation, to instil serious fear in the population or to influence political decision-making" (NCTV, 2016, p. 6). Doosje et al. (2016)'s model (Figure 1) describes the process from radicalisation to terrorism.

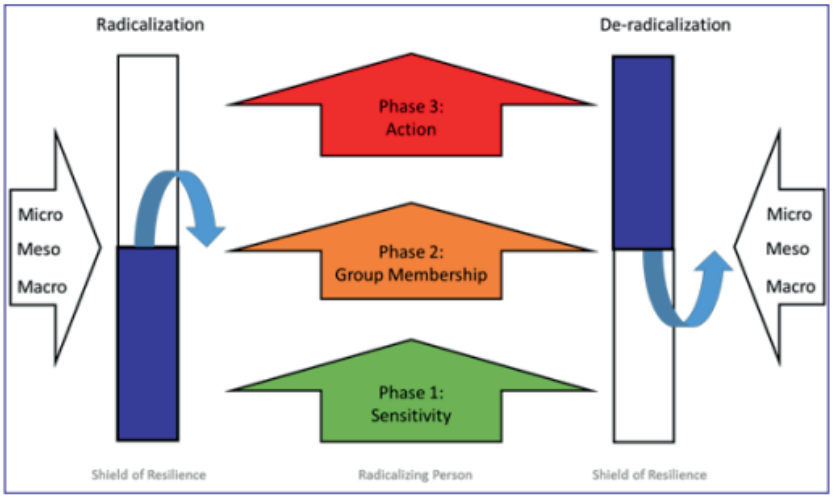

Figure 1: The radicalisation and de-radicalisation process and its determinants (Doosje et al., 2016)

This model assumes that people are naturally resilient to radical influences. Resilient people have the ability to resist risky experiences, such as radical messages and propaganda, on a cognitive level (e.g. critical thinking skills), an affective level (e.g. good emotion regulation) and a behavioural level (e.g. being active in the community) (Mann et al., 2015). In contrast, risk factors can have a negative impact on this resilience and make someone more vulnerable to a radicalisation process. The research literature has identified many of these risk factors (Doosje et al., 2016), and it is clear that terrorism is a heterogeneous

[2] Original Dutch definitions and translations are reported in Chapter 2 in which we discuss official definitions.

phenomenon. Psychological, social, political or economic risk factors interact at micro (individual), meso (group) and macro (societal) levels in a complex and context-dependent process (Doosje et al., 2016; Gottschalk & Gottschalk, 2004).

These complex interactions and the diversity in terrorist offenders and their radicalisation processes make the unequivocal identification of relevant factors overly complex. Consequently, since the 1970s there has been much writing and disagreement in the academic world about the role of one specific psychological factor that occurs at the micro level in a large part of the population: psychopathology. Today there seems to be a consensus that psychopathology alone cannot be used to causally predict radicalisation or terrorism in the general population. However, many are familiar with the names of terrorists who were characterised by psychopathology (such as the Unabomber, Theodore Kaczynski). The disagreement about whether psychopathology plays a role, and if so in what forms and how, makes this an extraordinarily complex issue for policymakers. An optimal radicalisation prevention policy must address risk factors that actually contribute to abnormal behaviour that results in terrorism, and the question is to what extent and how psychopathology should be involved in prevention policy. With this report we seek to offer insight into this issue: what is known about the prevalence of psychopathology in terrorism? Can psychopathology possibly reduce a person's resilience to radical messages, and if so, how and through which mechanisms? In concrete terms, the following research questions have been formulated:

Research questions

What is known from existing scientific research about the relationship between mental disorders and radicalisation/terrorism?

1a. What mental disorders in relation to which forms of radicalisation/terrorism have been scientifically studied? What are the findings with regard to the relationship between mental disorders and terrorism?
1b. Through which mechanisms does (mutual) influence take place? What factors play a role in this?
1c. Are the factors/mechanisms that play a role in radicalisation/terrorism found in an analogous way in other problematic behaviour? If so, which groups are these? What does this say about the risk that these factors/mechanisms may lead to radicalisation/terrorism?
1d. Are there theories and/or models that can describe/explain the (possible) influence of mental disorders on radicalisation/terrorism? If so, what are they?

What is a relevant and feasible research agenda in this area?

2a. Which mental disorders and/or mediating factors are missing from research of good scientific quality?
2b. Is it possible to obtain this knowledge through empirical research? If so, what is a relevant and feasible research agenda in this area?

Structure of the report

In section 2.3 (this introduction) we will give a brief historical overview of how the relationship between terrorism, radicalisation and psychopathology is conceptualised in the broad sense. Then we will explain the definitions of the key concepts that we have used in this report (specifically radicalisation, terrorism

and psychopathology). In section 2.4 we will describe our methodology, which includes a literature study, interviews with experts and stakeholders and a focus group.

Based on the literature, the interviews and the focus group, we describe the current insights into the relationship between psychopathology and terrorism in the following three Chapters. Section 2.5 discusses which forms of psychopathology play a role in various forms of terrorism and what the prevalence figures are (Research Question 1a). Section 2.6 provides insights into how psychopathology as a non-specific factor in conjunction with other factors and contextual situations can play a role in a radicalisation process leading to terrorism (Research questions 1b, 1c and 1d). For both prevalence studies (section 2.5) and theory building (section 2.6), the content and methodological gaps of existing studies will be analysed to identify priorities for future research (section 2.7, Research questions 2a and 2b). Finally, in 2.8, we summarise the findings, discuss the shortcomings of current research, draw conclusions and discuss implications.

The aim of this report is not to provide an exhaustive overview of all studies written on the subject. Instead, we have attempted to synthesise the empirical and current theoretical streams, highlighting the key insights into the relationship between psychopathology and terrorism. Given the controversies within this field, we will highlight the most important critical voices, allowing the reader to understand the complexity behind this issue. Broader theories about radicalisation and terrorism, such as those from the socio-psychological, political science and sociological perspectives, will therefore be discussed only in limited detail in this report, especially as regards the phenomenon of group terrorism.

Conceptual Definition of Psychopathology and Terrorism

Psychopathology and terrorism through the years

In order to properly understand the current state of the science, in this section we provide a brief historical overview of how scholars have conceptualised the relationship between psychopathology and terrorism (Gill & Corner, 2017).

In the early years of this research field, terrorists were mainly seen as psychopaths (antisocial personality), or had various other personality traits attributed to them. Yet the empirical evidence for these claims was minimal (Victoroff, 2005). For example, a study by Pearce in 1977 characterised terrorists as psychopaths. However, the evidence he provided for the presence of psychopathology was highly questionable – in fact, it was partly based on a terrorist's tattoo. Without referring directly to disorders, Hubbard (1978, cited in Silke, 1998 and Corrado, 1981) suggested, for example, that antisocial behaviour to gain attention was characteristic of terrorists. However, this conclusion was based on the finding that almost 90% of 80 terrorists in 11 countries suffered from bad hearing. In addition, several researchers from the psychoanalytic field concluded that terrorists were driven by narcissism, narcissistic rage and paranoia (Lasch, 1979; Morf, 1970; Robins & Post, 1997, cited in Victoroff, 2005 and Corrado, 1981). Morf (1970), for example, found no narcissistic personality disorder in clinical interviews, but did find narcissistic traits in members of the Front for the Liberation of Quebec (FLQ). There was also a large-scale study conducted by the West German government in which 250 terrorists were interviewed. The researchers concluded that psychopathology was relatively rare among the group, but that two personality patterns played a role: an extrovert, stimulus-seeking dependent pattern and a hostile,

suspicious defensive pattern (Jäger, Schmidtchen, & Süllwold, 1981). The empirical evidence for these conclusions was also minimal (Victoroff, 2005).

In addition to the studies that have claimed that psychopathy and terrorist personalities are the keys to understanding terrorists, there are also studies that suggest that terrorists rarely show signs of psychopathology. Typically, these researchers have conducted interviews with members of terrorist organisations, such as the IRA, Hamas and the RAF (Crenshaw, 1981; Ferguson, Burgess, & Hollywood, 2008; Hassan, 2001; Post, Sprinzak, & Denny, 2003; Rasch, 1979; Sageman, 2004). For example, Post et al. (2003) conducted interviews with 35 extremists from the Middle East. They concluded that group pressure rather than psychopathology drove these terrorists. Furthermore, the (non-peer reviewed) article by UN staff member Hassan (2001) described that she found few signs of psychopathology in unstructured interviews with nearly 250 members of Hamas and Jihad. However, it is difficult to conclude from these studies that psychopathology does not play a role, because no psychological tests were administered and no clinical evaluations took place. A lack of evidence is not the same as evidence that psychopathology was absent in these terrorists. Nevertheless, partly because of these studies, the research focus did shift to other explanatory factors for terrorism, such as political, economic and social factors.

Because the empirical evidence for the above findings was weak, several literature reviews proclaimed that we simply could not know whether psychopathology plays a role in terrorism (Merari, 2010). An important critical study by Silke (1998) argued that all previous research claiming that terrorists were driven by psychopathology might have been influenced by the so-called fundamental attribution error. This attribution error assigns the poor performance of individuals from other groups to inner psychological characteristics. Environmental factors are then often overlooked. Moghaddam (2006) also stated that terrorists are easily perceived as mentally ill because they seem insane, given that they kill and injure others through motives that are incomprehensible to many people. In addition, researchers suggested that the psychopathological explanation for terrorism may contribute to the fact that governments do not (have to) listen to the political and social wishes of terrorists (Corrado, 1981; Miller, 2006). The risk of a bias towards the psychopathological explanation is especially prevalent in studies that have not used a systematic, empirical and quantitative method. In line with this, Silke (2003) wrote that the best empirical evidence at the time could not show that terrorists have certain personalities or deviant psychological characteristics. Therefore, Silke warned the scientific community that the existing empirical evidence was empirically too weak to conclude that terrorists are psychopathologically vulnerable.

In 2018, a consensus seems to be forming that psychopathology cannot by itself lead to radicalisation or terrorism in the general population. There is therefore no direct causal link between psychopathology and terrorism. Psychopathology will not by itself, without any other factors, be able to explain why someone from an ideology has committed violence because their thinking, motives and behaviour have been influenced (Borum, 2013). As a result, we can and may not identify persons on the basis of psychopathological vulnerabilities as a risk group for terrorism (De Roy van Zuijdewijn & Bakker, 2016). A nuanced picture is therefore needed to understand the relationship between psychopathology and terrorism. Current studies that have empirically and systematically investigated the prevalence rates of different forms of psychopathology in various forms of terrorism thus provide a more nuanced picture. Before discussing these prevalence studies and describing the role that psychopathology can play in

terrorists, it is important to demarcate radicalisation, terrorism and psychopathology so that it is clear in what context our report should be understood.

Demarcation of radicalisation, terrorism and psychopathology

Terrorism

As indicated above, we use the following academic definitions for radicalisation, extremism and terrorism that correspond with the definitions used by the NCTV. *Radicalisation* is defined as an "increased preparation for and commitment to intergroup conflict. Descriptively, radicalization means change in beliefs, feelings, and behaviours in directions that increasingly justify intergroup violence and demand sacrifice in defence of the ingroup" (McCauley & Moskalenko, 2008, p. 416). The NCTV sees radicalisation as "*het proces van groeiende bereidheid om de uiterste consequentie uit een denkwijze te aanvaarden en die in (geweld)daden om te zetten*" (NCTV, 2016, p. 6)[3]. *Terrorism* is "an act of violence (domestic or international), usually committed against non-combatants, and aimed to achieve behavioural change and political objectives by creating fear in a larger population" (Doosje et al., 2016, p. 79). The NCTV defines terrorism as "*het uit ideologische motieven plegen van op mensenlevens gericht geweld, dan wel het aanrichten van maatschappij-ontwrichtende zaakschade, met als doel maatschappelijke ondermijning en destabilisatie te bewerkstelligen, de bevolking ernstige vrees aan te jagen of politieke besluitvorming te beïnvloeden*" (NCTV, 2016, p. 6)[4]. Extremism, as defined by the NCTV, balances on the edges of our definition of terrorism, since it is a phenomenon "*waarbij personen of groepen vanuit ideologisch motief bereid zijn in ernstige mate de wet te overtreden of activiteiten te verrichten die de democratische rechtsorde ondermijnen*" (NCTV, 2016, p. 5)[5]. Therefore, this report also includes research on violent extremists.

In order to clarify which data we have included in our analysis of the relationship between psychopathology and terrorism, a more pragmatic demarcation is also required. For example, McCauley and Moskalenko (2014) provided a clear dividing line between radical beliefs and emotions and terrorist behaviour. Based on the beliefs, emotions and behaviour, we have distinguished three groups: a) 'justifiers', b) radicalising individuals, and c) terrorists (see Figure 2). The justifiers form the first and largest group: this group is radical on a continuum in terms of beliefs and emotions but does not express this in behaviour. Justifiers thus support the use of violence in the name of a certain ideology, but do not act on it themselves. McCauley and Moskalenko (2014) indicate that only a very small group of justifiers will ever exhibit violent behaviour, and thus switch to b) and/or c). Studies into psychopathology among justifiers (e.g. Bhui, Everitt, & Jones, 2014) will therefore not be included in our study, because this group does not seem representative of radicalising individuals and terrorists who actually (are prepared to) commit violence.

[3] English translation: "the process of a growing willingness to accept the extreme consequence of a way of thinking and to convert it into acts (of violence)" (NCTV, 2016, p. 6).
[4] English translation: "the ideologically motivated committing of violence aimed at human life, or the causing of societal disruptive material damage, with the aim of undermining and destabilising society to instil serious fear in the population or to influence political decision-making" (NCTV, 2016, p. 6).
[5] English translation: "in which persons or groups are prepared, for ideological reasons, to seriously break the law or carry out activities that undermine the democratic legal order" (NCTV, 2016, p. 5).

Radicalised individuals, violent extremists and terrorists are central to this report. As the definition indicates, radical persons or groups go through a process in which they are increasingly prepared to display violent behaviour, in which changes in their ideology, beliefs and emotions are the driving force. The samples that we discussed in this report, and for which we used the umbrella term terrorism, have actually displayed ideologically motivated violent behaviour and have broken the law in the process, or they were prepared to do so. This violence is so damaging that the consequences are serious. For example, radicalising individuals who have thrown a pot of paint over someone are not considered terrorists. Individuals are also regarded as terrorists if they had the intention to engage in terrorist behaviour, but for some reason failed to do so (e.g. stopped by security services or the police). Leaders who coordinated or facilitated a terrorist attack are also considered as terrorists in this report (Gill, 2012).

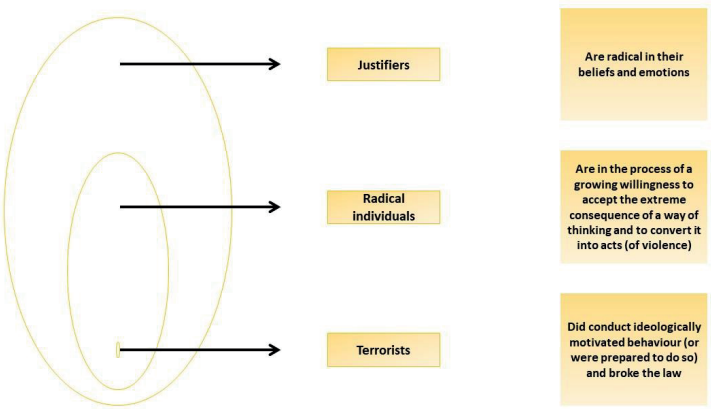

Figure 2. Demarcation: justifiers, radicalising individuals and terrorists

Demarcation of different forms of terrorism

Terrorism takes many forms. There are different types of ideologies and social movements that can inspire terrorism. Terrorist (non-state) organisations are often linked to these ideologies. Common ones are nationalist- and separatist-motivated terrorist organisations, such as the IRA and ETA; religiously motivated terrorist organisations, such as ISIS and al-Qaeda; right-wing extremist-motivated terrorist organisations, such as the Ku Klux Klan; left-wing extremist-motivated terrorist organisations, such as the RAF; or single-issue-motivated terrorist organisations, such as anti-abortion and animal rights groups (Doosje et al., 2016). In addition, terrorists also differ in the extent to which they are influenced by social group processes (Gill & Corner, 2013).

Group terrorists act within and alongside a wider group structure and terrorist organisation (Corner, Gill, & Mason, 2016). These terrorist organisations share certain characteristics: 1) the idea that

there is a serious problem in society; 2) the view that certain (government) institutions have not properly dealt with their social problems; 3) the view that their norms and values are superior; 4) an ideology that legitimises violence (often towards the out-group); and 5) the conviction that violence is an effective means of achieving their goals (Doosje et al., 2016).

Smaller terrorist groups or cells can sometimes operate without a hierarchy. Often, however, terrorist groups consist of different hierarchical layers, in which terrorists fulfil different roles. The higher layers contain the leaders and the lower layers contain the followers. Leaders probably have different psychological characteristics than followers (Victoroff, 2005). Gill's (2012) group model nicely illustrates how a terrorist group can be structured. The first layer contains leaders who facilitate and encourage a social movement and an ideology in which violence is legitimised. The second layer contains terrorists who provide a support network for the violent ideology. These individuals organise, for example, personal or online meetings in which the ideology and identity of the social movement are reinforced. Administrators of websites that upload terrorist-enhancing material also fall into this category. The third layer consists of terrorists who are part of the operational support network. Terrorists from this layer have, for example, technical or psychological skills to support the perpetrators of an attack. For example, they help to build a bomb or support the creation of suicide testament videos. The bottom layer consists of operations cells, which contain the actual terrorists who carry out the (suicide) terrorist attacks.

Lone actor terrorists are also often motivated by a violent component that they, for example, have acquired through the propaganda of extremist groups (Gruenewald, Chermak, & Freilich, 2013b; Spaaij, 2010). Lone actor terrorists fall under the broader heading of "potentially violent loners". These lone actors are considered a separate category due to their relatively isolated processes and terrorist attacks. Because of their relatively unpredictable patterns and isolated preparations, they often seem difficult to detect (Gruenewald, Chermak, & Freilich, 2013a). For lone actor terrorism we use Spaaij's (2010) definition: Lone actor terrorism “involves terrorist attacks carried out by persons who (a) operate individually, (b) do not belong to an organized terrorist group or network, and (c) whose modi operandi are conceived and directed by the individual without any direct outside command or hierarchy" (p. 856). However, this definition is rather strict; researchers and experts differ on how strictly they follow it (Borum, 2013). Indeed, experts argue that social influences can affect the radicalisation process of the lone actor (Silke, personal communication, 2018). Readers should therefore be aware that the distinction between group terrorism and lone actor terrorism is sometimes one of gradation, and thus cannot always be made sharply. For example, Gill, Horgan and Deckert (2014) identify three types of lone actors: 1) lone actors who carry out an attack without the support of a larger group, 2) solo actors who receive training and have some connections to groups but carry out their attack alone, and finally, 3) isolated dyads who act in pairs without connections to a group. The lone actor studies we describe in our report also differ in their definitions used.

There is also a separate subgroup called foreign fighters and travellers, who travel from a Western country to a conflict zone, such as Syria, to fight for terrorist organisations such as ISIS. Potential foreign fighters have the same goals, but have failed to travel (Weenink, 2015). This subgroup cannot yet be properly classified as radical or terrorist because it is sometimes unclear whether potential foreign fighters actually had the intention of engaging in lethal or harmful behaviour and whether they became involved in terrorist acts. In addition, in research into the psychopathology of this group it is also not clear whether they are group terrorists or lone actors. However, the foreign fighters do seem to join a

terrorist organisation (group), and in addition this affiliation is regarded as terrorism by the Dutch government (NCTV, 2014). Given these considerations, and the challenge that this specific group poses to policymakers, we do categorise foreign fighters as group terrorists.

Finally, there is a specific group consisting of both lone actor and group terrorists who aim to commit a terrorist attack by committing suicide, often with a bomb belt. We use Merari, Diamant, Bibi, Broshi and Zakin's (2009, p. 89) definition of suicide terrorism: "an assault, intended to achieve a political objective, performed outside the context of a conventional war, in which the assailant intentionally kills himself for the purpose of killing others". This group has been identified as a separate (in terms of modus operandi) in this report, since it has been studied separately in the literature, and other psychopathological aspects may play a role. Since suicidality in psychiatry is seen as part of psychopathology, it is often suggested that some suicide bombers may also be psychopathologically vulnerable (Lanford, 2013).

Finally, for the purpose of theorising the role of psychopathology and its interaction with other risk factors, we will consider studies on the role of psychopathology in 'near neighbours'. Near neighbours are groups or individuals who have displayed criminal and violent behaviour comparable to terrorism. However, there is no direct political ideology, political goal or political consequence attached to the behaviour. The near neighbours dealt with in this report are comparable to lone actors, and consist of school shooters and fixated loners who have attacked and/or threatened public figures. For both school shooters and fixated lone attackers, it has been suggested that they are similar to lone actors due to the similarities in the psychopathological, grievance-influenced, cognitive and behavioural (isolated) developmental pathway and the execution of the violent attack (Böckler, Leuschner, Roth, Zick, & Scheithauer, 2018; Fein & Vossekuil, 1999; James et al., 2007; McCauley, Moskalenko, & Van Son, 2013). It is possible that through linking near neighbours to lone actors, this research could be useful in understanding the link between psychopathology and lone actor terrorism.

Demarcation of psychopathology

Psychopathology studies questions about patterns of abnormal behaviour and abnormal psychological processes (Willerman & Cohen, 1990): how they arise, what perpetuates them, and how they can best be treated, or (preferably) prevented. Simply put, psychopathology is the study of mental disorders. In this report, we align ourselves as much as possible with the current classification of psychopathological disorders: the *Diagnostic and Statistical Manual for Mental Disorders*, fifth edition (DSM-5; APA, 2017) – as much as possible, because the context of the question (terrorism and psychopathology) often seriously hinders adequate diagnostics. Adequate diagnostics requires extensive analyses by clinical experts, such as psychiatrists or psychologists, and a minimum of cooperation by the patient. However, terrorists have often not been examined by a clinical expert, and validated and reliable instruments have often not been used for the diagnostics. Immediately prior to police intervention, the cooperation of terrorists will also be emphatically lacking; afterwards it is by definition limited to terrorists who have already been arrested.

The DSM-5 distinguishes more than 280 specific diagnoses, which can largely be organised into internalising disorders (e.g. anxiety and mood disorders), externalising disorders (e.g. addiction, psychopathy) and thought disorders (e.g. psychoses). Also included are neurodevelopmental disorders

in communication and social adjustment (in particular autism spectrum disorder). It seems obvious that none of these disorders is a sufficient or necessary condition for radicalisation or involvement in terrorism. It is more likely that various forms of psychopathology will play a role in the highly individualised process of radicalisation and terrorism, and then mainly as a complex factor.

Our report examines the connection along two lines. The first line (section 2.5) is empirical, mainly through the prevalence of psychopathology in general and specific disorders in terrorists. These prevalence rates are often compared to prevalence rates with relevant other groups, or the general population. It is then assessed whether certain disorders are overrepresented. The second line (section 2.6) is theoretical-conceptual, mainly based on expert theory. While the first line is based on a literature study, the second line also includes expert interviews and results from a focus group.

Definitions of terrorism and psychopathology used in this report

In order to investigate how often psychopathology occurs in terrorism (section 2.5), we will focus exclusively on research into psychopathology among radicalising individuals, violent extremists and terrorists who have actually broken the law, who were prepared to do so, or who have been stopped by security agencies for this purpose. A disadvantage of this choice is that studies of psychopathology among radicalising individuals with mainly radical attitudes are excluded. We are of the opinion, however, that knowledge of psychopathology among radicalising individuals without extremist behavioural characteristics can give a distorted picture. After all, radicalisation does not necessarily lead to terrorist (illegal) behaviour. Proven forms of psychopathology in this group may even serve as a protective factor for radicalised persons instead of a risk factor. Some anxiety disorders, for example, can prevent someone from daring to join a terrorist organisation. Furthermore, personal communication with an academic expert (Silke, 2018) shows that features of psychopathology are often found in individuals who show risk factors for radicalisation. However, the majority of this group will never commit or actively contribute to terrorist illegal violence. Finally, radicalisation is a term that can be controversial because a group of scholars wonder whether a radicalisation process always takes place or exists at all (De Goede, Simon, & Hoijtink, 2014). In short, in order to examine the relationship between psychopathology and terrorism as purely as possible, it is important to use those who aimed to break the law as the target group.

In order to investigate how psychopathology in combination with other violence-inducing factors can influence a radicalisation process towards terrorism, we will make use of studies into psychopathology in both radicalising individuals and terrorists in section 2.6. There is little evidence of the role of psychopathology in terrorists. The point of departure for this theorisation is also to offer professionals insight into the case management where radicalisation is accompanied by psychopathology. Nevertheless, future research should show whether the processes of psychopathology among radicalising individuals who do not become terrorists are different from those among radicalising individuals who do become terrorists.

2.4 Method

Literature review

For the systematic literature review, the PRISMA methodology[6] was used. According to this method, studies are identified via online databases, email requests to colleagues and reference lists of relevant studies. Specifically, we used the PsycINFO (psychological literature), Medline (general public health literature) and Worldwide Political Science Abstracts (political science literature) databases. No start date was used for the database search, so that all relevant articles were included. We also took a broad approach, using all relevant English search terms related to psychopathology (including specific DSM disorders), terrorism and radicalisation. See Appendix 1 for an overview of all search terms (PsycINFO). Furthermore, in July 2018 Google Scholar was used with the most relevant search terms and the first 100 hits were scanned for relevant missed articles. Other relevant articles were also searched via reference lists. Finally, we approached all first authors of the English publications that investigated the prevalence of psychopathology in terrorists via email for missed unpublished or grey (non-peer-reviewed) literature.

The search yielded 6,190 articles and books (studies). After removing the duplicates, 5,417 articles and books remained. We then included these sources based on an assessment of the title, abstract and content. The PRISMA flow diagram is illustrated in Figure 3. Irrespective of methodology, relevant books, theory-building articles, case studies and empirical prevalence articles were included. The content delineation was guided by the need to examine the relationship between: 1) psychopathology, radicalisation and terrorism; or 2) psychopathology and lone actor near neighbours (attackers of public figures (e.g. Fein & Vossekuil, 1999; James et al., 2007); and *school shooters* (e.g. McCauley et al., 2013)). Articles were excluded if they comprised only the following themes: 1) mental disorders of the victims of terrorism; 2) the link between psychopathology and personality traits such as religious fundamentalism and the personality trait of radicalism; and 3) purely theory-building, mostly psychoanalytic studies. Finally, studies on justifiers were not included (see the previous explanation on demarcation).

The PRISMA flow diagram at the end of this method section shows all the steps of the literature search. This model also includes the studies identified through Google Scholar, reference lists and expert consultations. Specifically for section 2.5 (Prevalence of psychopathology in terrorists), 23 prevalence studies were included.

Prevalence studies

Prevalence studies investigate how often a certain phenomenon occurs within a population, based on estimates in samples. The larger the sample, the greater the statistical power and generalisability of the results. Large samples of terrorists are not or hardly available. In our overview we include studies with a sample size of at least 25 terrorists.

[6] http://prisma-statement.org/

Interviews and focus group with experts

In addition to the literature review, 9 interviews with experts from three different fields were conducted: a) 4 academic experts, b) 4 practicing clinical psychiatrists and psychologists (therapists), and c) 1 professional. These three groups each have a specific theoretical or practical approach. Four themes formed the guideline for the interviews, namely: a) their conceptualisation of the key concepts of psychopathology, terrorism, radicalisation, lone actor terrorism, group terrorism, foreign fighters and near neighbours; b) their vision of the link between psychopathology and terrorism; c) where applicable, their assessment of the methodological quality of the research evidence; and d) their vision about priorities for future research. Finally, a focus group was organised. For this focus group, an expert from a municipality, a policy officer and a researcher from the Dutch police force met to specifically discuss priorities and practical aspects of future research. All interviewed experts decided how they wanted to be referred to in this review and gave written consent for this reference.

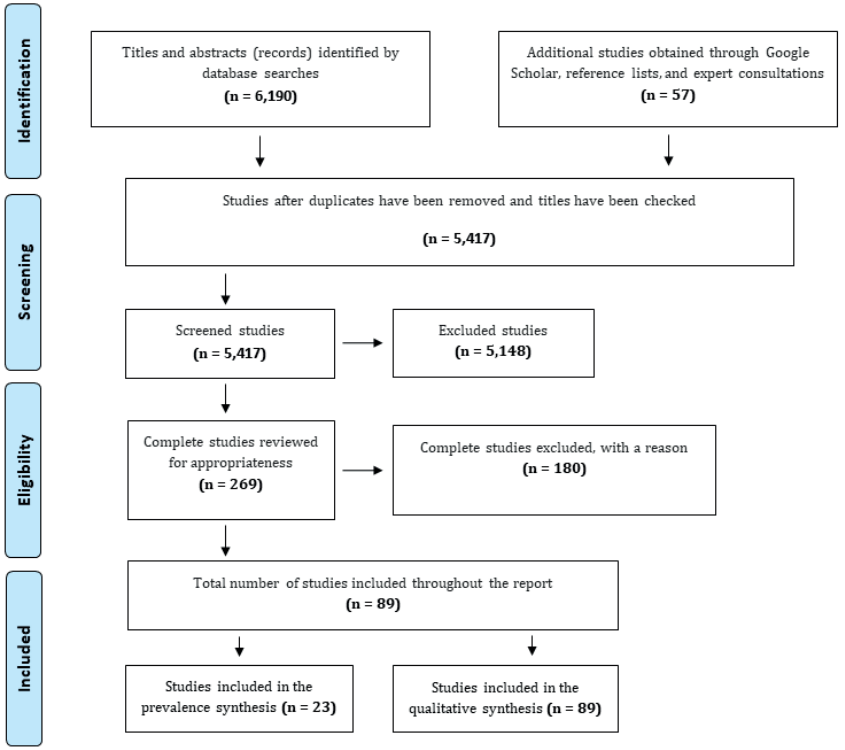

Figure 3. PRISMA[7] flow diagram of study selection.

[7] http://prisma-statement.org/

2.5 Prevalence of psychopathology among terrorists: Literature review

Introduction

The purpose of this section is to summarise the findings from the empirical research literature on the prevalence of psychopathology among terrorists in order to answer research question 1a:

1a. What mental disorders in relation to which forms of radicalisation/terrorism have been the subject of scientific research? What are the findings with regard to the relationship between mental disorders and terrorism?

Only studies in which the research group consisted of what we consider as terrorists (or radicalising individuals who broke – or attempted to break - the law) are looked at in this section. In addition, the studies had to have examined characteristics of psychopathology in their sample. Furthermore, the studies had to meet certain methodological conditions. More specifically, they had to come from peer-reviewed journals or books, have collected data systematically, describe the method, and mention quantitative statistics of psychopathology among terrorists. See Table 1 for an overview of included studies and prevalence rates.

We discuss the empirically established prevalence rates of psychopathology for lone actors, group terrorists (including foreign fighters) and suicide terrorists. For each study, attention is paid to the definition of the specific target group, time period, regional context, ideological motivation of the sample, and the method of data collection and diagnostics. Based on these elements (definitions, methods and diagnostic quality), the studies were evaluated and identified as good, sufficient or weak. Using the evaluations per subgroup, conclusions were drawn, whereby some studies were not taken into consideration. Some implications are also discussed.

The prevalence figures give an indication of the number of terrorists in whom characteristics of psychopathology have been found in a sample. If psychopathology occurs in terrorists to a comparable or lesser degree than in the general population, we cannot conclude that it is a specific factor at group level. Methodological limitations of the research looked at will be discussed in the overall conclusion, giving rise to some recommendations for future research.

Lone actor terrorism

Seven prevalence studies of the occurrence of psychopathology in lone actors were included on the basis of the criteria described. A classic study was conducted by Corner and Gill's research group (Corner & Gill, 2015; Corner et al., 2016; Gill et al., 2014). They compared the prevalence rates of psychopathology among 119 European and American lone actors from 1990 onwards, among 119 American and non-US group terrorists from 2001 onwards, and among the general population (base rate). The terrorists adhered to various ideologies. Terrorists were included on the basis of their behaviour if they had been convicted or killed in an attack. Terrorists were also included who did not themselves display violent behaviour, but who facilitated or encouraged the violent terrorist behaviour of others. The violence did not necessarily have to be against people. The researchers identified and included lone actors based on

he following criteria: 1) lone actors who had carried out an attack without the support of a larger group (N=87), 2) solo actors who had ties to a group but carried out their attack autonomously (N=21), and finally, 3) isolated dyads without connections to a group or network (N=11). Group terrorists had to be affiliated with a terrorist organisation. The researchers used public data sources to obtain information on the psychopathology of these terrorists. Specifically, they used the LexisNexis database, scientific articles, manifestos, subpoenas, affidavits, indictments, transcripts of court proceedings, court memoranda, government and expert witness reports and competency evaluations. Three independent coders divided the terrorists into certain diagnostic categories based on the ICD-10 categories for mental disorders. They also evaluated the quality and reliability of the source from which the diagnosis came. For example, if only a friend had indicated that a terrorist suffered from schizophrenia, this was insufficient to identify psychopathology.

The main finding of this study was that 31.9% of the lone actor group suffered from a mental disorder. Lifetime prevalence rates (i.e. referring to the occurrence of psychopathology across the life course) within the general population ranged from 12% (Nigeria) to 47.4% (United States), with an average of 27.43% (Corner et al., 2016). Moreover, they found that the odds of lone actors having a mental illness was 13.5 times greater than the odds that group actors suffered from mental illness. The more the terrorist acted alone, the more likely it was that this individual was suffering from a mental disorder. Compared to the base rate of the general population, there were three mental disorders that occurred more frequently among lone actors: schizophrenia (8.5%), delusional disorders (2%) and autism spectrum disorders (3.3%). Finally, the authors found a higher prevalence of psychopathology among single-issue motivated lone actors than among religiously (al-Qaeda) and right-wing extremist-inspired lone actors.

Gruenewald et al. (2013a, 2013b) studied far-rightist extremists between 1990 and 2010 within the United States. The psychological histories (here both complaints and diagnoses) of 47 lone actors and 92 group terrorists were compared. The ideology was defined broadly (e.g. also anti-abortion extremism). The included lone actors were perpetrators who had committed homicide. They were furthermore included in the study on the basis of behaviour, i.e. only if they had operated on their own in all phases, were not members of a far-right extremist group, and did not act on the instructions of a group leader. Group terrorists were included if they were members of a far-right extremist group, were directed by an extremist group, or had committed the ideologically motivated crime in a small cell. As a source, the researchers used the United States Extremist Crime Database (ECDB), which provides information on extremist crimes. Other public data sources were then used for detailed research, such as terrorism databases, watch-group reports, court documents, official sources and 26 web engines. The inter-rater reliability for this research was good (over 90%). This research shows that 40.4% of far-right extremist lone actors had a reported history of mental disorders prior to the crime. Among the other (group) terrorists this percentage was 7.6%, which significantly differed from the lone actor group.

De Roy van Zuijdewijn and Bakker (2016) examined the prevalence rates of psychopathology among 120 lone actors. The lone actors acted out of different ideologies, came from EU countries, and were active between 2000 and 2014. Terrorists were defined as lone actors if they had used (or threatened to use) violence as a loner or in a small cell. The formation, planning and attack were not directed or planned by other individuals or a group. School shooters were included if they wanted to

achieve a higher social goal and a larger audience with their attack. The researchers used public data sources (court proceedings and media reports). The lone actor was identified as psychopathologically vulnerable when there were indications of psychopathology, for example through reports by family members. An official diagnosis was therefore not required. The researchers found an indication of psychopathology in 35% of the lone actors. Since the World Health Organization (WHO) found that 27% of the general adult population has suffered from at least one clinical disorder in the past year, the researchers concluded that psychopathology is not that much more common among lone actors than in the general population. However, other sources indicated that the overall point prevalence in 2016 was 15.5%[8]. Furthermore, the percentage of indications for psychopathology was highest among school shooters (63%) and lowest among religiously inspired lone actors (24%).

Hewitt (2003) examined prevalence rates of psychopathology among 27 lone actors and 136 group terrorists in the United States. Lone actors were individuals (or came from a cell with up to three people), were not affiliated with a terrorist group, and were not members of an extremist organisation that acted on the orders of the group leader. Terrorist groups consisted of at least four individuals. Data on psychopathology was obtained through annual reports by the FBI, Trick's chronology, reports by journalists, watch-group reports, academic publications, and other media sources. This study also showed that the prevalence rates of symptoms of a mental disorder were higher among lone actors (22%) than among group terrorists (8.1%).

Pitcavage (2015) examined 35 cases of lone actors from the United States between 1993 and 2012, analysing lone actors who carried out a deadly terrorist attack in which the individual did not act as a member of a terrorist group or network, or on the instructions of a command or hierarchy. The ideological backgrounds were diverse, but a high percentage of the sample was motivated by right-wing extremist ideology. Pitcavage used data from the Anti-Defamation League's database for extremist-related murders. Psychopathology in moderate or substantial forms was detected in 20% of cases. In addition, psychopathology seemed possible in 11% of cases.

Spaaij (2010, 2012) studied the prevalence of psychopathology among 74 lone actors from 15 countries. The ideologies to which the lone actors were affiliated varied widely. The data was collected from the RAND-MIPT Terrorism Knowledge Base, supplemented by open source research. Spaaij indicated that psychopathology in general was considerably present among the lone actor group. In addition, he described five lone-actor case studies, four of which clearly had psychopathology in their history. Specifically, three lone actors had been diagnosed with a personality disorder and one with an obsessive-compulsive disorder. One lone actor had been treated for an anxiety disorder, and four others had experienced severe depression. Hamm and Spaaij (2017) further investigated a group of 121 American lone actor terrorists, using previous studies, biographies and memoirs, government documents, court documents, psychiatric evaluations and media reports. The authors found features of psychopathology in about 40% of lone actor terrorists. As is the case for many studies, these estimates were often not based on official clinical DSM diagnoses.

Finally, Perry, Hasisi and Perry (2017) examined lone actor terrorists (i.e. with no connection to an organisation, and not supported or commissioned by one) who had carried out vehicular attacks (62

[8] https://ourworldindata.org/mental-health

incidents) in Israel or the West Bank between 2000 and 2016. 56.5% did so because of their nationalistic/religious motivations. This study collected information on the mental health of these lone actors through Israeli Security Agency (ISA) documents and public data sources, such as court proceedings and decisions, the media and social media. Psychopathology was diagnosed in the lone actors when evidence of drug use, psychiatric consultations, hospital admissions or reports of severe behavioural disturbances were found. The researchers found an indication of a mental disorder in 8 (12.9%) of the 62 lone actor terrorists.

Scientific quality of evidence: Evaluation of lone actor terrorism studies

The studies discussed vary somewhat in terms of how they define lone actor terrorism, and also in the composition of the ideologies associated with it. As a result, the studies cannot be compared directly with each other. The quality of diagnostic data is limited in all studies due to the use of public data sources rather than actual (self-administered) expert diagnostic research (Corner & Gill, 2015). Studies are often unclear about the sources of diagnostic information and accept much information as indicative of psychopathology. Thus, most diagnostic results from public data sources should be interpreted with caution. For example, public data sources do not always clearly describe whether a clinical expert made the clinical diagnosis. If, for example, someone close to the lone actor shouts that he 'has always been somewhat autistic', other sources, such as the media, may copy this. Some studies (notably Gill and Corner et al., 2014, 2015, 2016) did analyse the diagnostic data as critically as possible, which makes their results more reliable. In any case, if the diagnosis was not made by a clinical expert, or was first established retrospectively, one cannot say with certainty whether the psychological disorder was actually manifest during the radicalisation process.

Conclusion on lone actor terrorism

The present study shows that the prevalence of psychopathology among lone actors is generally higher than among group terrorists. The percentages among lone actors fall between 12.9% and 40.4%. Especially right-wing extremist and single-issue ideology lone actors have been studied. The mental disorders that may be elevated in lone actors compared to the base rate in the general population are schizophrenia, delusional disorders and autism spectrum disorders. However, the studies suffered from substantial methodological and diagnostic limitations, so these results should be interpreted with caution.

Group terrorism

Seven prevalence studies documented the prevalence of psychopathology among group terrorists. In addition, as already described, there are three studies that used prevalence figures related to group terrorists as a comparison for the prevalence among lone actors (Corner & Gill, 2015; Gruenewald et al., 2013a; Hewitt, 2003). In summary, with regard to the latter studies, the prevalence of mental disorders among group terrorists was lower than among comparison groups. Corner and Gill (2015) estimated the prevalence at 3.4%, Gruenewald et al. (2013a) at 7.6%, and Hewitt (2003) at 8.1%; each of these rates

are relatively low compared to reported base rates in the general population.

Psychiatrists Lyons and Harbinson (1986) investigated prevalence rates of mental health diagnoses among 47 murderers who acted with a political or terrorist motive and 59 non-political murderers in Northern Ireland between 1974 and 1984. The sample consisted of accused murderers who were referred by a solicitor for psychiatric evaluation. The presence of psychopathology was investigated through interviews with the accused murderers and family members, a questionnaire on psychiatric history and psychiatric diagnoses, hospital records, testimonies, case notes and other statements. The study found that 16% of political murderers had evidence of a mental disorder, compared to 58% of non-political murderers. However, there are several aspects of the study that suggest that the estimate of the prevalence of psychopathology was lower than the reality. For instance, the (political) murderers were not included in the analysis if they had been referred to other psychiatrists than the researchers, or if they had not been referred for psychiatric examination at all. It is also relevant that non-political murderers were as a rule examined by a clinician, whereas this was not the case for terrorists. Finally, the researchers noticed that psychiatric assessments could depend on whether the psychiatrist worked for the defence or the prosecution camp.

LaFree, Jensen, James and Safer-Lichtenstein (2018) examined the prevalence rates of psychopathology among 1,473 violent extremists and non-violent extremist persons in the United States between 1948 and 2013. The study included non-violent extremists and violent extremists who exhibited ideologically motivated violent criminal behaviour, had joined an extremist organisation, or associated with terrorist groups whose leader had been prosecuted for violent crimes. Based on their first identified criminal act, individuals were categorised as either violent (i.e. they had exhibited violent behaviour against people or professed this intention) or non-violent. To examine psychopathology, they used the Profiles of Individual Radicalization in the United States (PIRUS) database, which contains publicly available sources including court documents, newspaper archives, public non-governmental reports, online news articles, government reports and terrorism datasets. The outcome of the inter-rater reliability check proved to be satisfactory. A psychiatric history was concluded when a mental health diagnosis was evident, but also when self-reports or testimonies of friends or family indicated a mental illness. In 80.7% of the terrorists and radicalising individuals no data on mental disorders was found. Of the 19.03% (N=284) for which data was available, 43.7% of the extremists had a history of psychopathology. Of the total sample, 8.4% had indications of a psychological disorder. Interestingly, several statistical analyses that deal with missing data by estimating the data showed that there is a relationship between psychopathology and violent extremism within a sample of radicalising individuals.

Bubolz and Simi (2015) examined the psychiatric histories of 34 American former white supremacists. There was great diversity among the terrorists and radicalising individuals in this sample: terrorists had either belonged to a hate group and carried out less-violent criminal activities, such as vandalism, or had committed violent crimes, such as murder. Through interviews, the researchers evaluated the terrorists' life histories and examined their motivations for leaving extremist groups. They report that 32% of the sample disclosed that they were having mental health problems prior to or during their involvement with the hate group. In addition, 44% reported having suicidal thoughts at some point during their lives. In an unpublished study, the researchers even report that the prevalence of psychological complaints in a larger (overlapping) sample of 44 persons was 57%, and that 62% had

named suicidal complaints. However, it is unclear whether this sample meets our criteria for inclusion in this report. In addition, the study also had serious diagnostic limitations, particularly because the self-report of psychological complaints was not tested against an independent clinical judgement.

Bazex, Bénézech and Mensat (2017) examined the prevalence of psychosis among terrorists in prison. To this end, they examined 112 jihadist terrorists who had been convicted (85%) or arraigned (15%) under French anti-terrorism legislation between 2015 and 2016. 14% of these cases were justifiers, i.e. non-violent terrorists. Information on mental disorders was collected from personal files from penitentiary facilities, which included a psychological profile and evaluation. The researchers reported that 11 detainees had a psychotic disorder (10%). In this group, a higher level of violent offences and a higher use of alcohol and cannabis were also detected. A limitation of this study is that it is not clearly stated whether it concerns group terrorists or lone actors.

In 2015, Weenink published an empirical study into the prevalence of psychopathology among 140 radicalised travellers (jihadists) from the Netherlands. This group were regarded by the Dutch police as potential or actual foreign fighters. We therefore categorise them as potential terrorists. Weenink (2015) examined various police databases, including police reports, reports for the Public Prosecutor's Office or prosecutors' offices, civil registrations, residential histories and criminal records. 6% of the travellers appeared to have a mental health diagnosis, and 14% of the travellers had a history of problematic behaviour (e.g. indications of problematic behaviour or psychopathology without a specific diagnosis). Furthermore, Weenink (2015) noted that the sample had a higher prevalence of schizophrenia (2%) and psychosis (1.4%) than is reported in the general population according to the DSM-5 (0.3 to 0.7% for schizophrenia and 0.2 to 0.5% for psychosis). However, the above results should be interpreted with caution as the researcher did not have access to formal psychiatric reports. Mental health professionals are also not allowed to share data with security services unless this is done under strict restrictions. Therefore, the diagnostic data from police reports does not necessarily come from clinical experts.

Van Leyenhorst and Andreas (2017) studied the prevalence rates of mental disorders among a sample of 26 Dutch (potential) foreign fighters (jihadists) using data from the Netherlands Institute for Forensic Psychiatry and Psychology (NIFP). To this end, they used Dutch Probation Service (DPS) pre-sentence reports. They found that 15% of the sample had been diagnosed with a mental disorder. In a further 12%, there was a suspicion that a mental disorder was present. Specific diagnoses were ADHD, psychotic disorder, borderline personality disorder and post-traumatic stress disorder (PTSD). However, the study did not compare these figures with other groups.

Gottschalk and Gottschalk (2004) compared personality traits of 90 Palestinian and Israeli terrorists who had killed unarmed civilians with those of 61 Palestinian and Israeli non-terrorist civilians. Unfortunately, the statistical and diagnostic procedures were very vaguely defined, making the results difficult to interpret, so we rated the study as 'weak'. The researchers administered the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) and the pathological hate scale to the sample. In addition, they conducted semi-structured interviews with 57 terrorists. They reported that the terrorists, regardless of their gender and background, scored higher on the following MMPI subscales: Psychopathic Deviate (Pd-4), Paranoid (Pa-6), Depressive (D-2) and Hypomanic (Ma-9). In addition, fundamentalists in the terrorist group scored higher on the Schizophrenic scale (Sz-8) than the comparison group. It should

be noted, however, that in the MMPI-2 scale names are completely inadequate for interpretation (due to the method of scale construction). Moreover, these results should be interpreted with caution because they were obtained after prosecution and imprisonment.

Scientific quality of evidence: Evaluation of group terrorism studies

With regard to the nature of the sample and definitions of terrorism used, the studies are usually clear, albeit extremely diverse. For example, Bubolz and Simi (2015) included both terrorists and less-violent radicalising individuals in their entirety, which meant that the study should be interpreted with caution. In addition, it is sometimes unclear whether there were lone actors in the samples (e.g. in the study by Bazex et al., 2017), and the ideological motivations are not always clearly described and analysed. Finally, a separate study group examined foreign fighters. As a result, the studies cannot be compared in one category.

The studies on group terrorism generally suffer from the same methodological limitations as lone actor studies, mostly related to the use of public data sources and the absence of relevant comparison groups. The problem of missing data in public data sources is very clear (e.g. LaFree et al., 2018). In public data sources, little diagnostic information is used that comes from clinical experts, partly due to the professional secrecy that clinical experts must uphold (see for example Weenink, 2015). There are also studies that have carried out primary diagnostic research on terrorists, such as the study by Lyons and Harbinson (1986). However, this study is limited in that psychopathologically vulnerable terrorists are not necessarily referred for psychiatric consultation, whereas non-terrorist murderers are. It is therefore possible that also in this study there is a selection bias due to missing data and that the independence of the judgement of the psychiatrists can be questioned in the context of criminal trials. Finally, not all studies clearly state whether the psychopathology was already present prior to the terrorist act.

Conclusion on group terrorism

The current data shows varying results regarding the prevalence of psychopathology among group terrorists. In general, we could not find convincing evidence that psychopathology seems to be overrepresented among group terrorists compared to the general population base rates. Among foreign fighters the estimates ranged from 6% to 15%, with an extra 14% also showing behavioural problems and characteristics of psychopathology (insufficient for a formal diagnosis). These studies usually did not use comparison groups and it is not clear whether an expert psychiatrist or psychologist made the diagnoses.

Suicide terrorism

Terrorists can carry out attacks in various ways. One form or modus operandi deserves its own analysis because of the relatively high number of victims associated with it and its increased frequency worldwide: suicide terrorism. Merari et al. (2009) showed that in the US, only 3.3% of terrorist attacks in 2007 were suicide attacks, but they caused 25.3% of deaths. Some researchers argue that

psychopathology associated with suicidal tendencies plays a major role in suicide terrorists. We discuss prevalence studies of three research groups where the role of psychopathology among suicide terrorists was central.

Lankford (2013) studied suicidal tendencies in suicide terrorists. To this end, he examined the occurrence of suicide risk factors among 12 suicide terrorists, 18 rampage shooters, 16 school shooters and 35 workplace shooters from the United States between 1990 and 2010. This comparison is relevant because personal problems of these comparison groups that correspond to risk factors for suicide are often the motivator behind the suicide attack. Lankford (2013) used suicide letters, love letters, manifestos, diaries, the internet, martyrdom videos, scientific reports, government reports and media reports, existing datasets and court documents. The results confirmed that the suicide terrorists did not show different risk factors for suicide than the rampage and school shooters. They experienced similar personal problems, such as marginalisation, family problems, problems at work or at school and crisis situations. Lankford (2014) further found risk factors for suicide in 130 suicide bombers from Africa, Asia, the Middle East, the United States and Europe, and found characteristics of depression, PTSD and other forms of mental health problems in 44 suicide bombers. As a side note, McCauley (2014) indicated that there were approximately 3,500 suicide bombers in total, which means that the evidence relates to a small subgroup.

Merari et al. (2009) investigated whether failed suicide terrorists are characterised by certain personality disorders and/or pathological traits. The sample consisted of 15 individuals who had been arrested for a failed suicide attack, and two comparison groups consisting of 12 matched non- suicide terrorists, and 14 suicide attack leaders. Data was collected by clinical psychologists in semi- structured interviews and psychological tests (e.g. thematic apperception test, Rorschach inkblot test and the House-Tree-Person drawings) from these terrorists in prison. Psychologists used the data to analyse ego strength (i.e. the ability to cope with internal and external stress and emotions), suicidal tendencies, depression, PTSD, psychopathic tendencies and personality styles. Subsequently, clinical psychologists and a clinical specialist, blinded to the group classifications, analysed the reports and came to a consensus. Inter-rater reliability was adequate (77% to 92%). Suicide terrorists were more often found to have intermediate ego strength, while the leaders were more often found to have normative levels. These results show that the suicide terrorists are psychologically less integrated, although it should be noted that ego strength is not a univocal concept that can be measured unambiguously. We therefore classified the quality of this evidence as 'weak'.

Furthermore, qualitative personality patterns, group behaviour, biography, and psychological tests were found to differ between groups. For example, suicide terrorists were more likely to exhibit Cluster C (avoidant and dependent) personality styles (69.2%) than non-suicide terrorists (20%) and leaders (8.3%). On the other hand, compared to the suicide group (30.8%), the non-suicide terrorists (80%) and the leader group (91.7%) showed more Cluster B (impulsive and emotionally unstable) personality styles. Failed suicide terrorists (0%) showed fewer psychopathic traits than the non-suicide terrorists (25%). Among the leaders, only one person showed psychopathic characteristics. Furthermore, suicide terrorists (40%) suffered more from suicidal tendencies than the other two groups (both 0%). They also found that 53.3% of suicide terrorists suffered from depression, significantly more often than non-suicide terrorists (8.3%), but not significantly different from leaders (21.4%). Finally, 20% of suicide

terrorists with depressive tendencies also suffered from PTSD, compared to 0% of the other two groups.

Brym and Araj (2012), however, conclude that the study by Merari et al. (2009) should be critically examined and that psychopathology does not play a greater role among Palestinian suicide terrorists than among other Palestinians. They examined a randomised sample of 42 Palestinian suicide terrorists who committed attacks in Israeli territory between 2000 and 2005 by interviewing at least two family members or close friends and by administering questionnaires to family members and close friends. Specifically, they asked about characteristics of depression among the terrorists and found that 24% exhibited these characteristics. They concluded that this number is low considering the sample comes from a conflict area where depression is likely to be more common. A major caveat to this research is that family members and close friends may be quite or wholly unwilling to acknowledge psychopathology given the taboo, but above all the, also financial, importance of the martyrdom of the suicide terrorist. After all, if martyrs show signs of psychopathology, this could infringe on the terrorist propaganda and credibility of these organisations' struggles.

Scientific quality of evidence: Evaluation of suicide terrorism studies

The results of these prevalence studies of suicidal tendencies in suicide terrorists are insufficiently robust to draw any unequivocal conclusions. In the general literature, there seems to be no consensus on the question to what extent a (depressive) desire for suicide can incite a person to commit a terrorist attack. Because the studied target groups and definitions differ considerably per study, it is difficult to draw general conclusions. For example, suicide terrorists may have carried out the attack in isolation or through the influence of a group. In addition, the research groups are also relatively small, especially in Merari et al. (2009) and Brym and Araj (2012). Finally, for research on suicide terrorism in general, it is difficult to collect primary data, as successful suicide terrorists have died during or after their attack. Merari et al. (2009) solved this by researching unsuccessful suicide terrorists. Critical researchers, however, stated that the study did not examine real suicide terrorists for this reason, for example because it cannot be said with certainty that all these terrorists actually wanted to commit suicide. The fact that the suicide terrorists had not carried out their attack and that they were in prison may also have been a cause of their psychological complaints.

The methodological limitations obviously make it difficult to come to clear conclusions. Once again, researchers are faced with methodological problems due to the use of public data sources. There is also a lot of room for bias in (suicide) terrorism studies, which hampers sound research. The risk of political bias is mentioned more often, especially in the evaluation of suicide terrorism studies. Both research target groups and the researchers themselves can be subject to bias, which is reinforced when the method is less systematic and objective. This can especially be the case with martyrs if the diagnostic information comes from sources in the environment of these martyrs, who may be quite or wholly unwilling to acknowledge psychopathology given the taboo and the (financial) importance of the martyrdom of the suicide terrorist. Indeed, if martyrs show signs of psychopathology, it will infringe on the terrorist propaganda and credibility of the struggle of these organisations. Lankford (2014) described an example in which suicide terrorist leaders indicated that their suicide terrorists were normal individuals who were psychologically healthy. However, further research showed that the young men this leader was talking about were never suicide terrorists. The possibility of political bias among the

researchers lies in the fact that many countries are at war with terrorist organisations. With the goal of winning a psychological war, researchers and governments might be more likely to describe (suicide) terrorists as mentally ill in order to negate the power of ideology to encourage suicidality (McCauley, 2014). Systematic bias-avoiding research is thus especially crucial in this field.

Diagnostic reliability seems to be the main limitation in these studies, so diagnostic results should be interpreted with caution. For example, the diagnostic information of Lankford (2014) and Brym and Araj (2012) comes from public sources or unreliable sources and not from clinical experts. Given the potential for bias, this is problematic. In addition, cultures have different perceptions of death, suicide and martyrdom (Aggarwal, 2009), which may make it more difficult to compare outcomes of suicide terrorists from non-Western conflict zones and Western areas. After all, psychopathology is a culturally dependent concept. In Western cultures, the wish to die may be more readily seen as a sign of psychopathology. Having said that, with the DSM system, one should explicitly take culture into account. Finally, psychopathological or depressive causes can be attached to a desire to commit suicide, while various other personal reasons can lead to suicidal ideation. For example, a person may also want to commit suicide in order to avoid punishment in the future or to provide financial support to the family through martyrdom. For this reason, it is important, but very difficult, to detect the exact reason behind the desire for suicide (Lankford, 2016).

Conclusion on suicide terrorism

The results of prevalence studies on suicide bombers appear to be insufficiently robust to allow any firm conclusions to be drawn. Future research should show whether psychopathology plays a significant role in suicide terrorism (e.g. as a method to positively redefine a psychopathological suicide wish), but as explained earlier, this is difficult and complex research.

Table 1. Overview of studies in the prevalence analysis

Lone actor terrorism								
Authors	**Research group (N)**	**Inclusion criteria research group**	**Country/ region and period**	**Ideology**	**Comparison group**	**Data/assessment**	**Main findings**	**Study evaluation**
Gill and Corner (2014, 2015, 2016).	119.	Terrorists who had been convicted of or died because of an attack. Also included are terrorists who themselves displayed non-violent behaviour, but who facilitated or encouraged the terrorist violent behaviour of others. Lone actors (N=87), 2) solo actors (with group ties) (N=21), and 3) isolated dyads (without group ties)(N=11) were examined.	The US and Europe.	Various.	119 matched US and non-US group terrorists, and prevalence base rates for mental illness in the general population.	LexisNexis database, scientific articles, manifestos, subpoenas, affidavits, indictments, transcripts of court proceedings, court memoranda, government and expert witness reports and competency evaluations. Three independent coders divided the terrorists into certain diagnostic categories based on the ICD-10.	The chance of psychopathological features was 13.5 times higher in lone actor terrorists (31.9%) than in group terrorists (3.4%). Specifically, schizophrenia (8.5%), delusional disorders (2%) and autism spectrum disorders (3.3%) were elevated in lone actors compared to the general population base rate. The more the lone actor acted alone, the more often psychopathology occurred.	Provides good insight.
Gruenewald, Chermak and Freilich (2013a, 2013b).	47.	Perpetrators who acted alone in all phases and committed homicide, and were not members of any extremist group. Some lone actors may have communicated with others.	The US between 1990 and 2010.	Far right.	92 group perpetrators who had connections with extremist groups, were led by an extremist group, or committed the crime in a small cell.	United States Extremist Crime Database (ECDB) and public data sources, such as terrorism databases, official sources, watch-group reports, court documents and 26 web engines.	Psychopathological characteristics were found to be significantly more likely present in lone actor terrorists (40.4%) than in group terrorists (7.6%).	Provides good insight.
De Roy van Zuijdewijn and Bakker (2016).	120.	Violent perpetrators (or plotters of violence) who, as a lone actor or in a small cell, devised and planned an attack. School shooters are included if they wanted to achieve a higher social goal with their attack.	EU countries between 2000 and 2014.	Various.	Not applicable.	Public data sources with court documents and media reports.	Psychopathological characteristics were found in 35% of the lone actor terrorists.	Provides good insight.
Hewitt (2003).	27.	Individuals (from a cell with up to three people) who were not members of a terrorist group, or who were not members of an extremist organisation for which they acted on the orders of the group leader.	The US between 1955 and 2001.	Various.	136 group terrorists from a cell with at least 4 people.	Annual reports by the FBI, Trick's chronology, reports by journalists, watch-group reports, academic publications and other media sources.	Psychopathological characteristics were found more often in lone actor terrorists (22%) than in group terrorists (8.1%).	Provides sufficient insight.
Pitcavage (2015).	35.	Perpetrators who committed lethal attacks as individuals (not members of a group) and not by order of a command or hierarchy.	The US between 1993 and 2012.	Various.	Not applicable.	Anti-Defamation League's database for extremist-related murders and killings.	Psychopathological features, in moderate or substantial forms, were detected in 20% of cases. In addition, psychopathology seemed possible in another 11% of the sample.	Provides sufficient insight.
Spaaij (2010, 2012) and Hamm and Spaaij (2017).	74 or 121.	Perpetrators who had committed violence as individuals, and not as members of a group or by order of a command or hierarchy.	15 countries between 1968 and 2007 and the USA between 2001 and 2015.	Various.	Not applicable.	RAND-MIPT Terrorism Knowledge Base, studies, biographies, memoirs, government documents, court documents, psychiatric evaluations and media reports.	Psychopathological characteristics were found in a significant proportion of the sample of 74 lone actor terrorists. Psychopathological characteristics were detected in approximately 40% of the 121 lone actors.	Provides sufficient insight.
Perry, Hasisi and Perry (2017).	62.	Attackers who acted with a vehicle and without organisational connection, support or direction.	Israel/ West Bank between 2000 and 2016.	Various.	Not applicable.	Documents from the Israeli Security Agency (ISA) and public data sources (court proceedings and decisions), media and social media.	Characteristics of psychopathology were found in 12.9% of lone actors.	Provides sufficient insight.

Group terrorism Authors	Research group (N)	Inclusion criteria research group	Country/ region and period	Ideology	Comparison group	Data/assessment	Main findings	Study evaluation
Lone actor studies: (Corner et al., 2016; Gruenewald et al., 2013; Hewitt, 2003).	119, 92 and 136.	Group terrorists (see relevant lone actor studies above).	The US and Europe.	Various.	119, 47 and 27 lone actor terrorists.	Public data sources (see relevant lone actor studies above).	The prevalence of mental disorders among group terrorists was lower than among (lone actor) comparison groups. Corner et al. (2016) estimated the prevalence at 3.4%, Gruenewald et al. (2013) at 7.6%, and Hewitt (2003) at 8.1%.	Provides good insight.
Lyons and Harbinson (1986).	47.	Political assassins referred for psychiatric assessment.	Northern Ireland between 1974 and 1984.	Political motivations.	59 non-political killers.	Interviews with the accused murderers and family members, a questionnaire on psychiatric history and psychiatric diagnoses, hospital records, testimonies, case minutes and other statements.	Psychopathological characteristics were detected more often in non-political murderers (58%) than in political murderers (terrorists) (16%).	Provides good insight.
LaFree, Jensen, James and Safer-Lichtenstein (2018).	1.473 (N=284 without missing data).	Violent extremists who displayed violent behaviour or professed intent. Furthermore, they had joined an extremist organisation, or associated themselves with terrorist groups whose leader had been prosecuted for violent crimes.	The US.	Various.	Non-violent radicalising individuals who had joined an extremist organisation or who associated with terrorist groups.	The Profiles of Individual Radicalization in the United States (PIRUS) database, which contains publicly available resources including court documents, newspaper archives, public non-governmental reports, online news articles, government reports and terrorism datasets.	Multiple statistical analyses, dealing with missing data by estimating these values, showed that there is a relationship between psychopathology and violent extremism within a sample of radicalising individuals.	Provides sufficient insight.
Bubolz and Simi (2015).	34 or 44.	White supremacists from a hate group who had carried out criminal activities (e.g. vandalism or murder).	The US.	Far right.	Not applicable.	Interviews.	Psychopathological characteristics were detected in 32% and 57% of the sample. Suicidal thoughts were detected in 44% and 62% of them.	Provides sufficient insight.
Bazex, Bénézech and Mensat (2017).	112.	Individuals who had been convicted (85%) or arraigned (15%) under French anti-terrorism legislation between 2015 and 2016.	France.	Various.	Not applicable.	Personal files (from penitentiary institutions), containing a psychological profile and evaluation.	Psychotic features were identified in 10% of terrorists.	Provides sufficient insight.
Weenink (2015).	140.	Potential or actual travellers.	The Netherlands.	Jihadist.	DSM-5 prevalence rates of schizophrenia among the general population (between 0.3 and 0.7%) and of psychosis among the general population (from 0.2 up to 0.5%).	Police databases, police reports, reports for the Public Prosecutor's Office or prosecutors, civil registration, residential history and criminal records.	Psychological diagnoses were found in 6% of the travellers and in 14% there were indications that they exhibited problematic behaviour or psychopathology without a specific diagnosis. The prevalence rate of schizophrenia was 2%, and psychosis was 1.4%.	Provides sufficient insight.
Van Leyenhorst and Andreas (2017).	26.	Potential or actual travellers.	The Netherlands.	Jihadist.	Not applicable.	DPS (Probation Service Advice) pre-sentence reports.	DSM diagnoses were found in 15% of the travellers. In 12% there was a suspicion of a mental disorder.	Provides sufficient insight.
Gottschalk and Gottschalk (2004).	90.	Terrorists who had killed unarmed civilians.	Palestine and Israel.	Various.	61 matched Palestinian and Israeli non-terrorist civilians.	MMPI-2.	Terrorists scored higher on the following MMPI subscales: Psychopathic Deviate (Pd-4), Paranoid (Pa-6), Depressive (D-2) and Hypomanic (Ma-9). In addition, terrorist fundamentalists groups scored higher on the Schizophrenic Scale (Sz-8) than the comparison group.	Provides weak insight.

Suicide terrorism								
Authors	**Research group (N)**	**Inclusion criteria research group**	**Country/region and period**	**Ideology**	**Comparison group**	**Data/assessment**	**Main findings**	**Study evaluation**
Lankford (2013, 2014).	130 (comparison study N= 12).	Suicide terrorists.	Asia, Africa, USA, Middle East and Europe between 1990 and 2010.	Various.	Comparison study: 18 rampage shooters, 16 school shooters and 35 workplace shooters.	Suicide letters, love letters, manifestos, diaries, the internet, martyrdom videos, scientific reports, government reports and media reports, existing datasets and court documents.	For 130 suicide terrorists, evidence was found that they showed risk factors of suicide and for 44 of them, characteristics of depression, PTSD and other mental disorders were found. Suicide terrorists did not differ in their risk factors for suicide from the rampage and school shooters. These included personal problems, such as marginalisation, family problems, problems at work or school and crisis situations.	Provides sufficient insight.
Merari et al (2009).	15.	Failed suicide terrorists whose attacks did not succeed or who were caught in advance by security forces.	Palestine and Israel.	Various.	12 non-suicide terrorists and 14 organisers (leaders) of the suicide attack.	Clinical psychologists, blind to the group divisions, conducted semi-structured interviews and interpreted psychological tests (e.g. TAT, Rorschach inkblot test and the House-Tree-Person drawings).	Suicide terrorists (69.2%) were more likely to exhibit avoidant and dependent personality styles than non-suicide terrorists (20%) and leaders (8.3%), but less likely to exhibit impulsive and emotionally unstable personality styles (30.8%, 80% and 91,7%). Suicide terrorists (0%) had fewer psychopathic traits than non-suicide terrorists (25%) and leaders (7.1%), but more suicidal tendencies (40%, 0% and 0%, respectively) and depressive tendencies (53.3%, 8.3% and 21.4%, respectively). Finally, 20% of suicide terrorists with depressive tendencies also suffered from PTSD (0% in the other two groups).	Provides sufficient insight.
Brym and Araj (2012).	42.	Suicide terrorists.	Palestine and Israel.	Various.	Not applicable.	Interviews with and questionnaires from family members or close friends.	Characteristics of depression were detected in 24% of suicide bombers.	Provides insight.

General conclusion prevalence studies

The prevalence studies into psychopathology among terrorists that have just been described show that no single psychopathological profile of terrorists can be found. Moreover, mental disorders are generally also not useful for statistically predicting who will (or will not) commit a terrorist act in the general population. For any disorder, even if it is found relatively more frequently in lone actor terrorists, the vast majority of people suffering from it will never feel drawn to radicalisation or terrorist activities. In terms of policy, psychopathology in itself is not useful for statistically predicting who will become a terrorist in the general population. Comparable to the problems in predicting suicide and other (extreme) forms of criminality, the *base rate* for both psychopathology and terrorism will also be too low to produce usable predictions. Predictions will therefore inevitably lead to many false positives and so will even be counterproductive. However, the present results can be of importance in the treatment and understanding of cases in which psychopathology meets radical ideology and behaviour (think of case management). For this understanding, we will elaborate in section 2.6 on how relevant forms of psychopathology can play a role in lone actor terrorism.

The available evidence shows that the prevalence of psychopathology among lone actors is high, and higher than among group terrorists. The percentages among lone actors fall between 12.9% and 40.4%. The lone actors studied acted on the basis of various ideologies, but the studies in question mainly examined right-wing extremist and single-issue lone actors. The mental disorders found to be elevated in lone actors compared to the general population base rate were schizophrenia, delusional disorders and autism spectrum disorders. Furthermore, the following mental disorders were found in some lone actors: personality disorders, obsessive-compulsive disorder, anxiety disorder and depressive disorder. There is no strong evidence that psychopathology is elevated in group terrorists and suicide terrorists compared to the general population base rates. However, a number of studies do provide indications that psychopathology may occur in a small minority of violent (suicide) terrorists (depression and suicidality), foreign fighters (schizophrenia and psychosis), American right-wing extremists and French and jihadists in conflict situations, but the evidence is still too limited to be able to draw more definitive conclusions.

The prevalence studies described suffered from a number of methodological limitations, which have already been described in detail. In addition, there are problems with the quality of the diagnostics. Optimal diagnostics requires a minimum of cooperation from the patient. Immediately before legal intervention this cooperation will usually be lacking, and afterwards it is often limited to (failed) terrorists who have already been arrested. In addition, in certain cultures there is a stigma attached to psychopathology, as a result of which fewer people may seek help for, or inform others of, their psychological problems (De Roy van Zuijdewijn & Bakker, 2016). In addition, only Lyons and Harbinson (1986) and Merari et al. (2009) have conducted psychological assessments as clinical experts. Finally, it is often difficult to rule out the possibility that the psychological disorder was actually present during the radicalisation process and played a role in it. It is quite possible that the problem arose because of later traumatic experiences during terrorist activities, because of presence in conflict areas, or because of contact with prisons, authorities, convictions or interrogations (Corner, Bouhana, & Gill, 2018; e.g. Merari et al., 2009; Weatherston & Moran, 2003).

2.6 Psychopathology and the development towards radicalisation and terrorism: Theoretical basis

Introduction

Psychopathology can be involved in various ways in different phases of the radicalisation process, but it can also be independent of the radicalisation process (Corner et al., 2018). In this section we want to offer insight into the possible role of psychopathology and its relationship with other factors that promote violence in a radicalisation process. Specific research on such processes is scarce, and relies heavily on case histories. As a result, this section is of a theoretical and speculative nature. We will use articles and case studies that are purely theory building at our own discretion, and incorporate the results of our expert interviews and focus group. The description of psychopathology remains oriented towards the DSM-5 conceptual framework (and where necessary the translation to earlier and other systems will be made as well as possible). We hope that these insights can be useful for professionals in the approach and management of a terrorism case in which psychopathology seems to be present.

In this section, we will focus on questions 1b, 1c and 1d:

1b. Through which mechanisms does (mutual) influence take place? What factors play a role in this?
1c. Are the factors/mechanisms that play a role in radicalisation/terrorism found in a similar way in other problematic behaviour? If so, which groups are these? What does this say about the risk that these factors/mechanisms may lead to radicalisation/terrorism?
1d. Are there theories and/or models that can describe/explain the (possible) influence of mental disorders on radicalisation/terrorism? If so, what are they?

In discussing the role of psychopathology, we again start from the distinction between lone actor and group terrorists. First, suggestions are made as to why psychopathology might be relevant among some lone actor terrorist cases. Next, models are presented that describe with which other violence-supporting factors psychopathology in lone actor terrorists may be associated. *Near neighbour* studies are cited to investigate whether these models can be further supported. Finally, the most relevant mental disorders are described in terms of how they may play a role in lone actor terrorists (and if applicable all types and forms of terrorism). For group terrorists, some well-known explanatory models are discussed that focus mainly on socio-psychological risk factors. We present how psychopathology might interact with these factors for individual and rare cases where a violent extremist or terrorist also suffers from a mental disorder. Finally, the role of psychopathology in terrorist group leaders is briefly discussed.

Lone actor terrorism

Psychopathology in lone actor terrorism

There are various possible explanations as to why psychopathology occurs more often in lone actors than in group terrorists. Psychopathology may be less prevalent among group terrorists via (self-) selection, as people with certain, more severe forms of psychopathology are judged to be less useful to

the group, because of a perceived lack of reliability, or because of shortcomings in adequately following orders and displaying the desired internal discipline (Corner et al., 2016; Miller, 2006; Spaaij, 2010). Research does show, however, that terrorists with certain forms of psychopathology are quite capable of acting in a goal-oriented manner (Corner & Gill, 2015; Hamm & Spaaij, 2017). It is also possible that the lone actor terrorist does not want to join groups because extremist groups do not want to commit themselves to the (excessive) violence that the lone actor desires (Gruenewald et al., 2013b).

Another explanation might potentially lie in the psychopathology-related difference in the readiness to use violence directly against people. Group terrorists, as opposed to lone actor terrorists, do not always carry out the violent attack themselves, but may, for example, only support attacks indirectly. For example, there is evidence that psychopathology is more common among violent extremists than among non-violent extremists (LaFree et al., 2018). In addition, lone actors with a mental illness in Corner and Gill's (2015) sample seemed to be more likely to have a violent past and the desire to hurt someone compared to those without a mental illness. The theory that lone actor terrorists may be more likely to commit interpersonal violence is supported by findings that the 53% of lone actors who legally owned and used a firearm prior to the attack were also known to have a mental disorder (De Roy van Zuijdewijn & Bakker, 2016). Future research should test and clarify whether the readiness to use immediate violence is actually more common among lone actor terrorists than among group terrorists.

Models for lone actor terrorism

Two research groups have presented strong data and an influential model, respectively, on how psychopathology and other risk factors for violence are related in lone actor terrorists: Corner and Gill (2015) and Meloy (Meloy & Genzman, 2016; Meloy & Yakeley, 2014).

Corner and Gill (2015) investigated which risk factors were significantly more common among lone actors with a mental illness compared to lone actors without a mental illness (N=119; see section 2.5 for a description of this study). It was found that lone actors with a psychopathological vulnerability (hereafter LAPP) had generally experienced more discrimination/ bias and increased stress levels immediately prior to the attack. Furthermore, LAPP diagnosed with schizophrenic disorder were significantly more likely to have exhibited violent behaviour prior to the terrorist act than lone actors without a mental illness. LAPP were also more likely to have experienced stressful life changes or chronic stress symptoms. These stressors were especially prevalent among lone actors with schizophrenia and mood disorders and among lone actors with multiple (comorbid) disorders. Furthermore, LAPP with various comorbid symptoms, mood disorders or developmental disorders more often had divorced parents. LAPP also are more likely to have a radical partner. Finally, Corner and Gill (2015) found that LAPP with comorbid disorders were more likely to have stockpiled weapons.

Contrary to expectations, the researchers found no support for the idea that LAPP lived in isolation more often than lone actors without a mental illness. However, Corner et al. (2018) did find that lone actors who had been treated for a mental disorder were more likely to adhere to a radical ideology through isolation and the use of an online environment. In line with this, De Roy van Zuijdewijn and Bakker (2016) found that 50% of LAPP were socially isolated, while this was only the case for 17% of non-mentally ill lone actors. LAPP were also no more likely to have a criminal history than lone actors *w*ithout a mental

illness. However, LAPP were more likely to have had a history of violent crime. Overall, the empirical relationship between psychopathology and (previous) crime is very complex (Corner & Gill, 2015). It should be noted that the correlations found should not be confused with theory: they are atheoretical correlations that may give rise to further thought and policy-making, again perhaps especially in the context of case management.

An influential risk assessment model comes from the research group of Meloy. Meloy is a forensic psychologist and researcher, and as such not only has considerable research experience but also practical experience in the clinical evaluation of lone actor terrorists. Based on these experiences and framed by psychoanalytic considerations, he has developed the *Terrorist Radicalization Assessment Protocol* (TRAP-18)[9] which defines ten distal (long-term) factors that cumulatively can make a person more vulnerable to a radicalisation process towards lone actor terrorism (Meloy & Genzman, 2016; Meloy & Yakeley, 2014). The advice is not to use these factors for a quantitative risk assessment of the threat, but to specifically monitor (i.e. case-manage) extremists with clusters of these factors. One of the identified factors is if individuals have a mental disorder (psychopathology). Meloy and Yakeley (2014) therefore advocate the study of psychological structures and psychological functioning. Of the other factors, four factors concern cognitions and internal experiences, three factors concern relational aspects and the last two factors concern life circumstances.

In terms of the lone actor's cognitions and internal experiences, four distal factors are identified. A first important factor concerns the ideology or belief system a person adheres to and if someone is *framed by an ideology*. If this ideology justifies or enforces violence, it increases the likelihood of terrorism. The second cognitive factor is the experience of *personal grievance and moral outrage*. Here the person in question has religious, historical or political grievances that are the motivation behind a terrorist attack. Lone actors may identify with others to such an extent that they adopt the grievances of other in-group members that are not related to their own personal lives. The third cognitive factor is the *changing in thinking and emotions* that fuel radicalisation and that are independent of ideology. This means that thoughts become increasingly simplistic and absolute. The person concerned no longer thinks critically, and ignores counterarguments. Anger can turn into envy and disgust of "others" and contempt for their beliefs. The willingness to inflict violence upon others can thus be strengthened. A fourth factor is that lone actor terrorists are more often able to think *creatively and innovatively* than group terrorists, partly because no other authoritarian leaders influence their radicalisation process. Lone actor terrorists can therefore be extremely dangerous if they can think tactically and 'outside the box'.

In terms of relational aspects, three factors have been identified. Firstly, it is a risk if a lone actor experiences *failure in sexual bonding*. This may be due to interpersonal limitations, but also due to high demands placed on partners. According to Meloy's psychodynamic model, a person may try to compensate for their failure in sexual relationships by, for example, fixating on weapons, or by thinking

[9] Several influential models exist, such as VERA-2 and RAM (Radicalisation Assessment Monitor). Other relevant models are Radicx, RADAR, the Dynamic Assessment Framework (DBK) and the Extreme Risk Guidance 22+ (ERG22+). The TRAP model of Meloy et al. is presented as a framework of thought given its focus on lone actor terrorism. The other models are not considered, but also provide insight into psychopathology in terrorism.

that they can find sexual satisfaction in the afterlife. A second factor may be if a person *fails to affiliate with an extremist group*. This might be due to interpersonal, communication limitations or, for example, the fact that the desire for violence is too extreme for the group. If a person is rejected by an extremist group, they can isolate themselves further and consequently believe more strongly in their ideology. Partly because these people can maintain relationships online, there are fewer dissenting voices and the internet can contribute to strange fantasies. The *dependence on and active contribution to the virtual community* may itself also be a third factor. For example, the emotions between persons can be intense online, even on an anonymous level. Because there is less dissent, the lone actor can also more easily express feelings such as anger and hatred without immediate consequences. A paranoid pseudo-community may arise, in which everyone turns against the lone actor, according to the lone actor. Conversely, a *pronoid* pseudo-community may emerge, in which everyone is perceived as 'the same' by the lone actor. These communities can support a moderate distortion of reality, but also extreme delusions.

Finally, in Meloy's model there are two life events that act as distal factors. First, the authors describe the *thwarting of occupational goals* as a risk. If the environment does not allow individuals to be successful, they may feel aggrieved. This can lead to disillusionment with the social order, and to the feeling that their lives are meaningless or that their pride has been compromised. If individuals had narcissistic fantasies about themselves as successful adults, the hurt may even lead to intense hatred. Typically, lone actors would find that the grievances could then lead to hatred of a group or a person. Finally, a *history of criminal violence* is seen as a risk. Lone actors can enter a very instrumental *predator* mode if they organise and carry out the eventual terrorist attack with some moral purpose in mind. This predator mode prevents emotions from interfering with the attack. If it can be shown that persons have exhibited such behaviour in the past, there is a greater risk that they will enter the predator 'attack' mode if, for example, they experience certain grievances and indignation that are reinforced by a certain ideology.

Other supporting literature

Some factors from the above models are consistent with results from related anecdotal and theoretical research that also suggests new hypotheses. In the VERA-2 model (risk assessment instrument for violent extremism), the following factors are considered in addition to psychopathology: attitudes, such as perceived grievances; contextual factors, such as the use of extremist websites; historical life events, such as a criminally violent past; and protective factors, such as disapproval of the use of violence to achieve goals (Pressman, 2009). Spaaij (2010) also hypothesised that psychopathologically vulnerable lone actors experienced stress when they were rejected by a terrorist group or organisation. Grievances from perceived discrimination and disrespect have been further identified as problematic risks by McCauley and Moskalenko (2014). Traumatic events, without necessarily leading to a formal disorder such as PTSD, are believed to be able to contribute to a radical ideological development towards lone actor terrorism (Canetti, 2017; Speckhard & Akhmedova, 2005). The latter issue seems to be specifically relevant for returnees from war zones, such as returning ISIS fighters. Finally, De Roy van Zuijdewijn and Bakker (2016) found that psychopathological indications were more common among the youngest (<25) group of lone actors (40%) who, incidentally, also live in isolation more often.

Overall, the above models are mainly meant as a framework of thought, in which the individual factors can be checked in case management, and in which the idea is that in principle they work in clusters and thus cumulatively (some boxes are probably harmless, but the more boxes ticked, the more someone can be monitored). Nevertheless, it remains the case that ultimately each terrorist makes their own developmental progress, in a unique context, whether or not reinforced by psychological problems.

Near neighbour research

In some prevalence studies, researchers reported that the same mental disorders were observed in lone actors as in their near neighbours, such as school shooters and attackers of public figures (Corner, Gill, Schouten, & Farnham, 2018; Fein & Vossekuil, 1999; James et al., 2007). There appears to be a similar grievance-driven developmental path. Studies of these groups also conclude that psychopathology can only contribute to violent behaviour in a complex and context-dependent process, in conjunction with other factors. A number of specific findings with these near neighbours deserves special mention.

A history of violent crime seems to be a frequently mentioned relevant factor. For example, 41% of potential fixated political attackers with a history of psychiatric treatment also had a history of violent crime convictions (James et al., 2007). In a study of school shooters and murderers, McCauley et al. (2013) found that a proportion of the sample showed characteristics of depression, grievances and unfreezing (losing relational and routine comfort), and a history of gun use. The authors speculated that the combination of depression and relational issues can make a person feel more likely to be a loner and isolated, which may make them less inhibited in terms of acting on grievances with violence. Grievances provide a motive for the violence, and depression and unfreezing could therefore reduce the perceived cost of an attack since the lone actor has less to lose. Experience with and access to weapons is also relevant to the developmental progression to violent behaviour (McCauley & Moskalenko, 2014). In short, the near neighbour research supports the theory that in lone actors, psychopathology in an individual and complex process can contribute to terrorism when it comes together with other more important factors that promote violence. In the mentioned *near neighbour* groups, a violent past, experience and access to weapons, and stress possibly play more central roles in developmental progression to violence than in lone actor terrorists.

Mental disorders and lone actor terrorism

As discussed earlier, based on the available evidence it is estimated that between 12.9% and 40.4% of lone actors suffer from one (or more) form(s) of psychopathology. Partly on the basis of this literature, but also on the basis of the interviews, the following groups of psychopathological disorders seem to be relevant to elaborate further on: (a) disorders from the schizophrenia spectrum and other psychotic disorders, (b) neurodevelopmental disorders including social communication disorder and autism spectrum disorder, (c) mood disorders, and (d) personality disorders. Below, for each group of disorders, we explain how they can play a role in the developmental chain towards radicalisation and lone actor terrorism. We use the DSM-5 (APA, 2017) for mental disorder descriptions.

Schizophrenia or other psychotic disorders

The prevalence study by Corner et al. (2016) shows that schizophrenia (8.5%) and delusional disorders (2.0%) are elevated among lone actors compared to the general population base rate and compared to group terrorists. Other studies and several interviewed experts endorse this observation.

A common core symptom of these illnesses is that they interfere with the way a person thinks and interprets perceptions. In other words, in active psychosis, people have great difficulty in distinguishing what is real, ordering their thoughts, understanding others properly and communicating clearly. The most salient symptoms are delusions and hallucinations. Delusions are false beliefs that cannot be countered, even if they are obvious to others. Delusions can be of a more or less bizarre ('impossible true') nature; being certain that you have no organs falls under the first heading, while delusions of persecution fall under the second. Particularly relevant in the context of this report are paranoid delusions, in which the person may be convinced, for example, that the government is secretly and systematically exterminating their own group, or (more bizarrely) that it is 'stealing the words'. Hallucinations refer to experiences in which a person hears (the most common form of hallucination), sees, smells, or feels things that are not actually there (i.e. in the absence of an external stimulus). Most stereotypical of these is hearing voices, often in the form of commands.

Several of the experts interviewed speculated that the ideologies help the lone actors to give meaning to their psychotic decompensation. The clear framework could give direction and meaning, and as such structure, to a decompensating psyche. In other words, ideology is a coping mechanism against the paralysing anxiety that can accompany the loss of contact with organised thought and reality (see also Meloy & Yakeley, 2014). For example, a person may believe that the government is twisting or stealing words so that they become less anxious about their own psychotic symptoms.

Other symptoms associated with some forms of psychotic disorders include severely disorganised or abnormal psychomotor activity and negative symptoms (e.g. loss of interest, initiative, and motor reactivity). While they could potentially interact in complex and rare individualised pathways towards extremism, these symptoms could potentially also act as impediments to purposeful action, and thus to planning and carrying out a terrorist attack (Zillmer, personal communication, 2018; Corner et al., 2016). In delusional disorders, these symptoms are generally absent, whereas in schizophrenia they can be both absent and present. Regardless, planning and executing a (well-organised) terrorist attack requires a certain minimum level of cognitive and executive skills that are not always easily achieved with severe negative symptoms or disorganisation of thought and action.

In the context of case management, it is not obvious to assume that people with such strong and extreme convictions or sensory perceptions can be persuaded with arguments. It seems important that the underlying disorder is recognised and adequately treated (e.g. with antipsychotics).

Social communication disorder and autism spectrum disorder

The prevalence study by Corner et al. (2016) shows that autism spectrum disorder (ASD) seems elevated among lone actors (3.3%) compared to the general population base rate and group terrorists. Another neurobiological developmental disorder, social communication disorder (SCD), is also associated (in

interviews and case studies) with lone actors.

In both social communication disorder and autism spectrum disorder, which often manifest themselves in early development, the person experiences such problems in behaviour, thoughts and attitudes that communication with and from other persons is made difficult. With a specific social (pragmatic) communication disorder, the person has difficulty, for example, with social non-verbal and verbal communication, such as greeting, adapting to context, rules of conversation or non-explicit communication from others. In addition, the person may suffer from functional limitations in effective communication, relationships, social participation, and school or work performance. ASD is characterised by severe persistent deficits in social communication and interactions, such as deficits in social-emotional reciprocity, non-verbal communicative behaviour, and developing, understanding and maintaining relationships. Furthermore, ASD may be characterised by restricted, repetitive patterns of behaviour, activities or interests.

According to Corner et al. (2016), lone actor terrorists with ASD may seek refuge in online relationships. Indeed, partly due to the difficulties experienced in social contact, a person may feel more comfortable in online interactions. Research also shows that the internet is a good breeding ground for radicalisation (Neumann, 2013). As Meloy and Yakeley's (2014) research shows, online interactions can also harden the rigidity of a particular extremist thought, grievance or ideology because there is little counterpoint, or because the person only seeks out online places where these cognitions are confirmed. Lone actors with ASD may also become extremely fascinated and fixated with a certain ideology (e.g. becoming a martyr), and find some affiliation with other sympathisers via the internet. However, as is the case with any diagnosis, it should be noted once again that ASD alone is not a risk factor for radicalisation. It is in interaction with other factors that promote violence (search for meaning, affiliation; hyper-focus and obsessive cognitive style) that ASD or SCD can play a role in the developmental path to radicalisation.

In summary, it is recommended that this problem be systematically included in the clinical evaluation of radicalised persons. It may also be possible to help the person in question to realise meaning or affiliation in another way, and to seek more positive uses for their hyperfocus, whether or not via online communities that facilitate these positive uses.

Mood disorders

According to Corner and Gill (2015), the diagnosis of depression is no more common among lone actors compared to the general population base rate. Nevertheless, there are a number of known cases in which depression played an important role.

In general, depressive mood disorders are characterised by "the presence of a depressed, insensitive or irritable mood accompanied by somatic and cognitive changes that significantly affect the person's ability to function" (APA, p. 244). Classical major depressive disorder is the best known. When a person suffers from depressive disorder, there are "distinct episodes lasting at least two weeks with marked changes in affect, cognition, and neurovegetative functions" (APA, p. 244). Some examples of symptoms are a depressed mood, markedly reduced interest in activities, feelings of worthlessness or excessive or unjustified guilt, or recurrent thoughts of death/suicide.

Several experts and researchers noted that depression and suicidality make people more

vulnerable to recruitment. Terrorism can redefine a personal suicide (wish) as a heroic act, for example as an act of martyrdom. This signification can motivate vulnerable people to die for the ideological cause. They may act alone, but they feel connected to the ideology and the group. As such, this developmental process also applies to group actors, and pre-eminently to suicide terrorists.

Personality traits and/or disorders

According to the figures of Corner et al. (2016), unspecified personality disorders are also not significantly more common among lone actors (6.5%) than in the general population. Nevertheless, there are a number of known cases in this cluster in which personality disorders played an important role.

The DSM-5 defines a personality disorder as "an enduring pattern of inner experiences and behaviours that is markedly different from what is expected within the culture of the individual. This pattern is expressed in two (or more) of the following areas:

a) Cognitions (ways of perceiving and interpreting oneself, other people and events)

b) Affectivity (the variety, intensity, lability and appropriateness of the emotional response)

c) Interpersonal functioning

d) Impulse control" (APA, p. 849).

To meet the criteria, the pattern must: a) be inflexible and manifest in a wide range of social and personal situations, b) produce clinically significant distress or impairment in social functioning, and c) be stable and enduring in nature, with origins in childhood. The DSM-5 distinguishes 10 specific personality disorders, which can be organised in three clusters: A, B and C.

Cluster A, also called the 'odd or eccentric' cluster, includes the schizotypal, schizoid and paranoid personality disorders. Paranoid personality disorder is characterised by 'a pattern of distrust and suspicion that interprets the motives of others as malicious'. A person with schizoid personality disorder often feels like a social misfit, and assumes that they thrive best when they keep a distance between themselves and others. Combined with an ideological belief that justifies terrorist violence, these paranoid (best defence is attack) and schizoid (isolation) patterns can reinforce the justification for violence against others. The schizotypal personality disorder strongly resembles a subsyndromal version of schizophrenia – see the discussion around this under the sub header Schizophrenia or other psychotic disorders.

Cluster B, also called the 'dramatic or emotional' cluster, includes the narcissistic, borderline, theatrical and antisocial personality disorders. The former and the latter in particular are relatively often included in theory formation. Narcissistic personality disorder is associated with extreme hurtfulness and an inflated sense of self-worth. This sensitivity to humiliation and (compensatory) self-importance can be a good breeding ground for strong grievances towards others (the sources of humiliation). Within the group of antisocial personality disorder, there is a subgroup that is sometimes referred to as psychopaths. This group has hardly any moral scruples, lacks empathy (for the fate of others) or is even sadist (takes pleasure in the pain of others), and is often fearless, impulsive and sensation-seeking. A (comorbid) combination of narcissistic and antisocial personality disorder can be extremely dangerous – not especially

in relation to radicalisation or terrorism, but in principle in all kinds of violent and criminal directions. Again, these psychopathology risk factors can only lead to a path towards radicalisation and terrorism in interaction with specific contextual factors (sometimes including a 'trigger' event, such as a traumatic loss).

Cluster C (the 'fearful' cluster), consisting of dependent, avoidant and compulsive personality disorders, is by definition not so obvious as a risk factor, but there are cases where individuals with comorbid compulsive and antisocial traits have used their control and perfectionism for antisocial purposes. For example, one expert mentioned a jihadist who performed particularly heinous acts (known as *necro-sadism*) because of his compulsive focus on rituals and sadistic tendencies. Finally, the subjugation characteristic of the dependent personality traits may increase susceptibility to recruitment, possibly through low self-confidence, and also increase the willingness to commit extreme acts, such as suicide attacks, in order to gain approval (Merari et al., 2009).

Once again, it should be noted that the diagnosis of personality disorders is complex and demanding. In other words, there is little good evidence, and theory building has a strong character of the logical extension of the characteristic tendencies. However, these need not be so pathological in nature that they meet the criteria of a personality disorder.

Conclusion on lone actor terrorism

As an interim conclusion, it can be said that radicalisation and participation in terrorist groups seems to be determined strongly by other factors, rather than only by whether or not a person has a mental disorder. However, vulnerable people (in search of identity, meaning, affiliation, support, etc.) can fall into the hands of radicalising and terrorist groups or extreme propaganda and ideologies. Their vulnerability may make them more susceptible, or increase their willingness to do what earns them recognition.

The *'lone'* in lone actors is consistent with forms of psychopathology in which people feel very uncomfortable in (offline) social intercourse, either because they cannot read the interpersonal 'language', have no interest in proximity with others, or harbour a strong suspicion or delusion. Furthermore, a pronounced tendency to fixation/focus and sensitivity to humiliation appear to be dimensions along which the link with extreme ideas can run. Let us repeat: each of these personal characteristics is in no way a *specific* precondition for radicalisation or terrorism. To illustrate: sensation-seeking can take shape in professions like being a stuntman/woman or firefighter, but it can also take on more dangerous forms like crime or involvement in radical or terrorist activities.

Group terrorism

Models of group terrorism

The available prevalence figures of psychopathology in group terrorists are not systematically higher than in the general population. Given the methodological limitations of the studies, the limited evidence, and the often low quality of the diagnostics, it is in our opinion too early to clearly conclude that psychopathology does not play a role in group terrorism. It does seem plausible, however, that in group terrorists political, historical contextual, economic and socio-psychological risk factors are more relevant

than psychopathology.

Generally speaking, it can be said that, particularly among the followers, participation in radicalised communities can offer a solution to problems relating to identity development, social affiliation and social functioning: one belongs somewhere, is motivated to achieve a common goal, has a common enemy/grievance, and, in contemplating terrorist acts, experiences power and derives meaning. On the basis of this vision, we describe here a number of well-known theoretical models, indicating in what way a relationship might be established with psychopathology. We would like to emphasise that this is highly speculative and not based on solid empirical research. It is therefore intended to generate a hypothesis rather than to confirm it.

Moghaddam (2005), in his 'staircase model', describes how people can reach the 5th floor (where someone experiences feelings of relative disadvantage and exclusion) via five staircases. The floors consist of: Floor 1) Perceived options for addressing perceived disadvantage and exclusion; Floor 2) Shifting aggression; Floor 3) Moral attachment to group; Floor 4) Consolidating categorical thinking and the perceived legitimacy of the terrorist organisation; and Floor 5) The terrorist act and the avoidance of violence-inhibiting mechanisms. Moghaddam, like Kruglanski et al. (2014) in their 'significance-seeker' model, assumes that people are motivated to address perceived disadvantage. This may relate to the individual ('I don't get what I'm entitled to'), but much more likely is about a feeling that their group is disadvantaged ('we don't get what we deserve'). In this context, the terrorist group satisfies the motivation to make a difference: the group gives people the feeling that they can develop 'from zero to hero'.

Speculatively, it is possible to link psychopathology to feelings of exclusion. These feelings may be linked to an experienced powerlessness to change a situation. Kruglanski asserts that this link can be made: in his view, people who experience deprivation (e.g. through losing a job) can be particularly attracted to the message of radical groups (personal communication, 2018), in an attempt to restore honour.

Related models emphasise the role of feelings of insecurity (e.g. Doosje, Loseman, & Van Den Bos, 2013; Hogg & Adelman, 2013; Van Den Bos, 2009). These authors argue that insecure people are susceptible to radical ideas and groups because these groups offer something to hold on to in the form of a black-and-white world view and clear rules of life. Part of the insecurity stems from puberty. In this period, children and young adults must shape their identity and separate themselves from their parents. Questions such as "Who am I?", "What do I want?" and "What can I do?" are then central. These questions are more difficult to answer when people can draw on multiple sources, which can sometimes contradict each other. This can be especially true for young people who sometimes hear different ideas at home than at school or at work. Developing their own identity can then be especially difficult and can be accompanied by a period of uncertainty.

It is important to note here that there is always a context of supply and demand. On the one hand, as has been argued, insecure people are more susceptible to radical influences (the demand side). On the other hand, sometimes the providers also seek out the demanders (the supply side): recruiters are well able to identify insecure and isolated people and are motivated to approach them with their radical message (Mellis, 2007; Moors, Van den Reek Vermeulen, & Siesling, 2009).

In another influential model, McCauley and Moskalenko (2008) describe 12 mechanisms of radicalisation. Two mechanisms relate to the individual level, namely, personal victimisation and political

grievances – overlapping with the ground floor in Moghaddam's staircase model, in which he focuses on feelings of exclusion and relative deprivation. Other mechanisms relate to the link between the individual and the group, such as becoming a member of a radical group, or to the group itself, such as isolation from the group and feelings of group threat. Finally, some mechanisms relate to the in-group – out-group level, such as dehumanisation and hatred of the enemy.

In the context of this report, the role of perceived personal victimisation and group threat are particularly important. Personal victimisation has often been linked to terrorist attacks. For example, Chechen black widows took revenge on Russians for killing their husbands or for sexual abuse, and Palestinian suicide bombers are often associated with revenge for Israeli attacks that killed a family member. It is difficult to assess the relationship with post-traumatic stress disorder (PTSD). For example, it appears that young people from Gaza who had experienced violence at the hands of Israeli security forces were more likely to participate in political violence (Victoroff et al., 2010). Other scholars, however, speculate that terrorism may have served as a means of protection against PTSD and depression due to the fact that the trauma victims no longer feel passive and helpless (Post, 2010).

Finally, group threat has more often been linked to radicalisation. Doosje et al. (2013) argue that the combination of group threat and a sense of in-group superiority can cause a group to consider using violence to defend or secure the threatened group image. It is interesting that, at the individual level, there is evidence for this. For example, individuals with high self-esteem (perhaps even narcissistic) who feel threatened may be inclined to use violence to repair or protect their self-image from this threat (Baumeister, Smart, & Boden, 1996). This has been demonstrated in both clinical and non-clinical populations (Lambe, Hamilton-Giachritsis, Garner, & Walker, 2018). The same pattern is recognisable at the group level: in particular, groups with a morally superior self-image, but who feel threatened by another group, are inclined to use violence to restore or protect their superiority (Doosje et al., 2016).

In summary, psychopathology does not seem to occur often in group terrorism. This makes it illogical to attribute a major role to psychopathology in group terrorism. In this section, therefore, we have discussed some frequently used models and mechanisms in group terrorism and, with caution, speculated how psychopathology may interact with these models. It is possible that through the treatment of psychopathological symptoms, professionals in the case management of terrorists can also address other recognised risk factors that may interact with them, such as feelings of helplessness, powerlessness, insecurity, personal victimisation and perceived grievances. As indicated earlier, these suggested links should be treated with caution, as they are not based on empirical evidence but on speculation. As such, they should be seen as hypothesis-generating, not hypothesis-confirming.

Leaders of group terrorism

The empirical evidence in the literature on the prevalence of psychopathology among leaders of terrorist organisations is limited, so no clear conclusions can be drawn. One reason for this is that there are inherently few leaders, and it is very difficult to gather primary reliable diagnostic information on leaders. The literature and expert interviews do suggest, however, that psychopathological traits may play a role in this leadership. For example, Merari et al. (2009) found that the leaders of suicide terrorists displayed emotionally unstable and impulsive personality traits. Merari et al. (2009) then hypothesised that these personality traits led some leaders to think in black and white (extreme) terms and to externalise their

anger. What emerged from our interviews and the literature is that some terrorist leaders are so convincing and manipulative that followers admire them and thus follow them into the terrorist struggle (Kruglanski, personal communication, 2018). Narcissistic traits may play a role in this. In addition, the violence of these leaders is so disproportionate and cruel that there is a significant chance of psychopathic, antisocial and poorly empathetic traits also explaining this behaviour (Kruglanski, personal communication, 2018). Consequently, such leaders may themselves be a risk factor. Indeed, if a vulnerable follower is overwhelmed by such a leader or recruiter, the chances of being drawn into terrorist networks are significantly higher.

2.7 Research agenda recommendations

Introduction

The literature described and our expert interviews show that psychopathology has no useful predictive value for radicalisation or terrorism in the general population. It is possible that psychopathology, especially in lone actor terrorists, contributes to a radicalisation process in interaction with other factors that can incite violence, such as having a history of violence, access to weapons, relational stressors, experienced grievances and moral outrage. This knowledge can promote good case management. However, the research evidence is limited in scope and methodical and diagnostic quality. Therefore, it remains crucial that more (and better) research is conducted. This section describes the priorities and a feasible research agenda. In this section we answer the following questions:

2a. Which mental disorders and/or mediating factors are missing from research of good scientific quality?
2b. Is it possible to obtain this knowledge through empirical research? If so, what is a relevant and feasible research agenda in this area?

We first discuss the limitations of our literature review and study. This is followed by five perspectives for further research, which we see as priorities for the research agenda in this domain. In order to make these as concrete as possible, we also describe the methods and materials that can be used for such research. Finally, we discuss the practical feasibility and bottlenecks that may hinder this research.

Limitations and context of current research

In every study, choices have to be made, which often also produce limitations. First of all, our choices regarding the demarcation of the groups and the inclusion and exclusion criteria of the literature study may affect our conclusions. The conclusions about the prevalence of psychopathology relate only to terrorists as defined by us. Other relevant groups such as the justifiers and radicalising persons were not considered for the purpose of determining prevalence, although some included studies did contain samples that also comprised radicalising individuals. Overall, the evidence is limited in scope and quality. The lack of uniformity in clinical evaluations is a particular problem; a diverse set of instruments with varying psychometric properties makes it difficult to arrive at an overall picture. Nevertheless, the studies do seem to converge to the previously stated conclusions. Furthermore, our choice to distinguish lone

actor terrorists from group terrorists is contestable, since the distinction is not always easy to make (e.g. how do you categorise a lone actor who has had a lot of contact with like-minded people online?)

For the literature search we chose the PRISMA method. The PsycINFO, Medline and Worldwide Political Science databases were consulted using a wide range of search terms. This list included general databases and psychological and political science databases. However, a more criminologically oriented database, such as National Criminal Justice Reference Service (NCJRS), might have identified additional studies. Having said that, our additional analyses will have significantly reduced the chance of possible omissions; in particular by using the Google Scholar search where studies from all disciplines were identified, as well as by searching the reference lists. Furthermore, the expert interviews with various academic experts, psychiatrists and professionals ensured a broad approach.

It is also important to note that this report does not exhaustively describe theories on the role of psychopathology in terrorism. Various reports by governments and non-governmental bodies, known as 'grey literature' (e.g. Paulussen, Nijman, & Lismont, 2017), have been left out of consideration. In the PRISMA method, a guiding principle in the selection of sources is that the knowledge should in principle be scientifically sound. This means that studies had to be public, peer-reviewed and verifiable. However, this does not exclude the possibility that the results of different studies on American and European terrorists are partly based on overlapping data.

Finally, it should be noted that the current research does not include the growing literature from neuroscience (see, for example, Decety & Workman, 2018). Although we do not exclude the possibility that this could lead to interesting insights in the future, in our opinion this perspective is still in its infancy and the link between concrete brain activities and actual behaviour (in this case a terrorist attack) cannot yet be made. This is partly due to the nature of the phenomenon of terrorism, which lends itself more to an analysis in terms of interactions between individual characteristics and influence by a social group (and then in turn to an analysis of a larger set of intergroup relations – see Reicher & Haslam, 2016) than a strictly individual analysis.

Research priorities

In Boxes 1 to 5 (on the next page) we discuss five possible points on which future research could focus.

Box 1. Further research with specific (sub)groups regarding motivational processes and psychopathology

The report shows that several important themes have not yet been investigated or deserve more attention. For example, it is insufficiently clear whether the current or described foreign fighters should be understood as lone actor terrorists or group terrorists. The role of home-grown terrorism and the influence of hierarchy and tasks within terrorist organisations have also not been sufficiently addressed in the literature. Further research into so-called "deserters" (i.e. people who dropped out after joining a terrorist group) could also provide leads for (secondary) prevention policy. Furthermore, it is still unclear whether non-violent radicalising individuals differ in their psychopathological vulnerability compared to violent terrorists. Finally, further research should clarify the nexus between psychopathology and the other violence-inducing factors in a radicalisation process (e.g. isolation and refusal of a terrorist group).

Current prevalence studies (e.g. the DARE project[10]) or future prevalence studies could take on such issues.

Box 2: Uniform protocol case management

As demonstrated by our expert interviews and the review of the literature, there is a demand for more information on case management and/or prevention of radicalisation in which psychopathology plays a role. For example, it is important for practitioners to elaborate on the role that mental health care institutions can play, and which other institutions they must cooperate with when such cases occur. It is important to clarify the role of each agency. For example, mental health services may be responsible for psycho-diagnostics, treatment indications, appropriate referrals and treatment for mental disorders. On the other hand, mental health services should not be responsible for safety and security, and so should cooperate with the appropriate agencies such as the police or security services.

Furthermore, in the context of case management, it is desirable to increase knowledge of best-practice treatment protocols. Treatment protocols may contain information about which specific treatments have helped (or perhaps undesirably been detrimental to) individuals' mental health. In other words, it is useful to take stock of what exactly treatment providers have done in a specific case and what this treatment has achieved. This may be both successful and unsuccessful treatments – more knowledge about both is informative. Finally, in practice, some clinical professionals also experience a reluctance to treat psychopathology in the context of terrorism. Explicit descriptions about which actions (e.g. questions, comments, focal points) can be helpful, unhelpful or even counterproductive can support professionals (Weilnböck, personal communication, 2018).

[10] https://www.nifp.nl/wetenschap/lopende-onderzoeken/project-dare/index.aspx

Box 3: Uniformity of diagnostics

In order to improve the quality of diagnostic evaluations with datasets, we advocate uniformity in terms of diagnostics and conceptual frameworks. Currently, there is barely any agreement on how clinical evaluations are carried out. This is undesirable because it prevents knowledge from accumulating optimally. Whenever different frameworks, group definitions and psychological instruments are used, exchange and comparison are extremely complex and inherently subjective. It would be desirable for only clinical experts to conduct the diagnostic examination, to provide the diagnostic information, and to rule out the possibility that the psychopathological vulnerability arose after the radicalisation process. Finally, it would be desirable for clinical experts to establish a kind of "core battery" of instruments that would be the starting point for every clinical evaluation. These might include certain types of risk assessment instruments and the use of specific personality and psychopathology tests (e.g. a version of the Minnesota Multiphasic Personality Inventory, MMPI). Given the vulnerability of self-reporting in these groups, a multi-method approach (i.e. both self-reporting and also from another perspective) is essential.

Box 4: Uniform definitions within the terrorism theme

A clear description of the research groups is crucial in order to analyse the obtained data properly. The diversity of definitions used makes it difficult to reconcile the results of existing studies. It would therefore be desirable for researchers to draw up a clear codebook for all future studies, in which clear definitions of various forms of terrorism are used. Crucial elements within the following concepts should be clearly agreed upon: the process (radicalisation or terrorism), the form of terrorism – lone actor (specification of lone actor) or group (follower or leader), home-grown terrorists or foreign fighters – and the extremist ideology. In addition, this codebook should clearly explain the terrorist attack (what method was used and with what result). Finally, this codebook will have to indicate the other risk factors that stimulate violence during the radicalisation process of psychopathologically vulnerable individuals.

Box 5: Promoting exchange of existing and new clinical knowledge

Coordination and collation of research initiatives seems highly desirable. Our expert interviews and the focus group revealed that there is a lot of unpublished knowledge available that is not being exchanged, either nationally or internationally. A bottleneck lies in the confidentiality of the collected data. Yet It seems particularly useful to us, within the parameters of privacy legislation and professional secrecy, to promote such exchange. This can be achieved, for example, by organising a number of expert meetings and small-scale conferences with clinical experts, lawyers, privacy experts and security agencies (e.g. police), and documenting the results in publications. Clinical practitioners

can also be called upon to act on an international level, anonymously sharing data directly and helping each other in direct contact with the clinical evaluations. This can be further strengthened by setting up an international research network in which researchers collaborate, collate the datasets and collaborate more closely with professionals to unlock data.

Methods and materials

The above research priorities require a multi-method approach, in which priority research and quantitative, qualitative and experimental research can complement each other.

Based on previous studies and expert interviews, the present report has identified priorities for future research. These priorities could be directed and reinforced prior to new research with what is known as a Delphi panel (Bruijsten, Westen, Weijman, & Peeters, 2018; Gordon, Sharan, & Florescu, 2015; Rowe & Wright, 1999). A Delphi panel is a method by which a broadly selected and interdisciplinary group of experts can further validate and/or nuance the established research agenda and information needs. The panel consists of several rounds in which the experts assess research priorities in terms of values, so that the team ultimately produces a list of key priorities.

Quantitative data collections can be used on a large and international scale to reinforce prevalence results. Using percentages and Chi-square analyses, for instance, it can be examined whether various forms of psychopathology, and thereby other violence-inducing risk factors, occur more frequently in certain types and forms of terrorism than in comparison groups. Within these dimensions, moderator analyses can then show among which subgroups the effects are larger and, finally, mediator analyses can be carried out to investigate how the relationships between the three dimensions (i.e. psychopathology, terrorism, and other violence-inducing risk factors) can be explained.

The question of how psychopathology can play a role in the terrorism process, and how it can be treated, is extremely complex. Qualitative timeline analyses can therefore complement quantitative research by providing insight into complex and context-dependent individual trajectories and their treatment. However, for qualitative research it is also crucial that this data is systematically and uniformly accessed, analysed and published.

Finally, experimental research seems to be lacking in the current research field. This is logical given the nature of the problem. However, Kruglanski (personal communication, 2018) suggests a quasi-experimental approach whereby process-based research can be conducted to determine whether individuals diagnosed with a psychopathological disorder are more susceptible to radical influences than psychologically healthy individuals. Both groups are then exposed to certain storylines in which various extremist propaganda or ideologies are described. Questionnaires and interviews can be used to investigate whether the clinical population receives the extremist narratives more positively than the psychologically healthy comparison group.

Feasibility of the research agenda

A major bottleneck of quantitative, qualitative and experimental research on psychopathology in terrorism lies in the sharing, management and publication of confidential data. In addition to the existing professional privacy laws of medical professionals, the new privacy legislation within Europe has made all three forms of research considerably more difficult. Given the methodological limitations of research with public data sources, it is desirable to link confidential, valid and reliable data sources from various security, mental health and safety institutions.

On a practical level, it is very complicated to conduct scientific research with (legal) data because of publication restrictions, the legal framework of professional secrecy and European privacy legislation. This privacy legislation (General Data Protection Regulation, GDPR) means strict rules apply. In order to be able to deal with these, a privacy impact assessment (PIA) must be made, describing why and how exceptions should or must be made to the right to consent, the right to inspection, the right to correction and deletion of data, based on the social relevance of the research. A PIA is made with privacy experts, and is a laborious procedure of which there is relatively little experience. Also in connection with publication restrictions, professional secrecy and privacy legislation, it is crucial to guarantee the anonymity of the terrorists and to avoid recognisability. This requires encryption via an independent third party. In addition, it is necessary to collect data on an international level so that the data cannot lead to individuals (Duits, personal communication, 2018).

In addition to data collection, there are some specific elements of the research agenda that may be hindered. For example, the recommendation to build an international team of clinical psychiatrists and psychologists is not easy to achieve given the reluctance to share data. Privacy experts will need to determine the parameters within which clinical experts can and may share data about their case management and in what setting (e.g. online or only within meetings). It is also complicated to involve radicalising individuals or terrorists in such research. In an interview, it was suggested that transparency from the practitioner to the vulnerable person (partly through *informed consent*) is therefore crucial. The practitioner supports further cooperation if they are completely transparent about the method and objective of the research. It is also important for the researcher to emphasise that the aim of their study is to understand the motivations behind the radicalisation process and what has helped or what can help.

2.8 Conclusions and discussion

Prevalence of psychopathology among terrorists

Both psychopathology and terrorism are multiform. With regard to psychopathology we follow the classification and definitions of the DSM-5. With regard to terrorism we distinguish justifiers, radicalising individuals and terrorists (with extremists balancing on the edge of terrorism), and within the latter group especially lone actors, group terrorists and suicide terrorists. The available prevalence studies document that there is no unequivocal relationship between psychopathology and terrorism. Psychopathology does seem to occur more often in lone actor terrorists than in group terrorists. In general, psychopathology seems to occur in a relatively large minority of lone actors. The mental disorders that may potentially be

relatively elevated in lone actors compared to the general population base rates are schizophrenia, delusional disorders and autism spectrum disorders.

For group terrorists there is currently no strong evidence that psychopathology occurs more frequently than in the general population. Thus, the bulk of the explanatory power of group terrorism seems to lie in socio-psychological, economic and political risk factors. This does not exclude that on a casuistic level psychopathology can play a significant role, possibly with right-wing extremist groups and foreign fighters. Such information can be especially important for planning interventions (case management).

Nexus of psychopathology and terrorism

By means of theory-building articles, our interviews with various experts (i.e. researchers, practitioners and practitioner experts) and a focus group, we have attempted to clarify how psychopathology and terrorism are linked once the mental health disorder is identified in a case. We conclude that psychopathology is not a direct causal factor. Once present, it should rather be seen as a non-specific factor in a complex, highly individualised chain of context-dependent events and factors that can ultimately culminate in terrorist activities. Thus, within the general population, psychopathology does not lend itself to predicting with any accuracy who will or will not commit terrorist acts.

Disorders from the schizophrenia spectrum, other psychotic disorders (in particular delusional disorder), social communication disorder and autism spectrum disorder can play a role in rare cases of lone actor terrorism. In the case of terrorists with a psychotic disorder, it is assumed that the extreme views provide the perpetrator with some structure, as well as meaning for a derailed mind. In the case of social disorders, personal isolation (i.e. absence of corrective, nuancing influences) and a tendency towards obsession are thought to promote extremity of thought. The nexus between depression and terrorism may lie in giving meaning to pre-existing suicidal thoughts. Experts also point out that more extreme personality traits or formal personality disorders can translate into intensified reactions to humiliation or into a diminished empathy for the fate of others (e.g. in the case of antisocial problems; tendencies to negativism and impulsiveness).

There is no quantitative evidence of a higher incidence of psychopathology among group terrorists. Various experts mention more extreme forms of dependence, need for approval and acceptance, and also depression as vulnerability factors for recruitment. It must be said, however, that other factors probably play an important role, particularly socio-psychological, economic and political factors. The factors mentioned were: feelings of relative deprivation, such as economic deprivation and symbolic deprivation (discrimination) on an individual and group level (often driven by an available ideology), and the idea that politics does not do enough about it; a normal search for identity and meaning (Who am I? Where do I belong?); and a need for significance (i.e. making a positive contribution to a greater whole). Theory-building studies and experts speculate that, in some people, psychopathological vulnerabilities such as depression, schizophrenia, narcissism or trauma may interact with the above factors. As indicated earlier, these suggested links should be treated with caution, as they are not (yet) based on empirical evidence, but on speculation.

Towards a shared research agenda

Based on our literature review, the expert interviews and the focus group, we have formulated five perspectives for further research that dynamically complement each other. A multi-method approach, in which priority research and quantitative, qualitative and experimental research complement each other, will support this future research within the parameters of practical feasibility.

The first objective is to use future research to further refine theories and to conduct further research into specific (sub)groups with regard to motivational processes and psychopathology. The report shows that various themes, such as the role of psychopathology in foreign fighters, deserve further attention. The second goal is to unify the (treatment) protocols for thorough case management of (potential) terrorists. The third and fourth goals concern uniformity in psychodiagnostics and definitions within the theme of terrorism, while the fifth goal is to build an international network that promotes the exchange of (existing) clinical knowledge.

A bottleneck for this research agenda is its practical feasibility. For example, a bottleneck of both quantitative and qualitative research into psychopathology in terrorism lies in the sharing, management and publication of confidential data, due to medical confidentiality and the new privacy legislation within Europe. There are various possibilities for conducting this research within the legal parameters, however. For example, a privacy impact assessment can be made, and researchers can collaborate with an independent third party that collects, manages, links and encrypts the confidential data.

Conclusion

Prevalence studies of psychopathology in terrorism show that there is no single specific profile for terrorists. Psychopathology seems to play a limited role among lone actors and no specific role in group terrorism. Moreover, mental disorders are generally not useful for statistically predicting who will or will not commit a terrorist act in the general population. The vast majority of people suffering from any disorder, even if it is found more frequently in lone actor terrorists, will never feel drawn to radicalisation or terrorist activities. Future research will have to further clarify which mental disorders are more common in certain specific types of terrorism, and with which violence-inducing factors they may be linked. Qualitative knowledge about treatment protocols will also be able to assist clinical experts and professionals at the international level in sound case management.

2.9 Appendix A.

Two series of search terms were used to search for relevant manuscripts. The first series contained terms about terrorism and the second series contained terms about psychopathology. The search terms, as used for PsycINFO (ovid), are listed below:

1. psychopathology/ OR exp attention deficit disorder/ OR exp addiction/ OR attempted suicide/ OR exp drug abuse/ OR "substance use disorder"/ OR conduct disorder/ OR emotional trauma/ OR posttraumatic stress disorder/ or acute stress disorder/ or post-traumatic stress/ OR mental disorders/ OR exp affective disorders/ OR autism spectrum disorders/ OR exp dissociative disorders/ OR oppositional defiant disorder/ OR personality change/ OR delusions/ OR acting out/ OR aggressive behavior/ OR antisocial behavior/ OR behavior problems/ OR externalization/ OR rebelliousness/ OR tantrums/ OR (mental disorder* OR psychiatric disorder* OR mental illness* OR mental health OR DSM* OR psychopath* OR pathological OR psychiatry OR psychological disorder* OR mental health problem* OR autis* OR ASD OR asperger* OR ADHD OR hyperactiv* OR attention deficit disorder* OR conduct disorder* OR oppositional defiant disorder* OR ODD OR disruptive behavior disorder* OR personality change OR ((substance OR alcohol OR amphetamin* OR caffein* OR cannabis OR cocaine OR hallicinogen* OR inhalant* OR nicotin* OR opiod* OR opiat* OR phencyclidine* OR sedative OR hypnotic OR anxiolytic OR polysubstance OR polydrug* OR tobacco) ADJ2 (disorder* OR abuse OR misuse OR addict* OR intoxication OR withdrawal OR dependence)) OR psychotic* OR schizo* OR paranoid* OR delusion* OR mood disorder* OR depress* OR dysthymic* OR bipolar* OR hypomanic* OR manic* OR mania OR stress disorder* OR PTSD OR ((psychotrauma* OR trauma OR stressor) ADJ2 disorder*) OR depersonali#ation disorder* OR sadis* OR impulse control disorder* OR explosive disorder* OR personality disorder* OR borderline OR narcis* OR derealization disorder* OR acting out OR aggress* OR antisocial OR behavi* difficult* OR ((defiant OR disruptive OR dysfunctional* OR explosiv* OR maladaptiv* OR problem*) ADJ3 behavio*) OR externali* OR hyperactiv* OR misbehavio* OR misconduct OR tantrum* OR personality trait*).ti,ab,id.

2. terrorism/ OR extremism/ OR religious fundamentalism/ OR political radicalism/ OR (radicali* OR radicalism OR extremis* OR fanaticism OR terroris* OR suicide bomber* OR lone wol* OR mentally ill loner* OR lone actor* OR suicide attack*).ti,ab,id.

3. 1 AND 2

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